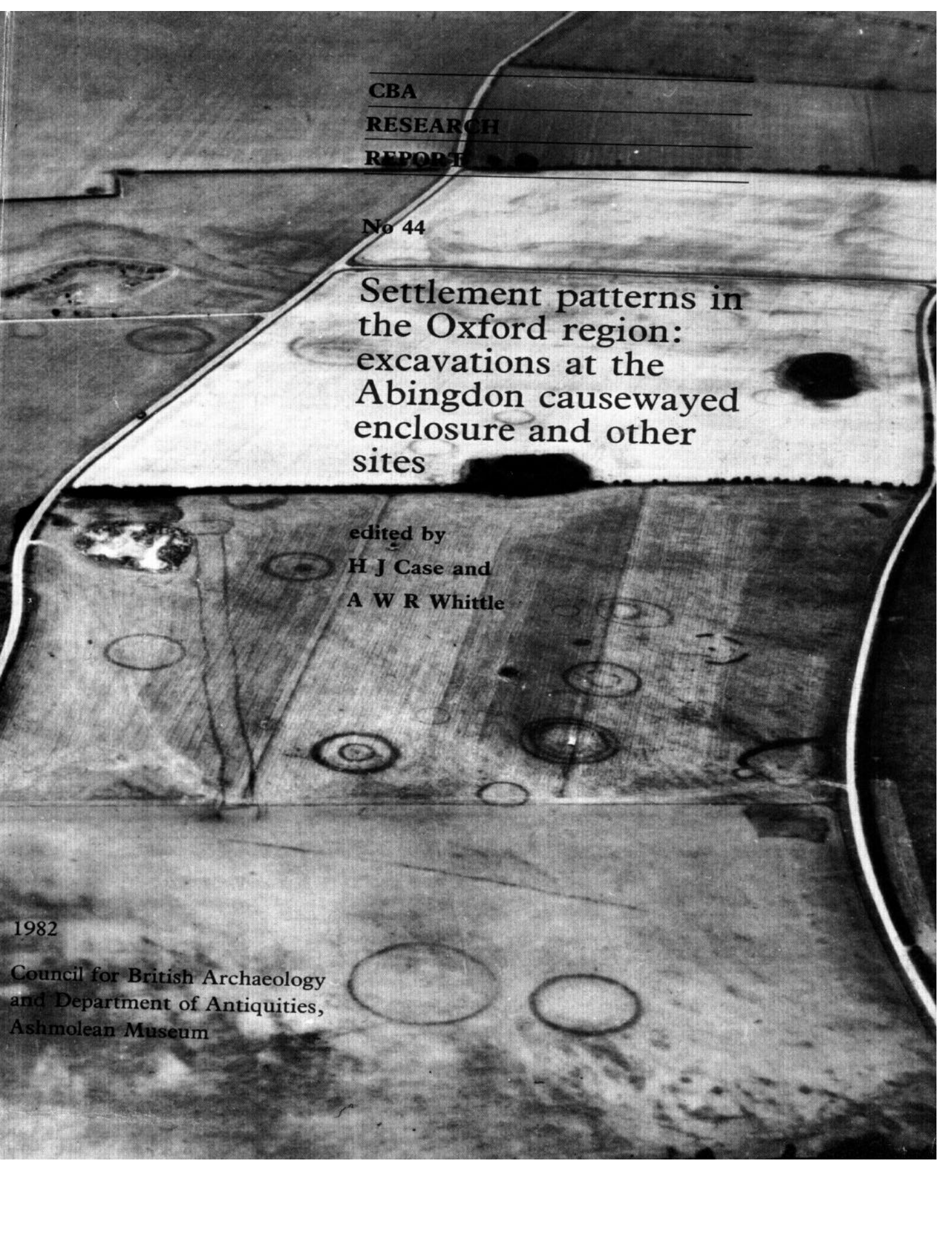




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No 44

Settlement patterns in
the Oxford region:
excavations at the
Abingdon causewayed
enclosure and other
sites

edited by
H J Case and
A W R Whittle

1982

Council for British Archaeology
and Department of Antiquities,
Ashmolean Museum

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region; excavations at the Abingdon
causewayed enclosure and other sites**

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**Council for British Archaeology and
Department of Antiquities, Ashmolean
Museum**

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Foreword

The rescue excavations in gravel pits reported here are of prehistoric and Romano-British rural sites. The organisation of work on most of them centred on the Department of Antiquities, Ashmolean Museum, between 1950 and 1964. They thus date from before the days when archaeological rescue excavation was fully recognised as a local and central government responsibility, with the formation of full-time professional excavating units.

In that epoch rescue digging was largely a spare-time activity partially supported by whatever funds could be diverted from a relatively slim government purse. In the Oxford region, the Department had a tradition of spare-time and part-time rescue excavating dating from the 1920s, and most of the excavations reported here were undertaken either by the staff during annual leave or occasional secondment or by others variously associated with the Department, including undergraduates in term-time. This largely amateur approach had been adequate in the days when gravel was dug by hand, but already during the Second World War use of large machinery was quite general and after its close destruction became both faster and more widespread. Moreover during the 1950s demands on the more strictly curatorial functions of museums increased likewise, due to the growth of archaeological research; and progressively less and less time could be given to Geld activities. Opinion locally and nationally was slow to accept the implications, and it was not until 1973 that the lessons learnt from the Department's experience and from that of the Oxford City and County Museum (when it had assumed the Department's role in rescue excavations in the 1960s) were applied to the formation of the Oxfordshire Archaeological Unit, which became a model for the numerous units now at work more or less throughout Great Britain.

The excavations reported here were in many aspects selective and less informative than they might have been if more resources could have been applied. Nonetheless, if they imply a lesson for the methods used today, it is that useful results can be obtained by improvising from slender resources. At present the fashion is mostly for large scale excavations; but from its very nature rescue archaeology is continually confronted by the unforeseen, and the progress of knowledge and research may often depend as much on speedy small-scale examination of chance discoveries as on expensive long-term programmes. The intention too behind the work reported here was to spread the available resources as widely as possible over the types of site which faced destruction (both local and urban), rather than concentrate on special problems or particular periods. Although this practice may involve very slight sampling, it helps to build a pattern of land-use over centuries or millennia, a task for which rescue archaeology is especially fitted.

Thanks are due especially to P Manning, E T Leeds, G W G Allen and R J C Atkinson, who established and fully developed the Department's tradition of field work and rescue excavation and to the late J S P Bradford and others in the Pitt Rivers Museum who assisted, and to many in various walks of life whose local knowledge and spare-time help contributed to planning and excavation, among them especially D N Riley, recording in the gravel pits and photographing from the air, and A G Fenwick, conspicuous with zealous energy; to the Oxford University Archaeological Society (OUAS) which was mainly responsible for the excavating in various roles; D

Sturdy for local knowledge and much initiative in organisation, and to others in the Department, including P Clarke, L Wallace and N Griffiths in the Drawing Office; and to the officers of the Department of the Environment (formerly the Ministry of Works), including J R C Hamilton, who gave unfailing help not least in providing the salary as Departmental Assistant of A W R Whittle, co-editor of this volume. Dr Whittle produced the first drafts of most excavation reports in this volume, and the Romano-British sections remain largely as he wrote them. Throughout the reports, much is owing to discussion with him and the sections on finds are mostly his; but considerable help was also given by P Gunstone in sorting and measuring the Abingdon material.

Dr Whittle and I are grateful for access to unpublished material given by D G Benson, Dyfed Archaeological Trust Ltd, Mr and Mrs R P Henderson of the Abingdon Archaeological Society, and D Miles, M K Jones, G H Lambrick, M A Robinson and R A Wilson of the Oxfordshire Archaeological Unit. Mr J Steane and Mr I Hornbrook, Field Section, Oxfordshire County Museum, gave valuable and ever willing assistance. I express thanks to the Visitors of the Ashmolean Museum and the General Board of the Faculties for granting me sabbatical leave which was partly devoted to these reports.

Finally, I salute all those who, undaunted by time, weather and conflicting obligations, worked hard to record a part of our heritage and for whom the smell of fuel oil, the roar of drag-lines and the rattle of the gravel-washers were unforgettable calls to battle.

HUMPHREY CASE

Keeper
Department of Antiquities
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Settlement patterns in the Oxford region: an outline

The field work and excavations reported here, together with recent excavations by the Oxfordshire Archaeological Unit and other work including that in Berkshire (for example, Bradley & Ellison 1975; Froom 1971/2a; b; 1976) give one a glimpse of settlement patterns evolving in a single region from the earliest times until the recent past. Any review of these patterns, even if based on much fuller evidence, would be speculative but is worth attempting if only for the questions it raises. A view must be taken first of the resources offered by the region and secondly of the social organisation of those who exploited them.

Resources

Soils The abundance of field monuments of numerous types indicates that the region was highly favourable for settlement in epochs when existence depended largely on subsistence mixed farming. For pioneering farming in the Sub-Boreal it had many advantages with large areas of soils both well watered and easily cultivated, and with excellent drainage characteristics which would have become important in later epochs. Many of the soils will also have had a basic reaction suitable to early farming and may originally have contained a greater loessic element than is apparent today making them still more attractive (p 8; Robinson 1980; Catt 1978).

Grazing Among the most attractive soils for both hunting-gathering communities and primitive subsistence farming would have been those on the widespread fluvial deposits of the Thames and its tributaries. Of special importance would have been the extensive flood-plain alluviums. Recent evidence (reviewed in Robinson 1980) indicates that persistent aggradation of the flood-plain with the winter or spring flooding familiar today may not have become established until the Late Iron Age, as shown for example by the Oxfordshire Archaeological Unit's excavations at Farmoor (Lambrick & Robinson 1979) and also at Hardwick. It may have been aggravated by the general practise of growing winter sown crops, which would have left areas of unconsolidated soils open in the wettest season; but evidence from the King's Weir barrow, Wytham (Bowler & Robinson 1980) is not incompatible with periodical local flooding having already begun by the later Bronze Age. In earlier Holocene periods, in a largely wooded landscape the river may have been more stable than today with more even flow - its channel less silted, with rain-water closely held in the root systems of trees. (I am grateful in this section for discussions with Mr Mark Robinson.) Clearances and cultivation from the Neolithic onwards will have induced run-off and aggradation to some extent, but the effect would have been less with spring-sown crops. In the relatively dry Sub-Boreal climate of the Neolithic through to the Middle Bronze Age, these flood-plain deposits will thus have been exceptionally valuable for spring and summer pasture: the grass may have been less inhibited in the spring than nowadays and the grazing have come on earlier and lasted longer. Even today the soils on higher terrace levels have the disadvantage of drying out excessively in a warm summer. Very large areas of flood-plain alluvium exist in the region (for example

between Eynsham and Newbridge, p 113) and the grazing on them will have been an exceptional asset during the Neolithic and Early Bronze Age, especially if as in many primitive societies 'flocks and herds were tokens of prestige.

Flint Another advantage possessed by the region will have been easy access to flint, an essential raw material. Although pebble flint in fluvial gravels is rare and fragmentary above Wallingford, and downstream is of poor quality, unlimited supplies of useful material would have been available as surface deposits on the southern Chilterns and the Berkshire Downs. Important collecting and working areas may be expected to have existed between the known sites of the Neolithic and perhaps later at Rotherfield Peppard, Oxon (Peake 1913; 1914), and at Aldbourne, Wilts, where finds of axe rough-outs (Passmore collection, Ashmolean Museum) suggest the possibility of a mine. From remote prehistory, the possession of flint and the ability to collect it in large quantities, and especially in the Neolithic the capacity to mine it, will have been outstanding assets and conferred prestige, which may have endured in the Bronze Age or even later (I owe this suggestion to Mr Richard Bradley).

Iron In late prehistoric times, proximity to the north Oxfordshire iron deposits and the adjacent deposits of Northamptonshire would have been a similarly outstanding asset regionally. Both the dressed ore and its products would have come into the region and passed through it. Evidence for ore-roasting in the Thames valley dates from the Middle Iron Age at City Farm, Church Hanborough (Cleere in Case *et al* 1964/5, 94-5).

Communications Finally it is hardly necessary to stress that well-drained soils and an extensive river system would have made for good communications with primitive transport, and that the necessary river crossings especially of the Thames have given opportunities for confrontation and political control.

Social organisation

All the monuments reported in the following pages were plainly constructed by groups of people (pp 153-56). In this respect they are characteristic of most archaeological data in any context; and thus sociological interpretation is implicit in almost any archaeological explanation, even although direct evidence for the social organisation involved may be non-existent or quite ambiguous. Lately sociological interpretation has become more explicit, with emphasis on vertical or hierarchical systems (on the emergence of Big Men or chiefdoms, on aristocratic developments, etc). These are useful conceptions but such vertical systems are themselves the consequences of horizontal or bonding systems which tie men together for cooperative works. Such horizontal systems may also serve to define the evidence, and may illuminate it.

Here a basic assumption is made that most prehistoric groups (and in varying degrees historic groups too) were organised through kinship, as in most modern primitive, and many so-called advanced societies, 'where relationships to ancestors and kin have been the key relationships in the social structure . . . the pivots on which most interaction, most claims and obligations, most loyalties and sentiments, turned' (Fox 1967). Thus, for the purposes of this summary account, groups of people

(or communities) are assumed to have been bound together or linked by kinship. The *nuclear family*, or extended family grouped around it, is assumed to have been the unit of such communities - while recognising that this unit may not be the most basic. Small communities of linked nuclear families are then indicated by the term *small descent group* - while recognising that descent from a common ancestor is by no means the only possible organisation of kindred. Larger communities, taken to represent small descent groups which tended to cooperate for various purposes, are referred to as *clans*; and agglomerations of clans as tribes, organised dynastically by the later Iron Age. The population ranges for each of the groupings must be largely a matter for intelligent guess-work, although Startin's figures for minimum required labour input at characteristic and exceptional monuments give some evidence as to scale (p 155, Table 42).

A final basic assumption is that specialist tasks or rights with which communities were concerned (thus, for example, digging for flint or iron ore, or the allocation of grazing) were generally *limited by descent* to certain families. When the average life-span would have been shorter than today this would have made for continuity of skills and crafts and for stable practices or institutions.

Palaeolithic and Mesolithic

Speculation about *Paleolithic* settlement patterns seems pointless in a region where none of the artefactual evidence, although relatively abundant, has survived fully *in situ*, the settlement surfaces themselves having been totally eroded, or perhaps deeply aggraded if any should have escaped erosion. Settlement patterns may not however have been greatly different from those of the Mesolithic.

It seems unlikely to be entirely accidental that *Mesolithic* evidence is most clearly seen in the very favourable area of the Kennet valley, where both Early and Later settlements have been excavated (respectively Wymer 1962: Froom 1971/2a; b; 1976). Settlement here was in the flood-plain on drier soils near small lakes or streams. Such locations would have had many advantages, providing, for instance, abundant water even in the driest season, watering places at or leading to which the larger game (principally red deer) could have been trapped or shot, beds of reeds and osiers for thatching and basketry, and opportunities seasonally for fishing and fowling. Flint would have been close at hand, both on the Berkshire Downs and across the Kennet south of Inkpen. The Early Mesolithic site at Thatcham (Wymer 1962) was exceptionally large and may have been a so-called base-camp for a small descent group whose members needed to spend comparatively little energy in excursions outside its territory, say for gathering fruits, nuts or hazel wands not growing in the immediate vicinity, or to collect flint, supplies of which it may indeed have controlled through proximity. Beyond the Kennet valley finds of flint axes or picks from the Thames northwards to Oxford may indicate the existence of similar riverside base-camps, within comparatively easy reach of the chalk (Case 1982). Conversely, finds at Nettlebed in the Chilterns may represent a temporary settlement concerned with flint collecting, outlying from a more distant valley base.

By the Later Mesolithic, settlement had spread onto the Corallian ridge and into the Cotswolds keeping close to rivers or streams; in the latter area energy would have been expended to obtain flint through long-distance movements or through exchanges with better placed communities, and it may be significant that the flint

industry at the site of base-camp size beneath the Ascott-under-Wychwood long barrow is scanty compared with that of Early Mesolithic Thatcham. Fragments of West Country rocks at Later Mesolithic settlements at Wawcott in the Kennet valley (Froom 1971/2a; 1976) may represent materials exchanged to obtain supplies of various kinds including flint, which may have been handed on in the form of finished axes or rough-outs (if one follows Care 1979). Materials exchanged may have passed from their places of origin through the hands of quite numerous descent groups, perhaps now loosely linked in clans. Such exchanges presuppose tracks. A hypothetical Mesolithic settlement pattern is shown in Diagram 1A.

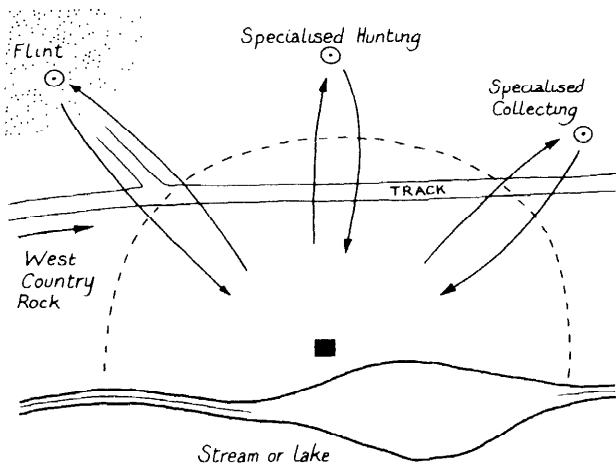
Early and Middle Neolithic

Prolonged activity in the river valleys in the Later Mesolithic, especially if including felling and burning, will have produced a semi-permanent effect on the vegetation and may have induced locally a park-like landscape with tracks similar to that encountered by early 19th century European settlers in south-western Australia (Hallam 1975). Such a landscape would have been very suitable for pioneering farming. At Wawcott I however in the Kennet valley, Later Mesolithic settlement survived well into the Middle Neolithic (Froom 1971/2b) and the same may have been true to some extent on the alluvium and lowest terrace of the river systems elsewhere. These low-lying soils may indeed have been the most inviting for pioneering farming as in Central Europe (Kruk 1980), but to some extent Early Neolithic mixed-farmers may have had to break new ground on the higher terraces and elevations, where evidence is found for a mixed-farming economy fully developed in the Middle Neolithic.

The excavations at Abingdon (pp 10-50) enable one to construct a settlement pattern for a small Middle Neolithic descent group based on a higher terrace but controlling a flood-plain area, and alongside a track (Diagram 1B). Six nuclear families are assumed (the minimum needed to construct the period 1 Abingdon enclosure: p 50) with the leading family as prescribed by descent with its farmstead within a small causewayed enclosure, and its plots in the immediate vicinity, and the other 5 families grouped around it in detached farmsteads with their respective plots. One may assume that the total territory and resources of the descent group included essentials such as constructional timber or potting clays (p 35), and sufficient breeding stock or seed corn for its survival. Seasonal settlements for temporarily detached members of the group are suggested for tending stock grazing on the flood-plain, and elsewhere for other purposes. An essential which had to be obtained from outside was flint and the diagram assumes that seasonal grazing rights on the flood-plain were exchanged with communities based on the chalk for supplies of flint or the right to collect them; similarly axes of fine-gravel rock may have been exchanged by other descent groups for similar rights to grazing. Excursions may have had to be made outside the territory to temporarily unsettled waste for, say forest grazing, hunting or for gathering antler, and here again descent groups who claimed control may have required gifts. Exchanges throughout would have included nubile men and women (depending on whether the system was matrilineal or otherwise), since such a small descent group would not have been reproductively self-sufficient for long even with only the most rudimentary mating prohibitions.

Diagram 1C suggests patterns for ritual monuments. Theoretically any of the nuclear or extended families, in

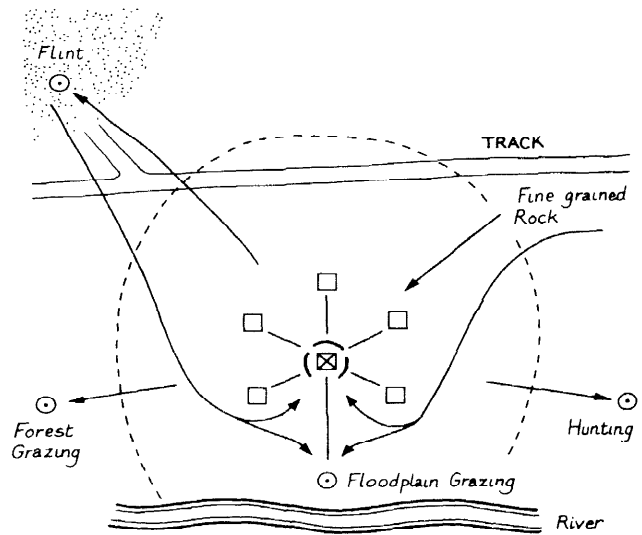
MESOLITHIC



- Base - camp
- ⊙ Seasonal settlement
- - - Limit of territory
- ⋯ Chalk upland

A

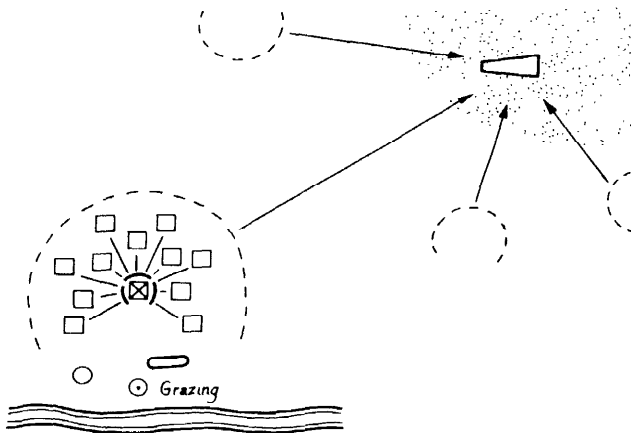
MIDDLE NEOLITHIC



- ⊗ Farmstead of leading family
- Other farmstead
- ⊙ Causewayed enclosure

B

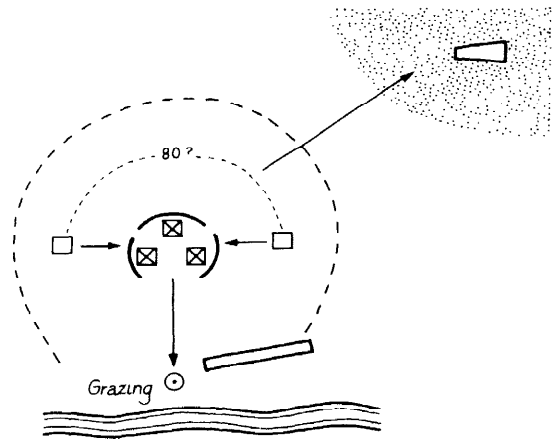
MIDDLE NEOLITHIC



- Ring Ditch
- ⊂ Long Mortuary enclosure
- ▭ Long Barrow
- - - Other territories
- ⋯ Chalk or other upland

C

MIDDLE NEOLITHIC



- ▭ Bank Barrow or Cursus

D

Diagram 1 Settlement patterns in the Mesolithic and Middle Neolithic

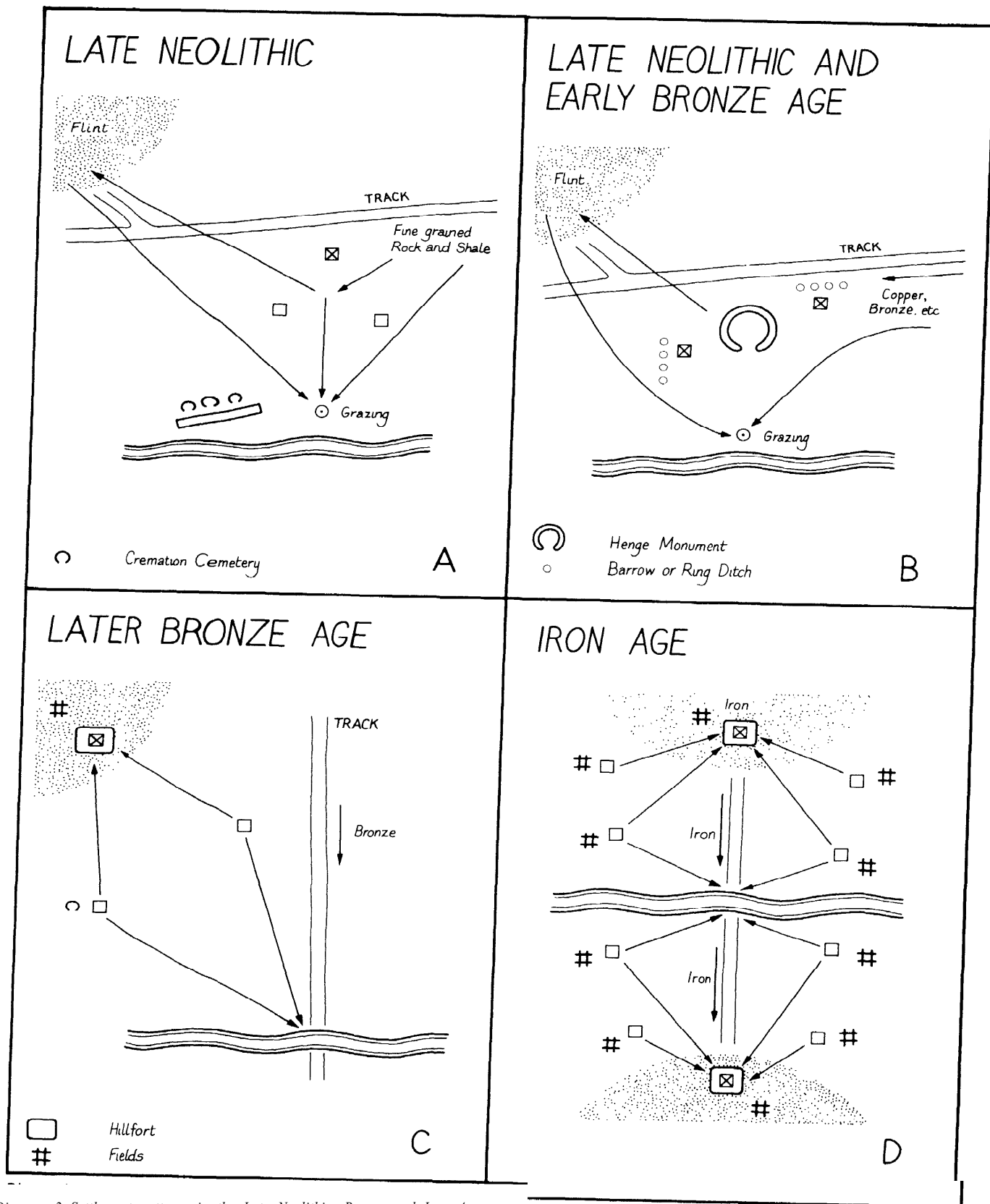


Diagram 2 Settlement patterns in the Late Neolithic, Bronze and Iron Ages

such a small descent group, would have had the capacity to dig a small burial site or ring-ditch as at Eynsham or Wallingford (p 51, 55) or a long mortuary enclosure as at North Stoke (p 60). Generally however these monuments may have been located where members of the entire group resorted periodically, either at the causewayed enclosure or perhaps adjoining the spring and summer pastures, as shown on Diagram 1C, and as conceivably both at Wallingford and North Stoke. The construction of a long barrow will however have been beyond a descent group as small as that shown in Diagram 1B, and one would need to assume (as in Diagram 1C) a group of about twice the size (12 nuclear families) linked to 3 other similarly sized groups to provide between them the labour force for a barrow such as that at Ascott-under-Wychwood in the eastern Cotswolds (Case 1982 for comparative figures and references). An upland siting dominating a variety of potential territories as at Ascott, or at Wayland's Smithy on the escarpment of the Berkshire Downs, would seem suitable for a cooperative monument. Flint collection on the Downs would be an occasion when members of numerous descent groups might tend to assemble. Another would be spring and summer grazing, and the construction of a bank barrow as at North Stoke (p 69) or a small cursus alongside the flood-plain would probably not have been beyond the capacity of such linked descent groups.

Such a grouping occupying varying territories could have been more or less self-supporting and reproductively self-sufficient, and may be termed a small clan. Its leading families may indeed have provided chiefs. An alternative and still larger grouping is shown in Diagram 1D with a greatly enlarged causewayed enclosure as at Abingdon period 2 (p 12) serving exclusively a still larger group and assumed to occupy a yet more enlarged and varied territory. The maximum labour-input at Abingdon 2 (p 50) allows one tentatively to suggest perhaps some 80 farmsteads in the territory and two or more leading families residing in the enclosure. Such a clan could have comfortably constructed both its own long barrow, and a bank barrow or cursus on the flood-plain. Judging by the relative sizes of causewayed enclosures in southern England such clans may have been comparatively normal in the mature Middle Neolithic and still larger ones can be suggested by for example the outer ring at Windmill Hill, Wilts (p 155). Warfare may have been inherent in such a system and it would not be surprising if it had contributed to its emergence. Abingdon 2 may have been a fortified enclosure like Crickley Hill, Glos (Dixon 1971) or the Stepleton Enclosure, Dorset (Mercer 1980).

Late Neolithic and Early Bronze Age

Construction or reconstruction of causewayed enclosures in the more southern parts of England appears to have ceased around the mid 3rd millennium; the same is generally true of the construction of long barrows over a wider area and the period thereafter until towards the end of the 3rd millennium is something of a Dark Age. Possibly this petering out in construction of major monuments combined with some indications of a contemporary re-advance of woodland into previously cleared areas can be explained by widespread falls in population (Bradley 1978 a; b; Whittle 1978); epidemic diseases of crops, livestock and humans may have been direct or contributory causes. The period may have been catastrophic like the 14th century AD.

Whatever the fluctuations of population, the beliefs and eventually somewhat warlike social system connected with long barrows and causewayed enclosures plainly lapsed. The large, rich and powerful lineages which

produced it may have disintegrated. Regional evidence suggests a shift in settlement towards the Stanton Harcourt-Cassington-Eynsham and the Dorchester areas and there is a little evidence that grazing swine became relatively more important in possibly a less rigid mixed-farming economy (Case 1982). Perhaps a need for glamorously large herds of cattle was inherent in the former social organisation.

The dating of cursus monuments is more obscure than that of causewayed enclosures and long barrows. The Dorchester cursus may have been frequented during this period and the evidence there may suggest a pattern of dispersed settlements, with cremation cemeteries by the flood-plain, exchanging as in the Middle Neolithic grazing rights there for flint from the chalk and for exotic rocks from various sources (Diagram 2A).

By the end of the 3rd millennium there seems no evidence of population decline: the labour input needed for digging the Devil's Quoits henge monument, Stanton Harcourt, seems somewhat greater than that for digging and revetting the period 2 enclosure at Abingdon (p 103); and now and in the early 2nd millennium, the distribution of Peterborough and Grooved wares and of Beaker pottery and its associations suggests a landscape more filled in than before. Changes both in social system and beliefs are suggested at Stanton Harcourt associated with a pattern of exchanges basically unaltered (Diagram 2B): the henge monument, dominating an extensive area of alluvium, providing the place of spring and summer resort for a group of communities at least as big as the hypothetical Middle Neolithic clans and commanding as wide a variety of environments, both upland and lowland: around the monument, the individual farmsteads of members of the leading families, their burials in individual graves, ring-ditches and barrows spread along the margins of their plots (p 113). These leading families are taken to have been responsible both for the monument's upkeep (and presumably for the ceremonial associated with it) and for allocating rights to the nearby grazing to those coming from far and near, receiving in return exchanges of necessary substances such as flint and prestigious objects of copper, bronze or exotic rocks. By the Middle Beaker phase cattle-grazing will have resumed its importance (Case 1977, 76).

This *barrow-henge* system implies a looser knit, less fragmentary and basically simpler social system than that of the Middle Neolithic; all who used the area, despite considerable differences in material culture, may have been bound in some loose tribal unity, dependent perhaps on religious belief; inter-clan rivalries were plainly not such as to necessitate defensive works. A henge monument itself is not an essential part of this system: a barrow-group alone might suffice, as at Radley (pp 76-8 1). Such a group without a henge monument may indicate a development which began after the late 3rd millennium fashion for building these monuments *ab initio* had largely declined. Finally, grave groups of the Beaker period and the Early Bronze Age suggest that exotic substances came generally into the hands of men rather than women; this may show that the barrow-henge system was generally patrilineal.

Middle and Late Bronze Age

The major English henge monuments ceased to be reconstructed or frequented during the third quarter of the 2nd millennium and the building of Bronze Age barrows will have dwindled after this date. Moreover regional evidence for Middle and Late Bronze Age settlement is slight, apart from finds of bronzes. The

suggestion is made here that the end of the barrow-henge system regionally was complementary to the development on the Berkshire Downs of field systems, whose layout has recently been discussed by Bradley (Bradley & Ellison 1975, 195 ff). Such field systems are taken here to have been closely involved with the development on the Downs (and elsewhere southwards) of intensive farming in an infield-outfield system, with stock folded near the settlements in the spring and summer instead of being driven away to pasture. Increased rainfall may now have made this more feasible on the chalk and other uplands. Farming there may have begun too to depend on winter-sown crops (for which positive regional evidence appears in the Iron Age: Jones in Parrington 1978, 106) and this may also have necessitated a more regular pattern of stock-proof fields than hitherto (Applebaum 1954, implying that such a system may have developed in the Late Bronze Age) - with a more rigid system of land tenure as recognised by Bradley (1978a, 117). The regular layout of Celtic fields on the Berkshire Downs may thus reflect more tightly controlled and less mobile clan systems than in the earlier part of the Bronze Age; and the site at Rams Hill, Uffington on the escarpment of the Downs (Bradley & Ellison 1975) may be part of the same trend in representing a large central enclosure with a role similar to those of the large enclosures of the Middle Neolithic such as Abingdon 2 (Diagram 2C). The extent to which the earliest enclosure at Rams Hill (taken by the excavators to have been unfortified) preceded the fortified 11th century reconstruction is not entirely clear, but the interval between them may not have been very great. In terms of earthmoving, the labour input at the earliest enclosure was greater than that at Abingdon 2 but less than that at the Devil's Quoits (p 103 and Griffiths in Bradley & Ellison 1975, 225).

With resort to flood-plain grazing being no longer necessary (or even acceptable) for those on the chalk, the numbers frequenting the major river valleys in the region may have dropped considerably and permanent settlement have declined somewhat. The extended families or small descent groups represented by the settlement at Corporation Farm, Abingdon (reported by Balkwill in Parrington 1978, 30) and the cremation cemetery at Standlake 1 (p 101) may have been outliers of clans based on the chalk, to which resort would still have been needed for flint. Traffic in bronze implements will also have required good communications, and control of crossings of the Thames and other rivers may explain the fair number of implements which came into the region; some settlements may thus have been deliberately sited in drier parts of the flood-plain as at Wallingford (noted in Ehrenberg 1977, 59). Some of the implements which came into the region are outstanding and the Long Wittenham shield showing perforations made by contemporary spearheads (Needham 1979) may indicate a confrontation at a river-crossing in an inter-clan or tribal feud of a kind familiar in heroic literature of a much later date. Such an explanation would fit the riverside distribution of spearheads at least as well as ritual and other explanations given by Ehrenberg (1977, 17-19).

Iron Age

The basic settlement pattern of the Iron Age (Diagram 2D) may be taken to be a development from that of the later Bronze Age, with the increasing spread within the valleys and eventually to the northern uplands of intensive farming in an infield-outfield system which included winter-sown crops. Spread of the cultivation of these crops into the catchment areas of the rivers will have led to increasing aggradation of their beds causing flooding and

deposition in the flood-plains to make them less attractive for grazing, cultivation or year round settlement (p 1). Iron Age settlement appears to have been of dispersed farmsteads as suggested at Stanton Harcourt (p 115), but sometimes took the form of small clusters of house sites (as noted in Parrington 1978, 34). It is generally impossible to determine whether the clusters represent truly nucleated settlements or merely a pattern of rebuilding, but the 2nd century settlement at Ashville Trading Estate, Abingdon (*ibid*, 38-9) appears to have had a planned layout which would suggest a nucleated settlement (I owe this suggestion to Professor Barry Cunliffe), and the same could conceivably have been true of the so-called fortified Allen's Pit enclosures defined by Harding (1972, 11 ff). No more than a small descent group, however, corresponding in size to one of the Middle Neolithic clusters on Diagram 1C may have been concentrated at Abingdon or elsewhere until late in the Iron Age. For most of the Iron Age, clan or tribal centres are likely to have been in the upland hillforts - following the pattern suggested for the later Bronze Age, but now with the centres both along the escarpment of the Berkshire Downs (with which Badbury, Little Coxwell and Sinodun Hill may be included as outliers) and in the Cotswolds. Those along the chalk escarpment may reflect the continuing prestige of lineages which had controlled supplies of flint, but the Cotswolds hillforts suggest new centres of power, in a pattern of exchange and confrontation which is likely to have become more complex with development of the north Oxfordshire and Northamptonshire iron resources. There may have been a tribal boundary along the Thames. To what extent some of the Cotswold hillforts, such as Chastleton, indicate nominally Late Bronze Age developments remains to be seen (Harding 1972, 74; Barrett in Bradley & Ellison 1975, 104).

Development of these more or less local iron resources and control of iron products moving southwards from the primary areas would have been among factors making the region more attractive for settlement compared with the later Bronze Age; the position of Cherbury Camp in a more or less valley situation may have been partly concerned with control of a route by which iron products passed (Case *et al* 1964/5, 50-3). The other exceptional lowland hillforts or large enclosures (The Big Enclosure, Cassington; Dyke Hills, Dorchester; and possibly Burroway) may all reflect dynastic upheavals in the Late Iron Age (p 137) surpassing local clan or even tribal activities - upheavals related if only indirectly to the onset of Roman power.

The Roman and later periods

The information given about the Roman and later periods in the following pages is comparatively slight. Although the social and economic structure will have changed very greatly with the consolidation of the Conquest, the Iron Age infield-outfield system of dispersed farmsteads or small groups may have continued through the 2nd century with comparatively few changes in some areas as at Vicarage Field, Stanton Harcourt (p 116); recent excavations by the Oxfordshire Archaeological Unit at Ashville Trading Estate, Abingdon (Parrington 1978) show continuity in use of Iron Age field boundaries into the 3rd century.

The field systems were abandoned after the 2nd century at Vicarage Field and the 3rd century seems to have been a period of reduced activity at Cassington (p 137) and apparently at Farmoor (Lambrick & Robinson 1979). Recession may have set in or there may have been widespread reorganisation. The 4th century however was

relatively prosperous at Cassington and at Farmoor (where resemblances can be seen to a similarly low-lying site at Wally Corner, Dorchester: Sutton 1961/2).

After the final decline or collapse of the Roman system, the distribution of Anglo-Saxon cemeteries and what is known of settlements suggests a clan or tribal system based on small nucleated settlements - situated as far as the valleys are concerned in more or less the same areas as Iron Age farmsteads. In the Late Saxon period, dynastic reorganisation for political reasons seems likely to have imposed a new pattern of small towns, nucleated villages and highly organised open-field farming (I am grateful for discussions with Mr Trevor Rowley; and see Cunliffe 1972), which survived more or less into modern times until taken over by a more fluid system.

Summary conclusions

It can be suggested that the settlement pattern of the Later Mesolithic was not very different from that of the Early Neolithic, but considerable changes occurred by the Middle Neolithic. Mixed farming at more or less subsistence level (at times more prosperous than at others) would have been the continuing basis of life from the Neolithic until quite recently, but the social framework within which it operated shows developing variations over the millennia. These variations occurred in an irregular cycle of comparatively rigid systems (such as in the Middle Neolithic, Later Bronze and Iron Ages, Roman occupation, and Late Saxon and medieval periods) imposed upon more fluid ones to which they ultimately reverted or by which they were replaced (systems such as in the Early Neolithic, Late Neolithic and Early Bronze Age, and modern times). These changes can be seen to be severally explicable both by internal developments and by invasions, the alternatives often debated by prehistorians; and not only economic compulsions but changed beliefs and the activities of exceptional people may all have played their parts.

Summary of excavated sites

The Neolithic causewayed enclosure, Abingdon
This enclosure (with Middle Neolithic radiocarbon dates) was for settlement and shows two main periods of use, represented successively by the inner and outer ditches. Settlement rubbish from the first occupation was buried in the inner ditch at the start of the second period. The earlier enclosure was a centre for a small dispersed group.

A Neolithic burial enclosure at New Wintles Farm, Eynsham

The small oval ditched enclosure with cremation burials shows analogies to the Dorchester henge monuments and generally to other Middle and Late Neolithic non-megalithic burial sites.

A Neolithic ring-ditch and Iron Age enclosure at Newnham Murren, near Wallingford

The double ring-ditch contained a central inhumation burial, Middle Neolithic.

The linear ditches and southern enclosure at North Stoke

The linear ditches (radiocarbon dated to the Middle Neolithic) are interpreted as a bank barrow; they joined two small ditched enclosures of which the southern was a long mortuary enclosure. A pit with cremation burial and

miniature collared urn (radiocarbon dated 15th century bc) was within the enclosure and on the central axis of the linear ditches.

Radley 15, a Late Beaker ring-ditch

The double ring-ditch (part of the Barrow Hills group) enclosed two central pits, one containing a dismembered inhumation burial with barbed and tanged flint arrowhead of Late Beaker type and the other containing two inhumation burials of children.

Four ring-ditches at Stanton Harcourt

One contained a central pit with cremation burial and biconical urn, probably Middle Bronze Age, but the others could not be directly dated. Traces of Romano-British occupation were nearby.

Six ring-ditches at Standlake

The ring-ditches yielded no direct dating evidence but are taken to have extended in use from the Late Neolithic (Middle Beaker period) to the Middle Bronze Age. Traces of Iron Age settlement were found and Anglo-Saxon burials (previously reported).

Vicarage Field, Stanton Harcourt

Features ranged from the Late Neolithic to the recent past, including: Beaker burials, a ring-ditch (enclosing a central pit with cremation burial and miniature food vessel) which was taken into cultivation in the Iron Age, a burial pit with collared urn and occupation debris, and Romano-British ditches and pits.

Cassington 1950-52: Late Neolithic pits, and Big Enclosure Ditch

Late Neolithic pits were found during excavation of the Enclosure Ditch, which is taken to have been originally dug in response to late Iron Age tribal conflict and to have been recut in response to the Claudian invasion. Occupation of the area continued throughout the Roman period.

Silting

The sites reported here were mostly in soils on gravels of the second or Summertown-Radley terrace of the Thames or its tributaries, but some (p 55 ff) were at lower levels. All will have been heavily and continuously cultivated since the early Middle Ages; and probably most of those on the Summertown-Radley terrace in Roman times and some in the Iron Age. Earthworks will have long since been flattened.

Interpretation of the original structures and later developments thus depends largely on that given to silting in ditches or pits; and this dependence is all the greater since mechanical stripping of topsoil may generally be the only feasible approach when working in gravel quarries. However, the excavator on gravel, compared with, say, on chalk, is helped by strong contrasts in colour and texture of the silting, and has exceptional opportunities in gravel pits for observing experimentally the natural degradation of artificial slopes over many seasons.

Degradation of vertical or steep topsoil and subsoil slopes begins initially at some depth in the unweathered subsoil, which first collapses outwards in scree or fans. Eventually the topsoil becomes undercut and collapses too. Rapidly and sometimes after only a single season's frosts, a relatively stable slope is produced to become partially colonised by vegetation; but this slope may be

further aggraded by minor movement from the upper parts of the subsoil still exposed to weathering. When the exposed subsoil has been entirely covered by fallen or weathered material, aggradation may then continue by topsoil carried by precipitation and occasionally perhaps by wind.

The earlier stages of such a sequence have been observed at the British Association's experimental earthworks on chalk at Overton Down, Wilts (Jewell & Dimpleby 1966) and on sand at Morden Bog, Dorset (Evans & Limbrey 1974); and some twenty five years' intermittent observations of the resilting of prehistoric ditches in Valley Gravel at North Stoke, Oxon are similar (p 73). Ancient ditches dug in the gravels of the Oxford region show this sequence clearly: a relatively unweathered *primary silting* of gravel and sand, sometimes with small runs of loam which may be interpreted as undercut topsoil (eg at City Farm, Hanborough, outer ditch site 2, and outer ditch site 4, Case *et al* 1964/5, 6 and fig 4; 24 and fig 10) grading upwards into a comparatively smaller volume of *secondary silting* of more weathered loamy gravel, grading in turn into *tertiary silting* of more or less stoneless loam, and finally into the modern topsoil. The undisturbed natural silting of ditches or pits dug in gravel thus mirrors in some respects the C, B and A horizons respectively of a natural soil profile (eg, clear examples on Plateau Gravel at Poole, Dorset: Case 1952, figs 3 and 5).

This sequence has numerous variations. Some may be natural - for instance where ditches or pits have been dug through the reddish coloured sometimes stony loams which lie beneath the modern topsoil capping the gravels of the Oxford region sporadically and at varying depths. Whether these loams (termed Pleistocene loams in Case *et al* 1964/5, 8 ff) were formed by aggradation of the uneven gravel surface or by Holocene weathering of the gravel *in situ* is not altogether clear, but they are plainly not of very recent origin since they were dug through from the Neolithic onwards. They are termed here *subsoil loams*. Silting of ditches dug through them into gravel will contain a relatively greater quantity of loam proportionate to gravel, and loam may also lie at greater depth (for instance City Farm 5 and 6; Case *et al* 1964/5, figs 14 and 16). Possibly much reduced in extent by weathering, they may have contributed more considerably than now to the soils encountered regionally by pioneering agriculturalists; possibly partly of loessic origin (Limbrey 1975), they may be quite plentifully represented in the silting of prehistoric ditches even where no capping survives (giving misleading impressions of wind-blown silting: Whittle 1977, 9).

Another frequent variation in ditch silting is asymmetry, generally in the secondary silting, effectively transposing the centre of the ditch consistently towards one edge. If the sequence shows no disconformity or sharp breaks, the asymmetry is best explained as produced by the natural degradation of an adjacent bank built from the upcast. In these cases, weathered silting may be intercalated with lenses of less weathered gravel from the core of the earthwork, but the asymmetrical secondary silting will grade eventually into tertiary as in a natural sequence. Fans of rather unweathered gravel (runs or lenses as they appear in section) may continue upwards into the tertiary silting (as at City Farm 5: Case *et al* 1964/5, 33, fig 14) and may be explained as the remains of the bank becoming spread through cultivation. Examples of such bank and ditch silting and of cultivation runs may be seen here in sections from Abingdon and Stanton Harcourt among others. Naturally however, if a sufficiently wide berm intervened between bank and ditch, or if the bank was

dumped at the angle of rest, the ditch silting will show no significant asymmetry as at the Overton Hill experimental earthwork.

Finally, marked disconformities in the natural sequence of silting will suggest direct intervention by man, whether through dumping material into the ditch (as for instance at City Farm 4, inner and outer ditches: Case *et al* 1964/5, 24-8) or by partially clearing it out (for example, Stanton Harcourt ring-ditches XV, 2 and 3; Hamlin & Case 1963, 15-16, fig 5). Conspicuous examples may be seen here in sections from Abingdon, North Stoke and Cassington.

Other editorial notes

Preparation of these reports for publication has been the responsibility of the editors. Interpretative comments and speculations as far as excavation reports are concerned are mostly theirs, as are the sections on the finds unless indicated otherwise; but the interpretation of the Abingdon causewayed enclosure is entirely Dr Avery's except where editorial comment is shown. The editors are grateful to Valerie Horsler for skilfully copy-editing throughout.

The archaeological finds are in the Department of Antiquities, together with the animal bones from Abingdon; the human bones are mostly in the sub-Department of Anthropology, Department of Palaeontology, British Museum (Natural History). Where excavators used feet and inches in the field, they are retained in the descriptions, and Imperial measures are retained in the tables for similar reasons. Conventional radiocarbon chronology (indicated by the suffix bc) is employed throughout, unless otherwise stated when calibrated chronology is shown by the suffix BC. The notation used for the statistical tables is noncumulative: for example, in the distribution table of lengths of 1232 sampled waste flakes at Abingdon (Table 11: p 38), 10 mm refers to lengths of 10-14 mm, 15 mm to lengths of 15-19 mm and so on to 70 mm and more. In the case of flints, length was measured along the bulbar axis and breadth at right angles to it.

The abbreviation Ox followed by the year of publication and a page-reference is used throughout to refer to entries in Notes and News in *Oxoniensia*. Fig 1 shows the majority of localities mentioned in the following reports.

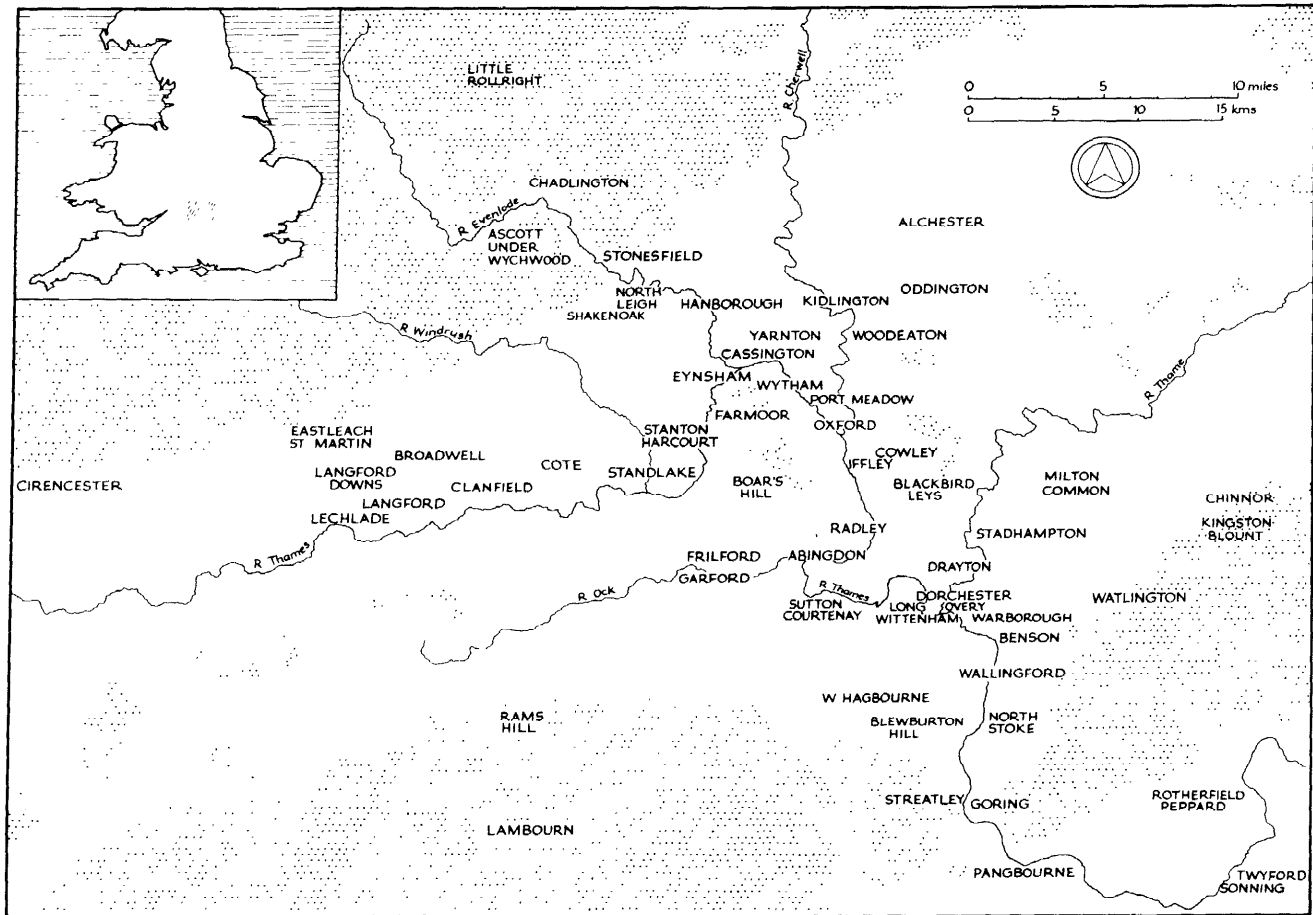


Fig 1 The Oxford region (land over 400 ft OD stippled)

with contributions by A f Cain, H f Case, C L Cram, WA Cummins, G A Harrison, P Murphy, P Powell, D WA Startin, A C Western, A W R Whittle, D F Williams and the British Museum Research Laboratory

Introduction

The Neolithic causewayed enclosure at the eastern edge of the parish of Abingdon, Oxfordshire (formerly Berkshire, SU 511983; Figs 2, 3) stood on a slight spur bounded by the valleys of two small streams which ran to the Thames, about three-quarters of a mile southwards and some 30 ft below; the spur was at the southern extremity of an expanse of second terrace gravel. The enclosure consisted of an inner and outer ditch, the former causewayed and the latter possibly so; one previously published interruption of the outer ditch (Case 1956a, fig 1) is in fact due to a small gravel pit (Fig 3). The ditches extended in arcs between the two small valleys, and the enclosure was at its highest near the centre of arc of the outer ditch (about 202 ft OD) whence the slope southwards was gentle.

The siting was typical of those favoured for later prehistoric settlement in the Oxford region (Case et al

1964/5, 53), and the distribution of Late Neolithic and Early Bronze Age ring-ditches and barrows nearby at Barrow Hills (Fig 40) suggests that the enclosure may have lain by a track running to its south, aligned south-east to north-west more or less along the line of the second terrace gravel.

The area of the enclosure has been greatly altered since prehistoric times. The streams were dammed in the medieval period just north of their confluence to create fishponds for the Benedictine Abbey at Abingdon (Leeds 1927a, 438) and some of the later grading and dumping noted below (p, 19) may have been connected with these works. Much of the inner ditch and the area around it (Fig 3) had already been destroyed by gravel quarries when it was discovered by the Revd C Overy in 1926. The outer ditch was not discovered until 1954 (Case 1956a); by 1926 it too had already been partly dug away to the north-west by a gravel pit and was shortly to be built over. Following Overy's discovery, E T Leeds conducted excavations in 1926 and 1927 on the inner ditch (Leeds 1927a; 1928) and in 1954 Case, having determined the line of the outer ditch from an OS aerial photograph (RAF No 3151) dating from around 1928, was able to dig a cutting across it in a garden north of Radley road (Case 1956a).

In 1963 the landowner wished to build a housing estate

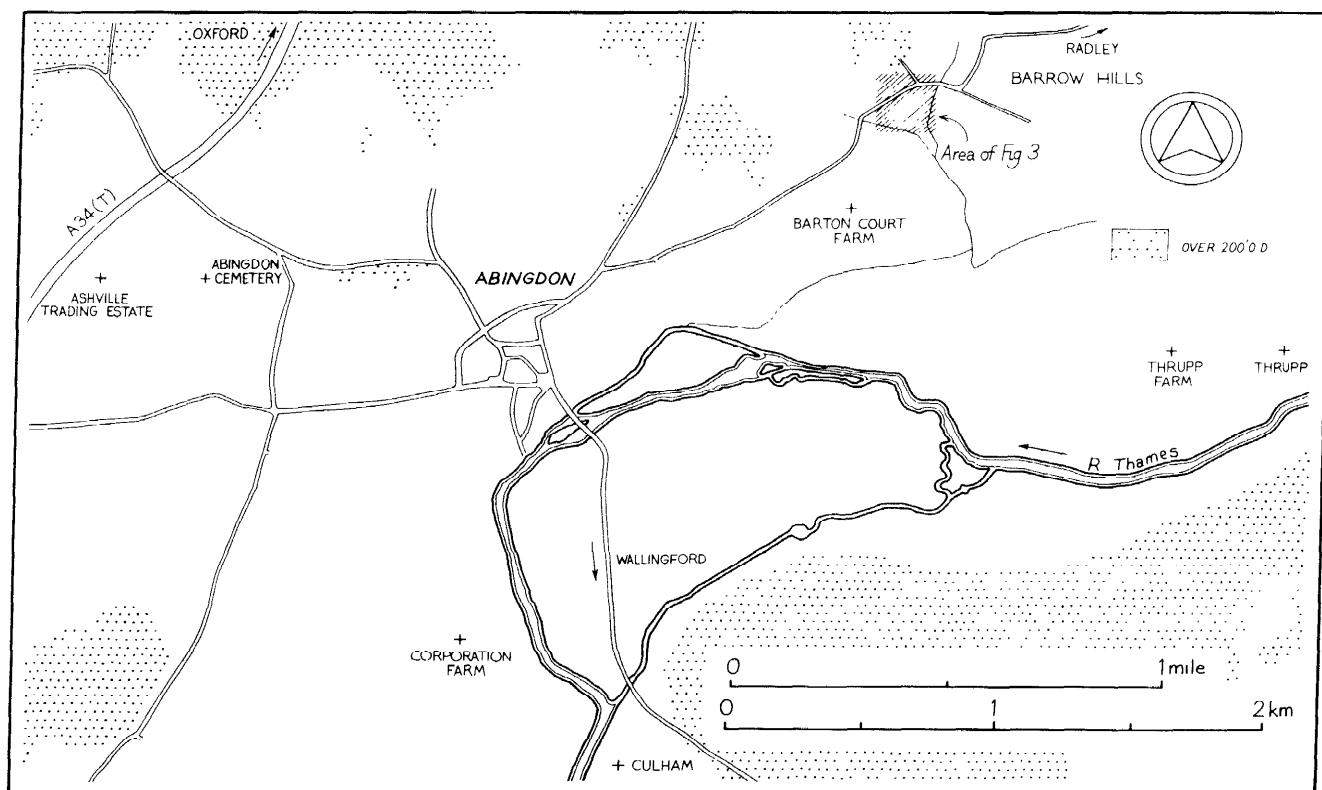


Fig 2 Abingdon causewayed enclosure: regional setting

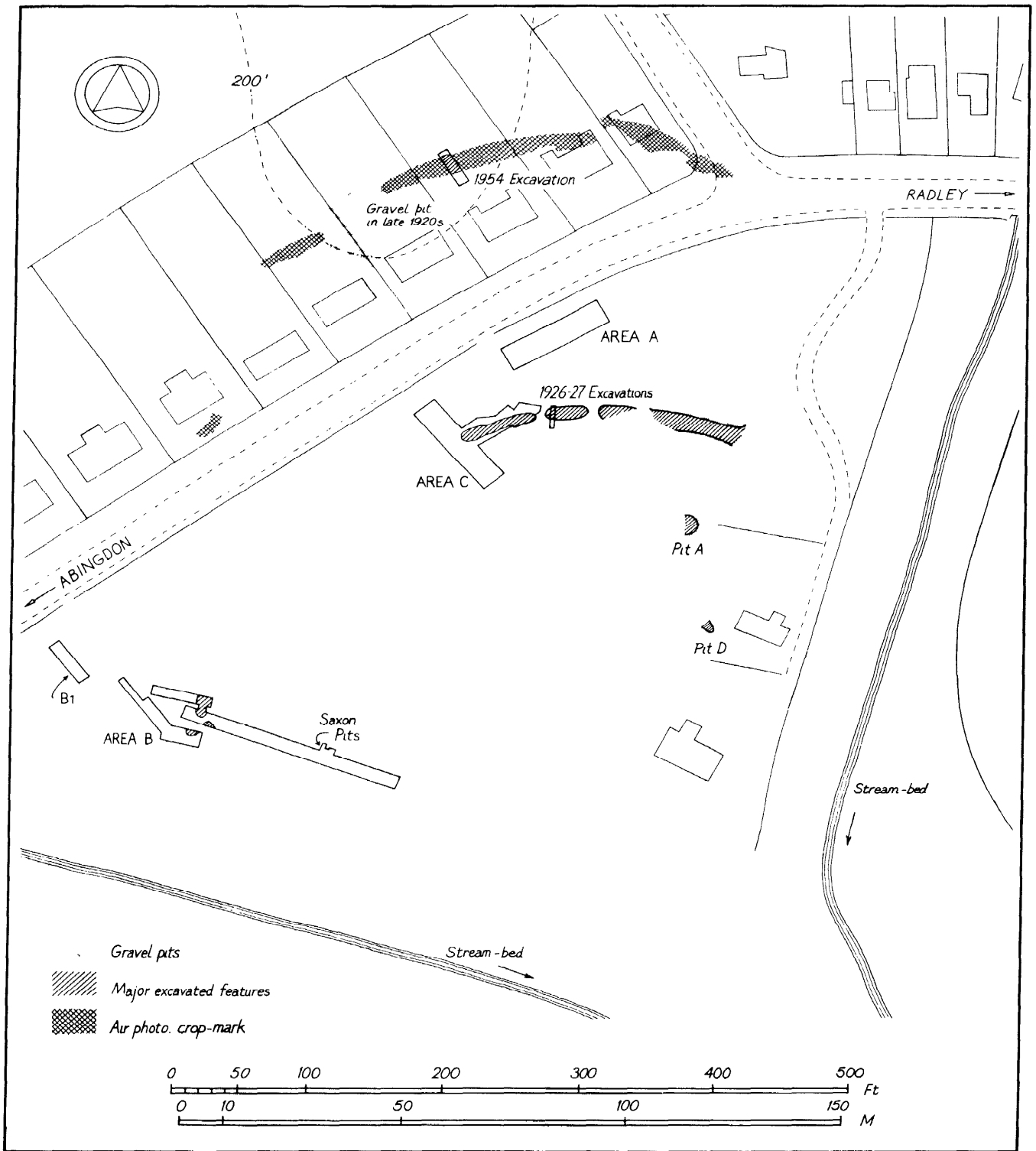


Fig 3 Abingdon causewayed enclosure, 1965: excavated areas

south of the road, which for more than twenty years had been a confused terrain of abandoned gravel pits and spoil heaps, overgrown with trees and scrub and partially built over on its eastern side. Two main areas of unquarried ground remained: to the north a flat area between the road and the abandoned gravel quarry, which showed signs of modern disturbance and was partly covered by stone and gravel hardstandings for contractors' vehicles; and to the south west, a narrow overgrown strip north of the bed of the southern stream. Thanks to the vigilance of D Sturdy and the kind cooperation of the Planning Department of Abingdon Borough Council, the Department was able to organise excavations in these areas in advance of the new building programme. These were directed by myself, with the assistance of volunteers and with the kind permission of the landowner, Mr W Docker-Drysdale. Thanks are due to Dr M J Aitken and Mr R E Linington of the Research Laboratory for Archaeology and the History of Art, Oxford for carrying out prior magnetometer and resistivity surveys.

The area south of Radley road is now largely built over, but scope for future investigations may lie at its southern extremity, near the confluence of the streams, and possibly on the line of the inner ditch between Leeds's excavations and the eastern stream.

Excavation

In the northern area cuttings were laid out in area A between the inner and outer ditches, and in area C immediately west of Leeds's excavations in 1927. After inconclusive magnetometer and resistivity surveys in the southern area, trial trenches were dug in area B, in the hope of locating the continuations of the inner and outer ditches and of testing the suggestion that pit A discovered by Leeds (1927a; 1928) may have represented an innermost ditch.

Summary of periods

A sequence of three periods was determined and inferred:—

Period 1: digging of the inner ditch The enclosure consisted of a low bank possibly with a timber stockade on its crest, on the inner edge of a typically causewayed ditch, enclosing some three acres between the stream beds. The bank silted into the ditch until it was almost filled.

Period 2: digging of the outer ditch and recutting and refilling of the inner one The inner ditch was recut and immediately refilled to the top with layers of settlement refuse and of relatively sterile earth and gravel. Some of the cleaner gravel may have been obtained from the outer ditch, which was a quarry for a bank similarly on its inner side and enclosing an area of some eight and a half acres.

Period 3: occupation of the area Postholes, gullies and a pit found outside the inner bank are strictly undated but suggest that habitation took place while the outer bank still stood. At least one shallow bedding trench was cut into the surface of the refilled inner ditch.

The clearest evidence of periods 1 and 2 was found in area C. Here 35 ft of inner ditch was excavated and the character of the filling was recorded by transverse and longitudinal sections (Figs 4, 6-8). Similar evidence was seen in area B, though less clearly (Figs 10-13). In area B, cuttings across the inner ditch revealed not only features of periods 1 and 2, but also a complex of shallow gullies. One of these gullies was cut into the period 2 filling, and is therefore taken as representing period 3. Area A, a small area excavated beside the inner ditch, revealed ancient features (Figs 4, 5), which could not be closely dated but

they were most likely Neolithic. They may be considered in conjunction with possible evidence of habitation within the area enclosed by the inner ditch, reported by Leeds (1927a; 1928, fig 1).

Area A

This 20 ft by 80 ft cutting was dug to search for structures between the inner and outer ditches (Figs 3, 4). Ancient man-made features were: *Pit 1*, a narrow, shallow gully, two possible *postholes*, and a crouched skeleton. *Pit 2* was modern.

Modern turf and 9 ins depth of fine, light yellow-brown, stoneless loam were stripped by machine to the natural gravel and sand. The loam was evidently present before the burial had been made. But it had evidently been disturbed to natural gravel in the nearby section C-I (Fig 6, layer 2), and the skeleton had been partly damaged, presumably by the same means. The original Neolithic ground surface is thus likely to have been at least 9 ins higher than the gravel surface. The area yielded 106 struck flints.

Pit 1 contained mainly loose gravel (Fig 5), also 6 struck flints. It may have been Neolithic by analogy with similar pits (Field *et al* 1964). *Pit 2* was modern, filled with black gravelly humus containing a 1962 newspaper. *Postholes 1* and *2*, respectively 12 and 4 ins deep into gravel and 10 and 7 ins in diameter at the surface, contained medium brown gravelly loam; neither produced finds. The gully did not apparently cut pit 1 (see Figs 4, 5) and was therefore presumably older: it produced no finds, but may have been a bedding trench of a Neolithic structure.

The *crouched skeleton*, fragile and very comminuted, lay directly on the gravel surface, presumably having been buried in a shallow grave dug into the overlying loam. The ankles had been contracted tightly to the pelvis. Three struck flints were found. The skull had been wrenched from the vertebrae probably during stripping and the collar bones disturbed previously, perhaps by ploughing. Professor G A Harrison (of the Department of Human Anatomy, Oxford) kindly reported that a short gracile male was probably represented, aged perhaps 40-50. This burial may have been of Neolithic or Beaker date, as may perhaps have been that of a young woman found in 1905 in a small square hole, doubled up with the head on the legs' (Leeds 1928, 476).

Irregular depressions filled with light yellow or red-brown sandy loam or with yellow sand (marked in dotted outline on Fig 4) were probably solution holes or tree hollows. That immediately west of the skeleton was deepest, about 12 ins deep. A few contained struck flints, and one a 17th century or later sherd.

Area C

Three cuttings were dug: C1, C2 and C3 (Fig 4). A 35 ft long stretch of the inner ditch was examined and transverse and longitudinal sections drawn (Figs 6-8).

Modern debris, humus and light brown loam were stripped by machine from cutting C1 to natural gravel, showing that some of the inner ditch still remained west of segment N3 excavated by Leeds (1927a; 1928). Leeds had apparently stopped excavating near the eastern edge of a modern quarry road (Fig 4) which overlay an undisturbed segment of the ditch terminating westwards at a causeway; the continuation further west had been lost in a back-filled gravel pit. The ditch in cutting C1 was excavated entirely by hand, and section C-I was drawn. Humus, loam and made ground were then removed from the ditch segment

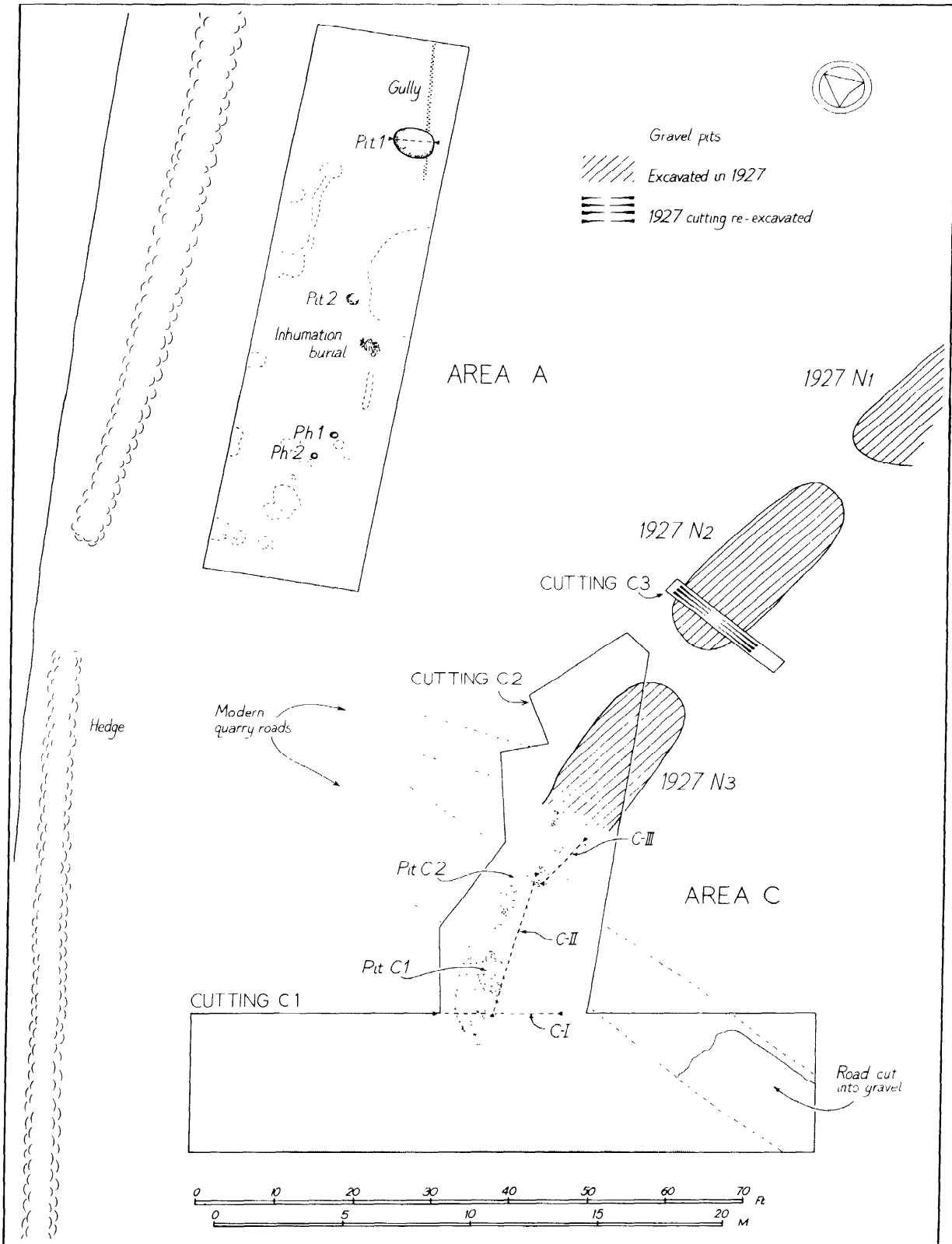


Fig 4 Areas A and C. A contour survey of pits C1 and C2 is in the archive

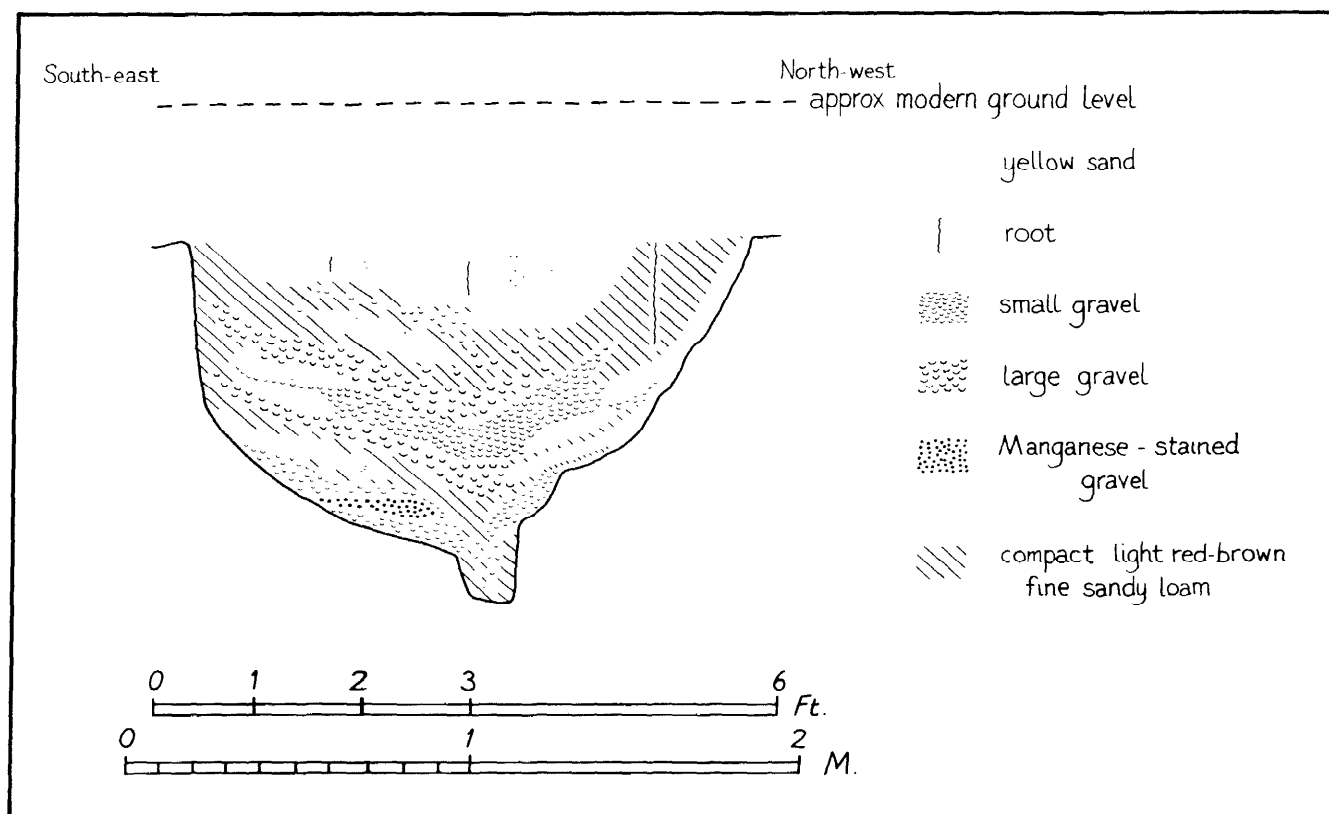


Fig 5 Area A: pit 1, section

by machine as cutting C2, until segment N3 was identified as excavated and back-filled by Leeds. The northern half of the undisturbed ditch was then excavated by hand following layers from section C-I as far as possible. After sections C-II and C-III had been drawn, the southern half was excavated, following the layers from these sections. Finally, cutting C3 established the position of segment N2 excavated by Leeds.

The layers in cuttings C1 and C2 (Figs 6-8) were as follows (beneath layer 1, modern turf):

Gravel 14 (had lens of charcoaly black loam at base), 16, 25, 28, 30, 41, 44b, 48b, 50. *Sandy gravel* 29, 34, 36, 51c, 54. *Loose gravel* 21, 33, 53 (with sand) 55, 56a (55, 56a showed bedding lines). *Gravel, a little charcoal* 11a-b (sandy), 51a-b. *Gravel, some brown loam* 3a-d (some charcoal), 7 (charcoal, a little loam), 9 (red loam, a little charcoal), 15 (a little loam, many small lumps charcoal), 27, 48a (both very little loam), 56b (a little red brown loam). *Gravel reddened by red loam, a very little charcoal* 45 (light red, very little loam), 46 (medium red).

Sandy gravel, orange or yellow-red (rust coloured), a little red loam 10a-c. *Sandy loam, a little charcoal, no gravel* 37a-b (compact brown loam), 52 (red-brown loam). *Sand* 44c, 48c (dark).

Brown loam, no gravel 31 (red-brown, a little charcoal), 38 (very dark brown), 43 (yellow-brown sandy and clayey), 44e, 47 (dark brown). *Brown loam matrix, charcoal, gravel very scarce* 4a-b (soft, dark brown, comminuted charcoal), 4c (darker), 8 (sandy).

Brown loam matrix, no charcoal: (a) with some gravel 6d, 12 (light brown), 32 (dark red-brown, very gravelly), 42 (dark), 44a (much gravel), 44d. *(b) gravel scarce* 2 (fine and compact: ploughsoil?), 6a-c, 6e-h, 40a-d (compact, dark brown sandy, gravel very scarce), 49 (dark brown).

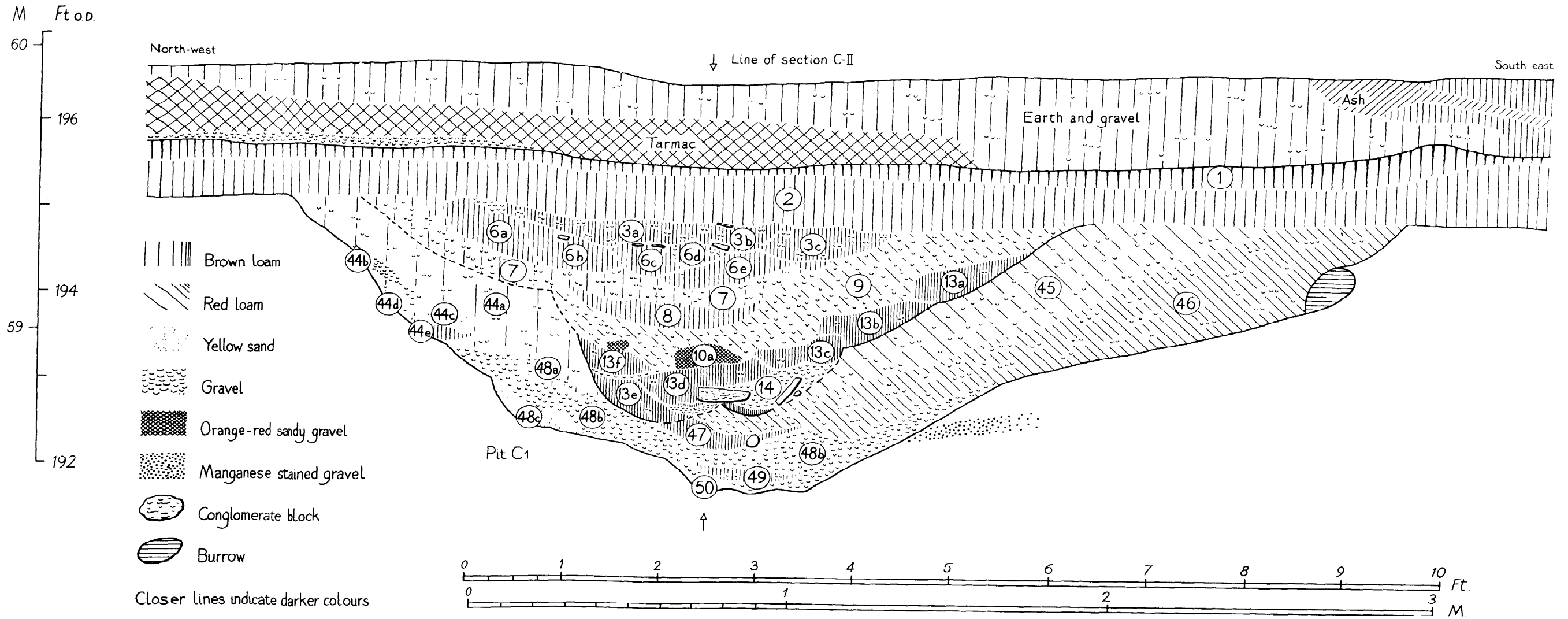
Brown loam matrix, gravel, charcoal, 17a-b (much gravel, charcoal scarce), 17c-e (gravel scarce), 24 (much gravel), 26a-b (charcoal scarce), 26c (gravel and charcoal scarce), 35a-c.

Dark brown loam matrix, gravel, comminuted charcoal 5a and 5d (soft, dark brown to black, much charcoal; 5a much gravel; 5d little gravel), 5b-c (soft, very dark), 18a-c (much charcoal), 19a-c (charcoal very scarce), 20a, 20b (much gravel, charcoal scarce), 20c (very dark, gravel scarce, much charcoal), 39 (charcoal scarce). *Fine, very dark loam, staining the hands, much comminuted charcoal, gravel scarce* 13a-b, f (all dark brown), 13c-e (very dark brown to black); beneath 13d lens of gravel and lens of very charcoaly black loam. *Medium red sandy loam and gravel* 22. *Lighter red gravel with some sandy loam* 23.

Neolithic pottery and flint, and animal bone and a little human, were found as listed below (p 25 f). Radiocarbon determinations (p 49) were made on samples from layers 18a-c and 19a (Fig 7: 2960 ± 110 bc, BM-350), 13 (Fig 7: 3110 ± 130, 2760 ± 135 bc, BM-351, 352), 5d (Figs 7, 8: 3020 ± 130 bc, BM-353), 4c (Figs 7, 8: 2500 ± 145 bc, BM-354) and 3d (Fig 7: 2510 ± 140 bc, BM-355).

Area C showed the clearest evidence of periods 1 and 2, *period 1* being represented by layers 44-56 in all sections; and *period 2* by the infilling of its recut portion, layers

SECTION C-I : Pit C₁



SECTION C-II

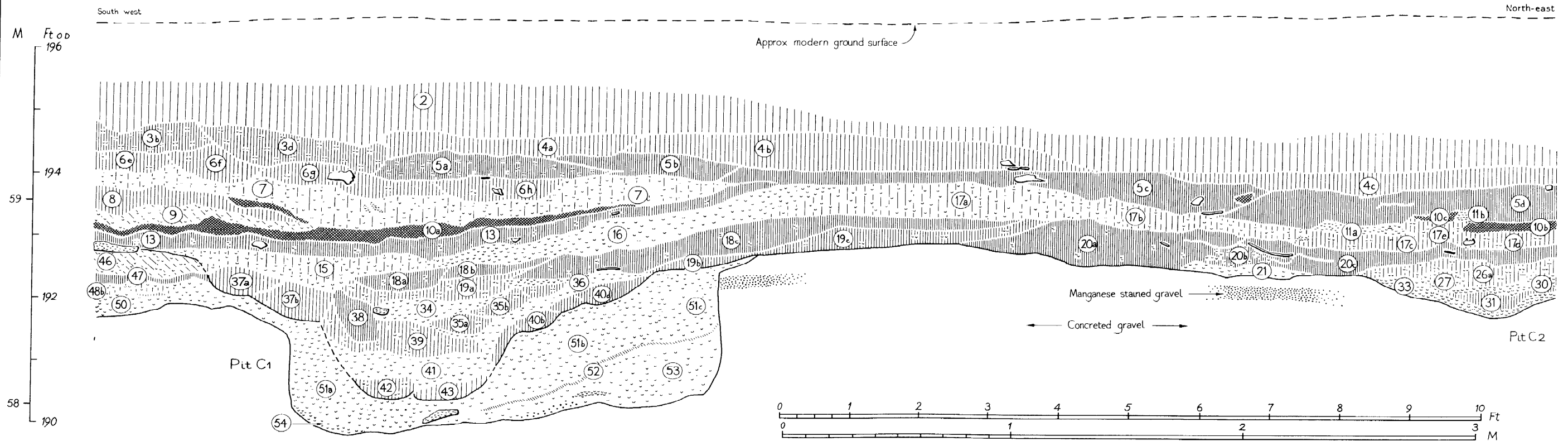


Fig 7 Area C Section C-II pits C1 C2

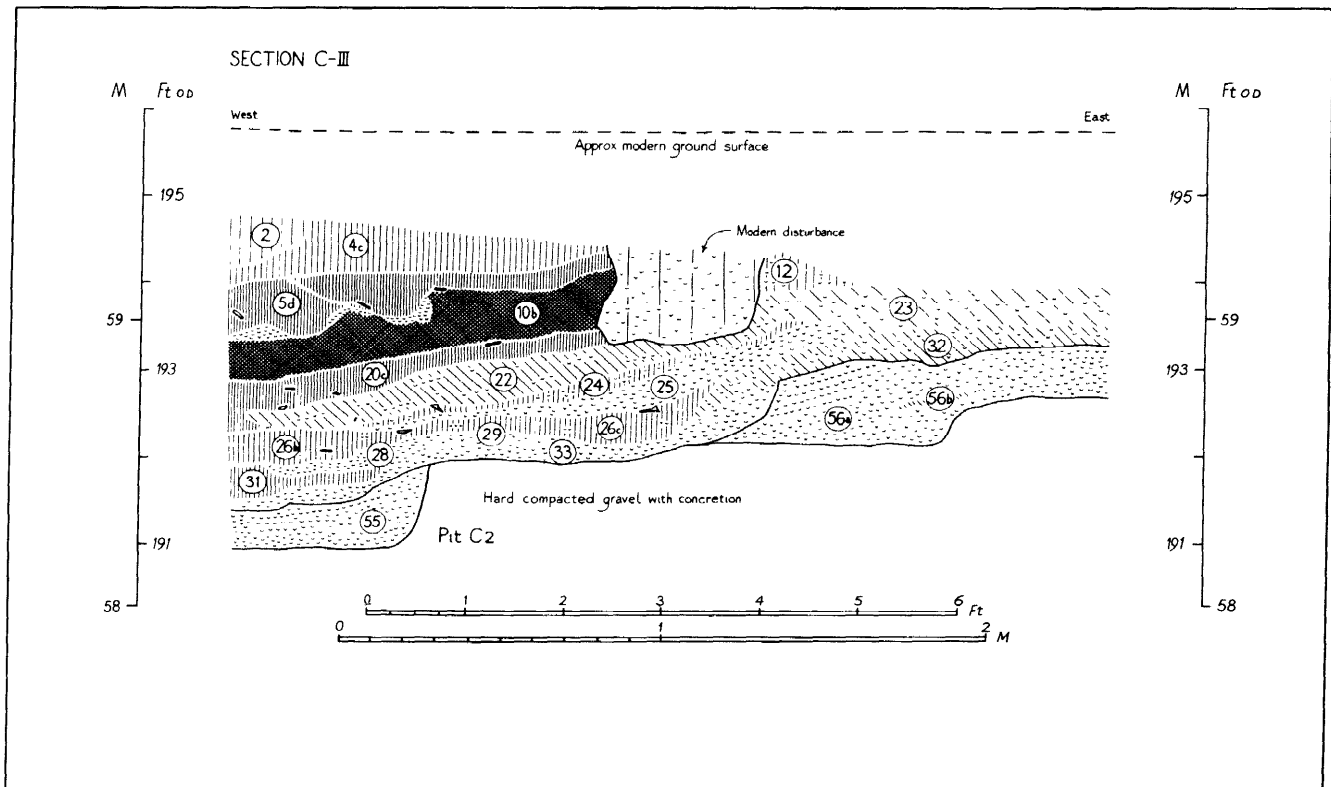


Fig 8 Area C. Section C-III: pit C2

3-43. Finer sub-divisions can also be suggested (Fig 9): periods 1b (layers 47-55), 1c (46), 1d (44-5, 56) being all represented by natural silting; and periods 2b (21-2, 2443), 2c (18-20), 2d (15-17d), 2e (13-14), 2f (6-12, 17e, 23) and 2g (3-5) by alternating sterile and organic deposits.

The period 1 features consisted of a ditch segment, part of which had evidently been excavated by Leeds as his segment N3. The ditch appeared as two pits, C1 and C2, some 5 and 3 ft respectively into gravel, connected and extended westwards by a trench some 2 ft deep (Fig 4).

As in area A., the Neolithic ground surface was evidently at least 9 ins higher than the gravel surface. The pits and the trench may have been some 5 ft wide originally, and were presumably dug simultaneously; their junctions had been destroyed by recutting in period 2 (Figs 7, 8). Concreted natural gravel was found beneath the ancient trench, which seemed to have been halted before any really hard gravel was reached.

The inner ditch in areas B and C had the appearance of a line of holes, connected by shallower trenches, like the stretch excavated by Leeds (1928, fig 1); presumably the ditch served merely as a quarry for a bank. Layers 45 and 46 of section C-I (Fig 6) show that most of the upcast went to form a bank on the inner edge, but layer 44 might suggest that some was deposited on the outer edge. No postholes were found within 6 ft of the original inner edge in cutting C2 (Fig 4). It is unfortunate that the triangular area under the modern roadway between cuttings C1 and C2 was not stripped more extensively to provide decisive proof of the absence of postholes, but the cumulative evidence from cuttings C2, C1 and B3 (below, p 22)

strongly suggests that there was no timbering embedded into the gravel to retain the front of the bank. Nor was there evidence in the ditch filling of a wall of sods as inferred at the outer ditch (Case 1956a); had it fallen into the ditch it should have produced about one square ft of loamy filling for each ft height of wall which fell. Layers 45 and 46 of section C-I (Fig 6) suggest rather that loam and gravel upcast were heaped indiscriminately. Such a relatively slight structure might be more in keeping with the nature of the ditch than would more sophisticated structures.

The volume of gravel excavated from the ditch in area C was about 700 cubic ft; allowing an expansion factor of 1.5 gives about 1000 cubic ft. Any continuous bank thus formed would have had to stretch at least 30ft. Loose gravel is not likely to have remained stable above about 40° slope unless it was retained in some way, which implies a dumped bank some 15 ft broad at the base and perhaps 4½ ft high. One can suppose that timbers of a stockade may have been inserted (Fig 9, phase 1a), but this would not have been a strong defence, particularly with such a shallow ditch. It would however have been relatively easy to construct, have served to delimit an area, and keep some animals in and others out.

After initial construction, the ditch edges and the bank eroded into the ditch in three stages, as suggested in Fig 9. Similar silting was also shown by the bedding lines in layers 55 and 56 of section C-III (Fig 8), and in layer 6 of section B-I (Fig 11). The only articulated bones, the badly weathered head and thorax of a young sheep, were found in this silting, in layer 52 of section C-II (Fig 7; p 43).

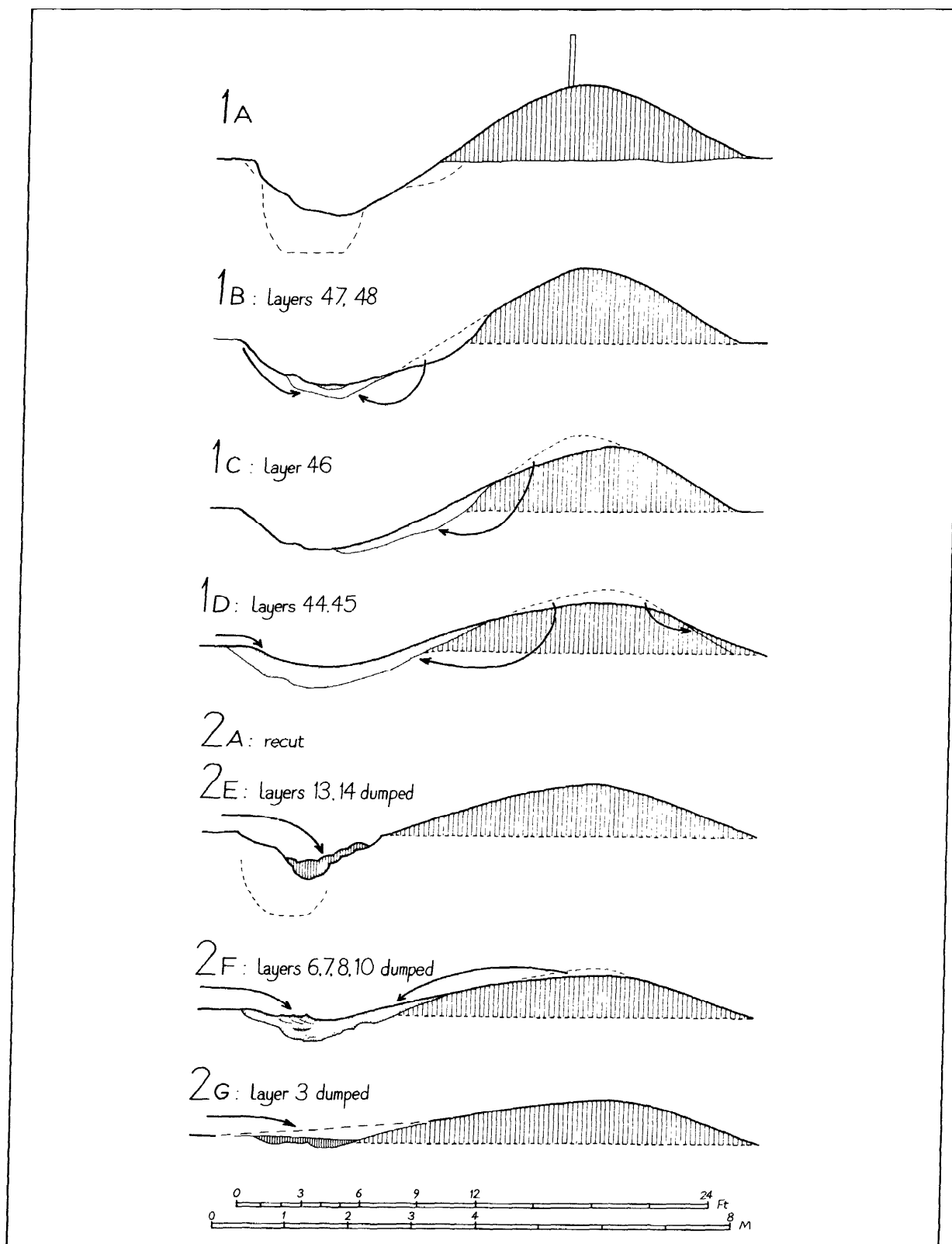


Fig 9 Inner ditch: periods and phases as seen in section C-I (Fig 6). Phases 1a and 2e show the outline of pit C I seen in section C-III. A layer sequence diagram is in the archive

At the end of *period 1*, the ditch must have been fairly fully silted (Fig 9, 1d), a process which may have taken some years. At the start of *period 2* the ditch was recut, as shown clearly on sections C-I and C-II (Figs 6,7). This recut also truncated the bedding lines of layers 55 and 56 of section C-III (Fig 8) and those of layer 6 of section B-I (Fig 11). Pits C1 and C2 were recut almost to their original depth, and the trench between them was also redug.

Sterile gravelly deposits and organic deposits were then dumped immediately into the recut ditch to fill it to the top. In the lower part of the infill, the layers observed had a distinctive cross-section and could be seen as individual heaps roughly 1 ft across. Each appeared to have been deliberately deposited by upturning a large basket. These heaps were generally clearer in the lower layers, presumably because settling and compacting of the lower filling had distorted the pattern above. The clearest evidence was seen in the mixed sterile and organic layers 10a-c, 11a, 11b and 17e; in the organic layers 13a to 13f; the sterile layers 27, 28 and 29; and in the mixed gravel and loam layers 34 to 43 (Figs 6,7,8). Similar lenses were also observed in the gravelly loam layers 3 and 6, and traces implying the same were observed on section C-II throughout the infilling, in the organic layers 5, 18, 19 and 20. Individual basketfuls were usually not distinguishable in the more sterile, gravelly layers, but are implied by the uneven surfaces of layers 7, 9 and 10a (Fig 7).

The same pattern was also seen in the distribution of the bones, found mostly in the organic layers, occurring unevenly through them, but occasionally clustered in discrete heaps. The pottery, flints and charcoal were not so clearly noted during excavation, since finds from individual heaps were not removed from the ground as separate lots, but collected only by layers.

The artificial nature of the infilling is clearly shown by the horizontal bedding in section C-II (Fig 7), and by the very marked alternation between organic layers and lighter, sterile gravel ones. The fact that its pattern was so clearly preserved shows that it took place as one continuous process, starting immediately after the recutting, before the loose gravel of layer 51 had had time to collapse appreciably. It had certainly not been interrupted by a winter's frost and not apparently by a major rainfall, nor perhaps even by trampling. On section C-I (Fig 6), layer 9 might at first sight appear to be a naturally silted infill, but the lie of layers 7, 8 and 9 on section C-II shows clearly that it was not.

Similar alternating layers of sterile gravel and organic matter were observed in nearby segments by Leeds, (1928, fig 2b and c). The dumping had evidently started with refilling the recut pits C1 and C2, continued with filling what remained of C1, and been completed presumably by levelling the entire ditch. Eventually a shallow bank may have remained, but virtually no hollow where the ditch had been (Fig 9, phase 2g).

The dumped material came from several sources. Clean gravel (as for example in layers 16 and 36, Fig 7) may have come from digging the outer ditch. Loamy gravel may have been obtained from the inner bank or the upcast provided by recutting the ditch: layer 9 for example was very similar to layers 45 and 46 (Fig 6). Some loamy gravel layers contained bone, pottery and flints, with relatively little humic matter, and generally scattered, comminuted charcoal.

Organic refuse occurred in three relatively gravel-free layers: 5, 13 and 18-20 (Fig 7). Dark loam, charcoal, bones, pottery and flints were largely, though not exclusively, concentrated in these layers. The refuse may have been obtained from differing locations, but the

infilling was clearly a single, continuous process, and there is no reason to believe that material found in lower layers was significantly earlier in date than that found in the upper ones. At first sight, perhaps, the C14 determinations suggest that the material ranged over some 500 years in time. It is however noticeable that the charcoal determinations (3110 ± 130 bc, BM-351; 3020 ± 130 bc, BM-353; 2960 ± 110 bc, BM-350), from each of the three organic levels of the infilling (p 14; phases 2c, 2e and 2g), show very little scatter, whereas the bone and antler determinations (2760 ± 135 bc, BM-352; 2510 ± 140 bc, BM-355; 2500 ± 145 bc, BM-354) although similarly with little scatter are consistently some 300 to 500 years later than the charcoal determinations from the same period. The apparent scatter thus derives predominantly from discrepancy between results from two sets of materials; and since the charcoal samples consisted merely of small dispersed comminuted fragments, notoriously unreliable for dating purposes, the scatter may be fictitious.

The organic layers were soft, dark, silty soil, staining the hands slightly and usually containing little or no gravel. Comminuted charcoal was plentiful. The nature of the charcoal, bone, pottery and flints shows that these were layers mainly of unburnt organic refuse matter. There is no evidence as to whether the refuse was largely of vegetable or animal origin; but clearly it had rotted or been composted for some time before dumping, since individual basketfuls had retained their shape and size. The best evidence is seen in layers 13a-c (Fig 6). These layers, presumably originally with a roughly semicircular upper cross-section, had been a little flattened and compressed, but had not apparently shrunk. Fresh organic refuse however shrinks rapidly to one-half or one-third of its original volume; layers 13a to 13c had presumably been reduced only to some two-thirds, and much of this loss can be attributed to compacting.

At a rough estimate, the 35 ft length of ditch excavated in area C produced somewhere between 1 and 2 cubic yards of these highly organic layers. Excavations in area B and those of Leeds (1927a; 1928) suggest that it is reasonable to extrapolate these figures to the entire length of the inner ditch, some 650 ft. Between 20 and 60 cubic yards of well-rotted organic refuse may thus have been buried in the inner ditch, in addition to other deposits containing a lower proportion of organic matter. Plentiful comminuted charcoal was found in these layers, and the scattered charcoal found in some of the more sterile layers (eg layer 15 of section C-II, Fig 7; and also layer 5 of section B-I, Fig 11) may imply that some organic matter was also brought to the site and burnt. To estimate the original volume of organic matter before burning and rotting, it could be reasonable to multiply the volume of the highly organic layers by a factor of at least 10 but hardly more than 100. Taking all of this evidence into account implies that organic matter was present on the site in hundreds, or more likely thousands, of cubic yards, a sizeable volume for a 3 acre site. For comparison, the volume of gravel upcast dug from the segment of inner ditch in area C would have been some 25 cubic yards; and that from the whole of the inner ditch in the region of 400 or 500 cubic yards. Such a volume of organic matter could have been gathered for extensive feasts, but it seems more in keeping with a habitation site occupied continuously over some years than with any shorter-lived activity.

The animal bones and the flints also suggest continuous habitation over several years. (I am grateful to Dr J P Mallory for stimulating discussion.) In the 35 ft long ditch segment in area C, the minimum numbers of animals

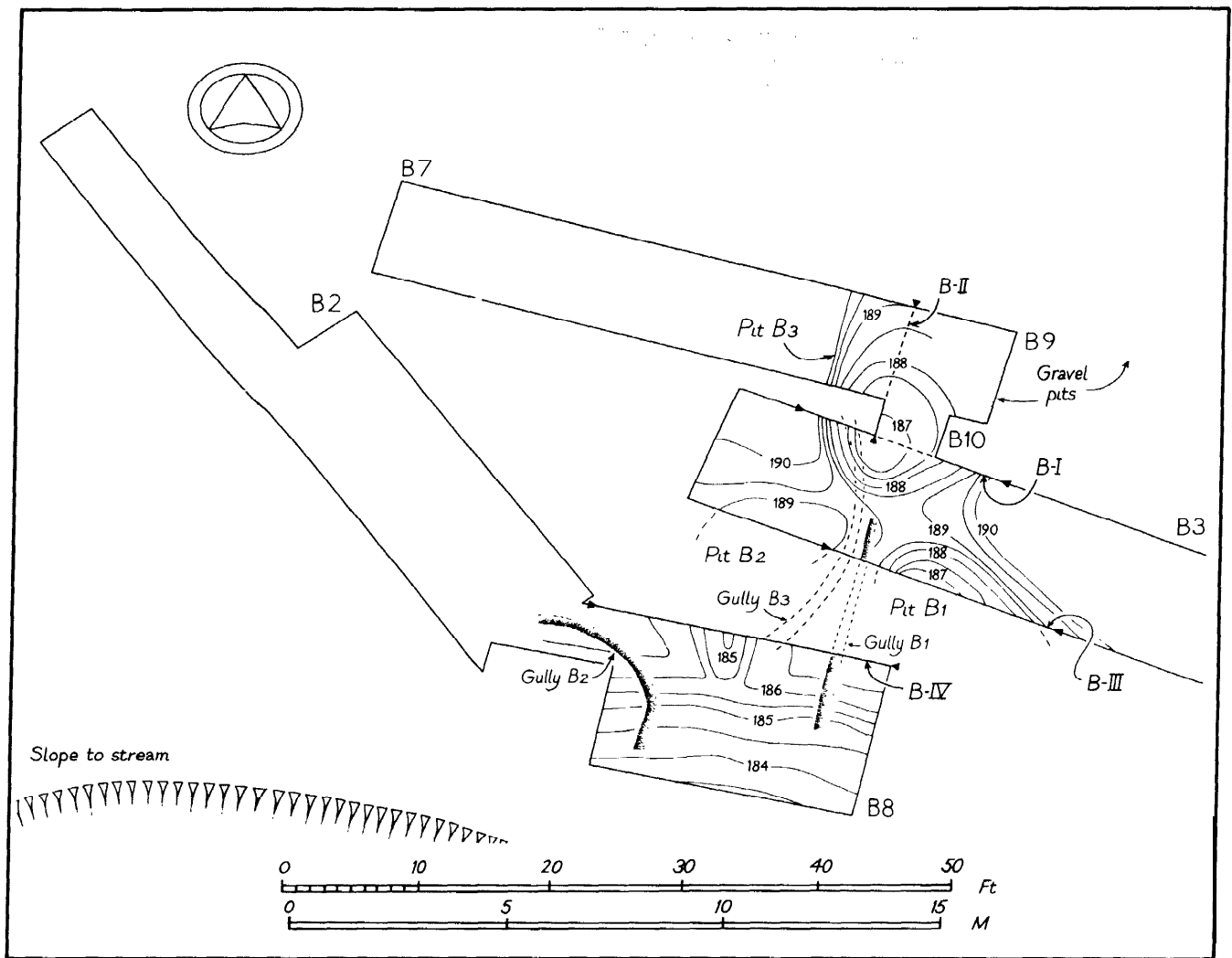


Fig 10 Area B: heights of gravel bedrock marked in feet OD

represented were 16 cattle, 14 pigs, and 5 sheep/goats (p 44). Extrapolating these figures to the entire 650 ft length of the inner ditch, we should assume about 150 to 300 cattle, 150 to 300 pigs and 50 to 100 sheep/goats. It seems very difficult to imagine a single feast so magnificent or wasteful.

If we suppose instead a succession of seasonal feasts, it is difficult to see why the bank and ditch were apparently allowed to decay without repair, rather than refurbished for each occasion. The flints argue similarly for continuous habitation, with a very high preponderance of waste flakes and very few completed implements (p 36). Moreover, there being no nearby sources of flint argues for manufacturing activities which one would expect to find carried out on a permanently inhabited site. Conversely, one would expect finished tools to be brought to a feast rather than raw material. Both animal bones and flints thus support the view that the organic matter was habitation refuse.

The alternation of concentrated highly organic bands and

bands of distinctly more sterile, gravelly soil shows that an organised effort was made, spreading organic refuse in a layer along the ditch bottom and then covering it with sterile soil and gravel, a process repeated several times quickly, implying that a material was being lifted from one or more locations. Baskets of material were presumably handed along several human chains, to end at a row of dumpers. Each band of infill was markedly homogeneous, implying that the baskets were not randomly filled, concentrating first on refuse (presumably found in distinct heaps somewhere in the interior) and then on more sterile soil (perhaps partly from the outer ditch, some 200 ft away).

Area B

Ten cuttings were dug through this overgrown area, much of which proved to have been dug for gravel, to search for a continuation of the inner ditch (Figs 3, 10).

Cuttings B1 and B2 were dug after inconclusive

magnetometer and resistivity surveys. Two Neolithic sherds and 91 struck flints were found, but no archaeological features were seen. I am grateful to Miss Helen Sutermeister for supervising this work. The long cutting B3 was then excavated, along the narrow strip of level ground still remaining between former gravel pits and the drop to the stream valley. Some 18 ins of topsoil and reddish-brown gravelly loam were stripped by machine to expose the gravel. This area had apparently also been ploughed in ancient times, though section B-I (Fig 11) suggests that ploughing had stopped some 6 to 8 ins above the level of the gravel surface, at the top of layer 4. Unfortunately, most of the area had been dug for gravel, leaving pits up to 7 ft in depth, which had been infilled with gravelly brown loam; there were also extensive rabbit burrows, especially to the east. Two undisturbed areas were left. One stretch revealed Saxon pits or hollows (Fig 3), previously reported elsewhere (Avery & Brown 1972; 1973). One posthole here may have been Neolithic (*ibid*, 68, fig 2). The other undisturbed area revealed the main Neolithic features (Fig 10).

Trenches B7-10 were dug next. B8 appears to have found the original edge of the stream valley as it was in Neolithic times, lying north of the edge of the steep present-day slope. Here the gravel surface began to slope gently downwards to the south, followed by the lower layers of soil 4, 5 and 6 of section B-IV (Fig 13). Gravelly soil (layers 2 and 3 of section B-IV) had been dumped above, altering the natural lie of the land. Saxon sherds were found in layer 5 of section B-IV (Avery & Brown 1972, 77), providing a *terminus post quem*.

Pit B3 (Figs 10-12), which showed a similar sequence to that seen in area C, was presumably a continuation of the inner ditch, its line having then been continued to the edge of the slope by pit B1 or B2 or both. The transverse section (Fig 11) was drawn by Mr Case who contributes the following notes:

'Layer 1, dark brown sandy loam (Munsell 10YR/4/3) was underlain by layer 2, dark brown loam (7.5YR/4/4) with occasional runs of pebbles, and whitish concreted gravel in the lower part; below, at the centre of the ditch, and grouped on Fig 11 as layer 3, were interdigitated lenses of variously dark brown gravelly and sandy loam (7.5YR/4/2 - 4/4 - 3/2), in places stained very dark grey with charcoal (7.5YR/3/0). Layers 4, 5 and 6 were sand and gravel: 4 with dark staining, with occasional stonier and loamier bands and like layer 3 containing burrows; 5 with charcoal and manganese staining; and 6 generally paler than 4. Layers 4, 5 and 6 ranged from yellow (10 YR/7/6) through very pale brown (10YR/7/4) to dark brown (7.5YR/4/4) and strong brown (7.5YR/5/6).

The ditch had been dug through gravel, which contained bands of concretion, sand and manganese-staining. It had probably also been dug as elsewhere through subsoil loam (layer 2a), but the section did not give a clear picture, as the eastern lip of the ditch had been much disturbed by burrows, and the western one had also been disturbed at some time after the deposition of the primary silting (layer 6).

The ditch had been dug on its inner side near the angle of rest but more steeply on its outer side, with the result that layer 6 on either side was very different. On a point of detail, the manganese-stained gravel midway up in the western part of layer 6 cannot have reached its position by natural silting if the surface of the gravel at the outer lip of the ditch had then been as it survived in the section. Plainly there had been some disturbance here after the primary silting had accumulated; the

surface of the gravel was ridged here to the north of the section and the soil-profile above was unusually stony.

The interface between layers 5 and 6 may be taken as the line of recutting initiating Dr Avery's period 2 as recognised in area C; three runs of concreted silting occurred in the eastern part of layer 6 (Fig 11), and the central one had plainly been cut through. Layer 5, which continued as a narrow band southwards of the section line is plainly an artificial accumulation and its ridged upper surface indicates dumping (some of this manganese stained material may have been derived from the disturbed ground on the western lip of the ditch). Similar dark layers were noted by Leeds (1927a, fig 4; 1928, fig 5) but his descriptions of them as charcoal layers should be taken with caution, as the colouring here was mainly derived from manganese-stained gravel. Avery points out too that at one point Leeds noted charcoal staining continuing beneath natural gravel (1927a, 443) suggesting a mistake for a band of natural manganese staining of the kind noted in this section and section C-II (Fig 7). The discovery by Avery in layer 5 of a roughly circular setting about 1 ft in diameter of blocks of concreted gravel up to 9 ins long, stained with manganese on their upper and lower faces, may also cast doubt on some of the hearths Leeds reported (1927a, 441-5; 1928, 466). This setting was presumably fortuitous but may on the other hand be compared perhaps with that in pit 2 at the New Wintles enclosure (p 51).

The somewhat ridged upper surface of layer 4 indicates dumping, as does the similar interface between stonier and less stonier filling within it along its eastern slope. The greater volume of filling being on the inside of the ditch suggests that the dumping was largely derived from the bank.

Layer 3 was similar in nature to the layers of dumped occupation material recorded by Dr Avery in area C (layers 3, 4, 5, 13, 17, 18 and 20; Figs 7, 8, 9). Individual deposits could be clearly distinguished as shallow scoops or small individual heaps or spreads largely of charcoal but sometimes with sherds, struck flints and bone; occasionally they could be seen to have been capped by a little gravel or loam. These deposits are interpreted by Avery as basketfuls, but a possible interpretation is that some at least were spadefuls; two can be seen to have been dug into the filling of layer 4 below.

Layers 3, 4 and 5 of section B-I may be taken then to represent Avery's period 2. The top of layer 3 to the west is sharply truncated by a hollow, identified by Avery as the continuation of his gully B3, as traced in sections B-III and B-IV (Figs 10, 13), and indicating his period 3. A Neolithic sherd lay on the lip of this hollow. To the left the top of layer 6 had plainly also been disturbed.

The lower part of layer 2 must largely represent tertiary silting after the dumping episode. The prominent run of gravel midway across the layer probably corresponds to a cultivation line, possibly only a little below the ancient ground surface. Most of the accumulation of loam above may represent medieval or later dumping, although no buried soil was seen as in section B-IV (Fig 13). Such dumping may have been for the construction of the fishponds of Abingdon Abbey (Leeds 1927a, 438).

Pit B3 was sectioned longitudinally as section B-II (Fig 12) some time after section B-I had been drawn. The layers beneath layer 1 (modern humus) were as follows:-

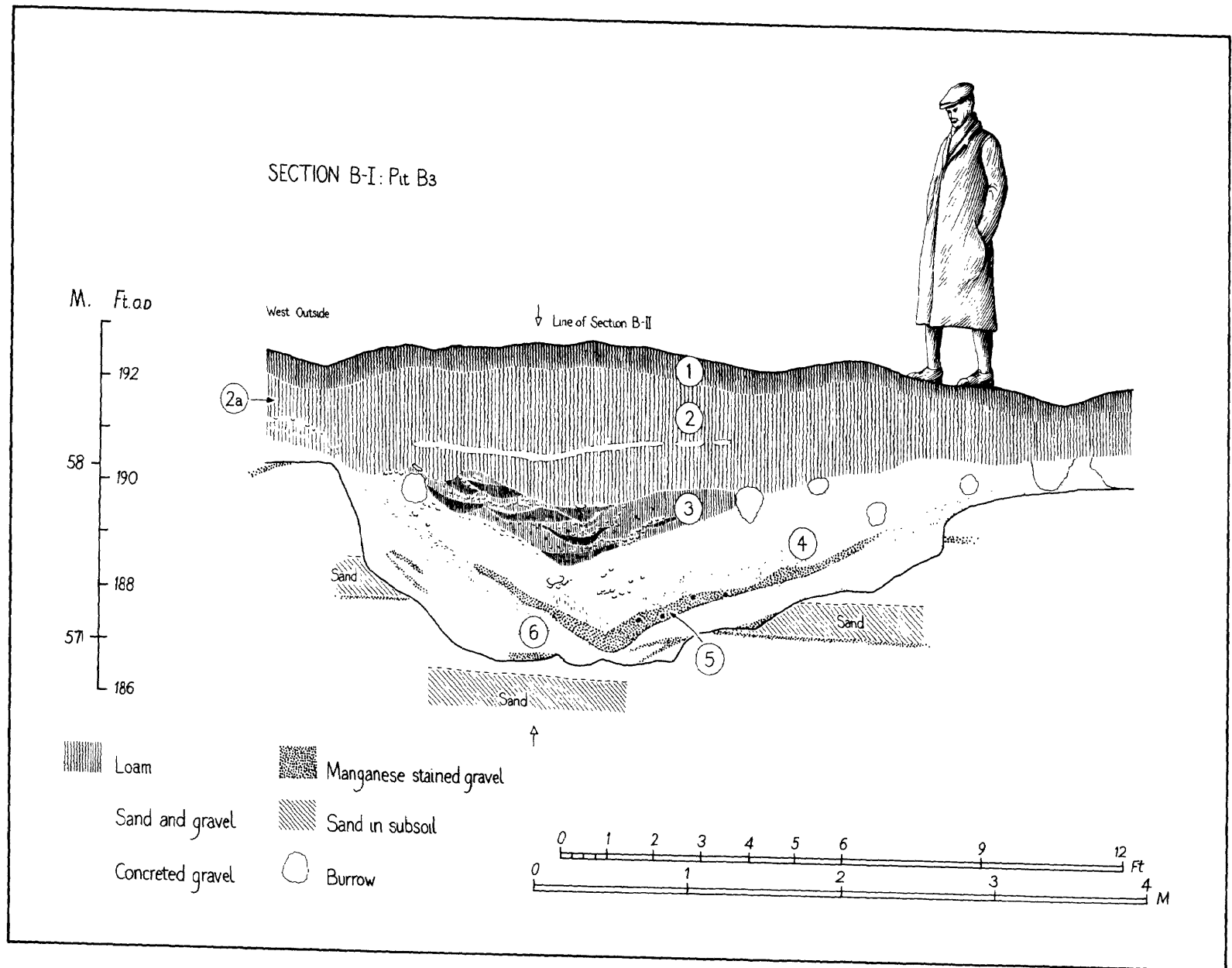


Fig 11 Area B. Section B-I: pit B3. The figure standing on the inner edge is ET Leeds

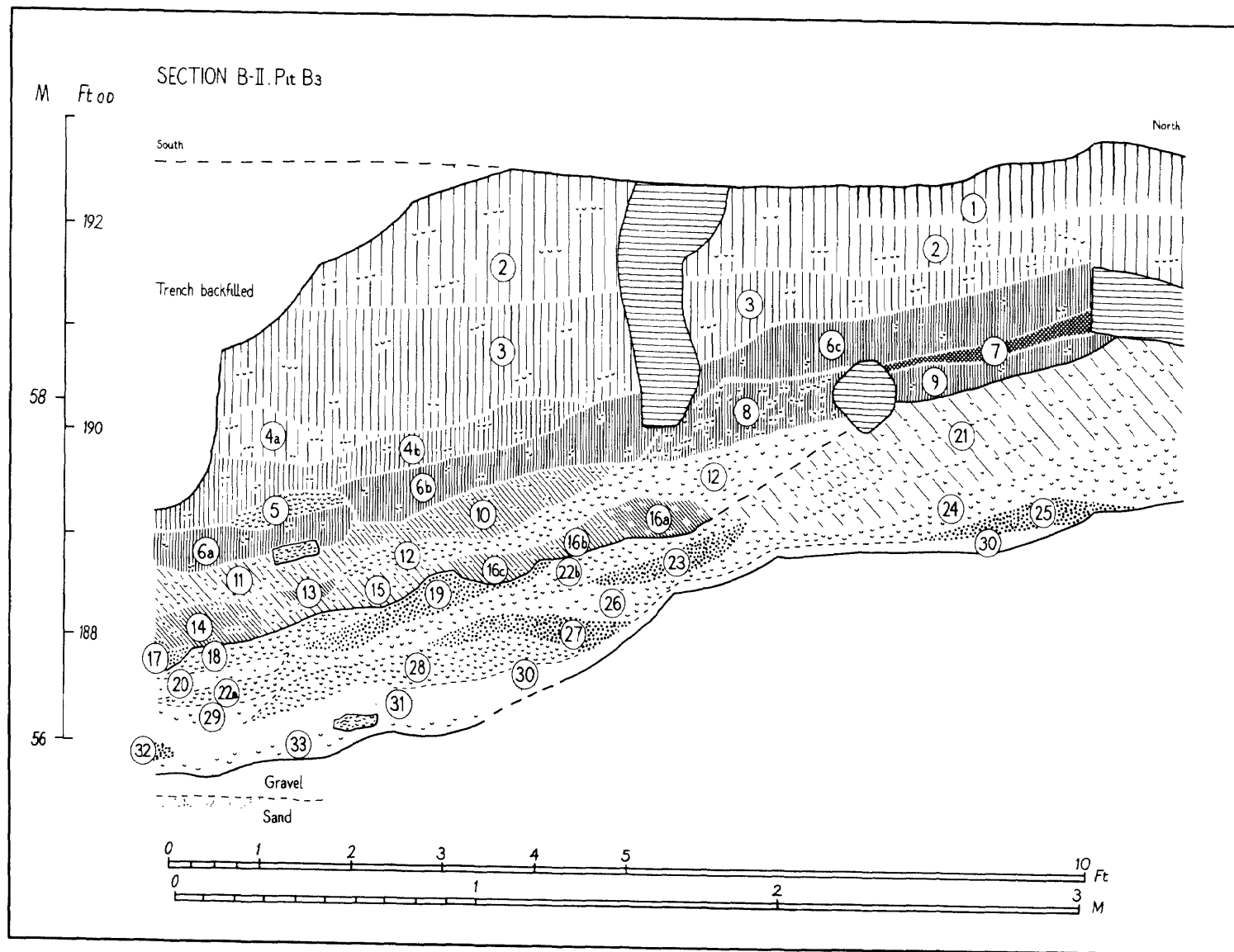


Fig 12 Area B. Section B-II: pit B3

Gravel 5, 7 (orange), 12, 18 (yellow), 24, 33 (red and white). Blue-black Mn-stained gravel 17, 19, 23, 25, 27, 32. Gravel with white Ca deposits 20, 29, 30 (much Ca, hard deposits in places). Loose gravel 22a-b (slightly yellow), 26, 28. Reddish sand 31. Gravel matrix, a little red loam 21 (showing bedding lines).

Reddish loam, much gravel 10, 16a-c (10, 16a-c bright red, fine, sandy loam), 11, 15 (both had some orange gravel). Loam matrix, much gravel 2 (red brown, recent dump?), 3 (dark red-brown), 8 (black). Loam matrix, some gravel 4a (dark brown; white Ca deposits through the layer), 4b (dark brown), 6a-c (black), 9 (black), 14 (dark red brown, some gravel Mn-stained). Brown-red loam, no gravel 13.

Pottery, flint and bone were found, mostly in layer 3, section B-I (Fig 11); also two radiocarbon determinations were obtained on charcoal from layers 17 and 6c, section B-II (Fig 12; respectively, 2780 ± 135 bc, BM-348; 4070 ± 110 bc, BM-349). The material from layer 6c appears to have been derived from an earlier occupation (p 40; editorial comment).

Period 1 in section B-II is represented by layers 18-33, and period 2 by 4-17. In period 1, the pit had been dug some 4 ft deep into sand and gravel, and been allowed to infill naturally, the layers of gravelly and loamy sand mostly coming presumably from a bank on the inner edge. In period 2, a pit some 3½ ft deep was dug into the silting. Into this had then apparently first been dumped a deposit of manganese-stained gravel (layer 17, cf 5 of section B-I: Fig 11). Above this manganese-stained gravel, the lower infilling, layers 10-16 (cf layer 4 of Section B-I), consisting mainly of relatively clean gravel and loam, also showed evidence of having been dumped by the basketful, particularly in layers 12-16. The upper infilling, layers 4-9 (cf layer 3 of section B-I), consisting mainly of gravel and loam darkened by decayed organic matter, was a little less clear-cut in character, like the upper infilling of area C (Figs 7-9). Presumably these upper layers had been dislocated a little by the filling settling and becoming compacted. Some evidence of separate tips was, however, visible within layer 3 of section B-I (Fig 11) as Case has noted; and there are definite hints of basketfuls in the uneven surfaces of layers 4 to 8 of section B-II (Fig 12).

Pit B3 thus shows deliberate infilling with alternate sterile and organic layers as in the pits C1 and C2 in area C, although the layers here cannot be correlated precisely with the subdivisions suggested there (p 15: Fig 9). However, clear evidence for period 3 is shown in section B-I (Fig 11) by gully B3 cutting the top of layer 3.

Pit B1 (Plan, Fig 10; section B-III, Fig 13) had no layers of organic filling and no finds were made. The following layers were recorded:

- 1 dark grey-black gravelly humus
- 2 reddish-brown gravelly loam (ploughsoil?)
- 3a-d loamy gravel and sand, a-b light red, c-d darker and more loamy
- 4 and 7 gravel and sand with much calcareous deposit and a little light red loam
- 5 light red loamy gravel and sand
- 6 clean yellow gravel and sand

The section was oblique at the pit's edge and its features are less clear than those in pit B3 and area C. It apparently showed traces of three recuts: one to the base of layer 5, and others to the base of layer 4, and the base of 3d respectively. Alternatively, it could be interpreted as containing deliberately dumped filling. A modern pit or trench has been cut into the top of the infill at the east.

Pit B2 (Plan, Fig 10; section B-IV, Fig 13) also contained no layers of organic mattes.

- 1 dark grey-black gravelly humus
 - 2 reddish-brown, gravelly loam
 - 3 grey-brown gravelly loam
 - 4 dark grey-black gravelly loam
 - 5 as 4, with rust-red patches of redeposited iron oxides
 - 6 grey-black gravelly loam
 - 7 clean gravel with much white calcareous deposit
 - 8 light red loamy gravel
 - 9 yellow gravel
 - 10, 14 greenish-brown loam, little gravel
 - 11 compact light brown loam, little gravel
 - 12 orange gravel
 - 13 loose yellowish gravel
 - 15 gravel-free clayey brown loam
- Saxon sherds were found above the pit filling, in layers 4 and 5; a core and four flakes were found in layer 5, scattered over cutting B8 (Fig 10).

This section too was taken at the very edge of the pit and the sequence was difficult to establish. The filling of this pit had also been cut to the east by gully B3. By this time the lower filling must have been fairly firmly compacted, but the upper may not have been there. Possibly therefore there had been recuttings or dumpings in the central and western parts of the drawn section.

Three gullies were recorded in cuttings B3 and B8 (Fig 10, sections B-I, B-III, B-IV, Figs 11, 13). *Gully B1*, 9 ins wide and 4-8 ins deep into gravel, contained light red gravelly loam and no finds. This gully lay outside the enclosure defined by the inner bank. It probably differed in date from the inner ditch, since any continuation of gully B1 would have cut across pit B3. Possibly the feature cut into the surface of layer 3 on section B-I should be interpreted as gully B1 rather than as gully B3. *Gully B2* was 10 ins wide at the top in its western part and about 12 ins deep into gravel; it widened to 12 ins at its south-eastern end, gradually becoming insignificant as the gravel surface fell away to the south; it contained yellow gravel with much white calcareous deposit, and produced 5 struck flints. *Gully B3* was more obscure, being observed only where it crossed sections B-I, B-III and B-IV, 9-24 ins wide and 3-14 ins deep (Figs 11, 13). Where dug into the gravel, it contained light brown or light red loam with relatively little gravel. It is reconstructed as one curving stretch in plan (Fig 10), but may have corresponded to two or three separate gullies; its cross-section on section B-III was markedly different from that on section B-IV (Fig 13).

All three gullies were presumably bedding trenches for structures, though neither packing material nor individual postholes were identified. The structures must have been on the 10° to 15° slope to the stream and were possibly not roofed. Layer 3 of section B-I had evidently been cut into by gully B1 or by gully B3, implying activity in this area after the inner ditch had been refilled in period 2. The three Area B gullies and the Area A features combine to suggest that activity continued within the area enclosed by the outer bank and ditch, either in period 3 while that bank still stood or perhaps subsequently in the Late Neolithic or the Beaker period. A few sherds of Late Neolithic pottery were found on the inner ditch. Two sherds of Beaker pottery were found at a high level in the outer ditch (Case 1956a).

The activity taking place within the enclosures At Abingdon, as at other causewayed enclosures (Smith 1971), the significant peculiarity is the carefully organised

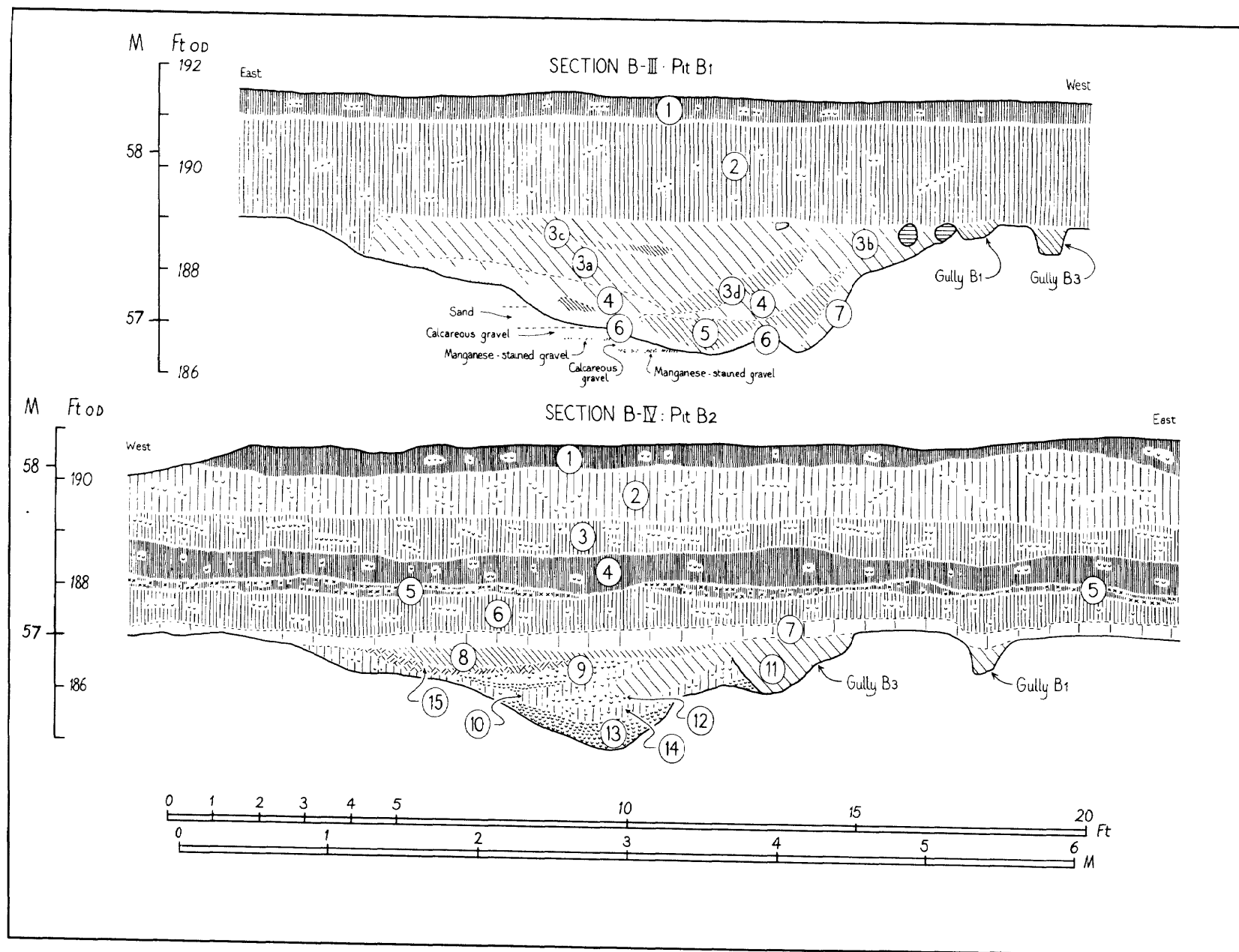


Fig 13 Area B. Sections B-III, B-IV: pits B1, B2, gullies B1, B3

and purposeful burial of refuse in the ditch. The refuse was some years old when buried in the inner ditch, which itself had originally been dug some years previously. It is natural to infer that the earthwork was built to demarcate an area and that the activities which produced the refuse then took place within it; that the site was then abandoned for some years; and that the ditch was finally used to bury the refuse.

What produced the refuse and why was it buried? Two kinds of explanation are possible: magical or utilitarian.

It has been suggested that the refuse may have been buried for the supposed magical powers of its known fertilising properties (Smith 1971, 100, following general suggestions by Case: as in 1973). This would be pure magic, since burying it beneath sterile gravel would in fact prevent it from fertilising vegetation.

It is never possible strictly to disprove such purely magical interpretations, but they seem less attractive when it is possible to suggest a fully utilitarian one: that of clearing the site for further activities. Thus, refuse which was clearly felt to obstruct some further activity was systematically removed from deposits within the area enclosed by the inner ditch, and was buried. The burial was concentrated in the inner ditch, which implies that the eroded ditch and bank were still visible, and that they were known to be artificial with perhaps their original functions still recalled. They had served their original purpose, for they were not renewed. What further activity necessitated their clearance? It would hardly be either arable or pastoral farming.

Renewed habitation springs more readily to mind, particularly if the clearance involved the demolition, burning and burial of parts of old, overgrown timber houses. This would account for the general scatter of charcoal found not only in the highly organic layers but also in the more sterile ones. Clearing a site and burying the debris before inhabiting it again hardly need justification; but burning and burial may imply a wish to prevent disease.

After the period 2 clearance, habitation apparently continued in period 3. Evidence of structures was found outside the area enclosed by the inner ditch, in both areas A and B. It is natural then to infer that the outer ditch was dug in period 2, to provide a new enclosure, like the old one but enclosing a larger area and with a deeper ditch. This would account for the clean gravel deposits found in the inner ditch. Judging from areas B and C, the refilling of the inner ditch involved moving some hundreds of cubic yards of compost, soil and gravel, tasks well within the capacity shown by the outer ditch, which must have involved moving 10 times as much material. Finally, it is again natural to infer that the period 3 habitation followed immediately, within the area now enclosed by the outer ditch.

Editorial notes

The outer ditch

Interestingly the outer ditch appears to some extent to repeat the sequence noted by Avery in the inner one. Here the section (Case 1956a, fig 2) was more of normal bank-and-ditch type, with the bank also on the inner side: layer 2 was subsoil loam, 2a tertiary silting, 3 and 3a secondary silting and 4-7 primary silting. However, a considerable part of layer 3 cannot have reached the ditch by natural silting and must represent dumped gravel, presumably largely from the bank. (I am grateful to Dr Isobel Smith for pointing this out in discussion some years ago.) Thus although the concentrated deposits of

occupation material are missing and there were no obvious signs of recutting (except perhaps at the junction of 3a and 3 ?), the ditch was levelled (at least partially) at the conclusion of occupation.

Interpretation of the site as a settlement enclosure Avery's interpretation of the two ditches as representing two successive settlement enclosures and of much of the filling of the inner ditch as scoured up and deliberately buried occupation debris of the earlier phase, provides another variation on the interpretations of causewayed enclosures made in recent years, ranging from ritual to defensive (eg Smith 1965; 1966; 1971; Mercer 1974; *Curr Archaeol* 5, 1976, 335-40). Avery's interpretation is most attractive, but must also serve to emphasise that no single one can be valid for all sites (Whittle 1977). Recent excavations as well as those at Abingdon (for example at Hambledon Hill, Dorset: Mercer 1980) seem to indicate that the common constructional technique of interrupted ditches conceals a variety of functions, several of which indeed may have taken place on the same site.

The siting of the Abingdon enclosures can however be taken to support the view that they were constructed and maintained with subsistence activities in mind. They lie in a wide area of gentle relief, quite well watered by streams, and surrounded by substantial patches of fertile workable soils. Some of the brown earth soils on various bed rocks may have been less favourable for prolonged cultivation than others, but together they provide a diversity of resources which characterises the area around many long-lived prehistoric settlements.

The enclosures themselves are on second terrace gravel and there are similar patches of gravel upstream and downstream, for which the enclosures might have been a centre of exploitation, with the river used for transport. Because of the winding course of the Thames, many such areas are within a radius of little over six miles. There are scattered indications of other Middle Neolithic sites in the region. In addition the widespread distribution of polished flint axes from the Upper Thames valley leaves no doubt of Neolithic settlement generally. (Some of the regional stone axes are however of group I, which may have tended to be relatively late.) Other possible causewayed enclosures towards Lechlade (Palmer 1976) were similarly sited on the edges of expanses of gravel, within reach of the valley bottom but also of higher ground on the Cotswold limestone - although the possible example from Cote lies in the present floodplain in the middle of a large expanse of alluvium. The majority of such enclosures elsewhere were sited in similarly potentially favourable environments (Palmer 1976), but clearly others placed on calcareous uplands, such as Crickley Hill or Knap Hill, were more exposed and further from a balanced range of resources, and suggest varied functions or patterns of occupation.

The nature of the settlement at Abingdon

What was the nature of this settlement? The enquiry must be confined to period 1, as too little of the outer ditch has been excavated to provide adequate data. Startin's hypothetical minimum labour force of 12 able-bodied adults needed for digging the inner ditch and constructing its bank (below, p 50) could have been provided without straining subsistence activities from a descent group of 30 persons (excluding infants), organised say as 6 *nuclear families* (Star-tin 1976). Assuming the usable area within the inner ditch and bank at Abingdon to have been at least 100,000 square ft, there would have been ample room for the individual and communal activities of this number of people, including storage and herding. Following Avery's

contention that settlement rubbish from period 1 was systematically buried in the inner ditch, we should assume a fairly high rate of representation. The excavated *pottety* may represent some 300 pots (p 26). Assuming that some three-eighths of the ditch was excavated and that its potential content of 800 pots represented only two-thirds of these broken at the site, a gross figure of 1200 pots emerges or 200 pots per nuclear family. In other words, 10 a year could have been broken for 20 years or 5 a year for 40 years. Any lower figure for earthenware under primitive conditions seems improbable, and a figure somewhere between the two the most likely.

Some 56 lbs of *flint* was recovered from ditch deposits. Grossing up the figures in the same way but assuming that the potential content represents only half the mass of flint knapped or discarded on the site (the 41lbs or so actually found in topsoil in 1963/4 goes some way to suggest that this is not too small an estimate, and see below, p 35), we arrive at some 53 lbs per nuclear family, that is to say some 3 lbs a year for 10 years or 1½ lbs for 20 years.

Calculations derived from the *animal bones* recovered involve several unknown factors: for example the extent to which bone may have been scrunched up by pigs, or rendered. Moreover, Cram offers two methods of calculating the weight of *meat* available: by numbers of individuals or by weight of bone (below, p 45). From the sample from the inner ditch, the first method gives 4634.5 kg, the second about 300 kg. Assuming that the sample involved (derived from Avery's cuttings only) came from one-tenth of the perimeter, but grossing up only by a factor of 7.5 to allow for falling off at the edges of the site (Table 16), and assuming this grossed up figure to represent only half the meat consumed at the site, we arrive at figures of 69,500 and 4,500 kg respectively.

Slicher van Bath (1963, 84-6) provides some figures for meat consumption by pre-industrial societies in temperate Europe, ranging from inhabitants of royal castles and estates in Sweden in 1573 consuming just over 100 kg per head per year, to 18th century English farm labourers with as little as 6-9kg. The British civilian's meat ration fell to about 7 kg per annum during the 1939-45 war but this was for consumption only within the home. Soudsky & Pavlu used 15 kg as subsistence level in the course of calculations concerning the Linear Pottery culture (1972). Assuming therefore 70kg per year as a well-nourished level and 15 kg as subsistence, a community of 30 persons could have survived well-nourished for rather less than 35 years at the greater calculated weight of meat consumed at the site or just over 2 years at the lesser calculated weight; and at subsistence level for some 1.50 or 10 years respectively. These figures diverge greatly but can at least be taken to provide limits of approximation, bearing in mind that we are concerned with a mature Middle Neolithic society with abundant grazing available.

All three sets of calculations (concerning pottery, flint and meat) involve large areas of unverifiable assumption, but at least they converge towards the conclusion that the period 1 settlement is only likely to have lasted a few decades with 30 inhabitants. Conversely, if fewer than 30 persons were concerned with it, the labour investment involved in its construction would have been disproportionately great. The relatively numerous radiocarbon dates from Abingdon give no absolutely sound evidence for the duration of the site, but one of only a few decades seems questionable bearing in mind the timescale of the Middle Neolithic and rather unlikely in view of the quantities of settlement rubbish inferred by Avery (above, p 17 but see also below, p 45).

These arguments favour therefore a hypothesis of partial settlement: that only one or two nuclear families resided more or less permanently at the enclosures and that the remainder of the descent group responsible for its construction resorted to it periodically. This interpretation would be consistent with the evidence from the animal bones, that the site was occupied throughout the year (p 44) and from the mollusca (p 47) that it was in open country (kept permanently cleared) but that woodland was near - a conclusion favoured also by the frequency of pigs' bones. This descent group may have been entirely locally settled as the pottery fillers suggest (p 35), dispersed about its territory in more or less isolated settlements, as suggested by known occurrences of British and Irish Neolithic house sites, dependent on only short excursions outside for flint, which may have provided opportunities too for exchanges through which axes of Group VI rock were obtained.

Some difference in function between the enclosure and outlying settlements may perhaps be seen in the possibility that pigs were slaughtered more often away from it than cattle (see below, p 45). This hypothesis of the enclosure as a place of resort is consistent with long-standing general interpretations by Piggott (1954) and Smith (1966) and with those of Kehoe (1974) as regards caretaker groups or individuals. Resort may have been as much for economic as for social reasons (for example, for rendering bone for fat, working antler or dressing skins, below, p 43) and not necessarily confined to one time of year.

With successful adaptation, a descent group larger than the original 6 or so families may eventually have needed to use the enclosure and this may explain its enlargement in period 2.

Table 1: Quantities of pottery from 1963/4 excavations by context and period

PERIOD 1		
Feature, cutting and layer		weight (oz)
Inner ditch, area C		
C-I	45-50	5
C-II, III	44a	3½
	46	¼
	51a	1
	53	½
		10¼
PERIOD 2		
Inner ditch, area C		
C-I	3&6	11¼
	7-14	3
C-II, III	2	1¾
	3	20½
	4a-c	41¾
	5a-c	53¾
	6	1
	6&7	5
	7	½
	9 & 10a	¼
	10a	¼
	11	9
	13	1 ¾
	15	18 ½
	17a-e	12
	18a-c, 19a	14 ¼
	20c	¼
	22	7 ¼
	26	
	2	¼
	2 or 3	32
	3	
	4	3 ¼
		243 (16 lbs 3 oz)

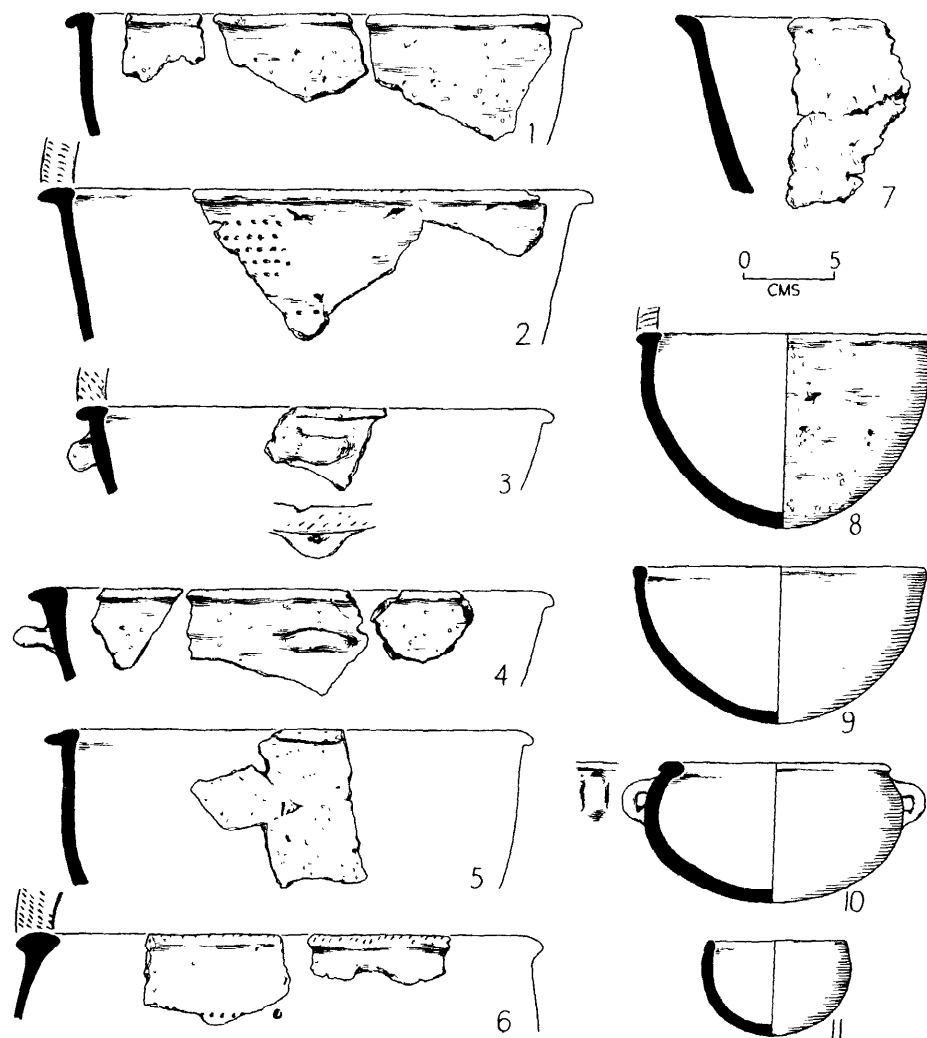


Fig 14 Pottery from inner ditch

Reports on finds and other specialist reports Pottery (Figs 14-19)

The Neolithic pottery from Abingdon weighs some 91 lbs, excluding a little from Leeds's excavations given by him to other museums. The 1963/4 excavations provided some 16lbs (Table 1), and the 1954 cutting 1½lbs. The remainder comes from Leeds's excavations where it was not recorded stratigraphically. The assemblage from 1963/4 is set out by context below. The frequency of sherds varied considerably within the silting of the ditch but there are no obvious stylistic variations corresponding to stratification, or thus to Avery's periods. Nor are there obvious differences between the assemblages from the inner ditch of 1926/7 and 1963/4. Later wares are hardly represented (p 30). We are justified therefore in discussing the assemblage from the site as a whole.

The Abingdon style

This assemblage includes some 565 rims (as well as small quantities of shouldered sherds, handles and lugs), which may be taken as a rough maximum limit to the number of pots represented. In many cases, two or more rims could be assigned to the same pot. 120 pots were identified by inspection through grouping rims and where possible body sherds on the basis of form, fabric, firing and decoration (these pots are referred to below by the prefix P). Full details are available in the Department. 23 of these 120 pots are without rim sherds; 220 rims are dispersed among the remaining 97 pots. This series of 120 may be taken as a very rough guide to the *minimum* number represented - permitting one to guess at a possible total of around 300, if one allows for variation of rim form as the same pot.

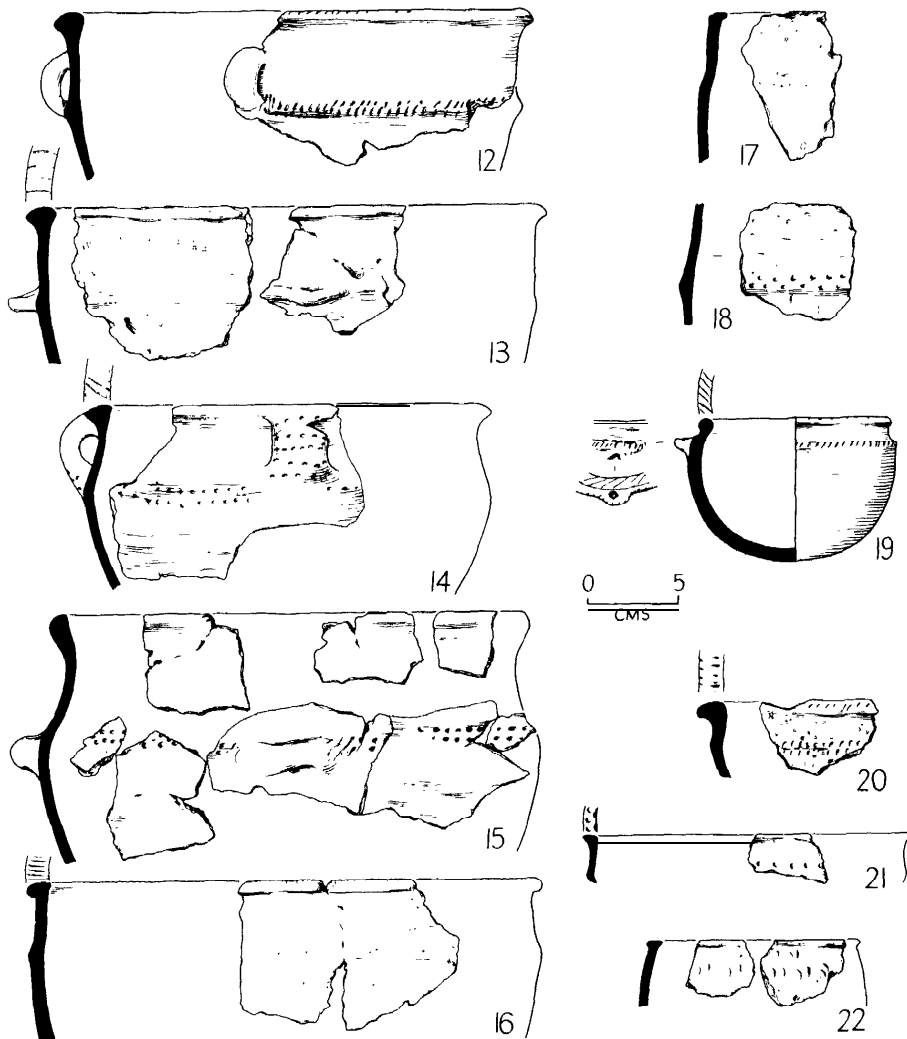


Fig 15 Pottery from inner ditch

Fabrics

About 95% of the pots are prominently filled with fragments of shell. This fabric previously described by Leeds and Case constitutes Dr Williams' *group one* (p 35). He inclines to see the shell as fossil in contrast to Sandford (in Case 1956a). Most of the shell had been ground into pieces smaller than 5 mm though larger fragments of up to 8 mm are found.

In many instances small amounts of burnt shell, small pieces of flint and other stone and grains of clayey material were included. The filler is characteristically dense, rarely sparse. Large fragments occur typically in a matrix of smaller ones, but infrequently otherwise.

Surfaces probably did not originally relate directly to the character of the filler. Though the fabric is typically weathered, giving a speckled appearance (easily accentuated by premature or over-enthusiastic washing),

well preserved sherds with smoothed surfaces, and occasionally burnish, are known. These have a variety of filler. Most pots were probably quite smooth when finished. One example (Fig 18, no 47) shows criss-cross burnish lines but it is noteworthy that an identical rim, plausibly from the same pot, is slightly weathered and lacks this finish.

Pots were dark or light grey or brown, or occasionally reddish-yellow, on their exterior, and frequently mottled. This range of colours extends to the upper part of the interior of the pots, which are otherwise uniformly dark or black. The core of the pot wall is typically dark or black, even when the exterior had been fired light brown or orange. A few dark sherds have a corky appearance due evidently to the disappearance of shell filler. Since this 'presupposes extraordinarily acid conditions in a calcareous soil' (Case 1956a, 20), it is possible that firing

Table 2 Pottery of groups two to four in cutting C2, 1963/4

Period	Context	Rim	Sherd
1	48b	1	-
2	4a-c	1	1
2	5b	1	-
2	11	-	1
2	13	-	1
2	18a-c, 19a	1	3
2	20c	1	4
2	22	-	1
2	26a	3	13
2	31	-	5 (P116)

Note: P117 has sherds from layers 20c and 26a. 1 body sherd was also found in modern disturbance.

was occasionally above 650°C, within the range in which calcium carbonate decomposes (Shepard 1946, 30, nothing that a short quick firing may not produce decomposition until 750° to 800°C).

The fabric of the remaining 5% of the assemblage as described by Case (1956a, 20-2) constitutes Williams' *groups of two to four*. This sandy fabric contains varying amounts of flint, quartz and other stone fragments, never dense, occasionally very sparse and rarely over 3 mm in size. Typically grey or brown in colour (one light brown rim only is known) the fabric is characteristically hard, very smooth and sometimes burnished. Found only in the

Table 4 Conversion to Hurst Fen scheme

A	B	B - C	C - D	E	F	?
58(10)	62(11)	53(9)	255(45)	73(13)	9(2)	55(10) 565

upper layers of the outer ditch, and with its greatest concentration coming in 1926/7 from pit D in the interior (Case 1956a, 17, 23), Table 2 shows it distributed in 1964/5 throughout the silting of the inner ditch in cutting C2, in period 1 and 2 deposits. The two fabrics may thus be assumed to have been in use together throughout.

Rims

Although the Hurst Fen typology has been widely followed and applied to Abingdon (Clark *et al* 1960) one more suited to the specific characteristics at Abingdon is used here (Table 3).

Approximate conversion to the Hurst Fen scheme gives a similar result to that already reported (Longworth in Clark *et al* 1960, following Case 1956a) (Table 4).

The 24 flint-filled rims (ie nos 13, 15, 35, 42-3, 47-8, 60-2) were comprehensively dispersed among these types, though 7 out of 8 rims in cutting C2 were simple. Table 5 shows the 3 main types of rim to have been present in both periods 1 and 2,

Table 3 Typology of 565 rim-sherds at Abingdon (%)

			Number decorated	Illustrated example (Figs 14-19)
A1	Angular, T-shaped	73 (13)	27 (20)	no 28
A2	Angular, out-turned	53 (10)	17 (12)	no 2
A3	Angular, overhanging	27 (5) (28)	8 (6) (38)	no 5
B1	Rounded, bulbous	162 (29)	54 (38)	no 4
B2	Rounded, bulbous and pointed	35 (6)	11 (8)	no 29
B3	Rounded, overhanging	25 (4) (39)	9 (6) (52)	no 48
C1	Simple, plain	44 (8)	2 (1)	no 11
C2	Simple, pointed	14 (2)	1 (1)	no 71
C3	Simple, beaded	56 (10) (20)	3 (2) (4)	no 39
F	Turned	99 (2)	2 (1)	no 25
	Flat-topped	4 (1)	1 (1)	no 32
	Indeterminate	55 (10)	6 (4)	—
		565	141	

Table 5 125 rims from 1963/4 excavations by period and layer (18 decorated, marked *)

		Rim type											
		Shell-filled								Flint-filled			
Period	Context	Al	A2	A3	R1	R2	R3	S1	S2	S3	I	F	?
1	Cutting : layer												
1	C1 :44a				3**								2
1	:48b												1:S3
1	:45-50									1			
1	B7 :18-33	1											
2	C2 :3		1		2"	1	1						2
2	:4a-c	1*			2*	1	2	1		1			2
2	:5b	3**	1	1*	9*			1		8			1:S1
2	:6 & 7				1				1		1	4	1:R1
2	:13				2			1		1			
2	:20c				5***			1		4			2
2	:18a-c, 19a									2			1:S3
2	:26a												1:S3
2	:26c							2		1			3:S3
2	C1 :3 & 6				4*	2*				2			2
2	:7-14									1			
2	B3 :2B, 3A	1			1	1		1					
2	:3				4**								
2	B7 :17, 18-33	1											
2	B10:3, 4 a-b				2*								
2	:6a-b, 8, 9	2			4	1	1						2
	Unstratified					1*		1	2				
		8	2	1	39	8	4	8	2	22	-	1	22 8

Table 6 Rim diameters

Est diam (cms)	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	46
Quantities	4	5	5	10	22	34	35	32	28	11	4	2	--	2	1	

Handling aids

The following were represented: 10 strap *handles* (eg no 14); 3 vertically and 3 horizontally perforated lugs (eg nos 3 and 53 respectively); 14 horizontal oval *lugs* (eg no 65); 1 elongated horizontal *lug*; and 1 upturned *lug*. This small total is surely functionally related to the numerous developed rims (types A and R) themselves convenient handling aids.

Shapes

Almost all the pottery appears to have been round-based: 2 sherds from section C-II (no 77 in layer 3; the other unstratified) and one from pit D (flint filled and decorated: Leeds 1928, fig 5; Case 1956a, fig 4, no 34) are exceptionally from fiat-based pots. These three exceptional sherds can be included in the main assemblage; flat-based sherds were similarly occasionally recorded at Windmill Hill and a few other sites (Smith 1965, 69) and a restorable pot was recovered at Dorchester site IX (Atkinson 1951, 58).

282 of the rims are sufficiently large or well preserved for their lie to be approximately determined. 37 were open at the rim, 66 closed and 179 neutral. As far as can be seen, most pots were rather straight sided. Measurements of the diameters of 195 rims show a normal distribution (Table 6) with no significant grouping by size.

4 basic forms may be recognised: cups (with diameter 12 cms or less), *simple bowls* and *carinated bowls* (estimated height < greatest diameter) and *jars* (estimated height > greatest diameter). However, bowls or jars often cannot be distinguished.

Pots nos 10 and 11 (Fig 14) are *cups*, no 10 with a strap handle. Pot nos 1, 2 and 5 (Fig 14) show the rather straight-sided thin-walled profiles of *simple bowls*. Nos 31 and 32 (Fig 17) belong to unusually globular forms, while no 7 represents perhaps the most open bowl in the assemblage. Rims were generally developed (types A and R). Strap handles (eg no 54), perforated lugs (eg no 3) and solid lugs (eg no 4), all high set, were all used on simple bowls. Rims were decorated fairly frequently, the upper body more rarely.

Carinated bowls were neutral, with relatively high set shoulders and barely concave necks, developed rims and thin walls, judging by the few instances of intact rim and shoulder. Five instances occur of a strap handle set vertically or horizontally on shoulder or neck (eg nos 12 and 14), and two of solid oval lugs horizontally on the shoulder (eg no 13). Some 30 other carinated sherds were noted (eg nos 17, 18, 21). Although generally thin-walled, shoulders are mostly weak; two or three only could be called sharp (eg no 21). The shoulders of carinated bowls were almost invariably decorated, if only lightly, in addition to rims and necks. Some bowls may have had capacities as large as jars.

Jars and bowls are about equally represented. Deep more or less straight-sided jars (nos 23-27, 30) had estimated rim diameters approaching 30 cm or more, nos 24 and 26 exceptionally over 40cm. Even such quite massive pots had thin walls, not exceeding one cm, in the last two mentioned cases; the shell-filled fabric must have been quite sturdy (Case 1955b). Rims were of types A or R;

Table 7 197 decorated sherds from Abingdon (%)

Incised	Rim	Neck	Shoulder	Lower body
vertical line	13 (9)	3	-	-
diagonal lines	44 (31)	-	-	-
horizontal lines	-	1	-	-
short vertical strokes	7 (5)	1	3	-
short diagonal strokes	24 (17)	-	5	-
vertical fluting	10 (7) (69)	5	-	1
Impressed				
twisted cord, oblique	23 (16)	-	-	-
notched stamp	5 (4)	1	-	-
round prick	1 (0.7)	-	13	-
oblique pricks	5 (4)	2	5	-
reed or straw impressions	4 (3)	1	4	-
single row pricks under rim	-	1	-	-
shallow round/oval	1 (0.7)	1	-	-
other bone or stick	3 (2)	2	4	-
finger nail	1 (0.7) (31)	1	1	-
oblique pricks and finger nail combined	-	-	1	-
	141	19	36	1

high-set lugs and handles may all have been handling aids. Decoration occurred on the upper body as well as rim (eg no 26; cf no 29).

Cups, bowls (eg no 35 and probably nos 47-8), carinated bowls (eg nos 13 and 15) and perhaps jars (Case 1956a, fig 4, 23) were all made in sandy fabric, and thus no obvious formal distinction is apparent between it and the normal shell-filled variety.

Decoration

Decoration was incised and impressed and the former roughly twice as frequent as the latter. Table 7 shows the types represented and their distribution on the pots. The identification of decoration made by straw stalks is due to Mr P Murphy (p 48). Additionally a few small indeterminate body sherds (eg no 55) were decorated with rounded or somewhat irregular shallow pricks or impressions. At least some of the impressed motifs were applied with a comb, about 3 cm long with 5 or 6 teeth (eg no 60).

25% of the rims were decorated and 89% of these were developed types (A and R). 36 out of 37 carinations were decorated, but only 4 had neck decoration as well (eg Case 1956a, figs 3, 4); 13 decorated rim sherds (5 fluted) were also decorated on the upper body, but may or may not have been carinated. One sherd was fluted below the carination (no 15); otherwise the belly of Abingdon pots was left plain. Two pots only have body decoration and undecorated rim (nos 22 and 68).

Decoration was simple but ordered. Incised diagonal lines (eg no 14) and twisted cord impressions (eg no 51) were very common on rims, but not used elsewhere. Conversely, simple round pricks, though common on shoulders (eg nos 16-17) were hardly used on rims. Fluting or rippling (nos 13, 15) was comparatively uncommon.

A few pots had neck decoration arranged in panels, in three instances as blocks of reed and other impressions (eg nos 2, 68, and Case 1956a, fig 3, 16), and once as round impressions combined with incised vertical lines (Case 1956a, fig 3, 15). Two instances of curved lines (no 29) are noteworthy.

As far as can be judged from the small sample, pots with sandy fabric (eg nos 13, 15, 43) were decorated in about the same proportions as the shell-filled and with the same range of motifs including twisted cord (no 29).

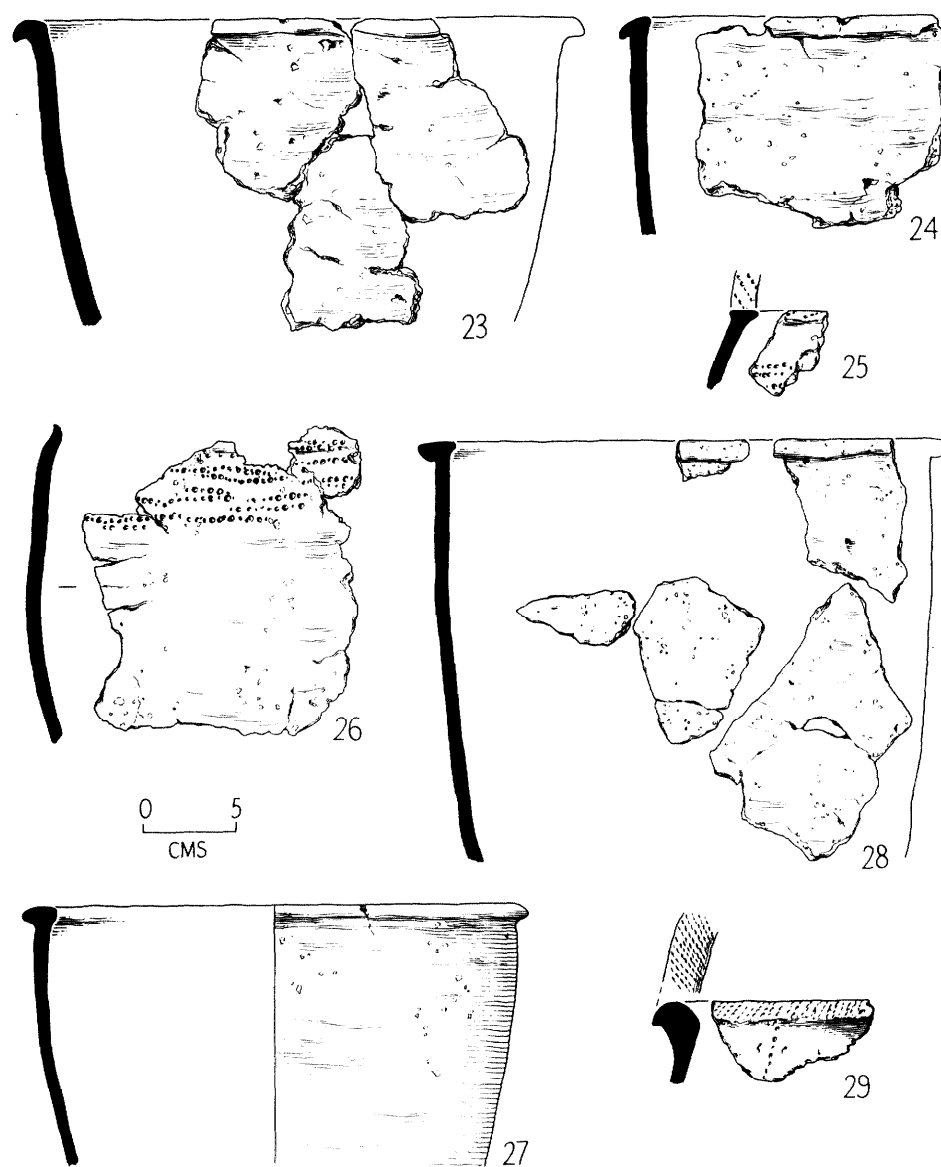


Fig 16 Pottery from inner ditch

Table 8 Dispersed sherds

Pot no	Illustration	No of sherds	Context (cutting: Layer)
58	—	3 rims, 6 sherds	C2: layers 3 & 5b
70	Fig 14, no 7	1 rim, 8 sherds	C1: layers 3 & 6,
73	—	1 rim, 19 sherds	B10: 6a, 6b, 8, 9; C2: 13
83	—	41 sherds	B10: 6a-9; Leeds's
109	—	11 sherds	C2: 4a-c, 5b, 20c
115	—	10 sherds	C2: 3, 6 & 7, 8, 9, 10a
117	—	23 sherds	C2: 20c, 26c
119	—	3 sherds	C2: 10a, 11, 20c

Other pottery

As on most other causewayed enclosures, only a very little Neolithic pottery of other kinds was found. Three sherds of *Peterborough* ware, two decorated rims and a base (Case 1956a, fig 4, nos 35-7) and two of *Grooved ware* affinities

(Case 1956a, fig 3, 18; Leeds 1928, pl LXXIV, fig 2h) came from unknown positions in the inner ditch. Two *Beaker* sherds were found in the tertiary silt of the outer ditch (Case 1956a, fig 4, 30-31). A flat based sherd from pit D has often been compared with *Beaker* pottery but is best taken with other occasional examples of flat based Middle Neolithic pottery as suggested above (p 29). Two undecorated *Bronze Age* body sherds, from collared or biconical urns, came from unknown positions in Leeds's excavations.

Discussion of the Abingdon style

The question of typological development

27 of the series of 120 pots discussed above were identified from the 1963-4 assemblage. 5 of these, identified in the list of pots as nos 70, 109, 115, 117 and 119 were each made up of matching sherds (although not joining) from

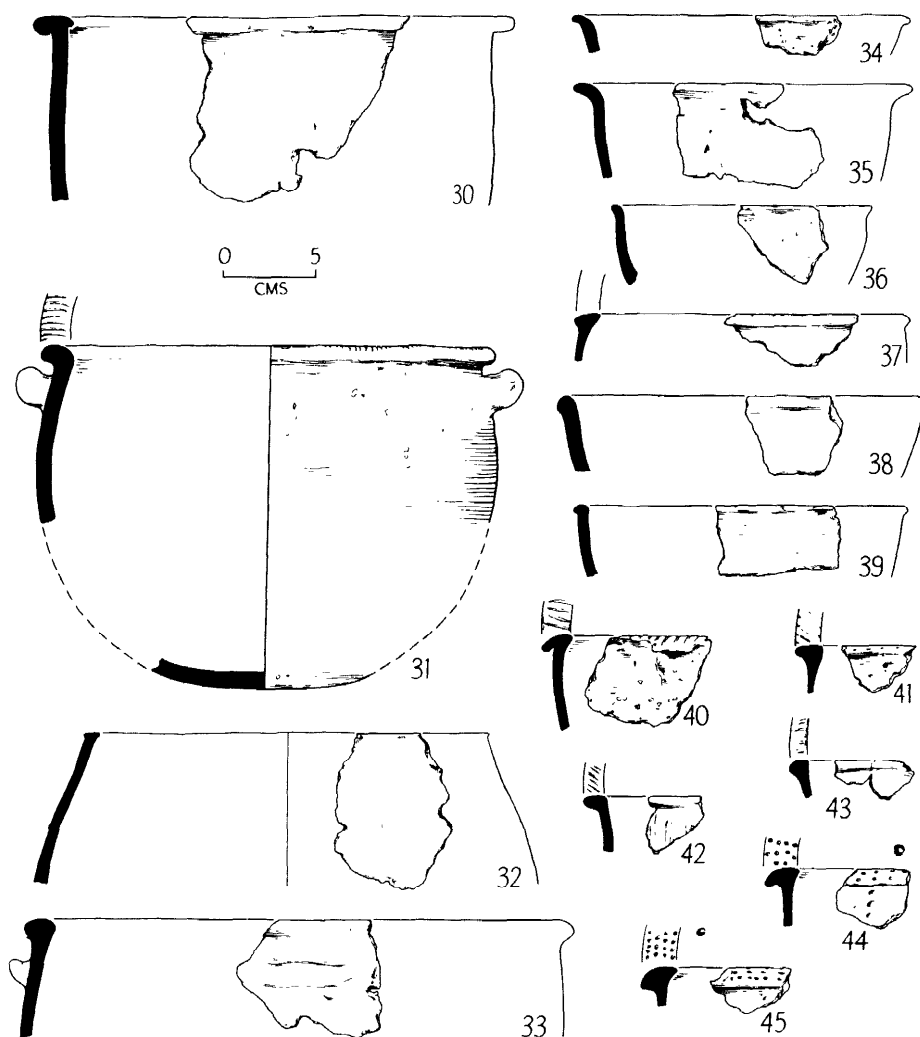


Fig 17 Pottery from inner ditch

widely separated layers of the inner ditch in cutting C2; and no 70 (Fig 14, no 7) was represented in the filling of both periods 1 and 2 as recognised by Avery. Another pot, no 58, came from two less widely separate layers, and two pots, 73 and 83, were made up of matching sherds from separate parts of the inner ditch system in areas B and C. Similar detail cannot be recorded for pots from Leeds's excavations but several vessels (eg Fig 15, nos 15 and 18; Fig 18, no 57) are recorded as originating from separate parts of the inner ditch system excavated by him (Leeds 1928, 471). These are well-known features of long occupied Neolithic enclosures, especially where ditches may be assumed to have been recut (Burnez & Case 1966; cf Smith 1965).

Assuming the enclosure to have been long occupied it remains to be seen whether the pottery shows any apparent development with time. Bearing in mind the interpretation given to the stratification, some

information should be obtainable from the characteristics of weathered and unweathered sherds. Not unexpectedly most sherds are moderately weathered (for example 105 out of 125 rims from the 1963/4 excavations of the inner ditch as set out in Table 5). Unweathered sherds from the 1963/4 excavations come from both period 1 (C2, layers 3-7, 10a, 13, 15, 18a-c, 19a, 20c; B3, layers 2, 3; B10, 6a-9).

The only pottery which can with certainty be assigned to Avery's *period 1* is the 10¼ oz found in period 1 filling as set out in Table 1. It includes rim forms A1, R1 and S3, the three commonest variations (Table 5); a carinated sherd was also found in C2, layer 44. Most, if not all, of the *weathered* sherds from the layers of period 2 filling should also belong to period 1, but there can be no certainty. The only group which belongs with certainty to *period 2* are the unweathered sherds from the primary silting of the outer

ditch (Case 1956a, layers 5-7). This group of 6 sherds only (out of 26 in these layers as a whole) includes one developed rim of type A1 decorated with transverse incised lines and one carinated sherd with impressed dots and shallow incised or dragged vertical strokes, as well as 4 plain body sherds. No apparently new or unusual formal or decorative features can be observed. In this small sample, and the same is true of unweathered sherds in the secondary silting of the outer ditch (Case 1956a, layers 2-4) which can probably also be taken to belong to period 2; these include a plain rim of type R1, a body sherd with two rows of oblique pricks, and another plain body sherd, out of a total of 22 sherds.

Finally, *unweathered* sherds from the layers of period 2 filling in the inner ditch might also belong to period 2 itself or at any rate at the end of period 1. These again however do not stand apart in any major way from the unweathered sherds from the period 2 filling or from the total group in period 1 filling. To take rims for example, the 20 unweathered ones comprise types A 1, R1, R2, R3, S3 and F; three of the type R1 are decorated with short diagonal incised lines, a technique used abundantly elsewhere. The flat topped rim from C2, layer 7 alone stands out as a possible innovation. This is a rare type both here (1%) and elsewhere.

These unweathered sherds from period 2 filling of the inner ditch include no carinated or shouldered examples, but we have noted that one is represented among the unweathered sherds from the primary silting of the outer ditch. Conversely the unweathered sherds from period 2 filling of the inner ditch include a strap handle (from C1, layers 3 and 6), and a weathered example with rim and shoulder came from layer 6 of the outer ditch; this type too might belong to period 1.

We conclude that there were no conspicuous formal differences between the pottery current in the two periods.

The two fabrics

Other assemblages of the Decorated style of Middle Neolithic pottery (to which the Abingdon style belongs), such as at Windmill Hill (Smith 1965), Whiteleaf Hill, Bucks (Childe & Smith 1954) and Lambourn, Berks (Wymer 1965/6) show a range of stone- and shell-filled fabrics. The 1963/4 excavations at Abingdon show the two fabrics to have been in use from the start (superseding suggestions in Case 1956a that the sandy one was late). The two fabrics were apparently used together for the same range of shapes, and stylistic analysis has shown no significant differences in form and decoration. There seems every reason to assume that they were used throughout both periods. The sandy fabric may have been a little stronger but both should have been perfectly efficient for the needs to which they were put and they may have looked quite alike when new. Their co-existence may suggest either a range of ability and individual preference among local potters, or the activity of specialists making vessels largely to the specification of their clients.

In the light of Peacock's analysis of gabbroic pottery (1969), no assemblage can be assumed to be composed entirely of local products; the petrological analysis here (pp 33-5) definitely suggests local fabric or else gives no reason to assume non-local sources. Both explanations may then be partly true: the shell-filled fabric may have been largely locally made and the sandy one partly locally made and partly made by specialists using some local materials.

Relationships

The assemblage is one of the important type-series of the Middle Neolithic. Only very generalised resemblances can be claimed to the few often compared sherds found nearby at Site 1, Dorchester (Atkinson 1951) which include no shell-filled or decorated pieces and only simple rims. However, several assemblages within a radius of approximately fifty miles have close affinities. Much of the flint- and shell-filled pottery with developed rims from the ditches at Windmill Hill is closely similar in rim form, decorative techniques (including twisted cord) and arrangement, with however differences (listed by Smith 1965, 69) such as internal decoration and more profuse decoration on neck, shoulder and body. The small assemblage from the primary filling of the West Kennet long barrow includes a well developed rim with oblique twisted cord impressions, in a fine flint-filled fabric (Piggott 1962a, fig 10: W1). Shell-filled sherds from the primary silts of the flanking ditches of the Lambourn long barrow have developed rims, but are undecorated (Wymer 1965/6). In the Middle Thames valley decorated pottery with developed rims from Staines shows affinities (Robertson-Mackay 1965); fabrics appear to have been predominantly stone- and flint-filled. To the north in the Chilterns the large assemblage from the Whiteleaf barrow (Childe & Smith 1954) included many rims (flint-, stone- and shell-filled, the fossil shell probably derived locally from the boulder clay), with direct parallels to Abingdon. Some rim decoration is similar but twisted cord is absent, and chevrons and lattices common. Many comparisons can also be made with the assemblage from Maiden Bower (Piggott 1931a) which however has less restrained neck and shoulder decoration. To the west, analogous but undecorated rim sherds occurred in apparently primary contexts in certain of the Cotswold-Severn tombs: Ascott-under- Wychwood (forthcoming); chamber C, Nymphsfield (Clifford 1938, part of an assemblage with mainly Ebbsfleet traits); Notgrove (Clifford 1936), and Eyford (Greenwell 1877); and further west, Tinkinswood (Ward 1916) Parc le Breos Cwm (Daniel 1937) and Ty-Isaf (Grimes 1939).

To the east the decorated pottery of East Anglia at such sites as Hurst Fen (Clark *et al* 1960) and Eaton Heath (Wainwright 1973) is similar in many aspects, but T-shaped rims and deep jars are comparatively rare and more decoration was applied to necks, shoulders and lower bodies. The undecorated assemblages from Broome Heath show similarities in form (Wainwright 1972). To the south some general affinities may also be found with the decorated assemblages from the Sussex causewayed enclosures and from Fussell's Lodge long barrow, Wilts (Ashbee 1966).

Dates from Lambourn (3415 $\pm$ 180 bc, Gx-1178), Fussell's Lodge (3230 $\pm$ 150 bc BM-314) and Eaton Heath (3145 $\pm$ 79 bc, BM-770 a bulked sample) establish a decorated style in eastern and central-southern England by the later 4th millennium bc. Leaving out of account BM-349 (4070 $\pm$ 110 bc), the series of radiocarbon dates from Abingdon appears to extend from a similarly early date, although the second quarter of the 3rd millennium bc seems the best date for period 1.

The Abingdon style thus appears part of a long lasting apparently little changing tradition, the ultimate relationship of which may be sought in the Rhineland (Case 1969; 1976; Whittle 1977). This tradition must have overlapped at least with the beginning of the Ebbsfleet style of Peterborough ware. Only two unstratified sherds of Peterborough were recorded however from the inner

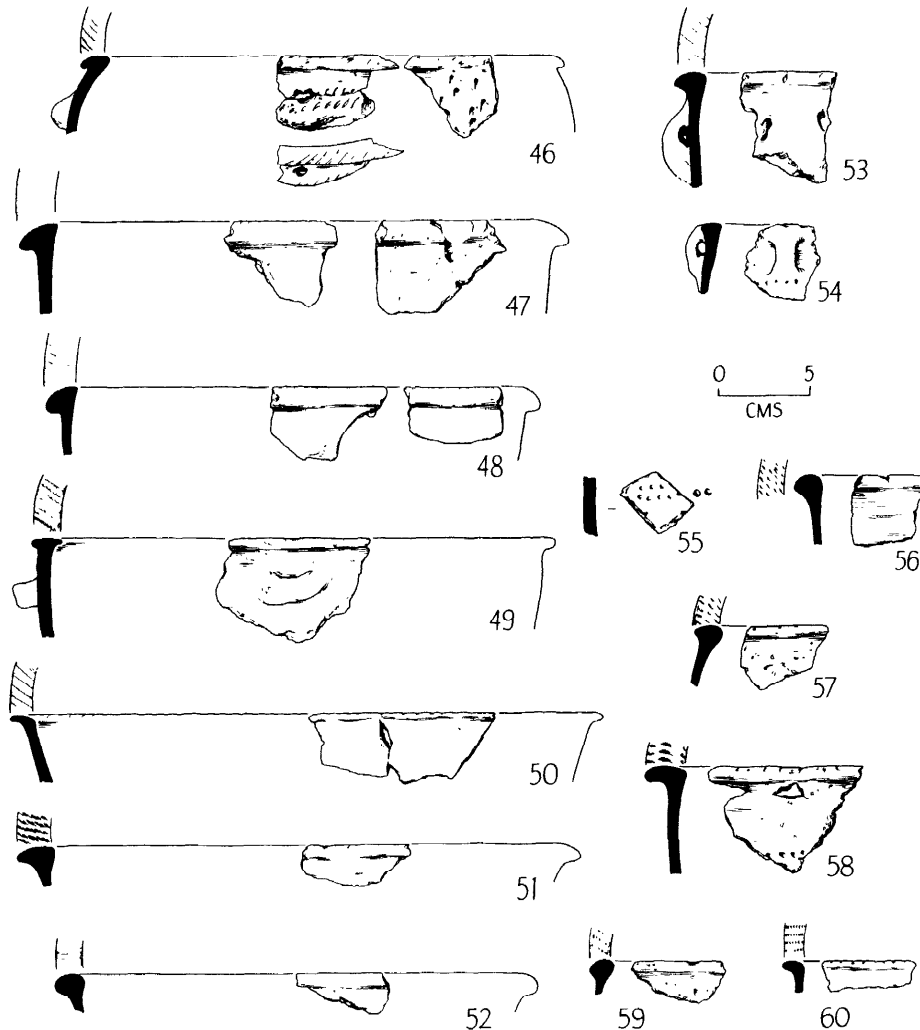


Fig 18 Pottery from inner ditch

ditch; Fig 15, no 15 has some affinities but was likewise unstratified.

As at most similar enclosures, little evidence was found of occupation continuing into the Late Neolithic, which is likely to have been the period of most of the nearby sites at Dorchester (p 54). The sherds with Grooved ware affinity were unstratified. Beaker sherds came from the tertiary silting of the outer ditch.

Finally, the two unstratified urn sherds show some frequenting of the area in the Early or Middle Bronze Age, as for example at Windmill Hill.

Petrological analysis of pottery

by Dr D F Williams, Department of Archaeology, University of Southampton

Twelve sherds of Neolithic ware from the Abingdon causewayed enclosure were submitted for petrological analysis. From an initial macroscopic examination of the fabrics, followed in each case by thin sectioning, four divisions could be made on the basis of temper inclusions. These are listed below following the descriptions of the fabrics. Munsell colour charts are referred to together with free descriptive terms.

Description of fabrics

No 1 (1963/4 C2:15)

Medium thick, soft fabric, light reddish-yellow (5YR 6/6) throughout. Heavily tempered with shell.

No 2 (Leeds S 1)

Thick, moderately hard fabric, dark reddish-brown (5YR 3/4)

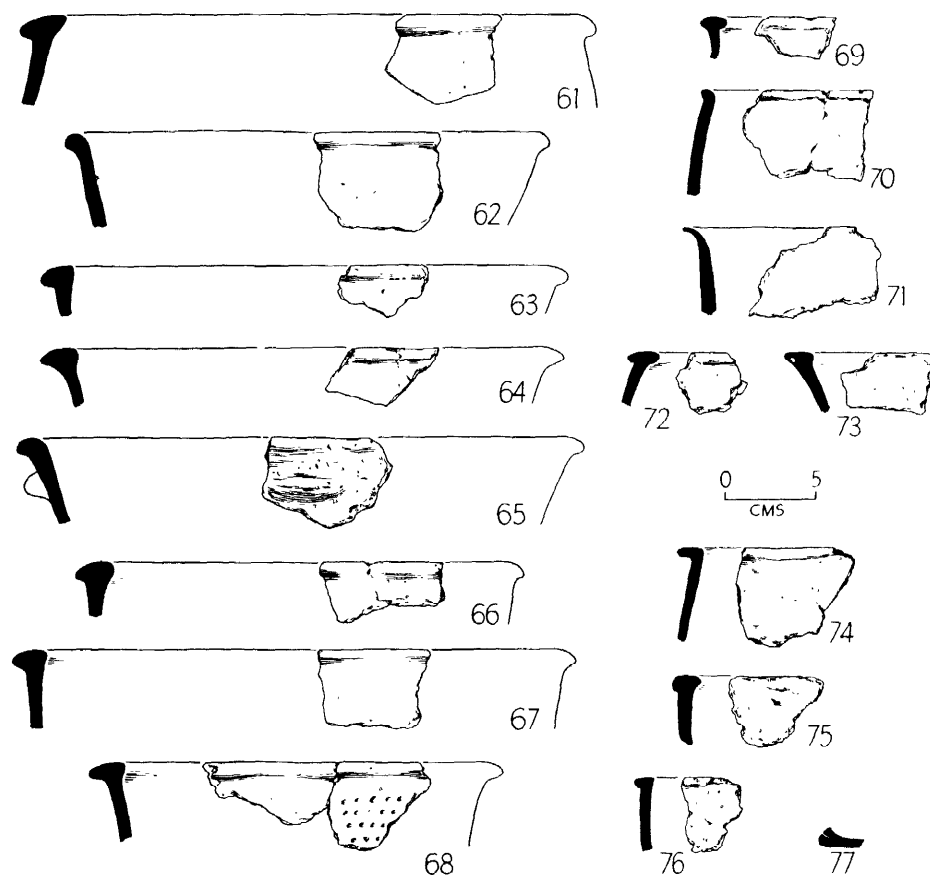


Fig 19 Pottery from inner ditch

No 3 (Leeds N1 & 2)	Medium thick, soft fabric, reddish brown (2.5YR 5/4) throughout. Heavily tempered with shell.	No 6 (Leeds N3. Pot 50)	Sparsely tempered with quartz sand grains. Medium thick, hard sandy fabric, dark grey (5YR 4/1) throughout. A sparse scatter of flint can be seen in the paste. The outside surface is roughly burnished.
No 4 (Leeds N1 & 2)	Medium thick, soft fabric, dark reddish-brown (5YR 3/4) on the outside surface, grey core and inner surface. Heavily tempered with shell.	No 7 (Leeds, 1928. 409. Pot 50)	Medium thick, soft fabric, dark grey (5YR 4/3) on the outside surface, dark brown core and inner surface. Moderately tempered with flint. Burnished on the outside surface.
No 5 (Leeds)	Medium thick, moderately hard fabric, very dark reddish-brown throughout.	No 8 (1963/4 C2:II)	Medium thick, soft fabric, light brown (7.5YR 5/4) throughout. Heavily tempered with flint.

- No 9 (1963/4 C2:20c) Medium thick, hard fabric, light greyish-brown (10YR 6/2) on the surface, darker core and inner surface. Moderately tempered with flint.
- No 10 (Leeds N3) Medium thick, hard sandy fabric, dark reddish-brown (2.5YR 3/4) on the surfaces, grey core.
- Nos 11 & 12 (1963/4 C2: 18a-c, 19a) The samples were too small for an accurate description.

Group one

Samples 1, 2, 3 and 4 Thin sectioning confirms that the predominant inclusion is shell, and it is possible to see some recrystallisation of calcite, suggesting that it is fossiliferous. Also present is a small amount of limestone and a sparse scatter of quartz grains, average size 0.10 - 0.20mm. Several large grains of argillaceous matter are present in all four sections. The presence of fossiliferous shell and limestone points to the local Kimmeridge clay as a likely source for the clay and probably also the temper. This view accords with Sandford's suggestion of a local origin for the shells in Abingdon ware pottery (in Case 1956a, 19).

Group two

Samples 6, 8, 9 and 10 Thin sectioning reveals that each sample contains numerous inclusions of well rounded light brown grains of limonite (probably altered glauconite), average size 0.10 - 0.20 mm. Also present is a small amount of flint and mica, and subangular quartz grains, average size 0.10- 0.20mm. If correctly identified, the presence of glauconite suggests an origin in the Upper Greensand. The nearest glauconite beds to Abingdon appear to outcrop at West Hagbourne, some six miles from the site (Jukes-Browne & White 1908, 17).

Group three

Sample 7 Large grains of flint are visible in thin section, together with a moderate amount of subangular quartz grains, average size 0.20-0.40 mm. Flint-tempered fabrics are perhaps to be expected from Abingdon, situated close to the chalk.

Group four

Samples 5, 11 and 12 This sectioning shows numerous grains of subangular quartz. In sample 5 the average size tends to be 0.10-0.20mm, while in nos 11 and 12 it is 0.30-0.50 mm. Sample 5 also contains some argillaceous matter similar to that in group one. It is not possible to indicate a likely source or sources for these fabrics, though as the argillaceous matter in no 5 also occurs in group one, a local origin is perhaps probable.

The flint industry

1203 struck flints weighing over 15 lbs were found in 1963/4 in the inner ditch to be added to some 3615 pieces (over 44 lbs) recovered earlier by Leeds. For comparison, about 30+40% of the waste from primary levels of the far more extensive excavations at Windmill Hill weighed 89 lbs (Smith 1965), and in the first season at Hurst Fen some 16,500 flints were recovered from 400 sq yds (Clark *et al* 1960). The bulk at Abingdon came from the inner ditch, and finds elsewhere were few: only 4 in the single cutting of the outer ditch; 106 in 1963/4 in area A between the two ditch systems, and 216 in the topsoil around the western end of the inner ditch (trenches B1-10); a leaf arrowhead, an ovate and 11 flakes in 1926/7 in pit D (Leeds 1928, 466; Case 1956a, 23) and an arrowhead,

several scrapers and numerous flakes (Leeds 1927a, 440) in pit A, both within the interior.

The 1963/4 assemblage is presented by type and context in Table 9. Since it does not vary obviously from the point of view of classification between one context and the next, or from the unstratified assemblage excavated by Leeds, we are justified in treating the industry as a whole like the pottery. The resulting quantities are set out in Table 10.

Raw material

Nothing suggests the use of mined flint on the site, apart from the creamy material with cherty inclusions used for polished axes; on the contrary much of the material had the slightly irregular flaking characteristics of moderately frost-weathered derived material. Derived flint is scarce in local river gravels becoming a little more frequent downstream from Dorchester. It is ubiquitous in the Chiltern outwash gravels south-east of Wallingford, some 8 miles to the south though of doubtful quality for flaking (below, p 72). Good derived flint is naturally abundant on the upper chalk of the Berkshire Downs, and the Chilterns, both some 9 miles away. All 120 cores were inspected for natural fractures but few were discernible, as a result of determined working down. 3 were stained and abraded suggesting an origin in Chiltern outwash or local gravels; and 3 had deep white patina suggesting they came from the surface of the chalk. Cortex gave somewhat more definite results. 43 had none, 65 had light brown or white unabraded cortex suggesting origin on the chalk, while 12 had abraded cortex suggestive of a derivation from the gravels. Of the 166 flake scrapers, 61 had none, 80 had unabraded and 25 had abraded cortex. Thus it seems likely that while some raw material was derived locally or from outwash gravels, more than three-quarters was probably obtained from the chalk either from the surface or from grubbing in topsoil (as suggested at Windmill Hill: Smith 1965, 86). The absence of badly shattered cores supports the latter possibility. The two largest quartered pieces (over 20 and 60 oz, respectively of black flint and of grey with cherty inclusions) were probably from the chalk.

Techniques of manufacture and types represented

Cores (Fig 20) 120 (13 lb 5 oz) were found. Analysis according to the Hurst Fen system (Clark *et al* 1960), with the addition of type Q, for roughly quartered blocks, gave:

A1	A2	B1	B2	B3	C	Q	unclassified
9	56	3	2	7	2	37	4

As at other Middle Neolithic sites in southern England the single platform type, incompletely flaked (A2), was predominant (nos 1-3). In addition, 4 polished flint axes were reused as cores (nos 54-57). No core had clearly been reflaked for use as a scraper. 12 core rejuvenation flakes were found, renewing both the face and the platform (nos 8-10); they had been used for sidescrapers and knives.

Over 50% of the cores weighed less than 2.5 oz, thus:

0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	20+	60+	(oz)
16	45	22	11	11	5	5	3	1	1	

Cores with two or more platforms (types B & C, nos 5-7) were evenly distributed through this range and not markedly smaller than cores with one platform (type A), as at Windmill Hill (Smith 1965,87). The diminutive size to which most cores were worked can also be seen in the

Table 9 Struck flints from 1963-4 excavations by context and type

PERIOD 1			Core type A ₂	Other cores	Waste flakes	Utilised flakes	Bevelled flakes	Serrated flakes	Flake scrapers	Leaf arrowheads	Polished axes			
Feature	Section	Layer												
Inner ditch, area C	C-I C-II, C-III	45-50	-	-	9	—	—	—	—	—	—			
		46	-	-	10	—	—	—	—	—	—			
		45	-	-	4	1	—	1	—	—	—			
		44a	-	-	11	—	1	—	—	—	—			
			-	-	34	1	1	1	-	-	-	37		
PERIOD 2														
Inner ditch, area C	C-I C-I, C-III	3, 6	-	-	18	-	-	1	-	-	-			
		26c	1	-	4	-	-	-	-	-	-			
		26a	-	-	4	1	-	-	-	-	-	-		
		22	-	-	-	-	-	1	-	-	-	-		
		20c	1	2	74	8	-	6	1	-	-	-		
		18a-c, 19a	-	-	20	5	1	3	-	-	-	1		
		15	-	-	3	-	-	1	-	-	-	-		
		13	-	-	14	-	-	1	-	-	-	-		
		11	-	-	16	1	-	-	-	-	-	-		
		10a	-	-	1	-	-	-	-	-	-	-		
		9, 10a	-	-	2	2	-	-	-	-	-	-		
		7	-	-	11	1	-	-	-	-	-	-		
		k, 7	-	-	1	1	-	-	-	-	-	-		
		6	-	-	5	-	-	-	1	1	-	-		
		5b	-	5	93	6	-	7	2	-	-	-		
		4a-c	-	2	130	15	1	10	-	1	-	-		
		3	-	-	27	-	-	1	1	-	-	-		
		Inner ditch, pit B3	B-I	4	-	-	1	2	1	-	-	-	-	
				3	-	-	3	3	2	-	2	-	1	-
				10-16	-	-	4	-	-	-	-	-	-	-
			B-II	4, 6a-c, 8, 9	-	-	94	4	2	11	3	-	-	
	2			9	566	47	5	44	8	2	1	684		
Insecurely stratified as to period, or unstratified	C-I C-II, C-III unstratified B-I B-II B-IV	7-10a, 13, 14, 44	-	-	2	-	-	-	-	-	-			
		2	3	1	53	8	2	3	2	-	-			
		2	-	1	50	3	-	2	1	-	-			
		2-4b, 6a-b, 8, 9	-	-	2	3	-	1	-	-	-			
		5	-	1	14	1	-	2	-	-	-			
			-	1	2	1	-	1	-	-				
			3	4	123	16	2	8	4	-	- 160			
Topsoil	area A area B		2	-	76	22	-	2	4	-	-			
			2	2	167	24	3	5	11	2	-			
			4	2	243	46	3	7	15	2	-	322		
TOTALS:			Y	15	966	110	11	60	27	4	1 1203			

maximum length of the last flaked face of each core. 90 were measured:

1.0 1.5 2.0 2.5 3.0 3.5 4.0 5.5 (cms)

4 10 19 19 23 11 3 1

Some were small cortical nodules (no 3) and could therefore never have been much larger, but the deliberate production of small flakes was confirmed by the measurement of waste flakes (p 38). Indeed, they may be under-represented, since the proportion of tools to waste is slightly higher in the total assemblage (523:5134) than in the 1963/4 assemblage alone (103:1203), which may reflect less than complete collection of the smaller flakes by Leeds. These small flakes (here and at Windmill Hill, Smith 1965, 89) must have served a purpose; they may have been practice pieces, but possibly much more use was made of unretouched flakes than is allowed (as with recent primitive people such as the Australian aborigines).

Some core rejuvenation flakes show not surprisingly that the cores were originally much larger. Robust flakes for scrapers and slenderer flakes for serrated and bevelled

Table 10 Abingdon flint industry

Cores	120
Waste flakes	4160
Utilised flakes	326
Bevelled flakes	44
Serrated flakes	272
Flake scrapers	166
Awls	5
Leaf arrowheads	17
Ovates	5
Sickle	1
Sickle pieces	2
Knives	10
Fabricators	2
Microlith	1
Polished flint axes	min 6 max 11

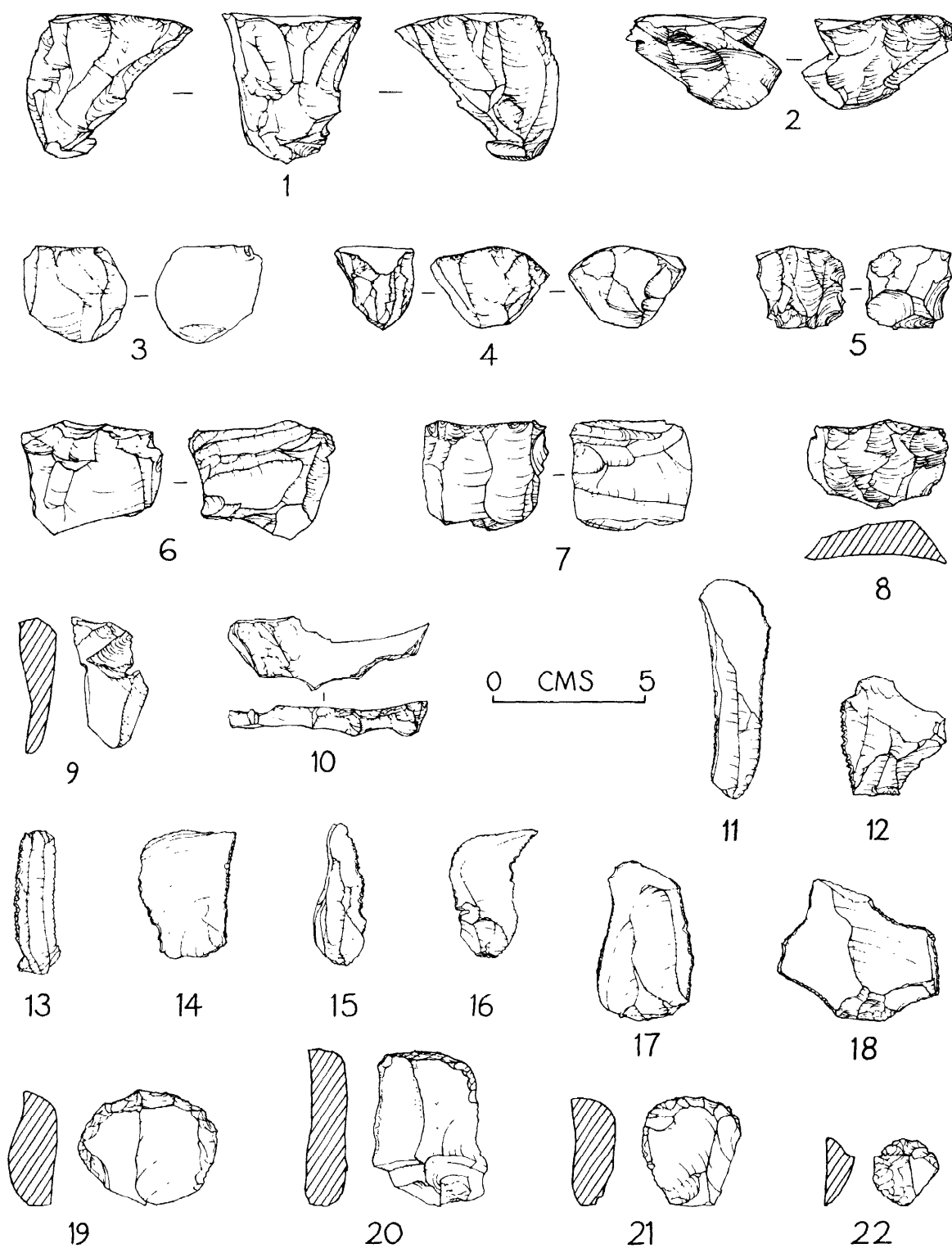


Fig 20 Struck flints: 1-3, A 1 cores; 4, A2 core; 5, C core; 6, B2 core; 7, B3 core; 8-9, face rejuvenation flakes; 10, platform rejuvenation flake; 11-16, serrated flakes; 17-18, bevelled flakes; 19-22, flake scrapers

flakes would have been struck off first, but as far as can be seen the same type of working (with similar cores to those surviving) was used throughout.

Waste flakes 1232 unbroken waste flakes (including 576 cortical) from the inner ditch were measured as to length along the bulbar axis and breadth at right angles to it, and breadth/length ratios were calculated (Table 11). No distinction was made between cortical and non-cortical flakes. Over 80% of the sample were under 4 cms long or under 3.5 cms broad. The ratio of breadth to length indicates that the industry did not produce such narrow waste flakes as on the other Middle Neolithic sites in southern England (Smith 1965). The earlier estimate of about 10% not exceeding a ratio of 2:5, quoted for Abingdon in the Windmill Hill report (Smith 1965, 91), must therefore be reduced.

Serrated, bevelled and utilised flakes (Fig 20, nos 11-18) 272 *serrated flakes* (Table 12) have a series of apparently deliberately retouched notches along one or both edges, frequently with a thin band of lustre on the cutting edge (nos 11-16). 44 *bevelled flakes* (Table 13) (Smith 1965: utilised flakes class A) have one or both edges steeply blunted by the removal of fine contiguous squills, perhaps at least partly from use rather than deliberate retouch (nos 17-18). 326 *utilised flakes* (Smith 1965: class B) have rather less regular denticulations and wear.

Table 11 Sample of 1232 waste flakes (%)

mm	10	15	20	25	30	35	40	45	50	55	60	65	70
L	0.5	2	11	28	23	17	8	5	3	1	0.5	0.5	0.5
B	1	16	29.5	23	14	9	3	2	1	0.5	0.5	0.5	
B:L		1:5		2:5		3:5		4:5		5:5		6:5 +	
		3		25		29		10		19		14	

Table 12 Sample of 272 serrated flakes (%)

mm	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
L	0.5	19	37	24	10	6.5	2	19	18	10	6	4	1	0.5	1
B	0.5	19	37	24	10	6.5	2	19	18	10	6	4	1	0.5	1
B:L		1:5		2:5		3:5		4	5		5:5		+		
		31		42.5		18		4			3		1.5		

Note: 64 snapped examples are included

Table 13 44 bevelled flakes

mm	10	15	20	25	30	35	40	45	50	55	60	65	70	75
L	-	-	-	1	1	1	9	9	5	8	4	1	4	1
B	-	-	7	5	9	12	3	13	3	-	-	1	-	-
B:L		1:5		2:5		3:5		4:5		5:5				
		6		14		15		2		3			4	

Note: 10 snapped examples are included

Table 14 Sample of 100 utilised flakes (%)

mm	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
L	-	-	1	1	5	2	16	19	21	13	6	1	3	1	1
B	-	-	10	25	16	20	13	8	3	2	-	1	-	1	-
B:L		1:5		2:5		3:5		4:5		5:5		+			
		9		35		29		5		9		13			

Table 15 Measurements of a sample of 118 flake scrapers (%)

mm	20	25	30	35	40	45	50	55	60	65	70	75
L												
B	1.5	1.5	16	28	27	13	6	4	2	1	-	-
B:L			2:5		3:5		4:5		5:5		6:5	
			3.5		28		24.5		37		7	
Th	mm	7	9	11	13	15	17	19	21	23	25	27
		3	14	13.5	26	19	11	8	25	2	-	1

Serrated flakes may have been intended for cutting and sawing, and bevelled for scraping; in support of this Tables 12 and 13 show that serrated flakes tended to be narrower. (Dr L Keeley of the Baden Powell Quaternary Research Institute, Oxford, kindly examined 5 serrated flakes and 1 bevelled under magnification from x 100 to x 200, and noted gloss from plant material on the former and gloss from contact with bone on the latter.) Not surprisingly both types were a selection from the mass of struck flints. Similarly the sample of 100 obviously utilised flakes shows a selection (Table 14) but it must be emphasised that many more than those classified here as utilised waste flakes may have been used; the 326 classified include many convenient shapes with cortical backs, square ends and sharp ends, which may all have been quite as useful as formally retouched pieces.

Flake scrapers (Fig 20, nos 19-22; Fig 21, nos 23-8). The 166 convex flake scrapers were classified according to the Hurst Fen scheme (Clark et al 1960):

A	C	D	A/D	E	indeterminate/unclassifiable
89	3	25	2	34	13

End scrapers thus predominated. Measurements (Table 15) of a sample of 118 excluding class E (with bulbar end removed) confirm that the raw material available to the site was far larger than the surviving cores suggest. However, a crude scraper (Fig 22, no 58) made on a polished axe fragment shows that any good flint was used thoroughly. Scraping edges were generally steep: about 75% in the range 60-80°, with fewer below this range than above. In all these aspects, the scrapers are a typical southern English Middle Neolithic assemblage.

Awls or piercers (Fig 21, nos 29-30) 5 came from Leeds's excavations, made on thick flakes: 2 with little retouch on the dorsal surfaces of short stout points (no 30); 3 with longer points, one bifacially (no 29), two unifacially retouched.

Blunted-back knives (Fig 21, nos 31-4) 10 came from Leeds's excavations, made on robust flakes, varying in form and size. Two were under 5 cms long and two longer examples are only retouched at the edges on one or both sides (no 34). The rest are retouched on both edges, usually steeper on one edge (nos 31-33). All are heavily patinated but one (no 32) still shows diffuse lustre over much of the thinner edge and face.

Sickle pieces (Fig 21, nos 35-6) Both examples (found by Leeds) are analogous to the short squarish sickle-flints of Windmill Hill (Smith 1965, 97), but with more transverse retouch: made on broad blades, steeply retouched across one end and snapped across the other. No 35 has steep blunting on one edge and apparent marks of use on the other; no 36 has one edge less steeply blunted and a little retouch on the other. Both are heavily patinated and do not show lustre.

Single-piece sickle (Fig 22, no 41) Found by Leeds in segment N3, it has a lozengic cross-section thick at the butt but thinner at the distal end where it has been cleanly snapped across. Boldly edge-flaked perhaps with the aid of a punch, the edges also carry irregular generally unifacial stretches of fine squills from secondary retouch or use. It is heavily patinated, and there are no clear signs of lustre; the butt has marks of battering. There is no reason to believe that it does not belong to the rest of the assemblage. Analogous forms, though more oval, may be cited from Hembury (Liddell 1932, pl XIX, 936), Hurst Fen (Clark et al 1960, fig 15) and Fengate (Pryor 1974, fig 8.3). Examples from Grovehurst, Kent (Payne 1880; Clark 1932) may be included if that site belongs to the

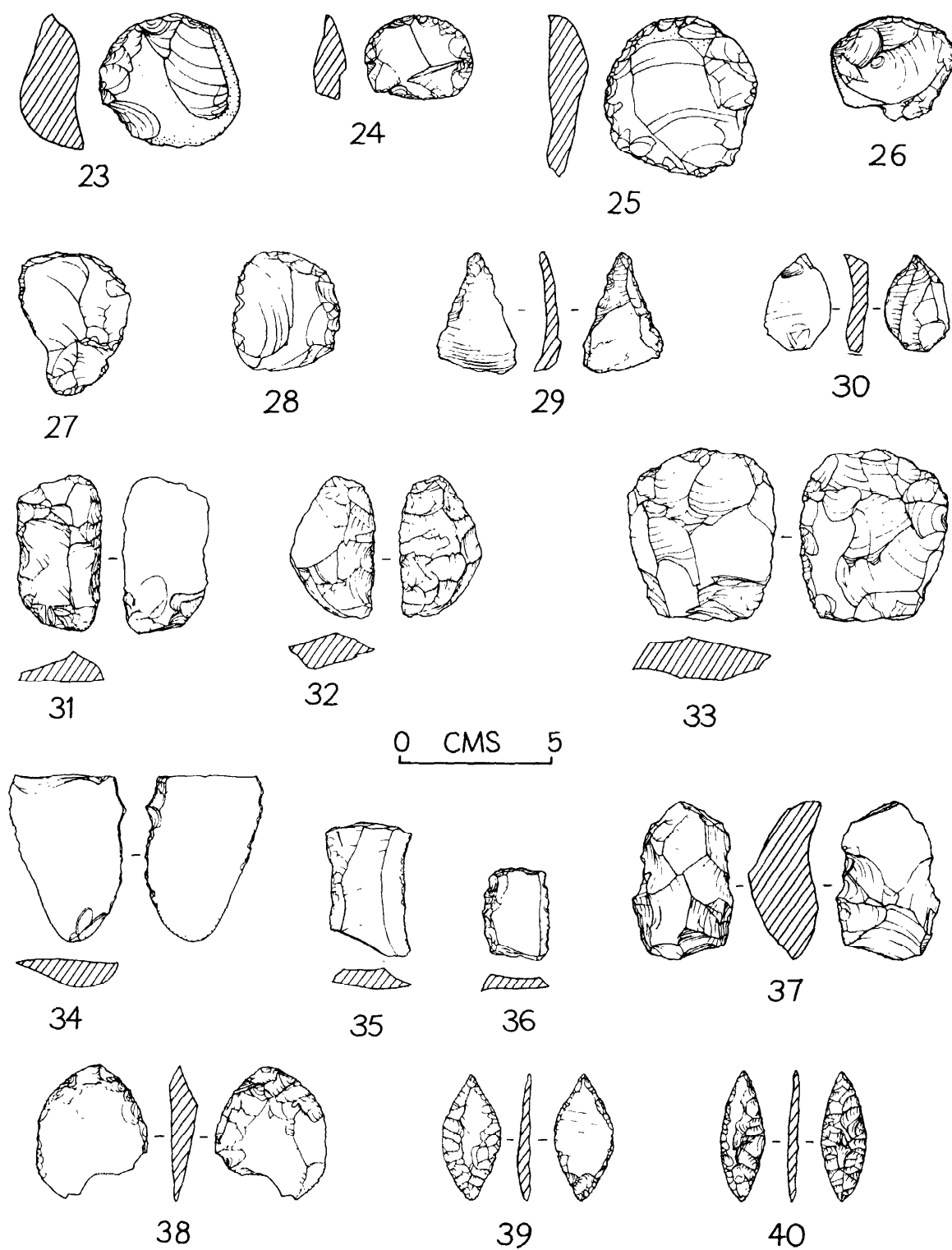


Fig 21 Struck flints: 23-8, flake scrapers; 29-30, awls; 31-4, knives; 35-6, sickle pieces; 37, fabricator; 38, ovate; 39-40, leaf arrowheads

Middle rather than the Late Neolithic. One from East Knoyle, Wiltshire was apparently associated with a polished and chipped flint axe, and plain pottery described as flat-based (Smallcombe 1937).

Ovates or laurel leaves (Fig 21, no 38) As at other causewayed enclosures, ovates were not numerous. 5 examples were recovered by Leeds, who illustrated the finest (1927a, fig 5a); it has complete bifacial retouch and a maximum thickness of only 11 mm. Another illustrated here (no 38) has partial retouch and is only 7 mm thick. The others are cruder and thicker.

Leaf arrowheads (Fig 21, nos 39-40; Fig 22, nos 42-53) 17 bifacially flaked arrowheads were found, together with 2 triangular flakes slightly retouched at edges and tips which might conceivably have been intended as arrowheads. Their quantity proportionate to finished implements is of the same order as at Hurst Fen (7-8%: Clark *et al* 1960), Hembury (9%: Liddell 1936), and Hazard Hill (9%: Houlder 1963); is much greater than at Broome Heath (1%: Wainwright 1972); and probably much less than at the partly published sites of Carn Brea (Mercer 1974) and Crickley Hill (Dixon 1971; 1972). 5 at Abingdon were longitudinally symmetrical, 10 asymmetrical with a rounded base, 2 roughly lozenge shape (nos 51, 53). Most were pressure flaked over both surfaces and none was more than 5 mm thick. As elsewhere they represent the industry's finest work.

Polished flint axes (Fig 22, nos 54-8). A maximum of 11 are represented: parts of 6, together with 5 small flakes. The flakes, less patinated and burnt than the fragments, show a creamy grey flint, with cherty inclusions, different from that used otherwise at the site. These axes must be regarded as imports like the stone axes which they only slightly outnumbered. The nearest known potential sources are the so-called mine at Rotherfield Peppard, Bucks/Oxon and the mine at Easton Down, Wilts; but there may also have been a source in north-east Wilts (rough-outs in Passmore Collection, Dept of Antiquities). Four samples have been submitted to the current British Museum project on the determination of the source of flint axes (Sieveking *et al* 1972),

Microlith A sub-triangular backed bladelet was recovered by Leeds (1927, fig 5m), unfortunately without details of its context. No true microlithic cores, burins or axe sharpening flakes survive otherwise. The radiocarbon determination from pit B3 section B-II, layer 6c (4070 $\pm$ 110 bc, BM-349) however raises the possibility of an earlier Mesolithic presence on the site - as at Corporation Farm (p SO) or at the Ascott-under-Wychwood long barrow (Benson 1971). The bladelet would be appropriate to a later Mesolithic industry (*cf* for instance Wawcott III, Berks, 4170 $\pm$ 134 bc, BM-767; Froom 1976).

Fabricators (Fig 21, no 37) Two roughly flaked examples were found by Leeds, one with marks of battering at one end (no 37), the other with a smoothed end.

Chert A utilised flake and a convex flake scraper (class E) were found, made of grey chert deriving from the river gravels.

Discussion

The industry has few peculiarities. It has a tendency to slightly broader flakes than other southern English Middle Neolithic assemblages. The sickle handle alone cannot be matched precisely, nor are the sickle flints exactly comparable, but resemblances can be found to both.

About 90% of the industry represents waste material, a figure typical of other Middle Neolithic sites in southern

England. 28% of the cores were fire-marked, which also suggests that flint knapping waste was mingled with other occupation material. Whether or not the enclosure was continuously occupied, the flint industry seems to represent the residue of ordinary occupation, in so far as that can be judged from sites such as Hurst Fen, Fengate, Haldon or Hazard Hill, which comprise both houses and an enclosure. The density of struck flints (or chert) however varies strangely within this range of sites, and may be an uncertain guide to their overall function. Taking surface areas excavated and leaving aside ditches, we find: 0.7 per square ft in the interior of the inner ditch at Windmill Hill, 6.1 in the southern part of Hembury (cutting XI), 1.9 at Hazard Hill, about 0.2 at Broome Heath, about 0.02 at Fengate, and 4.5 at Hurst Fen. Area A, Abingdon gave the comparatively low figure of 0.15 but the soil profile here may have been truncated; evidence at Hembury shows that high densities may be very localised, since small cuttings next to cutting XI gave only 0.16. Furthermore the material in area A at Abingdon is likely to have belonged predominantly to period 2 when the enclosure was enlarged by building the outer ditch. In that case it is reasonable to assume that in that period at any rate flint was both struck and used within the enclosure, since the material includes cores, waste flakes, utilised and serrated flakes and flake scrapers (Table 9). If we add to these quantities those from topsoil in area B (assuming that that material too was largely derived from surface occupation) we have a quarter of the cores and waste flakes, half the leaf arrowheads, approaching half the utilised flakes and more than half the scrapers. Some of these proportions would be somewhat larger still if we assumed that the layer 2 finds in sections B-I and C-11 were also derived from surface occupation. There seems little doubt on these figures that the interior was used for normal occupation.

stone other than flint

Polished axes (Fig 22, nos 59-62) 4 fragments and 2 flakes of polished stone were found in Leeds's excavation and one flake in 1963/4. One fragment (no 59), reused as a core, has already been identified as group VI (Evens *et al* 1962, no 220, BER 7). The remainder were submitted to Dr W A Cummins, Department of Geology, Nottingham University, who very kindly reported after microscopic examination that they are all likewise group VI, except for one flake from Leeds's excavations which is a tuff probably also of Lake District origin. Two fragments (nos 61-2) have rather squared sides characteristic of Langdale axes. One of these (no 62) has a rather square, lightly damaged cutting edge, 5 cms long. This axe was at least 5.5 cms broad and another 7.5 cms so that some medium-sized specimens are represented. Only one flake was certainly stratified, from the inner ditch section C-II, layer 3; this is in the uppermost layer of period 2 infilling, but one may fairly claim that group VI axes belonged in part at least to the Middle Neolithic occupation.

Hammerstones, rubbing stones and grinders (Fig 23) 16 were found, those stratified being from period 2 filling in the inner ditch, cutting C2: 3 from layer 2 and 2 from layer 7. 11 hammerstones (*eg* no 1), roughly round pebbles (all but one of quartzite, the exception being of dense, coarse, ferruginous sandstone), showed varying degrees of battering on one or more edges; some had been intensively used. 3 flakes from such pebbles, one with marks of battering, were also found. 2 more pebbles are not obviously marked. They range in weight from 15 to 60 oz. These quartzite pebbles may have derived from the non-calcareous plateau gravels, a mile or two north of the

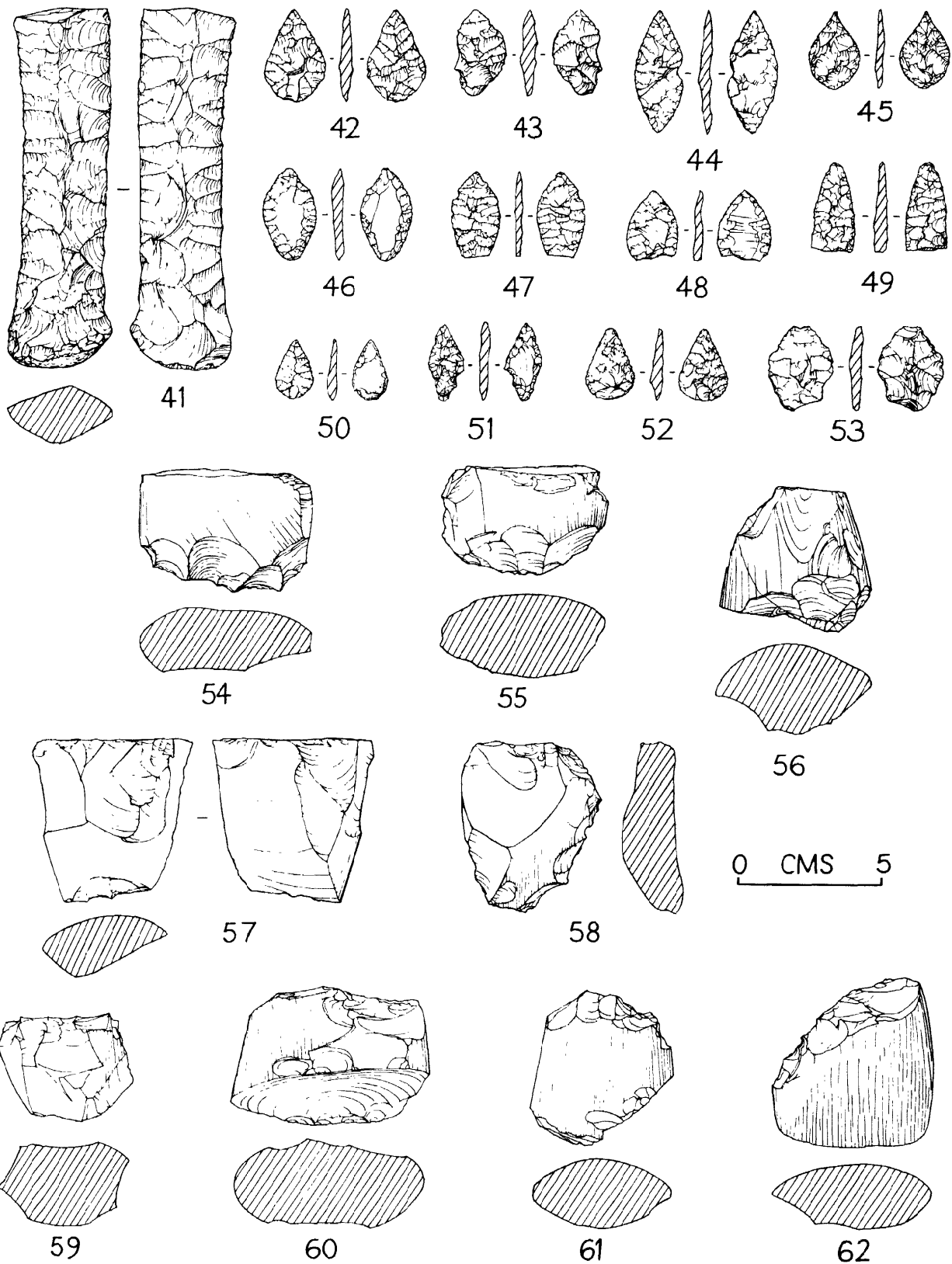


Fig 22 Struck flints: 41, fragmentary single-piece sickle; 42-53, leaf arrowheads and fragments; 54-8, fragmentary polished axes. Group VI rock; 59-62,

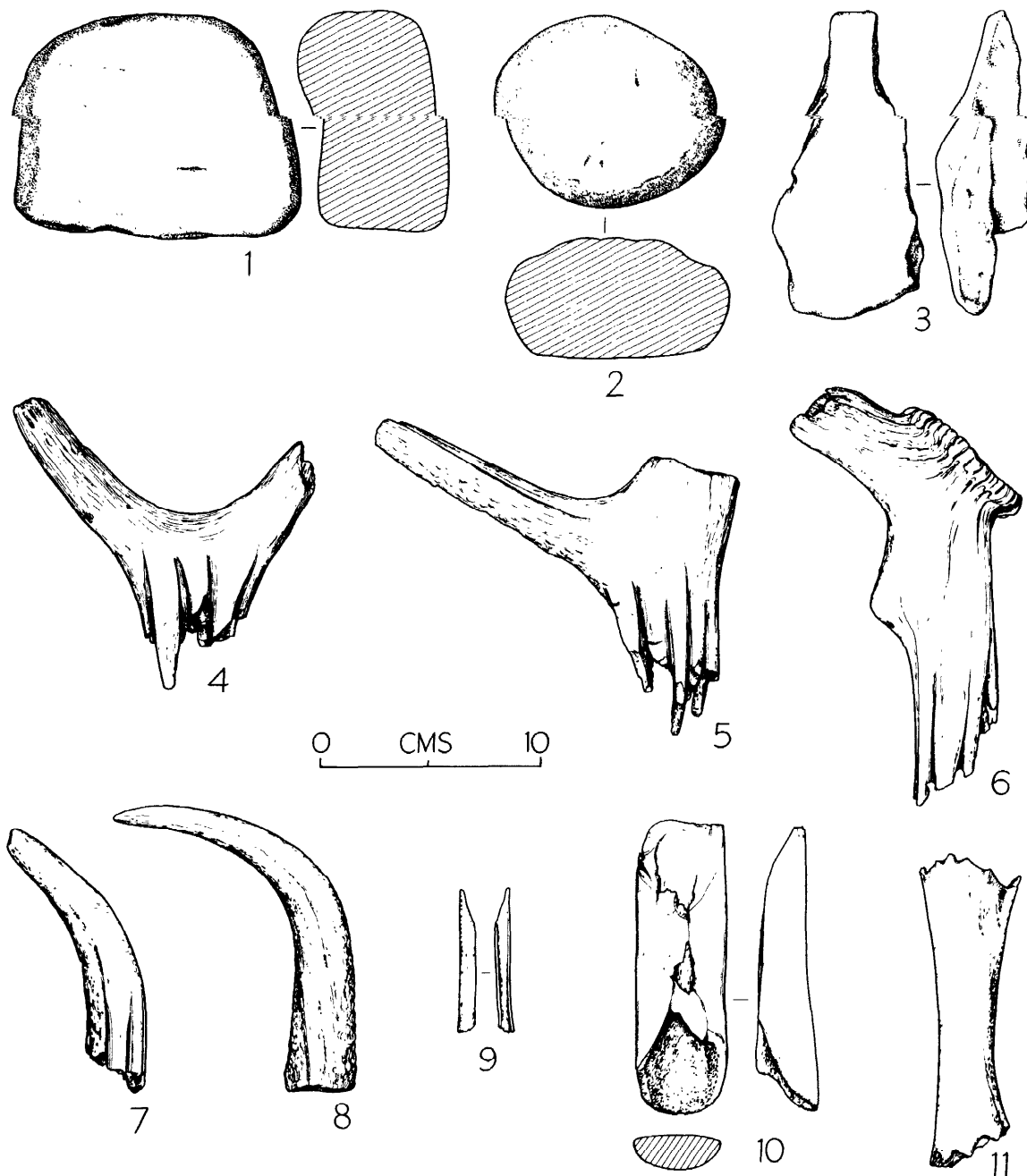


Fig 23 1, quartzite hammerstone; 2, quartzite rubber; 3, sandstone grinder; 4-7, antler combs; 8, antler point; 9, bone point; 10, bone scoop or chisel; 11, long bone with jagged end

enclosure, but they also occur as erratics in second terrace gravels. Identifications were very kindly made by Mr P Powell of the University Museum, Oxford.

4 rubbing stones (eg no 2) were found, quartzite pebbles of similar origin, ranging in weight from 15 to 20 oz, with one face ground flat and polished smooth by use, and other faces ground but convex. These may have been used in a variety of grinding and rubbing tasks.

A grinder (no 3) of sandy limestone 155 mm long, 65 broad and 40 thick, was recovered by Leeds, derived from the lower Calcareous Grit to be found about 3 miles west of the enclosure. It has a smooth upper face divided into two parts by a slight ridge formed by the meeting of two slightly concave surfaces. Leeds suggested it may have been an axe-sharpener (1927a, 448) but it would have been ideally suited to corn grinding, since it contains abundant quartz grains.

In addition, a piece of coarse very highly ferruginous grit was found in the upper filling of the inner ditch, section C-II. This derives from Lower Greensand, the nearest local outcrop being at Nuneham Courtenay, some 23 miles across the Thames. It does not appear to have been used.

Bone and antler

Antler combs (Fig 23, nos 4-7) 10 antler combs were found: 9 by Leeds and one from the inner ditch segment C2, layer 3, which was used as the sample for radiocarbon determination BM-355 reported below. All were finished, except a fragmentary one (1927a, pl Ll Id) which appears unfinished. 4 were made on the crown, one on the middle beam and 3 on the base, with one made on a tine, probably a brow tine. Shed antlers had been used. Some kind of burin was presumably used to cut the longitudinal grooves, but as at other sites none was found. Each comb has from 7 to 10 prongs. These show varying degrees of polish - sometimes intense, and extending to the grip or handle. One may follow the analogy provided by the single and double ended bone combs or 'kumofin' of the Point Barrow Eskimos used for skin dressing (Piggott 1954).

Interestingly all but one came from Leeds's excavations. Moreover, he reported deer bones as common in both seasons (1928, 476), whereas deer were only represented in the 1963-4 excavations by two small antler fragments. This difference may indicate differently spaced activities within the enclosure, or may perhaps suggest a short occupation in period 1, since otherwise the traces of various activities might have become blurred.

Antler points (eg no 8) 4 out of 7 pieces of tine recovered from Leeds's cuttings may be accidentally broken, naturally polished tips. However 3 about 15 cms long show signs of use. One appears flattened on two sides and is polished over its whole length (Leeds 1927a, pl LII, fig lc). Another had been cut cleanly across its base (no 8), while the third, broken at the butt, had been waisted at the tip.

Bone points (eg no 9) 6 points were recovered in Leeds's cuttings, made on whole and split bones.

Scoop, chisel or gouge A scoop or chisel 147 mm long (no 10), made of ox tibia, was found by Leeds. A rounded end had been produced by cutting back the flat surface of the bone; its edge is poorly preserved. The other end is damaged. Similar gouges were plentiful at Windmill Hill.

Long bones with jagged edges (no 11; also Leeds 1928, pl LXX111 f & g). Among the many broken bones 5 may be selected from Leeds's excavations for their high polish, presumably resulting from use. They have one or both epiphyses knocked off, leaving a jagged end, and may have been analogous to the antler combs. No parallels can be recalled.

Discussion

Similar bone and antler industries are known from other causewayed enclosures where these materials are preserved. These industries at Abingdon, like the flint industry, support the hypothesis that the enclosure was used for settlement with a range of different activities.

Animal bones

by C L Cram, Reading Museum

All the bones found during excavations at Abingdon in the 1963/4 excavation were studied: the distribution of the 1940 specimens is set out in Table 16.

Table 16 Total numbers of bones by layers

PERIOD 1	Inner ditch area C: sections C-II, III: layer 45, 10; 46,6; Sla, 4; 52, 8	28
PERIOD 2	Inner ditch area C: sections C-I: layers 7,8,9, 10a, 13,14,73	73
	Inner ditch area C: sections C-II, III: layer 2, 74; 3, 198; 4a-c-43, 1479	1751
	Inner ditch, pit B3: sections BI (BII): layers 3 (44), 85; 4 (10-26), 2; 5 (17), 1	88
		1940

Table 17 Identification of bones

	Cattle	Cattle size	Pig	Pig size	Sheep/ Goat
Cranium	33	72	4	30	2
Face	60	10	122	3	17
Vertebra, atlas	3	-	-	-	-
axis	5	-	-	-	-
i sacrum	5	-	-	-	-
caudal	-	2	-	1	-
other	-	106	-	26	-
Rib	-	175	-	50	-
Scapula	7	14	11	12	4
Humerus, proximal	2	-	-	-	-
shaft	1	2	8	13	-
distal	12	2	6	-	-
Ulna	23	5	5	-	-
Radius, proximal	22	-	5	-	2
shaft	1	-	1	4	-
distal	19	-	-	-	4
Carpal	15	-	1	-	-
Metacarpal, proximal	7	-	-	-	2
shaft	-	-	-	-	-
distal	3	-	-	-	-
Pelvis	14	13	4	14	4
Femur, proximal	4	3	1	1	1
shaft	-	11	2	4	-
distal	2	3	-	-	-
Patella	5	-	-	-	-
Tibia, proximal	4	3	1	4	-
shaft	4	5	5	6	-
distal	10	-	4	1	2
Fibula	-	-	6	-	-
Tarsal, as tragalus	12	-	3	-	2
calcaneum	9	1	3	-	3
other	3	-	-	-	-
Metatarsal, proximal	11	-	5	-	1
shaft	3	-	-	-	-
distal	6	-	3	-	3
Phalanx, 1	16	-	3	-	3
2	17	-	-	-	-
3	8	-	1	-	-
Marrow bone, fragments	-	63	-	91	-
complete	2	-	6	-	4
TOTAL	348	490	210	260	54
					= 1362

Notes on Table 17

(1) No attempt was made to separate the bones of sheep and goat except by the characteristics of the horn cores and cranial sutures; a horn core from cutting C2, layer 19 is of goat. Metacarpals and metatarsals of pig are classed together as metapodials. Bones of rodents and small bird were evidently intrusive and have been ignored.

(2) **Complete marrow bones:** Cattle: 1 radius, 1 metatarsal. Pig: 1 humerus, 1 ulna, 4 metapodials. Sheep/goat: 1 radius, 1 metacarpal, 2 metatarsals.

(3) **Burnt bones:** Cattle size: 2 ribs, 3 marrow bone fragments, 1 proximal end of tibia. Pig size: 1 marrow bone fragment. Unidentifiable: 8 fragments.

(4) **Wild species** not included in the table: red deer, 1 base of antler (shed), 1 antler fragment, 1 neck of scapula; canid, 1 maxilla fragment.

(5) **Unidentifiable bones:** cuttings B3, B9 and B10, 26; cutting C1, 33; cutting C2,515.

(6) **Articulated bones:** the articulated skull, mandibles, ribs and vertebrae of a young sheep with slightly worn second permanent molars in layer 52 of cutting C2.

Table 18 Comparison of selected collections according to species and divisions of the carcass

(The entry for layer 20c represents a major sample of the total from that layer)

	Identification of bones								Divisions of the carcass of the two dominant species											
	Cattle	Cattle size	Pig	Pig size	Sheep/goat	Wild	Unidentifiable	Total	Head	Upper limb	Lower limb	Rib	Vertebra	Marrow bone fragment	Head	Upper limb	Lower limb	Rib	Vertebra	Marrow bone fragment
	Cattle & cattle size								Pig and pig size											
Inner ditch, pit B3	32	17	3	8	2	-	26	88	13	7	15	6	2	6	2	6	1	-	-	2
Inner ditch, area C (C-I)	9	16	6	5	4	-	33	73	8	9	2	2	2	2	3	3	1	2	-	2
Inner ditch, area C (C-II, III)	49	55	18	17	6	3	50	198	20	24	14	13	23	10	14	9	2	5	-	5
4a-c	38	86	39	49	6	3	50	268	21	27	17	26	19	14	25	23	5	2	-	6 27
4b+5d	33	66	41	51	9	1	150	351	46	20	5	19	4	5	29	23	1	9	-	6 24
5a-c	32	52	23	16	6	-	65	194	15	21	9	2 6	10	3	12	10	4	8	-	5
13	34	35	19	20	2	-	59	169	13	19	7	20	7 3	3	12	10	4	3	7	3
18a-c, 19a	17	23	6	12	2	-	18	78	8	6	7	14	2	3	10	6	-	2	-	-
20c	24	37	20	9	1	-	43	134	4	10	15	16	10	6	14	8	2	-	1	4

The bones were generally well preserved. Table 17 shows that 616 were identified as to species, 750 as to species size (where the skeletal part could be recognised but only as from an animal of 'cattle size' or 'pig size'), and 574 were considered unidentifiable. The 616 identified as to species are retained in the Department along with details of all the bones for which space is not available in this report; these details are referred to below as the archive.

Table 18 shows that there was no major discernible difference between the collections either in the different trenches or in the layers within the trenches. (Note also that the 15 burnt bones were haphazardly distributed.) The excavated evidence discussed above suggests that the bones along with other refuse were dumped in the ditches after having been first accumulated elsewhere and also that the ditches were re-dug at least once. Any particular original assemblage may have been dispersed, and the bones can therefore be treated as one assemblage for the purposes of this report.

Species represented

Table 19 shows the frequencies of the species according to weight of bone, number of bones and minimum number of individuals.

By all criteria, the ranking of the species is in the same order and is similar to that found in previous excavations at Abingdon (Case 1956a, 16, 18; Leeds 1928, 476) although Leeds found that bones 'of ox and pig predominated but deer and sheep were also common'. Both sheep and goat are represented among the ovicaprid remains (Table 17, note 1). One humerus of a pig has a perforated olecranon fossa, a not unusual condition among pigs.

The remains of wild animals are few. Some of the cattle bones may be of *Bos primigenius* as shown by the measurements (in the archive) compared to the data from other sites (Grigson 1965, 1969; Harcourt 1971). The pig bones are all apparently domestic, the measurements not attaining those of the wild pigs reported from Star Carr (Clark 1954). The red deer scapula is at the top of the size-range from Star Carr (*ibid*, 83). The large size of the canid bone suggests that it is of wolf rather than dog.

The greater number of pig than of ovicaprid bones at Abingdon, as at other Neolithic sites (Clark 1947) probably reflects a wooded environment. A comparison of pig keeping in present-day New Guinea (Laycock 1975;

Rappaport 1971) suggests that at Neolithic Abingdon either the pigs were kept penned up, or that, if they were allowed to forage freely, growing crops nearby would have needed stout protection because of the animal's destructiveness when looking for food (Davidson 1966, 72, 476). Evidence from New Guinea also suggests free ranging pigs may have been fed from the crops, to prevent their turning feral.

Ages at death

Evidence from the eruption and wear of teeth and fusion of epiphyses of bones for the ages at death is detailed in the archive. Using the criteria of Silver (1969) it appears that the cattle often lived for more than 4 years but a quarter of the stock died in their first year. The teeth, especially of pigs, show all stages in the development of the dentition and suggest that animals died at all ages and therefore at all times of the year. This suggests occupation of the site at all seasons but does not prove continuous occupation.

The difference of slaughtering pattern between cattle and pigs could be explained by simple economics (Higham & Message 1969) or by social factors (Cranstone 1969; Laycock 1975).

Slaughtering

No frontal bones were found which could demonstrate the presence or absence of holes from pole-axing, a method of death suggested elsewhere (Piggott 1954, 28). Slaughtering by other methods such as cutting an artery would leave no evidence on the bones. The presence of waste bones such as the head and feet (Table 17), suggests that the animals were butchered on the site, and we may presume them to have been slaughtered where they were butchered.

Table 19

	Cattle	Pig	Sheep/ Goat	Red Deer	Canid	Total
Weight of bones (kg)	17.95	2.61	0.57	0.08	0.01	21.22
%	84.6	12.3	2.7	0.4	0.1	
Number of bones	348	210	54	3	1	616
%	56.5	34.1	8.7	0.5	0.2	
Minimum number of individuals	16	14	5	1	1	37
%	43.2	37.8	13.5	2.7	2.7	

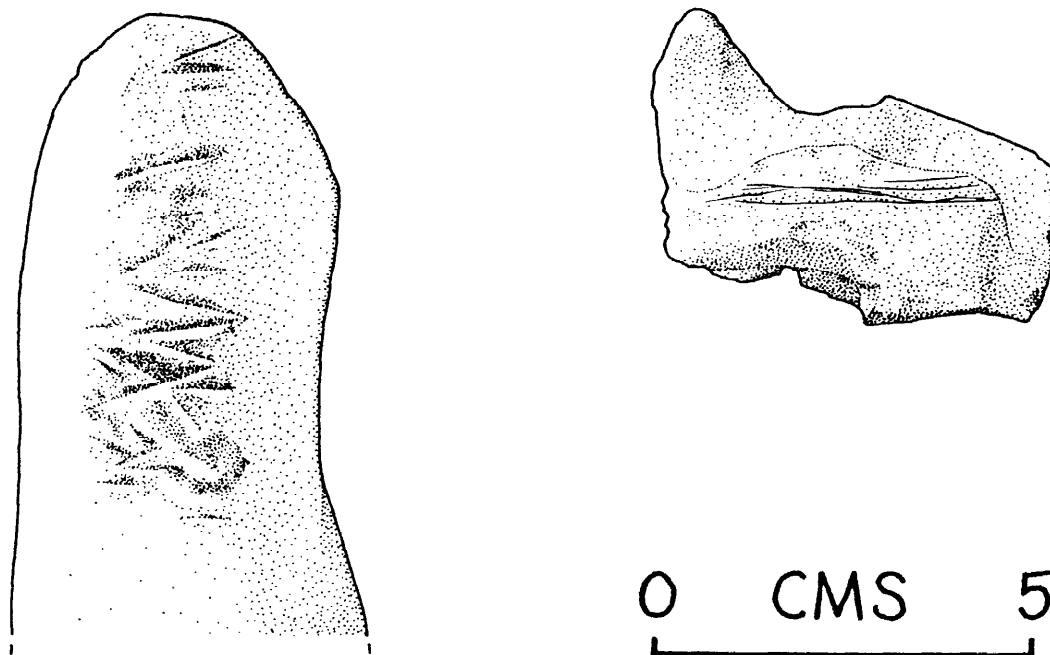


Fig 24 Cut marks on animal bones

Butchery

The bones show frequent cut marks which were presumably usually made by flint knives during butchery, as has been reported from Germany, Switzerland and Portugal (Von den Driesch & Boessneck 1975). The sample displayed in Table 20 shows that they are common on the bones of the upper limb but rare on head and foot bones. Cut-marked bones have on average 9 cuts. Many marks can be seen only with the naked eye under strong oblique light, but some only appeared under a $\times 20$ stereoscopic microscope. The knife marks are straight and sharp (Fig 24), contrasting with the rounded grooves of the natural channels in the bone and of the root etchings which are common in this collection. Dismembering was probably done by the easy method of cutting ligaments and tendons with a knife, rather than the strenuous method of smashing bone with a chopper as has been claimed at North American sites (Kehoe & Kehoe 1960; White 1952-55). The chopper marks found on some bones are likely to have come from splitting bones for marrow.

Differential preservation of parts of the skeleton

The figures in Table 17 show that not all parts of the skeleton are equally well represented, when allowance is made for the different numbers of particular bones in the skeleton. Some bones may be rare by chance because of the small size of the sample. The foot bones of pigs are less

common than foot bones of cattle, possibly because pigs were butchered away from the site more frequently than cattle. Cattle scapulae may have been used for digging (Smith 1965, 218). Caudal vertebrae may be rare because they remained with the hide when it was taken elsewhere for leather. Dogs and other scavengers may have scattered and consumed some bones (Isaac 1971, 282; Muller 1962, 102). Likely explanations for the general state of breakage of the bones are splitting for marrow and the chopping up of bones to boil them in water to extract the fat (Cram 1973; Leechman 1951). Bones from the Trundle (Curwen 1929, 68) and Whitehawk (Curwen 1936, 88) are reported as being broken up as at Abingdon, but those from Staines (Robertson-Mackay 1962) are said to be generally whole.

Weights of meat

An estimate of the carcass weight represented by the bones can be made by multiplying the minimum numbers of individuals of each species by an estimate for the weight of one individual. In the case of cattle this estimate for one individual is calculated as 474 kg and is based on a comparison of measurements of the Abingdon cattle bones with the skeleton (in the University Museum of Archaeology and Ethnography, Cambridge) of a shorthorn cow weighing 537.5 kg at death. The weight of pigs was taken as 90, sheep/goat 55, and red deer 150 kg. The carcass weight should be halved to give an idea of the weight of meat available. This can be calculated as 3792 kg for cattle (82 per cent of the total amount available from the minimum number of individuals of all species); 630 kg for pig (13.5 per cent); 137.5 kg for sheep/goat (3 per cent) and 75 kg for red deer (1.5 per cent). Evidence for the minimum number of individuals is set out in detail in the archive.

Alternatively the weight of meat can be estimated by taking the weight of bone given in Table 19 to be 7 per cent of the carcass weight (Kubasiewicz 1956), giving the following figures: cattle 128.2 kg, pig 18.6 kg, sheep/goat 4.1 kg. and red deer 0.6 kg. The total weight of meat thus

Table 20 Cut marks on bones identified to species from cutting C2, layers 4a-c and 5b (A = without cut marks, B = with cut marks, C = number of cut marks)

	Cattle			Pigs			Sheep/Goat		
	A	B	C	A	B	C	A	B	C
Head	11	1	6	24	4	23	5	—	—
Upper Limb	5	11	183	6	6	47	2	—	—
Lower Limb	5	—	—	1	—	—	2	—	—

Table 21a Subfossil mollusca from the inner ditch

Context	<i>Cepaea</i> <i>undetermined</i>	<i>C nemoralis</i> <i>unbanded/midbanded</i>	<i>C hortensis</i> <i>Unbanded/fivebanded</i>	<i>P elegans</i>	<i>H italia</i>	<i>Others</i>	<i>A arbustorum</i>
<i>Area B:</i>							
B3, section B1, layer 6:							
<i>period 1</i>	1	2	-	1	4	-	1
B3, section B1, layers 4-5:							
<i>periods 1-2</i>	4	10	-	1	4	2	-
B3, section B1, layer 3:							
<i>period 2</i>	7	12	2	2	5	25	14
<i>Area C:</i>							
C2, layers 20c, 26, 31, 37a-b, 51a:							
<i>periods 1-2, almost entirely 2</i>	6	16*	5	-	4	4	8
C2, layers 9, 10a, 11, 13, 15, 17a-e.							
<i>44a: periods 1-2, almost entirely 2</i>	8	29	6	-	12	12	18
C1, layers 3, 6, 7, 8:							
C2, layers 2, 4a-c; 5b, 7:							
<i>period 2</i>	9	26	12	3	7	32	13
	35	95	25	6	33	79	53
							8
							4

*one is white-lipped, but on size and shape appears to be *nemoralis*, not *hortensis*

Table 21b Subfossil mollusca from the outer ditch

Layer	<i>Cepaea</i> <i>nemoralis</i> (L)	<i>Cepaea</i> <i>hortensis</i> (Müller)	<i>Cepaea</i> <i>Unidentified</i>	<i>Trichia</i> <i>hispida</i> (L)	<i>Helicella</i> <i>itala</i> (L)	<i>Helicelline</i> <i>sp.</i>	<i>Unidentified</i>
2a	1	1				1	1
3	38	18	15	2	6		1
30	50	41	37		4		3
4	1	1			1		1
	90	61	52	2	11	1	6

Note: Details as to lips and banding are available in the Department of Antiquities, Ashmolean Museum

calculated is 151.5 kg, which even when doubled to allow for the unweighed bone not identified as to species, is only 6 per cent of the total calculated from the number of individuals (4634.5 kg). Two drawbacks to this second method are of course that the weight of bone may change while in the archaeological deposit, and through evaporation of the moisture content after excavation.

Bone refuse

The frequencies of species at Abingdon are similar to other causewayed enclosures, except Knap Hill (Connah 1965) and Windmill Hill (Smith 1965) where sheep/goat outnumbered pigs. Table 17 shows the regular, representation of the main divisions of animal carcasses at Abingdon, which in this respect may be compared with the assemblage from Windmill Hill. These aspects, together with the disposition of the bones in their excavated contexts, emphasise the absence of criteria to distinguish the Abingdon bones from household rubbish. Possibly contrary evidence however at Abingdon is given by the articulated head and thorax of a young sheep from primary silt in layer 52 of cutting C2. These bones were found with 5 upper limb bones of cattle (4 of these having cut marks) and 2 cattle-size skull fragments. The sheep bones were badly weathered so that the number of vertebrae and the presence or absence of cut marks could not be detected. Complete articulated skeletons have come from other causewayed camps, either from ditches (a dog, young sheep and young goat as well as two children from primary silt at Windmill Hill; Smith 1965, 9 and 20), or from pits (2 dogs from Maiden Castle; Wheeler 1943, 86; and a partly dismembered roe deer from Whitehawk; Curwen 1934a, 102). Articulated parts of skeletons were also found in ditches at Knap Hill (Connah 1965, 17),

Robin Hood's Ball (Thomas 1964, 11), Whitehawk (Curwen 1934a, 104) and Windmill Hill (Smith 1965, 9). Thus whole or partly articulated skeletons have been reported at all the causewayed enclosures from which any appreciable number of animal remains have been studied, except for Combe Hill (Musson 1950). That some were dumped, and perhaps purposefully covered, after going bad (Burnez & Case 1966), may be as good an explanation as their being the remains of feasting or ritual (Smith 1965, 20). Animal remains found with primary burials in earthen long barrows are mainly from the head and feet of cattle (Piggott 1962b; Ashbee 1970, 74-7 and 158-60). The bones from the ditches and mounds resemble collections from causewayed enclosures.

Evidence for the minimum number of individuals and their ages at death

For each species the parts of the skeleton were first grouped according to the evidence they gave of the age at death, and then the number of examples were counted of the same skeletal part in each age group to give the minimum number of individuals (MNI) in that group. The counts are available in the Department of Antiquities, Ashmolean Museum.

Measurements of bones

All measurements were from mature bones as shown by the fusion of the epiphysis, except for the horn cores, astragali and distal phalanges which have no epiphysis. These too are available in the Department of Antiquities, Ashmolean Museum.

Acknowledgments

I am grateful to Mr J Hull, Zoology Department, University Museum, Oxford, for the use of comparative

skeletal collections, and to Mr R E Chaplin, Dr P A Jewell and Dr M L Ryder for comments on an early draft of this work.

Subfossil mollusca

by Professor A J Cain, Department of Zoology, University of Liverpool

Samples from the inner ditch

In these collections, the only sample from area A yielded one indeterminate fragment. The compositions of those from B and C are shown in Table 21a. The species involved are:

Cepaea nemoralis (L)

Cepaea hortensis (Müller)

Cepaea undetermined - juveniles, and large fragments not certainly assignable to one of the above two species

Pomatias elegans (Müller)

Helicella (*Helicella*) *itala* (L)

Arianta arbustorum (L)

'Others' represents various proportions of *Oxychilus* spp and *Trichia* cf *hispida* (L)

Although there are considerable differences in proportions of the species, they are not greater than one might expect to find as the result of patchy distribution of microhabitats over short distances at the present day, and all samples can be taken together. They indicate a highly calcareous and well-drained habitat with very open grassland or low herbage and no bushes in places (*H itala*), and the high proportion of unbanded specimens and those with only the middle band in *Cepaea nemoralis* suggest a distinctly warmer climate than at the present day. The abundance of the land operculate snail (*Pomatias elegans*) contrasts with its very restricted distribution (mainly on steep chalk and limestone slopes) in the Thames valley at present. *Editorial note:* Evans (1972a, 133-5) records that *Pomatias elegans* favours broken or loose soil into which it can burrow (thus ditch deposits) and a more congenial temperature than today.

The presence of *Arianta arbustorum*, usually in damp ground and common near the river need mean no more than that the habitat was locally shaded and damp except in summer, or locally with a thick stand of broadleaved herbage.

Samples from the outer ditch

(re-examination of the sample reported by Grensted in Case 1956a). See Table 21b.

These Neolithic samples of *Cepaea nemoralis* (L) agree well with others in southern England examined by Currey and Cain (1968) in being largely bandless, and in those shells with bands having only the middle one of the usual five (00300). Currey and Cain showed, and further evidence is given by Cain (1971), that in association with the warmer climate of the Neolithic, this species has shells made light in colour by the genetic removal of all or nearly all the normal black bands, presumably to reflect back sunlight and keep its body temperature low - since this is a species that occasionally sits out by day instead of hiding itself. At present in the Oxford district generally, a high proportion of five-banded shells is usual (Cain and Sheppard 1954). The nearest sample to Abingdon recorded by Currey and Cain (1968) has 60% five-banded. Remarkably, the very closely related species, *C hortensis*, shows no such variation with climate. It normally lives in hollows and lower places than *nemoralis*, in which cold air and mist accumulate during the night (both are active mainly at night); or, in country dominated by *nemoralis*, *hortensis* is restricted to woods.

Both species require moderately to very calcareous soil, and cannot stand water-logging. *Helicella itala* not only requires very high calcium content in the soil, but is intolerant of shade, even of a few bushes, and is normally found at the present day on open dunes or downs, or limestone pavements. As snails move very little from where they are born to where they die, they are indicators (if the shells are found *in situ*) of exact ecological conditions within a few feet only of the shell. *Trichia hispida* (L) is a widespread species, not uncommon on dry grassland on the Marlborough Downs at present, but also in damper and shadier areas. If the species can be taken together as a natural assemblage (and they may be found in close proximity on high downland at the present day), they suggest open, well-drained, very calcareous grassland, with *C hortensis* either nearer the river or perhaps at the edge of woodland nearby. If they are an artificial gathering, then the only certain indications of local ecology are that there must have been open grassland (with at most some low broadleaved herbs) where the *itala* were found, and that the area in general was calcareous. Almost all the adult shells are whole, either because they crawled into the ditch or were buried there, or perhaps because they were cooked, the animals were extracted, and the shells were flung into the ditch. This is hardly likely for the small species *Helicella* and *Trichia*.

The occurrence of what seem to be white-lipped *C nemoralis* is of special interest since they seem to have been associated with a somewhat humid atmosphere (Cain 1971). The shells in the present collection are mostly in very good condition, the lip and the callus in dark-lipped *nemoralis* being obviously pigmented, and in *C hortensis* quite white. There is sometimes difficulty when there is a considerable size-range of adult specimens (as here) in separating all adult specimens of the two species; but on size and lip shape, those recorded here as white-lipped *nemoralis* do seem to belong definitely to that species. At present, white lip in *nemoralis* is rare or absent in England and France but reaches considerable proportions locally in western Ireland and the Pyrenees.

Impressions of plant remains

by P Murphy, Centre for East Anglian Studies, University of East Anglia, Norwich

Grain impressions on prehistoric pottery from Oxfordshire and Berkshire in the Department of Antiquities were examined over 30 years ago by Dr Hans Helbaek, and subsequently published in two country-wide surveys which have formed the basis of the study of ancient crops in the British Isles (Jessen & Helbaek 1944; Helbaek 1952). Neolithic pottery from Abingdon produced only a single impression of emmer, but it appears that Dr Helbaek was not able to examine the entire collection of pottery from the 1926-7 excavations, and the more recent excavations have produced further material. Consequently a full re-examination of all pottery from the site has been undertaken.

Impressions on other Neolithic and Bronze Age pottery and daub from the region in the Department of Antiquities are listed and discussed below (p 152).

Identifications

With one exception the impressions from this site are on sherds containing inclusions of fossil shell and limestone, probably derived from the local Kimmeridge clay. A single specimen is on a body sherd with flint tempering, which probably was also locally made (see Dr Williams' petrological report above). The crop plants and wild species represented can, therefore, be assumed to have come from the immediate environs of the site.

Some unusually large impressions, including entire spikelets of cereals and a fruitstone of sloe are present, but small-seeded cultivars and weeds are not represented. Unfortunately the coarse fabric of the pottery favours neither the preservation nor the detection of such remains. Where fragments of fossil shell have fallen from the pottery, impressions superficially resembling cereal chaff are left; and this has certainly acted to disguise true impressions of chaff.

The single impression of an emmer grain reported by Helbaek could not be re-located, and may well be one of the examples described below. The plant remains identified are listed in Table 22.

Hordeum vulgare (Pl 1A)

A sherd from the outer ditch (1969.232) includes an impression of three spikelets of six-row hulled barley, together with part of their internode. The whole structure is slightly distorted. The left-hand grain presents its dorsal view, clearly showing the lemma nerves. The median grain is also seen in dorsal view, but the nerves are less clear: the bases of the glumes survive, however. The right-hand lateral grain is the least well-preserved, but seems to have twisted around so as to display its ventral side. It is possible to make out the margins of the lemma where they overlap the palea. Measurements have not been made, since none of the grains is complete.

Triticum dicoccum (Pl 1B)

Three grains show features characteristic of emmer. They are fairly slender, and pointed at base and apex, with rather rounded ventral cheeks. A specimen seen in end

view has a rounded triangular cross-section. The grains are all small; their dimensions are as follows:

		Length (mm)	Breadth (mm)	Thickness (mm)
1969.286	Lateral view	5.9		2.0
	End view	-	3.5	3.0
1969.287	Oblique ventral view	5.5	c 2.0	

A body sherd (1969.285) has an impression of part of an emmer spikelet. The internode is missing, but two grains still enclosed within at least one glume are clearly visible. Impressions of fragments of spikelet forks, unfortunately rather eroded (1969.277, 1969.288), may be of emmer.

Cereal straw

In two cases the cut ends of straw were used to impress patterns on the surface of pots. Rim decoration on pot 54 (1969.276) is of this form. In addition, quite large numbers of sherds bear impressions of scraps of straw or grass culms. These were not identified, and do not appear in Table 22.

Prunus spinosa (Pl 1C)

A rim sherd from the 1954 excavations (1969.232) has an impression of the lateral view of a fruitstone of sloe, clearly showing the rough-surfaced endocarp. The dorsal ridge is also visible. The stone is 6.9 mm long by 6.0 mm broad.

Malus sylvestris (Pl 1D)

Lateral impressions of seeds of apple occur on four sherds. Two specimens (1969.285) and 1969. 275) show clear facets formed by the pressure of adjacent seeds. The dimensions of these seeds are as follows:

	Length (mm)	Breadth (mm)
1969.275	7.4	4.0
1969.280	6.9	3.9
1969.283	7.5	4.1
1969.285	-	3.8

Leaf

A body sherd from 'section 1' (1969.286) bears the impression of the petiole and basal part of the lamina of a small leaf. The maximum width surviving is 9 mm, though less than half of the blade is represented. Veins arise alternately from the midrib.

Discussion

The total number of impressions is not large, and the conclusions which may be drawn from them are therefore limited. It is clear, however, that the crops cultivated at, or near, the site of Abingdon included emmer wheat (*Triticum dicoccum* Schubl) and six-row hulled barley (*Hordeurn vulgare* L emend Lam). Impressions of emmer have been reported from several Neolithic sites in southern and eastern England, including Maiden Castle, Hembury, Windmill Hill (Helbaek 1952,224), Hurst Fen (Clark *et al* 1960,2 13) and Broome Heath (Evans & Davies 1972, 90). Emmer appears to have been the principal Neolithic wheat. Neither einkorn, spelt, nor bread wheat was identified at Abingdon, and indeed these wheats occur only at low frequencies at a few sites elsewhere. Impressions of hulled barley have also been reported from Maiden Castle and Windmill Hill.

The pottery from Abingdon has produced eight impressions of wheat grains and spikelets and one of barley. In general wheats are better represented by impressions on early Neolithic pottery than is barley (Helbaek 1952). Dennell (1976) has recently re-interpreted Helbaek's data, particularly the impression's from Windmill Hill, in the light of the

Table 22 Impressions on sherds from Abingdon

<i>M u s e u m</i>			
accession Number	Type and location	Species	Type of Impression
1969.232	Rim, type A1		
	Outer ditch, layer 5	<i>Prunus spinosa</i> L	Fruitstone
1969.232	Body sherd, outer ditch, layer-6	<i>Hordeum vulgare</i> L emend Lam	Internode with three spikelets
1969.275	Pot 23, 1926/7: N2, N3, S	<i>Malus sylvestris</i> Miller	Seed
1969.275	Pot 36: 192617: N3	Cereal indet	Caryopsis
1969.276	Pot 54, 1963/4: C2, 4a-c, 5b	Cereal indet	Straw used as rim decoration
1969.276	Pot 57, 1963/4: C2, 3, 4a-c	Cereal indet	Caryopsis
1969.277	Pot 90, 1926/7: N1, N2	<i>Triticum</i> sp	Spikelet fragments
1969.279	Rim, type A3, 1926/7	Cereal indet	Caryopsis
1969.280	Rims, type R1, 1926/7	Cereal indet	Straw as decoration
		<i>Malus sylvestris</i> Miller	
1969.283	Body-herd, 192617: W end of S trench	<i>Malus sylvestris</i> Miller	Seed
1969.285	Body sherds, 1926/7: N1, N2	<i>Triticum dicoccum</i> Schubl	Spikelet
		<i>Malus sylvestris</i> Miller	Seed
1969.286	Body sherds, 1926/7: 'section 1', Prob. A-B in S1	<i>Triticum</i> sp <i>Triticum dicoccum</i> Schubl	Caryopsis Caryopsis
		<i>Triticum</i> sp <i>Triticum</i> cf <i>dicoccum</i>	Caryopsis Caryopsis
		Cereal indet Indeterminate	Leaf
1969.287	Body sherd 1926/7: 'Section 1'	<i>Triticum dicoccum</i> Schubl	Caryopsis
1969.288	Body sherd, 1926/7	<i>Triticum</i> sp	Spikelet fragments

information provided by petrological analysis about the sources of Neolithic pottery. He proposes a new theory of Neolithic agriculture in which wheats are thought to have been the principal crops on heavier clay soils whilst both wheat and barley were of importance on lighter calcareous soils. Unfortunately, the sample from Abingdon is so small that it would be premature to attempt to relate the results to Dennell's model.

The remaining impressions from Abingdon are of wild fruits: four of apple and one of sloe. Both fruits would have been gathered when in season, and could have been dried for winter storage.

Charcoals

by A C Western, Department of Antiquities, Ashmolean Museum

The following were recorded in the layers of cutting C-2: *Quercus* sp, 3,4a-c, 5b, prob 7, 9, 10a, 11, 13, 15, 17a-e, 18a-c, 19a, 20c, 45,46; *Populus* sp, 5b, prob 9, 10a, 17a-e, prob 45; *Carpinus betulus* L, 15, 17a-e, 46; *Fagus sylvatica* L, 5b; *Alnus glutinosa* (L) Gaertn, 24,26c; *Alnus* sp, poss 15; *Acer*, prob *A. campestre* L, 18a-c, 19a, 20c; *Pyrus* sp prob, 17a-e, 24, 26c; *Pyrus* type, 4a-c, 9, 10a, 13, 15,46; (or *Malus*), 51a; *Prunus* sp, 26; *Crataegus* sp, 3, 4a-c, 5b; (or *Malus*), 8, 10a, 15, 17a-e, 18a-c, 19a, 20c, 31,45, 46; *Corylus avellana* L, 15, 17a-e, 18a-c, 19a, 20c, 24, 26c; *Sorbus cf aria* L 18a-c, 19a, 20c; *Sambucus nigra* L, 45,46; *Euonymus europaeus* L, 10a; *Ligustrum vulgare* L, 31; *Clematis vitalba* L, 5b, 26; *Hedera helix* L, 5b, 51a.

The following were recorded in layer 3 of cutting B-1: *Quercus* sp, *Populus* sp, *Crataegus* sp, *Hedera helix* L (and prob 4).

The charcoals were examined by the normal methods, at x 10, x 50, x 120 and x 400 diameters as necessary, following the normal features as described in the literature: *Forest Products Research Laboratory Bulletins* 22 (1959), 25 (1952), 46 (1961). There were a considerable number of specimens, but as many as were large enough to handle were examined, because it was reasonably clear most of them were hearth material or the remains of small artefacts, and were not structural. It was hoped, in this way, to obtain the widest possible view of the range of species available in the district.

Specific names, when given, are merely suggested as likely because only one species of these genera is known to be found in England either at present or in the plant record (Godwin 1976). Species are not normally to be distinguished from the wood or charcoal in most genera.

There is a high representation of genera of the family *Rosaceae*. These are not usually trees of the high forest, but are found round the margin of forest or in scrub where they are not shaded by the taller and denser trees. Their presence may indicate clearings in the forest, though some specimens may have been brought from the slopes of the downs where the soil is thinner and the plant cover would also have been less dense than in the river valley.

'*Pyrus* type' may include other rosaceous genera, especially *Sorbus*, as they are much alike and their diagnostic features, when they exist, are often unclear in charcoal.

It is a little unusual to find several specimens of climbing plants such as *Hedera* and *Clematis* because they are not really very suitable as fuel, and they may have been present incidentally amongst the firewood, but Dimbleby has pointed out the usefulness of *Clematis* as rope or cordage (1967, 144). One would also expect on a site so near the river that there would be more *Alnus* than

appears, which reinforces the long-recognized point that such charcoals can give only a selective picture of the environment (Godwin & Tansley 1941).

Radiocarbon dates

The following determinations were made at the Research Laboratory, British Museum, through the kindness of Mr G de G Sieveking. They have already been published (Barker *et al* 1971).

Context	Lab No	Date	Sample
Section B-II layer 17	BM-348	2780 ± 135 bc	Charcoal
Section B-II layer 6c	BM-349	4070 ± 110 bc	Charcoal
Section C-II, layer 18a-c, 19a	BM-350	2960 ± 110 bc	Charcoal
Section C-II, layer 13	BM-351	3110 ± 130 bc	Charcoal
Section C-II, layer 13	BM-352	2760 ± 135 bc	Animal bone (collagen fraction only)
Section C-II, layer 5d	BM-353	3020 ± 130 bc	Charcoal
Section C-II, layer 4c	BM-354	2500 ± 145 bc	Animal bone (collagen fraction only)
Section C-II, layer 3d	BM-355	2510 ± 140 bc	Antler comb (above, p 43; organic fraction only)

Note BM-349 is the weighted mean of two measurements which differed by only 120 years.

Editorial comment These determinations were made on samples from period 2 infilling which may be generally grouped as having at least a *reasonable possibility* (group D, Waterbolk 1971) that they were associated with the archaeological material they are intended to date. The two determinations from samples of animal bones (BM-352, 354) may however be accorded *probability* (group C) and that from antler (BM-355) *full certainty* (group A), being from a typical artefact.

The labour force involved in constructing the causewayed enclosure

by D W A Startin, Inspectorate of Ancient Monuments, Department of the Environment

The calculations are based on assumptions as to the complete plan of the monument, which is unknown as a result of gravel quarrying prior to examination. Considering the inner ditch first, a length of some 35 ft was excavated in area C (of a segment some 55 ft long) where it appears to have been 9-12 ft wide and 2-5 ft deep; in area B it had similar width and depth. Taking average dimensions to allow for the irregular shape and making some allowance for erosion of the upper ditch edges, I have estimated the volume of gravel and soil excavated from the complete segment in area C (including N3) to have been 1130 cu ft. If we estimate the whole length of the inner ditch as originally 650 ft and make allowance for the causeways, then the total volume of gravel excavated in period 1 was some 11,300 cu ft. Ignoring the expansion factor for gravel (only 13/12 according to Rea 1913, 35), the bank if continuous over some 650 ft would have had an average cross-sectional area of 17.4 sq ft plus any revetment. The angle of rest of gravel is 40° (Rea 1913,35) from which we might estimate that an unrevetted bank could have been about 9 ft wide at the base and just under 4 ft high. Revetted on one side it could have been little under 5½ ft high with a basal width of little under 6½ ft plus the width of the revetment, but it is worth noting that a turf revetment for one face only might have had to have been approximately 2 ft thick at its base (scaling down Hobley's figures: 1967, 23). It would

be possible to hypothesise a bank revetted on both faces in the manner of Roman turf ramparts, and even to suggest its dimensions on the basis of Hobley's experimental work, but this seems an unlikely construction. No evidence was found of a timber revetment or stockade.

In a team of three, with two men excavating gravel at a rate of 24 cu ft/hour and a basketer carrying 30 lbs/trip (0.24 cu ft), the basketer would need to do 100 trips an hour to keep up. At 4 ft/sec on horizontal ground this implies a maximum carrying distance of 72 ft or 144 ft return. Neither the ditch nor the assumed rampart are such that baskets could not have been handed up or emptied over. We may conclude that only one basketer was needed per team, possibly none in the case of an unrevetted rampart where the spoil could all have been thrown with a shovel. Thus we may estimate the labour involved in the construction of the inner earthwork as 1410 manhours leaving out of account any involved in a revetment. Assuming for the sake of completeness a turf revetment, Hurst (1886, 352) gives the labour involved in cutting turves 3 ins thick and stacking, with modern tools, as 0.6 hours per superficial yard. A revetment of 2 ft width with turves 3 ins thick would involve the stripping of 28,600 sq ft (44 sq ft/foot run of rampart); thicker turves would involve proportionately less (Hobley 1967). Excluding transport, this would have involved 2540 manhours; but it is possible to suggest a slighter revetment involving correspondingly less labour time.

Part of 3 pits and a connecting trench were found in area C; there was thus space in the whole segment for 4 or 5 teams. If we assume then that this section was the work of a labour force of 4 teams we find that it could have been completed in 11.8 hours. If 4 teams (12 people) comprised a constant labour force then the whole monument could have been finished in 117 hours (12 days) if unrevetted, or perhaps 330 hours (33 days) revetted.

The figure thus deduced for *period 1* at Abingdon, assuming an unrevetted bank, is very close to the figure I have calculated (Startin 1976) for the inner ring at Windmill Hill (1560 manhours); the scale of the respective ditch segments is also comparable. Using more complete evidence at Windmill Hill I concluded (and this still holds true despite a slight alteration in the method of calculating the number of teams) that none of the segments, of varying lengths, need have taken more than a working day to excavate by the appropriate number of teams that could fit into them. On this basis I suggested there that a community which could have spared a labour force of up to 9 teams (27 people) with occasionally as few as 2 teams available could have completed the monument in about 22 working days. To take an alternative view: a gathering of 22 communities (corresponding to the number of ditch segments) each of one to four nuclear families, could have constructed the monument in a single working day. Similar considerations apply to the inner earthwork at Abingdon.

The only section of the outer ditch assigned to *period 2* has a reconstructed cross-sectional area of 68 sq ft (Case 1956a). Estimating the full length of the earthwork to have been 1000 ft and allowing for possible causeways (but see above, p 10) we arrive at an excavated volume of 57,500 cu ft. The labour involved here, allowing in this case two basketers per team, would have been about 9600 manhours for an unrevetted rampart (about 20,000 manhours with a 3 ft turf revetment on one face). This is rather less than I have calculated (Startin 1976) for the middle ring at Windmill Hill (13,100 hours) and much less than for the outer ring (48,100 hours). An unrevetted

bank would have had a basal width of 16½ ft and a height of just under 7 ft. Revetted the height might have been little less than 10 ft and the basal width a little over 11½ ft plus revetment. Such a bank would have been of true defensive proportions but, if defence was the intention, the ditch would surely have been made continuous (above, p 10).

Fieldwork and excavation on Neolithic sites in the Abingdon district since 1965

Mr and Mrs R P Henderson

Corporation Farm (SU 495963). Excavation of small ring-ditch with two entrances. Flint-filled pottery in ditches, with Mortlake style rim and Grooved Ware in upper filling. Narrow flake flint assemblage.

Mr W Skellington

Abingdon cemetery (SU 486975). Scatter of flints, including scrapers and 4 transverse-derived arrowheads. Beaker sherds also found.

Culham (SU 501954/5). Close to river, extensive scatter of unpatinated flint, of Neolithic character. Includes leaf and transverse-derived arrowheads, and a Group VIII axe.

Thrupp Farm (SU 521972). On sandy rise above floodplain, extensive flint scatter, mainly Neolithic in character (9 leaf-shaped arrowheads, 15 transverse-derived, 4 barbed and tanged). Stray Late Beaker sherds (Sherratt 1973).

Thrupp (SU 525972). Large flint scatter of Neolithic character, including serrated flakes, scrapers, knives and cores. Several transverse-derived arrowheads. Two sherds of flint-filled pottery in pit.

Oxfordshire Archaeological Unit

Ashville Trading Estate (SU 482975). Some Neolithic flints in excavations on Iron Age/Romano-British site.

Barton Court Farm (SU 509978). Much unpatinated Neolithic flint recovered in excavation on Iron Age/Romano-British/Saxon site. Grooved Ware from pits.

Thrupp Farm (SU 52 1972). Penannular ring-ditch 16 m in diameter with Abingdon style and Peterborough wares; separate pit with Peterborough ware.

Mount Farm, Dorchester (SU 583968). Peterborough and Grooved Ware pits. Middle Beaker burial from ring-ditch.

Other finds

Characteristic Abingdon style rim sherds in the region have also come from Hanborough (Case 1964/5, 88) and nearby at New Wintles Farm, Eynsham (below), and from field-walking at Benson (information Mr G V Miles); and body sherds in comparable fabric have come from Wallingford, North Stoke and Radley (discussed below).

with contributions by H J Case, R Powers and A W R Whittle

The Neolithic enclosure at New Wintles Farm, Eynsham, (SP 43 1109) was a mile north of the village at about 220 ft OD on an even expanse of Summertown-Radley gravel about a third of a mile wide, flanking the lower course of the Evenlode which lies about a quarter of a mile eastwards (Fig 65). This stretch of gravels, bounded by Oxford Clay to the west and by clay and the flood-plain to the east, was favoured for settlement in prehistoric and later times, as shown by excavations at City Farm in Church Hanborough some 700 yds north of the site reported here (Case *et al* 1964/5; Ox 32, 71), and by cropmarks of ring-ditches and other features in aerial photographs by Riley and others (summarised in Benson & Miles 1974, 50-1). The area contained more sites than those revealed by aerial photography, and in 1968 Messrs B Arthur and D Benson (then on the staff of the City and County Museum) discovered numerous previously unrecorded features in a field on New Wintles Farm, which had been stripped of topsoil prior to gravel extraction. Rescue excavations that year directed by Mrs S Hawkes for the City and County Museum showed these to be mainly part of a 6th-8th century Anglo-Saxon settlement (Hawkes & Gray 1969), which was further recorded in adjacent areas by Mrs M Gray and Mr M Clayton up to 1972 (Clayton 1973). Struck flints of Neolithic and Beaker type (Ox 34,104) were found within the area of the Anglo-Saxon settlement, also two pits with Late Beaker pottery and several Iron Age pits; the Neolithic enclosure reported here lay to its north. Ring-ditches were also investigated (Clayton 1973).

The Neolithic enclosure was excavated in May and June 1968, with the help of volunteers, and the assistance of Mrs S Hawkes. Some 300 mm of topsoil, consisting of ploughsoil above subsoil loam had previously been stripped by machine. Though stripping was irregular, the site (Fig 25) was seen to consist of a discontinuous oval *outer ditch* from 10 to 12 m in diameter, enclosing an oval *inner ditch* formed of two curved segments about 6 m long and set about 3 m apart; pits lay at each end of the inner ditch in the western segment of which were two other pits; a fifth pit lay between the ditches.

The outer ditch

Five segments were defined, of which the two longest, the north-west and south-east, were on opposite sides of the monument. Their edges even allowing for uneven mechanical stripping were irregular, and their width varied from 600 mm to 1.2 m. They were generally flat-bottomed and quite steep-sided (Fig 25, section 1), dug into gravel which varied considerably from loose and markedly sandy to hard, compact and stony. Their depth from the gravel surface was irregular like their width. The south segment was only 140 mm deep, while in places both the north-west and south-east ones were over 700 mm, the latter reaching 760 mm at its southern end (section 1), but only about half that figure at the north. The main filling throughout was reddish-brown stony loam, though more yellowish-brown and sandy in the lower part of the south-east and north-west segments, and

more stony in their upper parts. Two unidentifiable fragments of *animal bone* were found 150 mm deep in the north-west segment. A crumb of *Neolithic pottery* came from the surface of the south-east ditch where cleaned by hand and an intrusive bird-bone was found 400 mm deep within it.

The steep sides of the segments and the relative homogeneity of the filling indicate deliberate and rather rapid infilling of the ditch, probably within the season during which the segments were dug.

The inner ditch

Both segments of the inner ditch were similarly irregular in width and depth. The west segment varied in depth from 500 mm at the south end to 200 mm at the north; the east one was about 400 mm deep mostly overall, but only 120 mm deep where dug into harder gravel at the north. Both segments were generally steep-sided, with rounded bottoms. They were uniformly filled with reddish-brown stony loam.

A burnt fragment of a *child's cranial bone*, kindly identified by Miss R Powers, British Museum, Natural History, was found on the surface of the central part of the east segment. 2 *flint flakes* were found within the filling and 2 fragments of cornbrash in the lower filling at the north end. Scattered fragments of a fossil elephant tooth were found on the surface of the west segment.

The steep sides and absence of gravel layers in the primary silting indicate likewise deliberate and rapid infilling of the inner ditch (Fig 25, section 3). Though the inner was shallower on the whole than the outer ditch, the topsoil and underlying subsoil loam cannot alone have provided the necessary volume of natural silting quickly enough to have preserved the quite steep edges of the segments in the gravel.

The pits

Pit 1, a long oval pit orientated north-west - south-east within the northern ends of the inner ditch segments, was steep-sided and flat-bottomed, dug some 500 mm into the gravel. Its main filling was reddish-brown stony loam, more gravelly towards the west. The upper central part of its filling, over an oval area 600 by 500 mm, aligned roughly on the axis of the pit and tapering to a depth of about 300 mm, was very dark grey stony loam, flecked with comminuted and small fragments of charcoal. A little over 1/4 oz of burnt bone, including a *child's cranial fragment* (identified by Miss R Powers), was found on and immediately below the truncated top of the filling.

Pit 2 was another long oval pit similarly orientated and within the southern ends of the inner ditch, dug some 500 mm into the gravel with sloping and rounded base (Fig 25, section 2). Its main filling was again reddish-brown stony loam, and the upper central deposit likewise similar to that of pit 1: very dark grey stony loam, flecked with small pieces of charcoal, over an area 900 by 300 mm on the same axis as the pit and tapering to a depth of 180 mm, and surrounded by loamy gravel. Five small slabs of *cornbrash* or *forest marble* had been set in a continuous arc 400 mm long on the southern side of the deposit just below the truncated surface of the filling. A larger *slob*, 120 mm square, broken by mechanical stripping of the

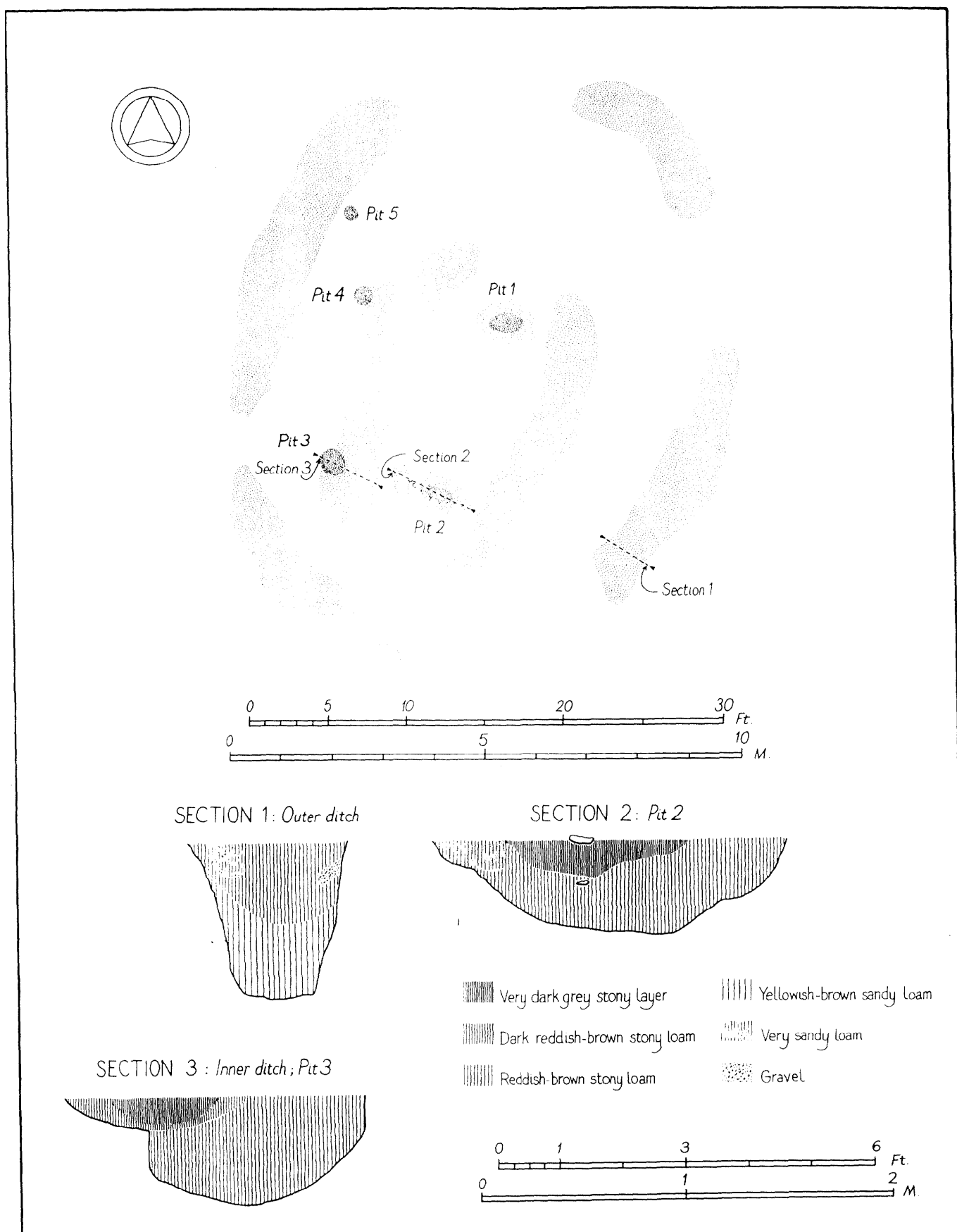


Fig 25 Enclosure at New Wintles Farm: plan and sections

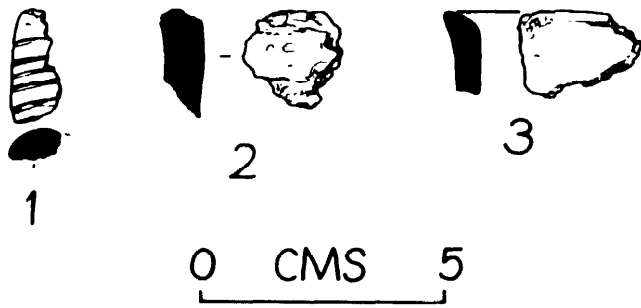


Fig 26 Neolithic pottery: 1, 2, pit 2; 3, Pit 4

topsoil, lay on the other side of the deposit, and other fragments had been scattered more widely by the machine. Some had been reddened by heat.

A fragment of cornbrash, a burnt quartzite pebble and a quantity of small unidentifiable bones were found in the main filling. From the middle of the upper deposit at a depth of 120 mm came two Middle Neolithic sherds (Fig 26; nos 1,2) and an unretouched flint chip, together with 6 small fragments (just over 1/4 oz) of cremated human bone belonging to a child (identified by Miss R Powers).

Pit 3, another oval pit, aligned north-north-west - south-south-east, had been dug partly into the top of the filled-in southern end of the west segment of the inner ditch and partly into the adjacent gravel (Fig 25, section 3). Over 150 mm deep, with gently sloping sides its main filling was dark reddish-brown stony loam. Its central deposit, roughly 500 mm in diameter and 120 mm deep, was very dark grey stony loam, flecked with generally small fragments of charcoal and burnt bone; one fragment of charcoal near the southern edge was however 60 mm long. Two Neolithic sherds and two crumbs of burnt clay were found in the central deposit.

Pit 4 comprised a small deposit of dark grey stony loam flecked with small pieces of charcoal containing also minute pieces of burnt bone, on the outer edge of the west segment of the inner ditch. Squarish in plan, and only 90 mm deep below the truncated surface, it appeared to have been the upper part of a pit irregularly dug into the edge of the ditch; if so, the remaining filling of the pit was indistinguishable from the reddish-brown stony loam filling of the ditch. A Middle Neolithic rim sherd (Fig 26, no 3) lay on its truncated surface.

Pit 5 comprised a deposit roughly 250 mm in diameter and only 50 mm deep, of very dark grey stony loam on the surface of the remnant of subsoil loam surviving after stripping between the outer and inner ditches in the north-west part of the monument. It contained small fragments of charcoal and bone calcinated white. A sherd not inconsistent with a Neolithic date lay on its truncated surface.

Like the inner and outer ditches, pits 1, 2 and 3 had probably been deliberately refilled soon 'after digging, judging by their homogeneous main filling and the relatively steep sides of pit 1. Pits 4 and 5 may have been similar. The dark deposits may be taken to represent pyre gleanings from human cremations. There is no reason whatsoever to think that pits 1 and 2 held posts at any stage.

The finds

Pottery (7 sherds: 2 oz)

Pit 2 (1) *Rim sherd*, Middle Neolithic, rounded and everted (Fig 26, no 1). Dark brown surfaces and core,

dense shell filler (> 3 mm). Decorated with slightly oblique transverse incisions. From medium-sized pot (c 200 mm in diam); form, fabric and decoration closely comparable at Abingdon causewayed enclosure. This find and others noted below confirms the extension of the Abingdon style north of Oxford (previously recorded: undecorated everted rim in similar fabric intrusive in Anglo-Saxon pit 15, site 3, City Farm nearby, Case *et al* 1964/5, 88). (2) *Body sherd* (Fig 26, no 2), dark brown fabric, dense shell filler > 5 mm. Compatible with Abingdon pottery.

Pit 3 (3) *Body sherd* (25 by 15 mm, 6 mm thick). Fabric and filler as no 5 below. (4) *Body sherd* (30 by 20 mm, 10 mm thick). Light reddish-brown exterior, brown core and interior; rough surfaces; laminated fabric, with plentiful flint and quartz filler > 5 mm and a little grog. Fabric closer to range of local Peterborough ware than Abingdon style.

Pit 4 (5) *Rim sherd*, pointed and everted (Fig 26, no 3). Brown exterior, dark grey core, dark brown interior, smooth surfaces, compact fabric with sparse quartz and flint filler > 4 mm. Compatible with Abingdon stone-filled pottery.

Pit 5 (6) *Body sherd* (13 by 10 mm, 4 mm thick). Dark grey compact fabric, very sparse shell filler (> 1 mm). Indeterminate but not inconsistent with Neolithic date.

Outer ditch, south-east segment, surface (7) Weathered crumb with light brown exterior, dark grey core and interior. Dense shell filler (> 4 mm). Compatible with Abingdon pottery.

Flint

Inner ditch, east segment Lowest filling at north end: patinated flake, marks of use on one edge, L 39 mm. At depth of 120 mm: patinated blade, L 29 mm.

Pit 2 Patinated chip. L 14 mm.

Stone

Inner ditch and pit 2 Fragments of Jurassic cornbrash and 'forest marble'. Not recorded locally in Pleistocene gravels, but the nearest outcrops are only a mile to the north-east.

Inner ditch Fossil elephant tooth. Possibly an accidental association; specimens have been frequently recorded in second terrace gravels.

Discussion and interpretation

The pottery comparable to that of the Abingdon causewayed enclosure suggests a Middle Neolithic date; and this date could be consistent with the sherd possibly of Peterborough ware in pit 3.

There are many well-known examples of Middle Neolithic cremation burials, as in the East Riding long barrows and north Irish court cairns and passage graves, as well as in Scottish long and round barrows and sporadically in earthen long barrows in southern England; there was one for instance at the Ascott-under-Wychwood long barrow (information Mr D Benson). Another conceivable example may have been cremation IV sealed by ring-ditch 6 at Cassington nearby (Atkinson 1946/7, 13-14, 18). Good analogies to the site itself are however hard to find. In a very general way the best are found in the well-known smaller henge monuments at Dorchester, Oxon (Atkinson 1951; Atkinson *et al* 1951). The dark deposits with fragmentary cremated bones in pits 1-5 superficially resemble those at the Dorchester sites. Being set in the

tops of pits or ditch filling or at the edges of ditches, the New Wintles deposits resemble variously those at sites I, II, IV and V. Pits and some ditches were deliberately filled in at sites II and XI but in contrast most ditches at Dorchester appear to have silted naturally, and at site VI cremation burials were recorded as made during the course of silting. Cremation burials set centrally or in rings within the ditches were also features at Dorchester not seen at New Wintles. Almost all the Dorchester deposits had a much greater content of bone, but significant quantities may have been removed at New Wintles in stripping topsoil.

The New Wintles ditches show no traces of the gravel originally dug from them. It may have been used perhaps to make a ring-bank or a mound or platform - in which case the superficial appearance of the monument may not have been very different from that of some of the Dorchester sites. However, it is difficult to claim most of the Dorchester sites as Middle Neolithic. Site XI with Ebbsfleet style pottery could be so regarded. Site I however should be Late Neolithic in view of the stratification there of Grooved ware; and the so-called Abingdon ware from that site has only the most tenuous resemblances to that from the causewayed enclosure, being deficient in decoration, heavy rims and shell-filled fabric. The finds from the remaining smaller henges at Dorchester point to a Late Neolithic date, which seems encouraged by analogies customarily drawn to the Aubrey holes of Stonehenge I.

Only the vaguest allusions based on resemblances in ground plan can be made to so-called long mortuary enclosures of Middle Neolithic date: for example, such enclosures incorporated into long barrows recurrently show opposed pairs of pits sometimes interpreted as having held posts (*cf* Atkinson 1965; Simpson 1968a; Ashbee 1970; Kinnes 1975), and pairs of similarly interpreted pits within successive layouts of rectangular and oval form occurred at the rather anomalous enclosure at Aldwinckle, Northants (Jackson 1976 and below, p 69).

New Wintles, unlikely to have been the burial place of more than a small descent group, is probably best regarded as a precursor of the Dorchester sites, which on present evidence seem regional in character - although with resemblances among an increasing variety of small circular or oval monuments (*cf* Oswald 1969; Kinnes in Jackson 1976). The oval structure which appears primary to the northern terminal of the North Stoke linear ditches may have been of New Wintles type (below, p 62).

A Neolithic ring-ditch and Iron Age enclosure at Newnham Murren, near Wallingford

P R S Moorey

with contributions by H J Case, R Powers, J Startin and A W R Whittle

The double ring-ditch and enclosure at Newnham Murren, near Wallingford, Oxon (formerly Berks: SU 603888) lay at a little over 150 ft OD on an even stretch of Valley Gravel rising gently from the Thames, which runs some 700 yards distant to the east and only a few feet lower (Fig 27). The sites were alongside a stream course draining into the main river, a common position regionally. Aerial photographs by Allen (nos 1284-5) show the sites as crop marks in a grass field lying between St John's Road and Bradford's Brook, the ring ditch partly obscured by a modern barn. Other indistinct linear marks can be seen, both within the rectangular enclosure and west of it, and an indistinct circle appears to be adjacent to the double ditch, to the north-west (Fig 28). Allen also recorded three other ring-ditches about half a mile southwards in a similar situation (no 1286) but otherwise the area, like many others regionally at first terrace level, seems largely

devoid of archaeological cropmarks. Rescue excavations by members of the OUAS, with the kind permission of Osterley Tudor Estates Ltd, took place twice a week from October to December 1959 in difficult, often cold and wet conditions. The area is now entirely built over.

The ring-ditch (Figs 29, 30)

The partly overlying barn having been pulled down without disturbance to features underneath, cuttings were dug initially to north and south to locate the ditches. Half way through the excavations, an area of topsoil 100 ft by 6 was stripped mechanically from the centre of the site to a depth of 18 in, and excavation was continued by hand. The grave pit was thus located, and was investigated by the extension of this cutting (Fig 29). No investigation was made of the adjacent possible ring-ditch.

The burial pit, approximately central, contained the contracted inhumation burial of a middle-aged woman. It was roughly oval, 6 ft by 5, aligned south-east to north-west and had been dug with gently sloping sides 1 ft

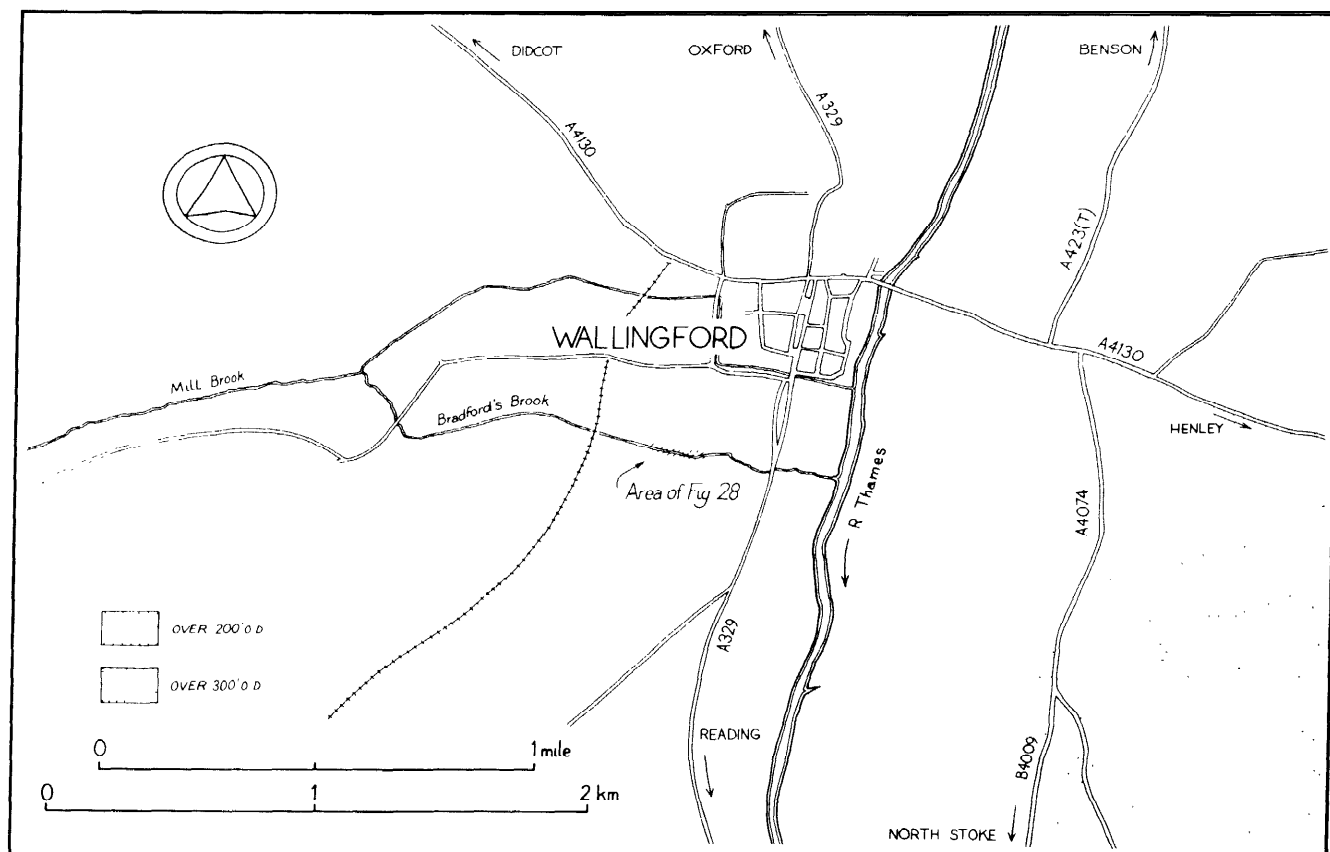


Fig 27 Wallingford ring-ditch and Iron Age enclosure: regional setting

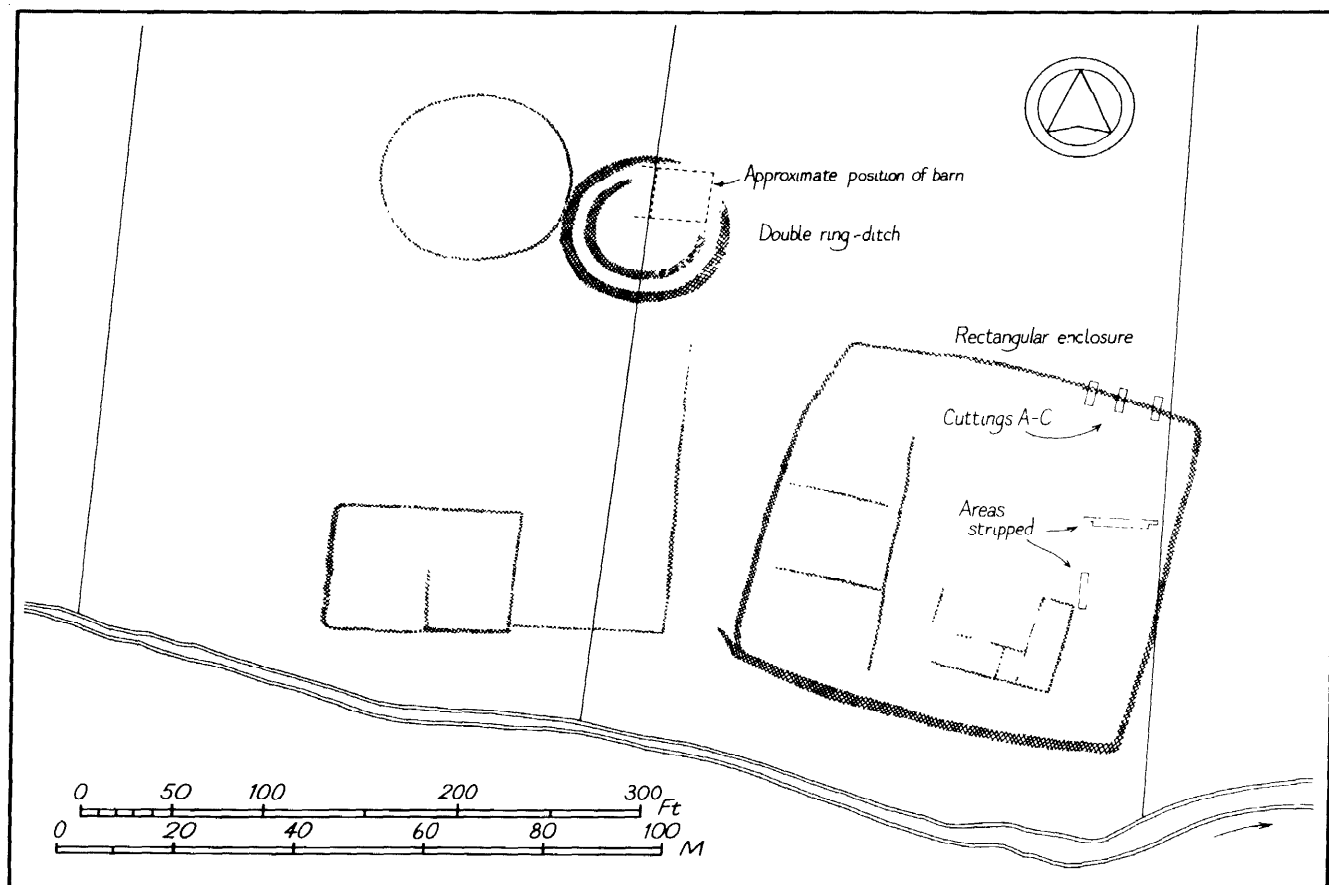


Fig 28 Wallingford ring-ditches and enclosures: plan

to 18 ins into gravel. Its main filling was largely stoneless dark reddish-brown loam. Below, a thin layer of unweathered gravel covered the skeleton; the gravel was concreted hard like the floor of the pit, which was stained dark grey. The skeleton lay on its left side on the north-eastern long side of the pit, which was stained dark grey. The skeleton lay on its left side on the north-eastern long side of the pit with its skull on the slope of the south-eastern end and the head facing south-west, though the lower jaw lay a few inches to the west. The legs were tightly contracted with the feet almost level with the pelvis, and with only 3 ft 4 ins between toes and skull. The right arm lay across the body with the fingers near the skull, and the left arm diagonally under the body, with the hand between the thighs of the contracted legs. A small body *sherd* comparable to Middle Neolithic Abingdon style stone-filled pottery was found in front of the head; and two flint flakes by the knees, one a serrated flake as common in Middle Neolithic industries (Fig 31).

Two further loam-filled *depressions* in the interior were partly excavated, one 12 ft south-east of the burial pit and the other 15 ft north-west; both may have been natural. No traces of a *mound* were seen in the interior; the soil profile here and elsewhere over the site was topsoil (*layer 1*, dark reddish-brown loam) overlying subsoil loam (*layer 2a*, reddish-brown loam with occasional concentrations of pebbles) which in turn overlay gravel.

The *outer ditch* (Fig 30, sections 1 and 2), roughly circular with an internal diameter about 75 ft, was 10 ft to 14 ft

wide and 3 ft deep into gravel. The ditch was flat-bottomed towards the outside, but towards the inside U- or V-shaped, the parts being separated by a ridge of undug gravel. Below *layer 1*, *layer 2* was derived subsoil loam and 3, seen in section 1 only, comprised lenses of fine loamy gravel on the inner and outer edges of the ditch. *Layer 4*, partly intercalated with *layer 3* in section 1, was stoneless dark reddish-brown loam. *Layer 5*, hard light-grey clay loam, (shown unshaded in Fig 30), extended over both parts of the floor of the ditch. *Layer 6* was loose unweathered gravel; in section 1 it occurred mainly only at the inner side of the inner part of the ditch, but in section 2 it occurred not only there but on both sides of the outer part. It was concreted in section 1 and thickest on the outer side of the ditch in section 2. The natural gravel of the ridge between the two parts of the ditch in section 1 was heavily iron-stained. Several flint-filled sherds, possibly Iron Age, and a rim sherd of Romano-British grey ware were found in layers 1 and 2.

The *inner ditch*, observed in the same sections, was more or less concentric with the outer one, lying from 7 to 10 ft within it; its width varied from 2 to 7 ft. Shallow and rounded at its narrowest, it was generally U or V-shaped, dug some 2 ft into gravel. Its tapering plan in the north-west may suggest a causeway (Fig 29). *Layer 4* was as in the outer ditch. *Layer 5a* beneath was a contrastingly darker brown stoneless loam. *Layer 6*, unweathered

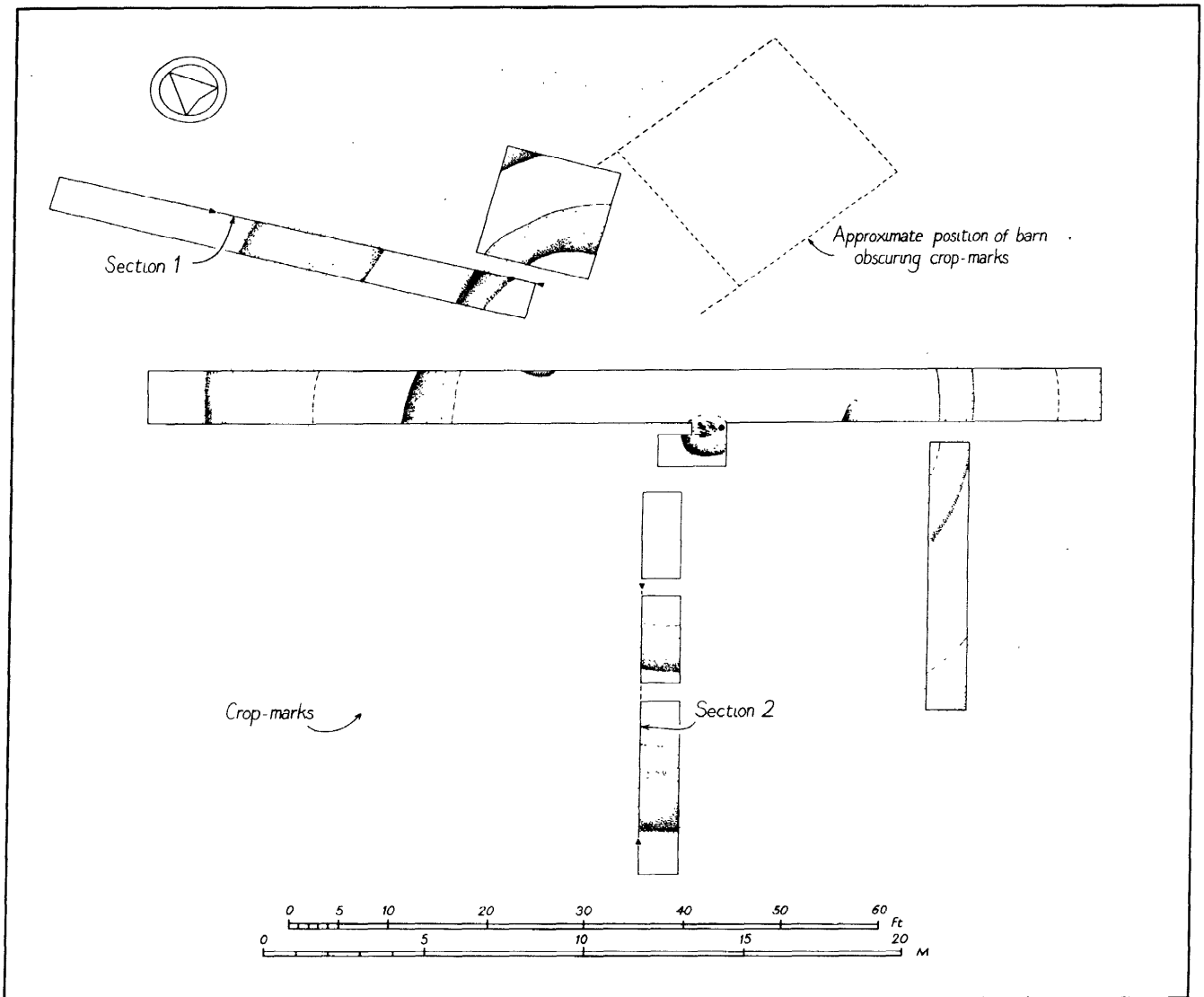


Fig 29 Double ring-ditch, Wallingford: plan

gravel, was observed only down the outer side of the ditch and at its base. No finds were made.

Discussion of the ditch silting

The sections are atypical. The general lack of primary gravel silting in the *inner ditch* should correspond to the thickness of subsoil loam above the gravel subsoil, and the small run of gravel on the outer side of the ditch may thus indicate an outer bank. The slightly darker layer 5a compared to layer 4 can be paralleled by the similarly contrasting layers 3 both in the ditch of the southern enclosure and the linear ditches, similarly sited near flood-plain level at North Stoke two miles to the south (see below).

In the *outer ditch*, a little primary gravel silting is represented by layer 6, but layer 5 suggests that in parts of the ditch primary silting was derived entirely from subsoil

loam and topsoil. The colour and consistency of layer 5 and the iron-staining on the ridge between the two parts of the ditch in section 1 strongly suggest that the ditch was persistently waterlogged, with perhaps redistribution of calcium carbonate from the subsoil and leaching of iron accounting for the colour changes (cf Limbrey 1975, 300-3). The linear ditches at North Stoke also were probably often waterlogged (p 73).

The ditch's profile is best explained by recutting. The most likely sequence is that a flat-bottomed ditch was dug first, perhaps with an outer bank (*vide* the outer silting of layer 6 in section 2), and when largely silted up was re-dug at its inner edge in a V-shape, perhaps now to provide an inner bank (as suggested by the inner silting of layer 6 in both sections). Layer 3 indicates dumping at a late stage in the silting of the recut ditch and supports the evidence for outer and inner banks. As at Hanborough site 4 (Case *et al*

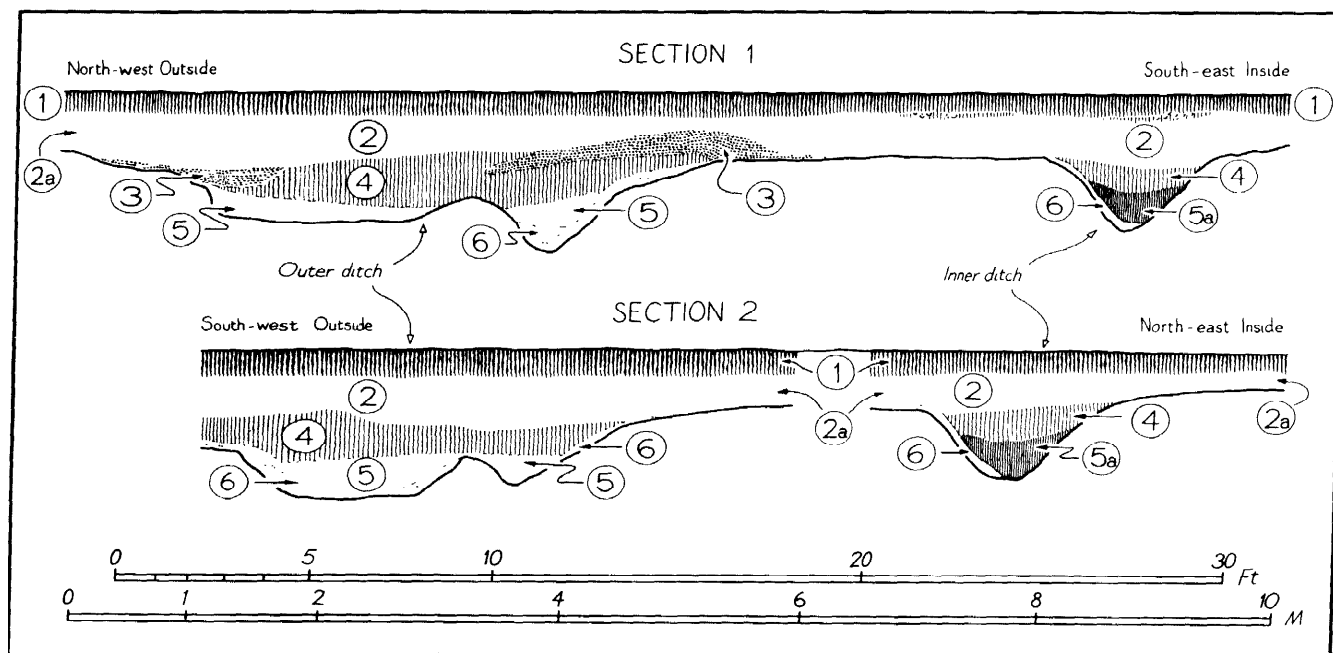


Fig 30 Double ring-ditch, Wallingford: sections

1964/5, fig 10, section 1; also below, p 107), it is explainable by Iron Age exploitation of the area.

No direct links were observed between inner and outer ditches and it cannot be established whether a single bank lay between them. The burial pit and both parts of the outer ditch show some evidence for waterlogging (layer 5 in the one and the concreted basal filling in the other) but it is not clear why the inner ditch should have been better draining.

Dating

The sherd and serrated flake from the burial pit may be taken to indicate a Middle Neolithic single burial to add to the other similar Neolithic burials, which have attracted attention again recently (Manby 1974; Burgess & Shennan 1976). Parallels elsewhere in the Thames Valley are the well known Middle Neolithic burial likewise of a woman from Pangbourne (Piggott 1929), and the Late Neolithic

burial also of a woman and likewise central to a double ring-ditch, Stanton Harcourt XXI 1, Lynch Hill Corner (Grimes 1943/4; Hamlin & Case 1963, 47; and there are other possible examples, Whittle 1977, 61). Poor associations as at Wallingford are by no means unusual with Neolithic burials. Although the Pangbourne and Lynch Hill Corner examples were reasonably well-furnished (accompanied respectively by a restorable bowl, a red deer antler and other animal bones and by a polished flint knife and jet belt-slider), the Middle Neolithic cremations from New Wintles Farm (p 51) were furnished similarly to the Wallingford inhumation. The majority of the Late Neolithic cremations at Dorchester were unaccompanied (Atkinson *et al* 1951; outstanding exceptions were site II no 19 with a bone pin, flint knife and flake and site VI no 11 with a fabricator). Other unmarked Neolithic burials in southern England were likewise unaccompanied and could only be dated by leaf arrowheads lodged in the skeletons' ribs, as at Crichel Down 13 (Piggott & Piggott 1944) or Fengate (Pryor 1976a).

The south-east orientation as at Wallingford is unusual for Late Neolithic and Early Bronze Age Beaker culture burials regionally, although it has interestingly only been recorded for women and children: for a woman from the Middle Beaker grave 2, Vicarage Field, Stanton Harcourt (below, p 105), and for a woman and a child at the Late cemetery at Cassington (respectively graves 10 and 11: Leeds 1934a); but these were all on the right side not the left as at Wallingford. A child's burial may also have been orientated south-east at the Late Beaker Eynsham cemetery (grave 13: Leeds 1938a).

Neolithic single burials were presumably of prominent members of descent groups or small clans. The outer ditch could have been comfortably dug by a family or an extended family in a single season (p 87). Middle Neolithic settlement of the more or less immediate

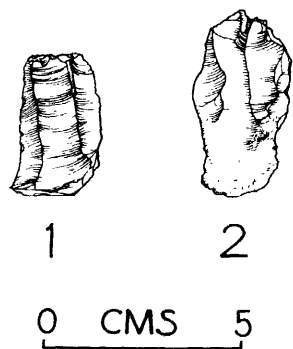


Fig 31 Struck flints from burial

neighbourhood is suggested by the southern enclosure and linear ditches at North Stoke about two miles south (p 60) and by an Abingdon style rim sherd from Benson found field walking about the same distance northwards (information from Mr G V Miles).

Finds from the burial pit

Pottery

Sherd, 20 x 18 mm; hard flint-filled fabric, with light brown exterior and dark grey core; comparable to Middle Neolithic flint-filled pottery from the Abingdon causewayed enclosure (above, p 28).

Struck flint

Serrated flake and *unused flake* (Fig 31), the former well within the range of similar flakes at Abingdon (p 38).

The burial

Miss R Powers, Sub-Department of Anthropology, Department of Palaeontology, British Museum (Natural History) reports that the skeleton is of a woman, late 20s to about 35; no length measurements are available so no stature estimate is possible. The brain case is warped by lateral compression so that the skull measurements are more dolichocephalic (71.58) than in life. The combination of mild dental wear and caries is unusual for the Neolithic and Bronze Age. Some bones are fragmentary; others are missing, strangely both thumbs and both tali. A full report is available in the Department of Antiquities, Ashmolean Museum.

The Iron Age enclosure (Fig 28)

The enclosure with slightly convex sides was approximately 220 ft north-south and slightly less west-east. The air photographs showed indistinct internal rectilinear enclosures but no entrances. An area 45 ft by 200 ft on its east side was stripped of topsoil by machine but extremely bad weather made further examination impossible apart from 3 cuttings (A-C) 10 ft by 4 ft across the north ditch near the north-east corner. Excavation of the ditch could not be completed; it was about 8 ft wide and dug at least 3 ft into gravel with gently sloping sides. The tertiary silting was uniform reddish-brown loam, with a lens of pebbles (probably a cultivation line) towards the top and one of coarse yellow sand at a depth of about 2 ft., both from the inner side. No other indications of the position of the bank appeared. 13½ oz of pre-Belgic Iron Age pottery, and 2 lb 6 oz of animal bone were found, also a human ulna. A medieval sherd and 7 fragments of tile are taken to be intrusive.

The enclosure may be taken to belong with other more or less rectilinear Iron Age ditched enclosures in the region. Other relatively nearby examples were at Mount Farm and at Allen's Pit, Dorchester (Myres 1937; Bradford 1942b).

Finds from the enclosure

Pottery

Topsoil (cutting C): 20 Iron Age sherds (2 oz; up to 25 by 50 mm, and 15 mm thick) dark brown compact sandy fabric; mostly weathered but one with dark grey burnished exterior surface.

Ditch filling (cutting A): 25 Iron Age sherds (10 oz; up to 50 by 30 mm and 15 mm thick) in similar fabric, some however with red exterior surfaces and 2 with rather coarse filler (quartz and shell up to 2 mm), including 3 simple rims (one burnished with a groove below it), a burnished rounded shoulder and a flat base. One sherd of medieval glazed ware and 4 pieces of tile.

Ditch filling (cutting B): 3 sherds (1½ oz) of similar dark sandy fabric to above, including 2 bases. 3 fragments of tile.

Animal bones

Mrs J Startin, Institute of Archaeology, Oxford, reports that 98 animal bones were examined, of which 36 were definitely assigned to species - the total numbers inclusive of all fragments being: *cattle*, 24; *sheep/goat*, 8; *pig*, 3; *horse*, 1. A full report is available in the Department of Antiquities, Ashmolean Museum.

with contributions by D F Roberts, E W Russell, D W A Startin, J Startin, A C Western, A W R Whittle and the British Museum Research Laboratory

Introduction

The linear ditches and southern enclosure at North Stoke, Oxon (SU 611856) lie south of the village (Fig 32) between 150 and 160 ft OD, on even ground, which rises eastwards to over 400 ft OD at the chalk ridge of the Chilterns within two miles, and which slopes gently westwards to the narrow floodplain of the Thames - the river lying a dozen feet lower and less than half a mile to the west. Their situation is attractive, ringed by low hills with the Berkshire Downs rising again across the river.

They are on an expanse of Valley Gravel (Jukes Brown & Osborne White 1908) probably derived from both fluvial and Chiltern outwash deposits. Such gravels flank this stretch of the Thames, with local extensions up small combs, towards the main remnants of outwash gravel about a mile away. At the excavation the gravel was composed mostly of flint pebbles, some jasperised and with nodules some 6 ins long, with sandy layers and chalk fragments (Munsell colour: 10YR/6/4). The upper parts

were decalcified (10YR/4/4 - 4/3) and somewhat loamy, with sandy layers and festooning; decalcification was from 2½ to 4 ft deep.

The ditches were discovered from the air by Allen in 1933 as cropmarks in arable land (Leeds 1934b), and observed by him at intervals up to 1938, and have been observed again since 1948 by Professor J K St Joseph, and recently by Mr J Pickering. Photographs taken in the first year (Allen nos 865-873) have proved the most informative about their southern end, though others taken in 1938 (nos 880-1) and in 1974 by Pickering add details of the northern one. The ditches can be seen from the ground in favourable conditions (PI 2A).

They appear as two irregular roughly parallel marks (PI 2A; Fig 33) about 740 ft long and generally between 30 and 40 ft apart (from centre to centre), running approximately north - south. The western ditch is noticeably straighter than the eastern, which may have a small causeway half way along its length and is rather irregular from this point to the northern terminal. The causeway shows in photographs taken in the earlier part of 1933; one taken with fuller crop growth however in August of that year, no 873, shows no gap at this point but another a little to the south. (The curving section between these causeways may possibly show that the ring-ditch

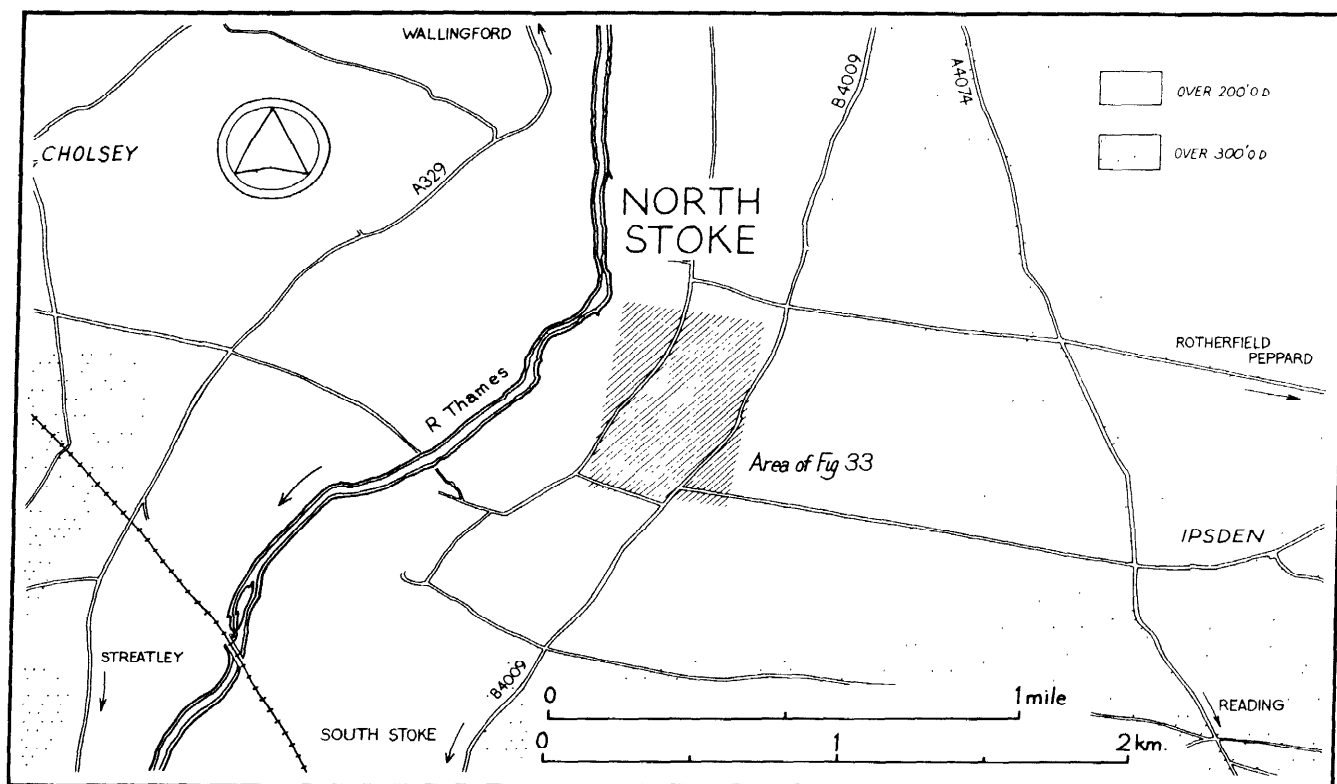


Fig 32 North Stoke linear ditches and southern enclosure: regional setting

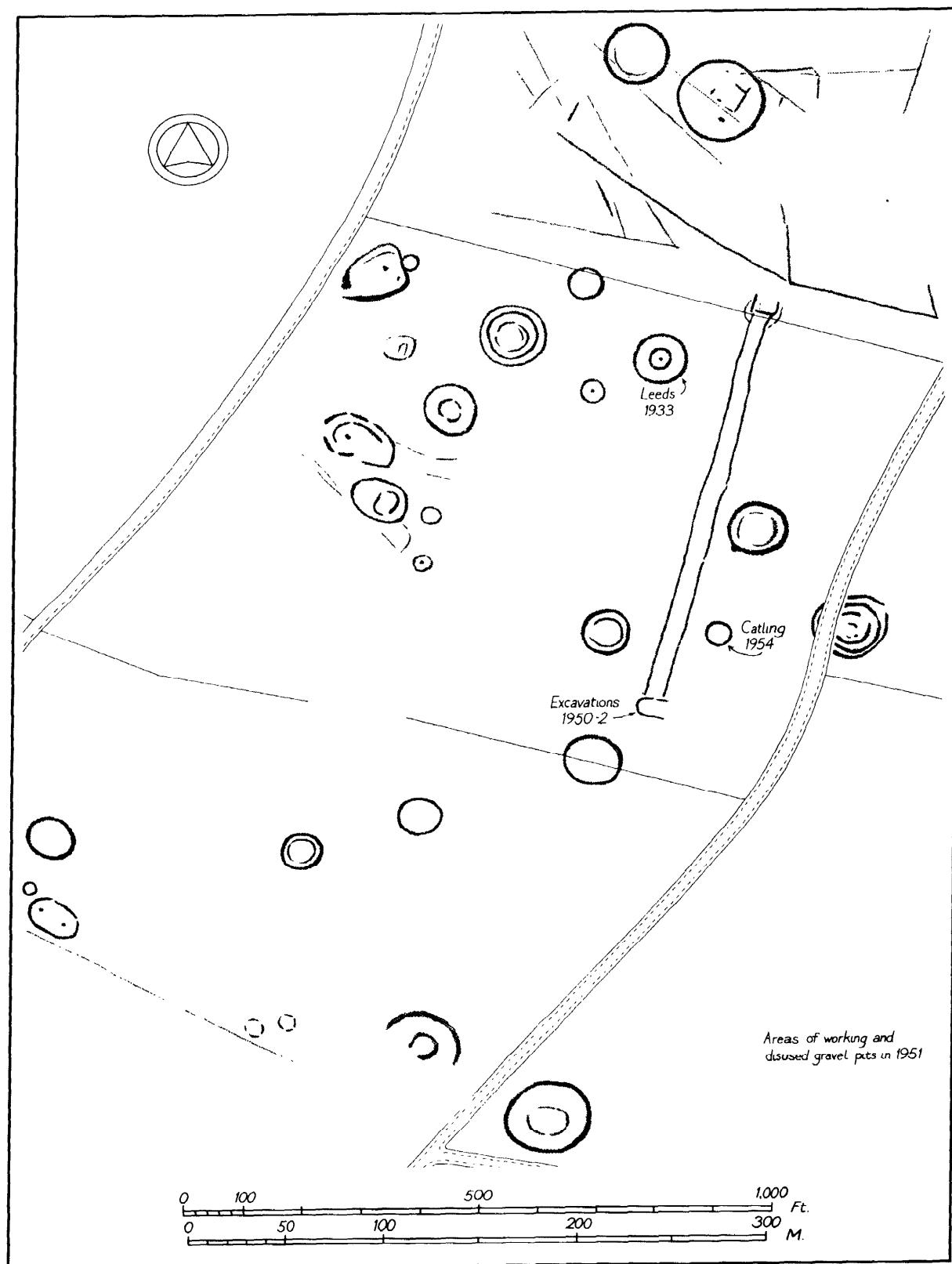


Fig 33 Linear ditches, southern enclosure and other aerial photograph sites, North Stoke

immediately to the east was earlier; *cf* Neolithic ring-ditches, above p 58). Aerial photographs show the ditches with terminal features at both ends. At the south, they stop immediately short of a U-shaped enclosure, which appears open to the east with a causeway on its northern arm between the linear ditches; at the north the east linear ditch, although changing direction slightly, appears to be continuous with that of a rectangular three-sided enclosure open to the north, but the west ditch appears to stop short of this enclosure. An oval enclosure is also faintly visible surrounding the northern rectangular terminal on Allen nos 880-1) on photographs by St Joseph (including CX 54) and on an unpublished one taken in 1974 kindly made available by Mr J Pickering.

The linear ditches are among numerous sites, apparently mostly prehistoric, discovered chiefly by aerial photography on gravels flanking the Thames between Wallingford and the Goring Gap (*cf* Benson & Miles 1974). They are surrounded but not encroached upon by enclosures and other features (Fig 33) including linear ditches and at least twenty ring-ditches, one of which some 200 ft eastwards, with three concentric ditches, still survives as a low mound. Two ring-ditches near the linear monument have been excavated, one in 1954 of Late Beaker date (Catling 1959) and the other in 1933 apparently Bronze Age (Leeds 1936). Among crop-marks not shown on Fig 33 are two roughly parallel ditches (some 1500 ft long and 200 ft apart) about 1500 ft south-west of the southern enclosure in the parish of South Stoke. They run roughly east and west, thus at right-angles to the Thames and the linear ditches. They appear in photographs both by Allen (869) and St Joseph (AP69, CX54, CX55) and in one taken recently by Pickering. They were seen on the ground in 1957 and again partially in 1976.

The attractiveness of the area for Neolithic settlement is also indicated by the quite considerable surface collections of flint implements from the parish generally, including leaf and transverse-derived arrowheads, knives and scrapers and by numerous stone axes found in a somewhat wider area, with 22 flint ones and 13 of other rock within two miles of the Thames between Wallingford and Streatley (Sites and Monuments Record, Oxfordshire Museum Services; material partly in the Department where largely in the Manning and Powell collections).

By the 1930s the linear ditches lay largely in a single arable field, with their northern end just within another. Some partly filled-in gravel pits lay near the southern end and in adjoining fields. One of these gravel pits appeared to have encroached on the south arm of the southern enclosure ditch. By the early 1930s a new pit had been opened immediately to its north and in 1950 the intention was to extend it rapidly westwards and southward to engulf the enclosure and the southern parts of the linear ditches (Fig 33). Rescue excavations were made with the kind permission of North Stoke Farms Ltd for four weeks in the summer of 1950 and again in the spring of 1951, and for a fortnight in the summer of 1952. Among those who worked on them were Hector Catling, Salvatore Puglisi and Isobel Smith; Gordon Childe visited the site. In the event the extension of the gravel pit westwards was delayed and gravel digging proceeded northwards instead, necessitating a further rescue excavation of a small ring-ditch, which contained a central inhumation burial with a late beaker (Catling 1959).

The 1950-52 excavations

Cuttings were laid out by dead-reckoning from oblique air photographs, and digging was entirely with hand tools. As

the site remained open after excavation in 1950 the opportunity was taken in 1951 and 1952 to recut some sections to obtain further evidence.

The linear ditches

Some 40 ft of each ditch were dug (Fig 34). They lay roughly parallel, about 36 ft apart from centre to centre. Running up to the ditch of the southern enclosure, they were found to be separated from it at the surface of the gravel by narrow causeways, 2 ft wide at the east and 1 ft to the west; the western ditch thus continued southwards about 4½ ft further than the eastern. The eastern ditch was from 6 to 7½ ft deep from the modern surface, the western from 5½ to 7. Both ditches were from 5 to 8 ft wide at the top and about 2 ft wide, occasionally 3 ft, towards their flat or rounded bases. They showed as more or less narrow V-shaped slots with more gently sloping bell-shaped sides above - the characteristically degraded profile of an originally narrow steep-sided ditch. Their upper slopes were generally difficult to distinguish from the unbedded decalcified gravel into which they had been dug (*cf* Catling 1959, fig 3); thus Fig 35, section 3 is slightly overcut, likewise Fig 37, sections 7, 8 and 10 of the enclosure ditch. The deeper parts of the ditches, however, generally showed clearly against the basal undecalcified material. At the base they had been dug in irregular scoops (P1 3A; Fig 34). The deep narrow ditches may possibly be explainable by the desire to obtain as much bright undecalcified gravel as possible for their adjacent earthwork.

Three transverse sections were recorded in the western ditch (Fig 35, nos 1, 3; Fig 36, no 4) and two in the eastern (Fig 35, no 2; Fig 36, no 5) and the following layers were consistently recorded, Munsell colours being determined from dry samples from section 5. *Layer 1*, turf and modern ploughsoil, dark greyish brown sandy loam (10YR/4/2) with flint pebbles, was sometimes found separated by a run of pebbles from *layer 2*, yellowish-brown grading into dark brown loam (10YR/4/3). *Layer 2*, flecked with charcoal at its base, was generally stoneless, but contained up to three silted runs of pebbles, which were sometimes prominent. In the west ditch, the major runs were derived from the inner edge in sections 3 and 4, but evidence had been partly removed by recent recutting in section 3 and wholly so in section 1. In the east ditch they come from the inner edge in section 2, but section 5 was inconclusive; and in a section some 1 ft 6 ins southwards of section 2, the volume of stones from the outer edge was greater. *Layer 2* graded into *layer 3* below, and the junction was sometimes marked by a run of pebbles. *Layer 3* was sandy loam with occasional pebbles only, ranging from dark brown to dark or very dark greyish-brown (10YR/3/3 - 4/2 - 3/2), making a very strong contrast with *layer 2* when wet and forming a symmetrical lens above *layer 4*.

Layers 2 and 3 may be taken together as tertiary silting; and *layer 4* as primary and secondary combined, there being no visible distinction between primary and secondary as a result of the decalcified material through which the ditches had been dug. *Layer 4*, gravel and dark brown sand (10YR/4/3) showed no significant internal stratification, and gave no consistent indication as to whether it had come more from one edge than the other; nor were any traces found in the filling of replacement fillings of hypothetical upright or revetment timbers. The shape of the ditches early in their excavation had suggested that they might have been palisade slots, and this hypothesis was temporarily kept alive (mentioned in Atkinson *et al* 1951, 57) by the discovery of patches of apparent filling continuing downwards at the base of most of the scoops at the bottom of the ditch. Continued excavation however showed that these corresponded with

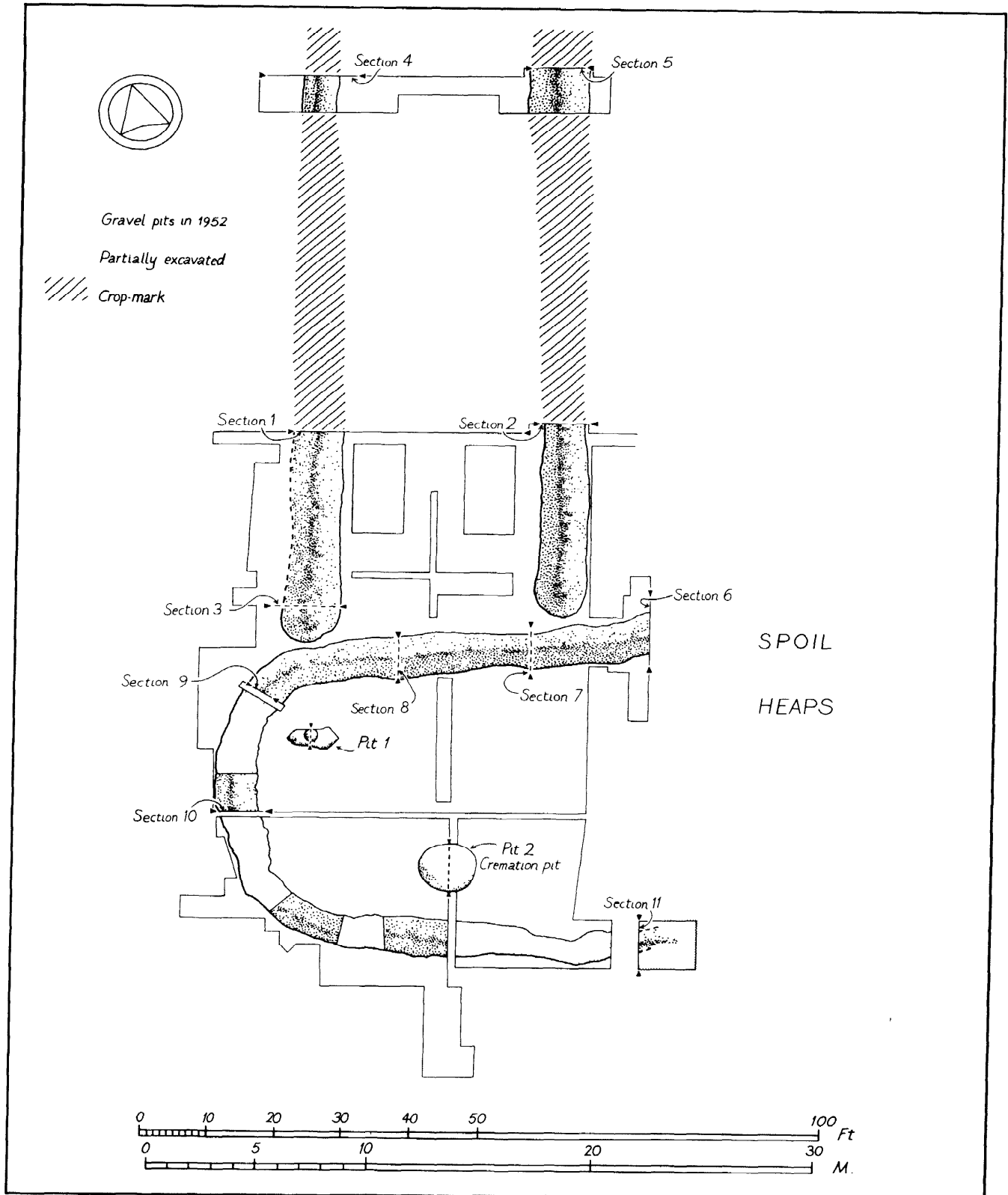


Fig 34 Linear ditches and southern enclosure: excavated areas

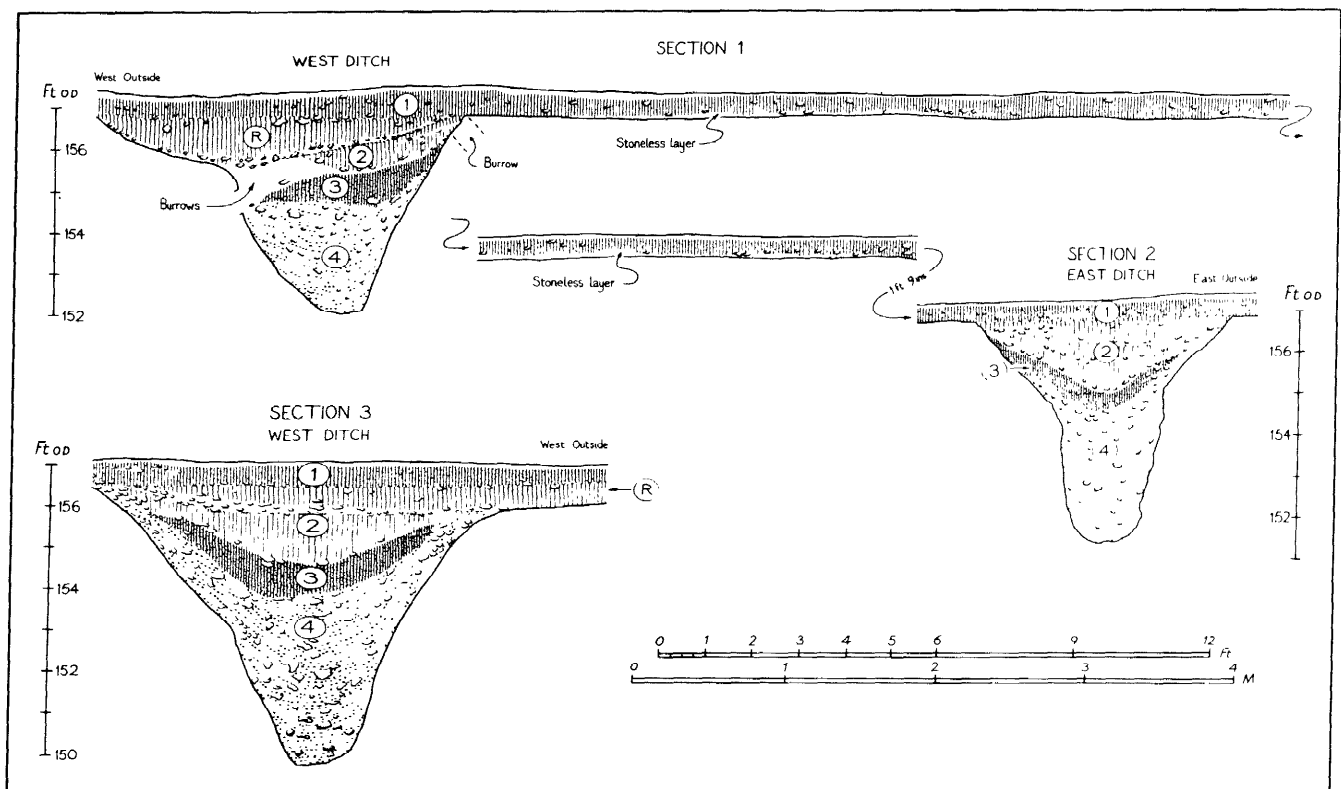


Fig 35 Linear ditches: sections

infiltration channels (eg Fig 36, section 5) produced naturally presumably after the ditches were dug.

Traces of recutting were only seen corresponding to a very late stage in the silting in the east ditch (labelled R in Fig 35, sections 1 and 3). In section 1 decalcified gravel on both lips of the ditch had been penetrated by animal burrows which had disturbed the filling down to the top of layer 4. Here, after the formation of layer 2 a pit or trench about 1½ ft deep and 7 ft wide had been dug at the west side of the ditch, and contained filling similar to that layer. It corresponded to a slight hollow in the surface of the ground and may thus have been quite recent. The outer edge in section 3 had been similarly dug away and it was considered at the time of the excavation that there may have been a continuous shallow trench at the west edge of the ditch.

Many fragments of modern tiles and pieces of iron and occasionally lead were found in layer 1 (perhaps connected with dumping in the gravel pits) but surprisingly no Romano-British or any other pottery. Pieces of tile were occasionally seen in the top of layer 2. Struck flints were occasionally found in layer 1 but fairly frequently from layer 2 downwards, occurring sometimes in random groups. A concentration of up to 9 flints per square ft was found in layer 3 in part of the west ditch, but elsewhere in the ditches densities were not above three flints per square ft. A careful search (for which I am grateful to Mrs R S Webster) revealed two joins in layer 3 of the eastern ditch.

A fragment of the crown of a red deer antler was found in layer 4 on the floor of the west ditch when cutting back section 1 in 1952 (P1 2B). It provided a sample for radiocarbon age determination (collagen) by the British

Museum Research Laboratory: 2722 bc + 49 (BM- 1405). Other fragments of antler, probably red deer (kindly identified by Mrs J Startin, Institute of Archaeology, Oxford), were also found in layer 4 of the west ditch.

Interpretation of the ditch silting

The sections show a sequence almost entirely of natural silting, only indirectly interfered with by man. Layer 4 represents primary and secondary silting, all of which could have been completed within five years (see below, p 73), providing that the ditches were not scoured; and there is no evidence for that. The silting being symmetrical shows that the upcast was placed at some distance from the ditch.

Tertiary silting, formed mainly by erosion of the topsoil by various agencies, is represented by layers 3 and 2, the darker colour of layer 3 reflecting, according to Dr E W Russell of the Department of Agriculture, Oxford University, the greater amount of organic material concentrated in the deeper, narrower ditch of this silting stage (cf Limbrey 1975, 294ff.). Similarly dark layers are also characteristic of the loam silting of sites on the flood-plain, or as here at nearly equivalent levels: compare, for Neolithic sites, the Wallingford ring-ditch (discussed above) and sites at Dorchester including the Cursus (Atkinson *et al* 1951, suggested by Zeuner as due there to charcoal, *loc cit*, 119-20) and possibly the Drayton Cursus (Leeds 1934a, 266; 1934b, 415), and the small ditched enclosure at Corporation Farm, Abingdon referred to above (p 50, unpublished evidence kindly given by Mr R P Henderson); also compare the Early Bronze Age King's Weir barrow 1, Wytham (Bowler & Robinson 1980).

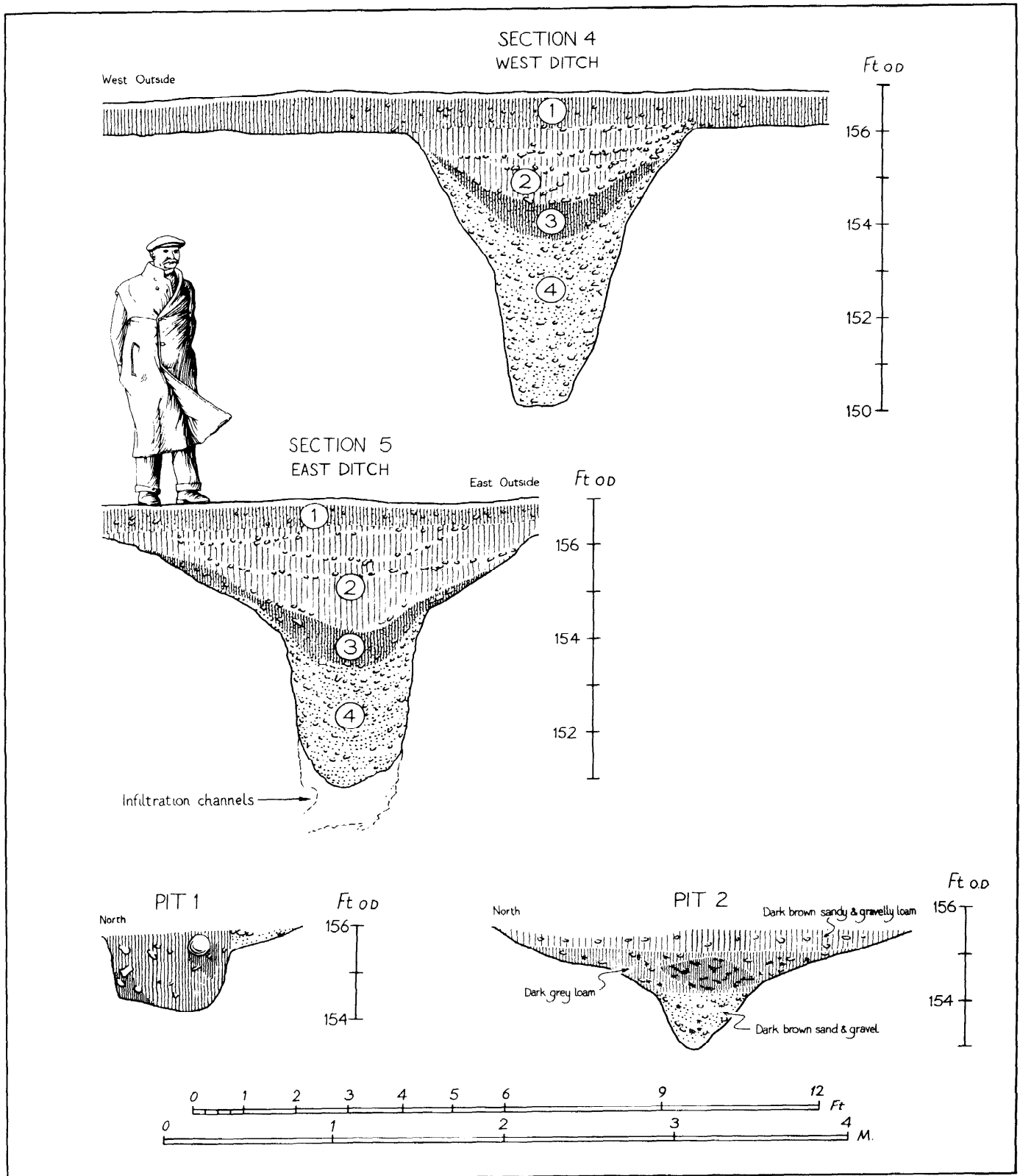


Fig 36 Linear ditches, pits 1 and 2: sections. The figure standing on the inside of the east linear ditch is A Berry

Layer 2 is likely to represent a long period, with struck flints and frequent flecks of charcoal indicating human activity nearby. Up to three runs of pebbles in layer 2 and at the junction of 2 and 3 are taken to represent clearance activity (or cultivation at a late stage) adjoining the largely filled ditches. These runs did not provide conclusive evidence but suggested more frequently than otherwise that the upcast from the ditches had been placed between them. Minor concentrations of stone in layer 1 between the ditches and an intermittent stoneless loamy layer at its base there up to 2 ins thick (Fig 35, sections 1-2) comprise slight evidence pointing the same way. No obvious difference was observed however in the depth of weathered gravel inside or outside the ditches to suggest the former presence of banks, but this might not show in such deeply decalcified material. Theodolite traverses of the ditches and adjacent ground for some 550 ft northwards of the excavation by members of the Department of Surveying, Oxford, showed no significant relief, but this was not surprising in an area more or less continuously cultivated in modern times.

Finally, the silting of the butt-ends of both ditches was carefully observed for any signs which might be connected with the construction of the southern enclosure, but none was apparent.

The southern enclosure and internal features

Fig 34 suggests that the plan of the enclosure was trapezoidal, but its full extent unfortunately could not be observed. The southern arm of the ditch had been truncated by a filled-in gravel pit, and excavation of the northern arm any further eastwards was prevented by the massive spoil heaps of the pit being worked. No trace was however seen of the northern arm continuing eastwards in the face of the pit being worked some 40 ft distant. It is possible therefore that the enclosure was originally open to the east as shown on Fig 34 and as it appears on Allen's photographs, but the lesser possibility remains that it was closed like the similar enclosure nearby at Overy (Allen 1927), with the northern arm continuing some 25 ft or less eastwards before turning south to form a complete circuit.

As excavated, the ditch was continuous and typically broader and more V-shaped than the linear ditches. It was generally about 6 ft wide at the top, but in places narrower, down to 34 ft. Generally about 5 ft deep, though sometimes only 3 ft, the floor was less irregular than in the linear ditches but had been likewise dug in scoops; infiltration channels were similarly observed (as in Fig 37, sections 6, 10 and 11).

Six sections (nos 6-11) were recorded in over 90 ft of excavated filling (Figs 34, 37; the portions marked partially excavated in Fig 34 were excavated down to and including layer 3). The natural silting was somewhat similar to that seen in the linear ditches but showed very contrasting signs of intervention by man. *Layer 4*, sand and gravel as in the linear ditches, had no significant internal stratification, but a somewhat greater amount of filling had come from outside the enclosure in sections 8, 9 and 10. This layer was succeeded by *layer 3*, the early tertiary silting, very dark loam as in the linear ditches. Laterally, it sometimes showed as in the linear ditches as a more or less symmetrical lens (section 7), but was generally asymmetrical, having been truncated by ancient recutting: slightly as in sections 8 and 10 (on its outside), more severely as in section 6 (on its inside), or 9 (overall). The sections through the southern segment showed similar recutting except in section 11, where the evidence had been destroyed in gravel quarrying. Longitudinally, layer 3 was also very irregular throughout the ditch,

sometimes completely cut away, sometimes on its inner side only, but occasionally left undisturbed (Pl 2C).

Layer 3 nowhere graded into the equivalent of layer 2 as in the linear ditches, but was succeeded sharply by a quite different *layer 2b*, which was gravel and sand similar to layer 4 below. Some of this may have silted into the ditch from a nearby bank, but most of it had plainly been dumped. There were struck flints throughout this dumped material but mostly in the top 2 ins. A shallow ditch had then been dug into this material towards the outer edge of the original ditch and had become filled with sandy loam, *layer 2a*, similar to layer 2 in the cursus ditches. The line where this ditch had been cut into layer 2b can be seen clearly in Fig 37, section 6. It had also been cut into layer 3 below in section 9 and slightly so in section 10. This recut ditch was traced in plan continuously in the southern arm of the ditch, but only intermittently to the north. The reason for its intermittent appearance here, between the linear ditches, may be seen in Fig 37, section 7, where the top of its filling had been covered by a dense spread of gravel; this may have been formed through cultivation but its denseness and localised occurrence suggested it had been spread and trampled. This covering by gravel (combined with the pattern of seeding of the crops) may be taken to explain the apparent causeway seen in Allen's photograph 868 of the north arm of the enclosure ditch. Finally, *layer 1*, as in the linear ditches, succeeded 2a or 2b except in section 11 (Fig 37), where the evidence had been destroyed by gravel quarrying.

Tiles and other recent artefacts such as nails or post-medieval pottery were found in layer 1. *Struck flints* were found, unevenly scattered, in all layers of the ditch in similar densities to those in the linear ditches; a concentration of up to 20 flints per square foot however occurred in layer 4 in the middle of the northern arm between the linear ditches. 2 oz of body *sherds* probably belonging to a single pot, best matched by the Middle Neolithic flint-filled fabric from the Abingdon causewayed enclosure, were found in the north-west segment about 12 ft north of section 10 (Fig 34) in the centre of the ditch, on the surface of layer 3 where sealed by layer 2b, in a somewhat similar position to the struck flint recorded in Fig 37, section 8. Its breaks were fairly unweathered but there were no joins.

Interpretation of the ditch silting

The enclosure ditch shows a more complicated sequence than that of the linear ditches, with recutting followed by dumping and further recutting. The slightly greater volume of *layer 4* from the outside edge of the ditch transposing the centre of silting inwards in Fig 37, sections 8, 9 and 10 (but not at all in 6 and 7) suggests an outer bank close enough to the ditch to have affected its early silting. *Layer 3* then accumulated naturally as in the linear ditches and probably for an appreciable period. When it had reached a thickness about proportionate to that of layer 3 in the linear ditches but before the equivalent of layer 2 had begun to form it was partially cut away by the ditch being scoured.

Next, before any natural silting equivalent to layer 2 in the linear ditches had accumulated in the scoured out parts or elsewhere, the ditch was deliberately filled with sand and gravel (*layer 2b*) more or less to the surface of the gravel subsoil. The lie of this dumped material could not fully be seen as it had been recut on its outer edge; some may have come from what remained of the outer bank suggested by the layer 4 filling, but the impression during excavation was that it mostly came from inside the enclosure. Then probably soon after it had been more or less refilled, the

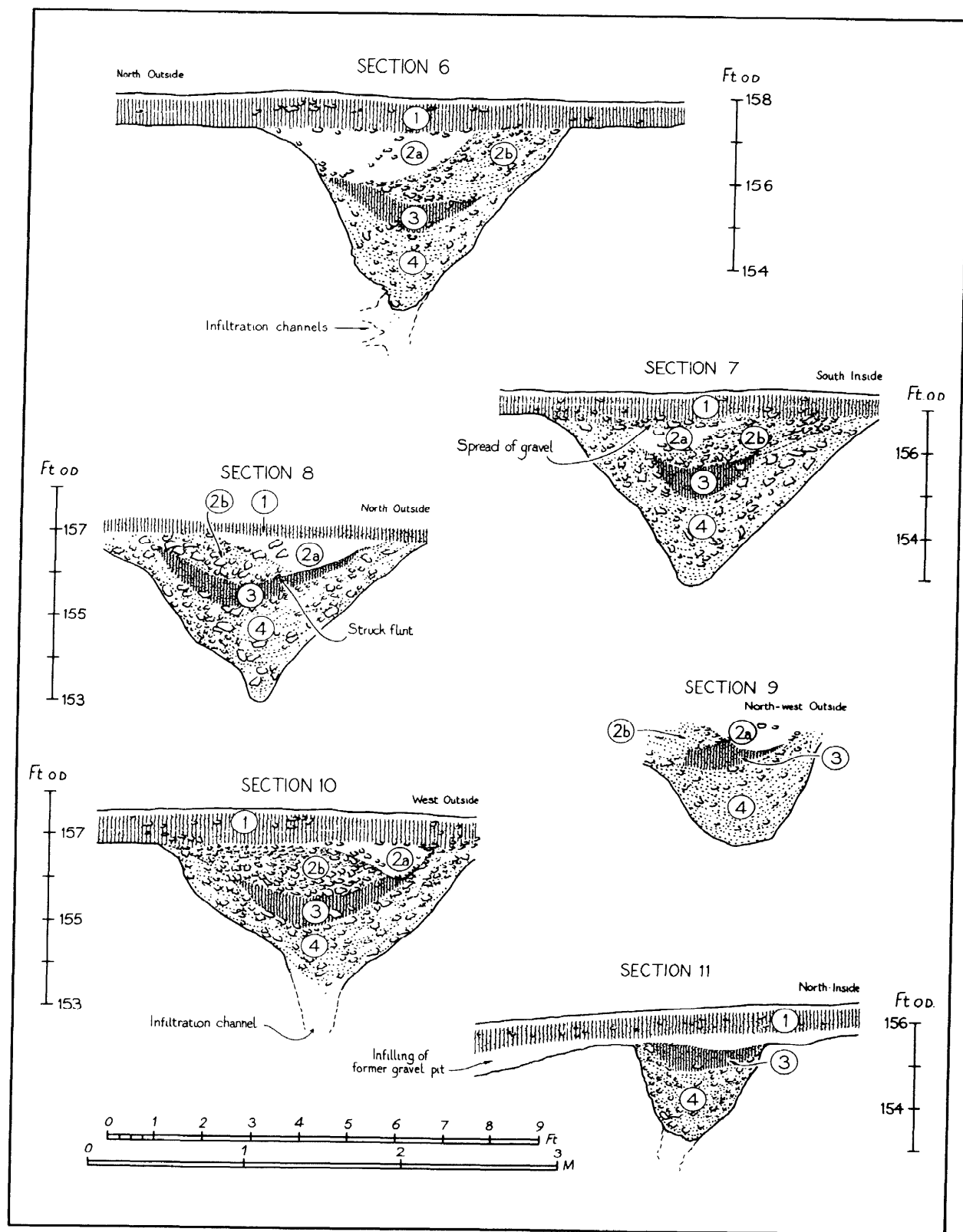


Fig 37 Southern enclosure ditch: sections

ditch was redug again towards its outer edge in the form of a shallow trench which became silted with layer 2a, the equivalent of layer 2 in the linear ditches. A final stage was irregular spreading of gravel over the north arm of the fully silted trench as in section 7.

Five stages are thus represented in the ditch's silting: (1) Construction of the enclosure with possibly a small outer bank close to the ditch and a larger inner one some distance from it; (2) irregular scouring of the partially silted ditch; (3) dumping of the bank(s) into the ditch to level it more or less completely; (4) recutting of the ditch as a slot along its outer edge; (5) spreading of gravel over the silted recut ditch. An appreciable interval may have elapsed between (1) and (2). (2), (3) and (4) may have occurred in fairly quick succession, but there may have been an appreciable interval again between (4) and (5).

Features in the interior of the enclosure

The available interior was almost completely stripped. 28 struck flints were found in *layer 1*, but not in any marked concentrations. Not surprisingly, no traces of putative inner or outer earthworks were found.

Pit 1 was a *posthole* in the north-west corner of the enclosure on the line of the west linear ditch (Fig 34, plan; Fig 36, section). It consisted of an irregular, somewhat rectangular scoop roughly parallel to the north arm of the enclosure ditch and at right angles to the linear ditches. It was somewhat more than 8 ft long and up to 5 ft wide and nowhere deeper than 10 ins with irregular stony, sandy loam filling. At its approximate centre east-to-west and at its northern edge was a steep sided somewhat oval pit, 3 ft 4 ins long by 2 ft 8 ins wide and cut just under 2 ft deep into the subsoil, containing very dark grey to black loam with flecks of charcoal, the replacement filling of a massive post which had decayed *in situ*. Nodules of flint and shattered fragments which had served as packing stones were more or less *in situ* around the edge of this filling just beneath the surface of the subsoil, or had silted into it when the post had rotted; the large flint nodule seen in Fig 36 had abrasion marks. This filling also contained 12 struck flints.

Pit 2 was an oval *burial pit* at the south of the enclosure aligned roughly on the central axis of the linear ditches, which would pass near its southern edge (Fig 34, plan; Fig 36, section). 8 ft by 8 ft 6 ins and of bell-shaped section tapering roughly to a point 2 ft 7 ins below the subsoil, it contained cremated bones and a fragmentary Early Bronze Age miniature collared urn (Fig 38). The topsoil (layer 1) was slightly more stony here than usual suggesting that the pit may have had a covering mound. The pit's upper filling was dark brown sandy and gravelly loam (10YR/4/3); small flecks of unweathered chalk surviving beneath the larger pebbles suggested that this filling did not consist entirely of the decalcified gravel into which it had been dug. Darker at the centre, it was also flecked with charcoal and contained 7 flint flakes including one irregularly retouched and utilised and 4 shattered fragments (one fire-marked). The miniature collared urn was found at the top of this filling slightly east of centre and of the section line, possibly deposited originally on its side (*cf* City Farm, Hanborough, site 3, pit 3; Case *et al* 1964/S, fig 7), with its upper part then becoming damaged by ploughing. Below this filling came 10 ins of dark grey loam (10YR/3/3), with centrally a clearly defined black or very dark grey lens; it contained much charcoal, 4 flint flakes, a core and 41 shattered fragments (35 fire-marked). A radiocarbon age determination was kindly made on a sample of charcoal from this dark grey loam by the British Museum Research

Laboratory: 1424 bc $\pm$ 83 (BM-1406). Below the dark grey loam came dark brown sand and gravel (10YR/4/3) similar to layer 4 elsewhere with a little charcoal and containing 4 flint flakes including a core changing flake and 4 shattered fragments (3 fire-marked); at the very bottom, a few oz of cremated bone flecked with charcoal. Dr D F Roberts of the Department of Human Anatomy, Oxford, kindly reported that, on the basis of thickness, and of lack of fusion of the sutures and of duplication of parts, the bones appear to be from the skull of a child, although their fragmentary condition precluded definite conclusions; breaking apparently occurred after cremation.

Relationship of the excavated features

No direct evidence was obtained of the relationship between the enclosure and the linear ditches. However, layers 2 and 3 of the linear ditches at their southern butt-ends showed no signs of any exceptionally gravelly silting which the digging of the enclosure ditch in their immediate vicinity (and the building of its outer bank) would be likely to have caused. The linear ditches are thus unlikely to have been earlier. Even when originally dug, these ditches must have abutted closely on the enclosure in a way which suggests that the presumed outer bank of the enclosure was no longer there - thus precluding a unitary plan. Finally the filling of the enclosure ditch as recut in its final form (layer 2a) was overlain with gravel only between the linear ditches (as in Fig 37, section 7) and it seems a likely possibility that this was related to their digging. The enclosure is therefore taken to have preceded the linear ditches.

Pit 1 contained a post which seems likely to have been a marker on which a major section of the west linear ditch was aligned and dug; but if so, a pit some 4 ft deep would have been required to support a post of the required dimensions (below, p 74). The depth of the pit from the modern surface was only however some 2 ft 6 ins. Major sub-aerial denudation seems unlikely with such a deeply decalcified subsoil. The post may have been banked around therefore by a small earthwork, and one of the first actions of the diggers of the linear ditches may have been to dig part of the southern section to provide this material, since most of the inner bank of the enclosure will by now have been dumped in its ditch. Interestingly, posts at the Middle Neolithic Stepleton causewayed enclosure, near Hambledon Hill, Dorset, were similarly banked around (information from Mr R J Mercer). Digging of the west linear ditch may then have proceeded from the north towards the marker, and the more erratic east ditch been dug alongside it by approximate offsets. The post will have remained standing after the monument was completed, to decay eventually *in situ*; a less likely explanation is that the post was connected with the function of the enclosure, like the posts in a bedding trench within the long mortuary enclosure at Normanton Down (Vatcher 1961). Finally, the linear ditches or their earthwork will still have been visible features when *pit 2* was dug in the Early Bronze Age, about a millennium and three-quarters later (calibrated).

The sequence is therefore likely to have been: (1) digging of the enclosure and after some appreciable time its modification, both during the Middle Neolithic; (2) digging of the linear ditches likewise during the Middle Neolithic; followed by (3) burial in the cremation pit during the Early Bronze Age,

The function of the monuments and their context

The southern enclosure can be classed with *long mortuary*

enclosures characteristic of the Middle Neolithic, although both inner and outer banks seem an unusual variation. Well known examples have inner banks, such as site VIII, Dorchester, Oxon (Atkinson *et al* 1951), Normanton, Wilts (Vatcher 1961) and another possible example at Charlecote, Warwicks (Webster & Hobley 1964, no 71; Ford 1971). Characteristically these enclosures are complete, but penannular examples as at North Stoke are known, notably Barford, Warwicks at right angles to a cursus and adjoining its terminal (Webster & Hobley 1964). None of them has been found, to contain burials apart from North Stoke and the rather atypical Adlwincle (Jackson 1976). Nevertheless their function may have been funerary; Atkinson suggested (1951, 58) that they were associated with and complementary to long barrows and Vatcher (1961) that they served as ossuaries before being covered by a mound. They would thus be comparable to enclosures incorporated within long barrows as at Wor Barrow, Dorset (Piggott 1954), Nutbane, Wilts (Morgan 1959), Fussell's Lodge, Wilts (Ashbee 1966) or Kilham, Yorks (Manby 1976); such enclosures were ditched and banked or with free-standing timber structures and contained burials often in small structures within them. The role of mortuary enclosure on a much larger scale has also been claimed for the main causewayed enclosure, Hambledon Hill, Dorset (Mercer 1980 and personal information), and it is interesting to note that the recutting of the ditch as noted at North Stoke, and its refilling and recutting again to leave a shallow slit are paralleled both at the enclosure and the adjoining long barrow at Hambledon Hill. Similar recutting and refilling were noted at the Abingdon causewayed enclosure (p 12) but both there and at the Hambledon Hill enclosure, the refilling was accompanied by much settlement rubbish.

At North Stoke the long mortuary enclosure is taken to have preceded the linear ditches at the south. There may have been two periods at the north too (Fig 33), where aerial photographs show the ditches, and the rectangular terminal presumably associated with them, lying within and presumably superseding a faint (filled-in?) oval enclosure. Such an oval enclosure, presumably penannular, is as likely to have contained a settlement (*cf* Corporation Farm and Thrupp Farm, (p 50) as a cemetery or a shrine, but its size and form recall that at New Wintles (p 51), and it may likewise have been funerary. The function of the monument represented by the linear ditches may then have been to provide a formal link between two long revered areas, the places of resort of communities little earlier than that responsible for the period 1 causewayed enclosure at Abingdon. The linear monument's radiocarbon date around the 1st/2nd quarter of the 3rd millennium bc is not significantly earlier than that which can be given to period 1 of the causewayed enclosure, and their material culture can be matched.

Bearing in mind its date, the most likely interpretation of the linear monument (740 ft by 30-40 ft) is that it was either (1) a cursus, which is the interpretation normally given; or (2) a *bank barrow* (virtually a very elongated long barrow, of the kind defined in Ashbee 1970, 15), which is the interpretation preferred here and was first suggested to me by Mr R Loveday.

The monument would be short for a cursus: only Barnack, Northants (Phillips 1935; RCHM 1960), Sherbourne and Barford, Warwicks (Webster & Hobley 1964, nos 81, 83) would be shorter. It would be exceptionally narrow - half the width or less of Barford, the narrowest recorded. Two parallel banks would have needed accommodating within this width: as at Amesbury and Winterbourne Stoke,

Wilts (Stone 1947; Atkinson 1956; Christie 1963), at the Dorset cursus (RCHM 1975) and at Rudston A, Yorks (Dymond 1966). The evidence at North Stoke suggests more consistently than otherwise that the upcast from the ditches was indeed placed between them (p 66), but since it had no effect on their earlier stages of silting, its overall width between them is unlikely to have been more than 20 ft. If so then, applying Startin's figures (p 74), twin unrevetted banks between the ditches, with a maximum possible height of less than 4 ft, would have been less than 3 ft apart, at least in places. If revetted with turf on both faces, 4 ft wide and rather more than 4 ft high, they would still have been only about 7 ft apart. Both these possibilities seem unlikely. A further one remains: that the upcast was heaped not to form twin banks but a level causeway between the ditches, which allowing for a 40° angle of rest at its sides would have been about 16 ft wide. Such a monument might have been analogous to a cursus, but no examples are known.

Given the alternatives, the more likely interpretation is that the monument was a bank barrow - although not absolutely typical of the class so far recognised. The recognised examples, all in Dorset, are: Broadmayne 19, about 600 ft long by 50 ft wide (RCHM 1970a, 431); Long Bredy 1, 649 by 69 (RCHM 1952, 41); Winterbourne St Martin 23 (the Maiden Castle long mound), 1790 by 60, the east section being some 550 ft long (RCHM 1970a; Wheeler 1943, 86 ff); and Pentridge 21 and 22 if regarded as a single monument, 455 by 60 (RCHM 1975, 56-7). It would thus also be exceptionally narrow for a bank barrow, but of acceptable length. The mound would be small for a member of the long barrow class. If heaped at the angle of rest, it would have been only a little over 5 ft high; but if revetted it would have been reasonably stable at somewhat over 6 ft high, and this seems acceptable. The north-south orientation is not unknown for southern English long barrows (Ashbee 1970, 28-9) or for bank barrows: Long Bredy 1 was NE-SW and Pentridge 21/22 NW-SE.

Winterbourne St Martin 23 is the only bank barrow to have been excavated. Here there was a berm between mound and ditches as there would have been at North Stoke, and this was so even where the mound had been placed off centre (Atkinson 1953; Wheeler 1943, pl V). There were traces of a forecourt at the east end, and the northern terminal at North Stoke may similarly represent a forecourt; the excavations in 1950-2 may thus have been at the tail of the mound. There would also be an interesting partial parallel in the sequence at North Stoke, if the underlying ditch of the causewayed enclosure at Winterbourne St Martin had indeed been deliberately filled in (Smith 1965, 17) like the ditch of the southern enclosure at North Stoke.

Long barrows, bank barrows, long mortuary enclosures and cursuses are an interlocking Middle Neolithic series. Cursuses are familiar crop or soil marks in the Upper Thames valley, and the linear marks south of the southern enclosure at North Stoke may be another example (p 62). Their direct association with long mortuary enclosures is shown nearby at Dorchester, where site VIII, a long mortuary enclosure was found to antedate the cursus to whose ditches it was axial (Atkinson *et al* 1951, 60); and the enclosure at Overy (Allen 1927) lies near the Warborough cursus. Long barrows and bank barrows on the other hand are unexpected on the Upper Thames gravels; but a long barrow has been claimed at Drayton (Benson & Miles 1974, 62) and it is interesting to note that linear ditches aligned on the north-east corner of the Warborough cursus (*loc cit* 68, 'Roman Road?'; NMR

SU5993/15172) are in a similar position to the bank barrow Pentridge 21/22 in relation to the Dorset cursus (RCHM 1975, 25).

After the construction of the North Stoke bank barrow, its sanctity and that of the southern enclosure survived for at least a millennium and three quarters (in calibrated chronology), at least until the cremation burial in pit 2 was made inside the southern enclosure and on the axis of the linear ditches. This Early Bronze Age burial is inseparable chronologically from that in pit 3, Hanborough 3 (1450 + 60bc GrN-1686: Case *et al* 1964/5) and has features in common: the urns were similar, both were deposited on their side at the top of the filling and there was little bone in either pit or in others at Hanborough. The Late Beaker burial in the small barrow some 130 ft north of pit 2 at North Stoke (Fig 33; Catling 1954) and immediately east of the bank barrow (Catling 1959) may have been only a little earlier (*cf* for similar material, Hanborough 4; 1510 + 65 bc, GrN-1685: Case *et al* 1964/5, 27). These burials at North Stoke are among many examples of the way Neolithic monuments continued to be frequented into the Early Bronze Age, although thereafter they were neglected. This enduring interest raises the question as to how the bank barrow and the southern enclosure remained so long visible under normal conditions of silting and vegetation.

If the barrow still stood approaching 5 ft high it would have been reasonably conspicuous in the Early Bronze Age as long as it was not greatly overgrown, and pit 2 may have been deliberately placed in line with its tail and only accidentally within the southern enclosure. However the question of monuments remaining visible applies to much smaller earthworks than the presumed bank barrow: for example, the ditch of the adjoining Late Beaker barrow was recut when it was already considerably silted (Catling 1959, fig 3), similarly the outer ditch of the Middle Neolithic ring-ditch at Wallingford (p 58); and likewise the Late Neolithic ring-ditch Stanton Harcourt XXI, 1 was considerably silted when it attracted a Middle Beaker burial (Grimes 1943/4).

Indirect evidence bearing on this question was obtained as a result of the ditches at North Stoke not having been filled in after the excavation in 1950, enabling observations of silting and vegetation to be made over more than 25 years (p 73). These suggest that if untended the bank barrow ditches would have been largely silted and overgrown by shrubs within a quarter-century, and that the mound would have been similarly overgrown. This will seem hardly surprising in view of the contemporary state of abandoned railway embankments and cuttings. It seems likely therefore that the monuments were kept fairly clear of vegetation by being regularly frequented. Active tending should not be ruled out since the recently excavated ditches of the Late Neolithic Devil's Quoits henge monuments, Stanton Harcourt, showed evidence of 'frequent clearing out' (Gray 1974). However this may not have been necessary in the case of the bank barrow or small enclosures or ring-ditches, where regular grazing may have sufficed. It thus appears to follow that during the time when such monuments were venerated, at North Stoke extending apparently from the Middle Neolithic to the Early Bronze Age, they were near settlements or regularly visited.

Bank barrows like cursuses are monuments of an open landscape and to be connected with the successful stable adjustment of the farming economy in the Middle Neolithic. At least 10 cursuses are known between Lechlade and Goring in the Upper Thames valley, a distance of approximately 40 miles. They are roughly

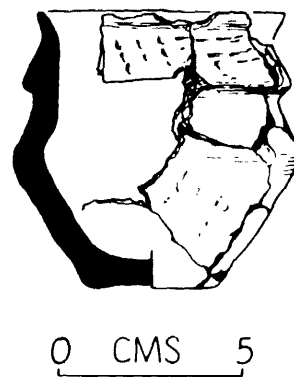


Fig 38 Miniature collared urn from pit 2

evenly spaced, although three are close together at Benson, Warborough and Dorchester and there is a gap between Oxford and Clanfield - partly filled by the modern city. Likewise in the Warwickshire Avon, there are 6 possible cursuses in a stretch of some 25 miles: three and a long mortuary enclosure are concentrated in the central part, from a mile to two miles apart and several miles from the others downstream and upstream. The two in the Trent valley are from 6 to 7 miles apart. These sometimes massive works and their veneration for long periods must reflect the activities of large numbers of people who frequented the lower slopes of the river valleys, seasonally at least. The situation of the North Stoke monuments at about flood-plain level suggests for example that the area may have been used for summer grazing by those whose settlements for the most part may have been in the adjoining uplands.

Reports on finds and other specialist reports

Pottery

Southern enclosure ditch: on surface of layer 3 in north-west segment: 14 undecorated body sherds (1¾ oz), up to 40 by 25 mm and 7 to 9 mm thick; flint filler to 5 mm, also sand and quartz; very dark greyish-brown inside and out with black core; sandy, surfaces smooth. Presumably all from the same pot, they best resemble the flint-filled Middle Neolithic pottery from the Abingdon causewayed enclosure, although the flint is rather more profuse here. Flint filler is rare in local Peterborough pottery, which has a contrastingly soapy feel. The fabrics of local Grooved ware or Early Bronze Age urns are also dissimilar. There is some resemblance to the flint-filled fabric of local bucket or barrel urns, which is however neither so smooth, hard nor compact.

Pit 2; Miniature collared urn (Fig 38), about a third complete (2¾ oz), tripartite, with simple pointed rim (formal motif 3: Longworth 1961); reddish-brown exterior where well preserved, brown to dark brown interior, and black core; badly weathered in places; grog filler and a little sand and quartz. Faintly surviving vertical and horizontal incised lines (possibly discontinuous strokes) on collar. Small collared urns occur quite frequently in the region (Hanborough 3, probably all closely similar in date: Case *et al* 1964/5, fig 26, incl 3/7 for similar motif and above, p 68; Radley 16, *loc cit*, fig 27, no 1; Long Wittenham, *loc cit*, no 1), but none is as small as this which is within the range of pygmy cups. There is no clear correlation between miniature collared urns and burials of children, since cremation frequently precludes an accurate estimation of age, but note example

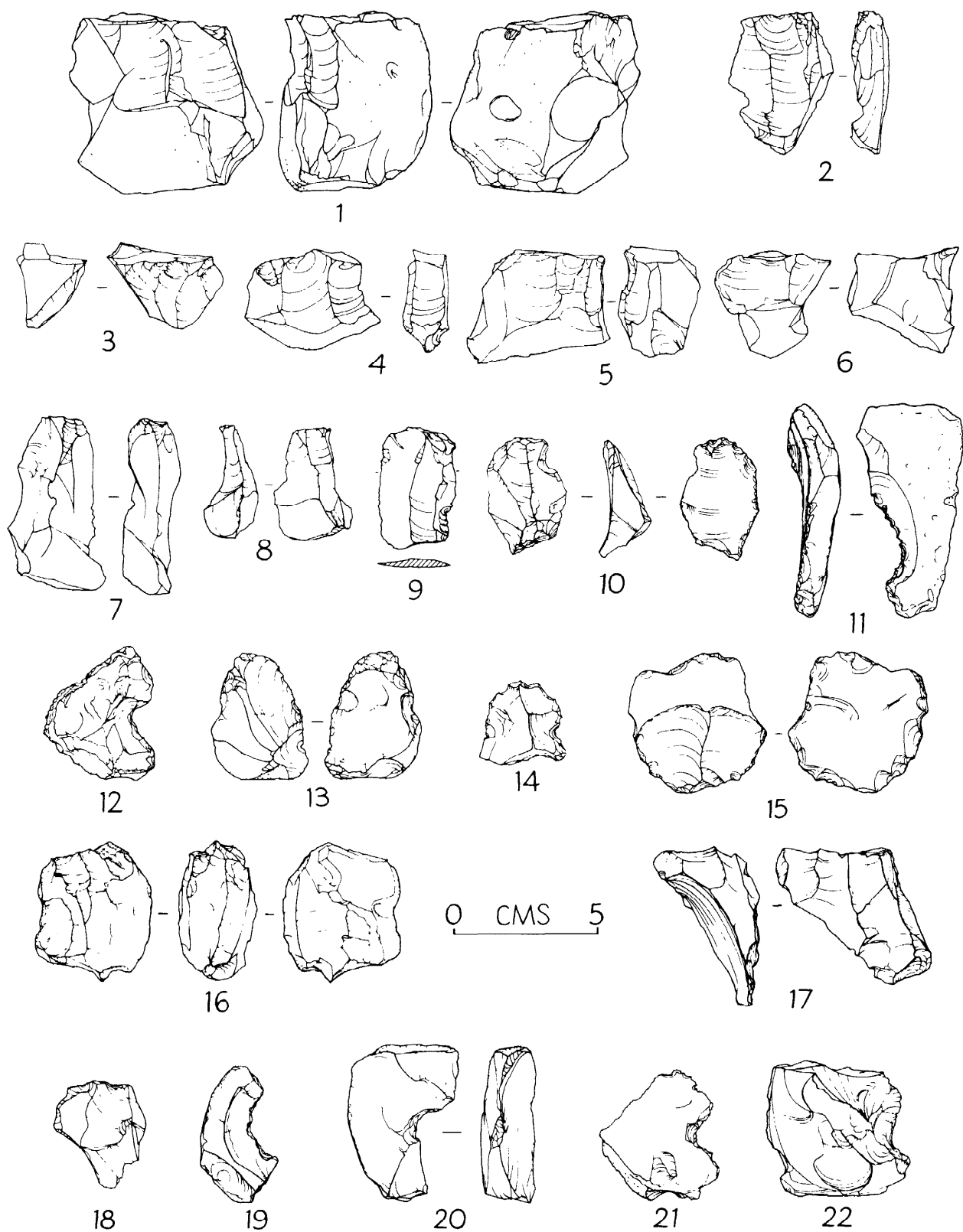


Fig 39 Struck flints from linear ditches and southern enclosure

130 mm high from barrow G 11 Collingbourne Ducis, Wilts, with the crouched inhumation of a child (Annable & Simpson 1964, no 484).

Flint (Fig 39)

1100 struck flints were recorded, 517 (nearly 11 lbs) from the southern enclosure and 583 (18 lbs) from the linear ditches: 209 (3¾ lbs) from the west ditch and 374 (14¼ lbs) from the east. The figure for the enclosure includes 69 shattered fragments mostly firemarked and from pit 2 (1¾ lbs).

These rather indeterminate assemblages can be considered together; the flints from the Early Bronze Age pit 2 are indistinguishable from those from the Neolithic ditches and may include Neolithic flints incorporated accidentally in the pyre. Table 23 shows the types distinguished and Tables 24 and 25 their context, the term ‘shattered fragments’ referring to the debris of worked frost-weathered material. Figures for layer 1 are included for the southern enclosure but not for the linear ditches.

Table 23 Types of flint

	Southern enclosure (ditch)	interior)	Linear ditches
Cores	5	2	19
Core changing flakes	2	1	7
Retouched or utilised flints	7	1	14
Other struck flakes	217	31	249
Shattered fragments	181	69	294
Hammerstone	-	1	-
	412	105	583

Raw material

All the *cores* and core changing flakes and 120 shattered fragments were classified on the basis of their cortex (Table 26). Thus, most of the flint probably came from local valley or fan gravel and only a little from the chalk itself, although this outcropped within two miles at most on either side of the Thames. No re-flaked specimens were recognised. The gravel flint was of poor quality with cherty inclusions; both kinds ranged from black to grey. One core presumably from the chalk has patination suggesting surface flint rather than dug from clay-with-flints, but a core-changing flake of grey flint (Fig 39, no 17) has thin fresh smooth cortex, comparable to that on specimens from the Rotherfield Peppard flint mines, Oxon, some seven miles distant eastwards (Peake 1913, 1914).

Cores (Fig 39, 1-6) were classified according to the Hurst Fen scheme (Clark *et al* 1960), with the addition of type Q for very roughly quartered blocks, giving: *Enclosure ditch*,

3 A2, 1 B1, 1 Q; *Enclosure interior*, 1 Q, 1 indeterminate fire-marked from pit 2; *Linear ditches*, 19 A2. More than half were 2 oz or less and all but one 3 oz or less, the exception being a 10 oz A2 from the linear ditches (Fig 39, 1). Most were rather crude and had few flaked facets, but some were more intensively worked: 2 *cores* from the enclosure ditch (and the core-changing flake of possibly mined flint) and four *cores* from the linear ditches had 4 or more regular facets, but none exceeding 50 mm in length. Deep bulbar facets were characteristic. 10 *core-changing* flakes were found (nos 7, 8, 10, 17, 18). 3 from the linear ditches had been struck from neatly flaked faces.

Retouched or utilised flints were: a *sickle-flake* (Fig 39, 9) of good quality chalk flint, layer 3 of the west ditch, retouched on one side and with gloss and marks of use on the other; 5 *bevelled flakes* (2 in layer 3 of the enclosure ditch, 3 in layer 3 of the west ditch), one with concave edge (Fig 39, 19), and 2 on core-changing flakes (eg Fig 39,10); 2 *utilised flakes* (one in layer 1 in the enclosure interior, the other in layer 3 of the east ditch); finally from both sets of ditches, 12 flakes or fragments with *irregular retouch* (Fig 39, 11-15, 19-22), five with concave edges.

Waste flakes were measured from both sets of ditches (Tables 27 and 28). The flakes from the enclosure thus tend to be narrower than those from the linear ditches; and they had narrower striking platforms and less pronounced bulbs of percussion. Few flakes in the whole assemblage had parallel sides and regular facets (like Fig 39, 9) and only two could be termed blades (with regular facets and length more than twice breadth). Waste in the form of *shattered fragments*, *spalls* and *broken flakes* formed the largest, and by far the heaviest, part of the assemblage. Shattered fragments indicating poor weathered raw material ranged from 1 to 8 oz in weight.

Discussion

The irregularly retouched flints with concave edges are comparable to notched flakes in Late Neolithic industries at Arreton Down, Isle of Wight (Alexander & Ozanne 1960), West Kennet Avenue and Windmill Hill, Wiltshire (Smith 1965), and the bevelled flakes and sickle flake are characteristically Neolithic. The assemblages do not include a range of types usually found on Middle Neolithic settlements and little effort had been made to secure good flint, although it was available nearby. Thus they may mostly represent the casual workings of those who constructed the monuments and visited them, and reinforce the likelihood that, although settlements may not have been far distant, they were not very close. The flakes are somewhat broader than at the Abingdon causewayed enclosure: this may be a condition of the raw material, or may perhaps suggest that Neolithic flint

Table 24 Flints from southern enclosure

Southern enclosure ditch: layer	Core changing Cores	Retouched or utilised flakes	Other struck flints	Shattered flakes	fragments	Σ	Wgt
1	2	1	-	16	2	21	12 oz
2b	-	1	1	32	51	85	1 lb 9 oz
3	-	-	1	54	16	71	1 lb 9 oz
4	3	-	5	115	112	235	5 lb
	5	2	7	217	181	412	8 lb 14 oz
Southern enclosure, interior:							
Pit 1	-	-	-	6	6	12	1 oz
Layer 1							
interior	1	-	-	12	14	27	1 lb
Pit 2	1	1	1	13	49	65	1 lb 12 oz
	2	1	1	31	69	104	2 lb 13 oz

Table 25 Flints from linear ditches

East linear ditch: layer	cores	Retouched or utilised flints	Other struck flakes (including core changing flakes)	Shattered fragments	Σ_2	Wgt
2	1	-	-	1		3 oz
3	6	3	94	117	220	5 lb 6 oz
4	1	-	68	83	152	8 lb 11 oz
	8	3	162	201	374	14 lb 4 oz
West linear ditch: layer						
2	2	-	12	21	35	5 oz
3	9	11	63	65	148	2 lb 14 oz
4	-	-	19	7	26	9 oz
	11	11	94	93	209	3 lb 12 oz

knapping skills were not evenly distributed among the population.

The silting of the ditches subsequent to excavation and their colonisation by vegetation

The ditches were not filled in after the excavation in 1950, it being the owners' intention to dig the area for gravel immediately. The delay in quarrying until 1960 and the survival of part of the southern enclosure ditch unquarried until after 1976 enabled observations to be made of silting and vegetation for more than a quarter of a century. During all this period the ditches stood in a small area of waste land surrounded by a cultivated field. Pls 3 and 4, chiefly from the east linear ditch, illustrate a process which may be divided into stages:

Stage 1: Pl 3A shows the east ditch after excavation in July 1950, looking north from the gravel causeway between its butt-end and the ditch of the southern enclosure. The lower part of the profile may be taken to be virtually as dug in ancient times, but the upper part had become degraded.

Stage 2: Pl 3B shows the ditch in April 1951 from about the same viewpoint, partly filled with water after the exceptionally wet winter of 1951 (*cf* Case 1956/7). The ditches were pumped out as thoroughly as possible and

photographed again (Pl 3C); the view in this case is of the west ditch from the north. The edges of the ditch as excavated in the previous summer can be seen to have become degraded again; about 2 ft of primary silting had accumulated and the upper edges of the cuttings had begun to be undermined. The silting was left in place, the ditches being untouched apart from cutting back the sections.

Stage 3: Pl 3D shows the east ditch from the same viewpoint as before, in April 1952. The processes had continued: the primary silting was nearly complete and vegetation including grasses had already begun to grow in it.

Stage 4: Pl 4A shows the ditch in the summer of 1960 from the same viewpoint, and Pl 4B a similar view of the west cursus ditch taken at the same time. The gravel edges had become still further degraded and the causeway between the butt-end and the enclosure ditch had by now partly eroded away. The primary silting had been completed and the gravel surfaces at the sides of the ditch had been almost entirely invaded by vegetation; only exceptional storms or human activity would have been likely to have dislodged noticeably more stony material into the centre of the ditch. One may take it, therefore, that the secondary silting was now virtually finished and that layer 4 as recorded on the excavation was almost complete. The linear ditches as dug in prehistoric times may be expected to have silted still more quickly, as they would have been narrower at the top: in that case the primary and secondary silting should have been completed in less than 10 years, after which tertiary silting will have begun. Even if no shrubs were allowed to colonise the primary silting, the thick grassy vegetation on its surface as seen in Pl 4A, B would have provided a trap for the accumulation of organic materials, which can explain the dark colour of layer 3 as seen in the excavation (above, p 62).

Stage 5: Pl 4C, looking north, shows a segment of the enclosure ditch running south-north towards its north-west corner in June 1976. This segment some 20 ft long was all that then survived of the excavated area in the gravel quarry. It was about 11½ ft wide and some 3 ft deep as silted; its cross-section had thus been somewhat enlarged by the quarrymen, who at the conclusion of excavation in 1952 had scooped the remaining filling with a dragline from the unexcavated parts of the enclosure ditch before digging for gravel. Thus, although it does not provide uninterrupted evidence of silting, it shows the continuing progress of vegetation. By 1976 it had been thoroughly colonised by shrubs and trees, including hawthorn, dog rose and willow - one willow having four

Table 26 Raw material

	Southern enclosure (excluding pit 2)		Linear ditches	
	Cores, etc	Shattered fragments	Cores, etc	Shattered fragments
Valley or fan gravel	4	53	21	48
From the chalk	2	1	1	1
Indeterminable	-	6	4	11

Table 27 100 waste flakes from the enclosure ditch

	10	15	20	25	30	35	40	45	50	55 mm
Length	3	11	20	14	19	13	12	2	2	2
Breadth	7	25	21	21	17	7	1	1	-	-
Breadth:Length		1:5	2:5	3:5	4:5	5:5	6:5+			
		2	20	27	20	13	18			

Table 28 100 waste flakes from the linear ditches

	10	15	20	25	30	35	40	45	50	55	60 mm
Length	3	8	14	14	24	13	14	5	1	3	1
Breadth	7	10	28	26	13	7	6	3	-	-	-
Breadth:Length		1:5	2:5	3:5	4:5	5:5	6:5+				
		2	17	23	29	15	14				

trunks up to 6 ins in diameter. The field in which the ditch lay was under continuous cultivation, among similar sized or generally larger arable or pasture fields, some of which are bounded by hedges. In this instance, hawthorn and dog rose are likely to have invaded the ditch from the hedge some 120 ft south (Fig 33). The shrubs and trees had rooted into the sides of the ditch and into its gravelly silt (the equivalent of layer 4 as excavated) and formed a more or less complete canopy, which was observed in 1979 to have been only slightly scorched by stubble-burning in the field alongside. Some 8 ins of loose loamy leaf mould with twigs and pebbles had accumulated above the gravelly silt by 1976; and no doubt in due course the equivalent to layer 3 as excavated would form from this loamy material if the ditch were left undisturbed.

These observations are in line with those suggested concerning ditch silting generally by experiments elsewhere (Jewell 1963; Jewell & Dimbleby 1966; Evans & Limbrey 1974); more specifically they indicate the speed of primary and secondary silting in a steeply dug unrevetted ditch in coarse gravel, and confirm the function of a silting ditch as a trap for organic material (above, p 64). More importantly they show that comparatively low or shallow earthworks such as those at North Stoke would not only soon have become degraded through the processes of primary and secondary silting, but even in a quite open and relatively densely settled landscape would have soon afterwards become almost totally blocked or hidden by dense and shrubby vegetation unless they had been cleared systematically or animals had been allowed to graze them freely. Conversely, grazing would have made slight earthworks such as the fully silted enclosure ditch more conspicuous as vegetation marks.

Radiocarbon dates

Determinations were made at the British Museum, through the kindness of Dr I H Longworth and Mr G de G Sieveking:

Context	Lab No	Date	Sample
East linear ditch, layer 4 (basal)	BM-1405	4672 ± 49 bp (2722 bc)	Antler (Collagen)
Pit 1, dark grey loam between collared urn and cremation burial	BM-1406	3774 ± 83 bp (1424 bc)	charcoal

BM-1405, coming from an antler brow tine which presumably had a direct functional relationship to the linear ditches, may be given *high probability* association (group B, Waterbolk 1971). The quantity and size of fragments providing BM-1406 give its association *probability* (group C).

Charcoals

by A C Western, Department of Antiquities, Ashmolean Museum

The following identifications were made:

Linear ditches, layer 2: *Corylus* sp; *Quercus* sp. Pit 1: *Quercus* sp. Pit 2: *Quercus* sp.

The labour force involved in constructing the monuments

by D W A Startin, Inspectorate of Ancient Monuments, Department of the Environment

The bank barrow

Three ditch sections have similar dimensions (Fig 35, 1; Fig 36, 4, 5); two (Fig 35, 2, 3) are respectively smaller and larger. The profiles of these ditches show that they could

only have been excavated in 'trench digging' fashion (p 154); such profiles could not conceivably have resulted from sinking of a number of adjacent pits. I suggest that one person did both picking and shovelling, and that the spoil was initially thrown up with the shovel, there being insufficient room to shovel it into a basket.

Assuming the three similar profiles to have been typical, we can suggest a cross-sectional area of about 16 sq ft. The overall length of the monument is some 740 ft, which gives the total volume excavated 23,680 cu ft, ignoring the slightly wider ditch sections which must have occurred where the first pits were sunk before the linear progression of digging could begin. This allows us to estimate the labour involved in digging the monument at roughly 2000 manhours.

Allowing the customary 13/12 expansion factor of gravel, an unrevetted bank alongside each ditch (in the style of a cursus) would have had a basal width of 9 ft and a height of only 3¾ ft. The plan of the monument shows that the ditches were formed each of five roughly equal sections. Each of these lengths would have involved about 200 manhours. In fact, because of the confined working space (Hurst 1886,350), it would be safer to increase these times by about one-third; this gives 266 manhours per section, or 2660 for the whole monument. We may suggest therefore that if the monument were a cursus, a working force of 10 people, each digging their own length of ditch, could have dug the ditches and heaped the banks in around 27 days. The fact that the line of one ditch was probably laid out by offsets from the other does not necessarily mean that it was excavated later.

However, as has been argued (p 69) the ditches could have been used to provide material for one central bank in the style of a bank barrow. Under these circumstances each digger might have required a maximum of one basket (maximum since he would not have been fully used at the speed of excavation I have assumed). The labour force would thus have been doubled to 20 and the labour to 5,300 hours.

If revetted on all sides (p 69), we might assume a turf revetment 6 ft high by 2 ft wide with an overall length (both sides and ends) of about 1,500 ft. If 3 in turves were used, 72,000 sq ft of turf would have needed to be stripped (the ditches would only have provided about 8,500 sq ft) and the labour would have been about 6,450 manhours, raising the total to about 11,700.

Pit 1

The surviving pit has a depth of just under 2 ft from the present ground surface and apparently held a post about 2 ft in diameter. A timber of this diameter and long enough to have been a siting marker (p 68) could have been manhandled by the suggested minimum labour force: at 70 lbs/man and allowing a friction force of 450 lbs/ton, the 10 men postulated would have been able to drag a timber of 2 ft diameter and 16.5 ft length. However, a pit with depth of less than twice the diameter of the post would have provided little support unless the post was held in position by guy ropes (cf the post pit at Danebury, where a 'ritual' post some 3 ft in diameter was embedded in excess of 6 ft: Cunliffe 1971); the stability of a post depends on *both* the proportion of the length which is embedded *and* the relationship of its diameter to the embedded length.

The evidence that the post rotted *in situ* presumably precludes guy ropes. In that case a post perhaps 12-16 ft long would have needed a pit 4 ft deep to be reasonably stable. Therefore, either some 1.5 ft had been eroded

from the original land surface or the post was held in a bank or mound now ploughed out.

The southern enclosure

The enclosure ditch has a similar cross-sectional area to the linear ditches (about 16 sq ft), although it was wider and shallower. The dimensions of the upcast would thus have been similar to that of a linear ditch. Without any allowance for working in a confined space, the labour involved in building the surviving length of the enclosure (about 150 ft) would have been 200 hours. Again, although the evidence is unclear, the ditch on plan looks to consist of separate joined lengths in the region of 20-25 ft long; these would have taken only 27-34 hours to excavate. The labour requirement for the enclosure was therefore trivial.

with contributions by B Blackwood, H J Case, C B Denston and A W R Whittle

Ring-ditch 15 at Radley, Oxon (NGR SU 518984; numbered by Leeds 1928b, fig 7) is one of the well known group of at least seventeen ring-ditches extending in two lines with outliers, amidst other cropmarks over the Barrow Hills and adjacent fields and about half a mile east of the Abingdon causewayed enclosure (Fig 40). This ring ditch and barrow cemetery, some 800 yds long, lay on level ground of the second terrace between Abingdon and Radley some 30 ft above the Thames and about three-quarters of a mile from it. Like some other groups of ring-ditches in the region, it may have extended along an ancient track (Case *et al* 1964/5, 50ff: below, p 113 ff). It had been partially recognised from the air and on the ground by 1930 (RAF photos nos 1215, 3150, 3151 presented to the Department in that year by the Ordnance Survey; Leeds 1936, 9), and was fully recorded from the air by Allen from 1933 to 1938 (nos 961, 964-98 1; Leeds 1936, pl 1; 1938b, pl VI; Williams 1948, pl 1). Of its constituent barrows and ring-ditches nos 4-7 and 17 have been wholly or largely destroyed by gravel digging and nos 14-16 partly so. No 14 was excavated in 1931 (Leeds 1936), no 16 from 1936-8 and no 11 in 1938 (Leeds 1938b); no 15 in 1942 (as reported here); nos 2 and 3 (Atkinson 1952/3), 4a, 4, 5, 6 and 17 (Williams 1948) in 1944, and no 7 in 1945 (Atkinson 1952/3). No 2 was re-excavated by the Oxfordshire Archaeological Unit in 1976 in advance of threatened destruction by roadworks, now in abeyance (Parrington 1977). The remainder have not been excavated.

No 15 was one of the worst defined as recorded by Allen, only showing as a cropmark on one photograph (no 968: Pl 5A) from 1934. It appeared as two concentric ditches, narrow, somewhat irregular but largely continuous, with a prominent central pit, but a more recent photograph in the National Monuments Record shows the ditches fully continuous except where destroyed by quarrying (Parrington 1977, p 1 III). In 1942, a small gravel pit which had already partly destroyed no 16 (Leeds 1938b), was observed from the air (Riley photo no VIII/33, held in the Department) to have been extended further westwards, partially destroying parts of both ditches of no 15 on its eastern side. With the permission of Mr W Dockar-Drysdale, rescue excavations were arranged by the Oxford University Archaeological Society and took place under difficulty at weekends in the late summer of 1942 (Ox 7, 103). R J C Atkinson, J S P Bradford, Miss C M Beckett, Miss B Blackwood and Miss J Morris took part. In the event, gravel digging was unexpectedly discontinued and the site partially survived, though still under cultivation.

The ditches were sufficiently traced on the ground by crop marks in a clover ley (Fig 40) for cuttings to be laid out to examine the central area. Thence, a long cutting 3 ft wide was extended north and south to locate inner and outer ditches; others were made across the inner ditch to the west and the ditches were also observed in section in the face of the gravel pit.

The ditches

Both ditches were roughly circular, with external

diameters about 70 ft and 120 ft; they were shallow, only 9 ins to 1 ft 6 ins into gravel, their width varying between 2 and 4 ft. Neither ditch could be traced in the ley to the north-west. The outer ditch, however, was found to have been dug into 'clayey subsoil' (subsoil loam?) in the north, where obscured by a dark patch on Allen's photograph (Pl 5A). The inner ditch was not found to the south where the cropmark appears discontinuous in Allen's photograph. The surface of the gravel subsoil here was densely concreted and this may explain the shallow apparently discontinuous ditches. Very hard concretion recurred in Barrow Hills field, though elsewhere it does not seem to have deterred digging (for instance, at no 7, Atkinson 1952/3, 26, or no 14, Leeds 1936, 9). Both ditches were filled with a uniform reddish brown loam; no primary gravel silting was recorded.

The interior

No trace of a mound was observed in removing shallow topsoil from the central area, where two pits were found to have been dug into gravel. Several stake holes, about 6 ins in diameter and from 9 ins to a foot deep, were observed north of the pits, but were not planned, no regular pattern being evident.

Pit 1

Oblong, aligned north-south, with one rounded and one squarish end, it was 10 ft 2 in long and 5 ft 2 ins wide at the surface of the gravel subsoil, and 3 ft deep with sloping sides, its flat base being 8 ft long and 28 ft wide. Its predominant filling was fine reddish brown loam, flecked with charcoal fragments, and containing abundant snail shells. The following other features were recorded, from the surface downwards:

- (1) A deposit of partly articulated *human bones* lay on a layer of fine charcoal fragments at from 6 ins to 1 ft 6 ins below the gravel surface near the south-western corner. They included, according to field identifications by the late Miss B Blackwood, Pitt Rivers Museum: a left femur; part of a right femur, left and right tibiae; right ulna and radius; two dorsal vertebrae (8th? and 11th?, not consecutive); left calcaneum, right astragalus; and three right ribs. (Goody in Williams 1948 for some details of these and other bones described below, Duckworth Laboratory: MH 7, lab no Eu. 1.4.6.)
- (2) An *animal bone* was surrounded by several blocks of gravel conglomerate in the centre of the pit 1 ft deep. Two Middle Neolithic *sherds* and several *flint flakes* as well as an ox tooth were also found in upper filling, the latter at 2 ft depth.
- (3) The filling down both long sides to a depth of 2 ft was densely flecked with charcoal, and the upper filling on the west side together with the adjacent subsoil had been reddened.
- (4) Two pieces of *carbonised wood* each about 4 ft long, 7 ins broad and one inch thick were found together a few inches east of the long axis at 2 ft and 2 ft 6 ins deep respectively, lying somewhat sloping.
- (5) A second deposit of partly articulated *human bones* lay below a layer of charcoal at the base of the pit, approximately on the central axis, 3 ft from the north end. They included, according to Miss Blackwood's field

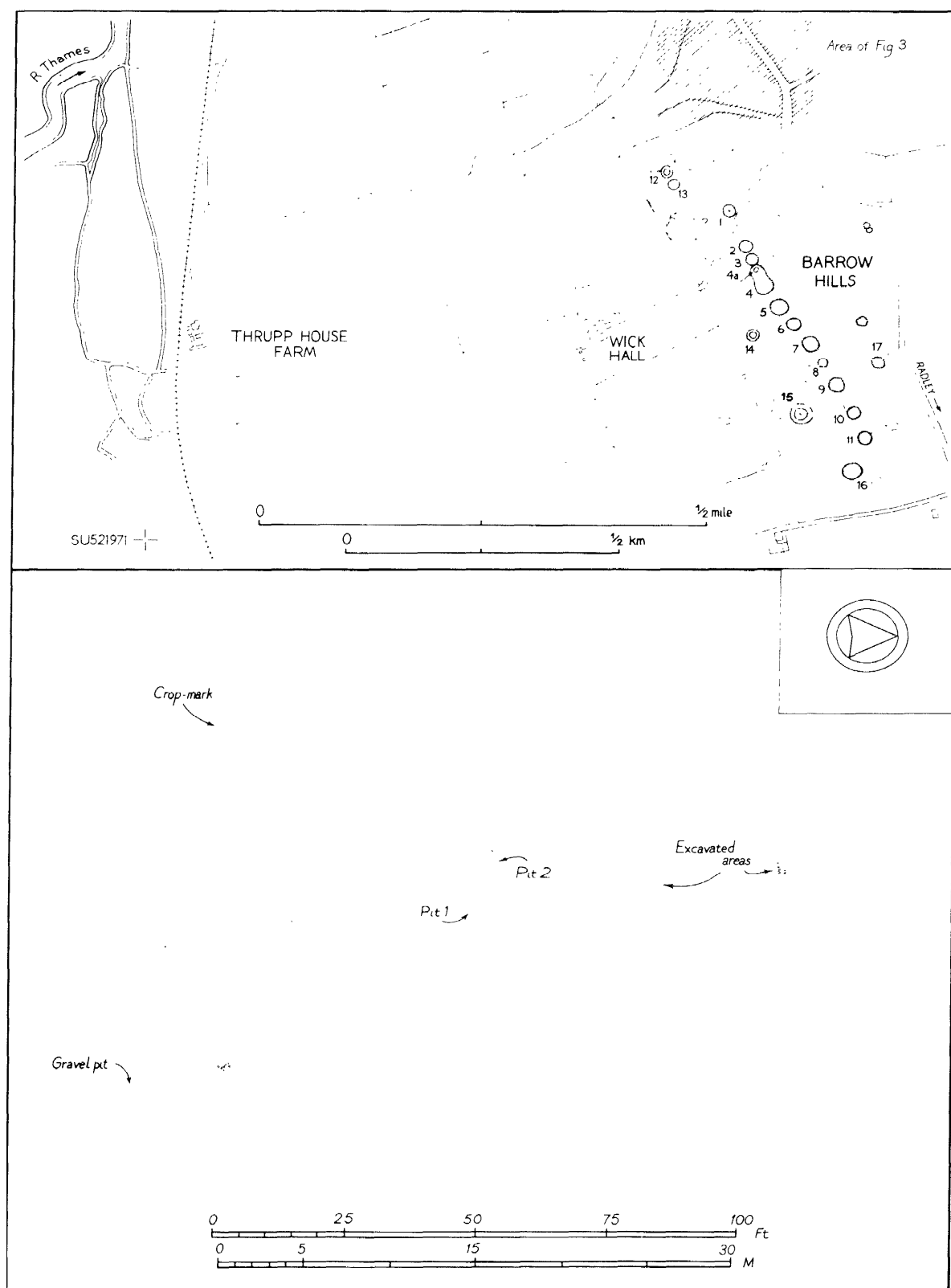


Fig 40 Above: Barrow Hills, Radley in its regional setting. Compiled by N G Griffiths from the following: Allen 959, 961, 964-6, 968. NMR SU5198/28/120, 123, 126; 29/135-6. St Joseph AM19; CD037; DX017, 020, 022. Below: Ring-ditch 15

identifications: an adult male skull and lower jaw (its left side missing), with five vertebrae in position (atlas, axis and 3 cervical); three upper ribs; proximate end of a right scapula; right clavicle; left ulna; left radius; and three metacarpals. Mr C B Denston, Duckworth Laboratory, Cambridge, confirms that the bones missing from the skull and jaw are: left half of mandible; left half of maxilla; left temporal bone; part of left parietal bone (Duckworth Laboratory reference no: Eu. 1.4.6).

(6) A third deposit of partly articulated *human bones* also lay on the base of the pit but some 4 ft from the southern end and towards its east side, between two charcoal layers, the lower more finely comminuted. The bones were again identified by Miss Blackwood. At the top were a right humerus and a limb bone tentatively identified as a left ulna. Below lay a sacrum with fifth lumbar vertebra attached; left and right innominate bones (respectively below and above the sacrum); left humerus with its head missing; six ribs; left astragalus; a complete left foot; two naviculars and a right calcaneum. A *barbed and tanged flint arrowhead* was found below the foot.

The following interpretation may be suggested if one assumes that the bones were almost all of one individual: much of the remains of an adult man, partially articulated, was arranged at the base of the pit in two deposits, the northern containing upper parts of the body and the southern containing lower. (The tentative identification of a left ulna in feature 6 implies however a second individual.) These were covered with charcoal and with a few inches of charcoal-flecked loam. Fires were lit along the sides of the pit: the material burnt included planks, perhaps part of a coffin or bier. The pit was then filled with more charcoal-flecked loam containing sherds, struck flints and an animal bone. The remaining bones of the partly articulated skeleton were buried near the top of this filling and an animal bone was also deliberately deposited.

Pit 2

Immediately west of pit 1 separated by as little as 8 ins of gravel, its southern end was similarly rounded and its northern square, but it was slightly larger, 11 ft 2 ins long and 6 ft wide at its broadest point. It had an oval extension at the north-west corner, some 3 ft long and 1 ft 9 in wide. The sides of the pit sloped to an irregular base, 2 ft below gravel surface in the south-west corner and at the north end, but more elsewhere; a low step had been cut in gravel on the east side of the base. The pit and extension were filled with loamy gravel. A fragment of *antler* was found 2 ft deep near the middle of the western side. *Bones of two children* (reported below, p 79) with two undecorated body *sherds*, probably of Beaker pottery were found about 1 ft 6 ins deep in the extension.

Pit 2 seems to have been filled more or less immediately like pit 1, since no silting was recorded. The filling in this case was loam mixed with gravel rather than loam alone.

The finds

Pit 1

Pottery: *sherd*, about 1 ft from upper deposit of human bones (feature 1), 40 by 30 mm, 8 mm thick; very light brown exterior (10YR/7/3) and very dark grey core and interior surface (10YR/3/1); exterior weathered, interior surface with smoothing marks; compact fabric densely filled with shell (<5 mm) and occasional small stone grits including quartz. Another *sherd*, 10 ins depth at north end of pit; 45 by 40 mm, 6-9 mm thick; unweathered brown

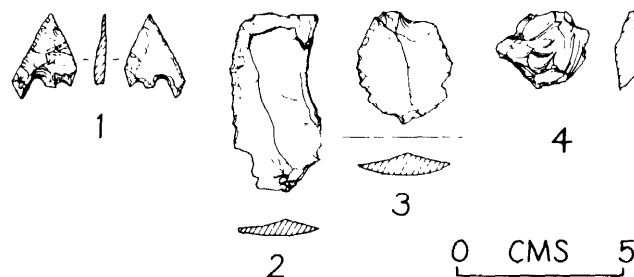


Fig 41 Struck flints from Radley 15: 1, barbed and tanged arrowhead, pit 1; 2, blade knife, pit 1; 3, 4, scrapers, topsoil

surface coating (10YR/5/3) over light grey core (10YR/7/1) and very dark grey interior (10YR/3/1); compact sandy fabric quite densely filled with flint grits <8 mm. Both these are best matched regionally by Middle Neolithic pottery from Abingdon causewayed enclosure.

Flint: Barbed and tanged flint arrowhead (Fig 41, 1) from below bones of human foot in third deposit of human bones (feature 6). Mottled grey flint, wholly retouched dorsal surface and partly bulbar; long barbs and short narrow tang (all broken). This type of arrowhead with long barbs and relatively short tang is characteristic of the Late phase Beaker Culture (Case 1977, 83); examples in southern England for instance at Lambourn 31, Berks (Case 1956/7, fig 5; Clarke 1970, fig 892) and Wimborne St Giles G 9, Dorset (Annable & Simpson 1964, 778-85). Compare Middle Beaker examples with relatively shorter barbs and longer tangs, and less finely worked, nearby for example at Radley 4a (Williams 1948, pi IIc) and Stanton Harcourt XXI, 1 (Grimes 1943/4, fig 15); and compare with the more dart-like form in Middle Bronze Age association in Standlake 1 (Riley 1946/7, fig 8).

12 struck flints from upper filling: *blade* (Fig 41, 2), dark grey flint, cortex suggesting non-gravel origin; one edge with light shallow retouch and damage by use at distal end. Knives of this kind have been recorded in Middle and Late Beaker culture graves, for example, Garton Slack 161, E Riding, Clarke 1970, fig 555; Winterborne Monkton, Wilts and Ysgwennant, Denbighs, Clarke 1970, figs 897, 895); but they would also be in place in earlier Neolithic assemblages. 11 *flakes*, up to L 35 mm, four broken including probably another snapped blade (with marks of use on one edge). Dark grey and patinated flint with cortex on at least two suggesting non-gravel origin.

Human bones: see above, this page.

Pit 2

Pottery: 2 *sherds*, with children's bones in the oval extension. 21 by 17 mm and 21 by 16 mm, both 5 mm thick; reddish-brown surface (5YR/5/3-5/4), reddish yellow beneath (5YR/6/6), very dark grey core and interior (5YR/3); rather flaky, sparse sand and quartz filler (-1 mm) and ? grog; neutral to sandy feel, somewhat weathered. Consistent with regional Beaker pottery.

Antler: Fragment from main pit filling, L 103 mm, 1/4 oz.

Human bone: Mr C B Denston, Department of Physical Anthropology, Cambridge, kindly reports:

Burial 1 Duckworth Laboratory: Eu. 1.4.7) ? Female. Age, approximately 8 years. Remains consist of a fragmentary calotte (cranium minus basal and facial portions), and fragmentary portion from the right half of the maxilla. Deciduous molars and canines retained in the maxilla and mandible. Incisors ousted by the permanent dentition. 1st permanent molars functional.

Burial 2 Duckworth Laboratory: Eu. 1.4.7A. Extensively crushed. ? Male, by size of the teeth. Age, approximately 11 years. All deciduous dentition deposited. Permanent incisors functional. 1st molars functional, displaying attrition. Premolars erupted. Canines erupting through alveolus.

Interior, topsoil

8 struck flints: end scraper (Fig 41, 3), white polished, marks of use on both edges. Another scraper on shattered chip (Fig 41, 4), qualifying as crude example of typically small Beaker scraper (for instance, regionally in Late Beaker Cassington pit 1, Case *et al* 1964/5, fig 22, nos 13-14). 6 blades, flakes or fragments up to 48 mm long, one with bevelled edge, another with marks of use and another fire altered.

Discussion

The finds give Radley 15 a Late Beaker date - with the Abingdon style sherds from pit 1 best seen as random inclusions, unsurprising in view of the nearby causewayed enclosure. This date is consistent with the features of the monument generally, although some double ring-ditches regionally have Middle - Late Neolithic associations.

Since the shallow ditches cannot have provided gravel for a substantial mound, the monument may have been a ring-bank like Late Beaker examples at West Overton G 6b, Wilts (Smith & Simpson 1966) and Burnt Common near Honiton, Devon (Pollard 1967); or it may perhaps have been a platform or disc barrow like the recently damaged Lambourn 15 (Case 1956/7) and as assumed for Cassington 4 (Hamlin & Case 1963 and references), both Middle Beaker, and as also assumed in Late Beaker contexts at North Stoke (Catling 1959) and Queensford Mill, Dorchester (Simpson & Case 1963). The absence of gravel filling in pit 1 may suggest that it was originally covered by a small mound or tump, probably a common enough feature of Beaker culture graves (below, p 105). The northerly orientation of pits 1 and 2 can be matched at North Stoke, and was favoured at the Late Beaker Eynsham cemetery but less so at Cassington (Case 1977, fig 4: 5). Non-superimposed double burials as of the children in pit 2 occurred regionally at Summertown, Oxford (2 adults with Middle Beaker: Clarke 1970, fig 246) and in grave 16 of the Late Beaker Eynsham cemetery (interred man and cremated woman: Leeds 1938). Organic traces interpreted as wooden and wicker coffins have been reported quite often from Beaker culture graves: regionally from Stanton Harcourt XXI, 1 (secondary Middle Beaker grave: Grimes 1943/4, 40), Dorchester XII (Middle Beaker with a secondary wooden object reported as a mortuary sledge: Atkinson 1951: *Inventaria Archaeologica* GB I), and less certainly from queensford Mill, Dorchester (Late Beaker: Simpson & Case 1963). Somewhat similar traces were recorded in Grave C, Saxton Road barrow, Abingdon (Leeds 1936, 31: probably Late Beaker in date if not cultural affinity). Examples of wooden structures from further afield are at mesbury G 71, Wilts (Phase II burial, Middle Beaker late: Christie 1967), and include the mortuary houses discussed by Ashbee (1978).

Radley 15 is further evidence of important Beaker culture

settlement nearby, as seen in the same cemetery by the well furnished Middle phase inhumation burial from ring-ditch 4a (Williams 1948) and the Late phase inhumation with (bronze) knife from barrow 3 (Atkinson 1952/3). No 17 may also have been of Beaker date (Williams 1948, 13-14, inadvertently misidentified in Benson & Miles 1974, fig 15); it showed interesting resemblances to no 15, having two burial pits, one with a disarticulated child's burial, the other containing an articulated contracted male inhumation burial, aligned west-east facing north in an attitude not however matched in the regional Beaker culture (Case 1956b, 21; 1977). Nearby, a Middle Beaker burial was found close to the lower righthand margin of Fig 40 top (SU/521989: Leeds 1935, 38: Clarke 1970, fig 152) and another recently further south near Radley Village (information from Mr J Wallis, Abingdon Archaeological Society). Beaker sherds also came from the upper filling of the outer ditch of the Abingdon causewayed enclosure (Case 1956a), and sherds of a Late Beaker (possibly a domestic pot) have been found south of Thrupp farm house (Sherratt 1973: Fig 40 top, SP 521971) and others nearby (information Mr W Skellington). A field-system possibly of Late Beaker date had been noted in re-excavating barrow no 2 (Parrington 1977).

Both the condition of burial 1 and the dimensions of Radley 15 are unusual. Fragmentary or incomplete Middle Beaker inhumation burials have been recorded regionally at Dorchester XII (Ox 15, 106) and twice at Stanton Harcourt: Vicarage Field grave 2 (p 105) and grave 1 north of XV, 1-5 (Hamlin & Case 1963). Further afield they are known throughout the Beaker Culture (for instance recently excavated Late examples at Watnall Farm, Suffolk: Martin 1976), but the burial as in pit 1 of an individual perhaps not long dead in three deposits in a single grave is remarkable in any context. Miss Blackwood observed during excavation that the remains appeared to have been pulled to pieces while there was still flesh on the bones, and not cut up. Of the explanations which can normally be provided for disarticulated, fragmentary or incomplete burials, butchery is thus out of the question as are natural causes (such as subsidence, collapse of the grave structure or burrowing activities), and also disturbance by later burials or reconstruction. There remain robbing of the grave, which seems possible in the case of Stanton Harcourt grave 1 north of XV, 1-5 (despite the excavator's opinion: Hamlin & Case 1963); or transference of the remains after initial burial or exposure elsewhere. The deliberate deposit of an animal bone in the upper part of the filling (feature 2) does not perhaps suggest robbers' activity (but compare again Hamlin & Case 1963, 6), and the inclusion of a bone of another individual in feature 6 would favour transference. It is hard to judge one way or the other, but the best possibility seems to be that the remains were transferred from elsewhere partly decomposed, like the corpses in Dorchester site XII and Vicarage Field grave 2 referred to above.

The ditches are both narrow and shallow, but the diameter of the outer one is exceptional for a Beaker culture funerary monument; and even assuming that only the inner ditch was primary, the monument would still be imposing, at any rate regionally. The two pits are also big for Beaker culture graves, larger in superficial area than any in the Late Beaker Eynsham and Cassington cemeteries; and to take examples from elsewhere, slightly larger superficially than the Middle Beaker shaft grave in Amesbury G 71 (Ashbee 1978) or the rich Late Beaker single grave in West Overton G 6b (Smith & Simpson

1966) and fully comparable with Beaker culture collective graves in East Riding barrows (Petersen 1972). The question may be asked whether such a rather exceptional monument may not also have been intended for collective burial: the burial in pit 1 being a foundation deposit like perhaps burial 8 in Aldro 54 (Mortimer 1905, 66) and pit 2 being intended for a number of burials, in which however only the children's burial came to be made.

On related questions, it is interesting to note that the primary grave, with Peterborough associations, in Stanton Harcourt XXI, 1 (Grimes 1943/4), was of comparable dimensions, and that the step in the bottom of pit 2 at Radley 15 is best paralleled regionally in grave 7 on the edge of the Late Beaker Cassington cemetery, in which seven inhumation burials (partly disturbed or transposed?) were associated with a sherd of Peterborough pottery (Leeds 1934a, 272). Another interesting multiple burial deposit (principally of skulls) was reported from pit V, Sutton Courtenay (Leeds 1934a, 266-7) and associated with a flake knife of Late Neolithic or Beaker culture type.

Finally, the burial in pit 1 may be classed with *arrowhead burials* (Case 1977, 81) which are generally poorly furnished, although rich Middle Beaker examples occur regionally at Radley 4a nearby (Williams 1948) and at Stanton Harcourt XXI, 1, secondary to the Late Neolithic burial referred to above.

with contributions by M Aston, D Benson, H J Case, G W Dimbleby, P Murphy, R Powers, D W A Startin and A W R Whittle

The four ring-ditches reported here belonged to a group of seven on level second terrace gravel south-west of the Devil's Quoits henge monument, about half a mile south of the village and the same north-west of Linch Hill (around SP 411045: Figs 42, 43). The nearest was 300 ft from the Devil's Quoits, the farthest about twice as far. Four (XXIII, 1 and XXIX, 1-3: Grimes 1960, fig 57) were first recorded by the RAF in 1928 (Ordnance Survey photo 1212 in Department). Together with two more (XXIII, 2 and XXIX, 4) they were recorded again by Allen in 1933 (photograph nos 1129, 1130, 1134), and observed lying amidst irregular linear cropmarks, one of which ran to the ditch of XXIX, 1 and another from the Devil's Quoits partly across XXIX, 2 and beyond. A seventh ring-ditch was photographed by St Joseph in 1952 (eg HP 83), lying between the other two in field XXIII (Fig 43, no 3).

XXIX, 2 was partly excavated in 1940 in advance of the construction of the wartime aerodrome (Harden &

Treweeks 1945, site 3). The remainder survived the war, though remaining under cultivation. By 1959 however commercial gravel digging had been extended northwards from Linch Hill towards those in field XXIX, and rescue excavations were made by R E Linington and members of the Oxford University Archaeological Society in the late winter and spring, with the kind cooperation of Messrs Amey's Aggregates Ltd.

Ring-ditch XXIX, 1

A third of the site had been destroyed by gravel digging before excavation; the remaining part of the ditch was traced by proton magnetometer survey, kindly made by the Research Laboratory for Archaeology and the History of Art, Oxford. Two cuttings were dug across the ditch, and one extended into the interior of the ring (Fig 44); sections were also observed in the gravel pit face. The site cannot be directly dated.

No significant features were seen in the interior. Ploughing (or more probably earth-moving during construction of the aerodrome) had reached the gravel subsoil leaving a clean surface of unweathered gravel directly below the plough soil except around sections 2

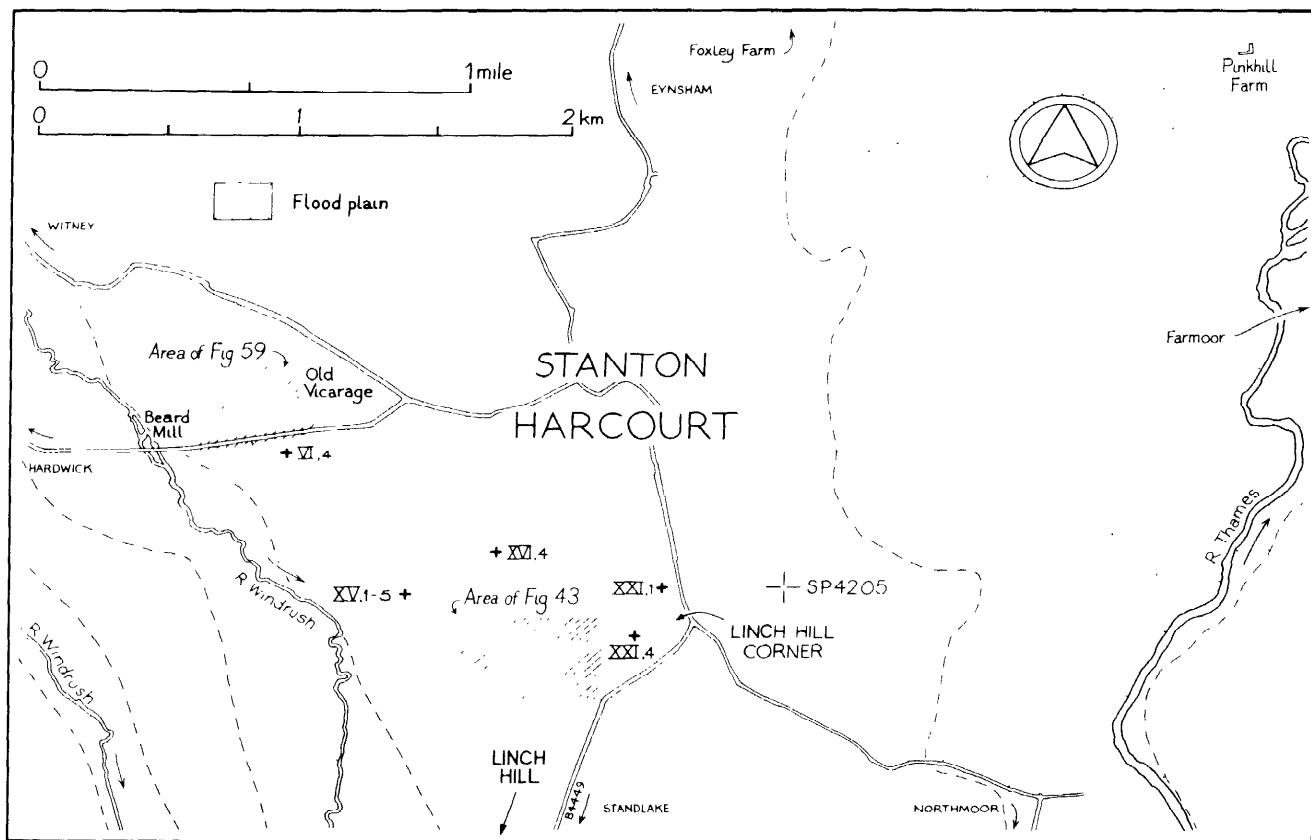


Fig 42 Ring-ditches and other groups of air photograph sites at Stanton Harcourt in their regional setting

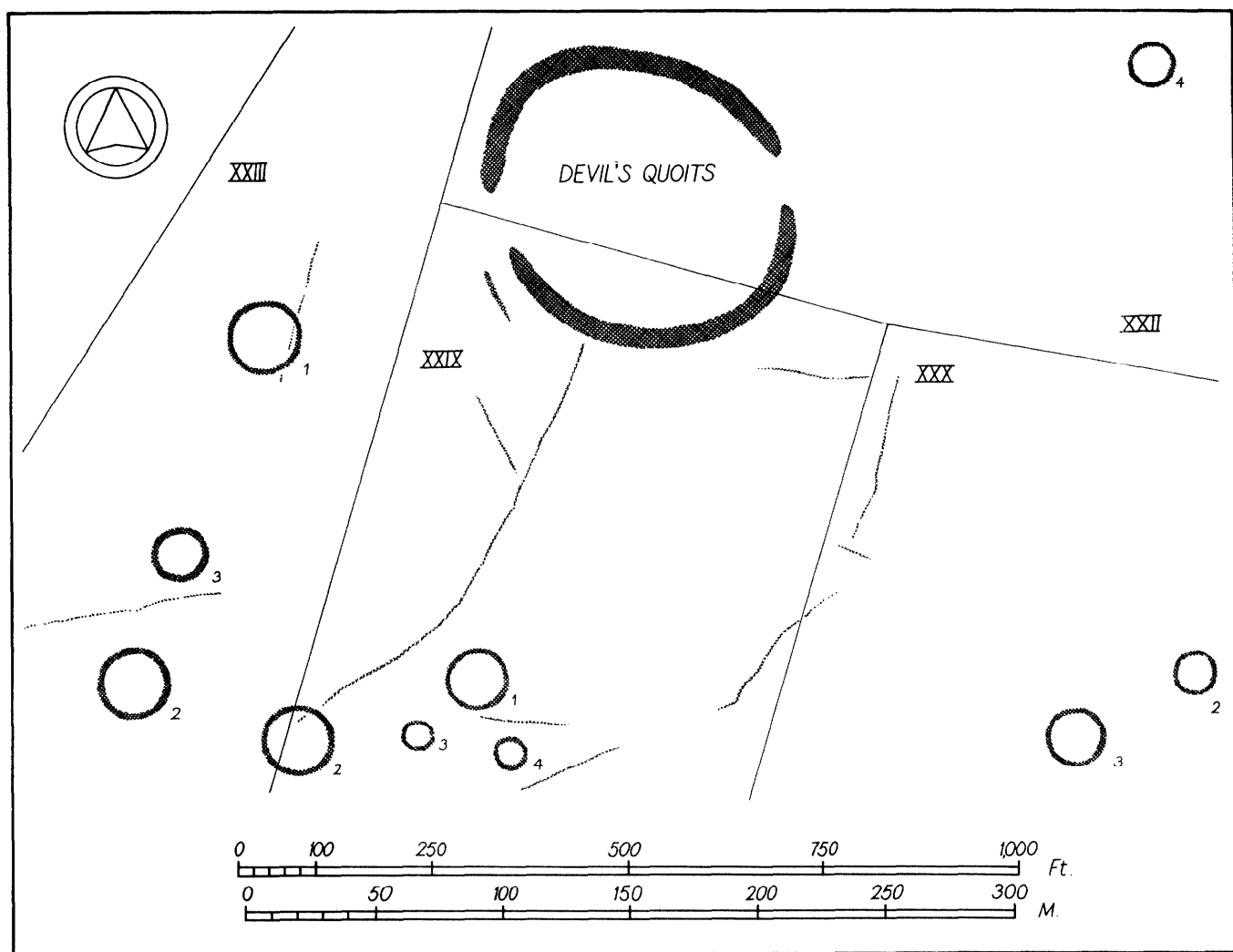


Fig 43 Ring-ditches south-west of the Devil's Quoits and others nearby. The field and ring-ditch numbers are after Grimes 1960, fig 58

and 3, where traces of weathered gravel were observed. One pit-like feature showing on Allen 1129-30 at the southern edge of the interior was destroyed before excavation; examination of the quarried material, together with workmen's descriptions suggested that it represented a natural depression filled with subsoil loam.

Three sections were recorded of the ditch (Fig 45), which was circular with external diameter 88 ft, and was about 3 ft deep into gravel, which had probably originally been overlain by subsoil loam; layer 2a outside the ditch in section 1 may represent a remnant of this loam. In section 3 the ditch intersected a frost wedge with yellow and yellowish-grey sandy gravel filling. This natural feature shows as a cropmark on aerial photographs; the mark running across XXIX, 2 might be of similar origin (Fig 43), and other irregular linear features in this part at least of Stanton Harcourt (*cf* Grimes 1960, 141-2) could be wrongly interpreted without excavation as man-made (*cf* Williams 1973; Evans 1972b).

In all three drawn sections of ring-ditch 1 (Fig 45), layer 1 corresponded probably both to modern ploughsoil and soil dumped in connection with building the aerodrome. Below, the following layers were noted in undisturbed filling: layer 2, loam and gravel, marked at its base in section 2 by runs of pebbles; layer 3, very uniform reddish brown loam, largely stonefree; layer 4, lenses of gravel

more loamy at the top than at the bottom of the layer, interspersed with thin lenses of loam in sections 1 and 3; towards the base of the layer or resting on the layer below in sections 1 and 2 there were conspicuous but isolated blocks of loam in the centre of the silting. Layer 5 was more or less unweathered somewhat sandy gravel with inclined bedding, in the corners of the ditch extending across its centre; layer 6 was sandy gravel and loam, sometimes rather loamy (section 1), and flecked with occasional pieces of charcoal, filling the corners of the ditch, and in section 2 (with horizontal bedding) covering its base.

Small indeterminate Romano-British sherds were found in both layers 1 and 2 and similar sherds with scraps of bone and flecks of charcoal in layer 3 down to 6 ins from its base. In section 2 a cremation burial with two small fragments of bronze was found in the top of layer 3, capped with a thin layer of loam and a layer of gravel.

The silting was of bank and ditch type. Layers 5 and 6 represent primary silt, layer 6 accumulating perhaps in only one winter. Layer 4 represents secondary silt; in section 2 the steepness of its surface on both sides towards its base suggests recutting. The volumes of gravel in layers 4, 5 and 6 on both sides of the ditch seem too large to have been derived from silting of the ditch alone and suggest an outer ring-bank and an inner earthwork close to the ditch.

The site was thus of type 2c (Hamlin & Case 1963) like Hanborough 6 (Case *et al* 1964/5) and Standlake 16 and 19 (see below). The blocks of loam occurring sporadically in layer 4 are probably best taken as turves from the face of the inner or outer earthworks rather than from the undercut lip of the ditch. The flecks they contain and those occurring in layer 6 suggest minor settlement activity nearby or at most recently burnt sward; in the context of the region generally these are more likely explanations than clearance burning of woodland cover (*cf* Green 1974, 76 and 88 on the Greater Ouse valley).

Layer 3 represents tertiary silting. Analysis by Professor C W Dimbleby, Institute of Archaeology, London University, indicated loam with a high sand content; much of it may derive from subsoil loam originally capping the gravel. Layer 2 represents the effects of cultivation and may likewise largely represent derived subsoil loam. The cultivation seems datable by the Romano-British sherds. If so it would be in contrast to the situation around ring-ditches XV, 1-5 little over quarter of a mile north-west (Hamlin & Case 1963, 14), at Vicarage Field about a mile north-west (p 114), at Hanborough (Case *et al* 1964/5, 39), and probably at Standlake across the Windrush (p 88f), where in each case it appears to have been Iron Age. However the cremation burial inserted into the top of layer 3 might, on account of its stratified position, be compared with the probably late Iron Age cremation burial in Langford 2 (Williams

1946/7); in which case the cultivation here too could be pre-Roman.

Report on finds

Cremation burial in layer 3: Bronze strip, 65 mm long, 5 mm in diameter, 0.55 mm thick; semi-circular cross-section. *Hemispherical bronze fragment*, squashed; similar thickness, now 11 mm long, 4 mm wide. Both possibly from leatherwork; taken to be Iron Age or Romano-British.

Miss R Powers, British Museum (Natural History) kindly reported on the cremation burial:

The individual cannot be sexed, though it was certainly not a robust male. The age is either young adult or sub-adult as indicated by the open sutures: as the epiphyses have not survived we cannot be certain that growth was complete. A premolar with complete root and the muscle-attachments suggest an age over 15. The probable age was therefore between 16 and 25. A full report is in the Department of Antiquities, Ashmolean Museum. Part of a *bos* mandible with the burnt bones was also identified by Mr A Currant.

Ring-ditch XXIX, 3

Gravel quarrying had destroyed only a small part before excavation (Fig 44). A cutting was dug across ditch and interior, and was extended; in addition the ditch was also

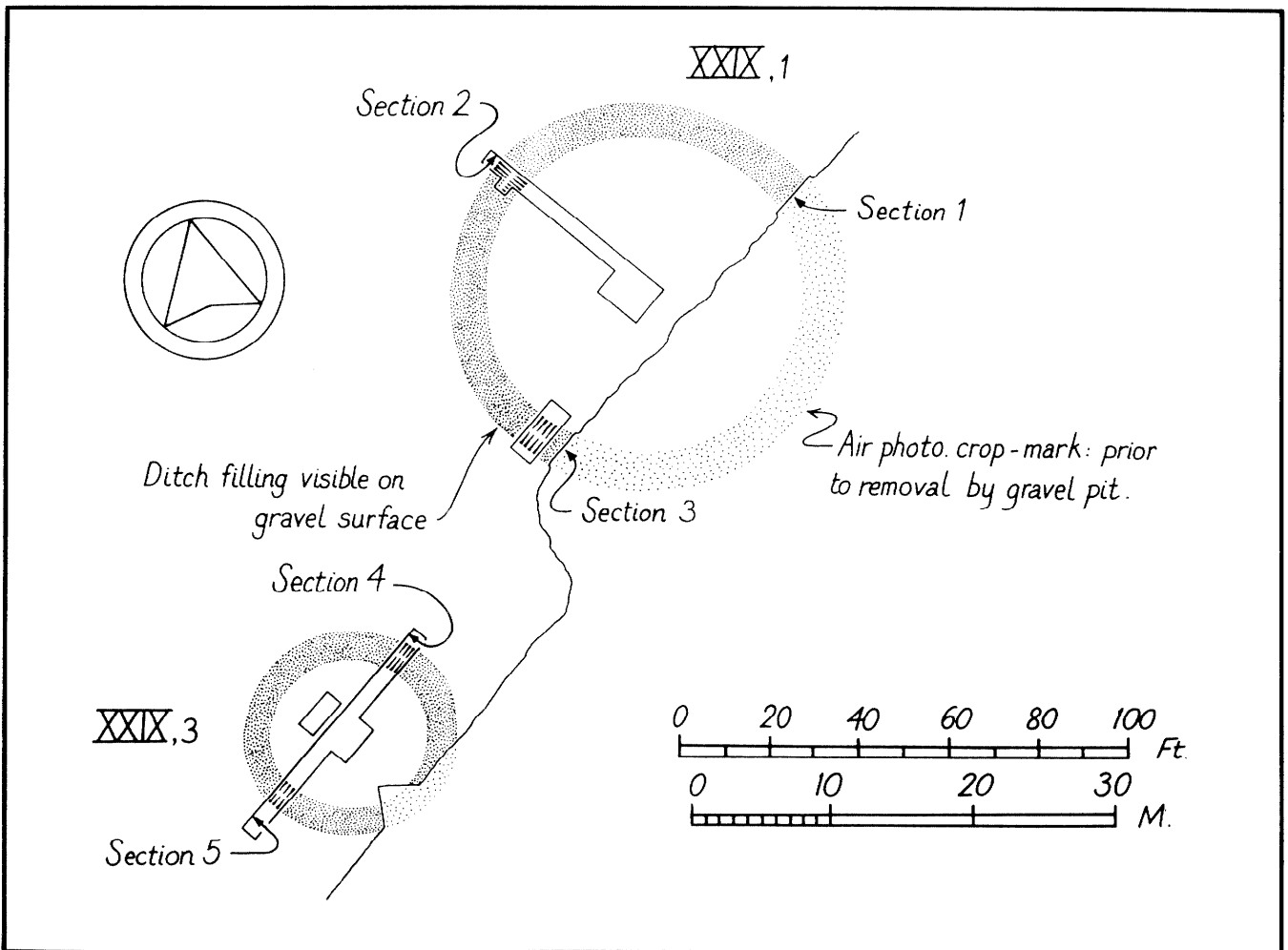


Fig 44 Ring-ditches XXIX, 1 and XXIX, 3: plan

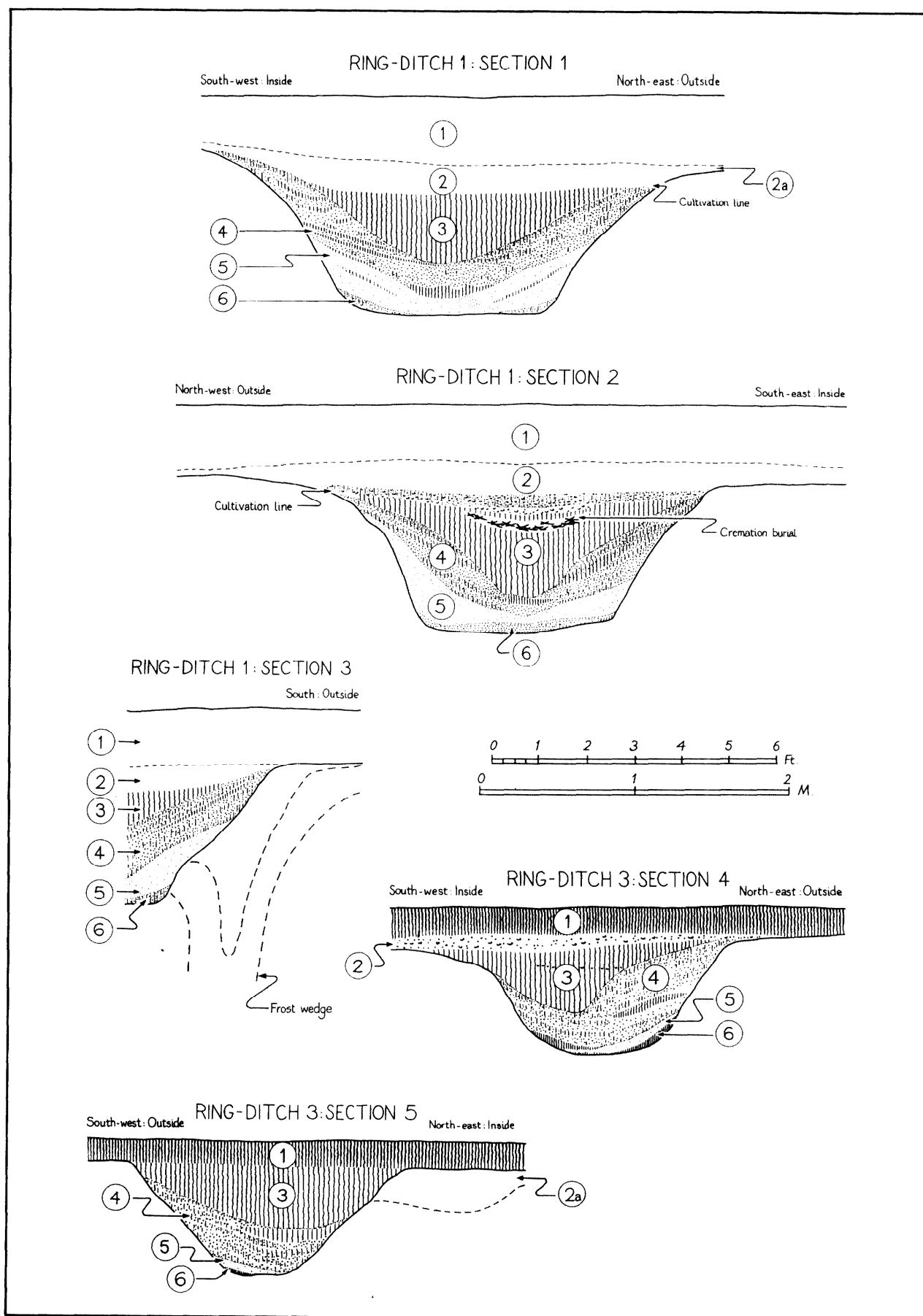


Fig 45 Ring-ditches XXIX, 1 and XXIX, 3: sections

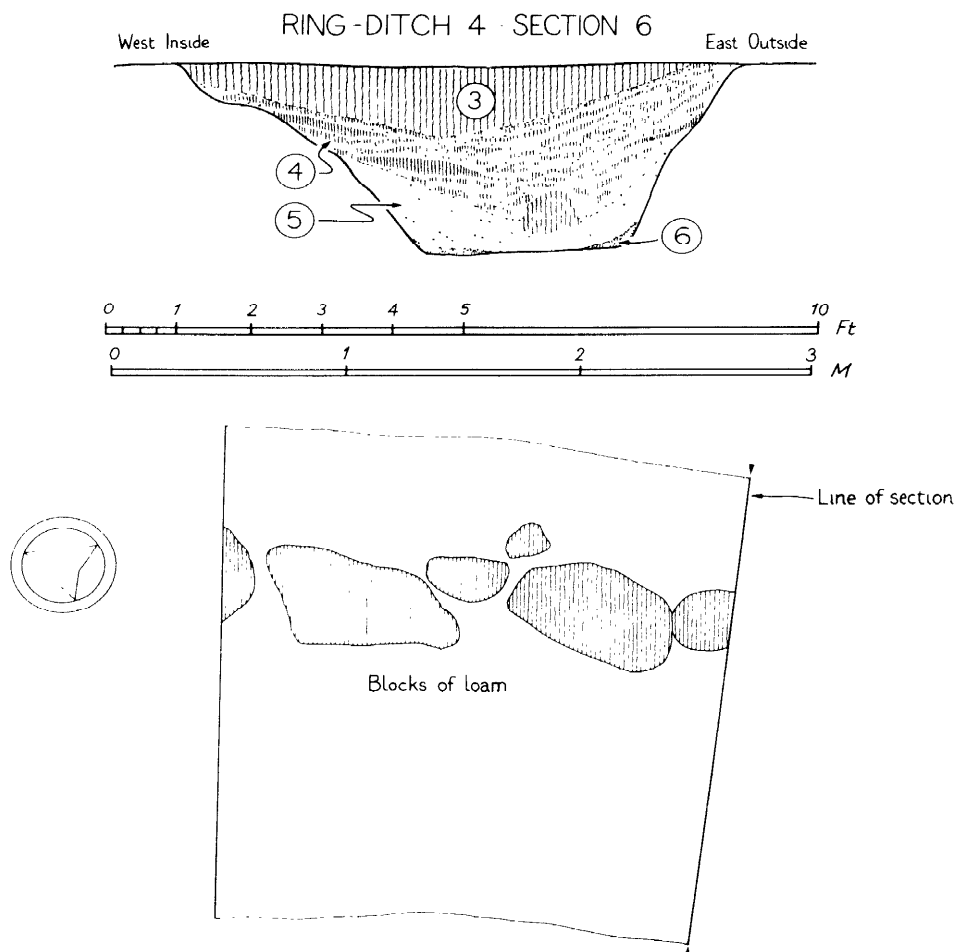


Fig 46 Above: Section of ring-ditch XXIX, 4. Below: Plan of blocks of loam in base of layer 4, ring-ditch XXIX, 4

observed in the gravel pit face. The site cannot be directly dated. The interior was featureless. Two sections were recorded of the ditch (Fig 45, sections 4, 5) which was circular, with external diameter 48 ft; it was about 2½ ft deep into gravel and in section 5 had been dug through a greater depth than normal of subsoil loam, light brown and occasionally sandy (layer 2a). The following layers were noted in the ditch: *layer 1* turf and topsoil, above *layer 2* which was a spread of gravel towards the outside of the ditch, which was not however observed in section 5; *layer 3*, uniform reddish brown stoneless loam; *layer 4*, asymmetrically disposed lenses of loamy gravel, more loamy on the inner side of the ditch than on the outer or towards the base; *layer 5*, sandy gravel above *layer 6*, varying amounts of dark loam on the very base of the ditch. A sample of subsoil loam (layer 2a) from section 5 was noted by Professor Dimbleby as having low sand content compared with the loamy lenses of the layer 4 ditch silting; this may be explainable by the ditch loams having been redeposited.

Romano-British sherds, scraps of bone and flecks of charcoal came from the top 6 ins of layer 3. The cultivation line (layer 2) may here too be Romano-British.

The silting was of bank and ditch type. The small amount of primary silt (especially layer 5) may be due to the ditch having been cut originally at a gently sloping angle; it was possible to observe the silting of part of the ditch for just over a year following excavation, during which time only about an inch of gravel silt had accumulated (*cf* contrasting observations in a steep ditch at North Stoke: p 73). The greater quantity of secondary silt (layer 4) from the outer edge indicates an outer ring-bank close to the ditch and the ring-ditch was therefore of type 2a.

Ring-ditch XXIX, 4

All topsoil had been removed for quarrying before excavation started, and work had to proceed quickly. Like the others, the site cannot be directly dated. The interior and the adjacent area outside were featureless apart from several loam pockets and the continuation of the frost wedge noted in ring-ditch 1. The ditch (Figs 43, 46 top), was circular, with external diameter 58 ft, and about 3 ft into gravel containing several sandy lenses.

Section 6 (Fig 46, top) was recorded to the west, and the layers recognised were followed some 7 ft further north. Layers equivalent to 1 and 2 having been quarried, the highest observed was equivalent to *layer 3* in the other ditches, uniform reddish brown loam. Below came *layer 4*, loamy gravel the greater part of which had come from the outer edge of the ditch. There were pronounced loamy lenses through the layer, and at its base in the centre of the ditch, resting on *layer 5* below, were squarish blocks of loam (Fig 46, bottom), flecked with small charcoal, each 18 ins-2 ft square and 6 ins-2 ft high; they were traced continuously over a segment of 6 ft and showed no signs of ceasing at the edges of the cutting. *Layer 5*, gravel, lay above *layer 6*, sand and gravel found in the corners of the ditch only. Romano-British sherds, scraps of bone and flecks of charcoal were found in the upper part of *layer 3*.

The silting was of bank and ditch type. The comparatively greater thickness of *layer 5* compared with the other ring-ditches (Fig 45) may be explainable by the sandier less stable gravel into which the ditch had been dug. The greater quantity of secondary silt (*layer 4*) indicates a ring-ditch with outer bank (Type 2a: Hamlin & Case 1963). The blocks of loam contained in this layer may be taken to represent turves as in ring-ditch 1, but their greater mass and continuity suggested emphatically here that they came from a collapsed turfvetment to the outer bank (*cf* similarly unusual silting in the outer ditch of the Abingdon causewayed enclosure: Case 1956a). They were flecked with charcoal like those in ring-ditch 1.

Ring-ditch XXIII, 2 (editorial notes)

After the destruction of the ring-ditches described above, gravel quarrying proceeded elsewhere. By 1970 however it had been resumed on the far side of the runway which partially covered ring-ditch XXIX, 2 (Fig 43), thus threatening the 3 remaining ring-ditches of the group, in field XXIII. Conditions here were unfavourable for excavation in advance of quarrying, but M Aston and D Benson were able to record XXIII, 2 when it had been partially stripped. The details now given with Mr Benson's kind permission are additional to those already published (Ox 1970, 104).

The ring-ditch had an internal diameter of 75 ft, was 9ft wide at the surface of gravel and survived to 3 ft 3 ins deep. All ditch filling had been removed, but Romano-British sherds were found on its dump. The surface of the interior had also been stripped, but a hollow-based flint arrowhead and other worked flakes were found in the north-west sector near the edge of the ditch. At what appeared to be about the centre of the interior, a shallow pit survived about 4ins deep. Roughly circular, some 18-20ins in diameter it contained dark reddish-brown loam (5 YR/3/4) with occasional small pebbles and flecks of charcoals, and the crushed fragments of a Bronze Age biconical urn (Fig 47) and a few cremated human bones. The urn had originally been set upright with the bones within it.

The apparent shallowness of the central pit illustrates the extreme vulnerability of grave deposits within ring-ditches, especially if they have been dug as possibly here through subsoil loam. Two other instances are however known regionally of more or less central (presumably primary) burials with biconical urns: Radley 14 (Leeds 1936) and Hanborough 6 (Case *et al* 1964/5). Generally however such urns seem rarely primary and the upright position as here also appears untypical (Smith 1961). Radley 14 and Hanborough 6 seem best assignable to early in the Middle Bronze, say the third quarter of the 2nd millennium bc, and this may be the best assessment

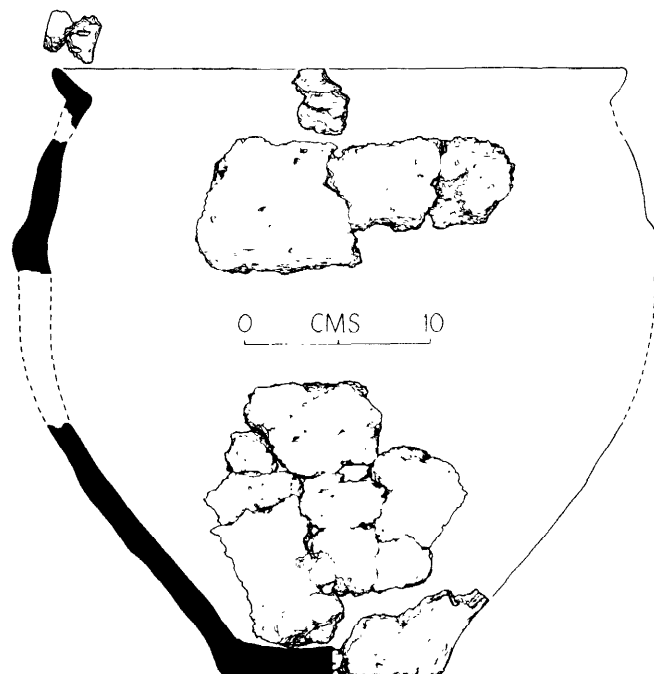


Fig 47 Bronze Age biconical urn from central grave, ring-ditch XXIII, 2

for ring-ditch XXIII, 2. In that case it may be among the later ring-ditches to be constructed in the region. The small nearby cremation cemetery associated with bucket urns in tertiary silt at ring-ditch XV, 4/4a should be at least as late, and sherds appropriate to relief-decorated urns were similarly stratified in XXI, 4 (Hamlin & Case 1963, 11-3, 29-30; Grimes 1943/4, 46).

Pottery from the central pit

36 sherds of *biconical* urn (Fig 47). Shoulder marked by low cordon (unclear whether applied) and sharply everted rim decorated internally with transverse whipped cord (maggot) impressions. Friable fabric, grog and occasionally flint and other stone filler - 10 mm. Exterior very light brown (10 YR/7/4), occasionally reddish-yellow (5 YR/7/6), well smoothed with faint vertical scoring marks, but lumpy and with pits and hollows. Some hollows may be from missing filler, but examination by Mr P Murphy, Centre for East Anglian Studies, University of East Anglia, has shown them to have been partly caused by burnt out organic inclusions. At least two of these are grain impressions (*caryopses*) but could not be further identified. (See below, p 152 for other identifications by Mr Murphy on regional Bronze Age pottery.) Interior surface similar colour on upper parts but greyish-brown (10 YR/5/2) to dark brown (10 YR/6/1) below; well smoothed but lumpy though less pitted. This fabric is similar to that of collared urns generally (but *cf* below, p 110) and of a biconical urn from pit E, Vicarage Field (below, p 110). Regionally urns of non-collared type have variable fabrics and a national study of this aspect would be potentially rewarding (Case *et al* 1964/S, 75).

Urn in the non-collared (relief-decorated) tradition may have had early beginnings but can be expected to have had a very long duration and to have been in this respect like pottery styles in the Neolithic. Early beginnings would

not be surprising in view of their often claimed relationship to Late Neolithic Grooved ware (references listed in Barrett 1976, 295); indeed the whipped cord decoration on this urn (not recorded otherwise on relief-decorated ones) is a trait in common with Peterborough ware, although occurring persistently also on collared urns: Longworth 1961, 269, figs 5-7.

Local relief-decorated urns are listed in Case *et al* 1964/5, 74-5. Radley 16 is mature Early Bronze Age around the mid 2nd millennium BC, like Hanborough 3. Radley 14 with a class I razor should be dated to early in the Middle Bronze Age as should perhaps the collared, biconical and bucket urns which were apparently part of a single burial tradition at Long Wittenham and possibly at Hanborough 6. Finally the crude biconical and bucket urns from tertiary silt in Standlake 1 should be mature Middle Bronze Age (below, p 101) and the small urnfield in similar position in Stanton Harcourt XV 4/4a may conceivably fall within the same range. A date early in the Middle Bronze Age seems appropriate for the urn in question here, third quarter of the 2nd millennium BC. Its best parallel is the urn from Iffley, Oxford, a similarly massive vessel like many of the same type.

The labour force involved in constructing ring-ditches XXIX, 1 and XXIX, 3

by D W A Startin, *Inspectorate of Ancient Monuments, Department of the Environment*

Ring-ditches XXIX, 1 and XXIX, 3 are of medium and small size respectively and therefore serve well for the purposes of general demonstration. Ring-ditch 1 had a mean diameter of some 80ft with cross-sectional area of 30.5 sq ft, and thus an excavated volume of about 7900 cu ft. If all the spoil had gone to provide an external bank, it would have been about 4.5 ft in height and 11 ft basal width, provided it was unrevetted; but in view of the fact that the silting suggests that some of the spoil was placed in the interior, the bank would have been smaller. XXIX, 3 had a mean diameter of some 40 ft, cross-sectional area of 13.3 ft, excavated volume of 1700 cu ft, and could have had an unrevetted external bank of about 3 ft in height and of about 7 ft basal width.

Insufficient evidence is available to define the method by which the ditches were dug but I suggest that, as with many round barrows, the 'trench digging' process was used as at North Stoke (p 154). Good examples of barrows apparently dug in this way are provided by Amesbury G 71 (Christie 1967) and Asheys Down (Drewett 1970). At the former a ditch of about 80 ft diameter appears to have been dug as about 7 roughly equal segments.

XXIX, 1 with side-dumping would have involved about 660 manhours and XXIX, 3 about 140 hours. These are trivial labour requirements, but may be incomplete since top-soil or turf stacks (if present) would not have survived ploughing to show in the archaeological record. In any event such monuments would probably have been a comparatively easy summer's task for a small family group, although the larger round barrows of the Early Bronze Age such as the nearby Stanton Harcourt Barrow XVI, 1 (Harden & Treweek 1945) would have demanded about as much effort as the larger long barrows of the Middle Neolithic (Startin 1976, 100, and *cf* figures for Bush Barrow, Normanton Down and Fussell's Lodge and West Kennet given below, p 155).

with contributions by H J Case, J Startin and A W R Whittle

The six ring-ditches reported here lay one mile north-west of Standlake village at 225 ft OD on an expanse of second terrace gravel, a mile broad, half a mile long, and about a mile west of one of the branches of the Windrush which joins the Thames two miles to the south-east (Fig 48). The area was typical of the discontinuous terraced landscape of the Upper Thames; it is however rather more undulating than normal and no doubt for this reason had been named Standlake Down. Excavations have been recorded here since 1857 (Akerman & Stone 1857; Stone 1859; 1864; Bradford 1942a; Riley 1946/7; Brown 1973; Dickinson 1973). The ring-ditches were part of a group containing at least 20 and possibly 24, clustered in an approximately L-shaped pattern over 600 yds from north-west to south-east; two strong west-east lines were formed by nos 13-18 and 19-21 and 23, and two less clear north-south lines by nos 1-4 and 5-12 (Fig 48, below). Two ring-ditches at least may have contained mounds, no 6 which Stone described as having a 'slight convexity' (1859, 219) and no 18, as seen during salvage work in 1941 (Ox 1941, 88). In this report Riley's numbering (1946/7) has been followed throughout, and its conversion to the series used earlier by Stone, who recognised fourteen monuments only (Bradford 1942a, fig 2) is as follows:

Stone	1	2	3	4	5	6	7	8	9	10	11	12	13
Riley	4	3	9	11	7	1	13	15	16	19	17	21	18

A further unnumbered monument excavated by Stone between his nos 5 and 6 (1859, 217) is probably Riley no 6. Nos 22-25 are added here to Riley's series: 22-24 identified from Allen photographs (11067 of 1933; 1114 of 1936; Brown 1973, pl XVII), and 25 from an RAF photograph of 1928 (1213 presented to the Department by the Ordnance Survey in 1930).

Nos 1-4, 6-11 and 13-22 can be reliably identified on the photographs but 5 and 12 are extremely faint, whilst 23 shows only partially. No 24, east of nos 19 and 21, is small and irregular and little larger than 20, with which 25 can also be compared in size.

Stone recognised first four, then thirteen monuments as cropmarks in 1857 (Stone 1859, 100; Akerman & Stone 1857), and ten were partially excavated (nos 1, 3, 4, 7, 9, 11, 15-17 and 19). One more, no 6, was investigated in 1858, and burials were recorded in the area between nos 1 and 7. Gravel digging had been in progress since before Stone's day (Stone 1859; Brown 1973, 233). The large abandoned gravel pit, north of the A415 road from Standlake to Witney (north of ring-ditch 15 on Fig 48, below) thought to have been the site of the small adjoining gravel pits nos 1, 2 and 4 explored by Stone in 1857, has been shown by Brown (1973) to have been in existence by 1839 or earlier; he considers Stone's pioneering Iron Age and Saxon excavations to have been at the south-west edge of ring-ditch 21 and immediately south-east, where surface disturbance can be seen on Allen nos 1106-7.

Gravel digging may have continued through the 19th century and early 20th, but quickened in the 1940s. Pit A at the east end of the group (Fig 48, below: as shown on Bradford 1942a, fig 2) cut into and largely destroyed ring-ditch 18, but brief examination showed it to contain a

mound within a ditch (Ox 1941, 88). Nos 13 and 14 in the centre of the group were destroyed unrecorded by pit F (Bradford 1942a). In 1943 pit E encroached on the western end of the group, and Riley was able to re-investigate briefly his ring-ditches 1, 2 and 3 though others were subsequently unrecorded (Riley 1946/7).

This commercial activity gave other indications of Late Neolithic and Early Bronze Age settlement: a Beaker Culture grave from pit D (probably Middle Beaker, Ox 1941, 88) crouched skeletons in pits B and C, and collared urns in the general area (Case 1956b, fig 5; Longworth 1961, 99; Ashmolean sherds 1958, 74-5). It also produced abundant Iron Age traces (Fig 48, below). These were found in the general area of the ring-ditches by Stone in 1857 and 1858 (Stone 1859; Brown 1973), and by Riley both adjacent to ring-ditches 1-3 and 5 (Fig 48, area B: as shown on Riley 1946/7, fig 6), and also between 100 and 400 yds distant in other surrounding gravel pits (Ox 1941, 88; Bradford 1942a, fig 2; Riley 1946/7, fig 6). None of these Iron Age traces show definitely on Allen's photographs or on St Joseph's of 1951 (nos GA 22-3). However Stone had seen cropmarks of pits in 1857 (1859, 100) and Riley observed from the air a cluster of pits and other features to the west of nos 6, 7 and 11 (Fig 48, Area A); though he was not able to photograph them (Riley 1942, 113; 1943/4, 97), St Joseph later did so (VL 57). Nearly 100 Anglo-Saxon graves were also found near the ring-ditches in the course of gravel-digging and during excavation by Stone and subsequently others (Stone 1858; 1864; Dickinson 1973, 247), probably mainly in a cemetery at the eastern end of the ring-ditch group (Brown 1973; Dickinson 1973).

By 1951 nos 15, 16, 17, 19, 20 and 22 comprised the remaining undamaged ring-ditches (as seen on St Joseph nos GA 22-3), situated in the corner formed by the A415 road from Standlake to Witney and a by-road off this to Stanton Harcourt (Fig 49). In 1954 these were threatened and excavations were directed for the Department by H W Catling. Thanks are due to A G Fenwick for salvage work following excavation, and to the landowner, Mr E W Pickford of Yew Tree Farm, Standlake, for permission to excavate and for giving the finds to the Department.

The ring-ditches

No 15

Its south-western part had already been destroyed by the A 415. However Stone's brief examination (Akerman & Stone 1857, 366) recorded it probably reasonably correctly as 106ft in overall diameter, with the ditch 6 ft wide and 3 ft deep. St Joseph's photographs show it to have been elliptical or an irregular oval. Two cuttings were made in 1954, on the north-east and south-east side, and were extended to the interior (Fig 49).

The ditch was similar in both sections (Fig 50), being about 9 ft wide and 4-5 ft deep, with a flat base and bell-shaped profile, and dug through subsoil loam (layer 2a) into gravel. The following layers were recorded:

Layer 1, topsoil, brown loam; *layer 2*, reddish-brown stony loam (shown unshaded on Fig 50) derived from subsoil loam (layer 2a) and indistinguishable from it; *layer 3* largely stoneless reddish-brown loam, with some large gravel pebbles towards its base in section 2; *layer 4*, brown

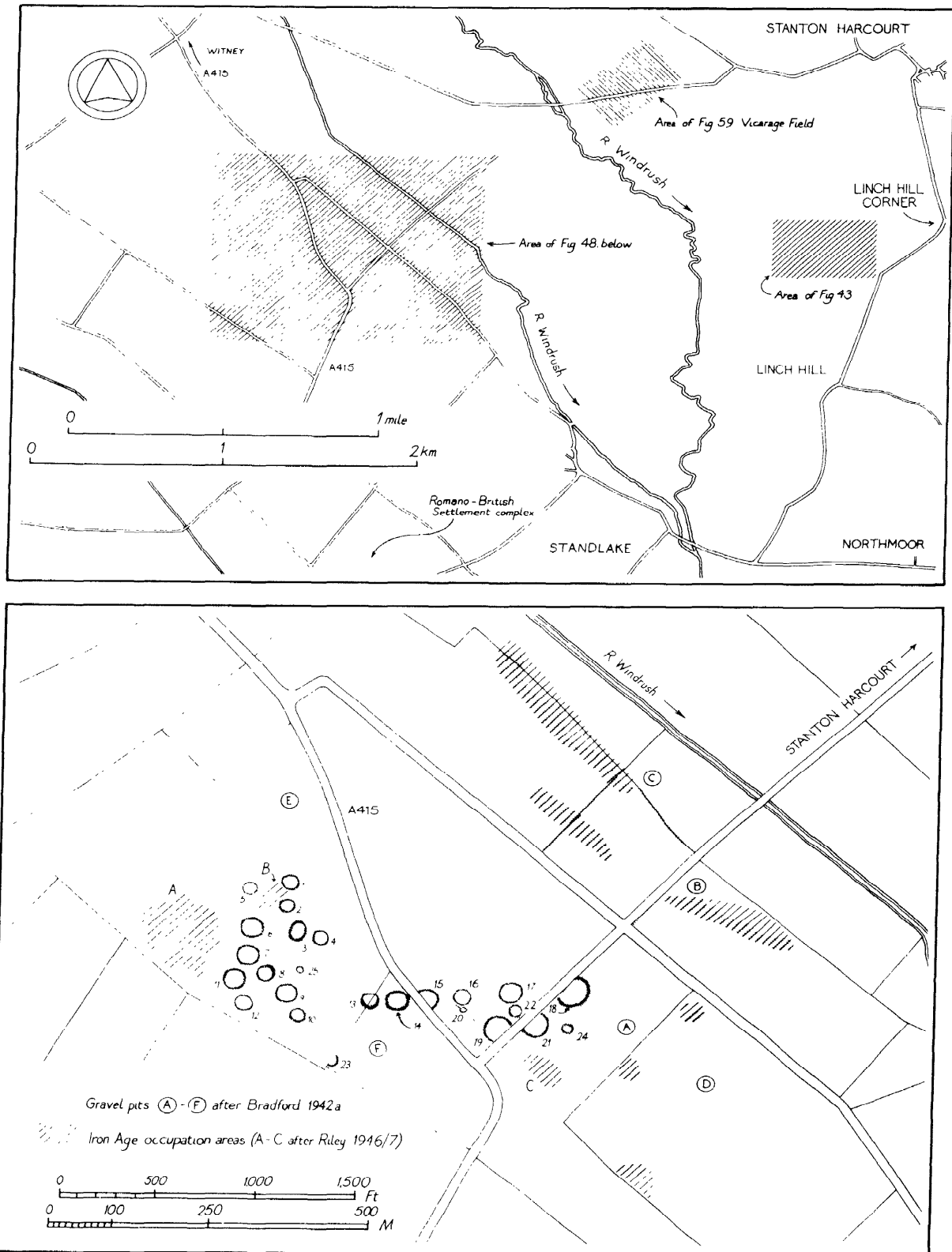


Fig 48 Plan of ring-ditches at Standlake, and above, in their regional setting

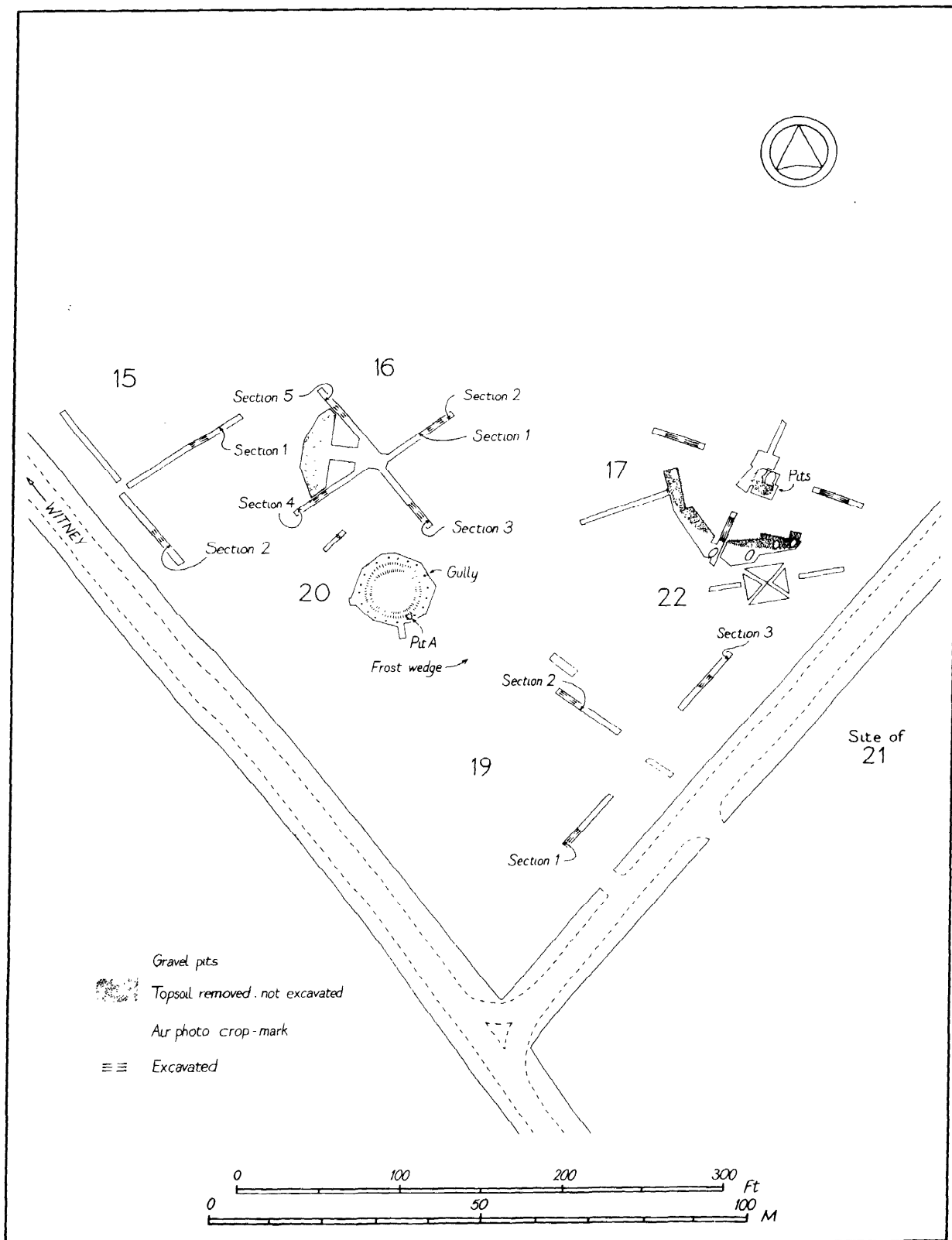


Fig 49 Plan of ring-ditches 15-17, 19-22, Standlake, in 1954

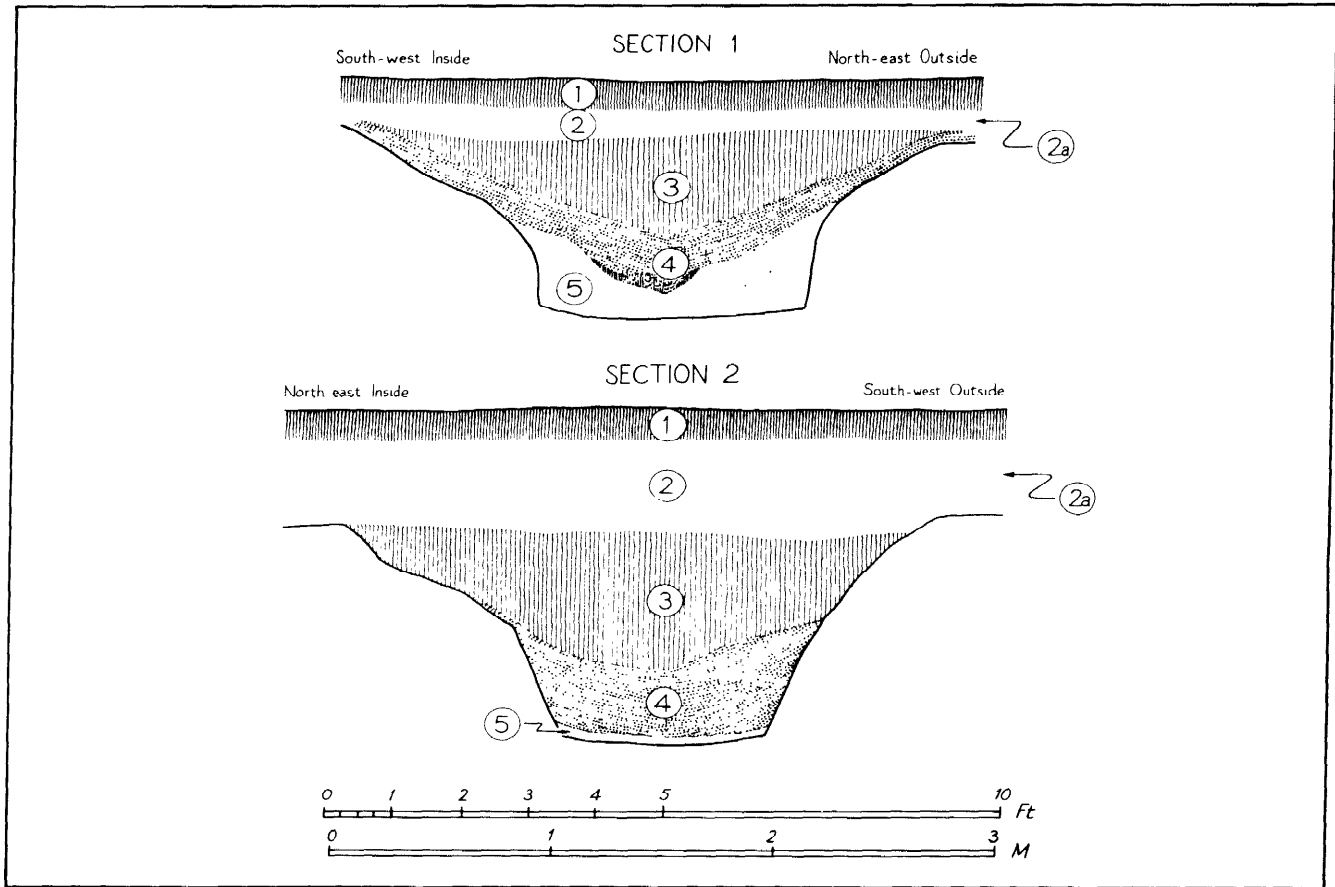


Fig 50 Sections of ring-ditch 15

loamy gravel, more reddish-brown and stony in the centre in section 1; layer 5, fairly clean unweathered gravel, in section 2 barely covering the base of the ditch.

This is a largely natural sequence of primary (layer 5), secondary (4) and tertiary silting (3 and 2), but the small amount of primary silting in section 2 appears to indicate re-cutting. No indication of bank or mound can be discerned.

Finds from ring-ditch 15

Section 1, layer 2: 2 sherds ($\frac{1}{2}$ oz). Base sherd, no filler, light red fabric, red internal surface coating, probably Iron Age. Body sherd, brown, sandy, smooth fabric, finger-tip decoration (Fig 58, 1), perhaps also Iron Age, (cf Harding 1972, pls 43, 47-8). 2 retouched flint flakes: 28 by 11 mm with parallel sides and regular facets; 18 by 10 mm.

No 16

The inner edge of the ditch as located in stubble formed a more or less true circle 74 ft in diameter (Stone's cursory investigation had suggested 77 ft). The ditch itself varied from 13 to 9 ft in width, being broader on the eastern side, giving a maximum outer diameter of 96 ft. Four cuttings were initially laid out across it and were extended into the centre of the interior (Fig 49).

The ditch was flat-bottomed and had a bell-shaped profile

reflecting originally steep sides, in all four cuttings; it had been mainly dug through subsoil loam (layer 2a) into gravel but the loam was missing on the inside of section 5.

The sequence of silting was also basically similar in each of the five sections recorded (Fig 51): 2 and 3 were as in ring-ditch 15, 2 being absent however in section 5. Layer 4 was brown loamy gravel with bigger pebbles concentrated in the middle of the silting and with loamier lenses; a lens of this kind underlay the whole layer in section 3, and the irregular but rather trough-shaped surface of the layer in most sections suggest that it may have been recut over much of the circumference of the ditch. Slightly more of this layer appeared to have come from the outer edge of the ditch in sections 1 and 2, but rather more from the inner edge in section 4. Layer 5 was as in ring-ditch 15; in section 3 however it was somewhat loamier, corresponding again to the greater thickness of subsoil loam through which the ditch had here been dug. No reliable indication of bank or ditch can be seen.

Cremated bone (probably human as identified by Mrs J Startin) was recorded in the top of layer 3, sporadically in section 3 and in greater quantity in section 4: thus on the southern side of the monument as in ring-ditch no 1 (Akerman & Stone 1857, 365-9). The surface of the ditch between sections 4 and 5 on the western side was stripped to search for more, but none was found. Flints and Iron Age and a few Romano-British sherds were recorded in

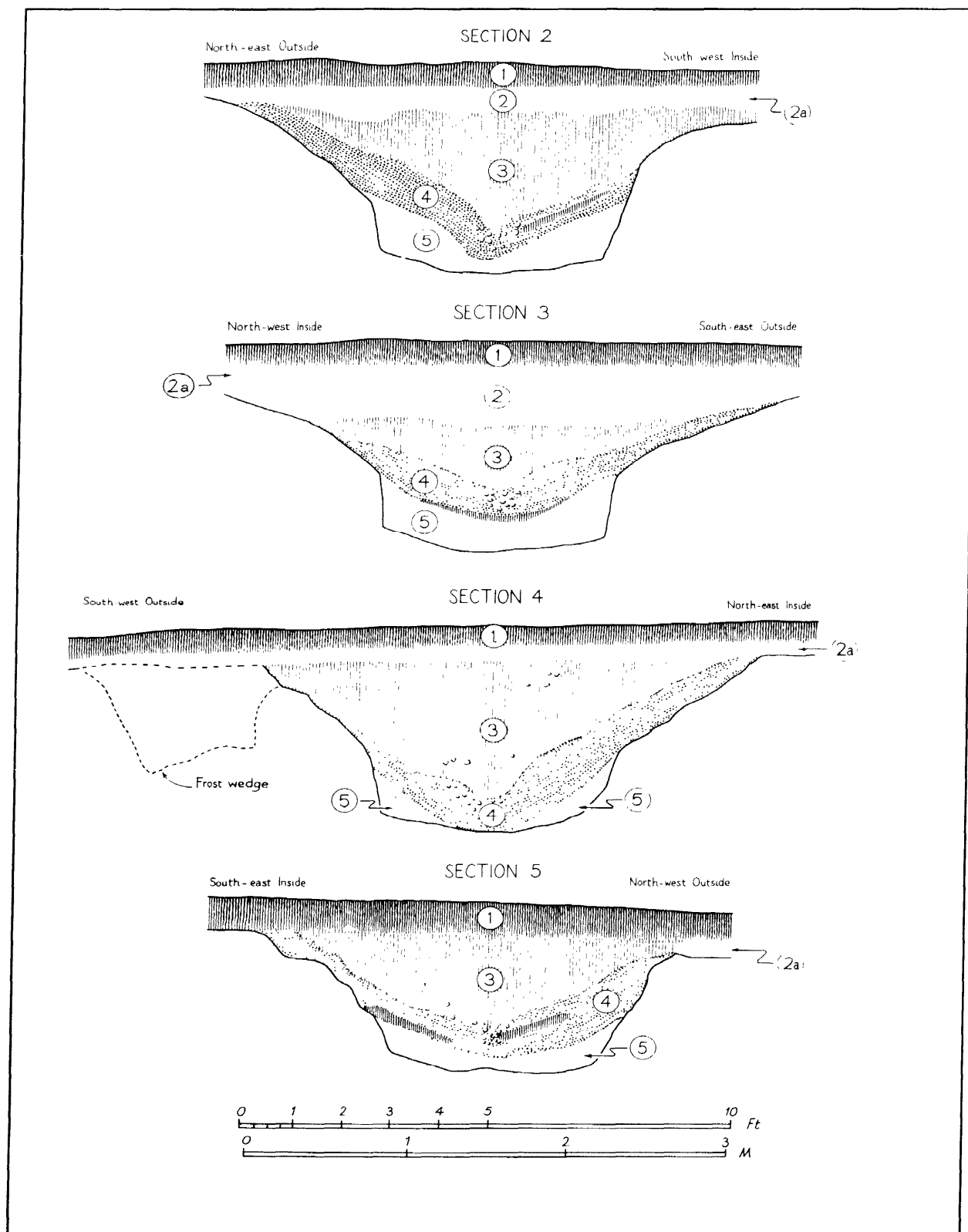


Fig 51 Sections of ring-ditch 16

layers 1, 2 and well into layer 3, as well as post-medieval glazed sherds in Layers 1 and 2. No sherds could be positively identified as Bronze Age, but a daub fragment from the middle of layer 3 in section 5 is presumably earlier than the Romano-British period, and may be pre-Iron Age.

Finds from ring-ditch 16

Section 1, layer 2: 12 sherds (1.5 oz), brown to dark grey surfaces, dark grey core; hard, sandy, slightly corky fabric with unusual grog filler (up to 5 mm) including 2 bead rims (eg Fig 58, 2), a round-bellied sherd, and possible base; 3 sherds (0.75 oz), light brown to reddish brown mottled surfaces, dark core, hard sandy fabric. Both these groups are Iron Age, though neither is distinctive.

Section 3, middle and upper parts of Layer 3: 6 sherds (1.5 oz). Red sandy fabric with dark core; finger-tip decoration above rounded shoulder, probably early Iron Age (cf Harding 1972, pls 43, 47-8). 2 body sherds, light brown surfaces, shell and grog filler; 3 body sherds, sandy grey fabric, late Iron Age or Romano-British. 7 broken *Flint flakes* (max 38 by 22 mm), all patinated.

Section 4, layer 1: 5 sherds (1 oz), with flint or sand filler, all Iron Age.

Between sections 4 and 5, layer 1: 69 sherds (12 oz). Predominantly light brown, sandy fabric with dark core and occasional shell filler, including 3 everted rims (eg Fig 58, 3); also 7 dark, smooth, hard, sandy fabric and 2 brown shell-filled. Possibly all Iron Age; but 7 grey sandy probably Romano-British. 29 *struck flints*, all patinated, one burnt; 25 flakes, many broken, including 2 core-changing flakes (68 by 26, and 55 by 30 mm), crude flake scraper on old patinated flake (35 by 32 mm), thick flake with crude retouch on both edges, end broken (40 by 27 mm).

Section 5, middle of layer 3: Daub (43 by 42 mm). Light red sandy fabric, flat back and 2 wattle impressions separated by prominent ridge, probably structural.

No 17

This monument, briefly examined by Stone, had an outer diameter of about 124 ft (Figs 49, 52). Three cuttings were dug across the ditch which, like nos 15 and 16, had been dug through subsoil loam (*layer 2a*) into gravel; the interior was also examined. In section 1 (Fig 53) the ditch was approximately 9 ft wide, though the sloping inner edge would allow a maximum width of several feet more; in sections 2 and 3 this effect was more marked, and may have been produced by scarping in section 2. This suggests a plan nearer an ellipse than a circle, which Allen's photographs partly support.

In sections 1 and 3, five layers were observed in the ditch, similar to those in nos 15 and 16; layer 2 was however thicker and was forming while the top of the ditch was still a shallow depression. In section 2, layer 2b, a marked cultivation line of gravel separated 2 and 3 and was given a *terminus post quem* by Iron Age sherds in these layers. The lower part of the section was also unusual with loam and gravel intercalated at the junction of 3 and 4; the ditch may have been recut here. Munsell colours were recorded in this section *in situ* by H J Case: layer 2, dark greyish brown, 10 YR/4/2; 2, dark brown, 7.5 YR/4/4; 3, reddish brown, 5 YR/4/4 to dark brown 7.5 YR/4/2; where intercalated with 4, dark brown, 7.5 YR/4/2; 5, strong brown, 7.5 YR/5/6. Fragments of cremated bone (probably human, identified by Mrs J Startin) were collected from layer 2. No markedly asymmetrical silting can be observed in any of the sections, but the primary and

secondary silting (layers 5 and 4) seems unlikely to have come entirely from the sides of the ditch, in view of the relatively steeply preserved outer face. This suggests an outer bank, which would however have been largely silted (and levelled by Iron Age cultivation?) by the time the four Saxon graves (Fig 52: Dickinson 1973) were dug on the south side of the monument.

In the interior, a very prominent central cropmark proved to indicate four closely grouped pits (Figs 52, 54; P15, B). Pits A and B were of a fairly common elongated oval Iron Age plan (cf Williams 1951, fig 4), while C and D, less completely investigated, were probably of more standard circular shape. They had been dug into the gravel from 1.5 ft (pit C) to 3.5 ft (pit A). All were steep-sided, and the sides of pit B slightly undercut. They had all been deliberately filled: A, B and C predominantly with reddish-brown loam. Lenses of weathered and unweathered gravel in A might suggest a slightly more gradual filling. Pit D had reddish-brown loam above largely gravelly filling, which was unweathered to the west but weathered to the east; it appeared earlier than B and A.

The pit fillings contained Iron Age sherds, struck flints and unidentifiable fragments of burnt bone.

Finds from ring-ditch 17

2 Iron Age body sherds (0.5 oz) came from sections 1 and 3, layers 2 and 3, but one of light grey hard sandy fabric (< 0.5 oz) from Section 1, layer 3 may have been Late Iron Age or Romano-British. A retouched cortical *flint flake* (23 by 27 mm) came from section 3, layer 3.

9 body sherds (2 oz) probably all Iron Age, and a fragment of *daub* (0.25 oz) came from basal filling of the pit complex; a rim and neck sherd (0.25 oz) of a small bowl (diam 120 mm), Late Iron Age or Romano-British (Fig 58, 4), came from upper filling; also 11 *struck flints* (2 oz), coarse patinated flakes, one with marks of use.

No 19

This probably circular ditch with an outer diameter of approximately 140 ft was partly overlain by the by-road to Stanton Harcourt. Three cuttings were dug across the ditch; the interior was found to be featureless, except for traces of former gravel digging. Stone reported occupation material in the south-west sector of the ditch (Akerman & Stone 1857, 366); and Iron Age material was found here in section 1 and during salvage work after the excavation.

The ditch (Fig 55) was 9-11 ft wide and 3.5-4 ft deep, and had been dug partly through subsoil loam (*layer 2a*). The layers were generally similar to those observed previously. In section 1, layer 2 was missing and Layer 3 contained a cultivation line of pebbles from the outer edge; above it the filling was heavily flecked with charcoal fragments and contained a little Iron Age pottery. Layer 4 came mainly from the outer edge and was more loamy towards the base. Section 2 was similar to section 1 with the addition of layer 2; the volume of layer 4 also came mainly from the outside. Section 3 did not contain the cultivation line and associated Iron Age pottery.

The fillings suggest that the monument had an outer bank which partly silted into the ditch during the stage of secondary silting, contributing to layer 4; section 2 suggests that there may also have been an inner bank or mound. The runs of pebbles from the outer edge of the ditch in layer 3 in sections 1 and 2 suggest a period of cultivation, which brought some of the remains of this outer bank into the largely filled ditch. Above them in layer 3 (sections 2 and 3) Iron Age pottery and charcoal suggest occupation nearby.

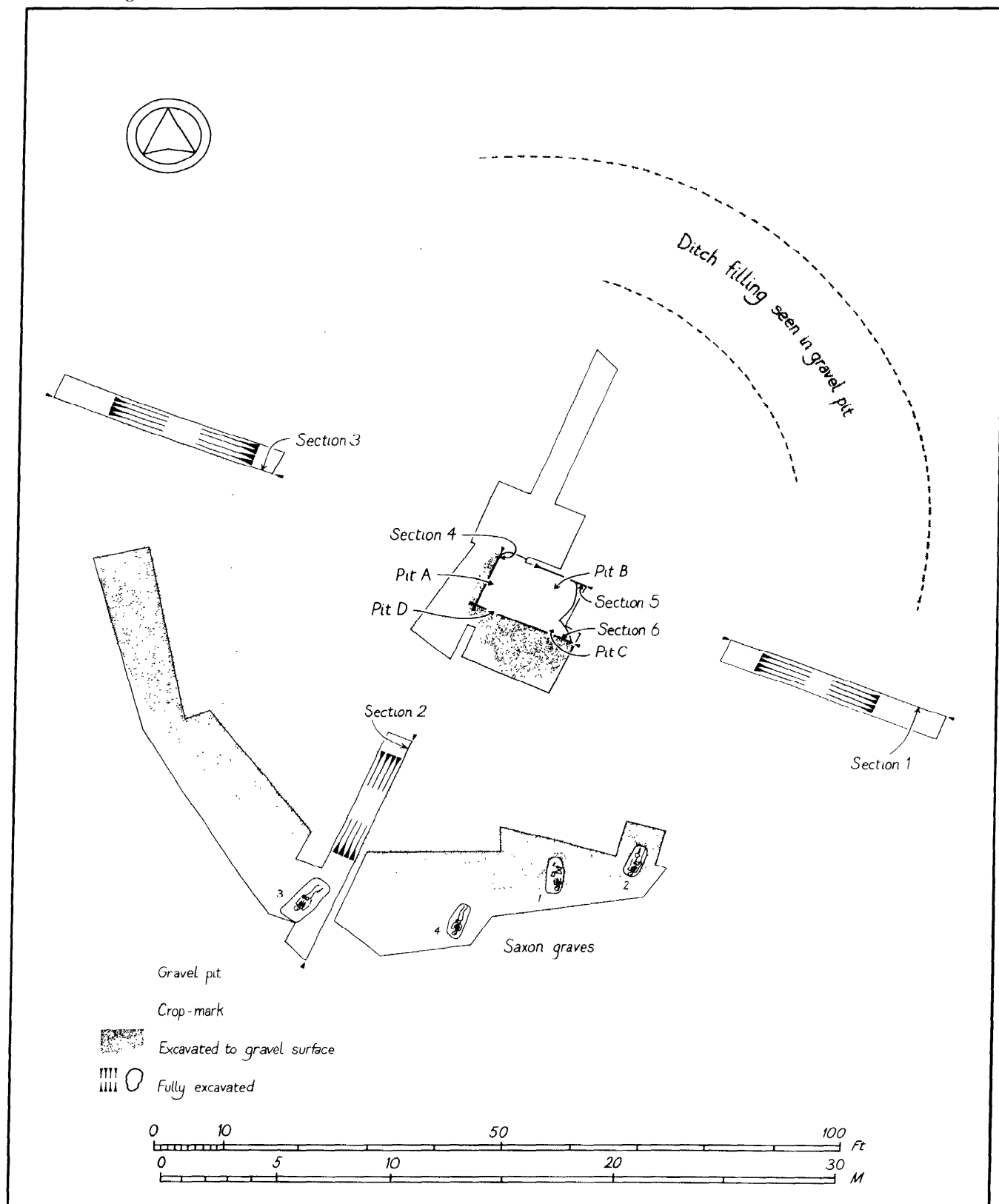


Fig 52 Plan of ring-ditch 17

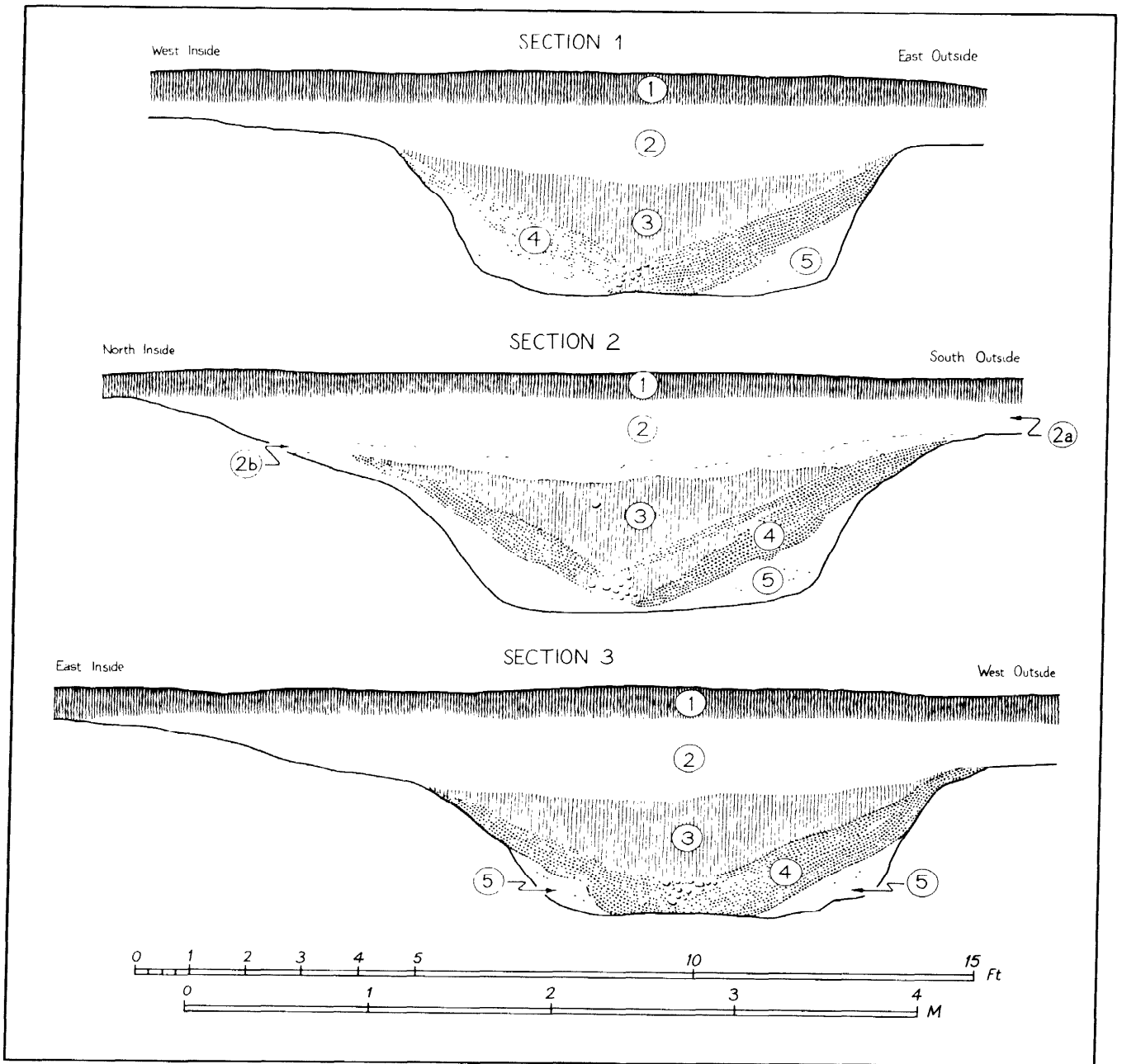


Fig 53 Sections of ring-ditch 17

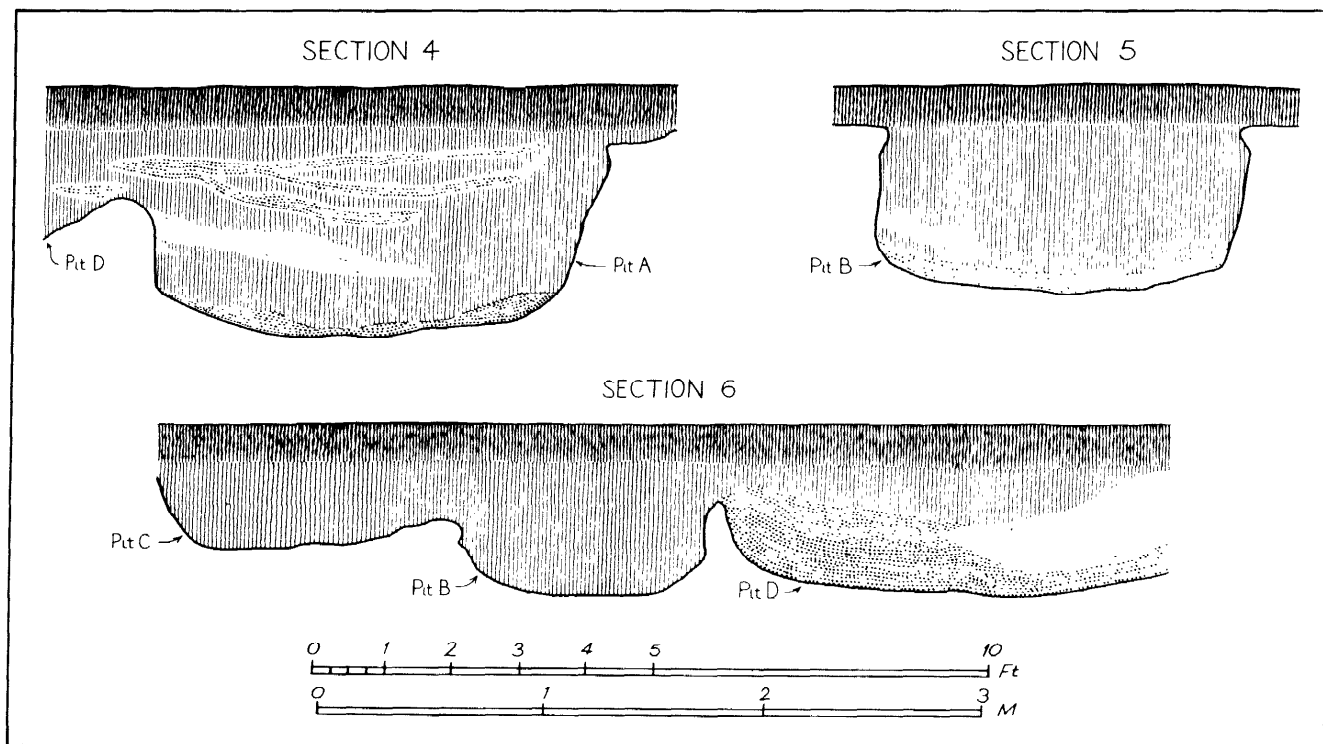


Fig 54 Sections of pits A-D, ring-ditch 17

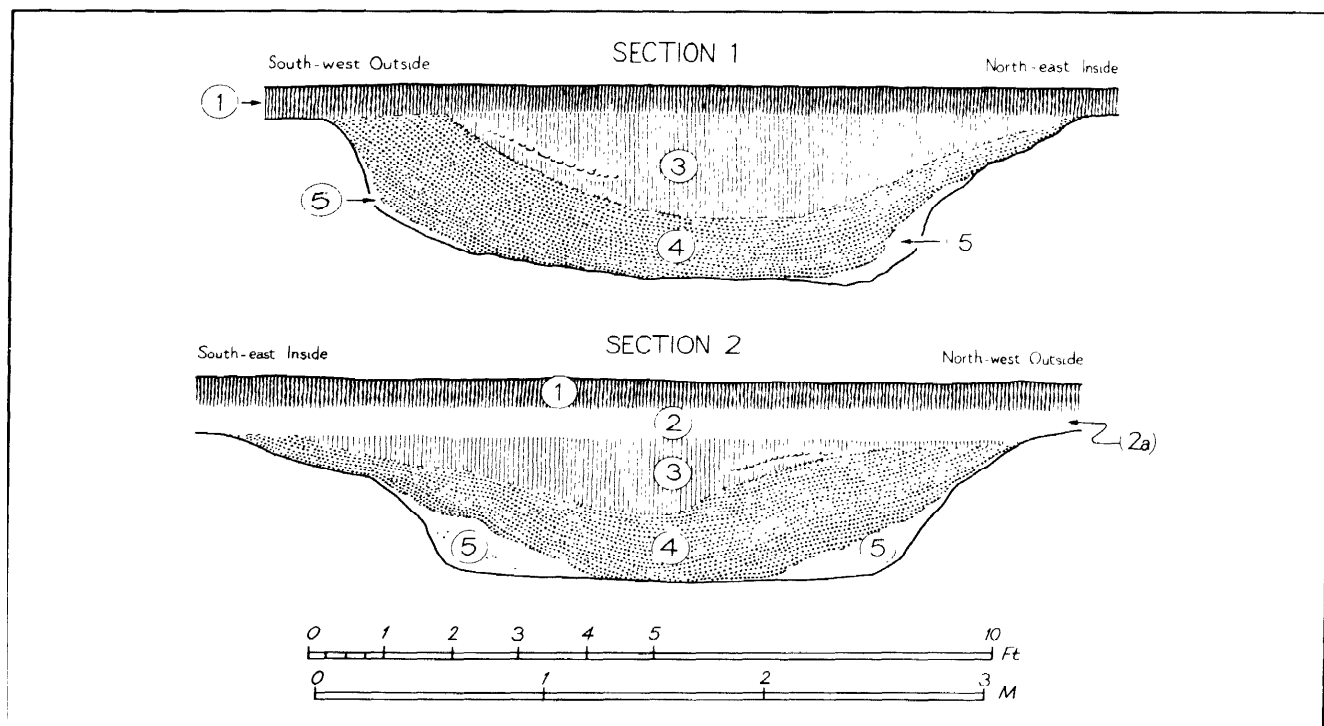


Fig 55 Sections of ring-ditch 19

Finds from ring-ditch 19

Sections 2 and 3, upper layer 3

5 *sherds* (3 oz) of carinated bowls (eg Fig 58, nos 5,6) dark grey to brown, smooth surfaces originally burnished, compact sandy fabric, sparse small shell filler (> 2 mm). *Sherd* (0.25 oz), similar fabric but denser shell filler, and thicker, decorated incised geometric motifs (Fig 58, 7).

2 *sherds* (0.25 oz), of carinated bowl(s), one sharply profiled, decorated with incised triangular motif (Fig 58, 8); reddish-brown exterior, brown core, reddish-brown to dark grey interior, smooth surfaces probably originally burnished, very sandy hard fabric. All the above local Iron Age angular tradition as defined by Harding (1972). Also *sherd* (0.25 oz), hard red gritless fabric, shallow furrow (no 9).

5 *sherds* (8 oz), brown to reddish-brown exterior, grey core, brown to red interior, rough surfaces, coarse sandy heavily shell-gritted fabric (> 10 mm), including flat base, bead rim with rusticated external surface, simple rim, two shoulders, one with finger-tip impressions (Fig 58, 10-12); at least 2 jars represented. 5 *sherds* (3 oz), light brown to reddish-brown exterior, grey core, light brown to dark brown interior, rough surfaces, sandy fabric, sparsely filled with shell and calcareous grits (~4 mm), including 3 bases (eg no 13) each of a separate pot, one with crude impressions around the foot; finger-tipped body *sherd*; simple rim. At least 3 pots. All the above possibly angular tradition.

The fine ware bowls (Fig 58, 5-8 and conceivably 9) may be assigned to Harding's (1972) angular phase, believed to be equivalent chronologically to the continental early La Tène period. The coarse ware (Fig 58, 10-13) could belong with them, though equally at home in an earlier tradition.

Finds from south-west quadrant, layer 3, between sections 2 and 3

Other material was salvaged by Fenwick in 1955 during destruction of the ring-ditch by gravel digging:

27 *sherds* (6.5 oz) of fine ware representing at least 9 bowls (Fig 58, 14-17); 199 *sherds* (8 lbs) of coarse ware, mostly shell-filled fabric frequently augmented with grog (~5 mm), representing at least 10 pots (including Fig 58, 18-23), but a minority in red or reddish-brown sandier ware, including more than one pot (eg nos 19, 20). The fine ware bowls may best be related to Harding's angular tradition (1972, especially pls 50, 55-7) and the coarse ware too (cf Bradford 1942a, fig 4, no 3), although with less certainty. In addition Fenwick also recovered: 2 pieces (4.5 oz) of structural *daub*; a piece (2 oz) of curved fired clay possibly the corner of a *Zoom weight*; a fragment (0.5 oz) of a *spindle whorl*; 2 small weathered pieces (1.5 oz) of earthy *haematite* with calcareous accretions (associated with the pottery); and 18 *struck flints* (8 oz) with relatively fresh light brown cortex, characteristically Iron Age (Case *et al* 1964/5, 78) comprising 11 irregular flakes, one snapped flake with steep edge-retouch (L 23 mm), 3 crude type A2 cores (1.5 oz) and 3 robust core-changing flakes (L 62 mm) from crude flake cores.

No 20

This monument was not noted by Stone. It consisted (Fig 56; PI 5, C) of a more or less circular ring of postholes, diameter 44ft, set from 1 to 3 ft outside an irregular, roughly circular shallow ditch of 39 ft maximum outer diameter. Four cuttings were made initially, from the ditches into the centre. They were later extended round the circumference of the ditch, and the interior was completely stripped. The ditch was from 6 to 32 ft wide

and up to 2 ft 9 ins deep, dug through subsoil loam (*layer 2a*) into gravel; it was U-shaped in the majority of sections though flat-bottomed in section 2 (Fig 57). To the south-west it had been dug through pit A, circular, some 2 ft 6 ins deep, filled with loamy and unweathered gravel; the upper filling of both pit and ditch had been disturbed. A gully approached the ditch from the north-east but its filling petered out so that the relationship of the two could not be determined. The ditch filling varied, although the succession of *layers 1-5* was generally as noted previously. In section 1 (Fig 57), *layer 2b*, a prominent lens of gravel (cultivation line) originated from the outer edge of the ditch and extended almost completely across it, *layer 3* was stony towards its top, and 4 (loamy gravel with more gravelly lenses) had come only from the outside of the ditch. In section 4, *layer 4* in contrast had come predominantly from the inner edge of the ditch and was capped by an exceptionally stony concentration (*4a*). In section 2, *layer 3* was stony towards the top as in section 1.

Section 1 suggests an outer bank but section 2 more emphatically an inner bank or mound; the undisturbed filling of the ditch at its intersection with pit A (thus close to section 1) was similar to that in section 2. Iron Age *sherds*, flints and animal bones were found in *layer 2* and the top of *layer 3*. A small unidentifiable fragment of bone came from pit A.

Patches of stony subsoil loam (*layer 2a*) occurred in the interior, which was traversed also by a natural frost wedge filled with mottled light yellowish-brown clay loam (shown on Allen 1106-7 and RAF 12 13) extending for about 80yds from beside ring-ditch 16. Two crumbs of reddish-brown pottery, noted at the time of excavation as similar to Beaker pottery, were found centrally just above the surface of the gravel subsoil. Two small unidentifiable fragments of bone were also found. Conceivably these were the remains of a plough-disturbed grave dug into subsoil loam.

Nineteen postholes were arranged in an irregular widely-spaced post circle of radius about 21 ft 8 ins around the outer edge of the ditch. They ranged from 9 ins to 2 ft 3 ins in diameter and from 3.5 to 14 ins into gravel. No 9 was double, the smaller representing apparently a first attempt. They were generally steep-sided (Fig 57). No 16 had been cut into the gully to the north-east and no 2 into pit A. In the rather shallow nos 3, 15 and 16 only the gravel bedding of the posthole survived; in the remainder, gravel bedding and in some cases packing (nos 1, 2, 4, 6-9, 11, 14) survived together with a core of more or less stony reddish-brown loam, at least some of which must represent replacement filling; some of the loam filling showed the shape of the post butts (eg nos 1, 7, 9).

If a setting of 20 points was intended, the gap between nos 10 and 11 (some 10 ft) may be seen as an entrance, since the gaps elsewhere range from just over 4 ft to just under 8 ft with the majority 4.5 to 6 ft apart. Assuming a unitary design, the monument would then have consisted of an outer ring of posts or a fence, around a shallow ditch with an internal bank or mound. Section 2 suggests that the posts may have stood in an outer bank, which would seem to have been necessary unless they were very short indeed (cf p 74, above).

Finds from ring-ditch 20

North-east quadrant, upperpart of layer 3: Sherd (0.5 oz) (Fig 58, no 24), of round-bodied bowl, light grey to brown surfaces, well smoothed externally, hard dense flint-filled fabric, alternate incised lines and triangular impressions; Iron Age (cf Bradford 1942a, fig 3, 3 from Standlake). 5 *sherds* (0.5 oz), probably of simple bowl including simple rim

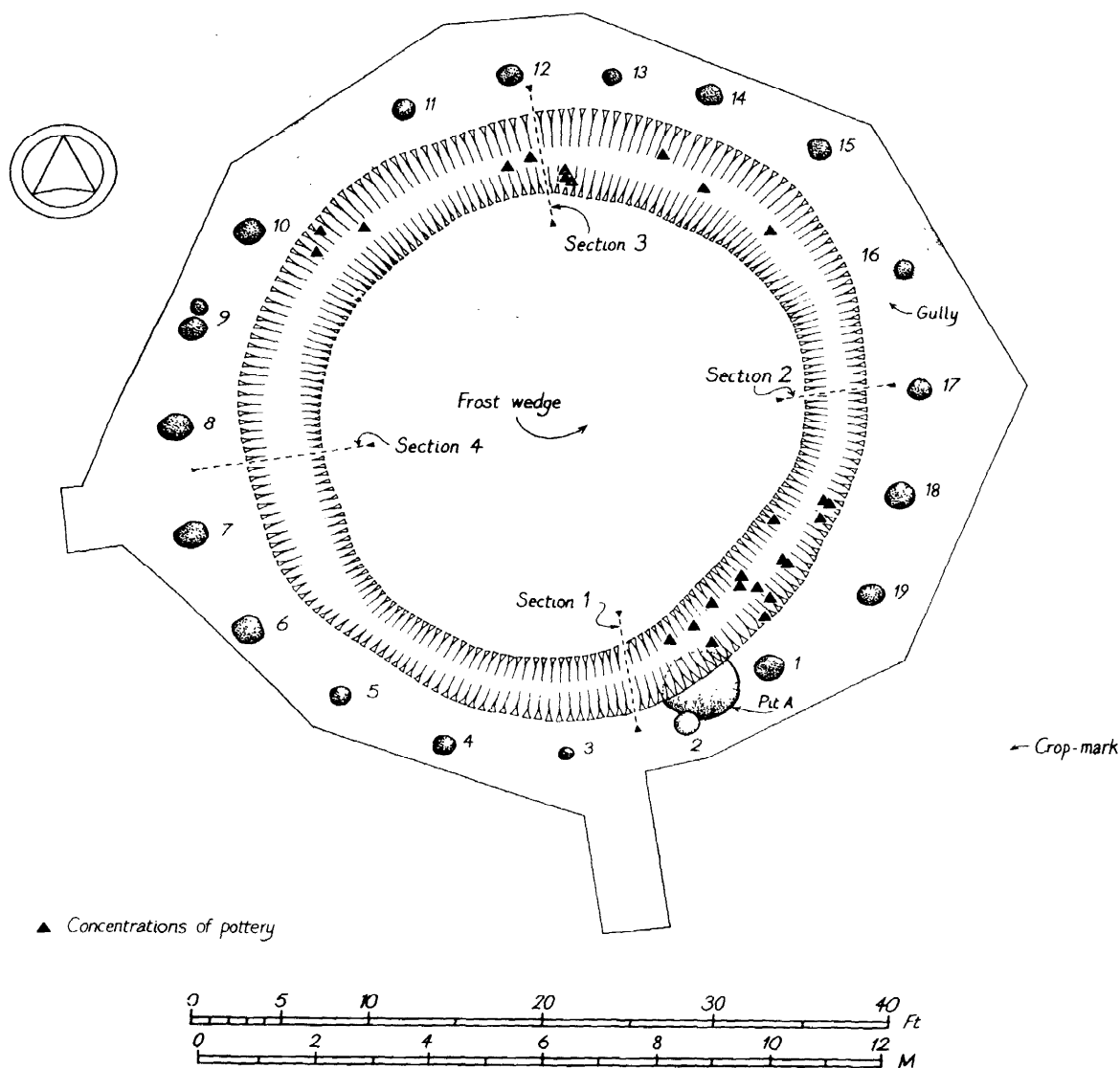


Fig 56 Plan of ring-ditch 20

and flat base, grey exterior, dark grey core, light red interior; smooth surfaces; hard, sandy, lightly flint-filled fabric.

South-east quadrant, layer 1 : 12 sherds (2½ oz) including a base, reddish-brown exterior, dark grey core, brown interior; sandy, corky fabric. 3 sherds (¼ oz), dark grey surfaces and core, well smoothed surfaces, hard sandy fabric; incised lines and impressions. *Sherd* (< ¼ oz), dark grey exterior and core, grey interior, very sandy fabric, thin-walled (5 mm).

South-east quadrant, Layers 1 and 2: 20 sherds (11½ oz) of globular jar, brown to dark grey exterior, dark grey core and interior; weathered but originally smooth surfaces; flaky and heavily shell-filled fabric (> 8 mm). 5 sherds of flat-topped, everted rims decorated with small finger-tip

impressions on rim and body (Fig 58, 25). Both probably Late Bronze Age - Early Iron Age (cf Blewburton Hill, Mount Farm, Dorchester and Chinnor: Harding 1972, pl 44). 9 struck flints (2 oz), all patinated, several with fresh brown cortex, including one rejuvenation flake from crude core, one bevelled flake and 2 scrapers (Fig 58, 27-30).

South-east quadrant, layer 3: 38 sherds (18 oz) of flat-based, weakly carinated, straight-sided bowl (Fig 58, 26), light brown to dark grey exterior, dark grey core, brown to grey interior; smooth, originally burnished exterior surface, now weathered; hard, densely flint-gritted fabric (> 2 mm); simple, upright rim; decorated below weak carination with incised ladder pattern broken by at least two oval lugs; probably Early Iron Age (cf Harding 1972,

pls 46-47, also from Standlake). Base or shoulder *sherd* of small bowl (< ¼ oz), light brown exterior and interior, dark grey core; hard sandy fabric. Core-changing flake (38 by 23 mm) and broken flake *scraper* (L 36 mm; Fig 58, 31).

North-west quadrant, upper part layer 3: 15 sherds (7 oz) of slack-profiled necked jar, including flat rim and concave neck, decorated with finger-tip impression, and one body sherd with incised line, red to brown exterior, grey core, brown interior; uneven surfaces; compact sandy fabric with shell filler (> 6 mm), some dissolved; probably Iron Age (cf Harding 1972, pl 147 B and C, also from Standlake). Core-changing flake (38 by 17 mm) struck from base of core made on pebble with worn cortex and older patinated surface (Fig 58, 32).

This assemblage may be assigned generally to an early part of the Iron Age. Fig 58, no 25 however is reminiscent of Bronze Age pottery while no 23 could arguably be more at

home with comparatively late, post-angular Iron Age wares. No 26 is unusual, though its size and incised decoration link it to other pottery from Standlake assigned to an early part of the Iron Age (Harding 1972, 82, pls 467). The flints might be residual from the Bronze Age but could belong to the Iron Age occupation (p 97).

No 22

This appeared (Allen no 1107) as a penannular ring open to the north-east, about 50 to 60ft in diameter. An inner ring appeared off-centre in the south western sector. Excavated by quadrants, both topsoil and subsoil proved featureless. Such illusory marks have occasionally been noted in the region (for instance at Cassington on similar gravel, p 121, and on clay and greensand subsoil on the Chiltern plain: Rowley 1973b).

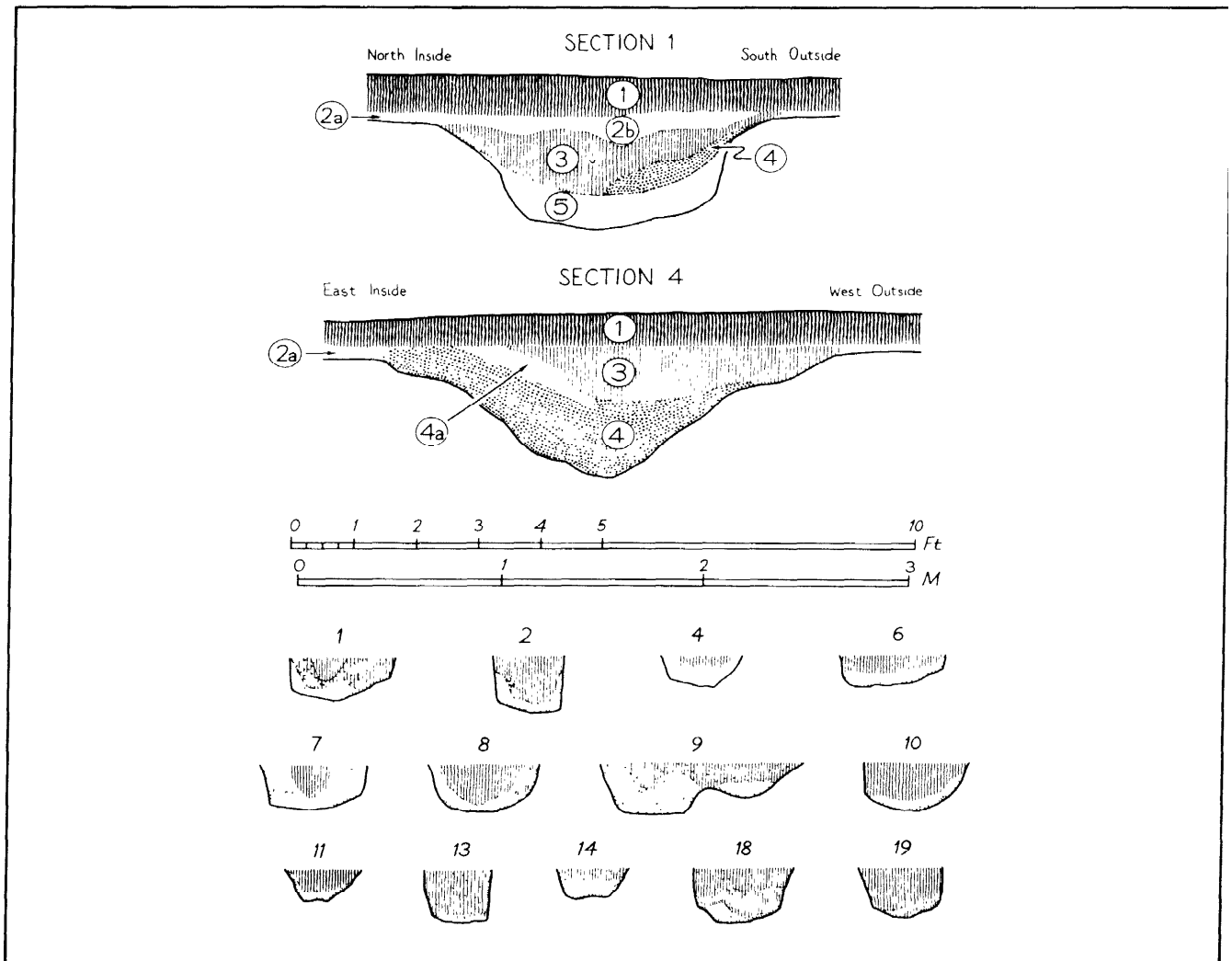


Fig 57 Sections of ring-ditch 20 and postholes

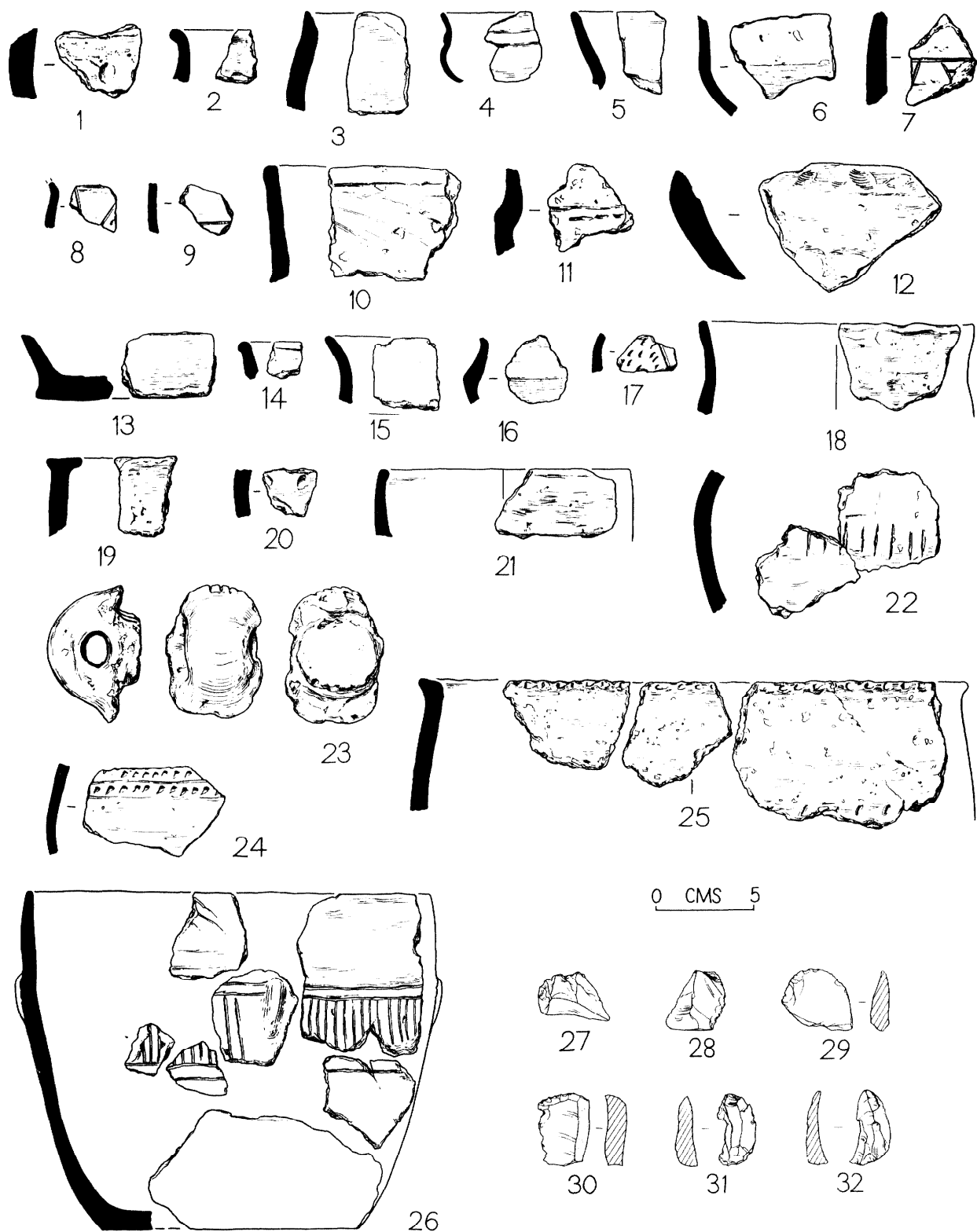


Fig 58 Pottery and struck flints from ring-ditches: 1, ring-ditch no 15; 2, 3, no 16; 4, no 17; 5-23, no 19; 24-32, no 20

Animal bones
by Mrs J Startin

A total of 345 fragments of animal bone were collected from the secondary and tertiary silts of the ditches of nos 16, 17, 19 and 20. They were mostly small and abraded, with the result that only 84 specimens were definitely assigned to species. The total number of fragments including rib and skull fragments are as follows:

Ring-ditch	Species						Total
	Cattle	sheep/Goats	Pigs	Horses	Dogs	Birds	
16	7	3	1	3	4	—	18
17	3	1	—	—	7	2	13
19	8	3	—	—	—	—	11
20	26	4	1	—	—	—	31
	44	11	2	3	11	2	73

10 fragments of rabbit and one of bank vole may be taken as intrusive. Details of ageing, butchery marks and measurements can be obtained from the writer.

Discussion

None of the ring-ditches yielded straightforward dating evidence. The most interesting is *no 20*, which is unusual in both regional and national contexts. Stake and post circles under or at the periphery of round barrows are now widely recognised in England and Wales (Ashbee 1960, fig 20) and range in date from the Middle Beaker period, as at Talbenny, Pembroke (Fox 1942) or Amesbury G.71, Wilts (Christie 1967) into the Middle Bronze Age (as at Poole I, Dorset, Case 1952: GrN-1684, 1260 $\pm$ 50bc). A minority were sited at the periphery of the mounds, serving perhaps torevet them, as at Chippenham 5, Cambs (Leaf 1940, fig 8), the east side of Canford Heath, Dorset (Ashbee 1956) and at Bleasdale inner circle, Lancs (Varley 1938); though in some cases as at Poole 1 or Talbenny phase 1 they stood at the foot of the mound, as envisaged by Van Giffen (1938) in his reconstruction of Dutch barrows. In all cases however they were contained within an encircling ditch, except at Letterston 1 and 2, Pembroke (Savory 1949) where there were no ditches around the mounds.

Dutch Beaker culture graves (dating from the Protruding-foot to Veluwe Beaker phases) offer inexact but interesting parallels. Many are encircled by narrow foundation trenches from 4 to 14m in diameter, often containing closely spaced small timbers (Lanting & van der Waals 1976, figs 30,32-3, 37). Some were contained within covering mounds, others stood towards the edges of mounds, though it is unclear in these latter cases whether they were under the tail of the mound as built or in its talus (Lanting & van der Waals 1976, 43, 46).

Four of Glasbergen's type 3 post circle (1954a; 1954b), with widely spaced posts at the edge of multiperiod mounds (Drenthe Ia, 7, 48; Friesland I), may belong to the Beaker sequence. Similar structures persisted into the Early and Middle Bronze Age in the Netherlands, notably at Toterfout-Halve Mijl in North Brabant, where post circles of type 3 were among the earlier monuments in the group (eg nos 5, 6 and 7). One type 3 circle from further north is in the same mound as an inner ring-ditch (Ballooërveld, Rolde, tumulus 2, van Giffen 1935, fig 3; Glasbergen 1954b, Drenthe 11) but the circle may have belonged to a later phase than the ring-ditch. Finally at Knegsel, Vessem, North Brabant (tumulus E, Brabant 15; Glasbergen 1954b, fig 52) a post circle of type 6 (with a double closely spaced circle) may possibly have stood outside a ring-ditch, but the sequence is unclear.

Standlake 20 may have had more than one constructional period, like several of the Dutch post circle barrows recorded by Glasbergen. A sequence of a small primary ring-ditch, with internal bank or mound, which silted up slowly, followed by reuse of the site with the addition of a post circle (set possibly in an outer bank), would be quite in line with Dutch if not English evidence. Other perhaps closer parallels are provided by the rather rare barrows with a widely spaced stone ring standing outside their ditches. Three out of a line of seven barrows within the large group on Broad Down, Farway, Devon had such circles, nos 46 and 47 with mature Early Bronze Age associations, and no 45 (Fox 1952, 3, 7 and fig 4). Other doubtful examples include, for example, Burn Moor, Cumberland (Ashbee 1960, 55).

Both the English and the Dutch comparative evidence thus suggest a date ranging from the Middle Beaker phase to the mature Early Bronze Age. The small size of

ring-ditch 20 is consistent with Beaker culture burial sites regionally (p 79) and it may possibly have contained a central burial of this period (p 97). The lesser likelihood must be entertained that the monument belonged wholly or partly to the Iron Age. This is not definitely contradicted by the finds, nor by the post circle even though its radius was almost twice that of the hut circles recorded by Riley at the west end of the ring-ditch group (1946/7, fig 9); but the unusual combination of post circle and shallow internal ditch argues against it.

Of the remaining ring-ditches, the elliptical or oval forms of nos 15 and 17 (*cf* also no 3 nearby: Akerman & Stone 1857; Riley 1946/7) are comparable to that of the Early Bronze Age Hanborough 3 (Case *et al* 1964/5, 16-18; *cf* also Micheldever Wood site R4, Hants, similarly with collared urn associations and radiocarbon dated towards the mid 2nd millennium bc, Fasham 1978). No 17 may have had an outer bank (type 2a: Hamlin & Case 1963) which strengthens the comparison to Hanborough 3 and Micheldever Wood R4, and the scar-ping of the inner edge of the ditch recalls the profiles of bell-barrows on chalk subsoils. The intersection of Iron Age pits at its centre is highly unusual and suggests a deliberate layout, rather than the casual interference with earlier ring-ditches found elsewhere (p 114). This opens the less likely possibility that the whole monument was Iron Age like sites 5 and 7, Port Meadow, Oxford (Atkinson 1942, 30-5; Ox 1946, 163), an interpretation which would involve treating the cultivation line in the ditch (and for consistency those in nos 19 and 20) as later; but this would be rather an unlikely conclusion in the case of the cultivation line in No 19.

The sections of no 16 are uninformative as to the original form of the monument. The cremated bone in the upper part of layer 3 recalls similarly placed Early and Middle Bronze Age burials in Hanborough 3 (Case *et al* 1964/5, with sherd *cf* collared urn), in Stanton Harcourt XV, 4 (Hamlin & Case 1963, 11, 29-30, with sherds of bucket urns) and nearby Standlake 1 (Akerman & Stone 1857; Atkinson in Riley 1946/7, with similar urns). Comparisons which could conceivably be made with some of the similarly placed Late Neolithic cremation burials in the Dorchester henge monuments seem less apt. No 19 may have had inner and outer banks, and if so was of the rarer type 2c (Hamlin & Case 1963, 46), with regionally a single Early or Middle Bronze Age example (Hanborough 6), to which can possibly be added no 20 and Stanton Harcourt XXIX, 1 (p 83).

The Standlake ring-ditches like those at City Farm, Church Hanborough (Case *et al* 1964/5) are best seen as extending in date from perhaps the Middle Beaker period (say 2000 bc) to the Early Bronze Age and continuing in use into the Middle Bronze Age (say 1200 bc). The Beaker pottery and collared urns found nearby would fall within this sequence. The urnfield with crude biconical and bucket urns in the tertiary silt of ring-ditch 1 (Riley 1946/7 and references) should extend the use of the area into the Middle Bronze Age, if one accepts the absolute dating offered by Burgess (1976, 89) for the bronze finger ring from burial E (Riley 1946/7, 31 & fig 8). The traces of possibly another urnfield were similarly stratified in no 16. This dating would help to bridge the interval somewhat to the Iron Age settlement of the same area, which according to present opinion can be dated at the earliest to the 7th century BC.

Accepting the *termini* of 2000bc and 1200bc, ring-ditches may have been constructed here over a period of 800 radiocarbon years, or about a millennium calibrated (following Clark 1975). This would imply an overall

construction rate of only one monument some 33-40 years. This may be compared with Green's figures and assumptions of between one and two per generation of 30 years during the Early Bronze Age in a forty mile stretch of the Great Ouse valley between Milton Keynes and Huntingdon (Green 1974).

The group forms a western outlier of the Stanton Harcourt concentration (Fig 63). Upstream to the west the density of ring-ditches is lower. It is suggested below that the Stanton Harcourt area served a wide region, while maintaining a small permanent population. Standlake appears more isolated and, in view of the comparatively small demands made by their construction the ring-ditches need not necessarily have been the concern of more than one or two small descent groups. From their very nature, ring-ditches are likely to have been built away from arable land or on its margins. The L-shaped pattern of the Standlake group may then reflect one of the boundaries between arable and pasture (along the Windrush) of such a small permanent population. Their east-west line may indicate too a track running along one of these boundaries to a crossing of the Windrush (Case *et al* 1964/5, 53).

Following Brown's arguments (1973), there would have been three major concentrations of Iron Age settlement at Standlake about 300 to 400 yds apart. They comprised pit clusters (as noted in ring-ditch 17, and previously by: Stone 1859; Akerman & Stone 1857; Bradford 1942a; Riley 1946/7) hut circles (Riley 1946/7), irregular lengths of ditches or gullies (Stone 1859; Riley 1943/4, 97; Riley 1946/7) and small enclosures (Stone 1859; Riley 1943). This combination of elements in similarly disparate occupation areas reflects the situation at Stanton Harcourt, little over a n-rile east across the Windrush.

Much of the pottery however at Standlake can be assigned to the early or primary part of the Iron Age, dated to 600 BC or earlier (Harding 1972); and to that from ring-ditch 19 can be added the finds in the northern settlement area by the Windrush (Bradford 1942a, fig 2) and those made by Stone, probably in the eastern part of the ring-ditch group (Bradford 1942a, fig 3, 1-5; Harding 1972, pl 46). This contrasts with the evidence for occupation at Stanton Harcourt which appears to date from the middle of the Iron Age and extend later, and raises possibilities of a shift of settlement during continued exploitation of the area.

The little Romano-British pottery recovered during the 1954 excavation matches its absence from the other ring-ditches of the group (one sherd was found by Stone at no 17). Romano-British settlement may have centred on the complex of trackways and paddocks frequently recorded from the air south-west of the village (Benson & Miles 1974,46), from which Romano-British pottery has been recovered (O 1961/2, 338; 1964/5, 192).

with contributions by A J Cain, C L Cram, G W Dimbleby, J L Harper, P Murphy, R Powers, D F B Roberts, K S Sandford, D W A Startin, A W R Whittle and C J Young.

The Vicarage field, Stanton Harcourt (SP 401057), triangular and approximately twenty four acres, lay at about 235 ft O D on an even stretch of second terrace gravel about half a mile west of the village (Figs 42, 48). Its western end came within a hundred yards of the Windrush, here running north-west to south-east. Associated with the former Vicarage at its eastern end, it was sometimes called after Beard Mill on the Windrush. To the south it was formerly bounded by an unfenced track to the mill, which later became the minor road from Stanton Harcourt to Hardwick.

Archaeological sites between Beard Mill and the Vicarage (Fig 59) formed part of the vast complex on the gravel terraces around Stanton Harcourt (Benson & Miles 1974, fig 11), and were first recorded from the air by the RAF in the 1920s (copies of Ordnance Survey photographs in Department, nos 3610-1). Further observations were by Allen in 1933 and 1935 (nos 1126, 1131-3, 1136-7; Williams 1951, pl IV), and by St Joseph after the war up to the early 1950s (nos AM 23, HP 86, LW 54, CI 007). Grimes's notation (1960, fig 58) is used throughout this report to indicate fields and ring-ditches.

Gravel digging began here during the 1939-45 war. Field VI to the south was superficially quarried from 1944-49. Two ring-ditches, VI, 2 and VI, 4 were recorded here by Riley and by Atkinson (Ox 1943/4, 201; 1945, 94-5). VI, 4 is not marked by Grimes (1960, fig 58) but partly appears on Allen 1126; it was adjacent to VI, 2 (Fig 59) and south-west of it.

Gravel digging began in the eastern corner of Vicarage Field itself in 1944. At first it was possible to record systematically and an Iron Age complex of pits, postholes, gullies or palisades and a ditched enclosure was excavated at the eastern end of the field (Fig 59; area of 1944 excavations: Williams 1951). After a lull the pit was extended south-westwards in 1951. A Bronze Age urn and cremation were salvaged (Fig 59, pit E: Ox 1951, 84); and Late Neolithic pits, a ring-ditch (II, 10), a Romano-British ditched rectangular enclosure and Romano-British ditches and pits were excavated (Fig 59; area of 1951 excavations: Thomas 1955).

The gravel pit was then rapidly extended as a result of a sudden, exceptional demand and reached the south-western end of the field by mid 1953. Most exceptionally too, the operators did not favour archaeological investigations, and only a single campaign was possible in 1952-3 (by Miss M Cra'ster and the OUAS), together with salvage work by Case, Fenwick and Mrs B de Seyssel. This work is reported now in the course of reviewing the sequence of land use in this small long-occupied area, as recorded by the various agencies.

Lower Palaeolithic

A handaxe came from deep levels in gravel digging in field VI (Ashmolean Museum: 1962.429) and a doubtful example from field II (Ox 1952/3, 228).

Late Neolithic

Grooved ware pits

A leaf-shaped arrowhead from the 2nd century Romano-British pit E found in the 1951 excavations (Thomas 1955, 22-3) may indicate Middle Neolithic activity in the area but the earliest settlement traces are Late Neolithic pits found in the same excavations or nearby. Two pits were found containing Grooved ware (Thomas 1955). *Pit A*, 4 ft square, dug 1½ ft into gravel filled with black loam and a little gravel, contained a large jar in Durrington Walls style (Wainwright & Longworth 1971). *Pit B*, 400 ft north-east, was smaller and contained sherds in the Woodlands style, as well as a flint flake, a fragment of quartzite and pig incisors. *Pit C*, 15 ft west of pit A, rectangular 3 ft by 1 ft and 1½ ft deep, contained black loam with flint flakes and a fragment of red deer antler, and seems likely to have been of similar date.

Pit 4/1 in interior of ring-ditch VI, 4 (Ox 1943/4, 200-1) also appears similar. It was 2½ ft in diameter and 1 ft deep and was in the south-west quadrant of the ring-ditch, which was about 120ft in diameter and appears to have had an inner bank, mound, or platform. The pit contained: (1) 27 flint flakes (7½ oz), including 3 fire-marked; end-and-side scraper (Fig 60, no 1); end scraper (no 2); 7 flakes with marks of use (eg nos 3, 4). This cleanly flaking material has the thin smooth cortex characteristic of mined flint, but is partly ochreous-stained and one such piece is re-flaked (possibly collected from flint mine dump?). (2) 2 fragments of quartzite (2½ oz), hearthstones or potboilers. (3) Pin from ground and polished sliver of long bone (Fig 60, 5). (4) 8 fragments (3 oz) of bone, partly cut, including burnt long bone; teeth and apparently fragmentary mandible of pig. (5) Charcoal fragment. A sherd of a large Beaker culture storage jar was found nearby (Fig 60, 6; p 105).

The contents of this pit are plainly a settlement assemblage. The mined flint recalls that in pit C within an area of Peterborough culture activity near ring-ditches XV, 1-5 referred to above, some of which may be connected with settlement (Hamlin & Case 1963); but the scrapers, bone pin and pig bones recall Grooved ware pits (as at Cassington, p 121). Somewhat similar bone pins occur in Beaker culture graves, but the characteristic small scrapers are missing here.

These 4 pits in Vicarage Field and nearby suggest settlement close at hand and may be taken as representative of the population which would have been needed to build the Devil's Quoits henge monument some three-quarters of a mile south east, and to scour it and keep it clear of vegetation (Grimes 1943/4; Gray 1974 for excavations; radiocarbon date from primary silt of ditch, 2060±120 bc, HAR-1887, kindly provided by Mrs M Gray). Other populations concerned with the henge monument may be represented by Peterborough culture activity around XV, 1-5 (Hamlin & Case 1963; also Ox 1952/3, 227) about half a mile south-east (Fig 63) and by the inhumation burial with similar affinities in the primary double ring ditch at Linch Hill corner (XXI, 1; Grimes 1943/4) about a mile south-east; Peterborough pottery came too from Linch Hill (Leeds 1940). Startin has calculated that the construction of the Devil's Quoits earthwork may have required some 26,000 manhours (personal information).

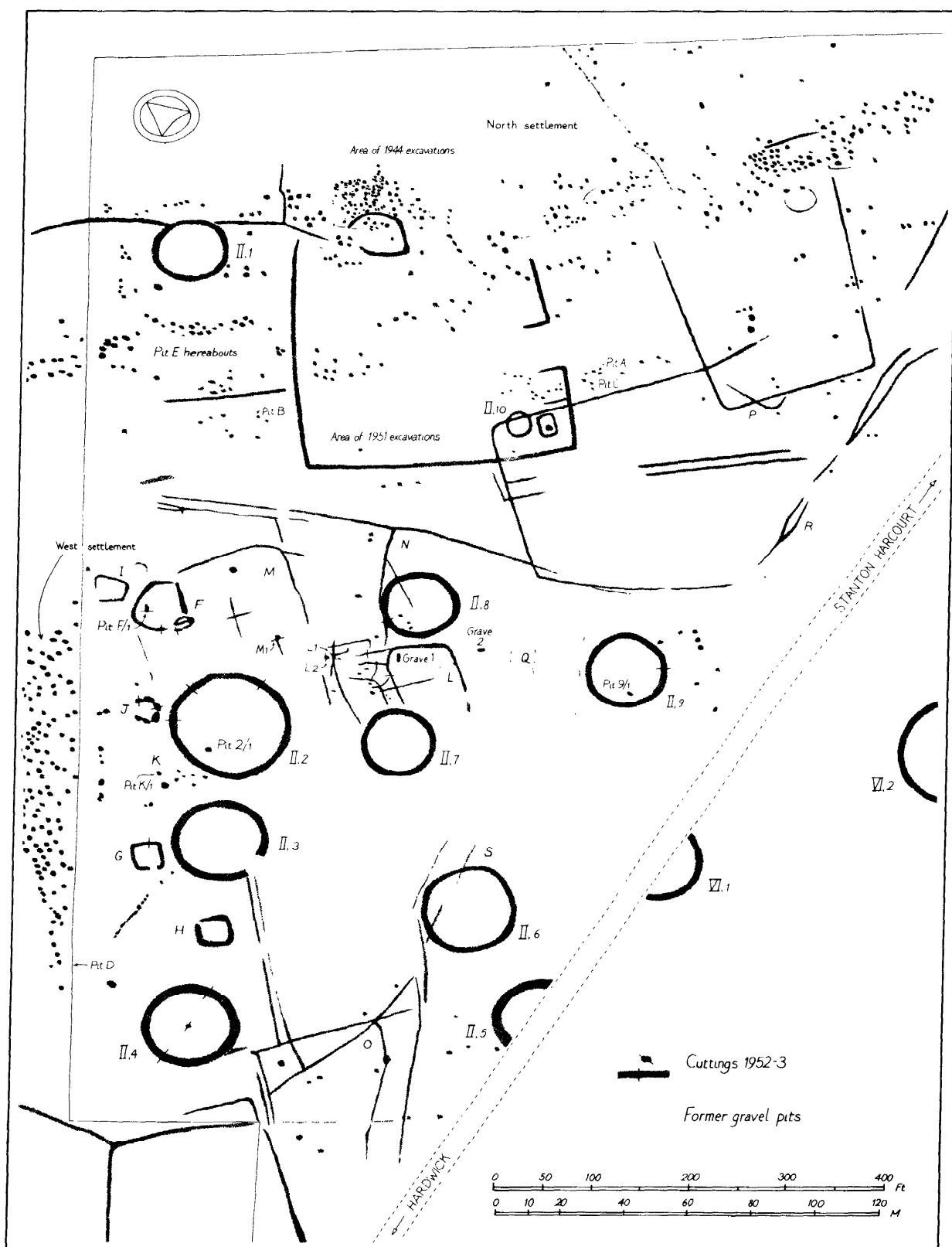


Fig 59 Archaeological sites in the Vicarage Field, Stanton Harcourt, and nearby. Field I is east and south-east of the modern field boundary running largely parallel with the left-hand margin; field II is between this boundary and the Stanton Harcourt-Hardwick road, and VI is south of the road

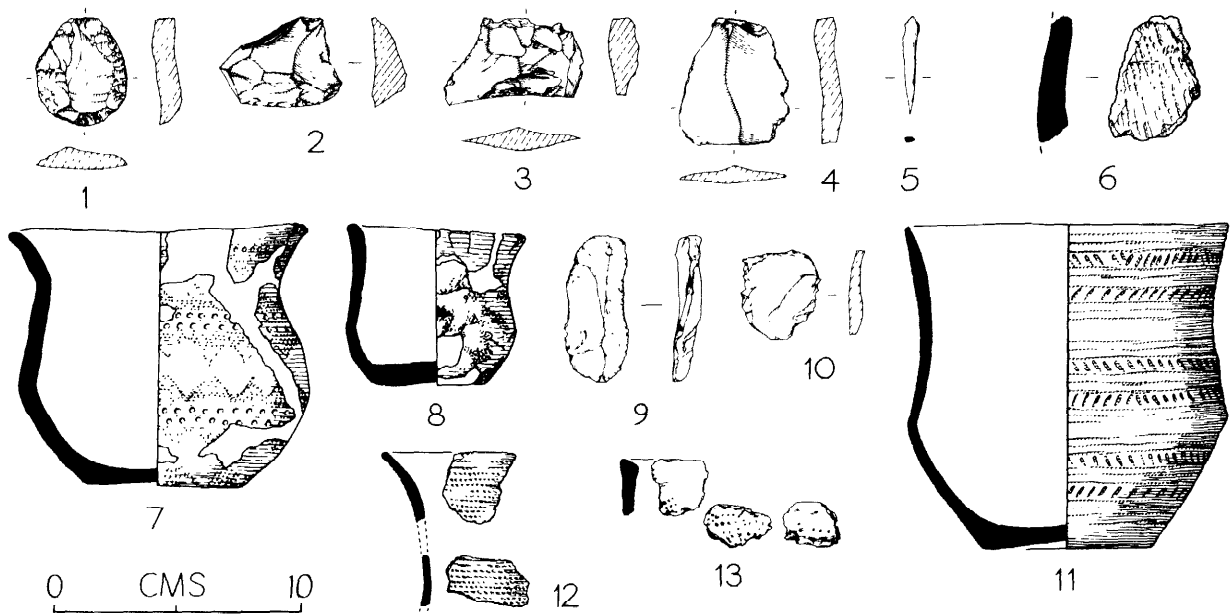


Fig 60 Grooved ware and Beaker culture finds: 1-5, pit 4/1; 6, near pit 4/1; 7-10, grave 1; 11-12, grave 2; 13, ring-ditch II, 2

Beaker culture finds

Two Middle Beaker graves were found in 1953 unmarked by ring-ditches or any other features, some 400ft west-south-west of pits A and C and adjacent to ring-ditch II, 8 (thus south of the 1951 excavations, not north as in Case 1956b, S-6).

Grave 1 excavated by Cra'ster was oval, approximately 8 by 5ft (long axis about 230 degrees magnetic) and contained the loosely contracted inhumation burial probably of a woman aged 18-20 (identification kindly made by Dr D F B Roberts, Anthropology Laboratory, Department of Human Anatomy, Oxford). The skeleton was on the left side, skull to south-west facing north-west, right hand on pubis, left forearm across chest. A Middle style beaker (Fig 60, 7; Clarke 1970, fig 109), zonally decorated probably with reed impressions found upright behind the pelvis, contained a smaller undecorated one (Fig 60, 8; Clarke 1970, fig 110).

A roughly flaked fabricator with marks of cutting or scraping use on both edges and pronounced traces of abrasion at the bulbar and distal ends (Fig 60, 9), and a roughly flaked core-changing flake (Fig 60, 10) lay behind the middle vertebrae.

Grave 2 Excavation was begun by workmen who damaged the skull and some of the pottery and completed by myself. The grave was 84 ft from grave 1 and aligned towards it. Oval, 5 ft 3 in by 3 ft and dug about 1 ft 6 in into gravel, it contained a tightly contracted skeleton of a woman of somewhat masculine characteristics, on the right side, skull south-east facing north-east, right arm across chest with wrist under the chin with fingers extending downwards, left hand at the left knee-cap. The upper part of the right tibia was missing, the break being ancient. Miss R Powers, British Museum (Natural History) kindly reports a fairly tall woman (1.645 m) with rather a masculine head, aged probably between 28 and 38 years (BMNH reference: 1961.2.3. A full report is in the Department of Antiquities).

A Middle style beaker (Fig 60, 11; Clarke 1970, fig 64), zonally decorated with impressions of a notched stamp, lay on its side in the space bounded by the feet and pelvis and the edge of the grave. Small parts of the rim and body were missing, damage which might have been caused by workmen; but damage which caused half the base to be missing was ancient. Two sherds of an Early style beaker (Fig 60, 12; Clarke 1970, corpus no 771F), with zonal impressions of twisted cord, were found in material dug from the grave by workmen. The breaks were with one exception new, indicating that more of this beaker existed as an ancient deposit.

These two graves with loam filling may have been marked by small, low mounds of the excavated gravel. Such low mounds have been recorded at the barrow cemeteries of Crichel Down, Dorset (Piggott, S & C 1944, nos 14, 16 and 17, without a quarry ditch, scraped up or built of turves) and Lambourn, Berks (Case 1956/7, no 31 of Late Ashbee 1978, 26 for further discussion).

Such mounds would soon have been destroyed by later

The Early style beaker in grave 2 represents a type which survived fully into the Middle phase, and perhaps into the

They appear related too through their alignments, and burial 2 with broken tibia and tight contraction may have

women, they reflect a tendency seen at the Late Beaker and Cassington cemeteries for women (and children) to be

possibly in both graves) is the most frequent additional association in women's graves. Grave 1 qualifies as an

knapping was among women's activities.

Other Beaker culture activity nearby is represented by the storage jar found near pit 4/1 (Fig 60, 6; p

surface reddish-brown, well-smoothed, short (- 16mm)

and poorly defined oblique but otherwise haphazard impressions of notched stamp; interior red (probably refired), inner surface flaked away, grog filler. Ring-ditch II, 10 (Thomas 1955) with outer bank, lying about 100ft west of pits A and C, may also be noted as of appropriate size and form for a Beaker culture monument (like XV, 5 between Vicarage Field and Linch Hill: Hamlin & Case 1963) although no finds were made or internal features found.

These finds may be related to other Middle Beaker burials and finds nearby (Fig 63): around ring-ditches XV, 1-5, between Vicarage Field and Linch Hill, where 6 burials were found (Hamlin & Case 1963, 4-7, 21-7); at Linch Hill Corner XXI, 1 (Grimes 1943/4, 34-45, 61-3); and at Linch Hill itself (Leeds 1931, 59-60). Some at least of these are likely to have been adjacent to settlements as were contemporary graves at Molenaarsgraf in the western Netherlands (Louwe Kooijmans 1974); and the occurrence in the filling of ring-ditch II, 2 of sherds of a beaker closely matching the decorated beaker from grave 1 (Fig 60, 13; below) gives this suggestion some support as far as Vicarage Field is concerned, as does the sherd of a storage jar (Fig 60, 6) found within ring-ditch VI/4.

These Beaker culture settlements should have followed fairly closely upon or partly overlapped with similar activity associated with Grooved ware nearby at Vicarage Field and with Peterborough ware in the Fengate style around ring-ditches XV, 1-5 and further south-east. An impression of the interval between the two groups of settlement may be given by the stratification at ring-ditch XXI, 1 where the ditch around the Middle Beaker burial was 'dug after the process of quick silting' of the ditches around the earlier burial with Peterborough culture affinities 'had been completed and the process of slower silting (had) commenced' (Grimes 1943/4, 40) – the slower silting itself perhaps hastened by cultivation not far distant (*cf* Limbrey 1975, 298-9).

Users of Grooved, Peterborough and Beaker wares were no doubt concerned with the use and maintenance of the Devil's Quoits henge movement, the ditches of which showed evidence of 'frequent clearing out' (Gray 1974). A radiocarbon determination from bone trampled into the primary silting at the Devil's Quoits (1640±70bc, HAR-1888 quoted with the kind permission of the excavator, Mrs M Gray) falls at the transition between the Middle and Late Beaker phases, a time of great activity at henge monuments (Case 1977, 80), including rebuilding in stone both at Stonehenge and at Mount Pleasant, Dorset. The stone circle may conceivably have been erected at the Devil's Quoits at this stage.

Finally, Late Beakers were strikingly absent around the lower Windrush, from both Stanton Harcourt and apparently Standlake, compared with Eynsham and Cassington around the lower Evenlode. It is therefore possible that some of the quite abundant Middle style pottery at Stanton Harcourt overlapped with the Late style further west. The pottery may thus conceivably represent different traditions of clans associated respectively with the Windrush and Evenlode, whose major assembly areas were represented respectively by the Devil's Quoits and the putative henge monument at Deadman's Burial, Eynsham (Case 1955a; but *cf* Benson & Miles 1974, 44), both near the confluences with the Thames.

Bronze Age

Ring-ditches VI, 2 and 4 were recorded in 1944-5; and II, 2, 4, 8 and 9 and nearby pits in 1951-3 under conditions which were not ideal.

Ring-ditch VI, 2

The circular ditch about 105 ft in internal diameter had an inner bank, mound or platform and appears to have dug into subsoil loam. Three pits were recorded centrally, one containing an unaccompanied cremation burial (Ox 1945, 94-5).

Ring-ditch VI, 4

Not shown in Fig 59, it was adjacent to VI, 2 and south-west of it. The circular ditch about 120 ft in internal diameter also appears to have had an inner bank, mound or platform (Ox 1943/4, 200-1). Finds from the interior are described above (p 103).

Ring-ditch II, 2

As with nos 8 and 9 described below the interior was carefully searched and the ditch was sectioned, after topsoil had been stripped 'mechanically'. The ditch was elliptical, 101 to 122 ft in diameter, 6 to 8 ft wide, and encroached upon at the north-east by an old gravel pit. The three sections observed were uninformative as to the monument's structure. The cutting nearest Beaker culture grave 1 produced 6 sherds ($\frac{1}{2}$ oz) including a rim (Fig 60, 13) closely similar to the decorated beaker (Fig 60, 7) in that grave; also two sherds of Romano-British grey ware. Pit 2/1, in the interior, circular, 5 ft in diameter, contained no finds.

Ring-ditch II, 8

The ditch was elliptical, 70 to 75 ft in diameter, 8 to 10 ft wide; the single section observed was uninformative and the interior featureless. Indeterminate Romano-British sherds came presumably from the tertiary silting.

Ring-ditch II, 9

The ditch was some 75 ft in diameter, 8 ft wide; the single section observed was uninformative. A human skull, probably set upright originally, was removed in a badly damaged state by the owner of the gravel pit from the surface of the tertiary silting on the east side, together with a sheep mandible and three indeterminate Romano-British sherds. Pit 9/1 in the interior 6 by 4 ft in plan, also contained indeterminate Romano-British sherds (below, p 115). Other pits south-east of the ring-ditch could not be examined.

Ring-ditch II, 4

The interior was carefully searched in the course of two days after topsoil had been stripped mechanically, and two diametrical sections were dug across the ditch. The ditch was circular and continuous, some 90 ft in diameter, with an approximately central burial pit containing a miniature food vessel (Fig 62, 2) and a cremation burial. The monument, possibly a disc-barrow, like other ring-ditches in the region, may be dated to the Early Bronze Age, possibly contemporary with the Late Beaker cemetery at Eynsham (around the mid 2nd millennium bc), but more likely to be later than it.

The burial pit, 4 ft diameter and 1 ft deep into gravel, was tilled with uniform reddish-brown stony loam, on the surface of which were the sherds of the miniature vessel adjoining fragments of cremated human bone. The gravel dug out of the pit may originally have been spread over it to form a small mound. The pot had been so crushed that it was impossible to say how it had lain originally. Dr D F B Roberts, of the Department of Human Anatomy, Oxford kindly reported that lack of duplication among the

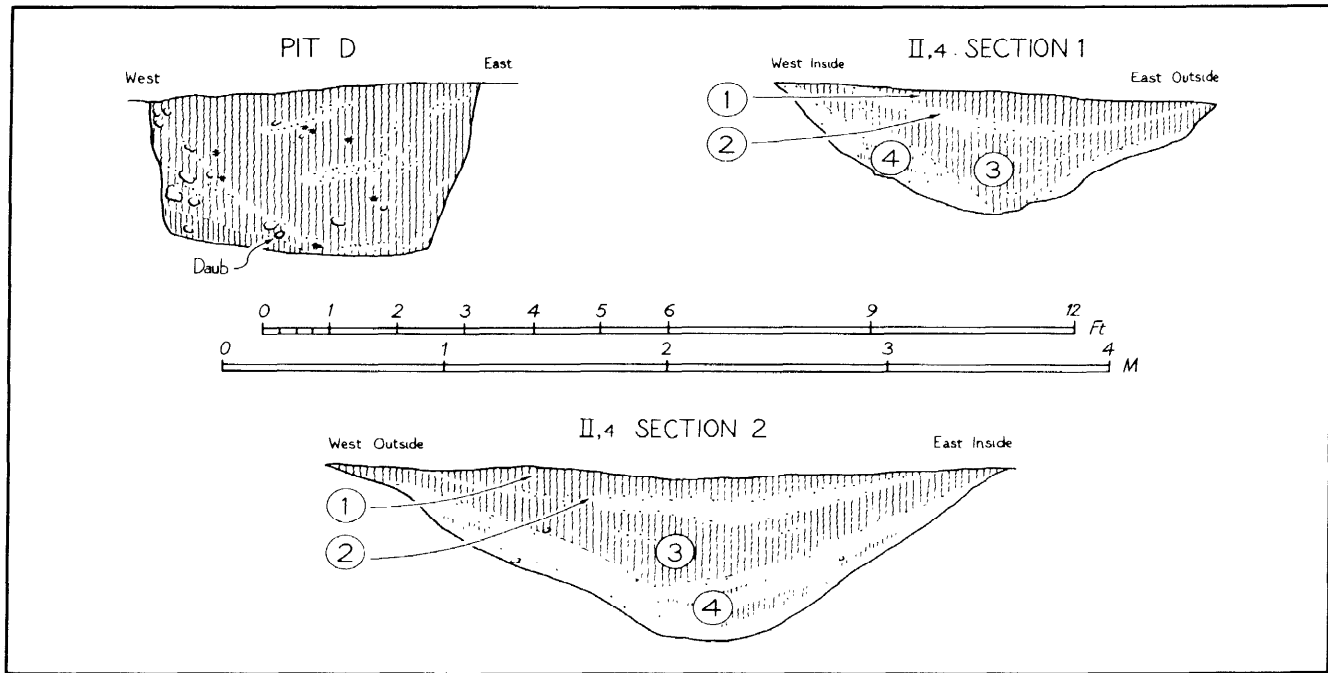


Fig 61 Sections of ring-ditch II, 4 and pit D

fragments of bone (7½ oz) suggests a single individual; fragments of the permanent dentition remained, and the degree of suture closure in pieces of skull suggested a middle-aged adult,

The ditch in section 1 to the east (Fig 61) was slightly over 6 ft wide and 2 ft deep, and in section 2 some 10 ft wide and approaching 3 ft deep. The following layers were observed in both sections: *layer 1*, reddish-brown stoneless loam; *layer 2*, more or less unweathered reddish-yellow gravel composed of small pebbles, in section 2 in two distinct runs with reddish-brown loam between; *layer 3*, large and small weathered oolite pebbles in a matrix of reddish-brown loam (redder than in layers 1 and 2) with stoneless lenses, and the larger pebbles concentrated in the middle of the ditch; *layer 4*, fairly unweathered reddish-yellow to reddish-brown gravel of generally small pebbles with occasional runs of stoneless reddish-brown loam, redder than in layers 1 and 2.

Struck flints and probably Iron Age sherds were found in layer 1, section 1. Layer 1, section 2 contained a concentrated patch of Iron Age sherds with animal bones and charcoal; a sherd probably Romano-British also came from this layer. Layer 2, section 2 contained struck flints.

The ditch's unusually gentle slopes explain the absence of strong differentiation between primary and secondary silting in layer 4. The greater volume of this layer derived from the inside (a process continued in section 1 by layer 3) indicates an earthwork lying close to the ditch's inner edge; the quantities of material involved suggest a ring-bank rather than a barrow mound. The monument with inner bank close to its edge (type 2b: Hamlin & Case 1963), and perhaps a small mound over the central burial may thus originally have been a form of disc-barrow. The runs of stoneless loam in layer 4 suggest that the bank may have been partly of topsoil, and perhaps subsoil loam. In section 1 the layer had been recut centrally and the filling of layer 3 above was markedly stonier than in section 2.

Layers 1 and 3 together represent characteristic tertiary silting, possibly largely explainable by cultivation not far distant (*cf* Limbrey 1975, 298-9). This process was interrupted by deposition of layer 2 across the width of the ditch in both cuttings; this fairly unweathered gravel is most likely to have come from the core of the ring-bank, and thus indicates the slighting of the monument, presumably through the interior also being taken into cultivation. Iron Age occupation rubbish in layer 1 section 2 can serve to date this episode and the single Romano-British sherd should be considered as intrusive.

Section 2 is also interesting as showing the amount of tertiary silting which accumulated during at least 8 centuries from the Early Bronze Age to the Iron Age. Compare Bronze Age finds in intermediate or similar positions in the similarly proportioned Early Bronze Age ditch at Hanborough 3 (Case *et al* 1964/5, fig 7, outer ditch, Cutting III), and in the steeper possibly Late Neolithic ditch at Stanton Harcourt XV, 4 (Hamlin & Case 1963).

The finds

Miniature vessel (from the burial pit): Flat-rimmed, high-shouldered cup of vase food vessel form, fairly complete (Fig 62, 2). Brown to reddish-brown exterior, light brown interior, thin dark core; occasional quartz filler - 2 mm; sandy; well smoothed; boldly incised, diagonally on rim, and in diamond and herringbone motifs on neck and body respectively; two perforations below. Best matched locally in fabric (and possibly size) by two very small sherds (one a shoulder) from Hanborough 4, phase 2, (inner ditch, layer 3: Case *et al* 1964/5, fig 24, no 6); phase 2 was a small single-entrance henge monument with Late Beaker associations (GrN-1685: 1510 ± 65 bc), but the sherds came from the

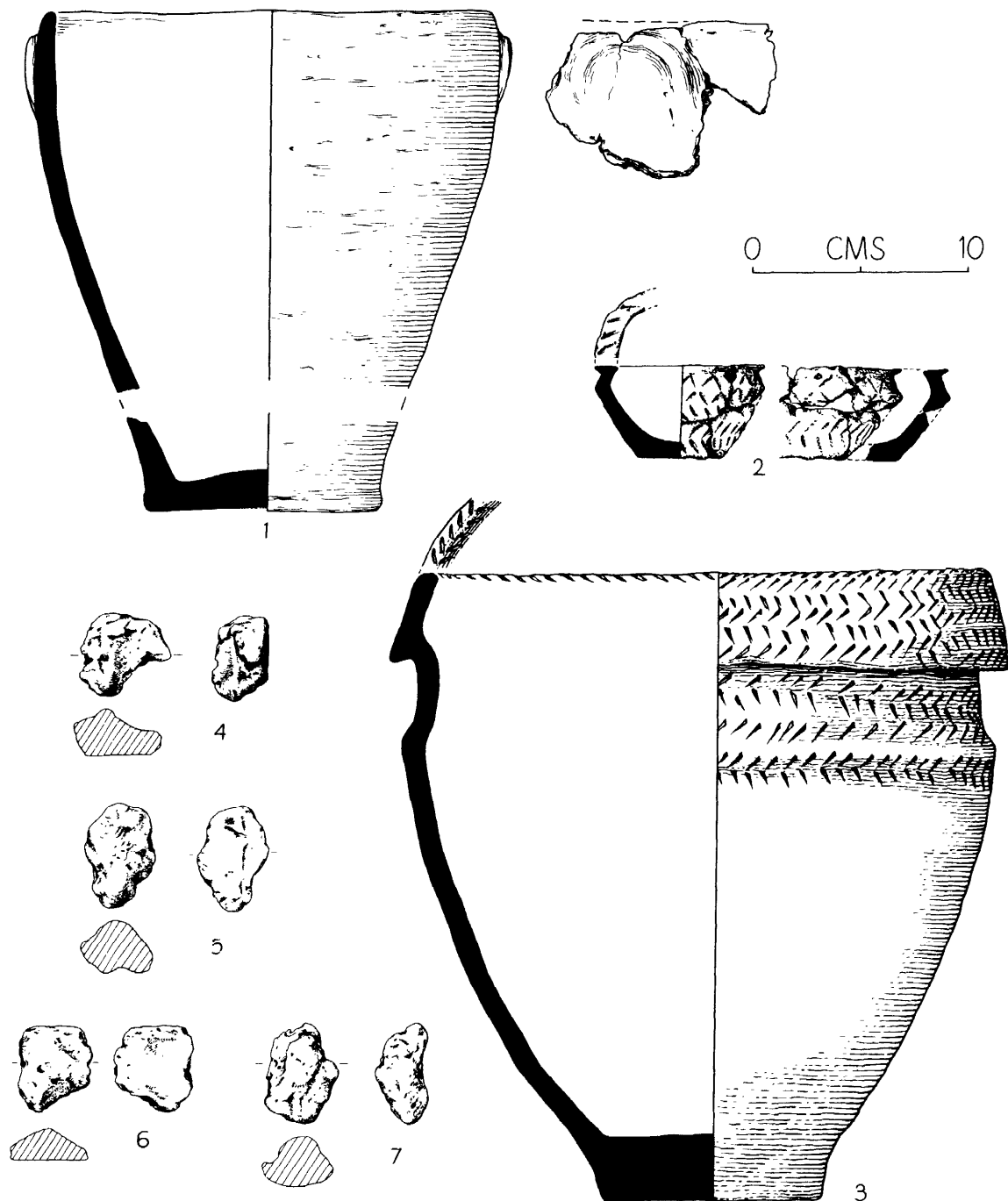


Fig 62 Bronze Age pottery and daub: 1, pit E; 2, ring-ditch II, 4; 3-7, Pit D

filling of a superficially recut part of the ditch (*ibid*, fig 11, section 7).

Other local miniature vessels are an incense cup from the nearby Stanton Harcourt barrow (XVI, 1; Harden & Treweeks 1945, and a collared urn from a small pit within

the southern enclosure, North Stoke (above, p 70), both with cremation burials. The incense cup from XVI, 1 has fairly classic Wessex culture associations, but it is generally dissimilar from the vessel here apart from diamond ornament, and twin perforations as matched on incense cups generally. The miniature collared urn from

Table 29 Vase food vessels or sherds in the Oxford Region

(Those from Standlake and Drayton are in the British Museum, the remainder in the Dept of Antiquities, Ashmolean Museum)

Site	Museum No	Publication	Associations
Standlake Yarnton	62 7-3 2 1886.1454	Abercromby 1912, pl XXIX, no 6 Case 1956b, fig 4, top right	— Found with a struck flint and inhumation burial. Ring ditches and other burials nearby, including burial with Middle beaker (Clarke 1970, fig 404). Another Middle beaker (fig 255) from same area.
Oddington Park Crescent, Oxford	1868.509 1868.510	Abercromby 1912, pl XXIX, no 9 Abercromby 1912, pl XXIX, no 3	— Loose association at find spot with another pot (now lost) and 3 skulls.
Frilford Frilford Saxton Road, Abingdon	1886.1441 1940.218 1934.362	Leeds 1934a, pl XXXVg, 276 Ox 1941, 87 Leeds 1936, 18-21	— — Contains fragments of charcoal and (?) bird bone. In a pit unaccompanied under a barrow. 3 single inhumation graves also under barrow. Cremation and child's inhumation also within barrow.
Drayton	62 7-22 2	Abercromby 1912, pl XXIX, no 8 bis	—

North Stoke has a mid 2nd millennium mean radiocarbon date (above, p 74).

Regionally, vase food vessels show rather considerable variety and fairly uninformative associations (Table 29); that from Yarnton however may have been with one of a series of burials with associations including a Middle Style beaker (Clarke 1970, fig 404) and possibly another (Clarke 1970, fig 255). Food vessels can be dated generally to the Early Bronze Age (Simpson 1968b); one of their origins was in Middle Beaker pottery and they overlapped totally with Late beakers although tending to survive later (Case 1977).

The *Iron Age* finds from the ditch are reported below.

Interpretation and dating of the ring-ditches

Interior features may have been destroyed in all these monuments by stripping subsoil loam with topsoil and most of them cannot be directly interpreted or dated. VI, 4 might conceivably be Late Neolithic, and connected with settlement, in view of the arguments which can be advanced concerning some of those in the nearby XV, 1-5 group (Hamlin & Case 1963) and the possibility of a Neolithic date cannot be overlooked for any ring-ditch in view of Wallingford (above, p 55) or Stanton Harcourt XXI, 1 (Grimes 1960). II, 10 is similar in size to regional Beaker culture funerary monuments such as nearby XV, 5 (Hamlin & Case 1963). The elliptical II, 2 and II, 8 can be compared with Hanborough 3 and Radley 16 (Case *et al* 1964/5; and above, p 101), datable to the mature Early Bronze Age, mid 2nd millennium bc. Like Hanborough 3 they may have been funerary monuments on the site of former settlements; the Beaker sherds in II, 2 should then be taken as derived. VI, 2 was funerary at any rate in its final use, like II, 4 which should also be dated around the mid 2nd millennium bc.

Pits

Pit D

Some 90 ft north of ring-ditch II, 4, it was noted in the section of the gravel pit by Mr E K Florey of Beard Mill in 1953. He removed the greater part of an Early Bronze Age collared urn (Fig 61, 3) containing cremated bone and gave it to the Department. Excavation was completed by myself and A G Fenwick.

The pit was unmarked by a ring-ditch or any other feature. Noted by Florey as roughly circular, excavation showed it to be about 4 ft 9 ins wide at the gravel surface and about 2 ft 10 ins deep, with steep sides and a flat base (Fig 61). It contained reddish-brown loam interspersed with occasional small runs of gravel. The filling tended to

be more tightly packed at the sides, and stones to be concentrated there especially at the top, but no well defined lining was observed as in the cremation pits 4, 5 and 6 adjoining Hanborough 4 (Case *et al* 1964/5, 30). The urn (Fig 62,3), containing 2½ oz of cremated bone, mostly human but including a few unidentifiable animal fragments, had been buried upright near the bottom of the pit and in its southern segment, and had probably been more or less complete on insertion. Other sherds, charcoal, daub, animal bones and flints were found throughout the filling.

The urn may be compared with that from the similar cremation pit in the Late Beaker Eynsham cemetery (Longworth 1961, nos 96 and 101, assigned to the primary series). Urns with less than 2 primary traits (Longworth 1961) as from Hanborough 3 (1490 ± 60 bc: GrN 1686) or the Long Wittenham urnfield (Case *et al* 1964/5, figs 26, 28) may have been later. Pit D may therefore be somewhat earlier than ring-ditch II, 4 despite the general priority of food vessels over urns (Case 1977).

It cannot be determined whether pit D was isolated or part of a group. Pits in the still unquarried area immediately north (Fig 59, left margin; Allen no 1132) probably belong to an Iron Age settlement (p 114). Regionally, other isolated cremation burials with collared urns were associated with the southern enclosure at North Stoke (see above) and the Late Beaker cemetery at Eynsham (Leeds 1938a). Some other pits with collared urn sherds are of uncertain status as at Cassington (near the Late Beaker cemetery; Department Register 1934.80; Leeds 1934b), Chadlington (Leeds 1935, 31) and Stadhampton (V C H 1939,266). A small group adjoined Hanborough 4 (Case *et al* 1964/5, *cf* also urn upright in pit 4/6) and apparently there was another group with biconical and barrel urns at Long Wittenham (Leeds 1929; Case *et al* 1964/5). Small groups of pits were within ring-ditches at Hanborough 3 and Radley 16 also with biconical urns (Leeds 1938b; Case *et al* 1964/5). Pit D also with sherds of a ridged food vessel within ring-ditch A at Sutton Courtenay may (Case *et al* 1964/5, fig 30) have been connected with settlement. Cremation burials with collared urns under barrows were at Cassington 6, possibly secondary to a Beaker culture burial, and Dorchester VII (Atkinson 1946/7; 1951).

The finds

Collared urn (Fig 62, 3), probably more or less complete on insertion, in view of large size of sherds (up to 100 by 140 mm) and unweathered breaks. The major missing part, about one-third, from one side of the upper half, was probably destroyed in gravel digging. Two crumbs and a flake from the base found *in situ* during excavation, the latter only one foot from the surface of the pit filling, may

have become detached during burial. Light brownish-red to reddish-yellow exterior, black to dark grey core, dark grey to dark reddish-grey interior; rather dense small stony filler generally < 1 mm long (probably limestone or fossil shell) but including quartz grains - 2 mm (the absence of grog is noteworthy); clayey texture, and well smoothed surface inside and out; tripartite form with flattened rim and collar varying from convex to concave external surface; decorated with small incisions made by a sharp tool, forming herringbone motifs on rim collar, neck and upper part of body below shoulder.

Other pottery 40 other sherds (5 oz) many < 10 mm in any dimension and breaks a little weathered, therefore likely to have broken before insertion: 22 (12 joining) possibly from belly of a smaller urn, approx diam 160 mm; - 10 mm thick; poorly fired but well smoothed fabric, grey with blotchy brown patches on the exterior; small quartz and large shell filler - 9 mm. 10 from one or more additional urns: 7 (10-15 mm thick) reddish-brown well smoothed fabric, small shell and quartz filler; 2 (13 mm thick), light brown, smooth, sparse small shell and quartz filler; one (10 mm thick), reddish-brown with dark core, shell and quartz, part of a rim or lower part of collar. Also 8 similar but indeterminate flakes or crumbs. None of the sherds from this pit show the grog filled fabric which is normally characteristic of collared urns.

Daub (Fig 62, 4-7) 32 fragments, 9¾ oz, ranging from small scraps 10 mm long to others - 74 mm long, 30 mm thick. Mostly fired red, but the largest fragment with a black core; sandy fabric containing limestone and fossil shell - 8 mm long, also grog and impressions of plant stalks, the better fired parts vesicular showing gassing; majority of breaks weathered, though some relatively fresh. The largest fragment has a flat surface (extending over 54 by 32 mm, and broken at each extremity), two others have similar smaller surfaces suggestive some of joins and others of recesses for stiffeners. These fragments may have been part of the walls of a collapsed or demolished hut burnt on the pyre. On the other hand the flat surfaces and possibly some of the concave ones may suggest smaller objects, such as ovens; the clay is not sufficiently well levigated for metallurgical moulds. The fillers (sand, limestone and fossil shell) would have been obtainable in the immediate vicinity.

Daub has been reported regionally only twice earlier than the Iron Age: pit 5, Cassington, with Grooved ware (p 124) and pit E, east of XV, 1-5, Stanton Harcourt, with a sherd probably of Peterborough ware (Hamlin & Case 1963). In the latter case, the fragments may have belonged to a small, perhaps portable structure. Daub has also been recorded with Late Beaker culture occupation material in East Anglia (Clarke 1970, 213) and at Gorsey Bigbury, Somerset (ApSimon *et al* 1976), also on Deverel-Rimbury settlements of the Middle or later Bronze Age in southern England, as sparsely at Shearplace Hill, Dorset (Rahtz & ApSimon 1962) or in larger quantities at Park Brow, Sussex (Wolseley *et al* 1927, 4).

Struck flints 3 flint flakes, 2 fire-altered and 2 from surface or pebble flint; core-changing flake (from core of type B), L 38 mm, neatly retouched to form convex end-scraper.

Other stone Fragments of *cornbrash*, mostly pebbles and pieces up to 2 lbs, blackened and reddened by fire and cracked, dispersed throughout the filling; *flint* pebble, outer diam about 40 mm, ¾ oz; small fragment of Jurassic fossil wood, L 16 mm, fire-altered; flake from pebble of Palaeozoic sandstone. The sandstone may have been a local erratic as may the flint pebble although similarly sized flint is normally only found in the Thames gravels south of

Wallingford. The nearest outcrop of cornbrash is 3½ miles north-west and of fossil wood about 4 miles north. Limestone slabs and a similarly miscellaneous collection of stones were recorded in the central cremation pit 1, Hanborough 6 with a Wessex biconical urn (Case *et al* 1964/5), and interpreted as pyre material. Cornbrash and fossil marble occurred in Middle Neolithic cremation deposits at New Wintles Farm, Eynsham (above, p 53).

Human bone Mr D F B Roberts, Dept of Human Anatomy, Oxford, kindly reported that the absence of duplication of identifiable fragments and the compatibility in size of fragments suggest a single adult. The sample included a few unidentifiable animal fragments.

Animal bone Samples were kindly identified by Mr C L Cram, Reading Museum, from the following which occurred throughout the filling: teeth and jaw fragments of sheep/goat (at least 2 animals); splinters including some from long bones and fragments indicating sheep/goat in size. Pig tooth. Unidentified splinters and fragments, burnt fragment.

Cereal impressions on fragments of daub Mr P Murphy, Centre of East Anglian Studies, Norwich, kindly made the following report: The impressions were mainly of cereal straw and leaf blades. Four daub fragments (Fig 62, 4-7) were destroyed during examination. One impression appeared to be of the median part of a glume from a species of oats (cf. *Avena* sp.) It is concave and has numerous longitudinal lines. This identification is however tentative.

Charcoal Samples were submitted to Professor G W Dimbleby, Institute of Archaeology, London University, who kindly identified several pieces of oak (*Quercus*) and one each of hawthorn (*Crataegus*), field maple (*Acer*), blackthorn (*Prunus spinosa*) and hazel (*Corylus*); one piece was unidentifiable.

Snails A sample of subfossil mollusca from the filling was kindly identified by Professor A J Cain, Liverpool University as belonging to *Helicella itala* (L) a snail characteristic now of open downland grass and of very dry, very calcareous grassland generally; it occurs at the present day on the calcareous grassland on the Coral Rag at the top of Wytham Hill and abundantly on high downland. *Editorial note:* Evans (1972a, 180 & references) has recorded it as prolific in prehistoric arable habitats, apparently from the Middle Neolithic onwards.

Pit E

Sherds of a *biconical type urn* and of another probably of the same type, and cremated human bones were recovered by gravel diggers from the area between ring-ditch II, 1 and pit B (Ox 1951, 84-5), and probably came from another pit: 26 sherds (40¾ oz) largely new breaks, a few joining, of *biconical type urn* (Fig 62, I), with rims and complete base, 2 rims with arc-shaped lugs immediately below; reddish brown interior and exterior surfaces, brownish-black core, crazed surfaces, grog, very occasional flint and quartzite; 2 body sherds (12¾ oz) of another urn, up to 16 mm thick, mostly old breaks, brown exterior, blackish-brown interior and core, denser fabric, fairly plentiful flint and quartzite - 11 mm. In view of the evidence from pit D it would not be surprising if both these sets of sherds came from the same pit. The urn had an impression on its base of a grain of *triticum vulgare* identified by Mr J L Harper, Dept of Agriculture, Oxford. Mr D F B Roberts of the Department of Human Anatomy, Oxford, reported that the bones (11¾ oz) were of a large middle-aged person of indeterminable sex.

The occurrence and dating of similar relief-decorated urns at Stanton Harcourt and regionally have been reviewed in discussing the similar type of urn from XXIII, 2 (p 87). Like collared urns they occur with isolated burials (Hanborough pit 2/1), in groups and within ring-ditches. The arc-shaped lugs here are best matched regionally on biconical urns at Iffley and Radley 16. The sherds from Radley 16 should be mature Early Bronze Age, but this urn like that from XXIII, 2, could be datable to the Middle Bronze. If so, it would show occupation of the Vicarage Field continuing into the 3rd quarter of the 2nd millennium bc.

Bronze Age settlement at Stanton Harcourt in its regional context.

Little or no settlement rubbish has been recorded from Bronze Age burial pits, at any rate regionally, and pit D is quite unusual for the amount it contained. It seems unlikely that pieces of daub would have been carried far and the parent settlement may have been nearby, as has been suggested in the case of Middle Beaker burials 1 and 2. The pit was marginal to the main cluster of ring-ditches, of which II, 4 and VI, 2 at least were burial sites. There seems no reason however to doubt that settlements and burial sites could have been close together on the sometimes rather confused spreads of gravel in the Upper Thames valley. In the Great Ouse valley surface distributions of struck flint have been used to suggest the possibility that occupation sites were on higher gravel terraces adjacent to ring-ditch concentrations at Biddenham and Roxton, Beds, but not directly associated with them; the ring-ditches there were however on land more liable to flooding than the second terrace of the Upper Thames (Woodward 1977). Although no direct evidence was found that any ring-ditches in fields II and VI or in XXIII and XXIX reported above (p 81) were themselves connected with settlement, VI, 4 remains a potential example and the partial possibility cannot be excluded generally (Hamlin & Case 1963); it is beginning to be confirmed (Green 1976, 19; Pryor 1976b). Areas used first for settlement may have later become cemeteries or been modified for that purpose, as at Hanborough 3 (and cf a somewhat similar site at Little Cheney, Dorset; Catherall 1976).

The absence of cattle from pit D contrasts with evidence elsewhere, as at Rams Hill, Uffington (Bradley & Ellison 1975, 118-22), but the sample here may be non random. The consensus of identifications suggests stable mixed farming in a rather well cleared landscape. This was an economy already well established nationally in the Middle Beaker period (Case 1977) by which time it had endured nationally for more than a millennium (and already for many centuries regionally, as at Abingdon, above pp 10 ff), and was not greatly different from that of the Iron Age many centuries later. At Stanton Harcourt itself mixed farming may be assumed to have been established from the Late Neolithic onwards: scraps of direct evidence are the association of an impression of *Triticum dicoccum* and possibly sheep bones with the Middle Beaker burial in XXI, 1 (see below; Grimes 1943/4); and there seems no reason to doubt that mixed farming was established in Grooved ware times at Vicarage Field - since pits similar to A-C and XVI, 4/1 and to pits 1-5 at Cassington (below, p 121) have been found recently at Barton Court, Abingdon and Mount Farm, Dorchester to contain cereal crop remains (information kindly given by M Jones, Oxfordshire Archaeological Unit).

Stable mixed farming around the mid 2nd millennium would hardly be surprising in the light of evidence for

apparently permanent settlements in the Middle Bronze Age in Sussex and Wessex (summarised in Cunliffe 1974, 11-17) and apparently connected with field systems and thus with fixed tenure, as for example at Itford Hill (Burstow & Holleyman 1957), New Barn Down (Curwen 1934b), Plumpton Plain A (Holleyman & Curwen 1935) and perhaps Shearplace Hill (Rahtz & ApSimon 1962), and recognised also on the Berkshire Downs (Bradley & Ellison 1975, esp 181-2, 195-6); but this interpretation appears to contrast with suggestions that the Upper Thames Valley was mainly used in the Early and Middle Bronze Age by seasonal transhumers resorting to water meadows (Case *et al* 1964/5, 53-5, and note collared urn sherd on flood-plain nearby (Fig 42) at Pinkhill Farm, Eynsham: Ox 1954, 117).

These two views are reconcilable however if one follows an interpretation similar to that adopted for the Abingdon causewayed enclosure and North Stoke bank barrow (pp 25, 70) and assumes a small permanently settled population concerned with the allocation of grazing rights and large numbers of transhumant clansmen from rather widespread regions arriving for the summer months (cf Fleming 1971 for the Wessex chalklands). This would explain the variety of burial offerings seen at Stanton Harcourt: the Wessex culture associations in XVI, 1 (Harden & Treweek 1945), a miniature food vessel in II, 4, a collared urn in pit D, biconical urns in pit E and ring ditch XXIII, 2, and the bucket urns at ring-ditches XV, 4/4a. This variety could be seen as the result of gifts or exchanges accruing to a fairly small permanent population which might have included holy men (in Kehoe's sense, 1974) associated with the presumably long established Devil's Quoits henge monument.

The nature and layout of ring-ditches at Stanton Harcourt support this argument in a number of ways. Some 60 ring-ditches were recorded in aerial photographs, a number which appears at first to argue for a large local population. However the labour inputs required for their construction were probably most trivial (above, p 87) and the overall rate of construction very low. Assuming them to have been continually built from the Late Neolithic (XXI, 1) into the start of the Middle Bronze Age (XXIII, 2) gives a span of about 1000 radiocarbon years (2150-1150 bc) and thus about 1300 years calibrated. The 60 odd ring-ditches would then have been constructed at an overall rate of only one every 20 years or so - slightly greater than that suggested for those across the Windrush at Standlake but almost the same as that calculated for those in the Ouse Valley between Milton Keynes and Huntingdon (above, 102).

Furthermore, using Grimes's plan (1960, fig 58) the mass of ring-ditches can be broken down into smaller clusters each of about 10 or so (Fig 63): (1) Vicarage Field and field VI; (2) fields IX, X, XI; (3) a linear group stretching eastwards from XV, 1-5 to the north of field XX; and (4, 5) two converging ones south of the Devil's Quoits. Little is known about cluster 2, largely destroyed before 1950, but the others suggest in a similar way to cluster 1 a range of settlement from the Late Neolithic to the Middle Bronze Age. Thus, cluster 3: Late Neolithic (around XV, 1-4a) - Middle Beaker (XV, 5 and other finds in same area) - Early Bronze Age (XVI/1) - Middle Bronze Age (secondary burials in XV/4). And to the south (clusters 4 and 5): Late Neolithic (XXI/1; and at Linch Hill, Leeds 1940) - Middle Beaker (XXI/1 and also at Linch Hill) - Middle Bronze Age (XXI/4 and XXIII/2). Each of these could have served a long enduring but small descent group living on areas of the gravel terraces immediately around, areas a little smaller than that around the somewhat larger Standlake cluster. The number and partly the siting of

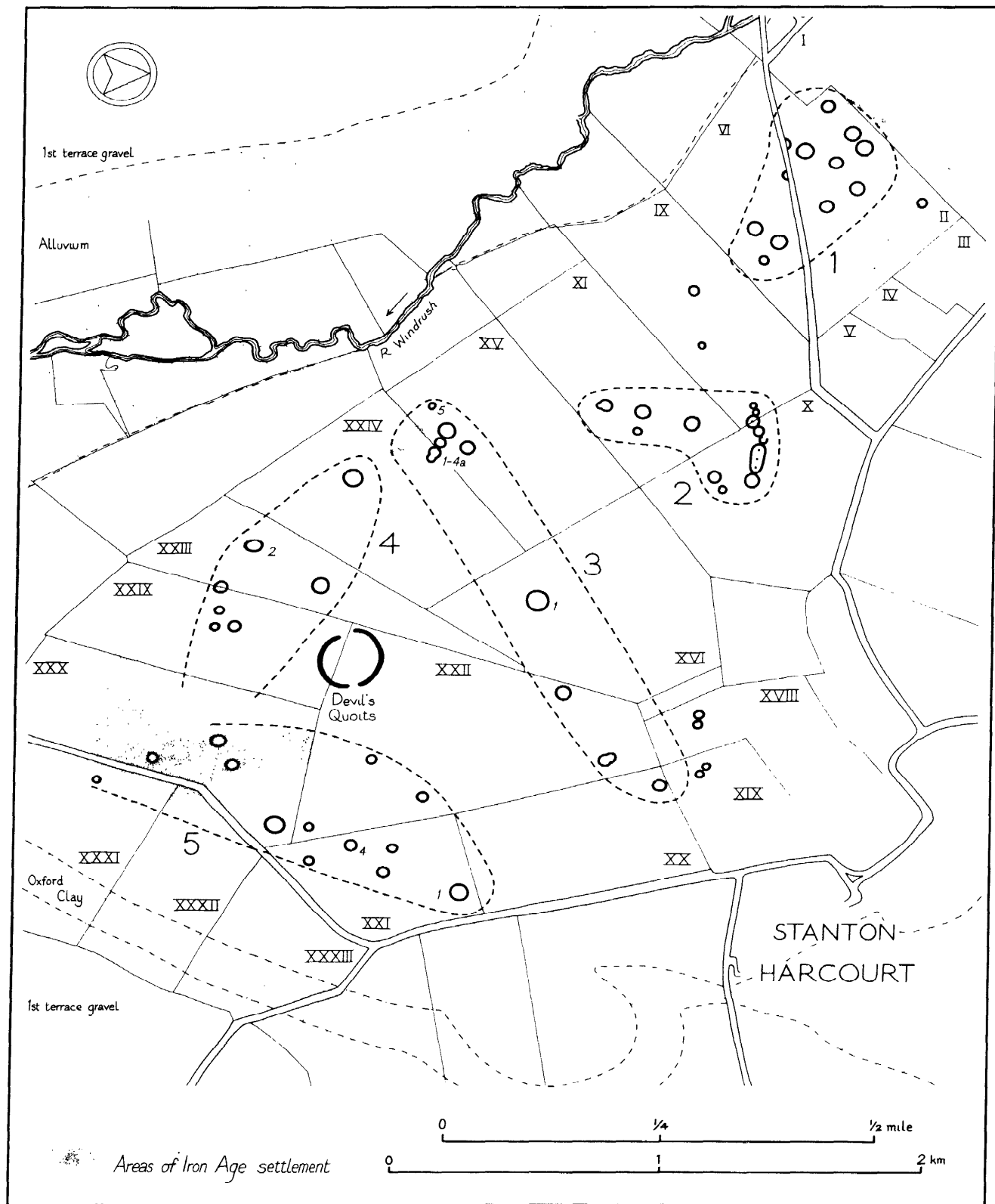


Fig 63 Ring-ditch groups at Stanton Harcourt

these clusters can be directly compared with those of later Iron Age settlements (Fig 63 and below, p 115). (In view of the apparently infrequent construction of ring-ditches, the suggestion that each cluster represents an individual settlement implies that by no means all the community received ceremonial burial; but this is a trend which requires demonstrating on a national scale; Case, forthcoming.)

The potentially widespread connections of such small Bronze Age settlements may be emphasised by the rather strikingly linear layout of the ring-ditches in cluster 1. Thus, in Vicarage Field (Fig 59), nos 1,2,3 and 4 form an emphatic south-west - north-east line, with 5,6,7, and 8 forming another line to the south, and 9 and 10 with VI, 1 a line to the south again. It has been suggested that these lines grew up alongside a track running to a ford on the Windrush at Beard Mill, which formed part of an important route connecting North Wessex with the Jurassic region (Case *et al* 1964/5; cf Glasbergen 1954b, 174ff for a similar suggestion in North Brabant; also Bakker 1976, esp fig 11). Connections between Stanton Harcourt and the Berkshire Downs are directly suggested by the bead of *Porosphaera globularis* with the Wessex culture burial in XVI, 1 and the general resemblances of this burial to that in Lambourn 1 (Case 1956/7).

To some extent too and in a related manner, the linear layouts of ring-ditches may indicate land divisions as suggested at Standlake (above, p 102); this may explain (for example) the linear layout of cluster 3, and the L-shape of cluster 2 which is similar to that of the Standlake group (above, p 88). In this respect too the patterns of ring-ditches may be similar to the traces of Iron Age settlements (below, p 115). Traces of pre-Iron Age field boundaries on the Thames gravels have so far been slight (reviewed by Balkwill in Parrington 1978, 29) but both Late Neolithic and Early Bronze Age rectilinear enclosures have been reported in gravel at Peterborough (Pryor 1976b, 31). Clusters 1-4 at Stanton Harcourt border the Windrush floodplain which would have been potentially valuable for small grazing plots: indeed clusters 1, 3 and 4 show western edges roughly parallel to it. The southern edge of cluster 5 follows a narrow outcrop of Oxford Clay, which is bounded on the south by first terrace (Northmoor) gravel which together with the extensive flood plain of the Thames (partly shown on Fig 42) between Eynsham and Newbridge forms an area of more than 1200 hectares on both sides of the river suitable for large scale or communal grazing. Highly organised communal grazing of the alluvium in the neighbouring parish of Yarnton continued into this century (Stapleton 1893; Hoskins & Stamp 1963, 130-1; archives of Field and Antiquities Sections, Oxfordshire Museum Services. I am grateful to Mr I Hornbrook for these references).

Other regional clusters of monuments show a cultural range similar to that at Stanton Harcourt generally, but in some cases starting in the Middle Neolithic: as at North Stoke, at City Farm - New Wintles and at Dorchester. Some too lasted into the Middle Bronze Age as at City Farm (Hanborough 6: Case *et al* 1964/5) and Radley (no 14: Leeds 1938b). To some extent these clusters are also grouped where tributaries join the Thames, as at Stanton Harcourt and Standlake, for example: Hanborough - Cassington - Eynsham around the Evenlode, and Dorchester - Overy - Warborough around the Thames; and a group associated with the Cherwell may be suggested by finds within Oxford itself, summarised briefly by Benson & Cook (1966, fig 2) and more clearly seen by the Oxfordshire Archaeological Unit and others in 1976 in cropmarks in the University Parks including

ring-ditches and small enclosures (recorded initially by Riley: negative IX, 33-4 held in the Department). All these groups are potentially similarly explicable as clan centres connected with summer grazing.

Cluster 3 may have been associated with the leading descent group at Stanton Harcourt. The Wessex culture burial in barrow XVI, 1 was rich even on a national scale and in a monument exceptionally large regionally, and the cluster may also have contained a well furnished (3 robbed) Middle Beaker grave (I/1 near ring-ditches XV, 1-5: Hamlin & Case 1963). The Early Bronze Age was the richest period at the ring-ditch clusters around the Devil's Quoits, and this trend seems discernible at other clusters regionally (for example at Radley). Later Bronze Age activity is not conspicuous at any; even at Standlake there was a gap of centuries before the Iron Age. This was part of a national trend. For example, no true Deverel-Rimbury assemblages have been found at any of the great southern English henge monuments, even at Mount Pleasant, Dorset, where earlier Bronze Age pottery was quite frequent (Wainwright 1979); and neither the latest radiocarbon date there (1324-r-51 bc, BM-669) nor that for the latest activity at Stonehenge (1240±105 bc, I-2445) would fall into the inner quartile of Deverel-Rimbury dates (quoted in Barrett 1976). The major henge monuments may have been comparatively neglected by the third quarter of the 2nd millennium bc.

This may reflect a decline in long-standing transhumance practises, resulting from more intensive and efficient land use with greater emphasis on grain crops and flocks folded around the farmstead instead of being driven away for pasture. This intensive farming involving a more rigid system of land tenure with more enclosures may have evolved in the more populous chalk regions south of the Oxford region. Increased rainfall too (Piggott 1972) may both have made long distance transhumance less of a necessity and have also caused the Thames and its tributaries to be liable to flood for longer periods and more widely - a tendency aggravated perhaps by greater clearances in the catchment areas, making the water meadows less reliable (cf position of later Bronze Age sherds at Ring's Weir Barrow C, Wytham: Bowler & Robinson 1980).

The region thus appears less populated in the later Bronze Age - although bronzes (including three palstaves from Stanton Harcourt itself) show that it continued to be frequented. Weapons are particularly numerous from the Thames itself (eg Ehrenberg 1977, but better explainable perhaps as evidence for combats at river crossings, cf the *Tain Bó Cuailnge*, rather than ritual practices); and hoards point to a local industry (Rowlands 1976, 122-3 for the Middle Bronze Age). More settlements may remain to be discovered such as that excavated by Mr R P Henderson at Corporation Farm, Abingdon (Balkwill in Parrington 1978, 30 and information kindly given by the excavator) and as perhaps at Port Meadow 6, Oxford (Atkinson 1942) and at Wallingford where bronzes and pottery may overlap with the onset of the Iron Age (Collins 1948). However, widespread fixed and intensive farming in the Upper Thames had to await the Iron Age.

Iron Age Finds in ring-ditch II, 4

The cultivation line (layer 2) in both cuttings of ring ditch XI, 4 at Vicarage Field can be reasonably securely dated by the concentrated patch of Iron Age sherds with animal bones and charcoal in layer 1, cutting 2, indicating continuing settlement after the interior of the monument had been taken into cultivation. (A probably Roman sherd

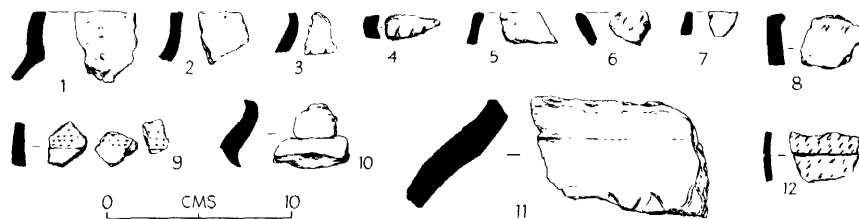


Fig 44 1-10, Iron Age sherds from ring-ditch II, 4; 11, 12, Romano-British sherds from pit F/1 and enclosure G

in the same layer is best taken as intrusive, likely enough being towards the top of the ditch.)

Cutting 1, layer 1: 3 body sherds, probably Iron Age, abraded, $\frac{1}{4}$ oz. 2 with reddish-brown exterior, light grey core, brown interior, sparse fossil shell >2 mm (kindly identified by Dr K S Sandford); one with brown exterior and interior, grey core, filler dissolved. 3 struck flints: thick flake, L 35 mm, slight retouch on bulbar surface; thick triangular flake, L 30mm, with bulbar retouch, distal end damaged (possibly an awl); core rejuvenation flake, L 30mm.

Cutting 2, layer 1: 31 sherds, 10 mm by 10 mm to 55 by 35 mm, wgt 7 oz, Iron Age with one exception: (1) 21 of coarse fabric; exteriors dark brown to yellowish-brown, interiors dark brown to brown; compact fabric, fossil shell filler, occasional grog and quartz; sandy texture; roughly smoothed surfaces. Mostly 7-9 mm thick, one rim however only 4mm. Two rims and necks of weakly profiled tripartite jars (Fig 64, 1-2); neck of weakly-profiled tripartite jar with short triangular incisions (no 3); shoulder, similar decoration (no 4); 5 simple beaded-rims (eg no 5); two simple rounded rims, short diagonal incisions below (nos 6-7); and body sherd, finger-tip impressions (no 8). (2) 8 sherds of finer ware, harder more compact fabric, very sparse fossil shell, quartz and grog > 2 mm; exteriors and interiors dark brown to reddish-brown, and in one case red; surfaces well smoothed; 6-9 mm thick. 4 plain body sherds; 3 small body sherds, with shallow incised lines enclosing zones of shallow dotted impressions (Fig 64, 9); neck and shoulder sherd from S-profiled bowl (no 10). (3) Sherd of brownish-yellow corky ware. (4) Sherd probably Romano-British, sandy grey fabric with brownish yellow surface coating. 5 struck flints, possibly Iron Age: 4 flakes, L 30 mm; core, $\frac{1}{4}$ oz, made on thick flake with fresh cortex, type A2.

Cutting 2, layer 2: 4 indeterminate flint flakes, but one with short retouch on one edge, L 30mm.

Cutting 2, surviving topsoil: 4 small sherds, probably Iron Age, wgt $\frac{1}{4}$ oz., similar to coarse ware described in cutting 2, layer 1. 1 flint flake, L 10 mm.

The Iron Age sherds are all assignable to Cunliffe's Long Wittenham-Allen's Pit group (1974, 38-9) ranging from the late 6th or 5th to the 3rd or 2nd century, and included in Harding's angular and post-angular phases (1972). They can be quite closely compared in form, fabric and decoration with pottery from the North settlement, Vicarage Field (Fig 59, Area of 1944 excavations: Williams 1951), although there the sherds are mostly from bulkier jars and here they are of rather thin small vessels. Fig 64, 1 may be compared with Williams's fig 10, 25; Fig 64, 2 with fig 10, 27-8; and Fig 64, 10 with fig 10, 33-5; Fig 64, 9 with shallow impressions matches Williams's fig 9, 15 with jabs, otherwise quite closely. The coarse flint flakes

could belong to the Iron Age as in City Farm pit N/3 (Case *et al* 1964/5, 78) and at Standlake (above, p 91f).

The finer ware at the North settlement (Williams 1951) has more quartz and shell filler, otherwise coarse and fine fabrics are well matched with those here. Ring-ditch II, 4 lay however only some 50 yards south of the still surviving West settlement in field I adjacent to Vicarage Field (Fig 59, left-hand margin), and the assemblage may have been derived from activity in that direction; from their appearance, the North and West settlements are likely to be of similar date. Enclosures F and I recorded by Miss Cra'ster and the OUAS in 1952 north of ring-ditch II, 2 may also possibly have been connected with the West settlement. F was a trapezoidal ditched enclosure, about 55 ft overall in each dimension with a triple ditch and entrance(s), to the south. It was surveyed when incompletely stripped of topsoil and sectioned twice, but no finds were made. I, similarly trapezoidal but smaller, with an entrance gap to the west, could not be examined.

Discussion

Cultivation runs similar to those in II, 4 have been noted quite frequently in the region in the upper fillings of ring-ditches and may be variously dated. That in the Big Enclosure ditch at Cassington (below, p 134) was late Roman at the earliest, more likely post-Roman. Others would be of Roman date. For instance runs of gravelly loam above secondary loamy silt in the ditch of the Stanton Harcourt barrow XVI, 1 contained Romano-British sherds (Harden & Treweek 1945); similar sherds were similarly stratified at XXIX, 1, (above, p 82). Other examples are more likely to be Iron Age as at Vicarage Field: for instance at Stanton Harcourt XV (Hamlin & Case 1963, 14); at Hanborough 2, 5 and 6 (Case *et al* 1964/5, 39), where traces of Iron Age settlement were found nearby and no Romano-British pottery at all; and at Standlake 19 (above, p 93), though a nearby part at least of an Iron Age settlement seems to have avoided no 2 (Riley 1946/7, 33, fig 9).

At Stanton Harcourt and Hanborough the affected ring-ditches were on the edge of groups; outliers were doubtless at greater risk than the rest. Barrows seem to have been generally respected by later cultivators on the chalk downlands of southern England, judging from those areas where their distributions coincide with Celtic fields. Barrows were evidently left either on islands of pasture in the midst of blocks of fields - as at Little Bredy and Winterbourne Steepleton, Dorset (RCHM 1970b, 624); on Snail Down, Everleigh, Wilts (Thomas & Thomas 1956; Annable 1960, 8); and on Nutwood Down near Lambourn, Berks (Bradley & Ellison 1975, 181)) or were left at the sides or angles of individual fields (eg RCHM 1970a, 425, fig 623, generalising about numerous examples from south-east Dorset, and RCHM 1970b, 324, 332 etc for instances from central Dorset).

Barrows with substantial mounds like many on the chalk would have been greater deterrents to cultivation than the minor earthworks represented by many of the ring-ditches in the Oxford region (Hamlin & Case 1963, 38-9). Besides many perhaps of the field systems recognisable on the chalk may have been pre-Iron Age in original layout (*cf* above, p 111) and at least as early as some of the barrows themselves. Even on gravel at Fengate, Peterborough, an Early Bronze Age field ditch has been reported cutting through a Late Neolithic settlement ring-ditch which had been incorporated into an Early Bronze Age barrow (Pryor 1976b, 31). Iron Age encroachment on earlier monuments at Vicarage Field is therefore unsurprising.

Groups of pits as defining the North and West settlements are very characteristic of the regional Iron Age, sometimes associated with *sub-rectangular enclosures* and occasionally with postholes of *circular* huts (references in Harding 1972; more recently in Benson & Miles 1974 and information Oxfordshire Archaeological Unit). The pits at both Vicarage Field settlements show marked linear arrangements, which are matched at Stanton Harcourt, both west of XV, 1-5 (Hamlin & Case 1963, fig 2) and at Linch Hill (Harding 1972, pl 28), at Cassington North-West (*ibid*, pl 27), Hanborough (Case *et al* 1964/5) and Northfield Farm (Allen 1438). The West settlement at Vicarage Field has a straight south-eastern edge, more or less coinciding with the boundary between fields I and II; a band some 900 ft long and 250ft wide, running roughly at right angles would largely confine the North settlement, and the reality of its fairly sharp southern edge seems confirmed also by the absence of Iron Age sherds in that direction (Thomas 1955).

The Vicarage Field settlements can hardly have been laid out in this way to respect ring-ditches. The North settlement's northern edge cannot be connected with earlier monuments (unless the former Vicarage overlies some), nor can the alignments at Linch Hill, or at Cassington North-West; and at Stanton Harcourt, west of XV, 1-5 a line of pits runs at right angles towards the mid-point of the linear cluster of ring-ditches (Hamlin & Case 1963, fig 1), suggesting use of the monuments as landmarks quite as much as any desire to respect them. At Vicarage Field and Hanborough the layouts can be interpreted as conformable to a long established and important trackway, but this can only be a partial explanation as it will not serve in the other instances. The most likely explanation is that the linear layouts represent a stable system of land tenure with fenced fields (as Harding has indicated: 1972, 18-19) or at any rate with small enclosures near the settlements. These boundaries would tend to be aligned on existing trackways, and ring-ditches and barrows would be convenient landmarks. The posthole alignment (gully 4, Williams 1951) running more or less due north from the North settlement at Vicarage Field may have formed part of an Iron Age boundary of this kind, as may the unfortunately undated ditches I and P to the west. Although little or nothing to indicate the boundaries of the North settlement may have survived archaeologically in the subsoil, they seem to have been enduring enough on the surface for the adjacent Romano-British settlement of the 1st century AD to have been laid out on the same alignment. Iron Age boundaries of this kind are possibly recorded in Allen's photographs at Linch Hill (for instance, Harding 1972, pl 35, especially the layout towards left hand margin), where again later Romano-British ones may be conformable. Environmental evidence from Ashville, Abingdon (Parrington 1978) and Farmoor (Lambrick & Robinson 1979) suggests that Late Iron Age field or paddock systems there with associated

droveways could be connected with grazing, particularly of cattle, and this seems to be the best explanation of the earlier ones recorded here -that they were part of a system of infield farming (as Harding indeed suggested, 1972, 18-19) more intensive, stable and efficient than that which had been generally practised in the Bronze Age.

Settlement complexes of this kind may appear dispersed sometimes in a continuous spread as at Mount Farm (Myres 1937) but sometimes in separate groups as at Hanborough, and as at Stanton Harcourt at Linch Hill and apparently west and north of XV, 1-4 (Harding 1972, pl 28: Hamlin & Case 1963, fig 1). These groups seem as likely as not each to represent settlement drift of small descent groups in a continuous protracted phase of occupation as recognised at Wharram Percy, Yorkshire in the Middle Ages (Hurst 1971, 117-3 1). At Hanborough, the West settlement may indeed have been rather later than the East (Harding in Case *et al* 1964/5, 81), but no clear differences have yet been demonstrated regionally within a single settlement complex (*eg* Sutermeister in Case *et al* 1964/5, 50).

Finally, by and large, the pottery from Stanton Harcourt ranging over the middle of the Iron Age (as at Vicarage Field) or assignable to its end (as at Linch Hill corner: Grimes 1943/4, 47ff), contrasts with that from nearby Standlake which is more emphatically early (above, p 102). The Standlake sword, a river find about a mile south of the village in the Thames at its confluence with the Windrush, and dated by Harding (1972, 1034) to the 3rd century BC or later is thus better assigned to the Stanton Harcourt settlements than to those at Standlake.

The differences between Standlake and Stanton Harcourt may have been local variations of the kind discussed for the Beaker Culture (*cf* p 106); and marked local differences certainly occurred regionally in the late Iron Age (below, p 137). Another possibility is that Iron Age settlement was discontinuous. In the relatively well researched Standlake-Stanton Harcourt area we may be observing a shift of settlement within the restricted gravel terrace landscape, motivated perhaps by changes in clan territories or by localised over-cropping.

Romano-British

Three small *enclosures*, a scatter of *pits* and some *linear ditches* were recorded in 1952 by Cra'ster and the OUAS and partly excavated. All may have been part of a Romano-British settlement of 1st to 2nd century date partially excavated already in 1951 (Fig 59, Area of 1951 excavations: Thomas 1955), lying immediately south of the Iron Age North settlement.

Enclosures (Fig 59)

J adjoining ring-ditch II, 2, was penannular and open to the north-west with an internal diameter of 20ft and a ditch formed of contiguous pits up to 8 ft wide. The ditch was sectioned twice and produced 1st century sherds. It resembles the settlement enclosure about a mile south-east at Linch Hill Corner (Grimes 1943/4) of the 1st century BC-1st century AD.

G was a small enclosure 30ft square adjoining ring-ditch II, 3 and on the same alignment as the Romano-British enclosures to the east. It had an entrance gap to the south-west. A section to the north-east produced pottery of the 1st and 2nd century AD. H, a similar enclosure to the south-west with an entrance gap to the north, could not be examined.

Pits

Ten circular or oval *pits* (complex K) up to 8 ft in diameter lay between enclosures G and J; K/1 produced a fragment of daub and sherds dating to the 1st century AD. Pit F/1, 10 by 5 ft within enclosure F, produced similarly dated pottery. Indeterminate Romano-British pottery came from pit G/1 with ring-ditch II, 9.

Ditches

L indicates a series of *ditches* from 2 to 7 ft wide, between ring-ditches II, 7 and 8 but not apparently intersecting with them, which appear to form successive layouts of small rectangular closes roughly on the same alignment as the enclosures described above. These were examined in several places, and two cuttings (Fig 59, L/1, L/2) produced pottery of the 1st and late 1st or 2nd century AD respectively. M was a similar series of narrow *ditches* south east of enclosure F; section M/1 produced pottery of the later 1st or 2nd century AD. Parts of a series of *ditches* O (between ring-ditches II, 4 and 5) could not be sectioned, but since they were on the same alignment as L and M may have belonged to the same settlement. Indeterminate Romano-British pottery was recorded from the Bronze Age ring-ditches 2, 4, 8 and 9.

Pottery

Identifications were kindly made by Mr C J Young. Only two sherds are illustrated here since a similar series has been published (Thomas 1955).

Pit F/1 (8 oz): (1) Sherd of large storage *jar*, with burnish and zig-zag decoration (Fig 64, 11). cf 1st century AD levels at Alchester (Hawkes 1927; Iliffe 1929). (2) Body sherd of dark fabric, shell filler, and body sherd of dark fabric, flint filler.

Enclosure G (1½ oz): (3) Rim of *jar* in orange fabric, D 160mm, Roman. (4) Rim of copy of *butt-beaker*, D 120mm, 1st or 2nd century. (5) Body sherd of brown fabric, with incised and impressed decoration (Fig 64, 12).

Pit K/1 (4¼ oz): (6) Six sherds of *jars*, including rims of two necked jars in brown and grey fabrics, D 140 and 100mm. The absence of Romano-British sandy grey wares could indicate a date before the last quarter of the 1st century AD.

L/1 (2¼ oz): (7) Bead-rimjar, in grey fabric, flint filler, D 160 mm. (8) Three body sherds of *jars* in grey fabric, one decorated with impressed lines. The absence of Romano-British sandy grey wares could indicate a similar date to 6.

L2 (10¼ oz): (9) Rim (D 130 mm) and body sherds of necked wide-mouth *jar* in dark fabric with dense shell filler. Probably late 1st century AD. (10) Base of *jar* in very sandy grey fabric, late 1st or 2nd century AD. (11) Bead-rim of dark sandy fabric, D 140 mm. (12) Base of *jar* in dark fabric, dense quartz filler.

M1 (5½ oz): (13) Everted rim of globular *beaker*, D 80mm, standard Romano-British grey ware, late 1st or 2nd century AD. (14) 3 rims of necked wide-mouth *jars*; D 200, 160 and 120mm, fabric and date as (13). (15) Sherd of storage *jar*, in greyish-white fabric, much grog in filler. (16) Two sherds of greyish brown fabric, with dense shell filler.

Discussion

The small pens and enclosures, scattered pits and presumably field ditches recorded in 1952 may reasonably be connected with the similarly dated large rectangular

enclosure and its pits immediately adjacent to the east and north-east (Thomas 1955). None of the pottery from the main enclosure there was certainly later than the 2nd century, and Young suggests that the pottery from Thomas's pit G (1955, 19) need be no later, though it could belong to the 3rd. The settlement was thus established in the second half of the 1st century (note also a fragmentary Aucissa fibula found in gravel-quarrying; Ox 1952/3, 218) and lasted certainly into the first half of the 2nd and in part probably a little longer. Its similar alignment to the Iron Age North settlement may suggest that the boundaries of the earlier Iron Age field system continued in use into the immediately pre-Roman period; although no certain Late Iron Age traces were found at Vicarage field itself, the Stanton Harcourt area itself continued to be occupied as the enclosure at Linch Hill Corner shows (Grimes 1943/4).

The Romano-British settlement at Vicarage field was thus contemporary with the post-Conquest reorganisation at the Big Enclosure, Cassington (see below), partly with the later stage of the enclosure at Linch Hill Corner, and with the first stage of occupation at Farmoor across the Thames (Lambrick & Robinson 1979). Its abandonment was more or less contemporary with the 3rd century contraction noted at Cassington and the hiatus found at Farmoor, and is explicable by reorganisation or recession. On this basis many of the well defined systems of droeways and paddocks in the region may have been laid out in the 1st or 2nd centuries AD.

Vicarage Field was not apparently reoccupied in the 4th century as at Farmoor and Cassington, though later Roman pottery had been found by Young some two miles to the east between Stanton Harcourt village and the Thames (around SP 4205: Fig 42), which certainly indicates continuing settlement of the area. Minor rural settlement of the later Romano-British period, as at Wally Corner, Dorchester (Sutton 1961/2), is not very common.

Saxon and medieval

No traces of Anglo-Saxon activity were seen at Vicarage Field, but the secondary burials at XVI, 1 (Harden & Treweek 1945) show settlement continuing nearby, as do similarly situated burials at Standlake (p 88), Eynsham (Ox 1952, 216), Cassington (p 121), Hanborough (Case *et al* 1964/5) and Dorchester (Atkinson 1951). One more revision of farming methods may now have taken place at Stanton Harcourt, as elsewhere in the Late Saxon period, with the emergence of the strip system of land allocation and cultivation.

Settlement may now have become concentrated in the area of the modern village and the crop mark fields have been devoted henceforth to farming. Most of the destruction of the Devil's Quoits (including the demolition of the stone circle) took place in medieval times, and the site became 'overlain with furrow marks of medieval cultivation' (Gray 1974). Medieval *ridge and furrow* cultivation at the Vicarage field is probably represented by a series of parallel linear brown stains on the gravel surface some 20 to 25 ft apart at Q between ring-ditches II, 9, 7 and 8. Richard Davis's map of Oxfordshire of 1797 appears to show such cultivation lines running in exactly the same direction in this and the surrounding fields (eg I, IV, V, VI, IX and XI). Similar marks of ridge and furrow were noted at Hanborough 4 (Case *et al* 1964/5). *Ditches* at N, to the north of ring-ditch II, 8 and adjoining it, with an apparent *trackway* running north-east, are roughly on the same alignment and may have been connected with the same cultivation system or its subsequent enclosure.

Recent

A number of small filled-in *gravel pits* were recorded, for example near or intersecting ring-ditches II, 2, 3, 5 and 7, with a large one east of II, 6. They presage finally the destruction of Vicarage Field and its record of millennia. Ditches at R on the line of Thomas's ditch X (1955) and of another further east and at S traversing II, 6 may have been associated with *tracks* serving this large gravel pit, and preceding the present day road connecting Stanton Harcourt village and Beard Mill. Allen's photographs show numerous filled-in gravel pits at Stanton Harcourt and elsewhere, and similar putative trackways elsewhere may mostly have been similarly recent, especially where they appear to cross other crop marks.

with contributions by A J Cain, W A Cummins, G W Dimbleby, A G Fenwick, J H Hedgely, J W Jackson, C King, R Powers, A C Western, A W R Whittle and C J Young

Introduction

The Big Enclosure at Cassington, Oxon (SP 450100), sub-circular, about 1100 ft from north-west to south-east and some 800 ft from north-east to south-west, lay on the left bank of the Evenlode at the inner apex of a rather gentle bend half a mile west from the confluence with the Thames (Fig 65). It was at about 200ft OD on an even, slightly rising expanse of second terrace gravel extending about half a mile east to west by three-quarters of a mile north to south. The slope southwards from the crest of the terrace to the Evenlode was abrupt and there was no floodplain at this point, but there were substantial expanses to the east, north of the Thames towards Oxford, and to the south across the river north-east and east of Eynsham. The site thus had a certain defensive potential as well as a varied economic catchment and Cain has suggested (p 150) that it may have been particularly favourable for settlement.

The enclosure (Fig 66) was discovered from the air by Allen in the spring of 1933, and thus observed by him until 1937 when its destruction by gravel digging was about to begin; after the war St Joseph made further aerial observations of the southern part as destruction continued. First observed by Allen as a light indistinct soil mark in ploughed fields (no 249), the ditch was typically seen as a dark cropmark about 30ft wide; see also Ox 1942, pl IX; Ox 1950, pl VIII; Atkinson 1946/7, pl 1; Bradford 1951, pl 1). On account of its size it crossed two large fields which rarely bore the same crop, and therefore no one aerial photograph could capture all its features. Indeed a small segment to the extreme west, confirmed in 1962, through a drainage trench north of Cassington Mill and between the Evenlode and the drive leading from the Mill to the Cassington-Eynsham road, does not appear on any photograph (Ox 1964/5) 190: in the area where a crouched inhumation-burial was recently found, Chambers 1977).

Some 2300ft of the circuit can be traced from aerial photographs and an overall perimeter of approaching 3000 ft extrapolated, enclosing some 13 acres. No trace was seen either from the air or from the ground of an adjoining bank.

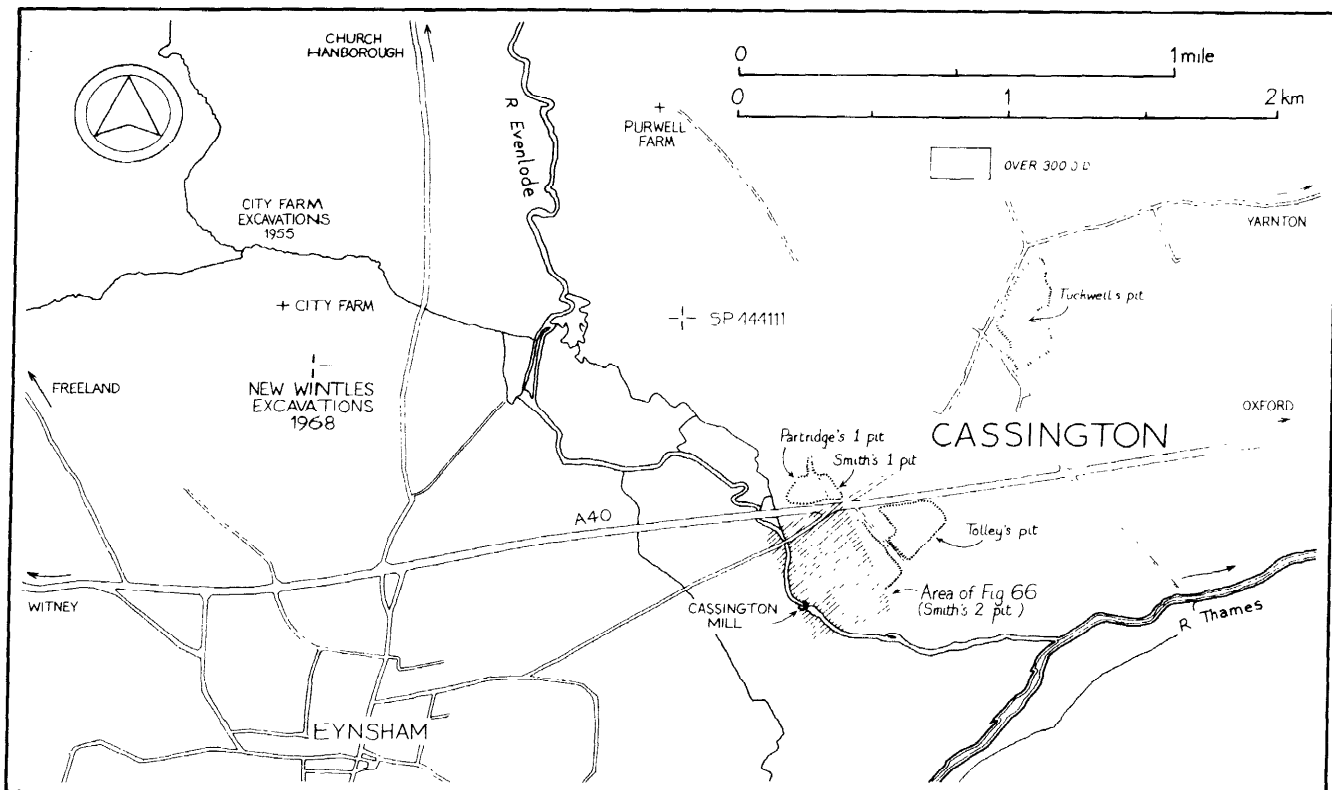


Fig 65 Excavations at New Wintles Farm, Eynsham and Cassington in their regional settings

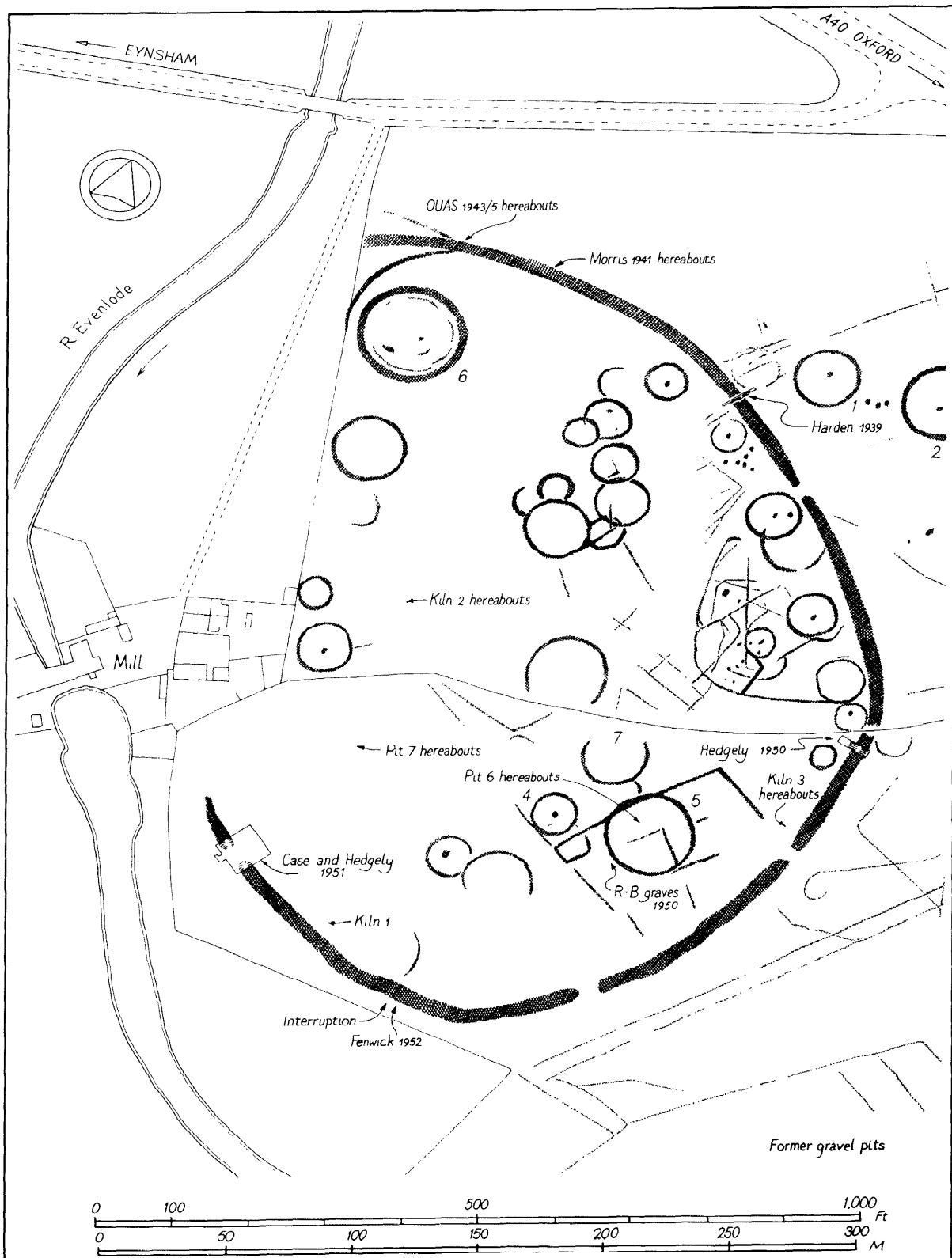


Fig 66 The Big Enclosure and other archaeological sites near Cassington Mill. Nos 1-7 refer to ring-ditches; no 3 was in Tolley's pit to the north-east

The ditch's course was generally curving but there were some sharp changes of direction. No less than 6 gaps were recorded for certain. Four were visible on aerial photographs. The excavation of the one which lay nearest the Evenlode in the southern part (Fig 66, marked *Case & Hedgely* 1951) forms the major part of this report; it is visible on several of Allen's photographs, for example no 265. Another lay more or less diametrically opposite in the north-eastern part (just visible on Allen nos 263, 266) and was confirmed during gravel digging (Ox 1943/4, 196). Two more lay in the south-eastern part, one perhaps visible on Allen no 249 and both more clearly recorded by St Joseph (nos AU 79, DX 49); they were both observed by Fenwick during gravel digging, and reported by him as about 40ft across. West of the more southerly of these gaps the ditch was seen by Fenwick to be interrupted by an unexcavated raft of concreted gravel extending virtually fully across it from the north, at a point just west of his 1952 cutting (Fig 66, marked *Fenwick* 1952). This gap was not visible on aerial photographs, nor was another some 10 ft across seen on the eastern side by Parr and Hedgely in 1950 a few yards south of the line of the hedge running north-east from Cassington Mill, at the point where the ditch showed a marked change in direction (Fig 66, north of Hedgely 1950). Finally several partial causeways were reported found by the OUAS in 1947 in the north-west sector (Ox 1946/7, 164).

The Enclosure lay among a plethora of other archaeological features, either visible as cropmarks or revealed by excavation, which range from prehistoric to the Saxon period. Sites within the Enclosure visible in aerial photographs include at least 35 ring-ditches, 2 sub-rectangular enclosures and numerous other linear marks and pits. The ditch itself appears to intersect at least one of the ring-ditches (Allen nos 262-4), several of which overlap with each other (Allen nos 264-6). One ring-ditch at least (Fig 66, no 6 at the north of the Enclosure) contained a barrow which survived as a low mound when excavated in 1943 (Atkinson 1946/7, 7). Within the Enclosure, 3 more ring-ditches were revealed during gravel digging, as well as numerous pits and other marks. Outside it features visible on aerial photographs included a few more ring-ditches and pits and linear marks both to the north-east and south-east (Allen no 262, St Joseph no AU 79). Already by the time of Allen's discovery in 1933, excavation east of the Enclosure in Tolley's gravel pits had revealed a ring-ditch, a hut circle, several pits and numerous graves including those of the well-known Late Beaker cemetery (Leeds 1934a); and to the north in both Partridge's and Smith's no 1 pits, a wealth of graves and pits was found between 1931 and 1938 together with a rectangular enclosure, none of which is visible on any photographs (Leeds 1935; Ox 1938, 164-5).

Tolley's gravel pit had begun by 1930 and excavation for the A40 road began in 1931. Gravel was also being dug in 1933 by Partridge in the angle south of the A40 made by the minor road from Cassington to Eynsham (Allen no 264; not on Benson and Miles 1974, fig 14). Smith's and Partridge's no 1 pits north of the A40 were active by 1937. Smith's no 2 pit, south of the road, was begun in 1938, and had been exhausted by 1952, with the destruction of the entire Enclosure ditch except for the segment west of the drive leading to the Mill.

Discovery and destruction went hand in hand, but pressure of normal duties, lack of both finance and widespread interest, and the need to spread resources throughout the region prevented the hoped for 'extensive excavation... in advance of gravel digging' (Ox 1938, 165, thus expressing an aim by no means invariably realised even nowadays). However many field sorties were

made and limited excavations undertaken by the staff of the Department and of the Pitt Rivers Museum, with others active such as the late Squadron-Leader C Musgrave before the war, service people on leave during it, and Mr A G Fenwick afterwards, together with members of the Oxford University Archaeological Society throughout.

Among the features associated with Neolithic Peterborough, Beaker and Grooved wares were two ring-ditches outside the Enclosure (no 1 in Smith's 2 pit and no 3, a double-ring ditch, in Tolley's pit: Leeds 1936; Harden 1942; Hamlin & Case 1963) and several pits within the Enclosure and outside (Leeds 1940; below, p 121); cremation IV sealed by ring-ditch 6 might conceivably have been Middle Neolithic (Atkinson 1946/7, 13-14, 18). Middle Beaker pottery was reported from Tolley's pit (Leeds 1934a, 268); the Late Beaker cemetery from this gravel pit is well known (Leeds 1934a; Case 1956b; 1977) and two pits with late Beaker pottery were also discovered about 400 yards north-west in Partridge's no 1 pit (Leeds 1938a; Case *et al* 1964/ 5, 59-62). Within the southern part of the Enclosure, ring-ditch 4 (Bradford 1951) contained superimposed burials with an Early style and a Late beaker respectively; and another Late beaker was found in gravel-digging nearby (Ox 1943/4, 193).

The large ring-ditch with barrow (no 6) within the Enclosure at its north-west contained: centrally a grave-pit (possibly Beaker culture) with 2 inhumation burials surmounted by a stake-hole structure; 5 concentrations of cremated bone on the surface under the barrow or in pits (in one case with a collared urn); and another pit was also found (Atkinson 1946/7). Ring-ditch 5 in the south of the Enclosure may also have been early Bronze Age (Ox 1950, 104), but no 7 had no datable finds (Bradford 1951). Other sherds of collared urns were recorded on two other occasions from the interior (Ox 1941, 84; 1943/4, 193), also a short bronze blade of rapier form (Fig 81, no 1; Ox 1943/4, 196; additional to list in Trump 1962). To the north, the hut circle in Tolley's pit, without finds, was speculatively assigned to the Bronze Age (Leeds 1934a; 1940, fig 1), and sherds of a collared urn, not previously reported, came from a pit near the Beaker cemetery (Ashmolean Register 1934.80).

Three settlement complexes of the earlier part of the Iron Age were recorded north of the A40 principally by Leeds and Musgrave: *Cassington North-West*, the most substantial in Smith's and Partridge's no 1 pits; *Cassington West*, so-called, discovered immediately east in roadworks from the A40 to the village; and *Cassington East*, in Tuckwell's pit (Leeds 1935; Ox 1937, 201; 1938, 164; Harding 1972, pl 27). However, surprisingly little Iron Age material was found within the Enclosure, except for that associated with the ditch and reported below. A sherd of a dark burnished bead-rim bowl was recorded from the surface of tertiary silting in ring-ditch 6 (Atkinson 1946/7, 10); a pre-Roman bronze bracelet was reported found with an inhumation burial in the south-western sector (Ox 1950, 105) but unfortunately did not come to the Department.

A Romano-British cemetery was recorded on the line of the A40 and in the south of Smith's and Partridge's no 1 pits (Leeds 1935; Harding 1972, pl 27) and a few graves inside the Enclosure to the south (Ox 1940, 163; 1950, 104-5). According to Leeds, disturbance of the cemetery was responsible in the mind of one villager for the frequent road accidents beginning at the cross-roads with the Cassington-Eynsham road as soon as the A40 was opened, where the author of this report himself later narrowly escaped being flattened when on horseback. Other

Romano-British features inside the Enclosure included pits and ditches in the northern sector including part of a sleeper-trench (Ox 1941, 84), a large sub-rectangular enclosure south-west of ring-ditches 4 and 7 (Fig 66; Bradford 1951), kilns reported below, numerous scatters of pottery (Ox 1941,84; 1943/4,195; 1948,66; 1950,104) and stray finds including a probably 1st century bronze brooch (Ox 1943/4, 193-5).

Anglo-Saxon features were recorded too north of the Enclosure, notably part of a settlement in Tolley's pit and associated burials to the west (Leeds & Riley 1942), including some just within the northern sector (Ox 1943/4, 196). The only other Anglo-Saxon finds within the Enclosure came from the southern sector: a double-pointed bone pin in 1950 and an iron spearhead in 1951 (Ox 1951,79). To the north-west, 5th or 6th century sherds were found north of ring-ditch 6 in the deliberate filling (from the *outer* edge) of a recut part of the Enclosure ditch (Ox 1945, 94: Department's Register 1946.19). They were associated with Iron Age and Romano-British pottery.

The Enclosure ditch itself was sectioned in at least six places (Fig 66) and recorded by archaeologists in the course of gravel-digging or drainage works in another three. The first cutting was excavated by Harden in 1939 to the north-west of the north-eastern entrance (Ox 1939, 196; Harden 1942). In 1941 another was dug by Morris in the gravel pit face near the middle of the northern segment (Ox 1941, 84; pl XIII, C), and she observed another section in this area in the course of gravel-digging (Ox 1942, 106). Further west again, members of the OUAS dug a section in 1943 and 1945 immediately north of ring-ditch 6 (Ox 1945, 934). In the western sector after the rest of the Enclosure had been destroyed, the upper filling of the ditch was seen in 1962 in a drainage trench north of the Mill and west of the drive leading to it (Ox 1964/5, 190). The south-west gap was excavated by Case and Hedgely in 1951 (Ox 1951, 79) and is reported here, and Fenwick later recorded part of the adjacent interior just in advance of destruction by gravel digging in 1952. Continuing eastwards, a cutting was dug by Fenwick in 1952 and another by Hedgely in 1950 (Ox 1950, 104) and both are also reported here.

The ditch thus revealed was observed to be up to 33 ft wide and 13 ft deep (as in 1943-5: Ox 1945, 93), but its dimensions varied and it was reported by gravel diggers as only some 3 ft 6 ins deep between gaps in the southern sector. It contained numerous stratified finds, dating from the latest Iron Age in the earlier silting to the 4th century Romano-British period in the uppermost filling. The Anglo-Saxon sherds reported from the recut part north of ring-ditch 6 were exceptional.

The purpose of this report is to publish the excavations of 1950-1952 and to integrate the material recorded from earlier campaigns with their findings. Grateful thanks are expressed to Messrs Smith and their employees for every possible help given during these years and throughout the investigations at the no 2 pit, to Mr F Hedges of Cassington Mill for much assistance during the excavations and to Mr A G Fenwick and members of the OUAS for their initiative and efforts.

Excavations 1950-2

By 1950 the face of the no 2 pit by Cassington Mill was some 150 ft from the south-west entrance of the Enclosure ditch. The quarry was not then advancing in that direction but was active to the east, and here in October Hedgely and members of the OUAS dug a trial cutting which is reported below (Fig 66, Hedgely 1950). In 1951 the pit

resumed its advance to the south-west; the south-west gap was located by aerial photographs and through a resistivity survey by J Jones, and was excavated over 4 weeks in June and July of that year by Case and Hedgely and members of the OUAS and others (Fig 66, Case and Hedgely 1951) in a cutting eventually some 55 ft square. The two butt ends of the ditch were fully excavated each over a length of some 15 ft (Fig 67, p 129). Four pits were also discovered, possibly all late Neolithic, with Grooved ware pottery. An L-shaped extension to the south-west of the cutting was dug to test what proved to be an illusory cropmark on Allen no 265.

Accumulated rubbish and vegetation and with it the upper 4 inches of topsoil were removed by machine from the central area to be excavated. Otherwise, excavation was by hand throughout. The gravel subsoil displayed occasional rafts of superficial concretion or sand; and towards the north of the cutting contained irregular natural hollows filled with stony reddish-brown loam (5YR/4/4), which can probably mostly be interpreted as ancient tree holes.

Cost and other duties made it impossible to continue excavation north-westwards from the cutting towards the advancing face of the gravel pit, but this area was watched for the rest of the year and into 1952 by Fenwick, who observed late Iron Age pits and Romano-British pits and round huts (Fig 67, p 136). It was possible to plan and section part of this complex in some detail, and section another part (Fig 75). Here subsoil loam was a more or less continuous layer between topsoil and gravel and about a foot thick. Fenwick also discovered here another late Neolithic pit (Fig 67, pit 5) which was planned and sectioned, and he succeeded single-handed in 1952 in digging yet another cutting through the enclosure ditch to the east (Fig 66, Fenwick 1952) before its southern segment was finally engulfed. Earlier during the course of the excavation in July, Hedgely recorded part of a Romano-British kiln (Fig 66, Kiln 1) and an earlier pit, possibly late Neolithic, some 125 ft south-east of the 1951 cutting, as the quarry had advanced.

Late Neolithic

Pits 1-7 (1-5: Plan Fig 67; Sections Fig 68. 6-7: Location Fig 66)

Pits 1-4 were discovered during the 1951 excavation and 5 by Fenwick while watching the area to its north-east. Pits 6 and 7 had been recorded during earlier visits (Ox 1950, 104).

Pit 1 was between the ditch segments (Fig 68) 2 ft 6 ins from the south-eastern segment. It was oval, some 4ft 6 ins by 3 ft and 10 ins deep into gravel, and had been asymmetrically filled with as it were alternate basket or shovel loads of loamy and clean gravel, and finally with reddish brown loam. The upper layer of loamy gravel contained a struck flint.

Pit 2 (P16A; Fig 68) was oval, 4 ft 6 ins by 3 ft 9 ins by 1 ft 4 ins deep. Its steep sides showed it to have been filled soon after digging, and as in pit 1 the filling was more or less regular. It had been lined first with reddish brown stony loam (*layer 4*), on which had been deposited dark grey loam (*layer 3*) with much charcoal, containing over 30 struck flints, a sherd of late Neolithic Grooved ware and animal bones. This had been covered by fine clean gravel (*layer 2*) which contained 20 struck flints, and bones, and the remaining hollow been filled with brown stony loam (*layer 1*) darker than the basal layer and flecked with charcoal, containing over 40 struck flints. Bones of ox and pig were recorded in layers 4, 3 and 2.

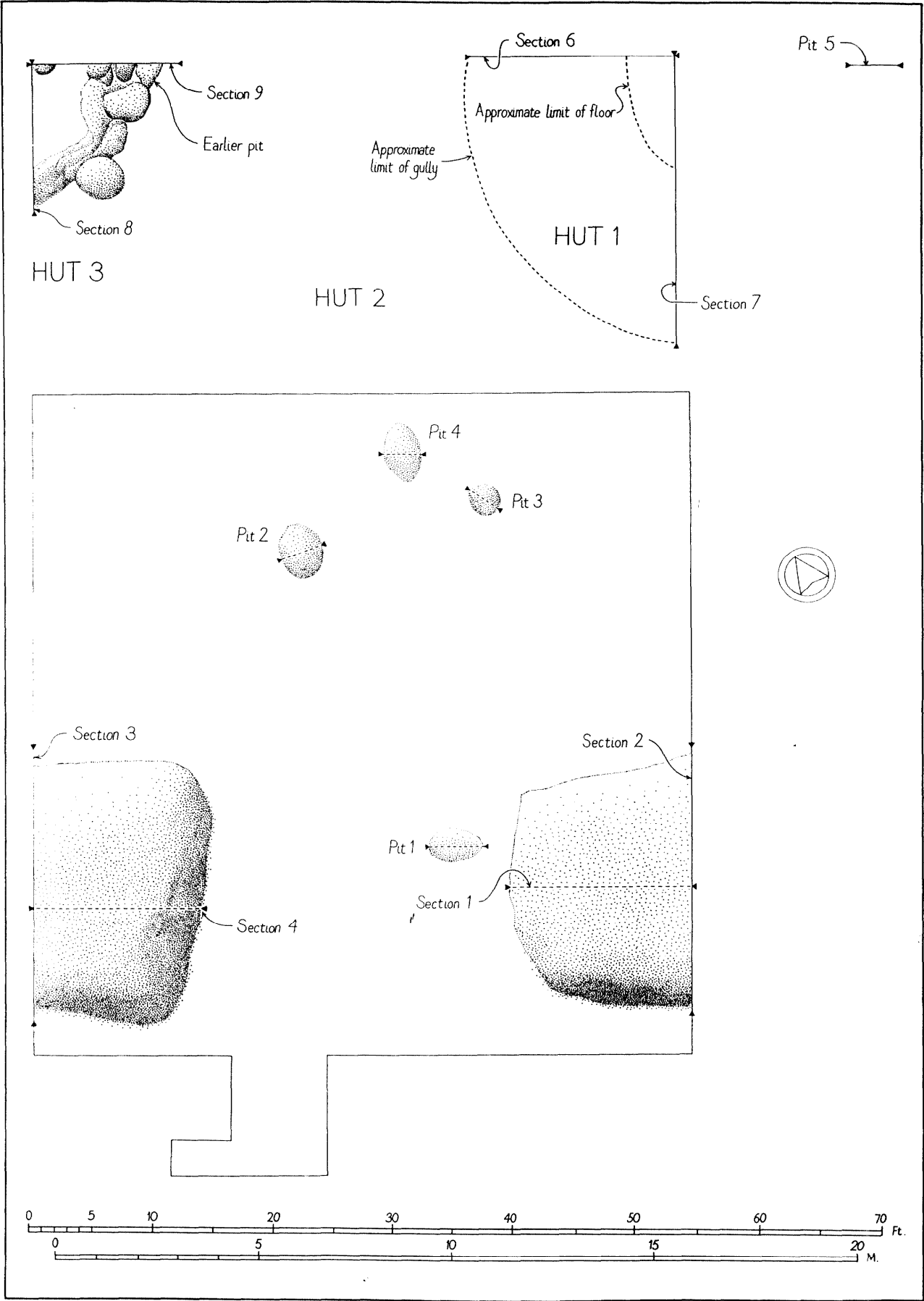


Fig 67 Area excavated in 1951-2: Late Neolithic pits (1-5); Late Iron Age Big Enclosure ditch, south-east and north-west butt ends of the south-west entrance; Romano-British huts 1-3 in the interior

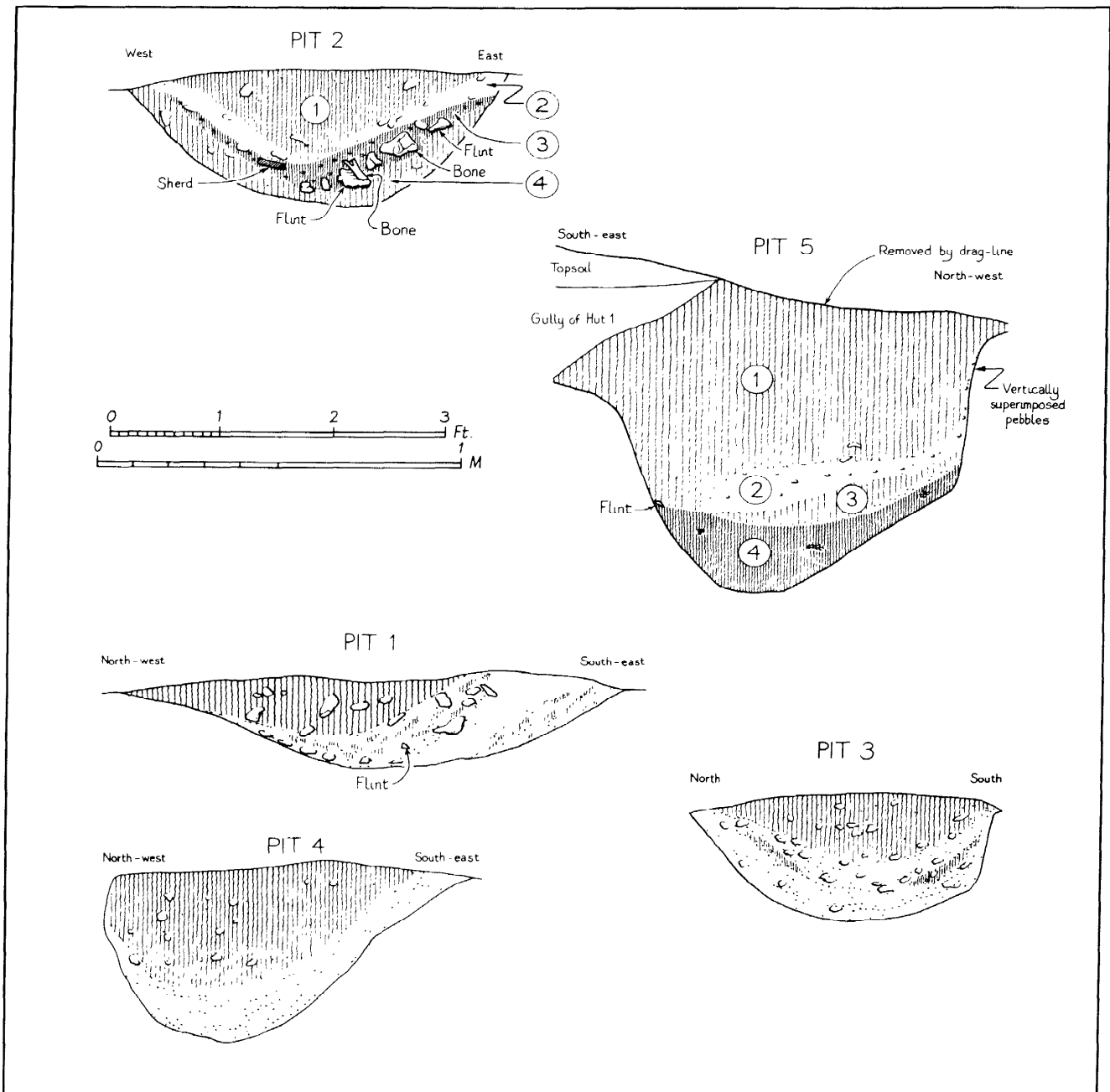


Fig 68 Sections of Neolithic pits 1-5

Pit 3 was likewise cup-shaped but more irregular in plan, some 2 ft 9 ins in largest dimension and 1 ft 3 ins deep. It had been less carefully filled, having been lined with mixed clean and loamy gravel and the remaining hollow filled with brown stony loam. It contained animal bones.

Pit 4 was oval, 4 ft 10 ins by 3 ft 3 ins and 1 ft 9 ins deep and slightly undercut to the north-west. It had been filled in similar style to *pit 3* and contained an animal bone.

Pit 5, discovered by Fenwick to the east of hut 1 (below, p 136) was probably originally oval, some 4 ft by 2 ft, and 3 ft deep. It was not possible to plan it fully, but a segment of about half its filling was sectioned and found also to have been truncated at its top by the gully complex surrounding hut 1, and partly by gravel digging. Although not undercut it was very steep-sided and somewhat conical at the bottom. It had been regularly filled like pits 1 and 2.

At the base the filling was dark grey to black loam with charcoal (*layer 4*), which had been covered with stoneless reddish brown loam (*loam 3*) with a basal lens of gravel; this loam in turn had been covered with fine gravel (*layer 2*) and the rest of the pit filled with reddish brown loam (*layer 1*). The vertically superimposed gravel pebbles between layer 1 and the north-west edge of the pit showed that a lining of some perishable substance had been in place when layer 1 was inserted. Layer 4 contained over 90 struck flints, 3 Grooved ware sherds, small fragments of daub, and bones of ox and pig. Layer 3: a struck flint, a sherd of Grooved ware and a pig bone. Layer 2: 4 struck flints. Layer 1: over 160 struck flints, 2 Grooved ware sherds and 1½ oz of daub as well as late Iron Age sherds and a modern teaspoon. Sheep bones, a bone point and another Grooved ware sherd were also recovered from the pit.

Pit 6 lay within ring-ditch 5 (*Ox* 1950, 104) and *pit 7* was described as being about 100 yards nearer the Mill (Department Register: *Ox* 1950, 104). Neither was recorded in detail but both contained polished hard stone axes and may therefore reasonably be connected with the other pits described.

Discussion

Late Neolithic pits like nos 2 and 5 are open to many interpretations: for example for storing produce (Field *et al* 1964 and the lining of no 5 supports this suggestion), but many examples including those in question here seem too small and sporadic for this to be a consistent explanation. Some may have served as hiding places, likely enough in the case of *pit C*, containing flakes of mined flint, west of Stanton Harcourt XV, 1-4a (Hamlin & Case 1963, 19) but this can hardly have been the final purpose of these at Cassington judging from their contents. Arising from Startin's views (p 154) it is possible to suggest that many such pits were dug originally for gravel (or other rock) to spread around, say, new huts and then used to bury rubbish from the old ones.

There are many Neolithic parallels for the disposal of settlement rubbish in pits (*cf* Field *et al* 1964; Case 1973). At Middle Neolithic enclosures, like Hembury (Liddell 1932) pits were wholly filled with rubbish; at others, like Maiden Castle (Wheeler 1943, 85-6) they were partly filled with rubbish and partly with chalk and other deposits. The Cassington pits are like the latter examples, and the contrasting gravel and loam layers show the different elements of their filling unusually clearly. Their regular filling resembles in a general way that from some of the ditches of Middle Neolithic enclosures, including Abingdon (p 12); it may merely reflect tidiness of mind, but could as likely be concerned with taboos or beliefs

connected with settlement rubbish (Case 1973) or the remains of personal possessions.

The reddish brown filling of the remaining pits (1, 3, 4) suggests a date earlier than the Romano-British occupation of the Enclosure. *Pit 1* was carefully filled somewhat like 2 and 5; 4 was steeply dug like 5 and the bones in 3 would not be inconsistent with a Neolithic date. Possibly all these pits were Late Neolithic and are attributable to a single settlement; and it is interesting to note in view of evidence for rectangular enclosures at the Grooved ware settlement at Fengate, Peterborough (Pryor 1976b), that 2, 4 and 5 are more or less in line. Flints from the 1950, 1951 and 1952 cuttings of the Enclosure ditch may also have been connected with the same settlement as may *pit 6* (within ring-ditch 5), *pit 7* and the pit disturbed by kiln 1 (p 134). The settlement may thus have been relatively large especially if finds from Tolley's gravel pit (Leeds 1940, 5, 6; pl II, F, J) are also taken into account. The settlement traces at Sutton Courtenay (Leeds 1923; 1927b; 1934a; and below, p 128) likewise stretched over a large area, at least 100m from west to east. Such traces may give an indication of the possibly extensive settlements of those responsible for building the greater henge monuments, such as the Devil's Quoits (above, p 103). The Cassington settlement would have been broadly contemporary with the quite numerous Middle Beaker finds nearby.

The finds

Grooved ware pottery (Fig 69)

All sherds are small, weighing together little over 2 oz (partly recorded in Wainwright & Longworth 1971, 282, but inadvertently as from Smith's gravel pit 1).

Pit 2, layer 3: Body sherd, flaky fabric; dark grey exterior, brown interior; dense small flint, quartz and burnt shell - 3 mm long; grooves, with finger-tip impressions between (Fig 69, no 1). *Pit 5*: Rim sherd, flaky fabric; light brown surfaces, dark grey core; dense sand and shell filler - 6.5 mm long; narrow groove below rim and applied segmented cordon projecting above (no 2). *Pit 5, layer 1*: Perforated lug, dark grey corky fabric (no 3); fragmentary body sherd, brown fabric, small quartz and sand. *Pit 5, layer 3*: Body sherd, flaky fabric; brown surfaces, dark grey core; dense small shell - 3 mm long; deep groove (no 4). *Pit 5, layer 4*: Rim sherd (?), denser fabric; light brown exterior, dark brown core and interior; sparse small shell and sandy filler - 2 mm long; shallow grooved herring bone motif (no 5); two body sherds, similar but corky fabric, with grooves, in one case clearly arranged in herring bone motif (no 6).

Affinities

Within the four styles of Grooved ware defined by Wainwright and Longworth (1971) these sherds have most affinities with the Woodlands style. The applied segmented pellet on the rim sherd is one of its diagnostic features, and grooving, small lugs and thin walls can also be found. Similar rim treatment has been recorded in Yorkshire at Fimber Church, Flamborough Hartendale and Rudston East Reservoir Field site 5 (Manby 1974) as well as at Wykeham (Moore & Manby 1962) which makes this feature a little more common in northern than southern England, where apart from Cassington it occurs only at Woodlands, Wilts and Honington, Suffolk (Stone 1949; Fell 1951).

The Woodlands style is most frequently recognised in the region: from Tolley's gravel pit, Cassington (Fig 69, 7, 8; Leeds 1940), Vicarage Field, *pit B* (p 103) and Sutton

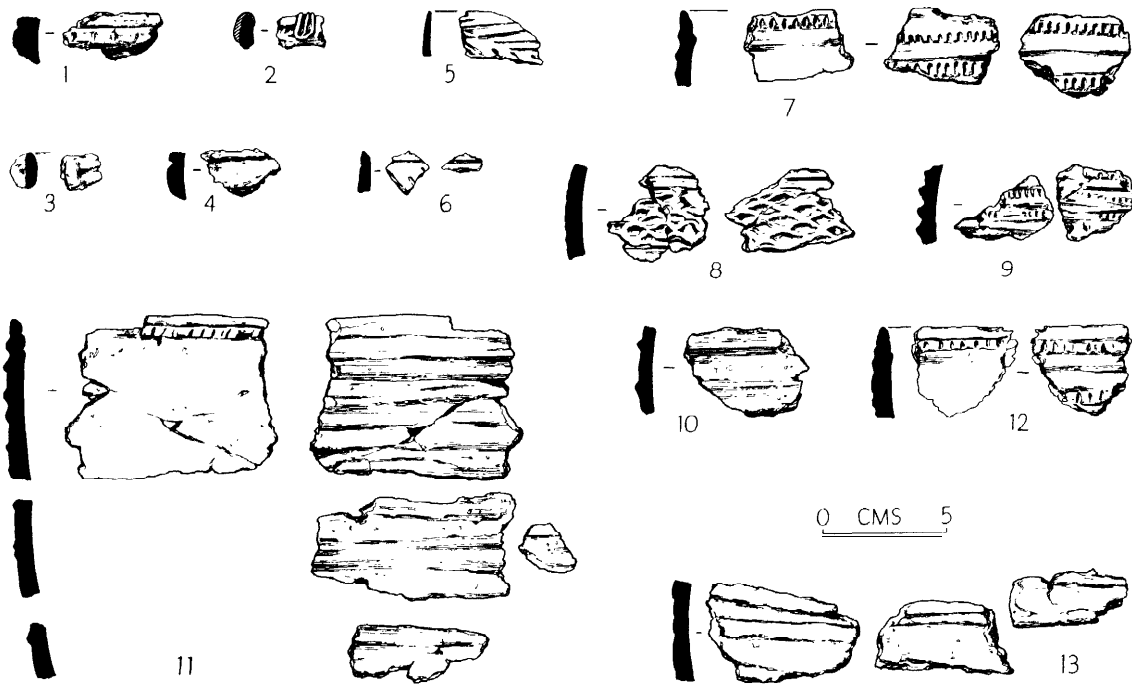


Fig 69 Grooved ware pottery from Cassington pits 2 (no 1) and 5 (2-6); Tolley's gravel pit (7, 8); Sutton Courtenay (9-13)

Courtenay (Fig 69, 9-13; Leeds 1934a). The Clacton style occurred however at Dorchester site 7 (Atkinson *et al* 1951); and the Durrington Walls style in Vicarage Field pit A (above, p 103).

Flint (Fig 70)

The struck flints in pit 2 (11b 8 oz) were mostly heavily patinated, those from pit 5 (4 lbs 11 oz) hardly at all. Otherwise there were no obvious differences between the assemblages, and they are treated together below. Details are set out in Table 30.

Raw material The gravels of the immediate region are extremely poor in flint, and two small crudely flaked cores from pit 2 with naturally fractured ironstained surfaces, and a waste flake from pit 5 are the only possible indicators of pebble flint. Most of the raw material, dark to grey, with cherty inclusions and light brown unabraded cortex, probably came from the Berkshire Downs, some fifteen miles southwards, the site lying by a convenient route (above, p 113). The Chilterns are a little further off.

Cores and core rejuvenation flakes The cores had mostly been neatly flaked. They were small and well worked down, ranging from 0.5-2 oz, and the last flaked face 15-40 mm. 5 were of type A2 (Clark *et al* 1960), one each of A1 and B3, and 3 of C (Fig 70, 1-6). The working down of the cores contrasts with the generously sized flake scrapers and is typical of flint-hungry regions (*cf* nearby City Farm, Hanborough, Case *et al* 1964/5, 66); the numbers of core rejuvenation flakes (nos 7-8) in pit 5 may also indicate a need for economy.

Waste flakes A combined sample of 137 waste flakes from both pits was measured (Table 31) for length, breadth, and length/breadth: length along the bulbar axis, breadth at right angles to it. 49 had some cortex but only 4 were wholly or largely cortical.

The flakes tended to be smaller than those in the Middle Neolithic assemblages at Abingdon and North Stoke (pp 38, 73) or the Late Neolithic one from Sutton Courtenay (p 129), hardly surprisingly since they were knapped further from a source of raw material. Compared with the Abingdon assemblage they confirm a general tendency for squatter flakes in the Late Neolithic, but the difference is not as marked here, nor at Sutton Courtenay as at other Late Neolithic sites in southern England.

Serrated, bevelled and utilised flakes 9 flakes had regular serrations (10-13 per cm) on one or both edges (*eg* nos 9-10) and in 4 cases a narrow band of gloss was observed on the bulbar surface (more frequently than typical of other Grooved ware industries: Wainwright & Longworth 1971, 260). 4 flakes (*eg* no 11) had blunter bevelling (*cf* above, p 39). 30 utilised flakes had edges with irregular chips and spalls. 29 of these 43 flakes could be measured (Table 32): despite the small sample, the normal preference is demonstrated for larger and slenderer flakes for various kinds of use.

Flake scrapers 7 of the 40 flake scrapers were fragmentary. Of the remainder, 22 were end scrapers, 9 end-and-side scrapers, and 2 retouched more or less all round (Fig 70, 12-16). All had convex scraping edges, except 2 unusually straight. They were on the whole neatly retouched, generally very steep (70°-90°) but frequently damaged, with in 6 cases a thin band of gloss. Measurements (Table 33, including 5 with bulbar ends broken or snapped) show that a relatively large, broad but thin flake was preferred.

The very small sample associated with Grooved ware at Sutton Courtenay was similar, while those at the Abingdon causewayed camp were also squat though on the whole less neatly and steeply retouched. Only 3 at Cassington had faceted butts suggesting a prepared core,

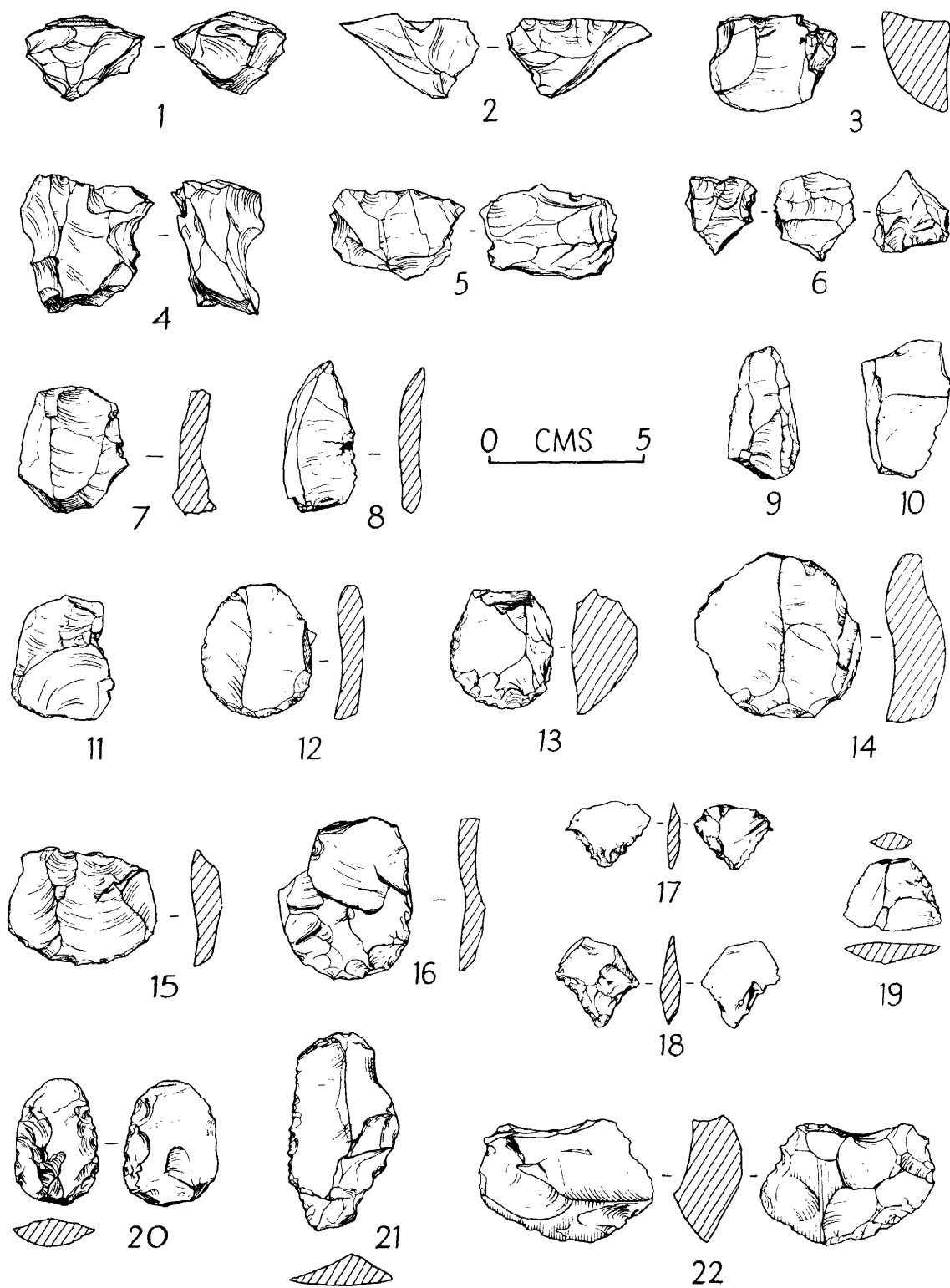


Fig 70 Struck flints from pits 2 and 5

Table 30 Struck flints from Cassington pits 2 and 5

	Cores	Core rejuvenation flakes	Waste flakes	Utilised flakes	Bevelled flakes	Serrated flakes	Scrapers	Arrowheads	Knives	Polished axe fragments	Retouched, miscellaneous	Total no	Weight (lbs)
Pit 5: layer 1	3	7	109	15	3	7	14	—	2	—	1	161	2 lbs 5 oz
" 2	—	—	4	—	—	—	1	—	—	—	—	5	2 oz
" 3	1	—	—	—	—	—	2	—	—	—	—	3	2 oz
" 4	2	5	59	8	—	—	8	2	1	—	1	86	1 lb 8 oz
general	—	1	26	—	1	—	4	—	—	—	—	32	9 oz
	6	13	198	23	4	7	29	2	3	—	2	287	4 lbs 11 oz
Pit 2: layer 2	—	—	13	1	—	—	5	—	—	1	—	20	11 oz
" 3	—	—	29	3	—	—	2	—	—	—	—	34	8 oz
general	4	—	38	2	—	2	4	—	—	—	—	50	5 oz
	4	—	80	6	—	2	11	—	—	1	—	104	1 lb 8 oz
	10	13	278	29	4	9	40	2	3	1	2	391	6 lbs 3 oz

and the correlation between this feature and thickness noted at Durrington Walls (Wainwright & Longworth 1971, 168) is not repeated.

Transverse arrowheads (nos 17 & 18) 2 were found in pit 5 (classes C1, D: Clark 1934), neither finely flaked.

Knives 3 were found in pit 5 (nos 19-21): fragmentary thick flake with shallow edge retouch and thin strip of gloss on the bulbar face of the opposed edge; thick flake with shallow edge retouch on two faces; similarly thick flake, knife scraper, heavily denticulated on one side, and lightly retouched on the other and at proximal end.

Polished axe fragment (no 22) Fragmentary cutting edge of a polished flint axe from pit 2, subsequently irregularly retouched, perhaps to serve as rough scraper or core.

Miscellaneous 2 small fragments were irregularly retouched, and do not fall into any recognisable category.

Table 31 Sample of 137 waste flakes (%)

mm	5	10	15	20	25	30	35	40	45	50	55	60	65	70
L	—	10.5	18	25	18	8	10	3	4	1	2	—	—	0.5
B	3	21	27	21	13	3	6	3	0.5	1	0.5	1	—	—
B:L		1.5		2.5		3.5		4.5		5.5		6.5+		
		3		20		25		19		17		16		

Table 32 Sample of 29 serrated, bevelled and utilised flakes

mm	10	15	20	25	30	35	40	45	50	55	60	65	70
L	—	—	1	5	7	4	3	3	3	1	1	—	1
B	5	5	6	5	4	4	—	—	—	—	—	—	—
B:L		1.5		2.5		3.5		4.5		5.5			
		2		16		7		2		2			

Table 33 Sample of 33 flake scrapers

mm	5	10	15	20	25	30	35	40	45	50	55	60	65
L	—	—	—	—	2	—	8	7	8	3	1	3	1
B	—	—	—	—	5	8	9	5	3	1	2	—	—
Th	7	17	7	1	1	—	—	—	—	—	—	—	—
B:L			2.5		3.5		4.5		5.5+				
			2		10		13		8				

Discussion

The flints may be considered normal occupational debris although fire-marked specimens were very few, 4 only from pit 5 and 2 from pit 2; scrapers were predominant, as in many Neolithic assemblages. The assemblage here is closely comparable to others associated with Grooved ware, containing 8 of the 19 characteristic types (Wainwright & Longworth 1971, 256). The so-called transverse arrowheads are of types C1 and D, commonly but not predominantly associated with Grooved ware, class D being a little unusual.

Given that the classes most commonly associated are G and H (and cf Smith 1974), it seems likely that the predominant arrowhead with Grooved ware was piercing and not transverse. This would continue the main Middle Neolithic tradition, compared with which the greater prominence of the true transverse arrowhead in the Late Neolithic may thus be seen as a contrasting innovation like much of the period's pottery. Some influence from symmetrical barbed and tanged arrowheads of the Beaker culture may also be evident, as in class D (cf Pryor 1974).

Struck flints from the Enclosure ditch 72 struck flints (1 lb 1 oz) were found in derived positions in the Big Enclosure ditch in the 1950 (6: 2¼ oz), 1951 (43: 8¾ oz) and 1952 (16: 6 oz) cuttings; they may mostly be connected with the same Late Neolithic phase of settlement. 6 were fire-marked. The types are compatible with those associated with Grooved ware, including a plano-convex knife (Fig 71, no 1), scrapers (nos 2,5), a flake knife (no 3) and an A2 core (no 4).

Polished hard stone axes (Fig 71)

Pit 6 (no 6) Cutting edge well polished, butt pecked. Identified as porphyritic augite andesite by the Geological Survey (Department accession no 1950.165).

Pit 7 (no 7) Fragmentary well polished, though some flake scars have not been completely removed. Identified as Group VIII by Dr W A Cummins, Department of Geology, Nottingham University. Group VIII axes may have been in circulation throughout the 3rd millennium bc, although this span of exploitation is supported by few associations. The latest association comes from Downton, Wiltshire where a fresh example was found in a layer with sherds of both Ebbsfleet and Fengate style Peterborough

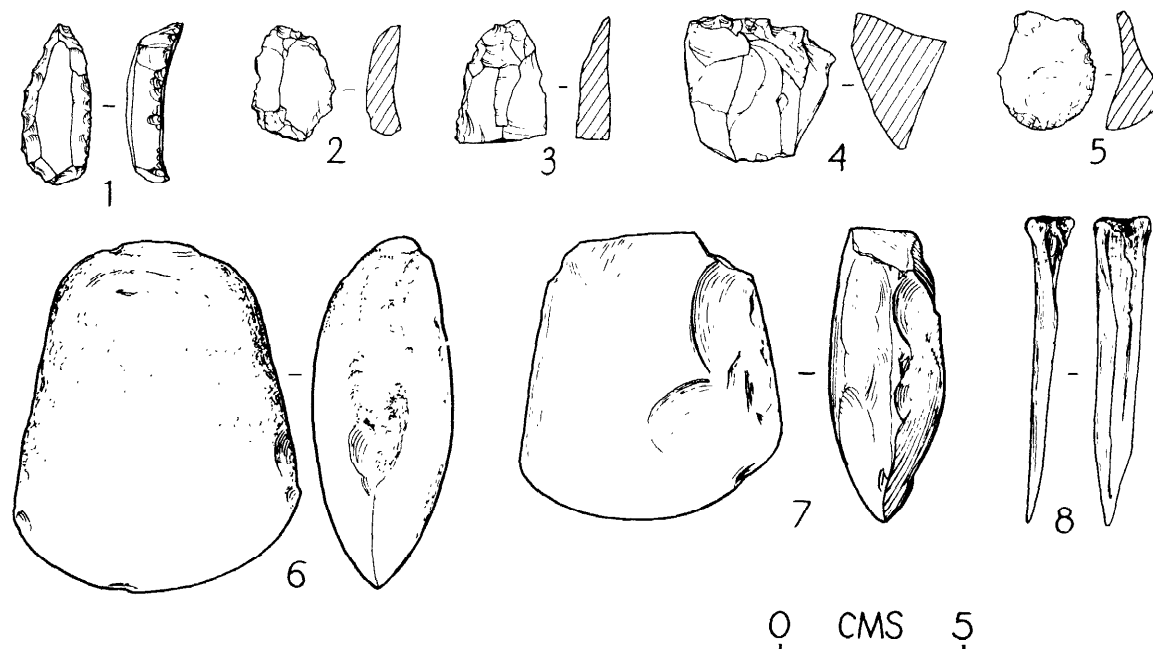


Fig 71 1-5, Struck flints from the Big Enclosure ditch; 6, 7 axes of other rock, pits 6 and 7, Cassington; 8, bone awl, pit 5, Cassington

pottery (Evens *et al* 1972, 251; Rahtz 1963, 121, 140) and tends to suggest a Late Neolithic date for pit 7.

Other stone

12 fragments (16 lbs) of *sandstone* pebbles and 2 of *quartzite* were found in pit 2, all but 2 fire-marked.

Worked bone

Bone awl (L 93 mm; Fig 71, 8) from pit 5, made from shankbone of sheep (identified by Dr J Wilfrid Jackson). More worked by cutting and polishing than examples found at Durrington walls (Wainwright & Longworth 1971, 181), though the medullary cavity had been removed only at the point.

Daub

1½ oz in pit 5, layer 1, possibly therefore but not certainly associated with Grooved ware, the largest fragment L 38 mm, W 28 mm, Th 15 mm, with one flat surface. Fabric quite hard, compact and sandy, light red throughout (2.5 YR/6/8); no wattle impressions. Such a find is otherwise unknown in Grooved ware contexts. Daub in similar well levigated fabric with flat surfaces was associated however with Peterborough ware from pit E, west of XV, 1-4a, Stanton Harcourt (Hamlin & Case 1963, 19); these fragments may have belonged to a small structure, such as an oven.

Animal bones

Identifications were kindly made in 1957 by Dr J Wilfrid Jackson and his report is available in the Department of Antiquities, Ashmolean Museum. Ox was identified from pits 2, 3 and 4, and specifically as *bos longifrons* from 3 and 2; indeterminate ribs only from 4. Pig was identified from 2 and 4 (? canine of wild boar from 4) and sheep from 3 and from 5 (unstratified). The specimens represented occur commonly in association with Grooved ware (Wainwright & Longworth 1971, table XXIX).

Land mollusca

Professor A J Cain, Department of Zoology, University of Liverpool, kindly identified from pit 2: *Helicella itala* (L) 1 adult, banding visible. This species requires very short herbage (downland or dunes at the present day) with no overshadowing by trees or bushes and usually a very sunny exposure. It is now local in the district.

Editorial note Evans (1972a, 180 and references) has recorded it as prolific in prehistoric arable habitats, apparently from the Middle Neolithic onwards.

Charcoals

Miss A C Western, Department of Antiquities, Ashmolean Museum, kindly identified, giving specific names where only one species or genus is known in the English plant record: Pit 2 *Acer* sp, probably *A. campestre* L; *Corylus avellana* L; possibly *Carpinus* sp.

Struck flints from Sutton Courtenay, Oxfordshire

The rather abundant flint industry excavated by Leeds (1923; 1927b; 1934a) in rescue work at Sutton Courtenay, Oxon (correctly Drayton, following Benson & Miles 1974, 62) was analysed to compare it with that from pits 2 and 5 (above, p 125).

Struck flint was found in pits A, B, C, E, G, H, J, L, M, N, P-T and U, but associated with Grooved ware were only in J (1923, 153), P and T (1934a, 264-6). N however might also be of Grooved ware date since it also contained a stone axe of ungrouped greenstone (Berk 5, no 40, Evens *et al* 1962: cf similar rocks and of Cornish origin such as those of group I, associated elsewhere with Grooved ware: Evens *et al* 1972). The industry from pits J, P and T (Tables 34, 35) was found to be similar to that at Cassington with a small rather squat flake predominant. Heavier cores (up to 4 oz), fewer rejuvenation flakes and more cortical flakes (up to 90mm L) reflect nearer raw material. A sandstone hammerstone-grinder-rubber (10 oz) from pit P is unusual since rubbing stones are rare

Table 34 Struck flints from pits J, P, T, Sutton Courtenay

	<i>P or T</i>	<i>P</i>	<i>T</i>	<i>J</i>
Cores		14		1
Core rejuvenation flakes	6			1
Hammerstones (flint)		1		
Waste flakes	643			
Utilised flakes	23			11
Scrapers		4	2	2
Arrowheads	5	2		
Fabricator	1			
Knife	1			
Miscellaneous retouched pieces	7			
		709		15

Table 35 150 waste flakes from pits P or T (%)

<i>mm</i>	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
<i>L</i>	—	5	8	15	20	15	16	5	7	3	2	1	0.5	—	2	0.5
<i>B</i>	0.5	11	21	14	20	13	7	7	3	2	1	—	—	0.5		
<i>B:L</i>		1:5		2:5		3:5		4:5		5:5		6:5	+			
		4		19.5		27		19.5		17		13				

Table 36 Struck flints from other pits and associations at Sutton Courtenay

	Weight (oz)	Cores	Core changing flakes	Retouched or utilised flakes	Other struck flakes	Scrapers	Knives	Piercers	Burins	Arrowheads	Chisel	Miscellaneous
PIT A	2				5						1	
B												
C	1				1							
E				1								
G	10		3	3	4		1	1				
H	14	1	5	21								
N	16	5	2	6	1							4 shattered fragments
R	33	4	2	5	57	4					1 shattered fragment	
S	23	1	4	47	7				1		1 fragmentary cutting edge	
	11	2	20	134	22		1	1	1	1	6	
PIT V (above, p 80)	1					1						
DRAYTON CURSUS	10				15				1			

Table 37 100 waste flakes from pits H, R and S, Sutton Courtenay

<i>mm</i>	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
<i>L</i>	—	2	4	8	13	16	18	10	12	11	4	1	—	1	—	
<i>T</i>	2	7	17	11	14	22	6	9	6	3	1	—	1	—	—	1
<i>B:L</i>	1:5	2:5	3:5	4:5	5:5	6:5+										
	15	27	24	14	13	7										

in Grooved ware association (Wainwright & Longworth 1971, 262).

In the remaining pits, struck flints were found alone in A, B, G and S, with bone in H, Q, R and U, and with doubtless intrusive Romano-British or Saxon sherds in C,

E and L. A more slender flake was predominant in this assemblage (Tables 36, 37) with more blade-like cores, but the scrapers were generally consistent with a Late Neolithic industry and a type C1 arrowhead came from pit S. However, a miniature scraper of Beaker culture type came from pit A, and D contained early Bronze Age pottery (Case *et al* 1964/5, fig 30) without flints.

Iron Age and Romano-British

The Big Enclosure: 1951 excavations, south-west entrance (Pl 6, A; Figs 66, 67)

Fully excavated, the south-eastern butt end of the ditch was found to be from 17 ft to 21 ft wide, the north-western from 20 ft to 22 ft; and both had roughly squared ends. They were dug about 5½ ft deep into gravel, were flat bottomed with sloping sides, slightly steeper on the inside. The ends rose more steeply to meet the causeway.

The topsoil (*layer 1*) had been cultivated until shortly before excavation and was thicker between the butt ends of the ditches, some 10 ins to 11 ins instead of 5 ins to 7 ins as normally. Throughout, it was dark brown loam (10YR/3/3) with varying amounts of pebbles; no concentrations of pebbles were noted in significant relationship to underlying features except at the inner edges of the ditches. On removal of layer 1, the butt ends showed clearly at the surface of layer 2 (Pl 6, A) but no gateway features whatsoever were seen between them; the surface of the gravel was carefully searched for staining or hollows which might have indicated the passage of traffic through the gap but nothing significant was noted.

The following layers were recorded underlying layer 1 in the lateral section 1 (Fig 72) of the south-eastern butt end: *layer 2* was brown, largely stone-free loam (10YR/5/3) containing many burrows at a depth of little over a foot. Below, *layer 3* was similarly loam but slightly darker (10YR/4/3) and stony with fine gravel pebbles mostly no bigger than 10 mm long. Below these loam layers more gravelly filling succeeded to the base of the ditch. *Layer 4* was yellowish brown, slightly weathered or leached gravel with a little loam (10YR/5/4) and with pebbles mostly under 35 mm long; the gravel was especially dense on the inner side at its junction with layers 2, 3 and 4. *Layer 5*, dark brown loam (10YR/3/3) with weathered gravel (brown in places, 7.5YR/4/4), with pebbles mostly under 15 mm long, scarcely appeared in this section. *Layer 6a* was gravel more weathered than in layer 4 with a little loam and flecked with charcoal; the more gravelly parts were brown (10YR/5/3) with pebbles up to 35 mm long and the more loamy parts dark brown (10YR/4/3). The central part of *layer 6b* below was similar to 6a, but more conspicuously flecked with charcoal; it was also more gravelly, but the pebbles were on the whole smaller, up to 20 mm long. Up the sides of the ditch the layer was virtually unweathered, yellow to yellowish-brown sand and gravel (10YR/7/6 to 5/6) but occasionally reddish, with larger pebbles up to 35 mm long. *Layer 7* was a small spread of very dark greyish-brown loam with a very little fine gravel (10YR/3/2) on the floor of the ditch,

In the longitudinal section 2 the same layers were traced towards the end of the ditch, with some variations. *Layer 5* was more prominent. *Layers 6a and 6b* were not clearly distinguishable at the south-east, but the somewhat more loamy layer 6a showed clearly towards the north-west, and here layer 6b was variable as in the lateral section and showed two loamy runs of silt, the lower one reddish. A prominent limestone boulder lay on the floor of the ditch.

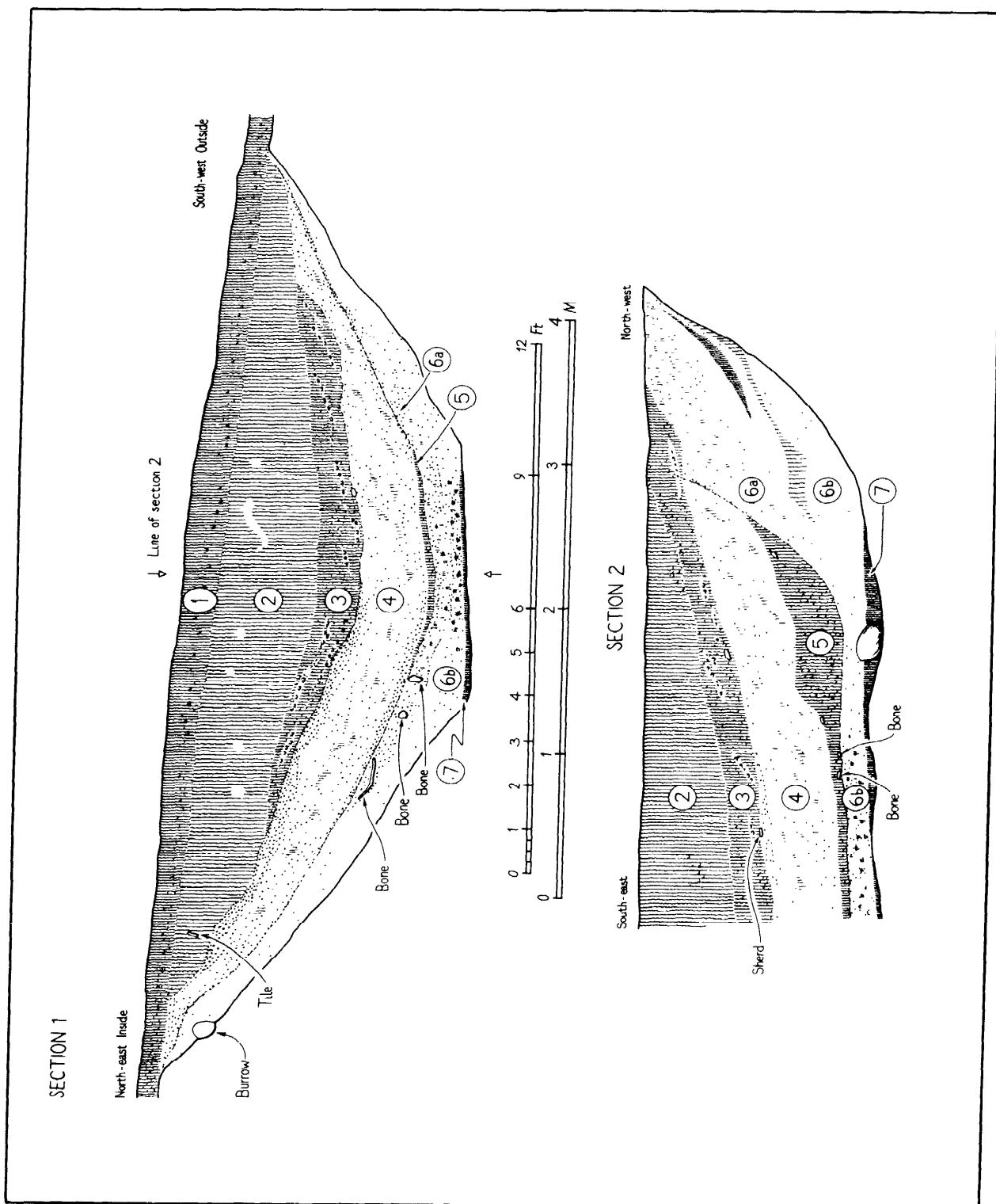


Fig 72 Sections of south-east butt-end, Big Enclosure ditch, lateral (Section 1), longitudinal (Section 2);

Around the middle of the section, the junctions of layer 5 with layer 4 and of layer 6a with layers 4 and 5 were markedly unconformable to natural silting.

The following layers were noted in the lateral section 3 of the north-western butt end (Fig 73; Pl 6B): *Layers 1 to 4* and 6 to 7 were generally as described in the south-east. However, *layer 1* was markedly stonier at the inner edge of the ditch and there was a strongly defined lens of pebbles at the junction of 1 and 2 at the outer edge. *Layer 3* contained a run of pebbles and its junction with 2 was defined by another from the inner edge. The dense gravel in the upper part of 4, on its inner edge at the junction with 2 and 3, was especially marked. *Layer 6* was not clearly divisible into *a* and *b*; it contained runs of reddish and unweathered gravel, especially near the edges, in a matrix of more weathered gravel.

In layer 6 the top of a human skull was visible on the section-line near the bottom of the ditch. After the section had been drawn, much of the rest of the burial was unfortunately badly damaged by intruders. Sufficient remained, however, to record that it was of an adult woman (below, p 148), aligned with head south-east and lying on the right side, with the skull slewed backwards out of articulation to face south. Immediately at its back and nearer the edge of the ditch, another burial remained to be properly excavated: a flexed infant (below, p 148) with pelvis just inside the section-line, aligned north-west and also on its right side. Neither burial had accompanying grave-goods. Wherever observation was possible, layer 6 lay unbroken over the burials; they had thus been laid virtually on the surface of the silting and a minimal covering of silted gravel heaped over them. The unconformity caused in the upper surface of layer 6 persisted in layers 4 and 3.

In the longitudinal section 4 of this butt end, the layers were as in the transverse section with the addition of layer 5. The sequence was similar to that observed in section 2 with minor differences: the junction of layers 5 and 4 was unconformable to natural silting throughout, and the junction of layers 6 and 5 was similarly unconformable to the south-east.

Table 38 shows the quantities of finds made in layers 1 to 7 overall. They did not vary significantly as between the two butt ends.

Interpretation of sections 1-4 (Figs 72, 73)

The sections are of bank-and-ditch type with the bank on the inner edge of the ditch. After the primary and secondary silting (layers 7 and 6a, b) the ditch was recut and then bank material dumped into it (layers 5 and 4) before tertiary silting followed (layers 3 and 2).

Layer 7 represents rainwash accumulating possibly in one season only and layer 6 the normal degradation of bank and ditch. Laterally (as seen in sections 1 and 3) the bank stood sufficiently far from the ditch or was built at such a gentle slope that it made little contribution to the silting; the late Iron Age method of dump construction seems in evidence. Longitudinally however, at the butt ends of the ditch (as in sections 2 and 4) the situation was different and bank material produced a major quantity of silting, as seen partly surviving in layers 6a and b of section 2. Banks or platforms may have flanked the entrance closely here (and were perhaps intended as the bases for timber watch-towers). Layer 6 may be subdivided in section 2. The loamy runs in 6b had the reddish colour characteristic of subsoil loam, which suggests that this virtually primary silting was produced in a few seasons only; thereafter the true secondary silting (6a) will have accumulated more slowly. True secondary silting was less evident in the lateral sections; layer 6 could be subdivided in section 1 but not at all in 3.

In section 4 the primary-secondary silting had been almost entirely removed at the south-east in a recut appearing as two prominent scoops almost to the surface of natural gravel; in section 2 the re-cutting had removed less material but showed in the unnaturally steep and regular face to the south-east edge of the secondary silting (layer 6a). The fact that the slopes as recut in both sections 2 and 4 had survived unnaturally steeply and regularly shows that layers 5 and 4 were dumped against them in quick succession only shortly after they had been recut. Both these layers show the heaped surfaces (and to some extent the unnaturally sharp banding) of dumped filling. The burials in the secondary silting of the north-west butt end may have been made only shortly before this dumping took place.

Thereafter tertiary silting accumulated slowly (layers 3 and 2). These loam layers lack the reddish colour

Table 38 Quantities of finds (oz) by layers at the south-west entrance. Percentages in brackets

LAYER	Romano-British and/or Iron Age pottery	Animal bone	Daub	Oyster shell	Struck flint	Tile	Plaster	Brick
1	82½ (14)	33½ (1)	126	17½	4	23½	80½	-
2	254½ (42)	264¾ (9)	584	4½	¼	8	41	8½
3	136¼ (22)	177 (6)	8	+	2½	41	2	6
4	115¼ (19)	1608 (56)	4½	-	1½	-	½	-
5	9½ (2)	278½ (10)	+	+	½	2	-	-
6	7¾ (1)	122 (4)	6	3	-	-	-	-
7	1 (neg)	397½ (14)	8	-	-	-	-	-
	606½ (100)	2881¼ (100)	211+	25+	8¼	74¼	124	14¼

Notes: 1. + = present; - = missing. Additionally, fragments of glass were present in layer 3 and iron in layers 1 and 2; Sf oz of *clinker* were found in layer 2, and ½ oz of *mortar* and 2 oz of *medieval and recent pottery* in layer 1. Clay pipe stems in layer 3 of the north-east segment may be regarded as intrusive in burrows.

2. The finds from *layer 1* cover a larger area than the ditch segments but are unrepresentative since the layer was partly stripped by machine.

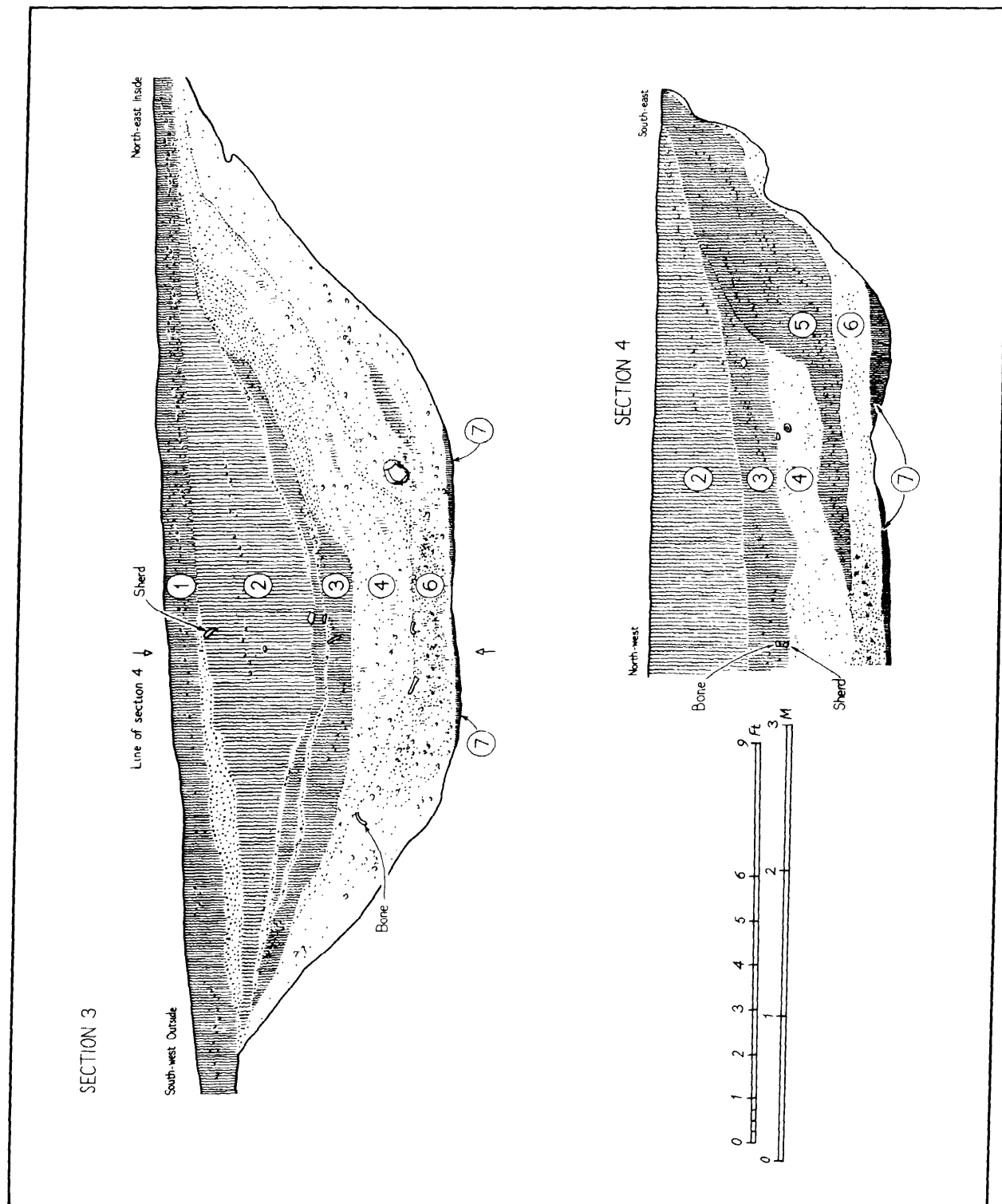


Fig 73 Sections of north-west butt-end, Big Enclosure ditch, lateral (Section 3), longitudinal (Section 4)

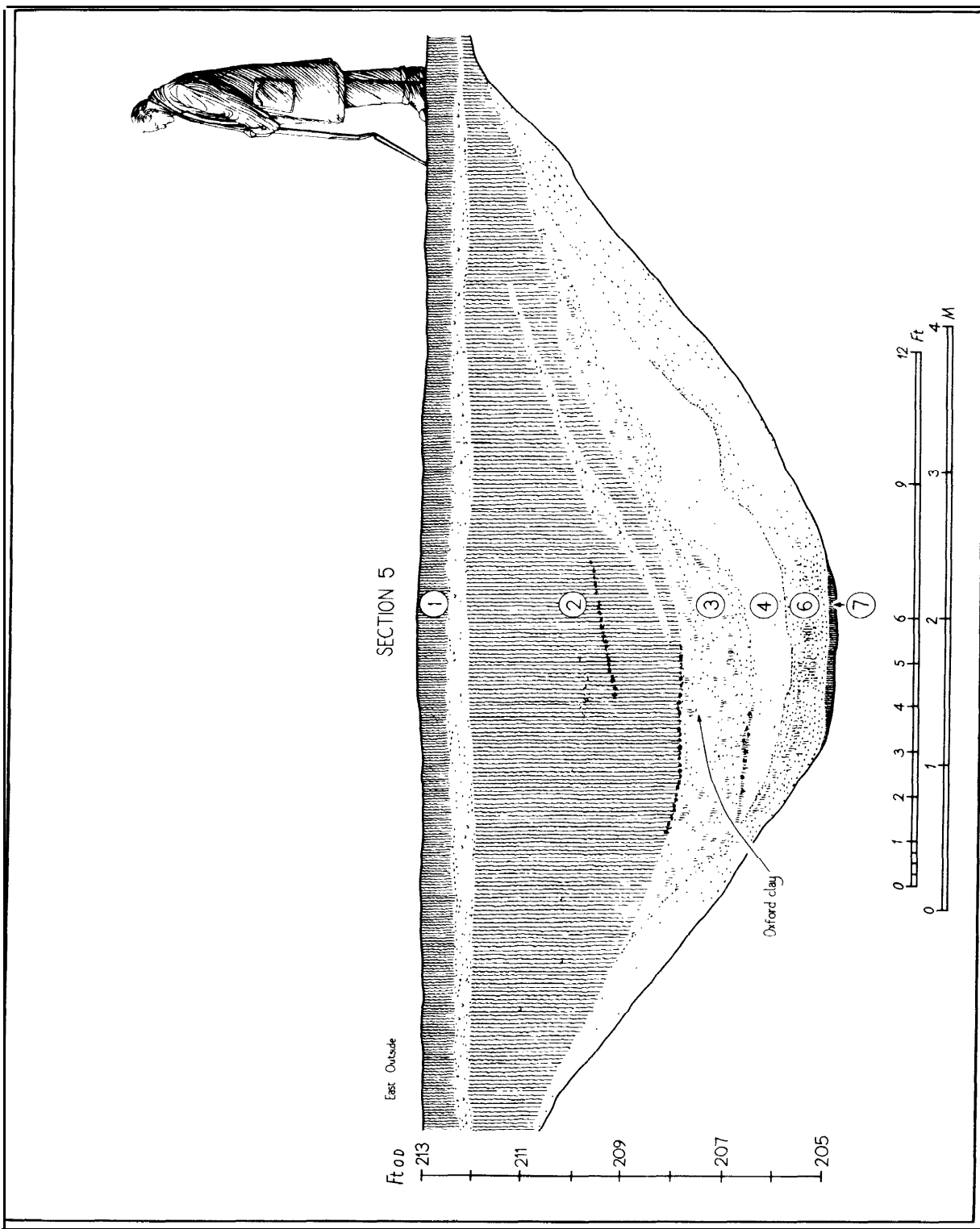


Fig 74 Section 5 of Big Enclosure ditch (marked Hedgely 1950 on Fig 66). The figure standing on the inner edge is A G Fenwick

characteristic regionally of ancient soils on calcareous bedrocks (as in layer 6 below) and in this respect are more like modern soils. The anomaly here may be explained by greater organic content as a result of prolonged occupation of the interior (*cf* above, p 64). Finally, the scooped surface of the top of layer 6a in section 2 suggests some quarrying of the ditch filling (presumably for gravel) at a late stage; and a prominent spread of gravel at the junction of layers 2 and 1 in section 3 may have been to fill a muddy patch.

The sequence may be summarised and dated by the finds:

(1) *1st century BC or 1st century AD*

The Enclosure was constructed and the fortifications allowed to silt into the ditch (layers 7 and 6) without any attempt at repair.

(2) *Within the second quarter of the 1st century AD*

The defences were repaired (recut layers 6), but levelled almost immediately afterwards (layers 5 and 4).

(3) *1st century AD to late Roman*

Tertiary silting of the ditch (layers 3 and 2) proceeded more or less undisturbed.

The 1950 ditch cutting

The cutting by Hedgely and the OUAS in 1950 was 42 ft by 10 ft, aligned somewhat obliquely south of a gap in the eastern segment (Fig 66). The ditch was fully excavated and found to be larger than at the south-west entrance, some 25 ft wide and nearly 83 ft deep at the south of the cutting, but to have been similarly dug at around the angle of rest.

The section (Fig 74) was drawn by myself. Subsoil loam lay here between topsoil (*layer 1*) and gravel. The ditch showed bank-and-ditch silting as at the south-west entrance, and a similar phase of dumping. Its layers were broadly similar, although layer 5 was missing; it may have been peculiar to the entrance (above, p 131). The following features are also noteworthy. A prominent cultivation line extending across the ditch at the junction of layers 2 and 2 showed that the bank here had survived into post-Roman times at least as a minor earthwork. *Layer 2* contained a prominent hearth and a dense spread of charcoal at its base. The layer was some 4 ft deep at the drawn section, much deeper than at the south-west entrance; but on the opposite side of the cutting it was only some 2½ ft deep as a result of the greater mass of the underlying dumped material (*layer 4*); this shows the somewhat irregular manner in which dumping had proceeded. *Layer 3* was much stonier throughout than at the south-west entrance and may partly have silted rather more rapidly; but the dense spread of charcoal immediately overlying 4 indicates some break in silting after the dumping represented by that layer. An unusual find in *layer 3* was a lump of Oxford clay some 200 mm long which is unlikely to have come from the immediate neighbourhood. The surface of *layer 4* was humped as at the south-west entrance, and the scoop in the upper surface of *layer 6* may indicate efforts here also to repair the defences.

Two smallpits were found in the gravel on the inner side of the ditch in a position where they might be supposed to have been covered by the bank. Both had filling similar to subsoil loam; one was probably natural but the other was reported to contain three struck flints and an oyster shell.

No finds were made in primary and secondary silting (layers 6 and 7) apart from an indeterminate sherd (10 mm square, dark grey, compact fabric without stone filler), but the dumped material (*layer 4*) is datable to within the second quarter of the *1st century AD* as at the south-west

Table 39 Quantities of finds (pottery in oz, the rest by frequency) from the 1950 cutting

Layer	Romano pottery	British pottery	Bone	Oyster shell	Iron
1	232 oz		+	4	—
2	263 oz		301	2	3
3	39 oz		29	2	—
	1 oz		56	6	—

+ = present but not recorded in detail; — = missing

entrance, and the tertiary silting (layers 2 and 3) from the *1st century* to the later Roman period (p 131).

The quantities of finds at the 1950 excavation were recorded only partly by weight and are thus not wholly comparable with those from the excavation of the south-west entrance. Layer 2 was far the richest; iron first appeared in this layer.

Other cuttings of the ditch

The cutting 54 ft long and up to 5 ft 6 ins wide made by Harden in 1939 in the north-west segment (Fig 66) showed the ditch, similarly dug at around the angle of rest, to have been larger still, some 25 to 30 ft wide and 11 ft deep (Harden 1942). The section showed no obvious signs of bank-and-ditch silting. The 8 ft depth of 'earthy filling', corresponding to layer 2 and 3 of the 1951 excavations indicates that dumping was very much less thorough here; the defences near the gaps may have been more thoroughly cleared for purposes of access, especially towards the south-west near a convenient watering place. The 'refuse dump' near the bottom of the 'earthy filling' (Harden 1942) suggests that this silting began during the 1st or 2nd centuries; finds from the upper part of the gravel layers below (corresponding to layer 4 and perhaps the upper part of layer 6 of the 1950 and 1951 excavations) were dated to the 1st century AD. These dates are consistent with the 1950 and 1951 findings.

The cutting 7 ft wide made by Fenwick in 1952 (Fig 66) also showed the ditch dug at the angle of rest and with bank-and-ditch silting similar to that seen in 1951. A basal layer was recorded corresponding to layers 4, 6 and 7 of the 1950 and 1951 excavations containing the 1st century AD finds, an intermediate layer corresponding to layers 2 and 3 and 1st century to late Roman in date, and a topsoil layer generally with late finds. No stratigraphical records survive for other sections of the ditch (Ox 1941, 84; 1942, 106; 1945, 93-4; 1947, 164) but one was reported to have had bank-and-ditch silting (Harden 1942, 106).

Late Iron Age and Romano-British features inside the southern part of the Enclosure

Disappointingly little was recorded inside the Enclosure in the area dug for gravel after January 1950, although it was regularly visited.

Three late Romano-British inhumation burials (finds, p 148) were recorded by myself in 1950 (Fig 66, *R-B graves 1950*), at the west edge of ring-ditch 5 (not the east as implied in Ox 1950, 104). During the 1951 excavations Hedgely recorded two intersecting pits to the south-east in course of destruction. Here a kiln (*kiln 1*: Fig 66) seems to have been dug into an earlier pit. The earlier pit (12 ft by at least 5 ft and 9 ins deep into gravel) contained reddish-brown gravelly loam similar to that in the Late Neolithic pits (above, p 121). The surviving kiln pit (6 ft 6 ins by 2 ft and 1 ft 6 ins deep) contained brownish loam filling similar to that in layer 2 of the Enclosure ditch with Romano-British sherds, fragments of structural fired clay

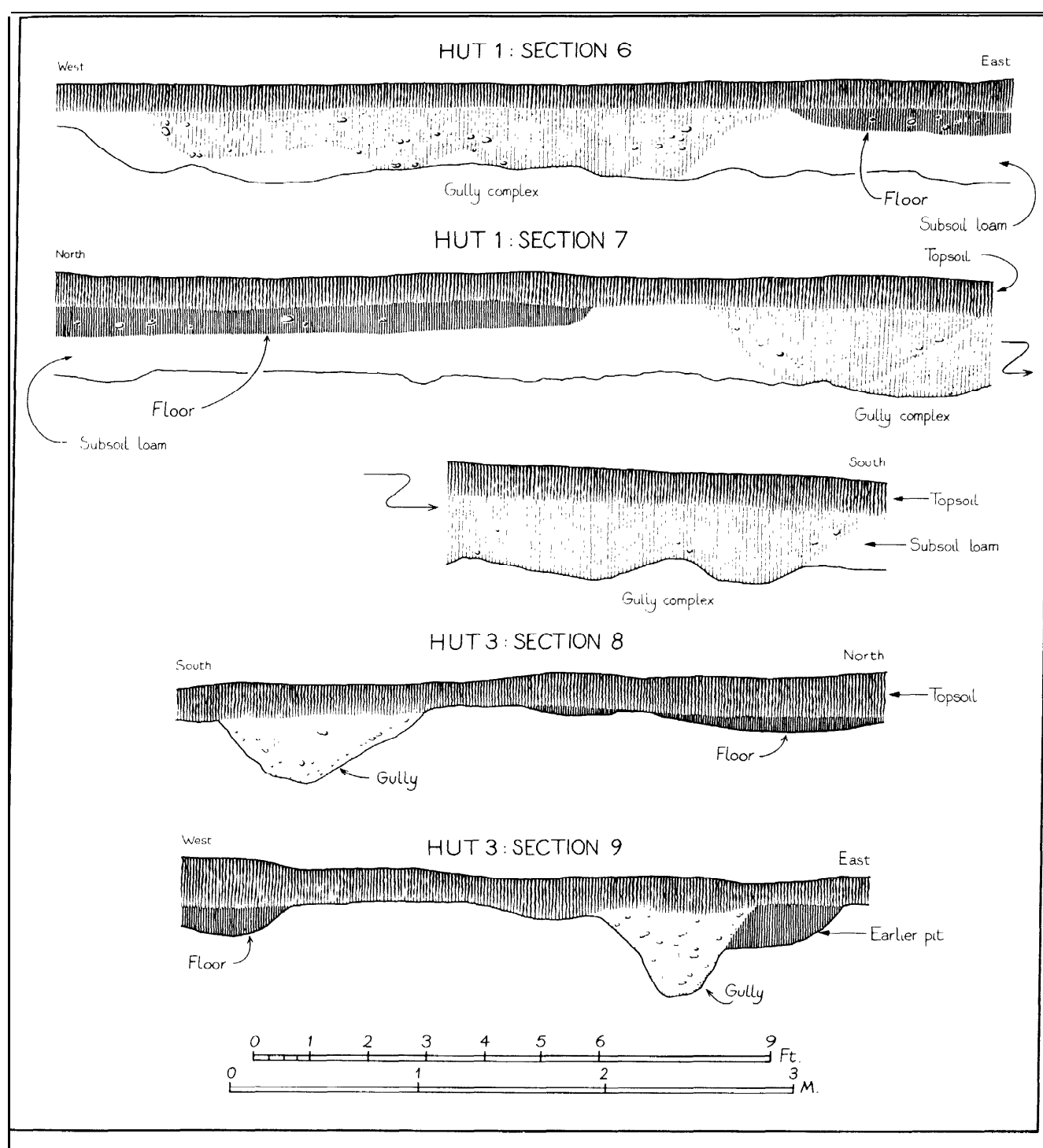


Fig 75 Sections of 1st and 2nd century huts inside south-west entrance of Big Enclosure ditch

and much charcoal; a late 2nd century date seems appropriate.

Two other kilns were recorded in the interior. *Kiln 2* datable to the second half of the 1st century AD (p 146) was discovered by A Corney and P M Finch in 1947 in the course of its destruction by gravel digging. It lay 150 yds east-north-east of the Mill. The site appears to have consisted of the kiln and of an interlocking group of shallow pits which contained most of the pottery, and also animal bones, charcoal, slag and fired clay, but stratigraphical evidence had been destroyed before the site was found. *Kiln 3* datable to the late 2nd century AD was noted in 1950 by Parr and members of the OUAS near the Enclosure ditch in its southern segment. It had been partly destroyed and no structural details could be recorded.

The potentially most interesting settlement traces in the interior were those recorded by Fenwick during quarrying of the area north-east of the 1951 excavation (Fig 67). The plan and sections (Fig 75) were drawn by myself. Here a continuous settlement area of more or less circular huts of the 1st and 2nd centuries AD followed the line of the ditch, and must have been largely in the lee of what remained of the bank after partial demolition. No sure indication of this settlement can be seen in air cover (but cf Harding 1972, pl 40).

The centre of *hut 1* will have lain north-east of section lines 6 and 7; thus under half its area was recorded. The floor probably some 12-18 ft in diameter had been dug into subsoil loam (Fig 75) and consisted of brown stony loam similar to layer 3 or parts of 5 or 6 of the Enclosure ditch. It was surrounded more or less concentrically by a continuous but irregular gully complex partly dug through loam into gravel with a mean diameter of somewhat more than 30 ft. This gully complex was filled with virtually stoneless and otherwise featureless light grey silty loam, representing the disintegrated daub of wattle-and-daub huts. This gully had plainly been many times cleared out and redug in a very irregular fashion but circumstances precluded any detailed recording of the sequence. One intersection (Fig 75, section 7) was however clear and others partly so, suggesting that the final gully surrounding the hut may have been some 20 ft in diameter, but earlier ones may have been some 30 ft or more. No trace of the floor of this hut was seen in what survived of the upper part of the Late Neolithic pit 5 to the west, but the inner edge of its gully had cut through the pit at its south-east edge (Fig 67). Sherds of storage jars from this hut including some from the floor indicate a date in the late 1st century AD, probably therefore during the accumulation of layer 3 in the Enclosure ditch.

Hut 2, immediately to the north-west, had a similarly filled gully some 20 ft in mean diameter which had cut through an earlier pit. No floor was discernible on the surface of subsoil loam. It was not possible to make plans or sections of this hut. The earlier pit may be dated to the pre-Conquest 1st century AD like the earlier layers (6-7) of the Enclosure ditch, and the hut itself to the late 1st or early 2nd century during the formation of layer 3.

More or less immediately north-west of this hut it was possible to plan and section a segment of *hut 3*, with a gully complex some 30 ft in diameter. Subsoil loam had run out here and the features had been dug directly into gravel. The floor of brown stony loam similar to that in layers 3, 5 or parts of 6 of the Enclosure ditch only survived vestigially in hollows. The gully complex had been filled with fairly unweathered gravel similar to that in layer 4 of the Enclosure ditch. Its plan showed it to have been

several times redug in pits or trenches, and it could be seen to have been dug through an earlier pit with filling similar to the floor of the hut. Here too the earlier pit was datable to the earliest layers of the Enclosure ditch, but perhaps not surprisingly a wide range of material came from the hut itself, which is however best assignable to the 2nd century, or during the formation of layer 3 in the Enclosure ditch.

These settlement traces are somewhat similar to those at Site 8, Linch Hill Corner, Stanton Harcourt (Grimes 1943/4), where a similar succession of gullies defined a rather larger sub-rectangular enclosure with an earlier range of date extending from the 1st century BC possibly to the 1st century AD (Grimes 1943/4; Harding 1972, 120-3). Many of the annular ditches seen on aerial photographs within the Dyke Hills, Dorchester (eg Harding 1972, pl 36) may be similar to these at Cassington, as may have been some of the smaller ones at Linch Hill west, Stanton Harcourt and Standlake and those less clearly defined within the northern arc of the Enclosure ditch itself where early Romano-British features and also Belgicised pottery were reported (Ox 1941, 84; aerial photographs in Harding 1972, 31, 35, 40). Some of those on Port Meadow, Oxford (Atkinson 1942) may also be comparable but these may all be Iron Age like the gully-houses at Milton Common (Rowley 1973a).

The late Iron Age and subsequent sequence at Cassington

The Big Enclosure as a massive riverside late Iron Age fortification is rather exceptional regionally if not nationally and invites explanation as a reaction to an exceptional danger - which Harding has suggested may be identified either with the Claudian invasion or (as he would prefer it) with Catuvellaunian expansion westwards earlier in the same century (1972, 59, 129-30). However, the stratification of the ditch together with the dating of the finds can be interpreted as showing responses to *both* these threats. The recutting of the ditch and the more or less immediately subsequent levelling of the defences, together datable to within the second quarter of the 1st century AD, can be attributed to the Claudian invasion and subsequent pacification; and the building of the enclosure itself assigned to an earlier pre-Roman threat.

What is the date of the earlier threat? The Belgic finds from the early layers of the ditch are rather indefinite (1st century BC to 1st century AD); but the single Roman sherd recorded in layer 7 (p 139) may be taken as an intrusion, hardly surprising in a ditch which had been deeply recut. The accumulation of secondary silting (Fig 72, section 2: layer 6a) before the recutting suggests an appreciable period before the mid 1st century AD and this would be consistent with the considerable amount of occupation material in layers 6 and 7 (Table 38) combined with that in 4 and 5 (most of which must be taken as pre-Roman). However the absence of tertiary silting before recutting precludes a very long period. Decades suggest themselves rather than a century (cf observations of modern silting at the North Stoke linear ditches, dug steeply like the butt ends of the Enclosure, p 73). A date early in the 1st century AD is therefore appropriate for the digging of the ditch.

What was the nature of the threat against which it was dug? The unfinished state of the Enclosure suggests that the danger may never have materialised or that the defenders may have been overwhelmed before they could prepare themselves properly (*vide* the gaps in the ditch, its shallowness in part and the absence of gate structures at the south-west entrance). The threat can hardly have

endured, since whatever rampart existed was allowed to silt into the ditch without any immediate efforts being made to rebuild it.

The relatively steep slope to the Evenlode made the area one of the few naturally defensible ones on the gravels around Oxford, and Startin has suggested that some 400 to 500 men may have been assembled to build the Enclosure (p 151). The material culture of its pre-Roman inhabitants was thoroughly Belgicised. Otherwise evidence for Belgic settlement or influence is scanty nearby and throughout the region. There was a small settlement scatter across the Evenlode at Foxley Farm, Eynsham (Ox 1941, 85-6), a small enclosure at Linch Hill, Stanton Harcourt (Grimes 1943/4, site 8) and perhaps another at Vicarage Field (p 115), and a larger one more distant at Langford Downs, Lechlade (Williams 1946/7). Cremation burials have been found only at Langford Downs, Kingston Blount (Chambers 1976), Watlington (Case 1958) and possibly Stanton Harcourt (p 83) and an inhumation burial at Abingdon can also possibly be included (Miles *et al* 1975, 103). Finds of Belgic pottery are listed by Harding (1972, fig 9 with coins) to which may now be added a few more: Abingdon (Miles *et al* 1975, 89, 103), Alchester (Young 1975, 138-9), Benson (information OAU), Kingston Blount, Milton Common (Rowley 1973b, 36) and Stanton Harcourt (Ox 1970, 104). The rarity of Belgic finds suggests a greater continuity of non-Belgic material culture regionally than commonly envisaged and this seems illustrated at Milton Common (Rowley 1973b, 367) and was indeed in evidence at Cassington (pots 2 and 3, p 139). The isolated character of Belgic material in the region has been stressed by Hawkes (1961) and Harding (1972). The range of pottery was restricted; imported fine ware has not been found nearer to Cassington than Kingston Blount, Watlington, Benson or Abingdon in certain pre-Roman contexts; and coins are not numerous.

These considerations suggest a train of events at Cassington imposed from outside, cutting across traditional clan and tribal organisation or patterns of settlement, and make dynastic upheaval (as Harding suggested) all the more plausible an explanation. Harding's interpretation of a local reaction by the Dobunni to a Catuvellaunian threat may be correct; he related the north Oxfordshire Grims Ditch (some 8 miles north-west athwart the Evenlode valley north of Woodstock) to the same threat (1972, 56f) and suggested that both Burroway (an enclosure or enclosures upstream on the Thames near Clanfield: Sutton 1966, 37) and the Dyke Hills, cutting off the confluence with the Thames at Dorchester, might prove to be similar contemporary defences. An alternative interpretation of the Big Enclosure is possible however: that it represented an enclave of clansmen adhering to the Catuvellauni in a potentially hostile environment. Unfortunately imported fine wares which would be relevant to this argument were not to be found in secure pre-Roman contexts at Cassington, except possibly for sherds of a butt-beaker from the pit earlier than hut 2 (below, p 144).

Whatever its nature, pre-Roman settlement inside the south-west entrance seems to have been dense judging by the amount of occupation material in layers 4-7, although only two pits preceding the Romano-British huts are referable to it. To the east, pre-Roman material was not as much in evidence in the 1950 cutting, but pottery of Belgic type (including fine ware) was well represented to the north judging by Harden's cutting (1942) and that made by Morris in 1941 (p 141). Sherds showing Belgicised influence were also reported from the northern interior (Ox 1941, 84). At least two *foci* of pre-Roman settlement

seem indicated, both likely to have been of greater extent and importance than site 8, Linch Hill Corner, Stanton Harcourt.

Settlement continued in the early Roman period apparently uninterrupted after the partial levelling of the defences. To judge by the huts near the south west entrance it was of native type, but the quantities of occupation material in layer 3 of the 1950 and 1951 cuttings (Tables 38, 39) suggest that it was not as dense as before the Conquest. It was rich enough however to support two kilns in succession (kiln 2 dating to the second half of the 1st century, kiln 1 to the later 2nd century), and a fine bronze brooch perhaps of the latter part of the 1st century AD (Ox 1943/4, 193-5) was a stray find. Settlement probably continued in the north of the Enclosure (Ox 1941, 84). The rectangular enclosure sectioned by Bradford in the south east (1951) may also have belonged to this period.

Contraction seems to have followed. The huts of the south west entrance did not continue later than the late 2nd century, the low quantities of rubbish in layer 3 of the 1950 and 1951 cuttings (Tables 38, 39) apply to this period too and the upper filling of Harden's cutting was much less rich in rubbish after this date. Such contraction would be consistent with that noted in the 3rd century both nationally (as by Rivet 1969, 201) and locally, as at Shakenoak (Brodrick *et al* 1973, 13-15) and Ditchley (Radford 1936, 43).

The final phase of the Big Enclosure dates to the later 3rd and 4th centuries. The quantities of occupation material increased again in layer 2 of the 1951 cutting (Table 38). The few graves (Ox 1950, 104-5) in the southern part of the enclosure (Fig 66, RB graves 1950) may be dated to this period, on the basis of their bone plaques and pottery (p 148). The graves were within the rectangular enclosure (Bradford 1951), which possibly belongs here rather than earlier. A late 3rd and a 4th century coin were found in the uppermost filling of the Enclosure ditch in the 1950 cutting, and two others of 4th century date in the upper filling of the ditches of ring-ditch 6, a coin loss which suggests renewed prosperity at the site. The scraps of sheet bronze apparently associated with the coin of Constantine in ring-ditch 6 (p 148) reinforce this impression, for they are of a type normally associated with religious sites such as locally at Woodeaton. This material may have been connected with a shallow ditch passing close to the ring-ditch on its east (Fig 66; Atkinson 1946/7, 7 and fig 5). A little to the north of ring-ditch 6 there was a large late Roman cemetery (Ox 1936, 201; 1937, 201; Harding 1972, pl 27) with over a hundred graves. A settlement of some importance surely existed in the neighbourhood, and may have been very near the Big Enclosure. St Joseph (1958, 99) has suggested that rectangular cropmarks to the north, halfway between the cemetery and Purwell Farm (Fig 65: SP 444111), could belong to the outbuildings of a villa, though none has since been found. Such suggested prosperity at this date is again consistent with trends observed nationally and locally.

No Roman finds from the Big Enclosure itself are definitely later than the 4th century, nor are any of the graves from the cemetery to the north (information Mr P D C Brown). A few 5th or 6th century Anglo-Saxon sherds came from possibly a recut part of the Enclosure ditch north of ring-ditch 6 (Ox 1945, 94), but Anglo-Saxon finds from Cassington date mostly to the 6th century or later. The prominent post-Roman cultivation line in the 1950 cutting (Fig 74) may date to the late Saxon or medieval period.

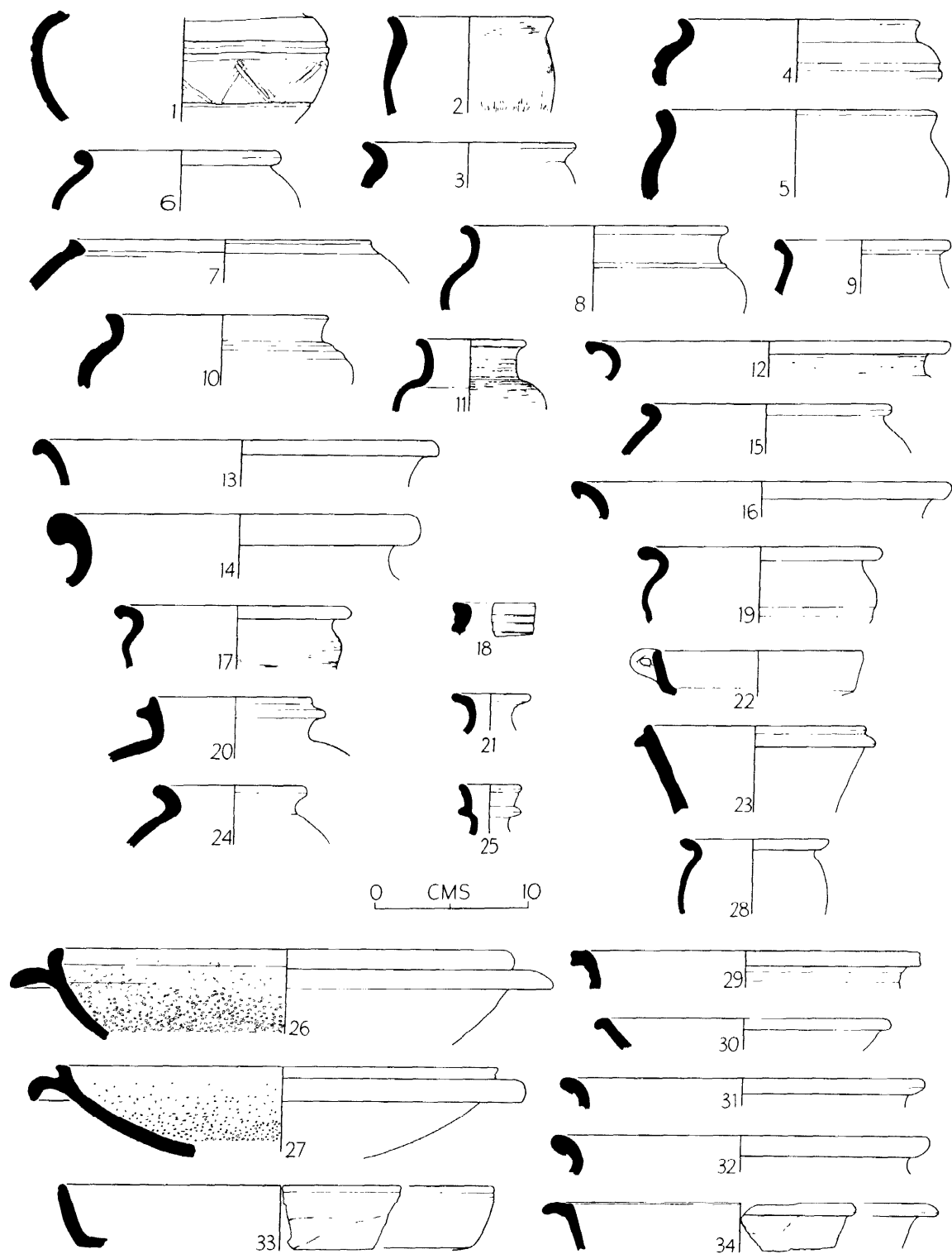


Fig 76 Pottery from the Big Enclosure ditch: 1-3, layer 6; 4-8, layer 5; 9, 10, layer 4; 11-17, layer 3; 18-34, layer 2

Reports on finds from Smith's Pit 2 and other specialist reports

Late Iron Age and Roman pottery

by Christopher J Young, Department of the Environment
The large quantity of pottery from Smith's gravel pit 2 provides a conspectus of types in use in this part of the Oxford region throughout the Roman period. Much of it is unstratified and this account has been restricted to that from recorded contexts, namely the Big Enclosure ditch; huts 1-3; kiln 2 and its associated material; and kiln 1.

I am grateful to Dr W Rodwell for his identification of the samian. His comments have been incorporated into the text, except that plain samian from contexts in which it is residual is not included.

The following abbreviations are used in the catalogue:

Churchill Hospital	=	Young 1972
Dorchester	=	Frere 1962
Gillam	=	Gillam 1968
Langford	=	Williams 1946/7
Shakenoak	=	Brodrick et al 1971

The Big Enclosure ditch

This was sectioned at least 6 times. However only the pottery from the 1950 and 1951 cuttings was recovered with full stratification. The 1952 material is roughly divided into 3 summary layers. The 1941 pottery, including many of the best preserved vessels, is attributed only to the ditch and not to individual layers within it. Little remains from the 1938 cutting which has in any case been briefly discussed and illustrated (Harden 1942); this group is not, therefore, considered in this report.

The two stratified sequences are first considered together, since they were closely comparable and have been correlated. Any dating of the various layers of ditch filling can only be based on this material. Subsequently pots from the 1952 and 1941 sections are discussed but these are illustrated only for the general light they shed on the ceramics of the area.

1950 and 1951 cuttings

1951, layer 7 3 body sherds of hand-made Iron Age pottery; one body sherd of wheel-made Romano-British grey ware. The last should be regarded as intrusive since the layers immediately above 7 contain no Roman material at all.

1951, layer 6 SE butt end (Fig 76): 1 Body sherd of necked bowl, with incised ornament; hand-made black ware with red-buff external surface and visible white inclusions on surfaces. NW butt end: 2 Wide-mouthed jar with up-standing rim; fabric as last, exterior smoothed vertically. 3 Form as last; hand-made, shelly red fabric, burnished exterior.

The dating of these sherds is of considerable importance, since, stratigraphically, they are the earliest diagnostic material in the ditch. No 1 is an example of the necked bowl, common in the area from the 1st century BC. It is not, however, normal for this form to be decorated in the Iron Age in this area, although it has been recorded elsewhere in the south of England (Cunliffe 1974, fig A:29, 6-7). Nos 2 and 3 are examples of a form normally thought to be of the pre-Belgic Iron Age. However, the occurrence of the form with Belgic pottery at Langford Downs (Williams 1946/7, fig 17) and in early Roman layers at Alchester (Young 1975, fig 5, 10) indicates that the type must have continued throughout the Iron Age and into the immediate post-Conquest period. No very

close dating of the pottery can be offered, therefore, the possible range being the 1st century BC to the 1st century AD

1951, layer 5 SE butt end: 4 Necked bowl, cordoned on body; shelly, black ware, burnished; similar to Langford 15; Harding 1972, pl 169 D. NW butt end: 5 Form as 2 and 3; shelly, red ware, black exterior surface. 6 Bead-rim jar; shelly, greyish-buff ware, black exterior, red interior; cf Dorchester 19. 7 Globular jar; with expanded rim; shelly grey ware, black exterior, red interior; a joining sherd of this pot was found in layer 4. 8 Necked bowl, cordoned at base of neck; sandy red ware with thick grey core, containing many black inclusions; black to red-buff surfaces, burnished; cf Frere 1962, 6, also Langford 14. These types were common in the 1st century both before and after the Roman Conquest. The bead-rim jar is not attested in the area before the 1st century AD, its earliest occurrence being at Dorchester, in levels not earlier than Tiberian date, and possibly as late as Claudian (Frere 1962, 128-9). This layer must then still have been open as late as c AD 20 and there is no reason why it could not have been open much later than that, although the total absence of the normal Romano-British, sandy, grey wares suggests that it must have been sealed before they started to become common in the area in the third quarter of the century. It must be assumed to have been deposited at some point within the second quarter of the century.

1951, layer 4 SE butt end: 9 Butt beaker, hard sandy orange ware with a few white inclusions and a burnished cream exterior surface.

NE butt end: 10 Necked bowl cordoned on shoulder; shelly, black ware; cf Langford 15. Not illustrated: Two jars as 6, two bowls as 8, another sherd of 7. The date of this layer is similar to the last. For other pottery of about the same date see nos 55-65.

1951, layer 3 Samian: Dr 33, Central Gaulish, ? Hadrianic; Dr 18, South Gaulish, 1st century.

SE butt end: 11 Necked bowl; hard, sandy, grey ware, burnished black exterior. 12 Necked bowl, cordoned at base of neck; hard, sandy light grey ware with dark grey burnished surface; similar bowls were produced at Cowley and Blackbird Leys, cf Young 1977, fig 80, R38. 13 Necked bowl, hard, sandy orange ware; Oxford kiln product, probably after c AD 240; cf Young 1977, fig 72, RO27.

NW butt end: 14 Storage jar; sandy grey ware, burnished grey surfaces. 15 Wide-mouthed jar; soft red ware with grey core and black surfaces; similar to 6 above, cf Dorchester 19. 16 Wide-mouthed jar; hard sandy orange ware with grey core and burnished miscoloured orange-grey surface; Oxon kiln product after c AD 240; cf Young 1977, fig 72, 027.

1950 cutting: 17 Necked bowl; hard grey, sandy ware with black surfaces, burnished on exterior.

Other material from this layer includes Belgic and Roman sherds and one piece of flue tile. The earliest pottery is Belgic (cf no 15) the latest not earlier than AD 240. The layer above was certainly forming in the late Roman period (see below). Layer 3 must then have accumulated slowly over a period of two centuries.

1950, layer 2 Samian: Dr 33, Central Gaulish, Hadrianic-Antonine.

1951, layer 2 SE butt end: 18 Shallow bowl or platter; sandy micaceous buff/orange ware with red/orange core and red colour-coat; an unusual Oxford product, diameter

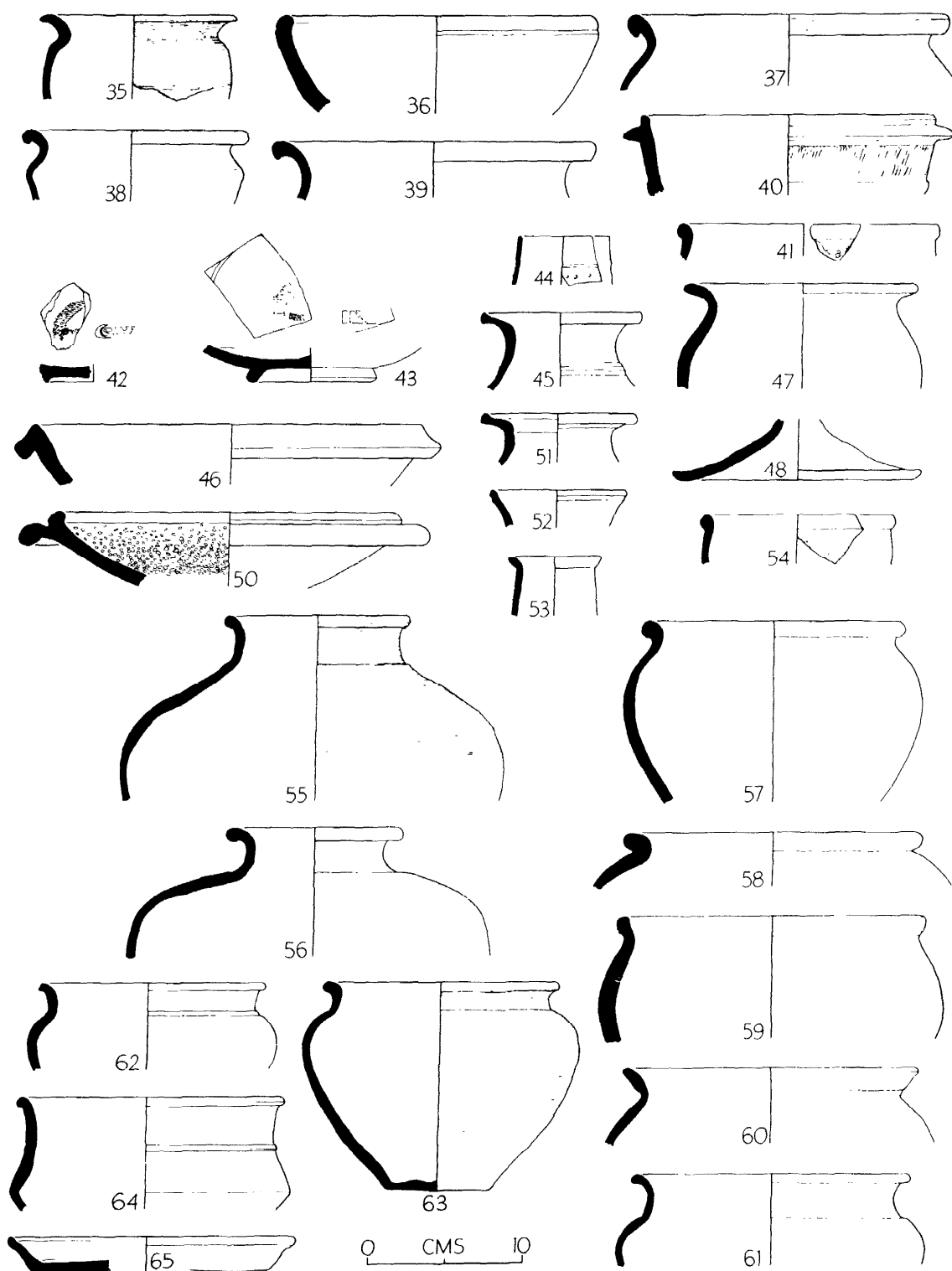


Fig 77 Pottery from the Big Enclosure ditch: 35-9, layer 2; 40-46, layer 1; 47-54, 1952 cutting; 55-65, 1941 cutting

not shown because sherd is too small; cf Young 1977, fig 57, C41.4, c 300-400+. 19 Necked bowl, girth grooves; hard, sandy grey ware, burnished on exterior. 20 Narrow-mouthed jar with flanged rim; sandy, micaceous grey ware, burnished exterior. cf *Shakenoak*, 347, second half of third century. 21 Flagon; hard, sandy, slightly micaceous grey ware with white inclusions and burnished exterior.

NW butt end: 22 Handled, straight-sided dish, hard, sandy white ware with blue-grey slip. 23 Flanged, straight-sided bowl; hard, sandy, dark grey ware, burnished exterior. 24 Narrow-mouthed jar; hard, sandy, grey ware. 25 Flagon; hard, sandy, grey ware, burnished exterior. *Not illustrated*: jar as 6; sherd of 2nd century Oxon mortarium; base of Nene Valley colour-coat beaker; Oxon red colour-coat Dr 36 copy.

1950 cutting: 26 Mortarium; hard, creamy-white ware; sparkling grit; Oxon product, late 3rd/4th centuries: Young 1977, fig 23, M22.27 Mortarium; hard, sandy red ware with grey core, white colour-coat, sparkling grit; Oxon product, late 3rd/4th centuries; Young 1977, fig 23, M22. 28 Jar; hard, sandy white ware, exterior smoke-blackened; traces of orange wash on interior; Oxon product; Young 1977, fig 31, W33. 29 Carinated bowl; parchment ware, red paint on rim. Oxon kiln product, c 240-400+: Young 1977, fig 27, P24. 30 Imitation Dr 31R; hard, sandy, orange ware with grey core, red colour-coat; Oxon kiln product, c 270-350: Young 1977, fig 57, C54. 31 Jar; hard, sandy, orange ware with grey core and brown colour-coat; Oxon kiln product, late 3rd/4th century: Young 1977, fig 55, C18. 32 Bowl; hard, sandy, orange ware with grey core and burnished exterior; Oxon kiln product: Young 1977, fig 72, 027. 33 Straight-sided bowl; black burnished ware; burnished curvilinear decoration on outer wall. 34 Flanged bowl; fabric as last, burnished decoration on outer wall. Fig 77, 35 Jar; fabric as last; burnished decoration on outer wall. 33-5 are black-burnished vessels; these were made at various major centres outside the Oxford region. 36 Shallow bowl; hard, sandy off-white ware with grey core and dark grey surfaces. 37 Jar; hard, sandy blue-grey ware with dark-grey surfaces; burnished lines on exterior. 38 Necked bowl; fabric as last. 39 Jar; pink/grey ware with black surfaces, heavily tempered with calcite grit; faint traces of horizontal rilling on neck; this ware was widely distributed from the second quarter of the 4th century in the late Roman period and was made in the South Midlands,

The bulk of the material from this layer is late Roman. The few earlier sherds must be residual since layer 3 was still open as late as the mid 3rd century. The quantity of pottery suggests that layer 2 contains rubbish deposits laid down after AD 250. The closing date for this deposit is uncertain, but may be before 350 AD since the definite late 4th century types, such as the rosette-stamped Oxfordshire colour-coat bowls, are conspicuously absent.

Layer 1 This layer was heavily contaminated with post-medieval material. Pots have been illustrated only if unparalleled elsewhere on the site.

SE butt end: 40 Flanged bowl; hard, sandy grey ware with thick, dark grey core and diagonal combing on wall. 41 Bowl; sandy, micaceous orange ware with red colour-coat; band of demi-rosettes below rim. Oxon product, after AD 325: Young 1977, fig 61, C70. 42 Base of bowl, fragmentary nonsense stamp, set within rouletted circle; sandy orange ware with red-brown colour-coat; Oxon product: Young 1977, fig 68, 18.

NW butt end: 43 Base of bowl, fragmentary nonsense stamp, set with rouletted circle; sandy, orange ware with

orange-red colour-coat; Oxon product; this stamp was used at the kiln site at Cowley (Young 1973, fig 6.6). 1950 cutting: 44 Beaker; hard, sandy, pinky-buff ware with lustrous brown-purple colour-coat outside, matt-red colour coat inside; perhaps a Nene Valley product. 45 Jar, hard, sandy, orange ware, burnished outside; Oxon kiln product: Young 1977, fig 71, 06. 46 Flanged bowl, hard, grey ware with red surfaces, heavily tempered with calcite grit; see 39 for comments on this ware.

1952 cutting

The material from this cutting was recorded in three summary layers. Only types not paralleled in the 1950/51 sections have been illustrated.

Layer 3: The pottery was all of Belgic type and included one rim sherd. 47 Jar; hand-made black ware, with buff inner surface, heavily tempered with calcite grit.

Layer 2: 48 Lid; hard, sandy grey ware. The other sherds ranged in date from the 1st to 4th centuries AD.

Layer 1: Apart from some residual material, the bulk of the pottery was of normal late Roman type. Samian: Dr 37, decorated sherd; Lezoux ware, style of Casurius, Antonine; Dr 31R rim, Central Gaulish, Antonine. 49 (*not illustrated*); Dr 31 base with fragmentary stamp almost certainly TURTUNNUS, probably first half of 2nd century. 50 Mortarium; hard, sandy pink/off-white ware, sparkling grit; Oxon product, c 240-400+: Young 1977, fig 23, M22. 51 Flagon or jug; hard, sandy light orange ware with red colour-coat; Oxon product, ? c 350-400+: Young 1977, fig 54, C13.52 Flagon; sandy, buff ware with patchy red-brown colour-coat. Oxon product, date as last: Young 1977, fig 54, C14. 53 Beaker; hard, sandy orange ware with grey core and brown colour-coat; Oxon product, c 240-400+: Young 1977, fig 59, C22. 54 Bead-rim bowl; hard, sandy light orange ware with red-colour coat and white painted decoration; Oxon product, c 325-400+: Young 1977, fig 61, C69.

1941 cutting

Many of the most complete Cassington pots come from this cutting and are worth publishing for their intrinsic interest. No stratification was recorded and it has been necessary to divide the pottery according to chronological and typological criteria, established from other Cassington deposits and from sites elsewhere.

'Belgic' pottery: 55 Large narrow-mouthed jar; hard, sandy, vesiculated grey ware; brown-grey outer surface with burnished linear decoration. cf *Dorchester* 18. 56 Form similar to last; heavily tempered grey ware with orange surfaces; cf *Dorchester* 14. 57 Jar, hard grey ware with buff-grey/black surfaces, heavily tempered with black and white inclusions; cf *Dorchester* 22. 58 Jar; fabric as last; *nos* 56-8 have all been overfired to some extent so that much of the temper has burnt out. 59 Jar; sandy red ware, with grey core, pink/buff outside and grey-brown interior, heavily tempered with shell. 60 Jar; hard, sandy dirty-buff ware with much visible sand and white inclusions, outer surface black with reddish patches; the form is unusual but the fabric suggests a date before the end of the 1st century AD. 61 Necked jar; grey/red with white inclusions, exterior black, interior red to red/buff; outside burnished. 62 As last, cordoned at base of neck; hard, sandy grey ware with black surfaces and many black and white inclusions, many burnt out. 63 As last; hard, black ware with white inclusions, and thin orange skins below black surfaces; burnished on rim and upper part of body with burnished horizontal lines on lower part of body. 64 Girth beaker; hard grey ware with black/dirty

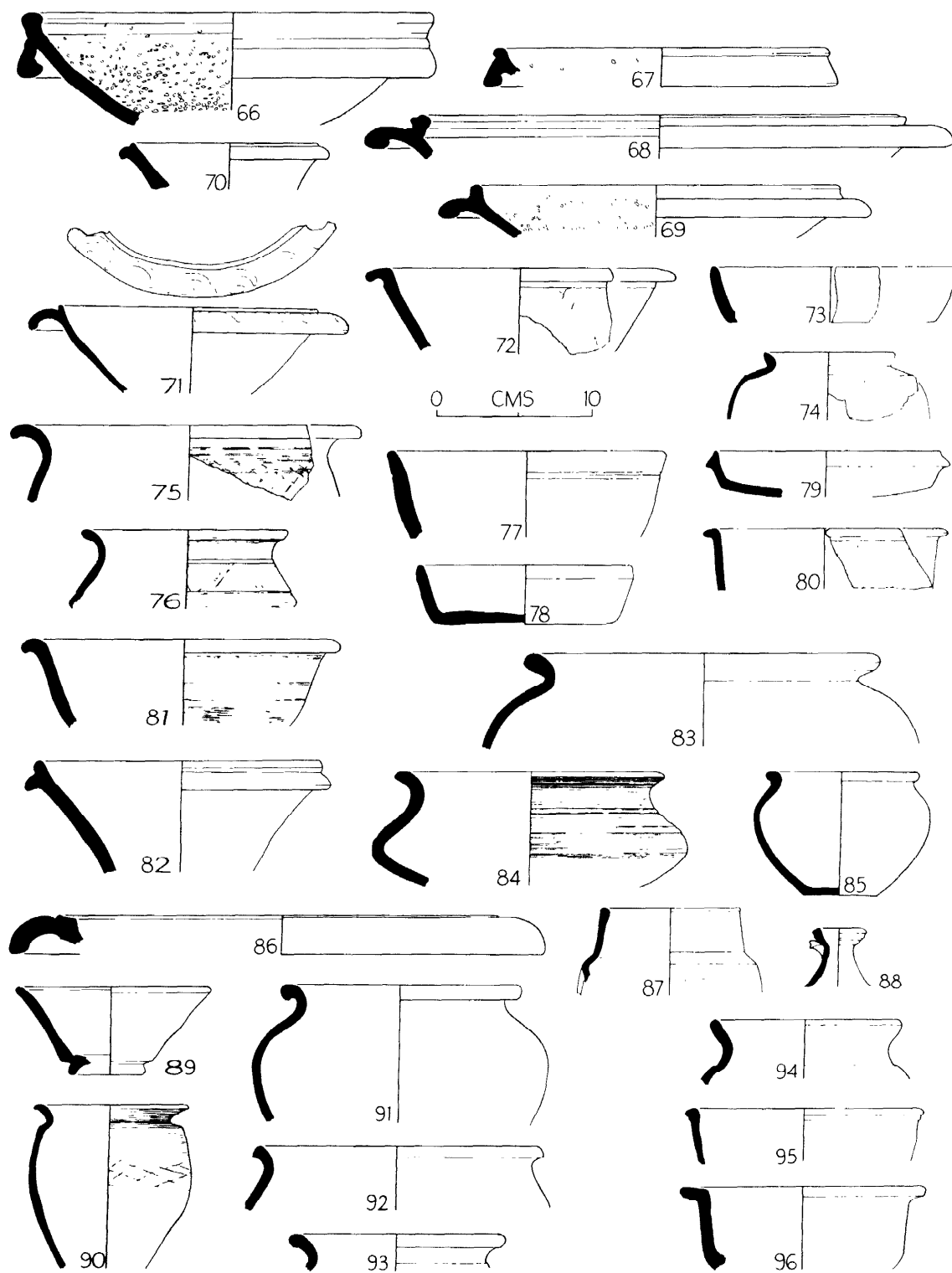


Fig 78 Pottery from the Big Enclosure ditch: 66-83, 1941 cutting; 84-90, probably from 1941 cutting. Hut 3: 91-6

buff surfaces, heavily tempered with black and white inclusions, burnished exterior; cf Linch Hill: Grimes 1943/4, fig 24, 4 65 Shallow dish; hard grey ware, black and white temper, with black surfaces, burnished; the pot is a copy of a Gallo-Belgic platter; cf Camulodunum: Hawkes & Hull 1947, 14, 31c; *Dorchester* 37.

It should be remembered, of course, that the 'Belgic' wares just discussed continued into the Roman period and that many of the forms here illustrated had very long lives after the Conquest.

Samian : (not illustrated) Curle 15, Central Gaulish, Antonine; Dr 31R, burnt, Antonine; Dr 18/31, South Gaulish, Flavian-Trajanic; Dr 18/31, Central Gaulish, Trajanic-Hadrianic.

Mortaria: Fig 78, 66 Hard, sandy, pink/white ware; sparkling grit; Oxon product ? c 180-240; Young 1977, fig 20, M 11.67 Hard, sandy, white ware with greyish-white surfaces; burnt; Oxon product, c 180-240; Young 1977, fig 20, M 10. 68 Hard, sandy, off-white ware; Oxon product, late 3rd/4th centuries: Young 1977, fig 23, M22. 69 Hard, sandy, pink-white ware with off-white surfaces; Oxon product, date as last: Young 1977, fig 23, M22.

Colour-coat wares: 70 Flanged dish; hard, sandy white ware with grey core and dark brown colour-coat; Nene Valley product, late Roman.

Oxidised ware: 72 Segmental bowl; hard, sandy orange ware with thin grey core and burnished interior; white painted arcade and dot on rim; Oxon product, late 1st/early 2nd centuries: Young 1977, fig 72, 039.

Black burnished ware: 72 Bowl with out-turned rim; black burnished ware; burnished decoration outside; cf Gillam 308, AD 130-180. 73 Straight-sided bowl; fabric as last; burnished; curvilinear decoration; cf Gillam 324, AD 80-120.

Grey wares: 74 Beaker; hard, sandy buff-grey ware with burnished black surface with vertical panels of barbotine dots; late 1st/early 2nd centuries; cf Young 1977, fig 79, R32. 75 Wide-mouth jar; hard, sandy, light-grey ware with black surfaces burnished on rim and neck and burnished lattice on shoulder. Late 1st/early 2nd centuries, 76 Form as last; hard, sandy grey ware with buff/grey surfaces, burnished on neck, burnished lines on shoulder; distorted in firing; date as last. 77 Bowl, perhaps copying Dr 37; sandy, micaceous grey ware, with grey/buff surfaces and traces of black slip; 2nd century. 78 Straight-sided dish; fabric as last. 79 Flanged bowl; sandy, slightly micaceous grey ware with many black inclusions. 80 Bowl with out-turned rim; hard, sandy buff/grey ware with some white inclusions and grey surfaces; burnished lattice decoration. 81 Form as last; hard, sandy, buff-grey ware with black surfaces; burnished horizontal bands on exterior. 82 Flanged bowl; hard, sandy grey ware with dark grey surfaces and with some black inclusions. 83 Large jar; hard, sandy off-white ware with grey exterior, heavily tempered with flint and black inclusions.

Probably from the 1941 cutting

This material was probably (but not certainly) found in the 1941 cutting of the Big Enclosure ditch. Only pottery of intrinsic interest is illustrated. It has been classified on the same principles as that definitely from the 1941 cutting.

'Belgic' pottery: 84 Carinated bowl; sandy, red ware with very thick grey core, inner surface red, outer surface dark maroon/brown, grooved on neck and carination and burnished on exterior above carination. 85 Jar: sandy,

granular, red ware with black surfaces. 86 Hard, sandy, off-white ware; Oxon product, c AD 140-200: Young 1977, fig 18, M3.

Colour-coat ware: 87 Beaker; hard, sandy, orange ware with pink/buff surfaces and red colour-coat outside. Oxon product; late 3rd/4th centuries: Young 1977, fig 55, C20. 88 Flagon; hard, sandy, orange ware with thick grey core, dark brown colour-coat; Oxon product, date as last: Young 1977, fig 53, C3.

Oxidised ware: 89 Copy of Dr 33; hard, sandy, orange ware with buff/orange surfaces and traces of burnish inside and out; Oxon product: Young 1977, fig 73, 043.

Black-burnished ware: 90 Jar; hard, sandy ware, laminated black and red, burnished outside except for reserved zone with burnished lattice.

The huts

Hut 3

Pottery was found in the gully and floor of the hut itself, and also in a pit cut by the gully.

The earlier pit: 91 Jar; sandy, granular, heavily tempered ware, laminated grey and red, grey/black surfaces. 92 Jar; shelly, red/buff to black ware with black exterior.

Close dating of this pottery is difficult since the forms were current both in the late Iron Age and in the Roman period. The fabrics, however, are closest to those of pottery from layer 4-7 of the Enclosure ditch (cf Fig 76, 1-10). This suggests a date before the third quarter of the 1st century AD for the pit.

Northern area of floor and gullies : 93 Jar; sandy, light grey ware with black outer surface. 94 Jar; hard, sandy black ware with dark grey/black surface. 95 Bead-rim, hemispherical bowl; hard, sandy off-white ware with dark grey surfaces; perhaps Oxford product, 2nd century. 96 Bowl with out-turned rim; hard, sandy light grey ware with grey surfaces; cf *Shakenoak*, 161, c AD 140. *Not illustrated*: one sherd imitation butt beaker; three jars as 97; one sherd parchment ware, late 3rd/4th centuries.

Central area of floor and gullies: Fig 79, 97 Jar; cordoned on neck; fabric as 96. 98 Jar; fabric as 35; burnished curvilinear decoration on underside of rim; cf Gillam 146 c AD 280-350. 99 Jar; hard, sandy red ware with black surfaces. ZOO Bowl with out-turned rim; fabric as 98; burnished linear decoration on exterior; cf *Shakenoak* 240 c AD 160-250. 101 Form similar to last; hard, sandy, grey ware with black interior; cf *Shakenoak* 273, c AD 160-250.

Not illustrated: sherds of 2nd century mortarium; 4th century mortarium; one as 30; four jar rims like 97; black-burnished jar as 90; bowl as 100.

Southern area of floor and gullies (not illustrated): samian: Dr 18/31R, Central Gaulish, Trajanic-Hadrianic; Dr 33, burnt, Hadrianic-Antonine; Dr 31, Central Gaulish, Antonine. Also two jars, fabric as 6; three jars similar to 97; two sherds red colour-coat enclosed vessels, late 3rd/4th centuries.

The pottery from the hut covers the whole Roman period and also extends back into the late Iron Age. However, the vast bulk of the material is, or could be, 2nd century and, if the relatively small amount of later pottery is thought to be intrusive, a late 2nd century date is the most appropriate for this hut.

Hut 1

All the pottery from this hut comes from large storage jars; the joins indicate that not more than three vessels are represented.

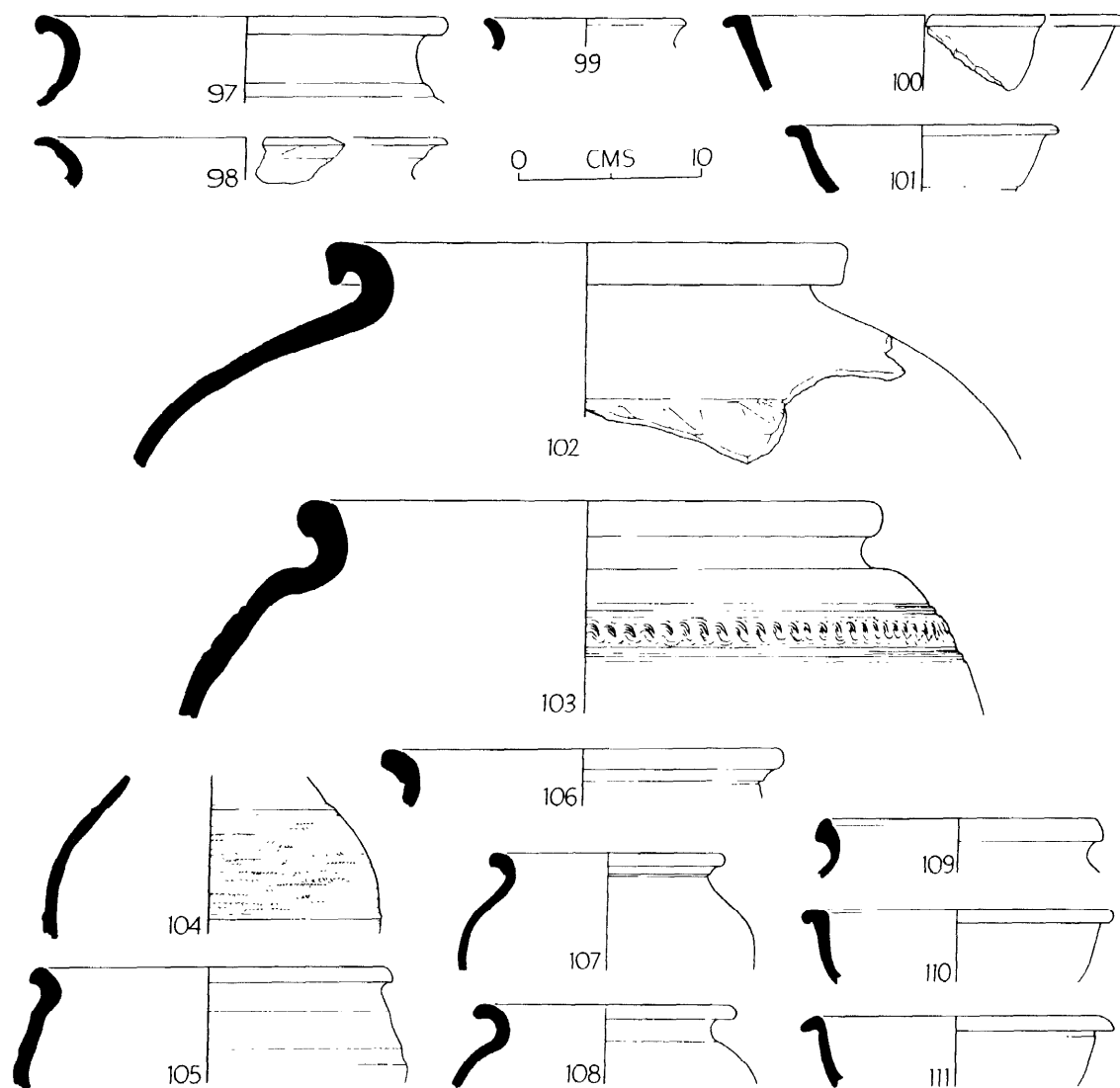


Fig 79 Pottery from huts. Hut 3, 97-101; hut 1, 102, 103; hut 2, 104-11

102 Hard, sandy, granular blue grey with buff surfaces, and white inclusions; incised curvilinear decoration on shoulder. 103 Hard, sandy, grey ware with orange/buff surfaces, and black inclusions.

These jars are similar to the large number of decorated storage jars found at Alchester (Iliffe 1929, fig 7; Young 1975,13), Verulamium (Wheeler & Wheeler 1936,200-2, 308) and elsewhere. They are of late 1st century date and this is presumably the date of the hut.

Hut 2

An earlier pit was found under the hut and this is reported first:

104 Body sherds of butt beaker; dark grey ware with orange surfaces, many black and some red inclusions; rouletted bands on body; cf *Dorchester* 16, from a Tiberio-Claudian level. 105 Jar with rilling, soft,

shell-tempered, black ware, cf *Verulamium* (Wheeler & Wheeler 1936, 40). *Not illustrated*: two rims as 61; one storage jar in Romanised grey ware. Apart from this last, which could perhaps be intrusive, all the pottery dates to the pre-Conquest occupation.

The pottery from the floor and gully is as follows:

106 Jar; hard, sandy, grey ware with black inclusions. 107 Jar; ware as last, slightly wasted. 108 Jar; fabric as last. 109 Jar; fabric as last. 110 Bowl with out-turned rim; hard, sandy, grey ware with black surfaces; ? Oxon product. cf *Shakenoak* 165, pre AD 140. 111 Bowl with out-turned rim; hard, very sandy, blue-grey ware with grey surfaces. *Not illustrated*: samian, Dr 27, south Gaulish, ? Flavian; beaker with white paint decoration: Hawkes 1927, fig 9, 21 (c late 1st century); two rims similar to 97, one rim as 90; one bowl as ZOO; sherds of narrow-mouthed jars, latticed on shoulder (cf *Shakenoak* 196, c AD 140); sherds of jars similar to 6, 58 etc.

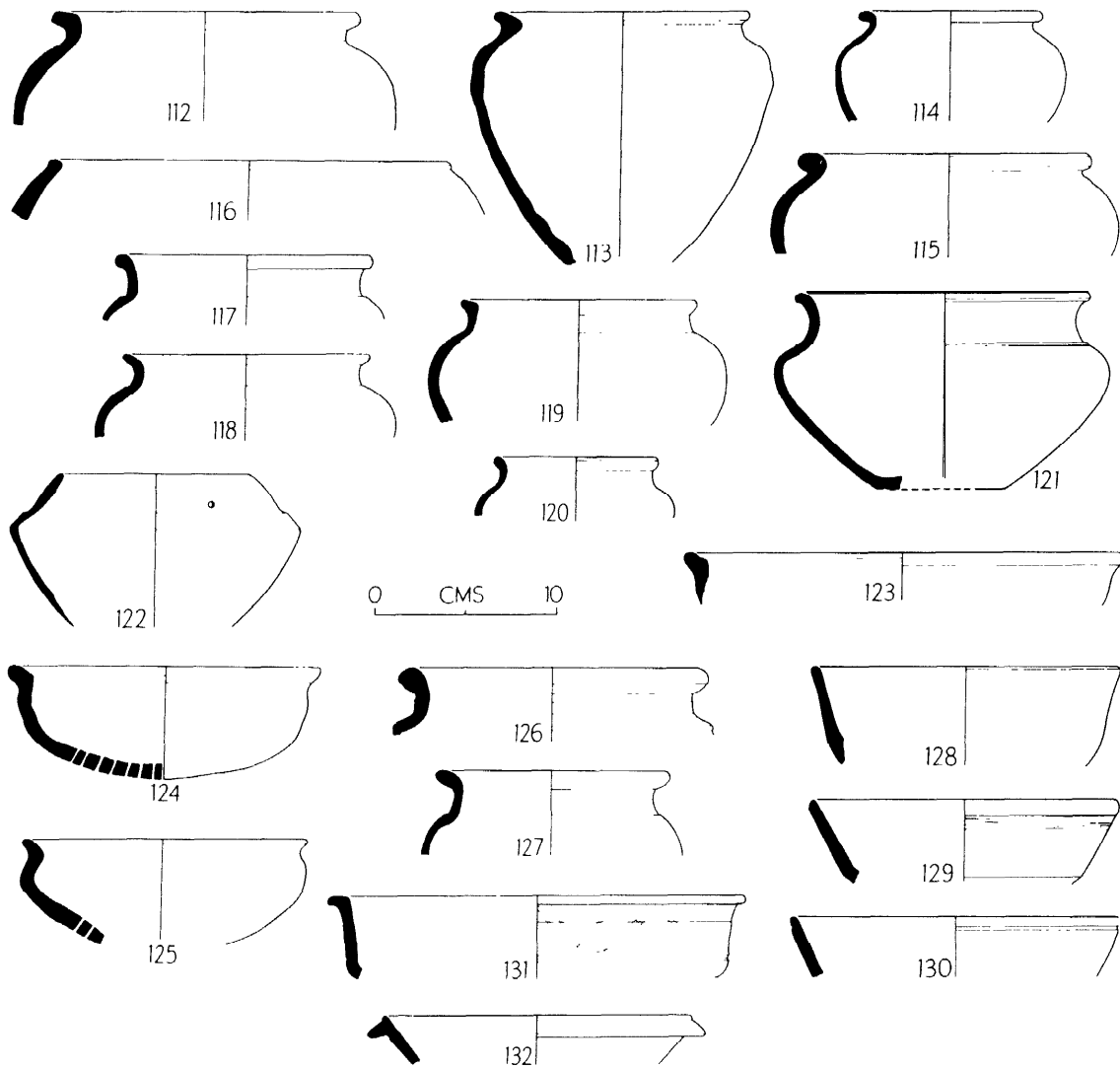


Fig 80 Pottery from kilns. Kiln 2, 112-25; kiln 1, 126-32

Apart from a few earlier and later sherds, perhaps intrusive, the bulk of the material is of the late 1st or early 2nd centuries.

Discussion of the pottery from the Big Enclosure ditch and huts

The pottery described above covers the whole of the Roman period and the last part of the Iron Age and so gives an excellent conspectus of the types of vessel used in this part of the Oxford region. As such a brief comparison is needed with other major groups of material in the area such as Shakenoak (Brodrick *et al* 1973 and earlier references), Alchester (Young 1975), Dorchester (Frere 1962) and Abingdon (Miles *et al* 1975).

As might be expected the range is broadly similar. In the late Iron Age and very early Roman period, the principal vessel forms are the jar, necked and bead-rim, and the somewhat shallower necked bowl. By the 2nd century bowl forms are much more common and from the middle

of the 3rd century large quantities of fine wares are present.

The sources of the pottery are also of interest. The fine wares are the most easily attributable and it is clear that from the early 2nd century the bulk of these were drawn from the major pottery industries along the road from Alchester to Dorchester (Young 1977). Imports from outside the Oxford region are comparatively scarce: some samian, one or two late pots from the Nene Valley colour-coat industry, some black-burnished ware, probably from Dorset, and a few examples of the late Roman calcite-gritted wares of the south Midlands.

The vast bulk of the pottery, though, consisted at any period of ordinary grey ware utilitarian vessels. These are very difficult to attribute to sources but it is virtually certain that all were local since a large number of small kiln sites producing grey wares are known in the region, including, of course, the two at Cassington discussed below. Except for a few pots which, as noted in the

catalogue may have come from the main Oxfordshire potteries, the vast bulk of these wares probably came from many local sources.

The kilns

Kiln 2

The bulk of the pottery consisted of nearly complete pots or very large sherds, all of the same fabric. Some showed signs of wasting sufficient to render them unusable. Apart from this material there were a few other sherds, including one of Antonine samian (kindly identified by Dr K T Greene) and one of an Oxfordshire red colour-coat bowl. These last must presumably be intrusive since they are totally out of place in this assemblage. A few intrusive pieces would not be surprising.

Apart from these intrusive sherds, all the pottery was of a hard, sandy, micaceous ware, containing large lumps of temper, up to 4mm long, and mainly white in colour. In the section the temper is often burnt out. The surfaces of the pots are often lumpy because of these large pieces of grit. Basically in section the ware is grey with thin lighter skins outside and inside the pot. The exterior surface is generally patchy in colour, with a range varying from purple-buff to black.

In the following catalogue the pottery is divided typologically and the fabric is only described insofar as it varies from the description given above. The type numbers given in parenthesis refer to the author's study of the Oxford pottery industry (Young 1977).

1 *Bead-rim jars* (Type R21) : Fig 80, 112 Bead-rim jar with square-cut rim and slight neck. 113 Similar to last but with internal bulge on rim; this vessel is wasted and parts of the wall have flaked off; Young 1977, fig 77, R21.1. 114 Similar to last, but with moulded rim. 115 Bead-rim jar with no neck. Four other rims not illustrated, diameter varying from 80 mm to 170 mm.

The type first appeared in the Oxford region in the period prior to the Roman Conquest (Frere 1962, especially figs 12, 19, 21-3) and continued to be common into the mid 2nd century. A few examples are known from later contexts. The typological variation of rim and neck has been shown not to have any chronological significance (Harris & Young 1974, especially fig 8. 20-25).

2 *Bead-rim bowl* (R22) : 116 Fabric as normal but hand-made and with orange-buff surfaces: Young 1977, fig 77, R22.1. The form is similar to the last but much shallower in relation to diameter. These bowls are far less common and do not have so long a life, being confined to the 1st century only (Dorchester fig 12,24,26; fig 13, 33; fig 15, 53).

3 *Tall necked jar* (R23): 117 Burnished on exterior. This form is distinguished from types 4 and 5 by its relative height in relation to its diameter. It was common throughout the Roman period.

4 *Necked jar* (R24): 118 Burnished on exterior surface, straight everted rim. 119 Burnished on outer surface, triangular rim: Young 1977, fig 78, R24.3. 120 Burnished on outer surface, rounded rim; this type is shorter than the last and has a rim notably narrower than the maximum girth of the vessel; it is a form common in the Oxford region from the late Iron Age to the end of the Roman period.

5 *Necked bowl* (R38): 121 Burnished on outer surface, cordoned at base of neck. This form is relatively shallow in relation to its rim diameter, which is equal to, or close to its maximum girth. It was made throughout the Roman period and has antecedents in the Iron Age: Young 1977, fig 80, R38.4.

6 *Carinated jar* (R26) : 122 Fabric somewhat finer than nos 112-121 with fewer inclusions; exterior burnished; one hole for suspension; the opposing portion of the pot is missing but presumably there were originally two: Young 1977, fig 78, R26.1. Necked carinated jars were relatively common in the region in the 1st and 2nd centuries. This variant is unique in its lack of a properly formed rim.

7 *Bowl* (R40): 123 Bowl with triangular, expanded rim with slight groove on top, with curved wall; burnished on top of rim: Young 1977, fig 81, R40.2. The only parallel known comes from a group from a Roman well at Dorchester Abbey, which was associated with Flavian samian (information kindly supplied by Professor Frere). A date in the second half of the 1st century is indicated.

8 *Colander* (R80): 124 Fabric as 11; burnished on rim and neck; graffito on outer wall: Young 1977, fig 84, R80.1. 125 Fabric as 11 : Young 1977, fig 84, R80.2. Parallels for this form are known from 1st century contexts at Dorchester (information from Professor Frere), the Churchill Hospital, Oxford (unpublished excavations), and Hanborough (Sturdy & Young 1976, fig 4, 4). An example has also occurred in a 3rd century context at the Churchill Hospital (unpublished excavations).

Although only a small group of pottery was recovered it is clear that the principal products were bead-rim jars (type 1) and variants of the ubiquitous necked jar (types 3-5). Bowl forms occurred only as single examples. With regard to date, one of the main diagnostic features is the ware used here, which had been ousted by the end of the 1st century by the sandy, grey wares typical of the Roman period. All the types made were common in the 1st century and Type 7 had gone out of use before the 2nd century. A date in the second half of the 1st century is the most appropriate for this kiln.

Kiln 1

117 sherds of pottery were recovered. Of these 8 were of calcite-gritted ware, the remainder of a grey ware, including some wasters. This fabric was hard-fired, sandy and micaceous, often with white inclusions, sometimes with dark grey or black ones. The colour varied from light to dark grey. In the catalogue of the pottery the same conventions are used as for kiln 2.

1 *Tall necked jar* (R23): 126 Necked jar with heavy cordon on shoulder and rounded rim. 127 Similar to last, but with less pronounced shoulder. Four other rims not illustrated. Among the 92 body sherds of jars are three with burnished linear decoration. The form is common in the Oxford region throughout the Roman period.

2 *Deep bowl with curved wall* (R50): 128 Overfired with resultant flaking and distortion. Only one other example of this form is known, from the 1st century kilns at Hanborough (Sturdy & Young 1976, fig 4, 16: Young 1977, fig 82, R50.2).

3 *Straight-sided bowl with chamfered base* (R51): 129 Burnished band below rim. 130 Groove below rim. The type is known from other kiln sites in the Oxford region, dating to the late 2nd or early 3rd centuries.

4 *Straight-sided carinated bowl with out-turned rim* (R 57): 131 Badly wasted; linear burnished decoration; Young 1977, fig 82, R 57-6; this type was made throughout the Roman period but seems most common in the 1st and 2nd centuries.

5 *Flanged bowl* (R47): 132 The fabric of this pot is not granular in texture, suggesting that it may come from a different source. This is a variant of the typical late Roman flanged bowl. The earliest attested occurrence of this type

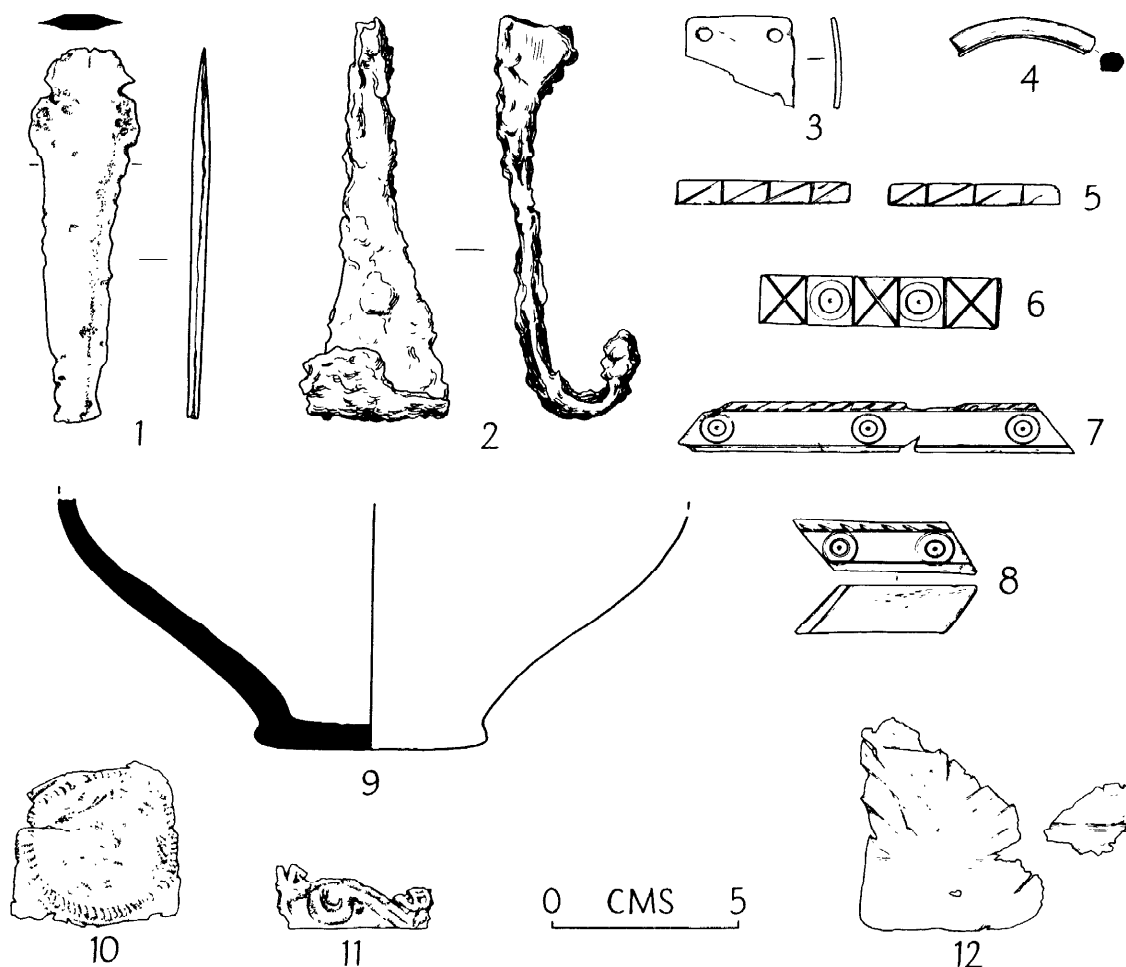


Fig 81 Miscellaneous finds. 1, fragmentary Bronze Age rapier; 2, fragmentary iron shears; 3, bone plate; 4, shale ring; 5-8, bone strips; 9, pottery bowl, 10-12, sheet bronze

in the Oxford region is at Shakenoak in a deposit dated to the second quarter of the 3rd century (Brodrick *et al* 1973, fig 27, 476).

Like kiln 2, the chief products of kiln 1 were jars although there is a greater variety of bowl forms. It is later than kiln 2, certain of the products (eg type 3) being made only in the late 2nd, or perhaps early 3rd centuries. The only objection to this date is type 5 which would normally be thought to be later still. As has been noted above, however, the fabric of this sherd is sufficiently different in texture for it to be regarded as possibly intrusive. A late 2nd century date for kiln 1 seems appropriate.

Discussion of the kiln pottery

Both these kilns lie well outside the main concentration of the Oxfordshire pottery industry and have little in common with it. Both produced utilitarian vessels such as jars, and did not attempt to make the fine wares which were a staple of the main industry from the late 1st century onwards. They compare far more closely with the smaller kilns at Hanborough (Sturdy & Young 1976) and Boar's Hill (Harris & Young 1975; Willett 1948), all of which

presumably existed to supply very small local markets with cooking pots and similar wares, whose low value did not justify large-scale trading by the main industrial sites.

Note: This pottery report was prepared in 1973 and revised in 1979.

Roman coins

by Dr C King, Heberden Coin Room, Ashmolean Museum

Big Enclosure ditch: 1950 cutting

Layer 1

Carausius Antoninianus. Obv IMP C CARAVSIVS PAVG. *Rev* MONETA AVG. Mint. SP/C Camulodunum. AD 292-4. RIC V, (2), 488, no 285 (c).

Layer 2 (top)

Copper coin of Gratian. *Obv* Head with wreath. *Rev* standing figure with standard in left hand, right hand on shield. GLORIA NOVI SAECVLI. Mint: (figure)/? CON. Arles. AD 367-375. Worn.

open, and the deciduous dentition in place, except for post-mortem loss of the lower canines. All the teeth are fully erupted but there is no trace of wear. The root canals of the molars are still open whereas those of the anterior teeth are closed. The crowns of the first permanent molars are present in their crypts, not quite fully formed.

The dental formula is as follows:

	e	d	c	b	a	a	b	c	d	e	
	e	d	c	b	a	a	b	∅	d	e	

Key:  unerupted tooth.

Instead of a normal lower left second incisor there are two abnormal teeth. One is a somewhat cone-shaped, narrow tooth against the first incisor and appearing to rise almost from the same socket; it looks as if it represents the inner half of the normal tooth. The second is larger, and lies obliquely in front of it as if arising from the canine socket. In shape it is somewhat like a canine, but: concave behind, and having an excrescence half the height of the crown, and narrow, on the medial side. Both abnormal teeth are asymmetrical, appearing defective on their adjoining sides as if they had originated by splitting of an abnormally large tooth 'germ'; but the position of their root tips is against this theory. Both upper second molars show a well defined carabellis cusp, a trait common in Europeans but not apparent on the adult female.

The age on the dentition is around 2 years (compared to recent children). The age on the bone measurements, compared to two children from pre-industrial London, is about six months younger. The bregmatic fontanelle is usually closed before two years, yet in this case it is open. (There are no clavicle defects so we can rule out the rare genetic syndrome which delays its closure.) The cranial bones are quite dense, lacking any trace of the 'fibrous' structure of infancy, usually still perceptible at 18 months. It is therefore probable that the child was small for her age. The only indication of malnutrition or ill-health is a small patch of cribra femoris, a condition also seen in the adult, which is suspected but not known to be due to calcium deficiency. There is also a slight cribra orbitalis, a condition of unknown cause common in early British children's skulls, in this case not present in the adult. There are at least seven lambdoid wormians present and parietal notch bones on both sides. The adult shows more wormian bones and only one parietal notch bone. Both skeletons also show overcrowding in the incisor region.

An eroded piece of animal bone found in with the child's skull showed four roughly parallel, short, cut marks on one surface. It was identified by Dr J Glutton-Brock as a pelvic fragment, probably of pig.

Relationship

Both skeletons show minor in-born anomalies but there is no clear evidence of their being related. The oddities they share are frequently found. Had the far rarer defects of the extra tooth and the cleft atlas been found in both individuals it would have been convincing evidence of relationship. They are notably unlike in the possession of the metopic suture by the adult only. The child's post-cranial bones show no abnormality other than the cribra femoris. The vertebral column is relatively complete and all vertebrae were in their unossified condition (in three parts each) except the two lowest lumbar which had ossified normally. Therefore the two halves of the atlas were still separate and one cannot make comparison with the atlas peculiarity shown by the adult,

Animal bones from the Big Enclosure ditch:
1951 cutting

Identifications were kindly made in 1957 by Dr J Wilfrid Jackson and his report is available in the Department of Antiquities, Ashmolean Museum. Ox, sheep and pig were identified throughout (layers 2-7); horse from layers 24, 6 & 7; dog from 3,4,6 & 7; red deer from 4; man (scapula) from 5; badger from 6 & 7. Ox (*bos longifrons*) was predominant (most numerous in layer 4). The sheep were suggestive of the Soay type, and the majority of oxen and sheep had been killed young.

Land mollusca from the Big Enclosure ditch:
1951 cutting

by Professor A J Cain, Department of Zoology, University of Liverpool

Layer 2 *Cepaea nemoralis* (L): Fragments of 2 shells, banding formulae 00300 heavy spread and 00300 ?light spread.

Layers 3 and 4 *Cepaea nemoralis* (L) adults: 00000 1; 00000 brown, heterozygous for non-brown 1; 00000 ?pale lip 1; 00300 1; 00300 heavy spread 1; 00300 light spread (lip incomplete, colour uncertain) 1; 12345 spread 1. *Cepaea nemoralis* (L) juveniles (identified on banding): 00300 light spread 1; 00300 spread (possibly 5-banded spread ?) 1. *Cepaea hortensis* (Müller) adult: 12345 1. *Cepaea* species uncertain: fragments 00000 1; 003?? 1; 00300 spread 1. *Oxychilus* species uncertain, fragmentary: 1. *Trichia* species uncertain, fragmentary: 3 ? *Discus rotundatus* (Müller): 1.

Layer 5 *Cepaea nemoralis* (1) adults, more or less whole: 00000 brown 1; 0000 1; 00300 4; 00300 spread 2; 00300 spread (very narrow band, may be S-banded spread) 2. *Cepaea nemoralis* (L) adults, broken: 00300 pale lip 1; 003?? 1. *Cepaea nemoralis* (L) juveniles (identified on size and banding): 00300 1; 00300 spread 1. *Cepaea nemoralis* (L) juvenile or broken: 12345 spread 1. *Cepaea hortensis* (Müller) adult: 12345 1. *Vallonia excentrica* Sterki adult: 1. *Oxychilus* sp juvenile: 1. *Cecilioides acicula* (Müller) adults and juveniles: 42. *Cochlodina laminata* (Montagu) adult: 1. *Trichia striolata* (C Pfeiffer) juveniles: 4.

Layers 6 and 7 *Cepaea nemoralis* (L) adult 00000: 1. *Cepaea nemoralis* (L) large juvenile or broken adult: 00300 1. *Cepaea nemoralis* (L) fragmentary adult: : 0 : : (poor bands, probably 5-banded spread) 1. *Cepaea* species uncertain (juvenile or fragmentary): 12345 3 (one may be spread-banded).

The species recorded above are almost all characteristic of fairly to very calcareous ground with rough herbage or grass. *Vallonia* species are intolerant of shade (Evans records that *V excentrica* is characteristic of grassland and common in arable land: 1972a, 161-2. Ed). *Cepaea* and *Trichia* seem to require some rough herbage (nettles, umbellifers, docks etc). Only *Cochlodina laminata* is associated with woodland, but it tolerates small copses and hedgerows easily. *Discus* and *Oxychilus* are very widespread forms. *Cecilioides acicula* is a burrower in calcareous soil and tells us nothing about the vegetation. The picture is of calcareous ground, dry and sunny in parts, with some areas of short grass, many of rough herbage (quite probably weeds of cultivation) and a few hedges or copses. The whole assemblage could be found anywhere outside woodland in the Oxford district at the present day.

All these samples of *Cepaea* are from a time when the weather was not unlike that at the present day. Brown shells seem to have been absent from *C nemoralis* at the

time of the hypsithermal and to have become locally common only after considerable deterioration of the climate; their presence is not surprising. What is unusual is the high proportion of unbanded and mid-banded shells (00000 and 00300), and the scarcity of five-banded ones (12345) which are common in the district at present. This and the strong predominance of *C nemoralis*, a more warmth-loving species, over *C hortensis* suggests that locally the soil was warmer and drier, and conditions were more like those on high sunny downland, than in many low-lying localities in the Oxford district at present. Just to the north-west, present day populations of *C nemoralis* begin to show higher proportions of mid-banded shells, and by the time one reaches the top of the Cotswold scarp they are very like these subfossil ones. The site may therefore have been a particularly favoured one for human habitation.

The names in the above list are those given by Walden (1976). *Trichia* frequently appears in the literature as *Hygromia*, and *Cochlodina* as *Marpessa*.

Charcoals from the Big Enclosure ditch: 1951 cutting

by A C Western, Department of Antiquities, Ashmolean Museum

Specific names are given where only one species of a genus is known to be in the English plant record or to have been found there.

Layer 2 *Quercus* sp; *Sorbus* sp; *Frangula alnus* Mill; *Corylus avellana* L; *Fagus sylvatica* L; *Acer* sp, probably *A campestre* L; possibly *Malus* sp, possibly *Rosaceae*.

Layer 3 *Quercus* sp; *Populus* sp; *Fraxinus* sp; *Frangula alnus* Mill; *Carpinus* sp; *Crataegus* sp; *Malus* sp; *Salix* sp; *Corylus avellana* L; *Sambucus nigra* L; *Rhamnus cathartica* L; *Acer* sp, probably *A campestre* L; *Viburnum* sp, probably *V lantana* L; *Pyrus* type.

Layer 4 *Quercus* sp; *Frangula alnus* Mill; possibly *Corylus* sp

Layer 6 *Quercus* sp; *Corylus avellana* L; *Ilex aquifolium* L; *Crataegus* sp; possibly *Viburnum lantana* L; *Cornus* sp, probably *sanguinea* L.

As usual it is impossible to draw conclusions from the absence of any genus, or from relative numbers of specimens within samples, although the presence of a genus (or species) in a large number of layers or samples must bear some relationship to frequency of occurrence or use.

The genus most widely represented through the layers of the ditch is *Quercus*, which is frequently the case on archaeological sites. Whilst not always forming the largest group it is so often well represented in comparison with other genera that it seems to indicate its great usefulness as a timber, rather than a heavy preponderance of oak in the environment. Furthermore, a few samples appeared to be of immature wood which is likely to be the small branches and brushwood trimmed off larger timbers intended for perhaps structural use, or the making of equipment or utensils. The other large group represented is that of the family *Rosaceae*, including probably fruit trees such as apple and pear. *Corylus* is another species which would have been valuable as a food crop, and also because it could be coppiced and produce relatively quickly supplies of posts or beams for huts.

In view of the position of the site, on a slight bluff immediately above the river and the edge of the flood plain

which one would expect to have been marshland until relatively recently, the absence of any *Alnus* and the small number of *Salix* is surprising. *Alnus* was however the only pollen recorded by Professor G W Dimbleby, Institute of Archaeology, London University in a sample from layer 7. *Populus* also is a species which would have enjoyed such a habitat along the edge of the plain and near the stream banks, and this was probably the source of *Frangula alnus* Mill too, wherever the soil was sufficiently acid. The larger forest trees, *Quercus*, *Fraxinus*, *Carpinus* and *Fagus*, must have come from the higher and drier ground to the north-east, with *Acer*, *Sambucus*, *Viburnum* and the Rosaceous types forming a scrubby belt at the edges of clearings in woodland.

The labour force involved in constructing the Big Enclosure at Cassington

by D W A Startin, Inspectorate of Ancient Monuments, Department of the Environment

Six entrances or gaps were recorded in the surviving part of the circuit (Fig 66). Study of the separate lengths of ditch so formed shows that they consist of even smaller lengths, changes of direction marking where these join. These observations, together with the variations in depth of the ditch are entirely consistent with the observations I have made elsewhere (1976 and p 155) concerning unfinished hillforts; and it seems likely enough that this is the correct explanation for the Big Enclosure.

The plan of the northern sector appears the most complete; this is borne out too by the sections dug by Harden (1942) where the ditch was most massive. Contrastingly in the southern sector, although parts were more or less complete, the causeways between them seem to have only just begun to be quarried; in one place the ditch is reported as being as little as 34 ft deep (p 121). Looking for separate lengths between the gaps we see that, progressing anti-clockwise, the southern segment could be divided into three and the next segment east into two, and that the next is unitary. These small lengths are all more or less of about 150 ft; and the next segment north would make two more such lengths. In fact, we might argue that the earthwork was begun as a series of 150 ft lengths with originally about 16 or 17 gaps of about 30 ft. The intention would have been to retain one or two of these gaps as permanent entrances; the rest would have been quarried away.

Rather than provide labour figures for the monument as it stands, it would be perhaps more appropriate to estimate the labour involved had it been finished. The Enclosure would have had an overall perimeter of about 3,000 ft with a ditch say 12 ft deep and at ground level about 30 ft wide; where details are available the basal width appears to have varied from 5 to 7 ft. A crude estimate of the total volume dug is therefore 666,000 cu ft. A single internal dump rampart might have been about 14 ft high with a basal width of 34 ft. With Iron Age tools, the excavation of this volume might have involved 37,000 manhours, exclusive of the transport of the spoil (p 154). We may assume digging teams of 2 men, picker and shoveller, excavating 36 cu ft/hour or a little more (p 153). Problems are involved, however, in estimating the number of baskets required to clear the spoil and build the rampart. When a length of ditch was begun, spoil initially had merely to be transported over horizontal ground to the line of the back of the rampart (assuming this to have been of dump construction). Later, the builders would have needed to pass the baskets up the face of the ditch, and towards

completion some material might have had to be transported out via the ditch ends. For monuments of this size it might have proved more economical to carry loads in excess of 30 lbs or more by alternative means (*cf* Hurst 1886, 305 for comments on the economical carrying distances of wheelbarrows and carts).

A method of estimating the *average* number of baskets per digging team throughout the work would be to consider the position when half of the spoil has been excavated. I shall assume that, at this stage, 2 baskets per team were required to carry and lift the spoil out of the ditch, and one was required to transport the baskets to a suitable collecting point at the base of the growing rampart. I shall also assume that it required a basket chain of 3 on the rampart, but that this chain could serve 3 separate digging teams; for our calculations this is equivalent to one per team. Thus, each team has the equivalent of 4 baskets. I have assumed the individual loads to be of 44 lbs (after Erasmus 1965), equivalent to 0.36 cu ft of gravel. Thus 100 loads per hour must be removed from a team excavating at 36 cu ft/hour.

We may conclude that the earthwork could have been built in the region of 111,000 manhours.

The total labour force is hard to estimate. At Ladle Hill (Piggott 1931b) we might assume that more than half the circuit was under construction concurrently; at Cassington, in view of the apparent completion of the northern sector, we could argue that perhaps at least the southern third was dug at the same time. I believe that a force of about 400 to 500 may reasonably be suggested and that such a force could have completed the work in about 23 to 28 days. Although this is a small operation apparently by Gaulish standards (Rivet 1971), if, as suggested above, Cassington was intended to be an earthwork thrown up to meet a specific threat, 500 does not seem too large a number to have set to work.

Plant impressions on local Neolithic and Bronze Age pottery and daub in the Department of Antiquities, Ashmolean Museum

P Murphy

The identifications made in examining pottery and daub from the Oxford region in the Department are set out in Table 40.

In addition Mr T L Harper, Department of Agriculture, Oxford identified an impression of *Triticum vulgare* on a biconical urn from pit E, Vicarage field, Stanton Harcourt, (above, p 110) and Jessen and Helbaek (1944) noted those set out in Table 41.

The impression on the rim of the Fengate style sherd (1928.416K) from Astrop is very indistinct. Of the impressions of emmer grains seen on Middle phase beakers, the one from Stanton Harcourt shows a partial ventral view of a grain, with an indistinct impression of part of the spikelet fork, and the one from Little Rollright shows a lateral view of a grain. This second grain appears rather rounded in cross-section; it is 6.3 mm long and

3.5 mm thick. The Late beaker (1930.761) from grave 1, Eynsham has two impressions of naked barley on its base. Both impressions are of the ventral sides of the grains, and show clearly the convexly curved sides and the round ventral surfaces. One specimen is rather small, 5.5 mm long and 2.4 mm broad, and has a twisted ventral furrow. It is probably a grain from a lateral spikelet. The other impression is of a larger, symmetrical grain, but is not sufficiently deep to make measurement possible. The Late beaker sherd from Cassington (1935.66b) bears a poorly preserved impression of a hulled barley grain. The rather angular cross-section and convex sides are typical of this species.

The sherd of an indeterminate relief-decorated urn from Garford bears a clear dorso-lateral impression of a grain of hulled barley, with clearly angular cross-section. The grain is 2.4 mm broad and 2.0 mm thick.

Table 40

Pottery type and site	Species	Type of impression	Publication	Departmental Accession no
Middle Neolithic: Causewayed enclosure, Abingdon	<i>Triticum dicoccum</i> <i>Triticum</i> sp <i>Hordeum vulgare</i> Cereal indet <i>Malus sylvestris</i> <i>Prunus spinosa</i>		above, p 47	
Late Neolithic: Peterborough ware Fengate style; Astrop, Northants	Cereal indet	Caryopsis	Leeds 1913	1928.416K
Middle Beaker; Stanton Harcourt XXI, 1	<i>Triticum dicoccum</i>	Caryopsis	Grimes 1943/4	1945.102
Middle Beaker; Little Rollright, Oxon	<i>Triticum dicoccum</i>	Caryopsis	Case 1956b	1951.379
Early Bronze Age Late Beaker; Cassington pit 1	<i>Hordeum</i> sp (hulled)	Caryopsis	Case <i>et al</i> 1964/5	1935.66b
Late Beaker; Eynsham cemetery, outlying grave (no 1)	<i>Hordeum vulgare</i> var <i>nudum</i>	Caryopses (2)	Leeds 1938a	1930.761
Daub assoc with collared urn; Stanton Harcourt, Vicarage field, pit D	Cereal indet cf <i>Avena</i> sp		above, p 110	
Collared urn; Frilford, Oxon	Cereal indet	Caryopsis	Ox 1941,88	1959.282
Early-Middle Bronze Age Biconical urn; Stanton Harcourt XXIII, 2	Cereal indet		above, p 86	Oxford City and County Museum, Woodstock: PRN 3928
Indet relief decorated urn; Garford, Oxon	<i>Hordeum</i> sp (hulled)	Caryopsis	Noted Case <i>et al</i> 1964/5, 75	1924.939b

Table 41

Early-Middle Bronze Age Food vessel.; Saxton Road barrow, Abingdon, Oxon	<i>Hordeum</i> sp (naked)	Caryopsis	1944,21 (Leeds, 1936)	1934.362
Collared urn; Long Wittenham, Berks	<i>Triticum monococcum</i>	Caryopsis	1944,19 (Case <i>et al</i> 1964/5, fig 28, no2)	1934.58
Biconical urn; Radley 14, Oxon	<i>Triticum monococcum</i> or <i>dicoccum</i>	spikelet	1994,21 (Leeds 1936, 12)	1931.238
Urn; unknown locality, Berks	<i>Hordeum</i> sp (naked)	Caryopsis	1944,19	1885.103 (cannot now be identified)

Calculations of the labour involved in constructing some of the monuments reported above are made in appropriate appendices: Abingdon causewayed camp (p 49), North Stoke ditches (p 74), Stanton Harcourt ring-ditches (p 87) and the Big Enclosure, Cassington (p 150). A summary is provided here of the principles involved, since they are not set out elsewhere in published form (Startin 1976).

A number of experiments have been made related to prehistoric earthmoving (Lane Fox 1876; Curwen 1926; Jewell 1963; Erasmus 1965; Evans & Limbrey 1974), and conclusions have been drawn. Furthermore, using experimental figures from Overton Down (Jewell 1963), Atkinson (1961) produced a formula to enable required effort to be estimated, and Renfrew (1973) used it to compare a number of monuments and thus to comment on the social structures of the societies involved. Further data, largely ignored however by archaeologists, exist in late 19th and early 20th century engineering texts for a period when the industry was labour-intensive (for example Hurst 1886 and Rea 1913).

Although there is no guarantee that all these data used can be strictly applied to prehistoric situations - for example, the 'idleness' of primitive peoples is well-known (Sahlins 1974) - the figures produced are likely to be reasonable approximations. Similarly, although Renfrew's interpretations have been criticised (for example by Kehoe 1974), any evidence which might relate to the basic structure of society is clearly of importance.

The most useful experimental study was at Overton Down (Jewell 1963) where the natural subsoil was chalk. Work-rates were produced for teams using both modern tools and assumed 'prehistoric' ones, such as antler picks, scapula shovels, and baskets. For modern tools a day-long working rate of 15 cwt/man/hour of chalk excavated was considered reasonable. This was achieved by a team of two men working together and removing their own spoil a short distance in buckets. The joint work-rate was therefore 30 cwt/hour, roughly equivalent to 1 cu yd/hour. This figure compares well with those given in engineering texts (as in the 'constants of labour' in Rea 1913 and Hurst 1886) even allowing for different figures assumed for the density of solid chalk: 27cwt/cu yd at Overton; 35cwt/cu yd by Rea. This may give us confidence in the experimental results for prehistoric tools. Rea (1913, 75-6) estimated that a team comprising picker, shoveller and barrower could excavate one cu yd/hour; while Hurst (1886, 350) considered that one man (picking and shovelling) could excavate 0.5 cu yd/hour. (An important rider is that one-third more time might be required to excavate the same volume from narrow trenches.) These can be considered reasonable work rates but are by no means the highest that could be achieved. Coleman (1968, 41) states that during the 19th century construction of railways in Britain, one man might shift up to 20 tons of earth in a day, more than twice the rate which I take to be acceptable.

Before considering prehistoric work-rates further, we must discuss the tools available. The assumption that antler picks were so used seems entirely reasonable, at least in earlier prehistory. Not only are many found in appropriate contexts, but their close similarity to later picks, for example those used by the Brandon flint miners (Lovett 1893, 2), must attest to their efficiency, which was

indeed noted at Overton (Jewell 1963, 52). Scapula 'shovels' are much less convincing; they were found to be less efficient than bare hands at Overton and they are not very frequent finds. At Windmill Hill (Smith 1965), for example, the tool inventory included 3 complete picks, 7 fragments without handles, 14 detached brow tines (16 out of these 24 pieces from primary levels), 3 rakes, but only one scapula 'shovel'. In contrast, numerous wooden shovels survive where conditions of preservation are appropriate, for example, in Neolithic contexts at Satrup Moor (Schwabedissen 1958) or at Burgäschisee-Süd (Müller-Beck 1965, Abb 116-19), and I believe that they were generally used. The digging tool-kit might have differed little from that of recent miners as portrayed, for instance, on Cornish bench ends (Langdon 1896, figs 7-9); and, interestingly, Thomas (1970) has identified spade marks at Bronze Age Gwithian as comparing closely with those made by a Cornish shovel. Scapula 'shovels' may have been useful for scraping soil (Jewell 1963, 52) where insufficient space existed for proper shovelling - hence their appearance in flint mines; the method of working suggested by Shaw (1970, 380) does not seem appropriate except in loose soil.

For 'prehistoric' tools, a day-long work rate of 5.0 cwt/man/hour was considered reasonable at Overton - a figure based on the work of teams of varying levels of efficiency. A more appropriate rate might be that achieved by a team of two men and a basket-carrier of 5.5 cwt/man/hour, giving a joint rate of 17.5 cwt/hour. It was noted at Overton that shoveller and basketer could just keep up with the picker, who was therefore limited to 17.5 cwt/hour: hence an improved shovel might not greatly alter the work-rate of a team. For convenience we can suggest that Neolithic tools involved about one-third loss of efficiency compared with modern tools, which is equivalent to saying that a team of a picker, shoveller, and an appropriate number of basketers could excavate 18 cu ft/hour. For the Iron Age we might safely adopt modern figures, bearing in mind however that the wheelbarrow was apparently not introduced until the medieval period (White 1975, 52). These figures apply to excavation of chalk. In order to apply them to gravel, we may use the 'constants of labour' listed by Hurst (1886, 350) for a variety of materials, and conclude that a prehistoric team could have excavated 24cu ft of gravel per hour and a 'modern' team 36 cu ft/hour.

Archaeologists who have applied Atkinson's empirical formula (1961) include Ashbee (1966), Wainwright and Longworth (1971) and Renfrew (1973). Three points must be made concerning the detailed workings from which the formula was derived, and which Professor Atkinson has kindly supplied me. First, Atkinson assumed that a team of five, including only one picker, could excavate 25 cu ft of chalk per hour; whereas I have suggested that 18 cu ft/hour would be a better figure. Secondly, assumptions reside in calculating the so-called 'scale factor'. Atkinson recognised that, while the rare of excavation might remain roughly constant, the basketers' output was related to the monument's size. He made two assumptions to allow for this: that energy expended by the basketers could be treated as a constant and that the 'scale factor' was relative to the earthwork's size. In fact, the harder the task, the more energy expended; furthermore, the effort required of the basketers depends on their

organisation (see below). Thirdly, and most important, a particular form of labour organisation is presupposed; alternative forms will be discussed below.

Rather than use an empirical formula, I prefer to divide the calculations into component parts. Rankine's tables (1876,252) enable us to estimate the basketers' effort. His table II suggests that a man may walk unloaded at 5 ft/sec (3.4mph), carrying a 90lb burden at 2.5 ft/sec, and carrying a 140lb burden but returning unloaded at 1.67 ft/sec. Erasmus's experiments (1965; reproduced in Coles 1973,954) gave speeds maintained for 5 hours of 3.75 and 4.2 ft/sec for carrying a 44 lb load and returning. Although these are incomplete and slightly divergent, they do allow us to estimate that a speed of 4 ft/sec would be reasonable for carrying a 30lb load horizontally and returning unloaded; at Overton such a load was considered comfortable and corresponds to 0.24cu ft of gravel. Similarly, Rankine's table I (1876,1.252) allows us to estimate the speed up slopes similarly loaded as 0.13 ft/sec for a constant up-and-down run.

However, on such slopes it can be demonstrated that a basket chain is more efficient than moving basketers if more than 39 loads per hour have to be transported; this is assuming a chain with 6 ft intervals and serving only one digging team. There are no experimental data available for the work of basket chains but it seems likely that one chain could suffice, in fact, for a number of digging teams; if it could move 600 loads per hour, then it could serve 6 teams, each producing 100 loads per hour. Conversely, it can be shown that on *horizontal* ground moving basketers would be twice as efficient as a chain passing 600 loads per hour. (Note in these calculations that a prehistoric team excavating gravel would produce 100 loads/hour, but one excavating chalk only 67 loads/hour; above, p 153). Thus, an efficient earthmoving organisation would include a mixture of basket chains on slopes and moving basketers on horizontal ground, the individual basket chains moving the spoil from a number of digging teams.

Turning to labour organisation, the prehistoric monuments themselves provide basic information. Examination of almost any monument, whether linear or curved, will reveal it to be composed of segments. For example, at West Kennet long barrow (Piggott 1962a, fig 2) each ditch consists of three roughly equal lengths. Similarly, at the North Stoke linear ditches (PI 2A; Fig 33, p 61) each ditch consists of five such lengths. Causewayed enclosures are of course the clearest examples. At earthworks of most kinds however kinks in alignments may reveal joining sections, of which obvious examples are at the blocked gateways of hillforts (O'Connor & Startin 1975).

The sections of the component ditches of prehistoric earthworks as well as study of their plans provide us with evidence of two basic forms of labour organisation: these may be termed 'pit-digging' and 'trench-digging'. In the former the labour force was split up into a number of teams which worked separate pits, from which a ditch if necessary could then be formed by joining them together. Familiar monuments such as Windmill Hill (Smith 1965) and Stonehenge (Hawley 1924-8) provide examples of this form of organisation. With 'trench-digging' a given length of ditch was excavated by a team or a single person beginning at one end and making a linear progression to the other. In the case of a single person this would result in an equally characteristic but narrow ditch section as seen at the inner ditch, Hanborough 4 (Case *et al* 1964/5, figs 10, 11) or at the North Stoke linear ditches (p 62). In the case of a team however the shape produced might be

flat-bottomed with steep sides, not necessarily different from a 'pit-dug' ditch whose sides had been smoothed.

For monuments constructed by the 'trench-digging' process the separate lengths clearly conform to the work of individual teams. For those constructed by the 'pit-digging' process the lengths can be assumed to conform to the area within which the total labour force was concentrated at any particular time, unless it was large enough to be split into different groups (see below, p 155). We may suggest that if it was necessary to build an earthwork in a short space of time with a fairly large labour force then it would be convenient to divide the force into teams along a length and dig it as a series of pits, as on a large scale at Cassington (p 150). If, however, a relatively small force was available it could be concentrated over a small section of earthwork or spread across a greater distance which could be dug as a series of lengths, as at North Stoke (p 74). With relatively small earthworks this latter course would be more practical than digging a series of pits, since each team would then have a face to work to - whereas with larger monuments it may not be practical to split the labour force because of the psychological effect of the size of task immediately in front of each team. Both these points will be readily appreciated by experienced directors of excavations. (We may note too in passing that these conceptions allow us to see so-called 'pit alignments' of various periods as simply a way of constructing banks - as a special case of 'pit-digging' rather than giving them any primary ritual significance. Simpson's (1966) work on the Welland gravels illustrated land divisions where pit alignments appeared to be interchangeable with 'trenches'.)

An important implication derives from recognising the division of ditches into lengths: the size of the labour force can then be estimated. At the North Stoke bank barrow, as an example of a trench-dug monument, ten such lengths imply not more than ten teams. Similarly, on a 'pit-dug' monument we can count the number of separate pits in a given section and estimate accordingly. The number of teams can still be estimated where evidence for the total number of pits was not noted or had been removed by smoothing the ditch sides. Rankine (1865,336) points out that an excavator needs a working face 5-6ft wide. Archaeological evidence for working widths comes from a number of monuments dug in parts, including Windmill Hill where the ditches were sunk as a series of pits 5-6ft in diameter, and Stonehenge where Hawley (1924-8) noted that the half-circumference which he excavated (some 550 ft) was composed of about 50 pits. A crude estimate of the number of teams in a ditch can be obtained by dividing the lengths of the ditch by 10 to 12, allowing a 10-12 ft length for a pit plus the gap between it and the next one; for wider ditches, by putting more pits more or less side by side, it would be possible to increase the number of teams working in a length. An example of this would be the positioning of the two unfinished pits in an 8 ft length adjacent to middle ditch II at Windmill Hill (Smith 1965, fig 3).

Confirmatory evidence for the 'pit-digging' form of labour organisation comes from studying the Beckhampton Road and South Street long barrows (Smith & Evans 1968, 139-42). The plans show that they were internally divided by lines of hurdling; both had hurdling along their longitudinal axes suggesting that the mounds were constructed from the centre outwards working from both ditches. At South Street the basic construction in each bay formed by the transverse hurdles consisted of turves stacked against the axis with subsoil material, becoming increasingly chalky towards the periphery, piled above.

Table 42 Estimated labour requirements for constructing Neolithic, Bronze Age and Iron Age monuments all, with one exception, in southern England (see text below for bracketed figures)

<i>Site or monument</i>	<i>Estimated labour (Man hours)</i>	<i>Estimated labour force</i>
Small Neolithic timber-framed house such as at Ballynagilly, Tyrone (ApSimon 1976)	550	—
Windmill Hill causewayed enclosure:		
Inner ring	1,560 (1,700)	27
Middle ring	13,100 (13,400)	30
Outer ring	48,100 (49,700)	80
Total	62,760 (64,800) (120,000)	—
Abingdon causewayed enclosure:		
Inner ring	1,410	?12
Outer ring	9,600	—
Fussell's Lodge long barrow:		
Earthwork	4000 (4,870)	32-40
Total		—
West Kennet long barrow	15,700	100
Stonehenge I	11,000	45
Durrington Walls:		
Earthworks	500,000 (885,500)	250-500
Southern timber circle	11,000	—
Avebury:		
Earthwork	500,000 (1,560,000)	250-500
Silbury Hill	4,000,000 (18,000,000)	—
North Stoke linear ditches		20
Stonehenge II	250,000	at least 70
Amesbury Barrow G 71:		
Phase II	600	—
Phase III	1,200	—
Bush Barrow, Normanton Down	about 10,500	—
Stonehenge IIIa	1,750,000 (30,000,000)	600
Stanton Harcourt		
Ring ditch XXIX, 3	140	—
Ring ditch XXIX, 1	660	—
Ladle Hill hillfort	76,700	—
(if finished)		
Cassington Big Enclosure	111,000	250-500
Danebury hillfort	180,000	250-500

The bays had widths in the region of 6-7 ft. It is difficult to see what *structural* purpose the hurdling might have served, although it could have anchored a hurdle revetment at Beckhampton Road; should part of the revetment have collapsed then the cellular construction of the mound would have allowed for easy repair (Guilbert 1975, 111). However, one would not expect hurdling to have had much structural life or the time taken in its construction to have been necessarily less than that required to produce a more permanent timber revetment (Startin 1978). An alternative hypothesis is that the bays correspond to dumping areas of individual teams, perhaps ensuring that each team did its fair share of work. Benson (1971) made a similar suggestion for the Ascott-under-Wychwood long barrow. The widths of 6-7 ft correspond quite closely to minimum working widths. Importantly at South Street we also have evidence of the sequence of construction; a large-scale plan in Avebury Museum illustrates certain transverse hurdles which have bulged as one section of the mound was built before the next begun. In plan, the mound lengths apparently correspond to ditch lengths confirming that these lengths can be used to estimate the size of the labour force.

Labour organisation was probably more complex at larger monuments such as henges and hillforts. Unfinished hillforts provide important information and the practice of hillfort building is likely to be relevant to the larger henge monuments on account of their size. At large sites, the labour force is likely to have been big enough for several ditch sections to have been worked simultaneously, as at Ladle Hill, Hants (Piggott 1931b) where virtually the whole circuit had been begun but no section completed. Here the intention plainly was to excavate a number of

sections and join them later. This would have given access to the interior during construction, made supervision easier and enabled revetment to keep pace with the body of the rampart. Furthermore, with steep-sided ditches and ramparts it would have been necessary to pass baskets upwards (*cf* White 1975, 73-5) or even to carry the spoil out *via* the ditch ends and up a gentler slope created along the lengths of the rampart sections. Note in passing that unfinished hillforts of dump or revetted construction may appear as different earthwork forms (Startin 1976, 104-9); compare respectively Elworthy Barrows (Feachem 1971, 25) with Ladle Hill.

In conclusion, the labour inputs needed for constructing the monuments in the Oxford region reported above may be placed in context by comparing them in Table 42 with those for Neolithic, Bronze and Iron Age monuments elsewhere in southern England (with one exception) using the calculations for earth-moving which are set out above. In the column for estimated labour I have included in brackets figures I have calculated for comparison using Atkinson's formula for Windmill Hill, and the figure derived by Renfrew (1973) for this monument by the same formula; Ashbee's (1966) figure for Fussell's Lodge; Wainwright and Longworth's (1971) figures for Durrington Walls and Avebury; and Atkinson's figure (in Renfrew 1973) for Silbury Hill. The figure for Stonehenge IIIa is very different from that published by Atkinson (1960), and the reasons for this will be included in a forthcoming publication on the transport of large stones, which will also include comment on the figures for Silbury Hill and on the social inferences which can be drawn from such figures as, for example, by Renfrew (1973). The figure for a small Neolithic timber-framed house derives from calculations set out elsewhere (Startin 1978).

The figures for estimated labour in constructing earthworks relate in the main to excavating the ditches and heaping the spoil and do not include revetment. In the case of the Abingdon causewayed enclosures for example, revetment with turf of one side of the inner bank would increase the labour requirement by 2,540 manhours, and of one side of the outer bank to about 20,000 manhours (p 50). Revetment of the entire North Stoke bank barrow would increase its labour requirement to about 11,700 manhours.

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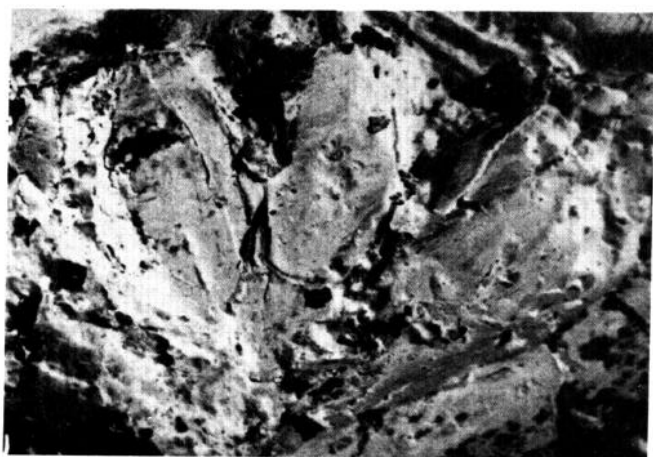
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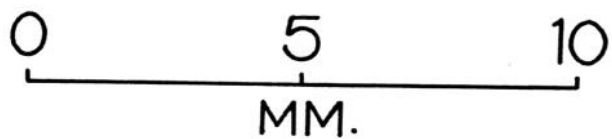
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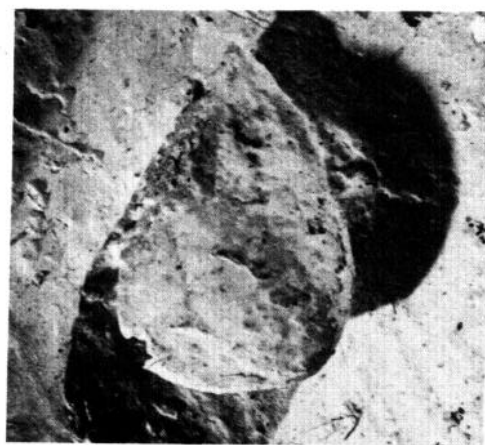
A



B



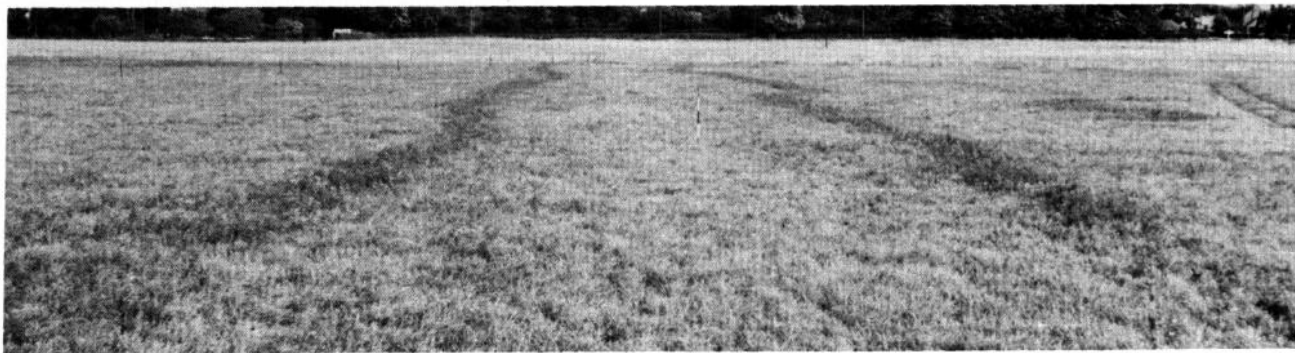
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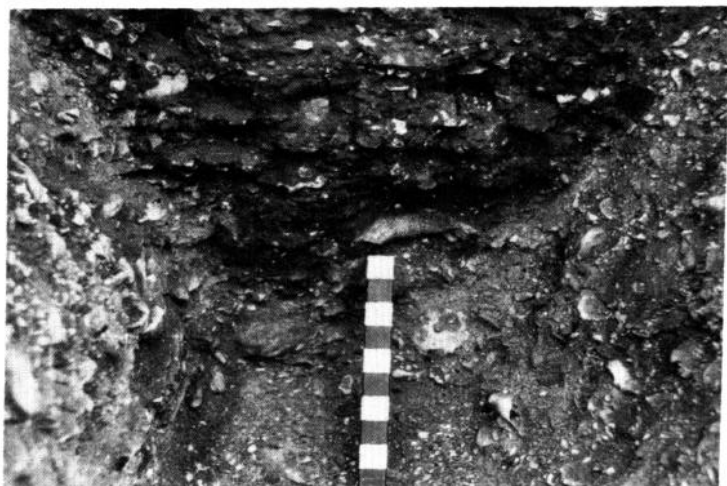
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Plate 1 Plant impressions on Abingdon Neolithic pottery:

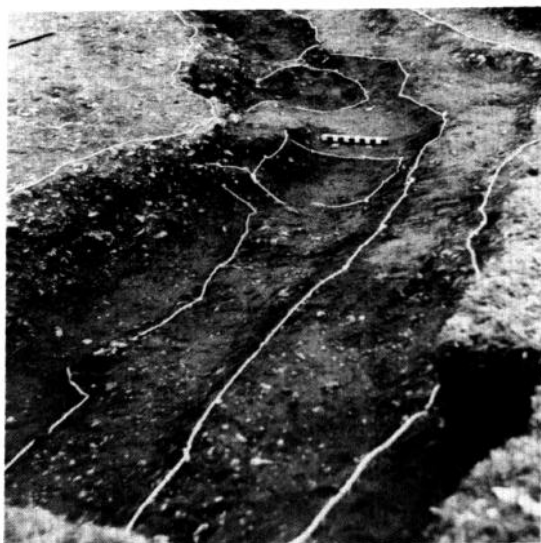
- A *Hordeum vulgare*, hulled barley; spikelets and internode; 1969.232
- B *Triticum dicoccum*, emmer; grain in oblique ventral view; 1969.287
- C *Prunus spinosa*, sloe; fruitstone; 1969.232
- D *Malus sylvestris*, apple seed; 1969.283. Photos: P Murphy



A



B



C

Plate 2 *North Stoke linear ditches*

A *Marks of linear ditches in lucerne looking north. Scale: 6 ft*

B *Fragmentary crown of red deer antler in situ on floor of west ditch. Scale: ins*

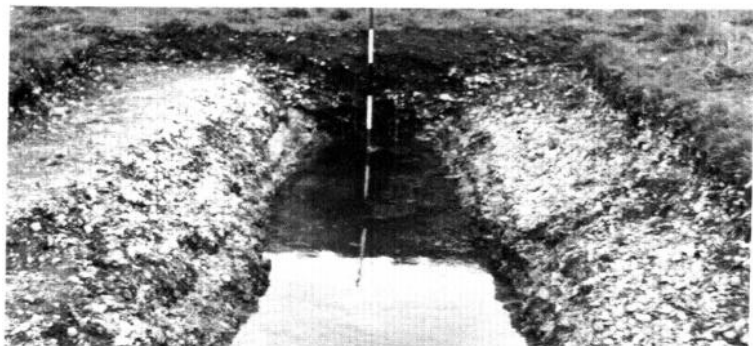
C *South-west sector of enclosure ditch, looking south-east from Section 10. Layers 1, 2a and 2b removed. Between two right-hand lines of white string: surface of layer 4 cut away by trench of second recut. Left of central line: surface of layer 3, variously cut away by pits and segments of first recut. Scale: one ft*



A



C



B



D

Plate 3 North Stoke linear ditches

A East linear ditch, looking north, as excavated, July 1950. The wands stand on the tops of infiltration channels. Scale: 6 ft

B East linear ditch, looking north, April 1951. Scale: 6 ft

C West linear ditch, looking south, April 1951, after pumping out, Scale: 6 ft

D East linear ditch, looking north, April 1952



A



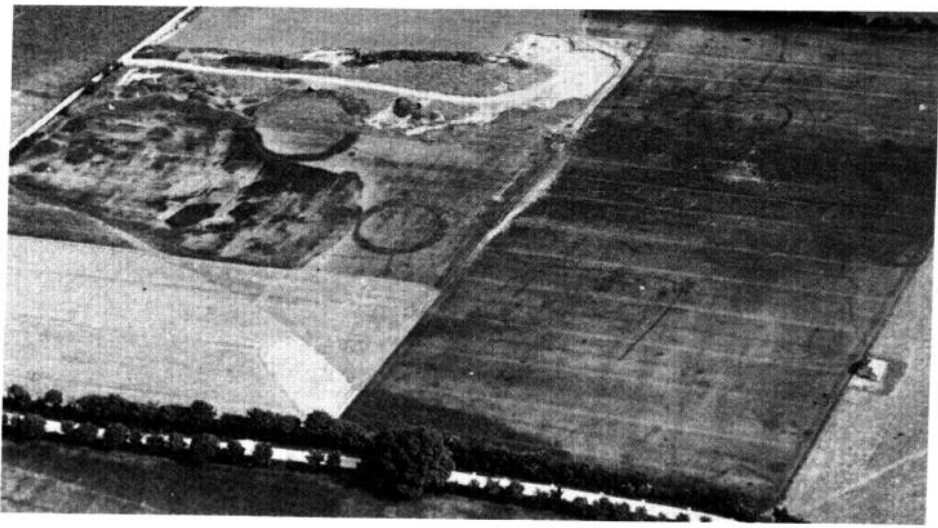
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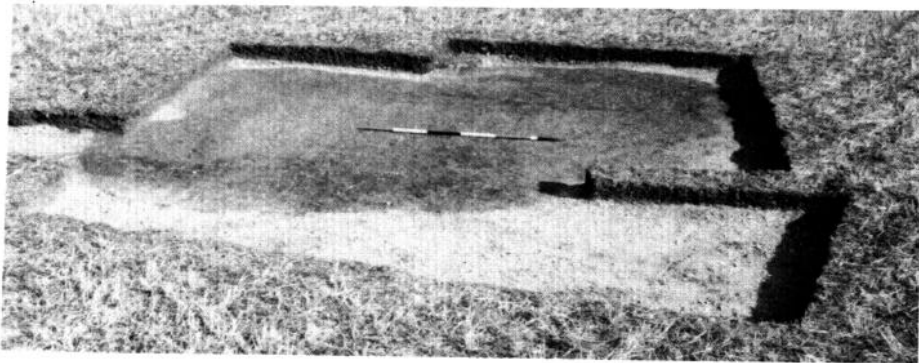
C

Plate 4 North Stoke ditches

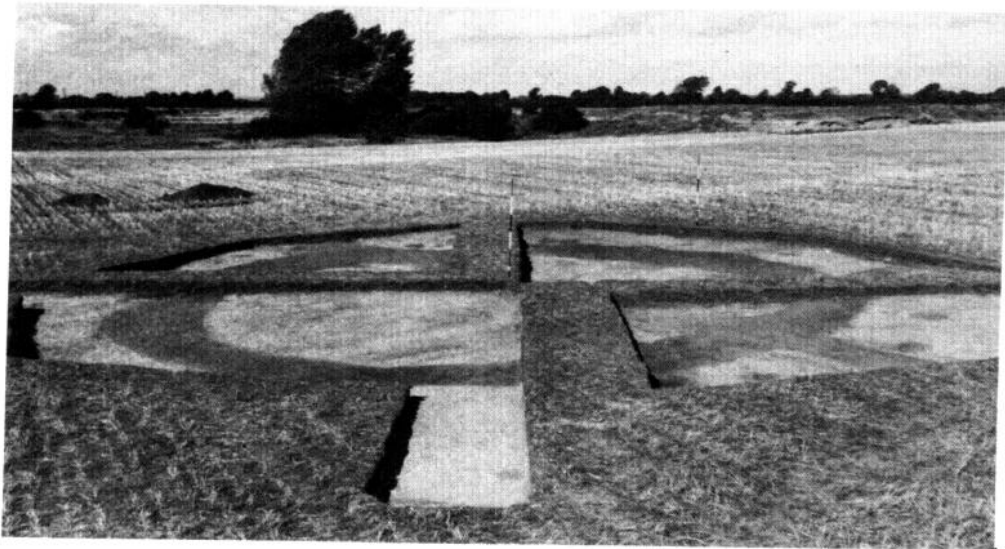
A, B East and west linear ditches, looking north, summer 1960. Scales: 6 ft
 C West sector of enclosure ditch, June 1976. Photo: A W R Whittle



A

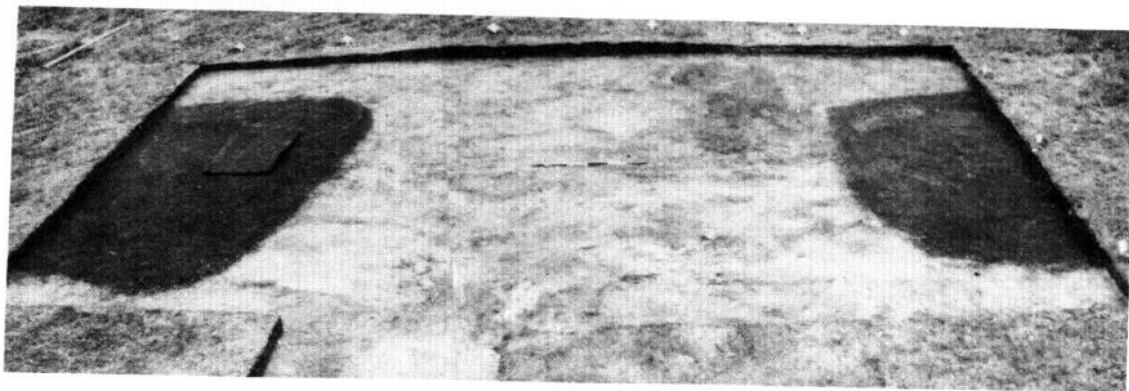


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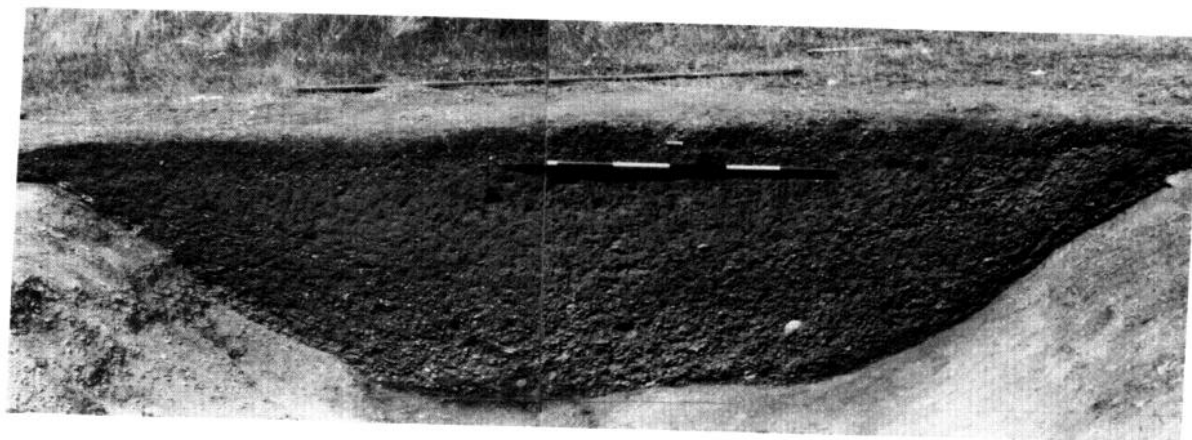


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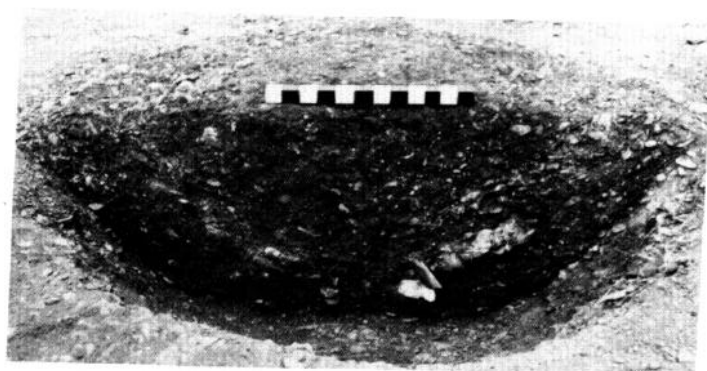
Plate 5 A Ring-ditch 15, Bmrow Hills field, Radley, from north-east, September 1934. Photo: G W G Allen
 B Ring-ditch 17, Standlake; pit complex A-D from north-west. Scale: 6 ft. Photo: H W Catling
 C Ring-ditch 20, Standlake, from south-east. Scales: 6 ft. Photo: H W Catling



A



B



C

Plate 6 A cassington 1951, tosoil removed from initial cutting: south-west entrance Big Enclosure ditch; Late Neolithic pit 1. Scale: 6 ft
 B Big Enclosure ditch, Section 3. Scale: 6 ft
 C Late Neolithic pit 2. Scale: one ft