HAMBLEDON HILL, DORSET, ENGLAND.

Excavation and survey of a Neolithic monument complex and its surrounding landscape

Volume 1

Roger Mercer and Frances Healy

ENGLISH HERITAGE

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See you our pastures wide and lone,
Where the red oxen browse?
O there was a City thronged and known,
Ere London boasted a house.

And see you, after rain, the trace
Of mound and ditch and wall?
O that was a legion's camping-place,
When Caesar sailed from Gaul.

And see you the marks that show and fade,
Like shadows on the Downs?
O they are the lines the Flint Men made,
To guard their wondrous towns.

Trackway and Camp and City lost,
Salt Marsh where now is corn;
Old Wars, old Peace, old Arts that cease,
And so was England born!

She is not any common Earth,
Water or wood or air,
But Merlin's Isle of Gramarye,
Where you and I will fare.

Rudyard Kipling, from 'Puck's Song', *Puck of Pook's Hill*, 1906

The chalk, which I have spoken of coldly when I discussed the preservation of the Old Road, should somewhere be warmly hymned and praised by every man who belongs to south England, for it is the meaning of that good land. The sand is deserted since men learnt to plough; the Weald, though so much of its forest has fallen, is still nothing but the Weald – clay, and here and there the accursed new towns spreading like any other slime. But the chalk is our landscape and our proper habitation. The chalk gave us our first refuge in war by permitting those vast encampments on the summits. The chalk filtered our drink for us and built up our strong bones; it was the height from the slopes of which our villages, standing in a clean air, could watch the sea or the plain; we carved it – when it was hard enough; it holds our first ornaments; our clear streams run over it; the shapes and curves it takes and the kind of rough grass it bears (an especial grass for sheep), are the cloak of our counties; its lonely breadths delight us when the white clouds and the flocks move over them together; where the waves break it into cliffs, they are the characteristic of our shores, and through its thin coat of whitish mould go the thirsty roots of our three trees – the beech, the holly and the yew. For the clay and the sand might be deserted or flooded and the South Country would still remain, but if the Chalk Hills were taken away we might as well be the Midlands.

Hilaire Belloc, *The Old Road*, 1911

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with contributions by
Michael J Allen, Phil Austin, Alistair Barclay, Alex Bayliss, Martin Bell, Robert Berstan, Lisa Brown, Catherine Chisham, Alison Cook, Mark Copley, Michael Cowell, Timothy Darvill, Richard Evershed, Jonathon Hather, Hillary Howard, the late Su Johnson, Glynis Jones, the late Robin Kenward, Moira Laidlaw, A J Legge, F G McCormac, J I McKinley, Stuart Needham, Alastair Oswald, Rog Palmer, C Bronk Ramsey, Michael Richards, Fiona Roe, Alan Saville, the late Isobel Smith, Rachael Seager Smith, the late Bob Smith, Elizabeth Somerville, Andrew Stott, and Nick Wells

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ARCHAEOLOGICAL REPORTS

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Summary

A programme of excavation and survey directed by Roger Mercer between 1974 and 1986 demonstrated that Hambledon was the site of an exceptionally large and diverse complex of earlier Neolithic earthworks, including two causewayed enclosures, two long barrows and several outworks, some of them defensive. The abundant cultural material preserved in its ditches and pits provides information about numerous aspects of contemporary society, among them conflict, feasting, the treatment of the human corpse, exchange, stock management and cereal cultivation. The distinct depositional signatures of various parts of the complex reflect their diverse use. The scale and manner of individual episodes of construction hint at the levels of organisation and co-ordination obtaining in contemporary society.

Use of the complex and the construction of its various elements were episodic and intermittent, spread over 300–400 years, and did not entail lasting settlement. As well as stone axeheads exchanged from remote sources, more abundant grinding equipment and pottery from adjacent regions may point to the areas from which people came to the hill. If so, it had important links with territories to the west, north-west and south, in other words with land off the Wessex Chalk, at the edge of which the complex lies. Within the smaller compass of the immediate area of the hill, including Cranborne Chase, fieldwalking survey suggests that the hill was the main focus of earlier Neolithic activity.

A complementary relationship with the Chase is indicated by a fairly abrupt diminution of activity on the hill in the late fourth millennium, when the massive Dorset cursus and several smaller monuments were built in the Chase. Renewed activity on the hill in the late third millennium and early second millennium was a prelude to occupation on and around the hill in the mid to late second millennium, which was followed by the construction of a hillfort on the northern spur from the early first millennium. Late Iron Age and Romano-British activity may reflect the proximity of Hod Hill. A small pagan Saxon cemetery may relate to settlement in the Iwerne valley which it overlooks.

Résumé

Un programme de fouilles et de prospection dirigé par Roger Mercer entre 1974 et 1986 a démontré qu'Hambledon était le site d'un complexe de vestiges de levées de terre du néolithique inférieur d'une taille et d'une diversité exceptionnelles; il comprenait deux enceintes à fossés interrompus, deux tumulus longs et plusieurs ouvrages avancés, dont certains avaient un caractère défensif. L'abondance de matériel culturel préservé dans ses fossés et ses fosses nous fournit des renseignements sur de nombreux aspects de la société contemporaine, parmi lesquels on trouve conflits, festins, traitement du cadavre humain, échanges, élevage d'animaux et culture de céréales. La spécificité des signatures liées à chacun des dépôts situés dans les différentes parties du complexe est le reflet de la diversité dans leur usage; la taille et la méthode qui caractérisent des épisodes individuels de construction donnent une idée des niveaux d'organisation et de coordination atteints dans la société contemporaine.

L'utilisation du complexe et la construction de ses divers éléments furent épisodiques et intermittentes, elles s'étendirent sur une période de 300 à 400 ans et n'entrainèrent pas d'occupation durable. A côté des têtes de hache en pierre provenant d'échanges avec des sources distantes, des meules et des molettes et de la poterie, plus abondants, proviennent de régions adjacentes et indiquent peut-être les zones d'où étaient originaires les populations qui sont venues à la colline. Si tel est le cas, elle avait d'importants liens avec les territoires à l'ouest, au nord-ouest et au sud, en d'autres termes avec les terres limitrophes de la craie du Wessex, zone en bordure de laquelle s'étend le complexe. Dans le rayon plus limité du voisinage immédiat de la colline, Cranborne Chase compris, une prospection pédestre donne à penser que la colline était le principal foyer d'activité du néolithique ancien.

Un lien complémentaire avec la Chase est apparent avec la réduction assez abrupte de l'activité sur la colline vers la fin du quatrième millénaire, au moment où on construisait dans la Chase l'énorme cursus du Dorset et plusieurs monuments plus petits. Un renouveau d'activité sur la colline vers la fin du troisième millénaire et au début du second millénaire fut un prélude à l'occupation de la colline et de ses environs du milieu à la fin du second millénaire, celle-ci fut suivie par la construction d'une forteresse sur l'éperon nord à partir du début du premier millénaire. Il se peut que les activités à la fin de l'âge de fer et à la période romano-britannique soient le reflet de la proximité de Hod Hill. Un petit cimetière païen saxon peut avoir un lien avec une occupation dans la vallée de l'Iwerne qu'il domine.

Traduction: Annie Pritchard

Zusammenfassung

Ein von Roger Mercer zwischen 1974 und 1986 geleitetes Augrabungs- und Prospektionsprogramm zeigte, dass sich auf dem Gebiet von Hambledon eine außergewöhnlich großeund vielseitige Anlage frühneolithischer Erdwerke befand, zu denen zwei von Erdbrücken unterbrochene Grabenanlagen, zwei langliche Grabhügel und etliche Außenbefestigungen, von denen einige der Verteidigung dienten, gehörten. Das reichhaltige, in den Gräben und Gruben enthaltene Kulturmaterial liefert Informationen zu zahlreichen Aspekten der Gesellschaft jener Zeit, unter anderem über Konflikte, Gelage, den Umgang mit Leichen, Tauschhandel, Viehhaltung und Getreideanbau. Die deutlichen Ablagerungssignaturen der verschiedenen Teile der Anlage geben Aufschluss über deren vielseitige Nutzung. Ausmaß und Art der einzelnen Bauepisoden lassen auf das Niveau von Organisation und Koordination innerhalb der Gesellschaft jener Zeit schließen.

Die Nutzung der Anlage und der Bau der diversen Elemente erfolgte episodisch und mit Unterbrechungen über einen Zeitraum von 300 bis 400 Jahren, führte aber nicht zur Errichtung einer festen Siedlung. Die aus weit entfernten Quellen eingetauschten Steinäxte, und die größere Anzahl an Mahl- und Schleifgeräten sowie Töpferwaren aus benachbarten Gebieten könnten darauf hinweisen, von woher die Menschen zum Hügel kamen. Demnach hätte es wichtige Beziehungen zu den Gebieten im Westen, Nordwesten und Süden gegeben, also zu den Gebieten außerhalb des Wessex Kreidehügellandes, an dessen Rand die Anlage liegt. Eine Feldbegehung innerhalb des kleineren Bereiches unmittelbar um den Hügel, einschließlich Cranborne Chase, lässt darauf schließen, dass der Hügel im Mittelpunkt frühneolithischer Aktivitäten stand.

Die relativ abrupte Verringerung der Aktivitäten auf dem Hügel im ausgehenden vierten Jahrtausend v. Chr. deutet auf eine ergänzende Beziehung zu Cranborne Chase hin, wo der enorme Dorset Cursus und mehrere kleinere Monumente errichtert wurden. Die Wiederaufnahme der Aktivitäten auf dem Hügel im ausgehenden dritten und frühen zweiten Jahrtausend v. Chr. waren ein Vorspiel zur Besiedlung des Gebiets auf und um den Hügel im mittleren und späten zweiten Jahrtausend, gefolgt vom Bau einer Hügelfeste auf dem nördlichen Ausläufer im frühen ersten Jahrtausend v. Chr. Es ist anzunehmen, dass die Aktivitäten in der Späteisenzeit und der britischen Römerzeit durch die Nähe von Hod Hill beeinflusst wurden. Ein kleiner heidnischer Sachsenfriedhof könnte mit Siedlungen im Iwerne-Tal in Verbindung stehen, die er überblickt.

Übersetzung: Ingrid Price-Gschlössl
für First Edition Translations Ltd, Cambridge

The archive

The main components of the archive are:

1 Finds, drawings, photographs, notebooks, context sheets and other records generated during the excavation and field survey.
2 An extensive collection of aerial photographs of the hill and the surrounding area, some commissioned for the project.
3 Annual syntheses of the excavation records, assembled after the end of each season.
4 Research archives compiled by contributors to the project, sometimes including draft reports.
5 Database tables generated during analysis.

These have been deposited with the Dorset County Museum, Dorchester.

Note on the use of radiocarbon determinations

All radiocarbon measurements have been calibrated using OxCal v3.3 (Bronk Ramsey 1998) and the dataset supplied by Stuiver *et al* (1998). All ranges cited in the text are those for 95% confidence unless otherwise specified and are quoted in the form recommended by Mook (1986), with the end points rounded outwards to ten years if the error term is greater than or equal to 25 radiocarbon years, or to five years if it is less. Ranges cited in normal type are the simple calibrated date ranges and have been calculated using the maximum intercept method of Stuiver and Reimer (1986). Ranges printed in *italics* are derived from the mathematical modelling of the chronology of the site described in Chapter 4.

1 Introduction

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1.1 Location, topography and geology

Hambledon Hill lies in north-east Dorset, centred at NGR ST 849 122, in the parishes of Child Okeford, Hanford and Shroton or Iwerne Courtney, which converge on it. It forms part of the north-west scarp of the Wessex chalk, set between the river Stour to the west and its tributary the Iwerne to the east, each of them cutting the hill off from the chalk continuum to either side. The confluence of the two streams is 4.5 km further south, at the south-east tip of Hod Hill, which is itself divided from Hambledon by a dry valley (Figs 1.1–2). Hambledon Hill has a central dome up to 350 m in diameter, rising to 192 m OD at its highest point, on which is sited a recent trig point, rather to the west of centre. From this central dome there extend three main spurs; the hillfort spur to the north, the Shroton spur to the east, and the Stepleton spur to the south with the Hanford spur jutting from its western side (Figs 1.3–4). The tip and sides of the hillfort spur are steeply abrupt. The other spur tips slope gently to the valley floors and provide the easiest access to the hill, although their sides are also steep (Pl I).

The Upper Chalk, including bands of tabular and nodular flint and of marl, is confined to the central dome of the hill and the immediately adjoining parts of the hillfort and Stepleton spurs, with the rather softer Middle Chalk, including bands of marl and of nodular chalk, lower down the spurs, and the Lower Chalk, incorporating thin beds of marl, silt, and limestone, around the flanks (Fig 1.2; Bristow *et al* 1995, 111–32). The valley floors either side of the hill are gravel-covered, with substantial deposits of alluvium in the Stour valley. To the east is the extensive chalk downland of Cranborne Chase, where the convexity and height of the facing slopes obviate any extended views, rendering the bulk of the Chase invisible. Chalk downland rises again to the south-west, where the central Dorset chalk plateau continues, ultimately to meet the sea in west Dorset and east Devon. To the west and north-west the chalk gives way to Greensand, Gault and the low-lying Vale of Blackmoor, based mainly on Kimmeridge and Oxford Clays, providing the hill with an open prospect towards Sherborne, Castle Cary, and the southern limits of the Somerset Levels (Pl II). Indeed, the Mendip Hills are visible on a clear day, as is the Isle of Wight to the south-east. Conversely, the hill is visible as a prominent landmark from much of the surrounding area to the west and north-west, at least in current conditions of relatively open vegetation (Pl III). While part of the Wessex chalk, Hambledon Hill is thus at the edge of that world, at its boundary with the distinctive landforms of the south-west (Figs 1.2, 1.5, 1.6). This ecotonal, even 'frontier', location may have had much to do with the development and significance of the site.

The Wessex chalk was widely, and to some extent still is, capped by Tertiary deposits, mainly clays and sands with some pebble and cobble beds (Bristow *et al* 1991, 20–32). There are also Quaternary deposits, principally Clay-with-Flints and Coombe Rock. The first seems to have been formed partly by the decomposition of the chalk itself and partly by the incorporation of no longer distinct Tertiary deposits, a process perhaps aided by cryoturbation (Bristow *et al* 1995, 140). The second occurs in valleys and on slopes as a concreted mass of weathered chalk and flint in a chalky or clayey ground mass, largely the product of solifluction (Chatwin 1960, 61–3, 76–9; Fisher 1991, 11). The former presence of a substantial depth of Devensian loess has been demonstrated for much of southern England, including Cranborne Chase (Fisher 1991, 12).

At Hambledon the excavation record supplies the detail of the hill's geology. Tertiary deposits may have been the source of occasional patches of sand, as well as of over 300 unmodified flint, quartzite and other pebbles recorded during the excavation (excluding beach pebbles, which were presumably brought to the site). These were often unstratified or found in natural features, and were concentrated in the central area, to the near-exclusion of the Stepleton spur (Ch 6.3.2). This distribution may reflect the extent of a now-vanished parent deposit. Clay-with-Flints was widespread in the excavated areas, sometimes filling depressions and fissures, as on site H, where the full depth of part of a segment of the main enclosure ditch was cut into it, or on the Stepleton spur, where a fissure extended below the bottom of the inner outwork. Many such deposits were removed during recent flint quarrying. Clay-with-Flints and Coombe Rock also occurred in shallow spreads over the surface of the chalk. These must once have been more extensive, since at the time of excavation their remnants tended to survive in slight hollows, scored, like the surrounding chalk, by ploughmarks. Where there had been no recent ploughing, clays with varying admixtures of chalk and flint and, more rarely, Coombe Rock-like deposits, tended to survive above

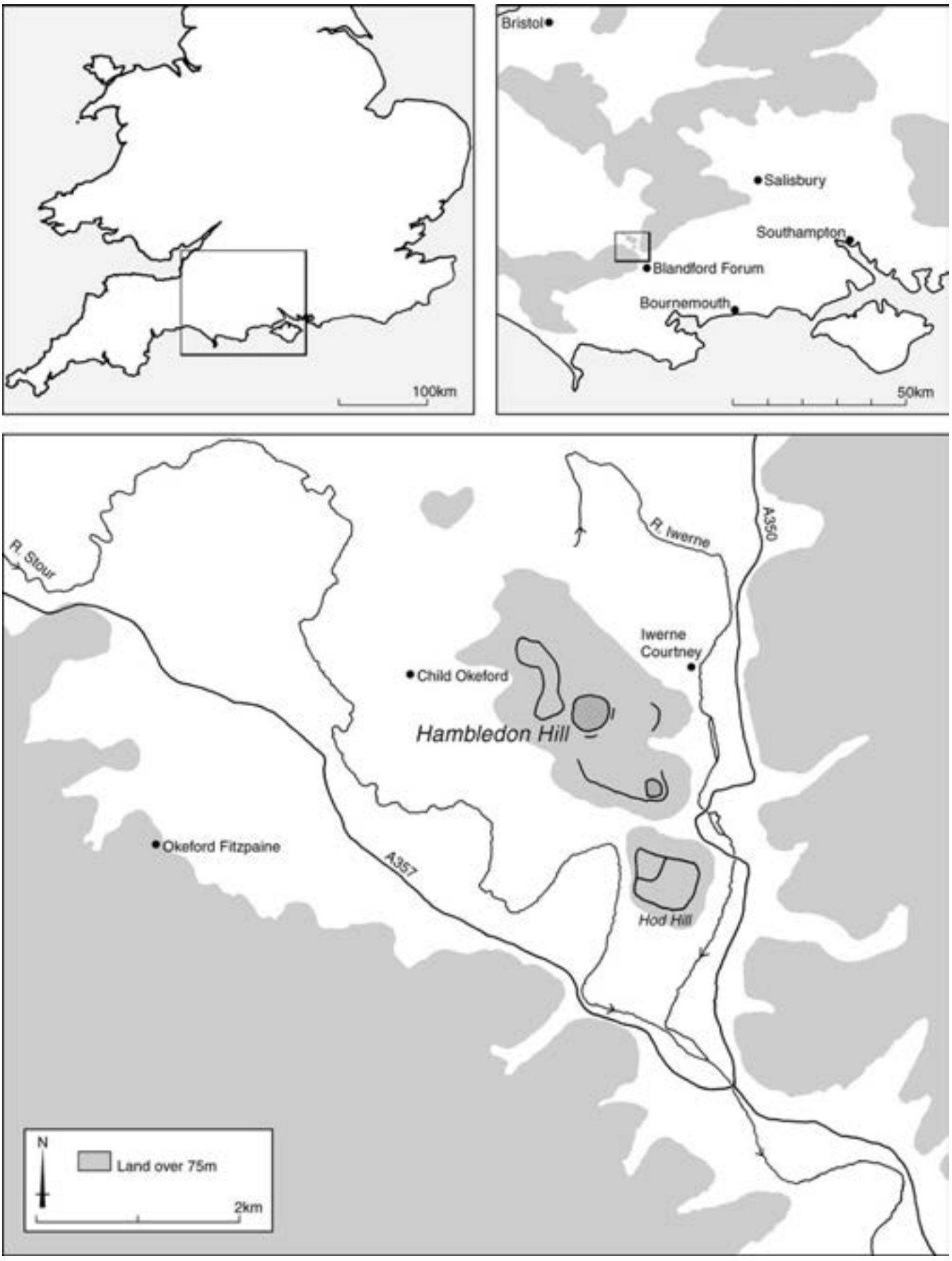

Fig 1.1 Location of Hambledon Hill. Land over 75 m shaded.

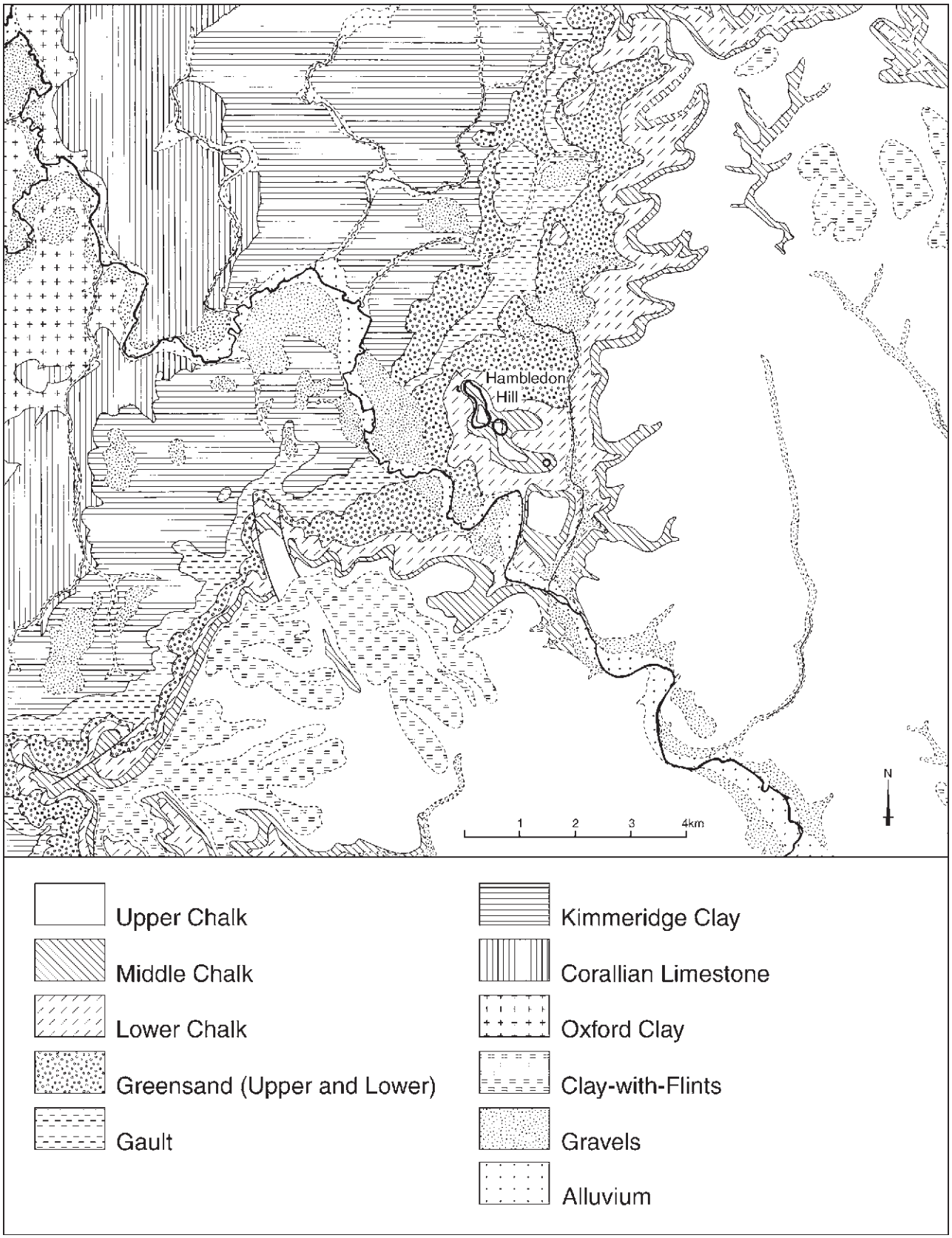

Fig 1.2 Geology of the surrounding area.

Fig 1.3 Hambledon Hill from the north. The hillfort spur extends towards the reader. Clockwise from it are the Shroton, Stepleton and Hanford spurs. CUCAP CFC 30 (25 January 1978). © University of Cambridge Collection of Air Photographs

the chalk in bank areas, as on sites P1 and P2 excavated in 1977 and in trenches A and G excavated by RCHME in 1958–60. It is now impossible to tell if loess once mantled Hambledon Hill. There may, however, be a suggestion that it did not in the contrast between the present Icknield series soils of the hilltop and the siltier Andover series soils that are prevalent on the chalk in Cranborne Chase, where loess *was* present (Colborne *et al* 1983; Findlay *et al* 1984, 75–81).

1.2 Soils

Today the Lower Chalk on the flanks of the hill carries argillaceous brownearths of the Blewbury series, and the hilltop is covered by thin humic rendzinas of the Icknield series (Colborne *et al* 1983; Findlay *et al* 1984, 99–102, 213–17). Soil scientists visiting the 1974–86 excavations concluded that erosion due to agriculture and the consequent artificial alteration of the soils had been such as to render analysis unprofitable. The Neolithic soil cover may be inferred from the likely parent materials, from the rare truncated soils surviving at the base of banks, from the Neolithic ditch fills, and by extrapolation from other sites on comparable geologies.

The parent materials, other than chalk, certain or likely to have been present on the site are, as outlined above, Tertiary clays and sands, Clay-with-Flints, and Coombe Rock-like deposits. The pre-bank soils surviving on the last two of these on sites P1 and P2 and in trench G were almost certainly truncated, underlying spread and destructured bank material made up almost entirely of ploughsoil. All three of these possible soils were lighter in colour and had larger, but less frequent, chalk and flint inclusions than the ploughsoils (probably Bronze Age in origin) which overlay them in the 'ghost' earthworks and extended over the ditch tops (3.5.4, 3.6).

The earthy tertiary fills of the upper parts of the Neolithic ditch sequences must have largely derived from the surrounding topsoil in the mid-fourth millennium BC. Like the pre-bank soils, these were lighter in colour than the overlying relict ploughsoils. They were

Fig 1.4 Hambledon Hill: earthworks and location of 1974–86 excavations.

sometimes described as 'orange-brown' or 'grey-brown', and occasionally as having some clay or sand content. The fills of most of the slot-like phase VI recuts in the tops of the central area ditches were recorded as 'clayey', 'sticky' or 'greasy' and contained dense flint and, to a lesser extent, chalk inclusions, larger than those of the underlying layers, the chalk sometimes discoloured. While the consistency might perhaps derive from decomposed organic components in the deposits, the combination of consistency and inclusions suggests that Clay-with-Flints-like deposits, or soils formed on them, were incorporated in these fills, even where they did not survive *in situ* above the chalk at the time of excavation.

This suggestion finds support in abundant and consistent evidence from elsewhere on the Wessex chalk for Neolithic soils which were substantially different from those of today and were formed on clay, and to some extent loess, parent materials, even on sites where these are no longer evident. On the basis of numerous investigations in the Dorchester area of Dorset, Staines (1997, 163–4) infers deep acidic brown earths on the ridges and plateaux, with a mosaic of still largely acidic soils over the rest of the landscape, a view consistent with Macphail's identification of a mid-Holocene decalcified brown earth on Maiden Castle (1991, 111). A second millennium BC barrow

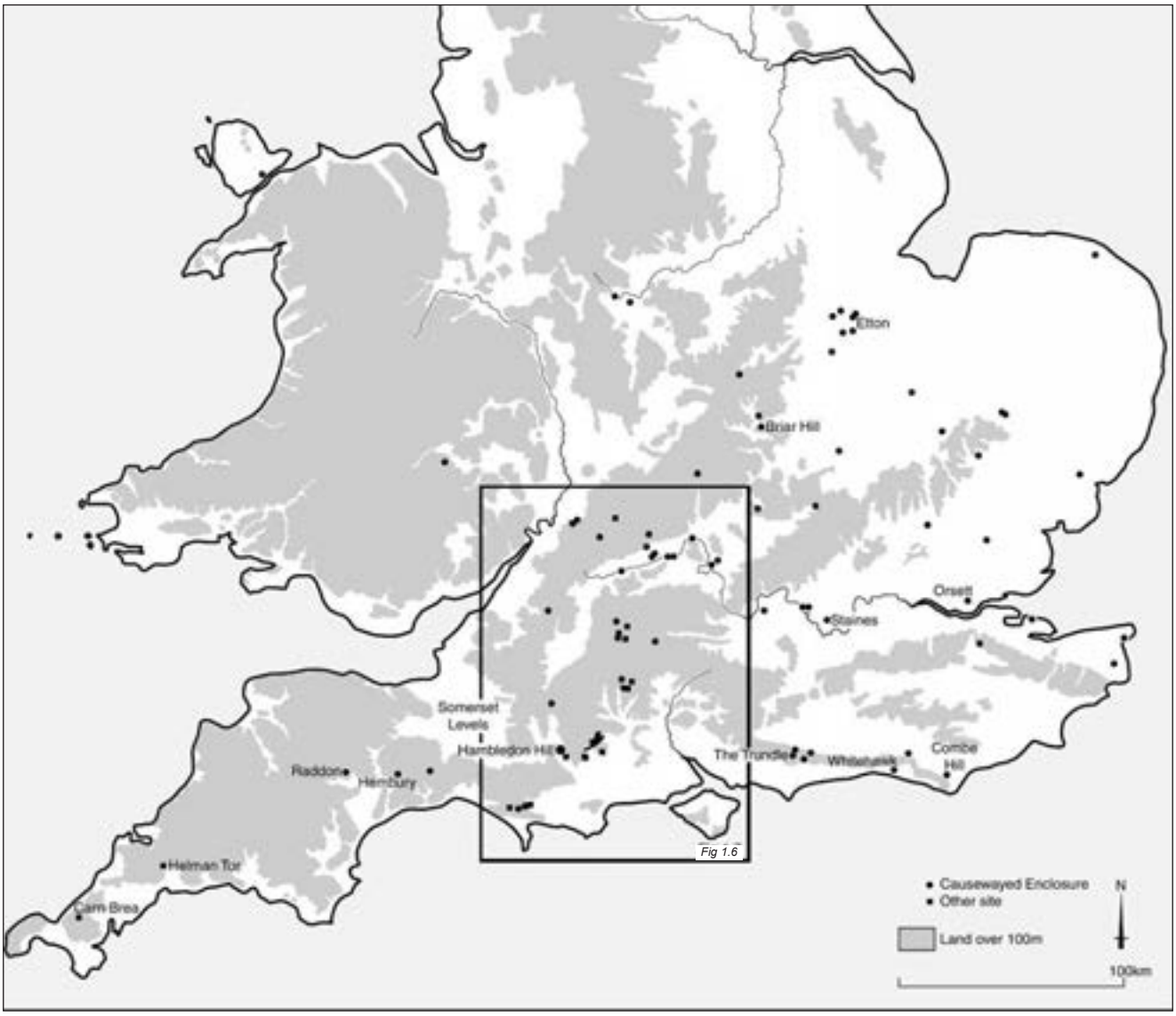

Fig 1.5 Southern England and Wales showing the distribution of causewayed enclosures and selected sites mentioned in the text. The area within the rectangle is shown at a larger scale in Figure 1.6.

on Cowleaze Pasture, Winterbourne Steepleton, on a gentle slope above a valley, was built on a brown earth, with its mound formed of non-calcareous loams and Tertiary-derived material, although the surrounding soils at the time of excavation were shallow rendzinas formed directly on the chalk (Staines 1991, 119). On Salisbury Plain, it is argued that the pre-Bronze Age soils of the Stonehenge area were typical brown earths, or even argillic brown earths, up to 1 m deep and with a considerable loess content (Allen 1995c, 34).

1.3 Loss of soils and sediments from the hilltop

Over only 32 years, the soil beneath the Overton Down experimental earthwork had lost up to 50% of its thickness, mainly by compression, decomposition of its organic components, and faunal (including earthworm) activity (Bell *et al* 1996, 76–118). In these circumstances the surviving scraps of soil excavated at Hambledon are likely to have been greatly reduced even before their upper surfaces were truncated. Beyond the protection of vestigial earthworks, recent and historic mechanical erosion by ploughing of soils, underlying deposits, and the surface of the chalk itself is graphically illustrated by ploughmarks in the surface of the chalk and by the milk-white run-off observable today at every point around the hill during periods of heavy rain. Equivalent earlier events are reflected in the old ploughsoils full of comminuted flint and chalk which fill the ditch tops, and in the first millennium BC and later colluvial deposits of the surrounding valleys (Ch 5.1.4). Alongside these phenomena, allowance must be made for chemical erosion of the chalk surface by percolating water (Atkinson 1957, 228–33).

It is certain that a substantial amount has been lost from the surface of the hill. To what extent can that amount be estimated? The greatest depth of pre-bank

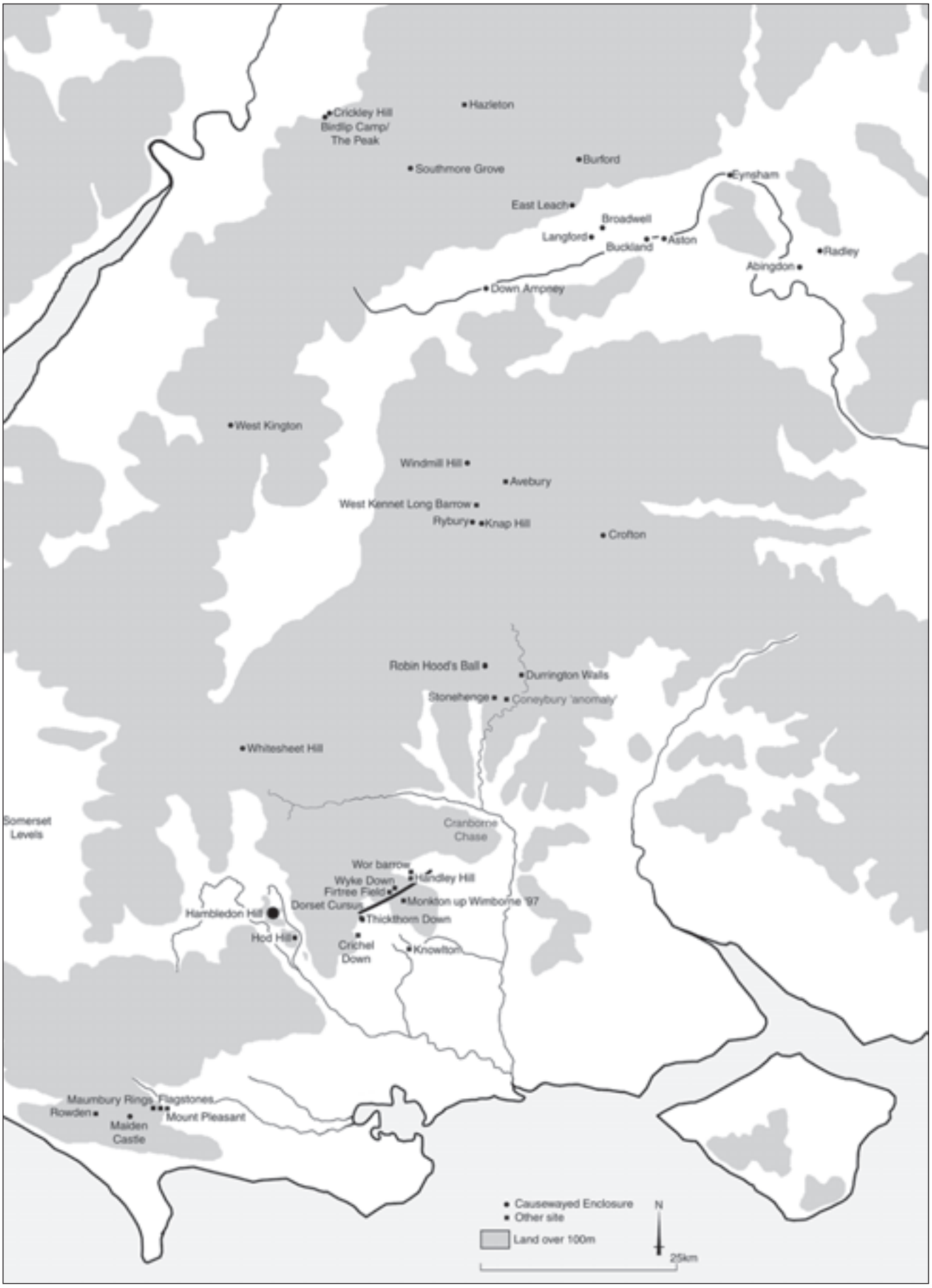

Fig 1.6 Detail of the area outlined in Figure 1.5, showing the distribution of causewayed enclosures and selected sites mentioned in the text.

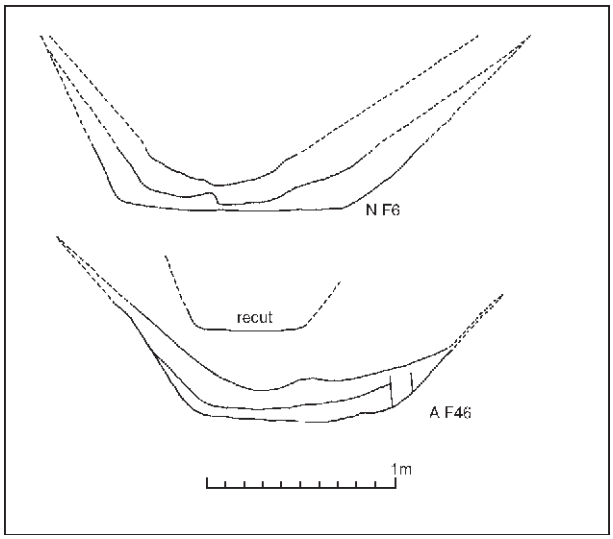

Fig 1.7 The truncated fills of excavated pits projected upwards as an indication of the amount of chalk and soil lost since they were originally dug. The uneven upper edge of A F46 reflects its location on a slope. The sections on which these projections are based are reproduced in Figures 3.58–9.

deposits above the chalk survived under the inner south cross-dyke on site P2, where there was more than 0.50 m of soil, Clay-with-Flints, and Coombe Rock (Fig 3.42). Height differences between chalk surfaces formerly under earthworks and beyond them were difficult to estimate, partly because of the slope of the ground, partly because in almost every case the chalk beneath the earthworks had suffered some attrition from ploughing, although not as much as the chalk beyond them. The greatest was a difference of 1 m between the surface of the chalk under the former mound of the south long barrow and the surface of the chalk to the west (Fig 3.47). This figure should be a minimum, since the upper part of the chalk surface beneath the barrow had been bulldozed off in the early 1960s. The profiles of pit fills, if projected upward from the truncated state in which they were recorded, may point to the height of the surface from which they were originally dug (Mercer 1980, 23). This procedure produces variable results. In the case of the examples in Figure 1.7, the height lost seems to have been in the region of 0.50 m near the summit of the central area (N F6) and 0.30 m further downslope (A F46). These various indicators together suggest that at least 0.50 m, and probably more, of chalk, later deposits, and soil have gone from the surface of the hill over the last five thousand years.

1.4 Archaeological context

The hill lies at the western edge of Cranborne Chase, where, in the late nineteenth and early twentieth centuries, General Pitt-Rivers developed and practiced those methods which have so shaped field archaeology in Britain (Bowden 1984), demonstrating the abundance and diversity of the area's Neolithic and Bronze Age monuments. More recent investigations have combined with his pioneering work to make the Chase an area where Mesolithic, Neolithic and Bronze Age settlement, land use and ceremonial practice are exceptionally well documented (Barrett *et al* 1991; Green 2000). By the time the Neolithic earthworks on Hambledon Hill were built, the Chase had long been occupied, with evidence for Palaeolithic and Mesolithic activity (Arnold *et al* 1988; Barrett *et al* 1991, 29–30; Green 2000, 17–28) extending up to the appearance of Neolithic artefacts at the turn of the fifth and fourth millennia cal BC (Allen 2000a; Allen and Green 1998). The earliest monuments in the Chase are its many long barrows (Barrett *et al* 1991, 36–43) which are likely to have been coeval with the Hambledon complex, on the evidence of the artefacts from Thickthorn Down (Drew and Piggott 1936) and the artefacts and radiocarbon dates from Wor Barrow (Barrett *et al* 1991, 43).

To the south of Hambledon Hill, opposite the Stepleton spur, Hod Hill is the site of an Iron Age hillfort attacked during Vespasian's campaign of the early 50s AD and then host to a Roman fort (Richmond 1968). Hod Hill also saw earlier activity. Three pebble maceheads may date from as early as the Mesolithic (Wymer 1977, 73); a Neolithic presence is evidenced by a ground flint axehead (Dorset County Museum 1907-2-1); there is a round barrow on the summit (RCHME 1970, 265); and a leaf-shaped side-looped middle Bronze Age spearhead and a late Bronze Age socketed gouge have both been found on the hill (Pearce 1983, 481, pl 56: 443, pl 110: 444). Two middle Bronze Age palstaves have come from the wider area, one from Ash Oaks Farm, Stourpaine, east of the Iwerne valley, and another from Hanford Park, at the foot of Hod Hill in the Stour valley to the west (Pearce 1983, 474, 556, pl 121: 891, pl 52: 409). Mesolithic and later Neolithic activity seems, however, to have been more intense off Hod Hill than on it, on the evidence of material of both periods in an extensive flint scatter at Stourpaine. Piggott used some of this material to illustrate the typology of his 'heavy' late Neolithic industries (1954, fig 44), and it is, in its totality, typical of the lithics which extend across the Clay-with-Flints in Cranborne Chase, dominated by later Neolithic material, with a low but consistent presence of heavy core tools (Gardiner 1991b).

1.5 Post-Neolithic history and landuse

The earthworks have a long history of degradation. The topmost surviving fills in the Neolithic ditches are almost universally old ploughsoils, apparently sometimes spilt from adjacent cultivation, but more usually accompanied by truncation of the underlying layers, which makes it clear that the ditch tops themselves were ploughed-over. This had begun by the second

millennium cal BC (Ch 3) and is probably associated with 'Celtic' field systems, not necessarily all of one period, recorded in aerial photographs (Ch 2, Ch 3.7). In the Romano-British period, the Stepleton spur was under the plough (Ch 3.5.7) and colluvium was accumulating in the valley below (Ch 5.3). A small pagan Saxon cemetery inserted into the inner Stepleton outwork bank lay close to one of the boundaries which now delimit the three parishes which meet on the hill. The creation of Cranborne Chase by King John (1204–1215) placed the hill at the western margin of a tract of up to 60,000–70,000 ha bounded, broadly speaking, by the rivers Nadder, Wiltshire Avon, Allen, and Stour. The area was managed primarily to provide fallow deer for hunting and governed by its own laws and customs, a state of affairs which endured until disenfranchisement in 1830 (Chafin 1818; Pitt Rivers 1887, xii–xiii). Ridge-and-furrow cultivation on the hillfort and Shroton spurs (Figs 3.73, 3.148) may be of medieval or post-medieval date.

The hill emerges briefly into historical prominence in the summer of 1645 when, after the great Royalist defeat at the Battle of Naseby in June, Dorset yeomen and labourers protested at the depredations of the Parliamentary forces in their locality. The presence of Parliamentary forces at the siege of Sherborne under Fairfax in August probably aggravated the situation but already on 25 May the *Desires and Resolutions of the Club Men of the Counties of Dorset and Wilts* had been read at Gorehedge Corner close by Badbury Rings 'by Mr Young, a lawyer; when there was present near 4000 armed with Clubs, Swords, Bils, Pitchforks and other severall weapons etc'. It commenced 'Wee the miserable Inhabitants of the said Counties being too deeply touched with the apprehension, and sense of our past, and present sufferings, occasioned only by these Civill and Unnaturall Warrs within this Kingdome. And finding by sad experience that by means thereof, the true worship of Almighty God and our Religion are almost forgotten and that our ancient Lawes and liberties, contrary to the great Charter of England and the Petition of Right, are altogether swallowed up in the Arbitrary power of the Sword ...'. Some of the Clubmen gathered at Shaftesbury whence they were ejected by Cromwell himself, in command of a Parliamentary detachment. On 4 August 1645 Lieutenant General Cromwell, marching south from Shaftesbury, encountered nearly 4000 Clubmen drawn up within the multivallate earthworks of Hambledon Hill. The situation was unmasked to him by a chance meeting with a man bearing a musket at the bottom of the hill who said he was bound to join the Club Army. The Clubmen then sent a Mr Lee as messenger to Cromwell, and after a party of horse under a junior officer had failed to open a parley with the clubmen, Mr Lee was sent back to his comrades with a demand that they submit to the power and protection of Parliament. The Clubmen refused to lay down their arms and indeed fired upon Lee's party as it was retiring. Cromwell, apparently anxious to avoid bloodshed and, indeed, the embarrassment of what promised to be a tricky engagement in which little credit could be gained, sent Lee again to warn the Clubmen of the inevitable consequences of their actions if they persisted in them. Whipped up to enthusiasm by a Mr Bravel, minister of Compton, the Clubmen defied this last offer of clemency.

Cromwell then ordered his own troop of horse to force a passage of the gate (almost certainly the south-east gate of the fort) but, unable to ride more than three abreast and opposed by musket-fire, this detachment was repulsed with some loss – a man or two killed, eight or nine wounded and with six or seven horses killed.

Upon this reverse Major Desborough with the remainder of Cromwell's own regiment 'went around about a ledge of the hill and made a hard shifte to climbe up and enter on their rear'. This achieved, the Clubmen broke ranks and were routed down the slopes of the hill. Some 400 were captured, 200 of them wounded. About twelve 'colours' were taken from the Clubmen, one of which, according to Sprigge, in his *Anglia Rediviva*, fol 79–80, bore the inscription:

> 'If you offer to plunder or take our cattel,
> Be assured we will bid you battel'

This incident, so redolent of the times, must represent the last occasion in Britain that a prehistoric hillfort was used as a defensive position and defended in the face of a determined hostile assault. Even so, Hambledon has remained in the wings of military history since the mid 1640s.

A century later General Wolfe was to train troops on the hill who a year later were to scale the Heights of Abraham, and military debris encountered at various stages during recent excavations points to use of the hill as a dry training area during the Second World War. Through most of the last few hundred years, however, the hill has been downland pasture, used by herders and by those travelling between the north–south roads that run to either side of it. Among those travellers was Thomas Hardy, who was lost in fog inside the hillfort while returning on foot from Shroton Fair to Sturminster Newton in September 1877, reflecting that 'A man might go round and round all night in such a place' (Millgate 1984, 119–20). Recent small-scale quarrying, for chalk on the hillfort and for flint in pockets of Clay-with-Flints in the main causewayed enclosure, has damaged both earthworks and subsurface features. In 1960, the north-eastern two-thirds of the area of the main causewayed enclosure were ploughed, and continued in regular cultivation thereafter. Some of the earthworks were bulldozed in the early 1960s. Currently (2004), the hillfort and the better preserved south-western part of the main causewayed enclosure comprise a Site of Special Scientific Interest, in the care of English Nature and under pasture, while the rest remains in cultivation.

1.6 Previous investigations on Hambledon Hill

The earliest antiquarian reference to the hillfort known to the writers is that written down in the 1620s by Thomas Gerard and published by the Reverend John Coker in 1732 (Coker 1732). He mentions 'two Hills of great height which have their Toppes fortified with treble Ditches and Rampiers called at this day Hameldon and Hod. They have been camps, I think noone can denie, but of whose makeing I believe as few can tell ...'. John Aubrey also mentions the site in passing but his reference seems to indicate a degree of isolation rendering the sites little known and of little importance. 'At the west end of Cranborne Chase, on Hambleton Hill is a Camp; and on Hod neare it is another camp. Old Captain Ryves, of Ranceston, told me that he knew Roman Coins digged or ploughed up on top of Hambleton Hill, which he gave away, and forgot what Emperor's inscription they had' (*Monumenta Britannica* pt 1, folio 25). Warne (in his *Ancient Dorset* 1872, 65) is quick to point out that he considers the two forts of Hod and Hambledon Hill as 'works of different ages' and that 'Of these two works Hamel Dun is by far the earlier of the two' – a comment all the more remarkable in its prescience for there being no attempt whatever to justify it.

Within the hillfort a transverse section was cut across the long barrow and a hole dug in the centre of one round barrow at an unknown date or dates and with unknown results. A fragmentary middle Bronze Age palstave (BM 1892 9-1-313) is registered as from a 'field near Hambledon Hill, Shroton, Dorset', and a side-looped leaf-shaped spearhead of the same period (DCM 1945/13/1) was found on the hill in Child Okeford parish (Pearce 1983, 476, pl 53: 415a–b). Limited excavations in the interior of the hillfort by Edward Cunnington in 1894 recovered Iron Age and Roman material. Among the ironwork in the Durden collection, amassed in the second half of the nineteenth century, are an Iron Age or early Roman knife, reaping hook, saw, and needle from Hambledon Hill, all from 'within the earthwork [ie the hillfort]' (Manning 1985, 19, 35, 55, 115, pl 9: B21, pl 14: D12, pl 23: F35, pl 55: Q45). The same collection includes indubitably Romano-British material from the hill, notably fourth-century coins (Manning 1985, 19). These and other finds of comparable date from the hillfort are summarised by RCHME (1970, 82). Some of the Neolithic earthworks figured on the Ordnance Survey's first edition 25-inch map in the late nineteenth century (Oswald *et al* 2001, fig 2.1). More detail was recorded when Heywood Sumner surveyed the main causewayed enclosure, the southern and eastern cross-dykes and the outwork on the east (Shroton) spur, together with the hillfort, in 1910 (Sumner 1913, 15, pl i). After the First World War, pioneer archaeological aerial photography recorded further elements of the complex (Crawford and Keiller 1928, 44–7), and it continued to be photographed in later decades. Crawford's and Keiller's photographs were accompanied by a perspicacious analysis of the earthworks of the hillfort, much of which holds to this day (Gardner 1928).

In 1951 three trenches were cut across the ditch of the main causewayed enclosure in the west and south of the circuit, by Sieveking and Erskine, at the instigation of Stuart Piggott (Farrar 1951). These showed that the ditches were causewayed, that their initial chalk rubble fills contained early/middle Neolithic artefacts and their secondary silts some later Neolithic and Beaker material, and that human remains were present. In 1958–60 Desmond Bonney of RCHME sectioned the main enclosure in the east, as well as sectioning the east and south cross-dykes and the east (Shroton) outwork (RCHME 1970, 131; Oswald *et al* 2001, fig 3.12). This confirmed the date and character of the enclosure and showed the cross-dykes and outwork to be closely comparable to it in date and contents. Two human skulls came from the ditch bottoms of the east cross-dykes, and a pit containing Beaker pottery was cut into the inner ditch fill of the same earthwork. A radiocarbon determination of 4740±90 BP (*3670–3400 cal BC*; NPL-76) was made on charcoal from the base of the inner south cross-dyke.

These excavations were conducted as a part of RCHME's work on its *Inventory* for central Dorset, in the course of which surveys were made of the main enclosure, the south long barrow between it and the south cross-dyke, the east, west and south cross-dykes, the east (Shroton) outwork, the Stepleton enclosure with the outwork immediately around it, the hillfort and the long barrow and one round barrow within it, and some of the 'Celtic' fields (1970, xxxix, 82–3, 104–5, 130–1, 342). The Stepleton enclosure remained undated. It was noted that the hillfort showed evidence of at least three main structural phases, the first confined to the northern tip of the spur, and that 'Celtic' fields appeared to pre-date at least some of the defences.

Surface collections of Neolithic material, including a nephrite axe of continental origin and a number of quern fragments (Evens *et al* 1972), were made from the central area after it came under the plough in the 1960s.

1.7 Project history

As a result of these endeavours, the earthworks known on the site in the early 1970s were:

a. The main causewayed enclosure, set slightly askew to the east, on the central dome of the hill
b. The 'cross-dykes', set across the necks of the Shroton and Stepleton spurs of the hill immediately outside the main enclosure
c. The south long barrow sited (and slighted in the 1960s) to the south of the main causewayed enclosure

d. The Shroton outwork, with an associated (and secondary) 'dew pond' feature, set at the break of slope of the Shroton spur
e. The Stepleton enclosure and the conjoined part of the inner Stepleton outwork, recognised by RCHME (1970), but chronologically unattributed and not recognised as of causewayed construction
f. The Iron Age/?Bronze Age hillfort complex on the northern spur of the hill
g The monumentally visible long barrow set within the hillfort complex
h. At least one round barrow within the same complex.

By 1973 ploughing had brought large amounts of chalk bedrock into the soil, and was clearly eroding not only vestigial earthworks but any shallow subsoil features remaining in the interior. There ensued in 1974 the first of nine seasons of large-scale rescue excavation and associated survey, directed by Roger Mercer and largely funded by English Heritage and its predecessors. The last of these, in 1982, incorporated key-hole excavations in the valley bottoms at the foot of the hill, designed to sample and date colluvial deposits. Subsequently there were small-scale investigations designed to answer outstanding questions, in Everley Water Meadow in 1983 and 1984 and within the

Fig 1.8 Hambledon Hill from slightly south of west, 9 February 1980. From bottom to top are the western outwork, the main causewayed enclosure and the Shroton outwork. The earthworks of the hillfort are bottom left, the south cross-dykes and reconstituted south long barrow are slightly to the right of centre, and the Stepleton spur extends to the top right. Photo J R Boyden

hillfort in 1986. These were funded from a variety of other sources. The total area excavated amounted to some 4.25 ha. There were several interim publications (eg Mercer 1980; 1985; 1988; 1990).

Specific questions asked at the start of the first season in 1974 included the extent to which the archaeology of the main causewayed enclosure survived; whether and how much its interior was occupied or otherwise used in the Neolithic; whether the narrow ditch sections already excavated were representative; how much more information could be gained by excavating lengths of ditch in plan; and the abundance and preservation of charred plant remains. The need to investigate and record the site before it was further destroyed by the plough also provided the opportunity to explore wider-ranging questions, such as how the excavation of an upland chalk enclosure by modern methods would compare with the work starting at exactly the same time at Briar Hill, on the Northampton Sands of the Nene valley (Bamford 1985), or how hilltop occupation in Wessex related to the kind of fortified Neolithic settlement recently excavated at Carn Brea in Cornwall (Mercer 1981a).

Further objectives emerged as the project progressed and the strengths and weaknesses of the data became apparent. Earthwork, air photographic and fieldwalking survey, principally by Rog Palmer, formed a part of the project from early on, and feedback between survey and excavation played a particularly important part in defining new questions, excavation often being designed to investigate features identified in the field or on air photographs (Ch 2). Figure 1.8 is one of numerous aerial photographs taken in the course of the project. Sediments in the surrounding valley bottoms were investigated to elucidate landuse history.

By the end of the 1982 season, it was clear that the Stepleton enclosure was, like the main enclosure, of Neolithic date, that much of the hill was surrounded by linear outworks of the same period, sometimes double or even triple in parallel layout – one of them having been destroyed by fire, and that up to six round barrows may also have stood on the hill.

Post-excavation analysis, funded by English Heritage and its predecessors, went forward in parallel with fieldwork and continued until 1987. The principal specialists, the late Isobel Smith, A J Legge, Alan Saville, and the late Robin Kenward, received and recorded the finds from each season directly after excavation. There were sufficient resources to employ a series of research assistants who concentrated on stratigraphic analysis and on the creation of an ordered, cross-referenced archive of the excavation record. Find identifications, however, were not yet integrated into the other information. Full-time work on the archive resumed in 1995, again funded by English Heritage, with the explicit aim of bringing the project to publication. The objectives of the publication project were based on those of the field project, modified in the light of its results and of subsequent developments in the discipline, since the intervening years had seen significant changes in thinking on such topics as the chronology of Neolithic development within the fourth millennium cal BC, the scale and organisation of contemporary society, degrees of sedentarism and mobility, the balance of resources in the subsistence base, contemporary attitudes to landscape and to already old monuments, and the manipulation of both material culture and the human body and its disarticulated parts in funerary and para-funerary contexts (cf Bradley 1993; Thomas 1991).

1. What were the complete form and extent of the complex? How many hitherto undated or undiscovered elements formed part of it? Was there a third Neolithic enclosure on the northern, hillfort, spur?
2. What was the chronology of its construction and use?
3. How did its components articulate in function and layout? Could the cross-dykes have been defensive, as their location suggested? How much diversity of use was there between the various components?
4. How was the complex built and what were the implications for contemporary resources, demography and social organisation?
5. What were the genesis and nature of the numerous deposits of largely disarticulated human bone? What processes had brought them to their final state? How did these remains relate to the far more restricted burial environments of the two long barrows? How far could the intermingling of funerary and other ceremony with the debris of everyday life be interpreted?
6. How could the collection of artefacts and food remains from the site be best interpreted to create a picture of the socio-economic base of the period?
7. What was the local context of the complex, in terms of contemporary settlement and of human impact on the natural environment? What light could valley-bottom deposits at the foot of the hill shed on these questions?
8. What were the subsequent human uses of the complex? Was Everley Water Meadow, in the Iwerne valley below the hill, a Bronze Age metalworking site?

In 1996 RCHME conducted a further survey of the hill (RCHME 1996), with the dual purpose of providing English Heritage with a record of the current state of the hillfort for management purposes and of providing material for RCHME's investigation of causewayed enclosures (Oswald *et al* 2001). The results of this survey are incorporated in Chapter 2 and elsewhere in the present text.

This publication combines the work of those who have been with the project from its inception with the application of techniques which were not available in the 1970s and early 1980s, introduced by a younger generation of researchers who joined the project from

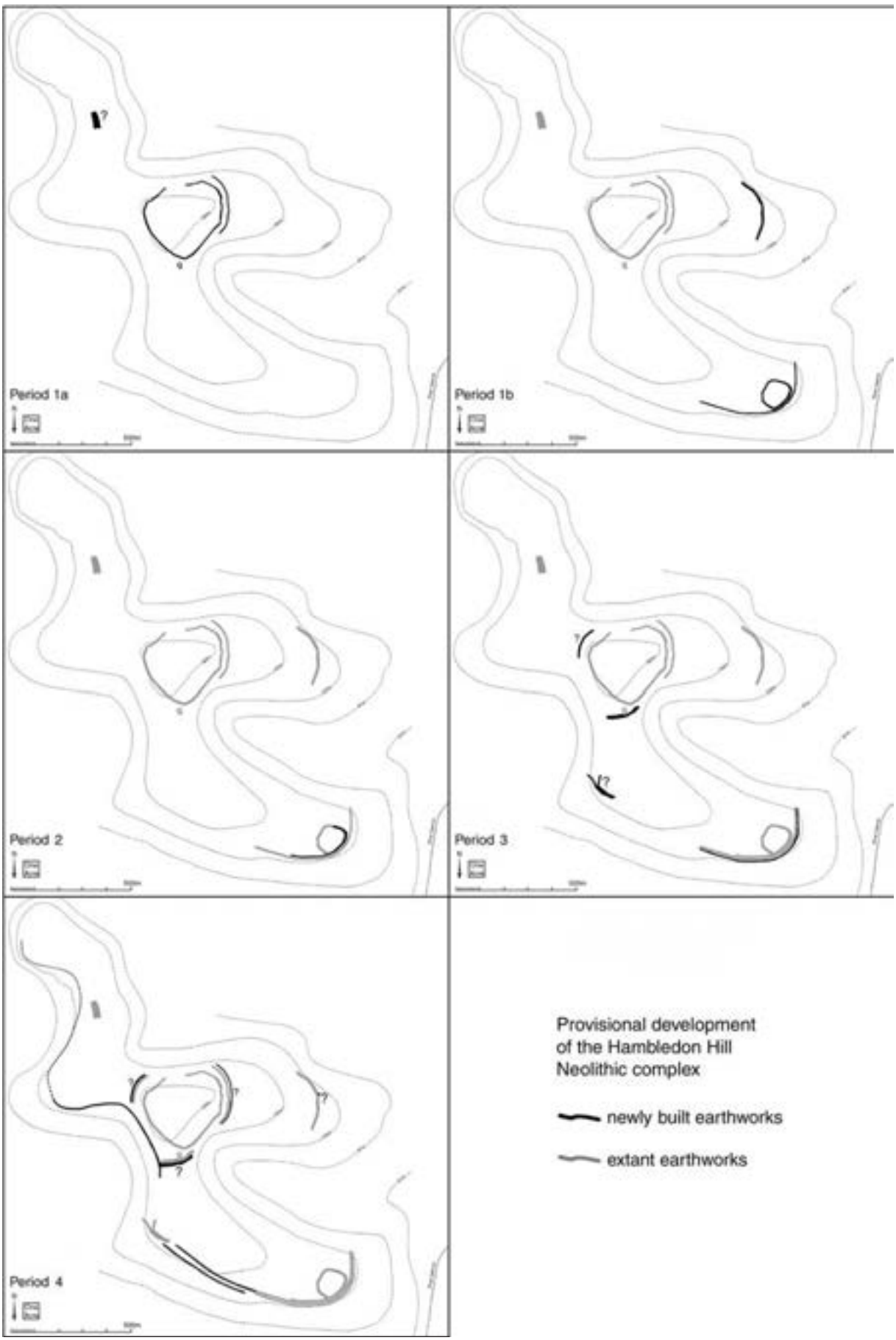

Fig 1.9 Development of the Neolithic complex.

1995 onwards, providing insights which expand and enrich the picture of the construction and use of the complex. The volume's format is traditional. Its approaches and conclusions are not always so and it is hoped that they will fuel reconsideration of the archaeology of the period.

1.8 Chronological summary

The evidence for the dating of the complex and its interpretation are set out in detail in Chapter 4. Its first element is a Mesolithic presence represented by Boreal radiocarbon dates on pine charcoal. The fourth millennium early Neolithic monument complex, the proposed development of which is summarised in Figure 1.9, is the main subject of this volume. There was a low level of late Neolithic activity, the most conspicuous element of which was a butchery deposit dated to the earlier third millennium. The later third millennium and the second millennium saw rather more activity, associated with the deposit of Beaker and early Bronze Age pottery in the ditch tops and the excavation of pits interpreted as mines or quarries. There was occupation on and around the hill in the second millennium, and excavation within the hillfort set on the northern spur has suggested an early Iron Age or even late Bronze Age origin and perhaps *floruit* for activity there. Late Iron Age activity and its Roman sequel are probably best understood from the perspective of Richmond's (1968) work on Hod Hill, but a pagan Saxon presence, as well as later material and more recent activity, has also formed an incidental but fascinating by-line to investigations at all stages of the project and appear in their due place within this report.

2 The field survey

Rog Palmer and Alastair Oswald

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2.1 Summary

The field survey by Rog Palmer (RP) developed from, and was integral to, the excavation programme that investigated the Neolithic use of Hambledon Hill. In so doing it built upon the earthwork survey made in 1959 by Desmond Bonney for the Royal Commission on the Historical Monuments of England (RCHME 1970). Ten years after the final excavations on the hill, RCHME undertook a second survey of the earthworks as part of its *Industry and Enclosure in the Neolithic Period* project and in response to a request from English Heritage for a more accurate record on which to base future management of the hillfort (RCHME 1996). That survey, co-ordinated by Alastair Oswald, not only confirmed many of the features previously suggested, but also extended knowledge of possible Neolithic earthworks, especially those on the hillfort spur. Joint authorship was the logical solution to full publication of the currently known Neolithic features on Hambledon Hill. The 1974–86 survey by RP was written up in the order of discovery: an order which is retained in the following text with additions, where relevant, from RCHME's 1996 work. Throughout this chapter 'field investigation' refers to survey as distinct from excavation.

The main causewayed enclosure occupies the domed central summit of Hambledon Hill (Figs 1.4, 2.1). It comprises a single line of interrupted bank and ditch that curves around the highest ground to enclose an area of 8.3 ha (20.5 acres). The narrow necks of land immediately to its south and east are spanned by two causewayed cross-dykes, which echo the course of the main enclosure earthwork. The 1996 survey identified a possible remnant of a third cross-dyke extending across the northern neck of land. Three outer earthworks – the Shroton spur outwork, the Stepleton–Hanford outwork and the 'relict' spur outwork (so-called because it is mostly overlain by Iron Age features) – extend across the three least steep approaches to the central part of the hill. On the south-eastern spur (the Stepleton spur), stood a second, much smaller, oval causewayed enclosure known as the Stepleton enclosure. Both authors recorded slight traces of a possible third enclosure within the Iron Age hillfort, here termed the north cross rampart, and suggested it to be of Neolithic date. However, trial excavation produced a radiocarbon determination which supports previous opinion that this was an early stage in the development of the Iron Age defences (Ch 4). In the course of the earlier Neolithic period, the enclosures seem to have been linked by a series of causewayed linear earthworks, which approximately follow the natural contours on the west side of the hill. The Stepleton outworks and western outwork both survive in parts as earthworks, but no comparable outwork has been identified on the eastern side of the hill, other than the Shroton outwork commanding the gentle slope of the Shroton spur.

Approximately mid-way between the main causewayed enclosure and the north cross rampart, a well-preserved early Neolithic long barrow occupies the narrow spine of land later enclosed by the hillfort. A second long barrow lay immediately to the south of the main causewayed enclosure, between it and the southern cross-dyke. The mound had been bulldozed prior to ploughing and was totally excavated in 1977; the present mound is a reconstruction of the original barrow.

Prior to the 1996 RCHME survey, one certain and one possible Bronze Age round barrow had been identified on Hambledon Hill, both lying within the southern third of the interior of the hillfort. In the course of the new survey, a further four possible barrows were identified, one standing near the centre of the main causewayed enclosure, just within the unploughed sector. Although these are the only earthworks that can be assigned with confidence to the early Bronze Age, it is possible that some of the house platforms, and perhaps some agricultural terracing and the earliest ramparts of the hillfort, originated in the later Bronze Age. Finds and radiocarbon determinations also indicate that there was activity on the Stepleton spur in the Middle Bronze Age.

The Iron Age hillfort is a complex monument in its own right; there are two, and in places three, lines of ramparts and dense traces of occupation throughout the interior. Though very little archaeological excavation has been carried out, it is clear from the superficial appearance of the earthworks that the ramparts experienced several phases of expansion and remodelling. The clearest examples of this are the north cross rampart and the early rampart to the south of it, which successively went out of use as the hillfort was twice extended to take in the southern end of the spur. In addition, an unfinished barbican-like defence across the fairly level south-eastern approach, here termed the gateway annexe, and a 'hornwork' added to the south-western gateway, testify to a number of other major changes. The south-western and south-eastern gateways are both complex, with in-turned flanking earthworks, forming passage-like entrances. At the northern end of the hillfort, a third, simpler, entrance

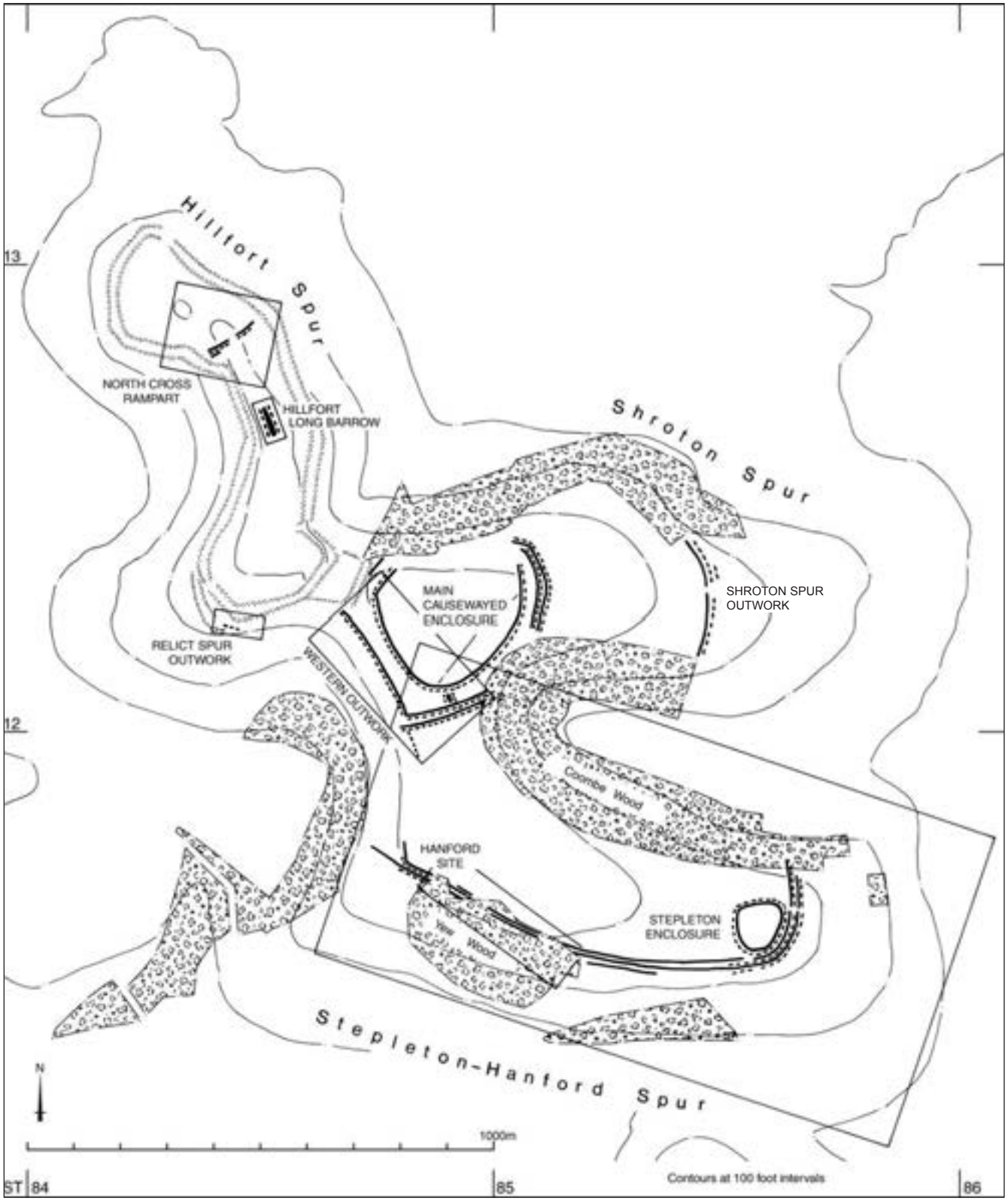

Fig 2.1 Key to the location and names of the features described in this chapter. Areas of larger-scale figures are outlined.

was perhaps contemporary with an earlier phase of the hillfort. Although the earthwork evidence suggests that all the house-platforms identified in the interior could theoretically have been occupied at the same time, it is almost certain that these too originated at different dates and experienced many minor changes, even where they continued to use long-established sites.

Traces of arable field systems survive on the slopes of Hambledon Hill. Some are similar in form to 'Celtic' fields, which are generally accepted as being of later Bronze Age or Iron Age date. They may therefore have been cultivated while the hillfort was occupied, but in some instances the earthworks can be shown to pre-date the construction of the ramparts, while elsewhere they are clearly later. It seems likely that some fields may have continued in use into the Roman period, and that a few survived as boundaries until the post-medieval period.

2.2 Origins and aims

2.2.1 The 1974–86 survey

The field survey originated in 1974 when, following the first season of excavation, Rog Palmer's research for his undergraduate dissertation led to the suggestion that a small enclosure lay within the main causewayed enclosure, on the basis of a number of air photographs (cf Palmer 1976a). The suggested inner enclosure was tested by excavation during the 1975 season. From these beginnings the survey was consolidated and structured around two themes: intensive investigations on the hill itself and a survey of the surrounding area.

By 1976, excavation had demonstrated that the main causewayed enclosure was unlikely to have been an occupation site, and it therefore became a priority to locate any nearby settlement sites of its builders or users. This was to be approached through fieldwalking for the collection of surface material, aided by the study of aerial photographs. Most of the fieldwalking was carried out during the 1976 excavation season, with four initial aims:

1 To put the excavated site in context by locating and defining contemporary flint scatters.
2 To locate a dense flint scatter of appropriate type with potential for excavation.
3 To test walk an area likely to be rich in prehistoric settlement but hitherto known only by virtue of upstanding field monuments (few of which are present in the survey area).
4 To enhance contact with landowners and farmers, developing a local interest in the Hambledon Hill project.

One result of the fieldwalking programme was the suggestion that the degraded earthwork on the Stepleton spur of Hambledon Hill, identified and planned by RCHME (1970, 104–5) may have been a Neolithic enclosure or a site of Neolithic activity.

2.2.2 The 1996 survey

RCHME's 1996 field investigation had four aims:

1 To carry out an accurate analytical earthwork survey of all surviving Neolithic earthworks at a common scale of 1:1000, and to transcribe the traces of the plough-levelled part of the main causewayed enclosure at 1:2500, to contribute to RCHME's compilation of a national corpus of large-scale site plans of causewayed enclosures (Oswald *et al* 2001). Although the focus of attention was initially on the main causewayed enclosure alone, a preliminary field visit immediately made it clear that concentration on that single element in isolation would be to the detriment of an understanding of the Neolithic complex as a whole, and the survey area was therefore increased.
2 To provide a plan of the hillfort and its environs on which English Heritage and English Nature could base management plans for the site. This aim coincided to a great extent with the revised aim of RCHME's own project, and was achieved by extending the area of the 1:1000 scale survey northwards to the limits of the National Nature Reserve. In addition to the conventional analytical earthwork survey, the fieldwork aimed to provide a detailed record of the various forms of damage to the earthworks (such as erosion, animal burrowing and scrub encroachment).
3 To experiment with newly available ground-modelling software, with the intention of depicting the dramatic topography and earthworks of the hillfort spur in an innovative and informative way.
4 To create an archive of ground photographs of the complex as a whole, to be held in the National Monuments Record of England (NMR), now the public archive of English Heritage.

2.3 The area survey

Hambledon Hill lies at the junction of two Ordnance Survey quarter sheets, ST81SW and ST81SE. Its north–south location is near the centre of the area covered by those sheets, which thus offered a convenient 10 × 5 km area for the survey around the site ( ). From the point of view of fieldwalking and air photography, the areas east and west of the hill are distinct. To the east is the rising chalkland of Cranborne Chase, now mostly arable, while to the west is the broad valley of the river Stour, much of which today offers extremely rich grazing land. For fieldwalking and surface collection of artefacts, the annually cultivated land east of Hambledon Hill was more readily accessible than that to the west where grass management has long had high priority. Similarly, the bias from the aerial viewpoint is towards the chalk on the east with its thinner cover of soil and its greater potential for crop- or soil-marked evidence. The land thus divided shows further

differences: the eastern high ground being more wooded, while the present-day villages favour a lower, mostly west-side location. Wooded and built-up areas are shown in Figure 2.2 to indicate areas where no field investigation was, or could be, undertaken and where features may be invisible from the air. Additionally, land unsuitable for prehistoric settlement (but not necessarily for use) occurs to the east of the hill, across the Iwerne valley, on steeply sloping ground. Traces of lynchets and field boundaries remain on some of these slopes and are detectable on the ground and/or on air photographs.

2.3.1 Surface collection

In 1976 harvesting and cultivation of fields to the east of Hambledon Hill began about one month earlier than usual, following a long, hot and dry summer, and thus allowed inspection during the excavation season. Work began in August by defining ownership/management boundaries and seeking the necessary permission for access and disposal of finds. Most fieldwalking itself was carried out between August 30, after the first rain, and October 8, when the 1976 season of excavations ended. Limited additional fieldwalking took place in 1977 and 1979.

The 1:250,000 soil map (Colborne *et al* 1983) shows the high ground on the east side of the area to be capped by Clay-with-Flints. Much of this deposit was being broken down by ploughing and mixed with lighter calcareous soils, leaving high numbers of shattered flints on the surface to be sifted when walking to collect worked material.

Much of the cultivation over the chalk was by chisel plough or spring tine, which left a surface (after weathering) that was ideal for collection. Some 60% of the fields walked were in this condition, while a further 30% had been harrowed (sometimes also sown) and therefore were no longer quite as revealing. Fields were walked in approximately 20 m traverses following, where possible, the line of the plough. With a visual scan of at least 1 m to each side of the traverse line, some 10% of each field was so inspected.

Since the purpose of the fieldwalking was to detect scatters of material, no rigorous attempt was made to subdivide the 10% sample. All struck flint, foreign stone and pottery was collected and generally related to a central NGR for each field. The so-called flint scatters shown in Figure 2.2 are subjective evaluations of the denser areas of surface material. If a traverse passed from a blank, or low yield, area into one of higher artefact density, the position of the change was estimated with respect to field boundary and other features, and where this change coincided on a number of traverses a scatter area was sketched on the 1:10,560 field map.

In 1976 British Gas constructed its Southern Feeder pipeline which crossed the area north of Hambledon Hill on a broadly east-to-west course (Catherall *et al* 1984, 194–5, map 14). After topsoil stripping, the route through the area was inspected and a small number of artefacts was collected, which by themselves were of little significance. However, in a number of instances, finds from the pipeline easement coincided with artefact scatters noted when walking adjacent arable land and may, therefore, be assumed to be related. Elsewhere, it may be suggested, finds on the pipeline could indicate fields worthy of investigation when surface conditions become suitable. Indications of subsurface features were rare anywhere on the pipeline (Catherall *et al* 1984, 6, 8) and in the Hambledon area only one undated linear ditch was observed (site BS/M93). This linear ditch crossed an area of collected surface material but, on the evidence from air photographs, is part of a relatively recent land division.

Given that a stated intention of fieldwalking around Hambledon Hill was to detect flint scatters rather than to define their extent precisely, some of the variable factors of importance to higher level collection strategies (eg Woodward 1978) were of little relevance to this exercise. The majority of fields walked were chisel-ploughed or harrowed; lighting varied considerably (as it does at that time of year) but only low sunlight and its attendant light and shade patches from clod shadows stopped collection; all cultivation had had some (but often very little) weathering, and it was found that light rain presented optimum visibility and collection conditions (ie given a waterproof collector there is even, unshadowed lighting plus washed flints); the degree of coverage of each field remained the approximate 10% and was carried out in a similar manner throughout the area; RP undertook all fieldwalking himself, bar additional cover of two fields by groups of excavation volunteers (which in itself proved the necessity for a one-person survey team if comparable results are required).

2.3.2 Aerial photographs

All oblique and vertical photographs of the area held in the Cambridge University Collection of Aerial Photographs (CUCAP, now part of the Unit for Landscape Modelling, Department of Geography, Cambridge) and RCHME's Air Photography Unit to the end of 1982 were examined. These ranged from specialist archaeological obliques to general survey cover, the earliest dating from Crawford's flight over the hill in 1924 (Fig 2.3). Photographs were studied stereoscopically whenever possible and any features identified were mapped, usually using a network (Palmer 1976b; Scollar 1975), onto 1:10,560 maps.

At the beginning of this survey complete stereoscopic vertical cover of the area at 1:10,000 or larger scales did not appear to exist. Irregular and non-parallel flight lines resulted in gaps in the RAF post-war national survey, thus acquisition of complete stereoscopic cover was seen as a priority requirement to assist field investigation. Consequently, three separate vertical surveys were commissioned from CUCAP at scales of 1:10,000 (for the area) and 1:5000 (for Hambledon Hill).

Fig 2.3 The western outwork runs SE–NW across the centre of the photograph); the observation that this is lit in the same way as the adjacent arc of the main causewayed enclosure led to RP's suggestion (now confirmed) that it might be of Neolithic date. The eastern part of the main causewayed enclosure and east cross-dykes, here visible as upstanding earthworks, were ploughed flat in the 1960s. Wiggly lines within the enclosure represent post-medieval quarrying. Faint traces of earthworks at the Hanford site are visible close to the photograph's lower edge, projecting southwards from the western outwork. In the pilot's log (also held in the NMR), Alexander Keiller names OGS Crawford as observer/photographer. Photograph of 14 July 1924 (now held in the National Monuments Record as ST8412/3). *© English Heritage*

One basic need for this cover was to update the OS maps of the area and to assess the potential of modern landuse for our own archaeological fieldwork and survey. These aerial surveys, carried out at specific periods in the agricultural cycle, were flown in November 1977 and January and April 1978. A full 'cropmark' sortie (in June or July 1978) was hoped for but finance was lacking. The three vertical surveys that were accomplished provided both individual and comparable archaeological details which were added to the survey maps and provided considerably more information than had been identified on pre-existing photographs.

Some features were checked on the ground and one, Rolph's Wood, was tested by excavation (Ch 3.8). The majority of the features recorded were lynchets or parts of ancient field systems. From the point of view of the photo interpreter, the vertical surveys would have been better if spaced over a number of years instead of the single agricultural season they spanned. Photographs taken in several different years would have allowed the possibility of recording a higher number of arable fields as well as enabling a better estimate of the reliability of some of the more dubious features recorded. However, in the context of the project's research design, the prime need was for current photographic cover and that obtained was more than adequate.

All aerial photography executed especially for the Hambledon project was taken after the location of the flint scatters in 1976 and the areas of and around some of them were additionally covered by oblique shots. The expectation was that if the scatters represented occupation sites there might have been sub-surface features capable of producing soil or cropmarks that could be recorded from the air. If characteristic marks could be identified where there were known scatters, then similar marks elsewhere may indicate the presence of other surface scatters, and hence 'sites', as yet unknown. Some of these obliques were taken by CUCAP when visiting the area for vertical photography and others were taken, over a number of years, by John Boyden (a regional flier based at Cheselbourne, Dorset) and RP. The photographs showed nothing of apparent significance in, or close to, the known flint scatters and a number of explanations for this may be offered:

- that no sub-surface features were cut during use of the site;
- that any sub-surface features may have been erased by ploughing and the surface scatters provide our terminal impression of the site;
- that the Clay-with-Flints cap masked any such features or did not allow distinct, or detectable, crop or soil variations;
- that none of the photographs was taken at a suitable time of year.

In addition to the above-mentioned sources of photographs, Dorset County Council hold 1:12,000 vertical photographs taken in July and October 1972. These were examined and found to be largely uninformative. In September 1975, vertical photographs at 1:10,000 were taken to cover the route of the British Gas pipeline. The Hambledon area photographs were examined briefly and appeared to offer no new features in the area.

2.3.3 Documentary sources

All relevant records at the OS (Southampton), at RCHME (Salisbury) and in the County Museum (Dorchester) were inspected and noted. These show the area to have been used by communities from the Mesolithic onwards, but offer little evidence for Neolithic activity other than on Hambledon Hill. The records contain much loosely provenanced material and, as such, are of little value in attempts to reconstruct more than a general picture of the past use of this relatively small area. More relevant was information about Hambledon Hill itself, and sources of this are cited elsewhere in this report.

2.3.4 Results

The three separate sources used by the survey have added both individually and collectively to our knowledge of the area around Hambledon Hill. A more comprehensive picture of past human activities in the area could now be compiled – albeit from scraps of information – than was previously known.

With the exception of a possible long barrow at Pimperne Fox Warren (Fig 2.4), it proved impossible to locate early to middle Neolithic flint scatters or other sites contemporary with the excavated causewayed enclosures. However, the survey did lead to an extension of work on the hill itself and a very considerable enlargement of the known Neolithic system there. In general terms, the collected surface flintwork, other than on Hambledon Hill, is attributed on morphological grounds to two periods, Mesolithic (one site, previously known from local activity; Summers 1941; Wymer 1977, 71) and late Neolithic/early Bronze Age (see Saville, 10.2.10). A middle Bronze Age burnt mound, adjacent to the river Iwerne at the foot of the Stepleton spur (Everley Water Meadow: ST 860 115; 5.3.3), was itself identified through the survey's fieldwalking programme.

In virtually every field inspected (and these ranged from almost bare chalk to rich valley deposits) prehistoric struck flint occurred. Whether it was lost, dropped, or hurled in antiquity is of little consequence, because it attests the presence of people over the full range of topographical zones in the survey area. It is further possible that, on the more alluvial soils, the flint may point to hitherto unknown concentrations of activity – possibly to occupation sites –which the plough is only now beginning to disturb and bring to the surface.

The air photographs and documentary sources tend to fill gaps in the area with features or finds mostly dating from the later prehistoric or Romano-British periods.

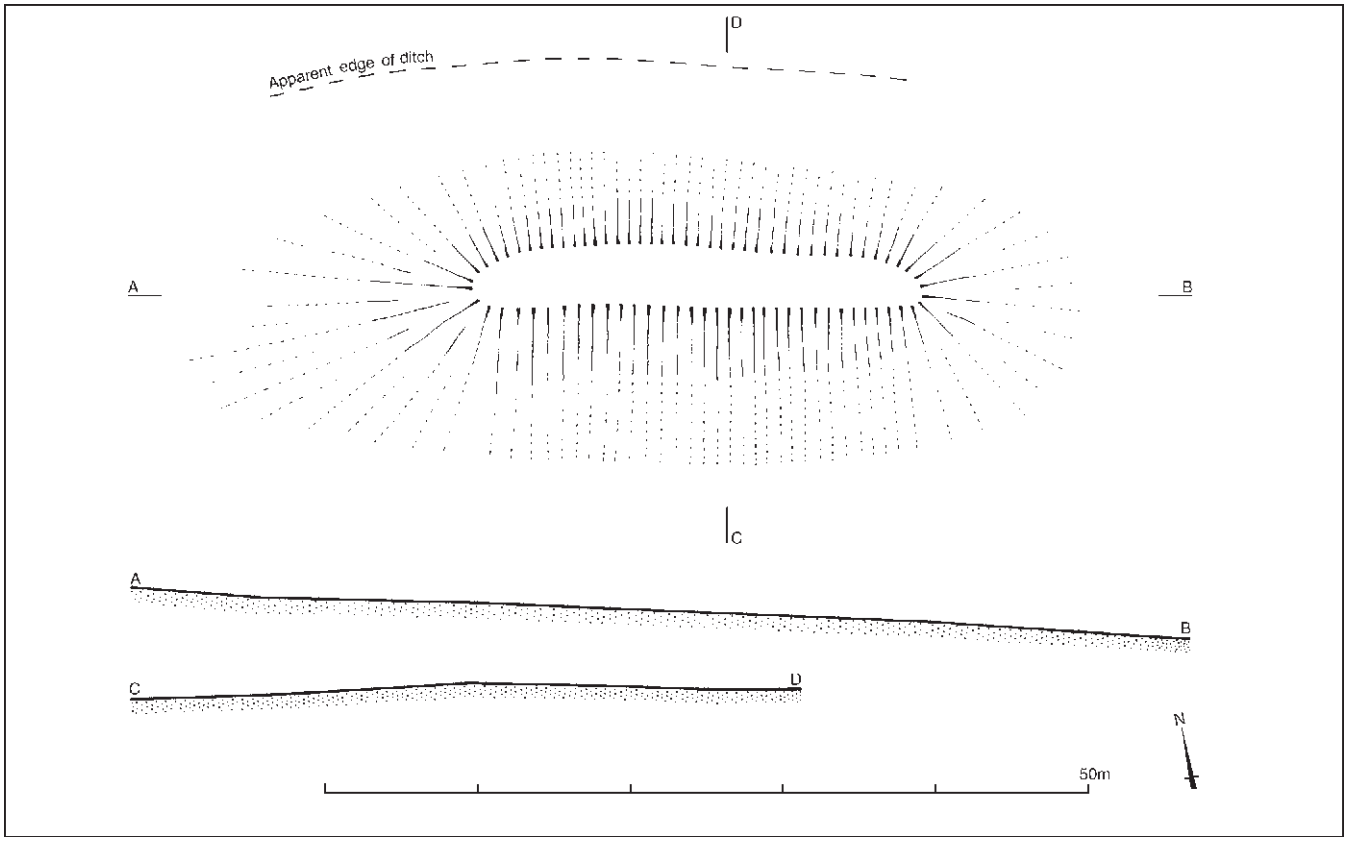

Fig 2.4 Pimperne Fox Warren long barrow.

The single exception was the site of a probable long barrow near Pimperne Fox Warren (ST 8996 1134) at the extreme eastern edge of the survey area. This was identified on vertical photographs and later surveyed on the ground, where it survived as a low east–west mound some 55 m long by 20 m wide, with slight evidence of a ditch on the north side of the mound (Fig 2.4). In this area and elsewhere, air photographs have recorded traces of ancient fields which obviously were once more extensively spread over the chalk in the east of the area. Off the hill, no new features of 'enclosure' or 'settlement' type have been recorded and there is surprisingly little evidence of Iron Age or Romano-British habitation in view of the proximity of the two great hillforts of Hambledon and Hod. Post-Roman use of the area is known from historical records, and visible remains of land divisions and access routes show that the area was then, as now, favoured for farming.

2.4 Investigations on the hill

2.4.1 Methods

The 1974–86 survey

The sequence of field investigation on the hill was to some extent dictated by the questions arising from fieldwork and excavation. It will be seen in the Results section that work was initiated for reasons ranging from inspection of air photographs to specific extensions of knowledge based on results from excavation. The identification of the system of Neolithic earthworks on Hambledon was due entirely to the positive feedback that developed and allowed excavation to lead to survey to lead to excavation to lead to survey ... (Table 2.1). This report makes apparent the benefits of this method of field investigation.

The basis of much of the new information about Neolithic Hambledon was air photo interpretation, carried out – usually – between excavation seasons, backed up by the input of information from the ground (often from excavation) to direct its questions. A simple (if worrying) example of the effectiveness of this process is that the seven vertical photographs of Hambledon Hill taken by Crawford in 1924 show all the 'new' Neolithic features in the areas they cover. That these features were not identified as such for some 60 years reflects the evolution of the necessary knowledge on which to base the questions and, perhaps, to accept the answers.

Points noted from the air photographs were inspected on the ground during following excavation seasons and frequently led to further reference to the photographs and, in cases, to requests for photographs to be taken of specific targets. If field inspection identified features of interest their salient points would be marked out and a measured survey would be undertaken. Notes were kept of interpretations.

The Neolithic earthworks on Hambledon Hill now vary considerably in stature – from the 2.5 m-high hillfort long barrow to the few-centimetre differences that

Table 2.1 The main emphases of excavation and survey on and around the hill, their chronological development, and the relationships of each to the other
In conjunction with Figure 2.5 the table summarises the project's work on Hambledon Hill

Excavation		*Survey*
Main causewayed enclosure (site A)	1974	No formal survey: suggested 'inner enclosure' on some APs
Main causewayed enclosure (sites B–F)	1975	No formal survey
Main causewayed enclosure and Shroton outworks (sites G–M)	1976	Field walking in area (flint scatters): preliminary examination of hill: documentary search: collection and interpretation of APs begun: potential of Stepleton suggested
Main causewayed enclosure and long barrow (sites N & P), Stepleton trial excavation	1977	Field walking in area (minimal): documentary search: earthwork surveys on hill (Shroton 'outworks', Stepleton–Hanford system, lynchets): investigations in woods: general AP interpretation
Stepleton (areas 1A–B)		
Shroton 'outworks' and 1978 Hanford trial excavations	1978	Earthwork survey of Hanford
Stepleton (areas 2A–B)	1979	Field walking in area (minimal): earthwork survey of Hanford and outworks: intensive AP study of area: AP work on Stepleton–Hanford spur 'field system'
Stepleton (areas 3A–C)	1980	No field season: off-site work on APs
Stepleton (areas 4A–C, 4E–G)	1981	Brief field season: off-site work on APs
Shroton 'outworks' trial excavation (area 4D)		
Hanford (+ 'flint mines'), Stepleton extension, western outwork trial excavation, valley bottom trenches	1982	Earthwork survey of hillfort features, western outwork, southern cross-dykes, main causewayed enclosure (W side): off-site work on APs re 'flint mines'
Everley Water Meadow excavation	1983	
Everley Water Meadow excavation	1984	
Hillfort 'phase 1' north cross rampart (?enclosure)	1986	Interpretation of hillfort earthworks by Roger Mercer
	1996	Survey of earthworks by RCHME

are all that remain, on the surface, of the western outwork ditch. In most cases they were extremely low, degraded features, and many might not have been identified on the ground if they had not first been noticed on air photographs. In turn, the evidence on the air photographs would not have been fully understood without our developing knowledge of the Neolithic activity on the hill.

Table 2.1 and Figure 2.5 combine to show how this knowledge increased. The table enables a comparison between survey and excavation to be made and shows the relationship between them that persisted throughout the project. Figure 2.5 shows how excavation gradually answered questions raised by the survey and allowed the definition of a Neolithic system on the hill. Some, it should be noted, remain unresolved. The results that follow have been made possible for two related reasons. The first is that, throughout the period of the project, there was the most active collaboration between survey and excavation – and it must be acknowledged that neither would have been so successful as individual undertakings. The second is due to the question–answer approach generated between survey and excavation that allowed our concepts of Neolithic Hambledon to develop so as to include and accept the extent of the system we were discovering. It was an approach which became more highly tuned with time and which could not have developed in a short-running project. The time and costs spent on survey linked to the excavation programme were fully justified by the knowledge gained.

The 1996 survey

After an initial assessment of all the earlier survey material, including aerial photographs, to determine those areas likely to be of greatest interest, the existing depictions were seldom taken into account during the 1996 fieldwork; that is to say that there was a deliberate attempt to maintain a degree of impartiality in interpreting the earthworks. The final outcome, which supported many of the earlier suggestions, could therefore be said to be a more-or-less independent validation. The fieldwork was sometimes an 'organic' process, in that certain areas were reappraised in the light of subsequent discoveries elsewhere on the hill, occasionally resulting in the addition of further fine detail.

The earthwork survey of the Neolithic features and the later settlement of the interior of the hillfort was carried out at 1:1000 scale using a traditional tape and offset technique, which was judged to be appropriate to

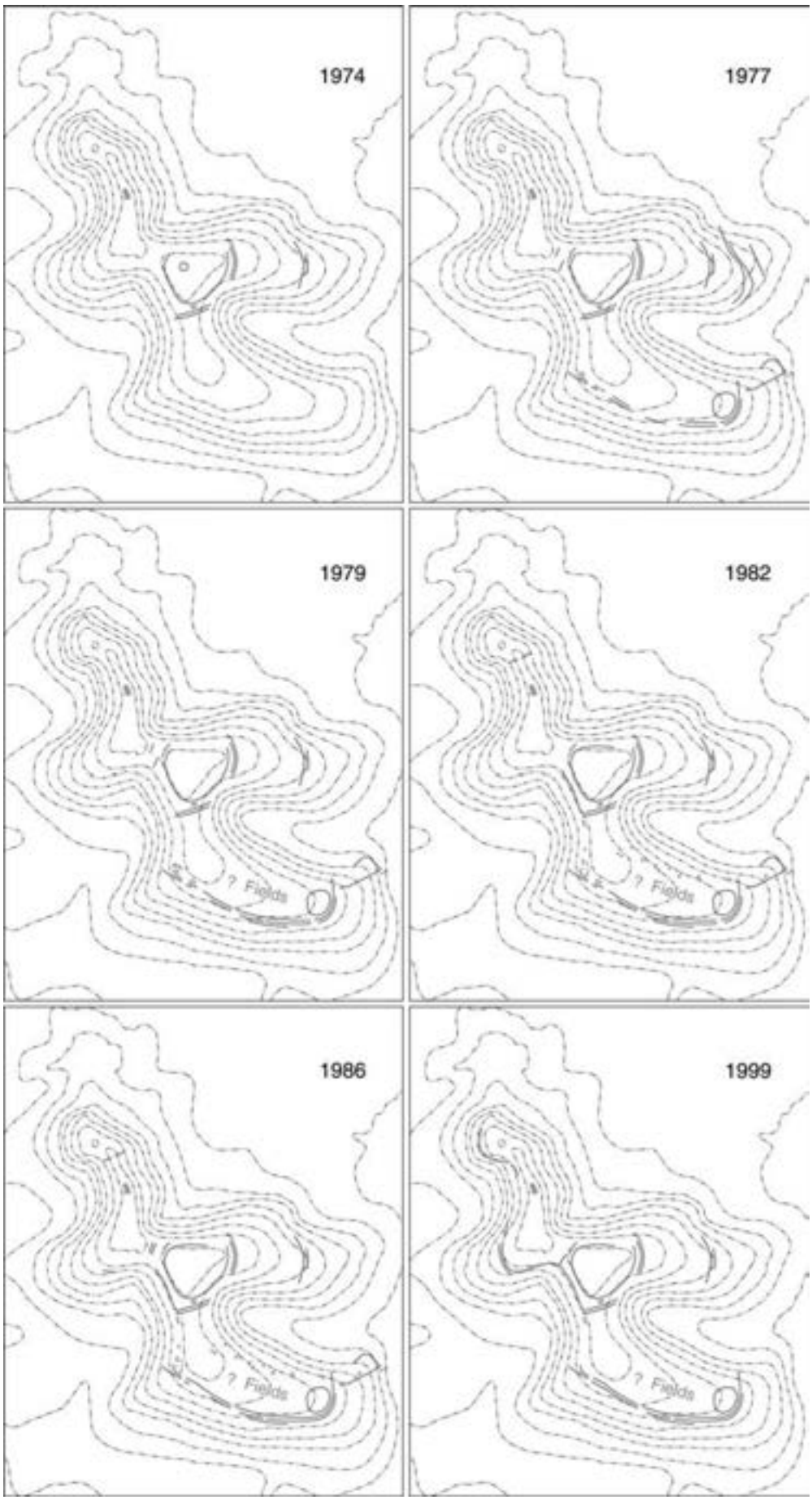

Fig 2.5 Key stages in the developing understanding of the extent of the Neolithic complex (see also Table 2.1).

Fig 2.6 The Stepleton–Hanford spur. Part of a vertical air photograph of 7 April 1978, showing soil marks of the earthworks. Traces of lynchets can be seen south of the outworks, but a possible field system on the top of the spur (see Fig 2.7) is virtually invisible in this image. A number of dark marks (notably those along the southern boundary of Coombe Wood) were initially interpreted, but mostly later rejected, as possible 'flint mines'. The photograph is orientated to facilitate comparison with Figure 2.7; shadows thus appear in relief. CUCAP RC-8 CO 284. © University of Cambridge Collection of Air Photographs

the slightness and complexity of these earthworks. The taped survey was based upon control points and hard detail surveyed using a Wild TC1610 Electronic Theodolite with integral EDM ('Total Station'). The survey of most of the Iron Age ramparts and other earthworks on the exterior of the hillfort was carried out primarily using Global Positioning System (GPS) satellite mapping equipment, and plotted via computer.

The traces of the plough-damaged part of the circuit of the main causewayed enclosure were transcribed using a Digicart plotter. It was hoped that this would offer greater accuracy than the network method used earlier, against the background of very variable topography and shifting control points (primarily fence boundaries). In the event, the quality of the plot was not a significant improvement in terms of either information or accuracy.

Though there was some uncertainty initially as to whether such comprehensive resurvey could be justified, given the amount of fieldwork already carried out, the 1996 survey fully achieved all its aims. Aspects of the Neolithic earthworks and the theories surrounding them were advanced in important respects, and the plan on which the management of the hillfort was to be based was put into immediate use. The ground-modelling survey software proved to have a wide range of useful applications and, following further trials, was adopted throughout the Field Survey Section of the RCHME, and subsequently English Heritage, following the merger of the two organisations in 1999.

2.4.2 Results

The location on the hill of the features described in this section, and the names used, are shown in Figure 2.1.

The Stepleton enclosure

This sub-circular univallate enclosure was identified and planned in 1960 during RCHME's investigations in Dorset. The earthwork was much degraded and, although it was then under pasture, it was apparent that cultivation was responsible for destruction of the bank and for filling the enclosure ditch (RCHME 1970, 104). In 1976, the area of the enclosure was walked for surface collection soon after ploughing at which time the line of the south-east arc of the bank was visible as a slightly upstanding chalky band. The flints from the enclosure area appeared more in character with those from the main (excavated) causewayed enclosure than the majority collected elsewhere during the fieldwalking programme. After the 1976 season, study of available air photographs – notably CUCAP verticals taken in June 1970 – showed the presence of what were originally thought to be two cross-dykes running across the spur on the east (downslope) side of the enclosure and swinging round it to run west following the course of a scarp noted on the ground by Bonney (Fig 2.6).

Stepleton was thus thought to show some promise of being a Neolithic enclosure – or of including a Neolithic element – for two reasons: firstly, the flintwork collected on the surface and secondly, its similarity to the main causewayed enclosure, as shown by the presence of what appeared to be cross-dykes. Test excavation during the 1977 season provided a Neolithic date for the ditches examined (the inner and outer outworks). By this time further examination of air photographs had shown the 'cross-dykes' to be of considerable extent; they were reclassified as outworks and are further discussed below.

Before excavation at Stepleton began, a plan was made of the identifiable earthworks on the spur. The plan itself differed little from that made by RCHME 17 years before, and the enclosure still survived as an upstanding earthwork – prominent by the standards of other Neolithic features on the hill – although much degraded by cultivation. The ditch was best preserved to the north of the boundary between Hanford and Shroton, as were the surviving lengths of outwork, which terminated to the north where the slope within Coombe Wood became steep. In doing so the outwork followed the normal Neolithic practice on the hill. Details were added to the plan from further fieldwork and air photo interpretation as understanding of the outwork system running from Stepleton to Hanford developed over the following five years.

Air photographs, reflecting some ground evidence, show three broadly spread lynchets following the contours on the slope below and to the south of the enclosure (Figs 2.6–7). At right-angles to these lynchets are much slighter features which are probably the remains of the boundaries of two superimposed field systems which appear to be of different (and later) date to the lynchets, although some may have been contemporary. The lynchets almost certainly post-date the Neolithic activity on the spur. One (dubbed Stepleton Lynchet) was investigated in 1982 (5.3.2).

The Stepleton to Hanford spur (Figs 2.6–7)

By the beginning of the 1977 excavation season, air photo interpretation had shown that the earthworks curving around the Stepleton enclosure extended the length of the Stepleton–Hanford spur. The record of these earthworks was not wholly complete – there were gaps owing to their passing through the yew wood on the south side of the spur, and at other points where the aerial photographs (at that time from only one survey flight) remained uninformative.

Field investigation confirmed the presence of two low parallel banks running continuously from the Stepleton enclosure to the yew wood, and these were surveyed and planned as such. Downslope of these, in a pasture field, was a low scarp that may indicate the bank of an outermost outwork, although excavation suggested that it did not extend much to the west of the Stepleton enclosure. No trace of this was recorded

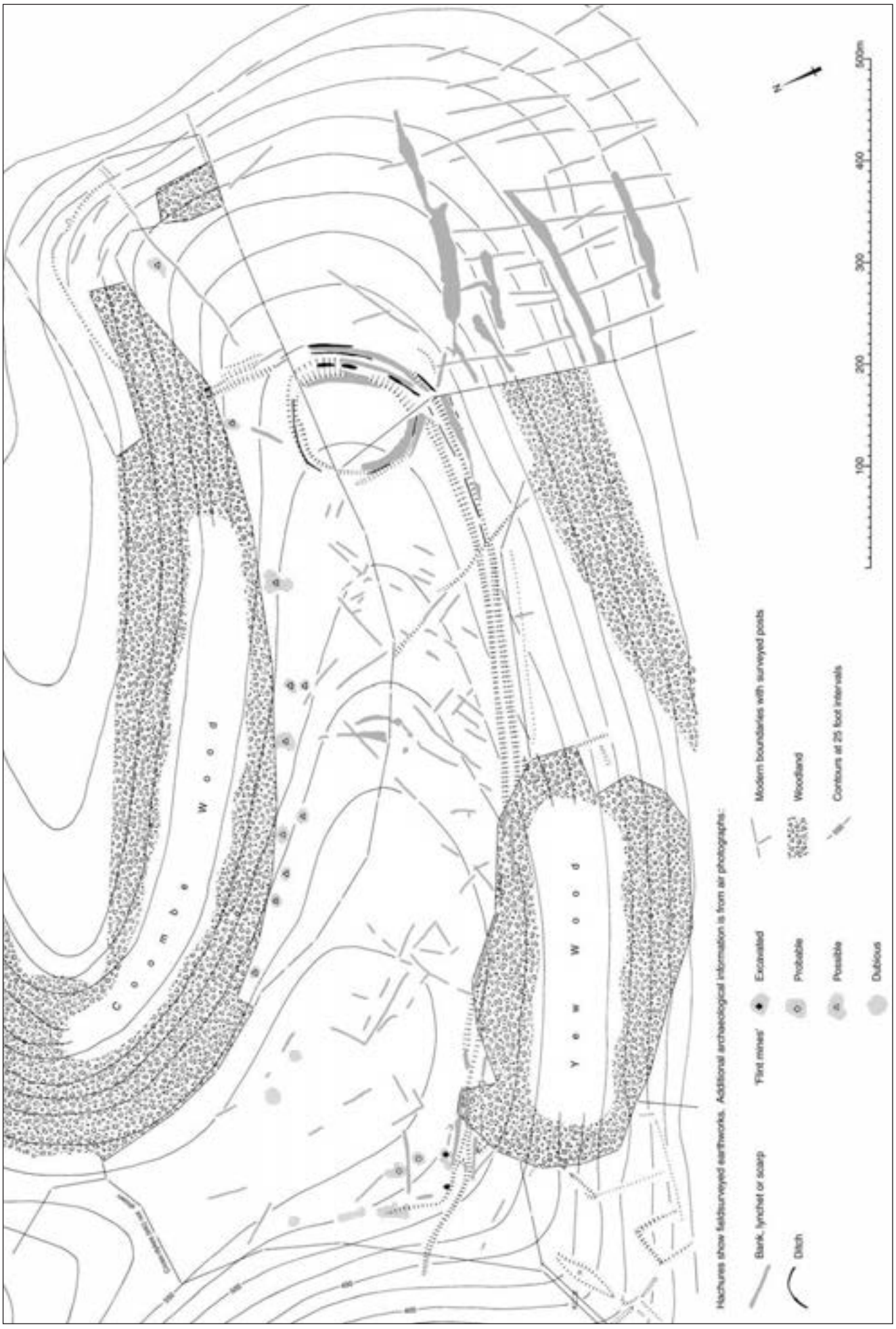

Fig 2.7 The Stepleton–Hanford spur. The main features are the Stepleton enclosure and the parallel earthworks which run from Coombe Wood, around the enclosure, and on, through the yew wood, to Hanford. Information from aerial photographs supplements the knowledge gained from survey of the surviving earthworks. The lynchets below the outworks have not been dated, nor have the possible field systems on top of the spur. See also Figure 2.6.

in the wood or in the arable field that contains the western arc of the Stepleton enclosure and its outworks. An alternative interpretation came from field survey combined with air photograph interpretation during the 1979 excavation season. Two parallel earthwork banks could be seen on the ground between the Stepleton enclosure and the yew wood. It appeared that, for some of that extent, the inner of these had a ditch (ditch 3, that of the middle outwork) on its outer, or downslope, side, while the outer earthwork appeared to be more of a scarped feature, sited to take advantage of the slope of the ground. However, aerial photographs showed that the outer earthwork also had an accompanying ditch (ditch 4, that of the outer outwork), which extended at least 30 m west of the modern north–south fence. They also suggested that a further ditch (ditch 2, that of the inner outwork) had been cut into the inner earthwork bank – and this could be traced on the ground for about 30 m. This apparent overlap of outworks could explain the change in their numbers as follows. The Stepleton enclosure (ditch 1) and at least the inner of the two visible outworks (ditch 3) were extant features when a later ditch (ditch 2) recut part of the Stepleton enclosure and was extended west to overcut and blend with the existing outworks. In so doing, its ditch was cut along the bank of the middle outwork in a way that would result in a continuous linear bank and ditch.

The yew wood and its peripheral belt of brambles made fieldwork difficult, although short lengths of bank – in places remaining up to 0.70 m in height – were observed inside its north boundary and were visible in and beyond the 'notch' towards the wood's west end. These were surveyed by RCHME in 1996 and slight traces of several causeways were noticed in the ditches, though not in the banks (Fig 2.8). Air photographs taken in 1947 and 1954 show the yew wood lying unfenced in downland. By 1961 the downland had been converted to arable and the wood was fenced, with its north boundary clearly respecting the course of the Neolithic outwork banks. The 1947 vertical photographs show the outworks running for much of the length of the wood, although parts are masked by trees. Later (1977 and 1978) photographs record some lengths of the banks as upstanding earthworks.

At Hanford, to the west of the yew wood, the ground slopes down to the west and there the outwork banks survived in 1977 as very slight earthworks which were surveyed on the ground. Owing to the shape of the west end of the yew wood, there was some confusion as to the numbers and precise form of the outwork banks that occurred there. The notch in the wood showed parts of possibly three parallel banks; links within the wood salient were unclear; and beyond it (ie on the Hanford spur at its west end) there was a short stub of bank, to the south of which lay a larger single length which appeared to fork some 40 m west of the wood (Fig 2.7). One arm of the fork continued to the west and terminated, as at the Stepleton end, when the slope steepened. The other ran parallel for 50 m and then turned sharply (through 85°) to the north to follow the contour in the direction of the main causewayed enclosure. This north-running element was little more than the slightest scarp which could be traced for only about 60 m.

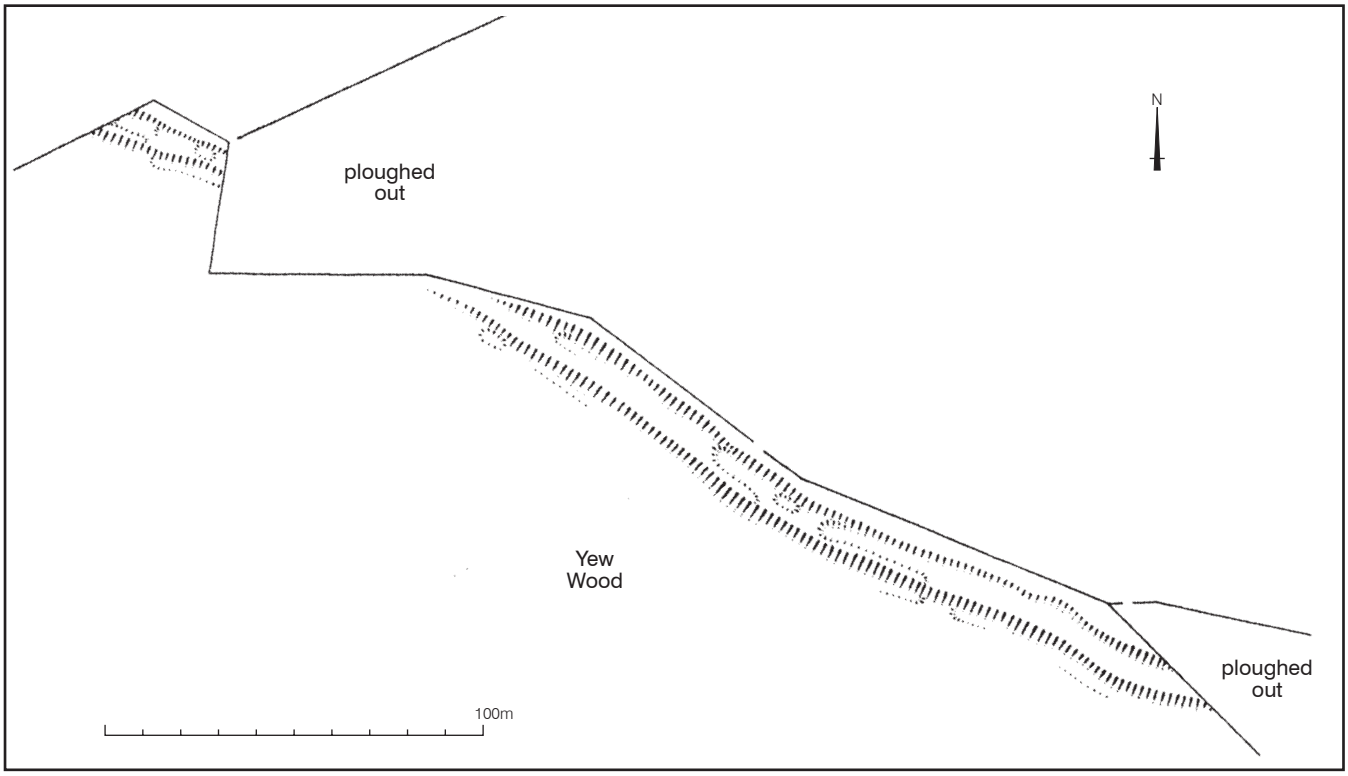

Fig 2.8 The Stepleton–Hanford spur. Earthwork plan of the Neolithic earthworks in yew wood. © Crown copyright, NMR

At this date (1977) the Hanford spur had not been photographed from the air as a specific target, although features at the west end of the yew wood had been recorded on one of Crawford's 1924 photographs (Crawford and Keiller 1928, pl III), on the vertical photographs of 1947 and 1970, and in the background of two RCHME and CUCAP oblique photographs of the main causewayed enclosure. The photographs confirmed the shape of features noted on the ground, and further confirmation – but not clarification – was obtained from the commissioned 1977 and 1978 CUCAP vertical photographs (eg Fig 2.6) and some Boyden obliques. Some RCHME oblique photographs, notably a stereo pair taken in March 1968, suggested the presence of a third 'side' to that made by the angled bank, but no evidence for this was seen on other photographs nor could it be found on the ground. The area excavated in 1982 included a specific search for a third side and also provided negative results. Most of the air photographs showed the outworks as 'negative marks', as banks of the protected chalk surface surviving from them, with little evidence for their accompanying ditches. (Protected chalk is chalk bedrock in the area of a former earthwork, protected from erosion by that earthwork up to the time of its destruction and hence higher, more homogeneous, and more solid than the bedrock to either side.) The field evidence was similar. The junction of the two 'prongs' of the fork could be traced clearly on the ground and was obvious on many of the available air photographs. However, excavation suggested this was not necessarily so and that the two 'prongs' need not have joined. The ditches of the 'prongs' formed a funnel-like entrance (although the placement of the banks makes this an unlikely primary function) while their banks – or the excavated traces of such – narrowed and almost closed any access via the funnel (Fig 3.134). A recently discovered vertical photograph taken in 1943 (RAF/HLA/651/1158: 13 January 1943) shows Hanford as an earthwork in which these banks were parallel but did not join. It seems probable, therefore, that the junction and tuning fork impression is wholly a product of recent agriculture in which the plough levelled and smeared these close-lying banks together to create the forked junction (Fig 2.7).

The above description treats the Stepleton–Hanford outwork as a single entity, despite not fully resolving the confusion arising from the uncertain number of its earthworks. The Stepleton enclosure is some 45 m lower than the main causewayed enclosure and features on the hillfort spur, but it is situated where the gentle slope from the main causewayed enclosure changes to become considerably steeper. This location would dictate the cutting of the outworks across the contours to Hanford, whence one of the earthworks angles towards the contour following the western outwork which is some 10 m higher and 200 m distant. The theory that all the earthworks represent a single feature was questioned during the RCHME 1996 survey: it was suggested that the earthworks at Hanford might originally have formed a 'spur outwork' some 110 m long, comparable to the outworks on the Shroton spur, which was later linked to the Stepleton outwork, a conclusion supported by significant differences between the radiocarbon dates for segments of the outer ditch respectively attributable to the original 'spur outwork' and the later connecting outwork (Ch 4).

There remain two further points to discuss regarding past activity on the Stepleton–Hanford spur. Both concern features of an extremely tenuous character. The spur itself – on the evidence of air photographs – shows scars from past surface quarrying, particularly on its highest point at the Hanford end. This quarrying is of similar character to, and may be contemporary with, that within the main causewayed enclosure (see below), some of which appears fresh on the 1924 photographs. At the Stepleton end of the spur, the 1947 verticals show the remains of cultivation thought to date to the 1914–1918 war (RCHME ms notes). Both quarrying and cultivation serve to have destroyed or masked evidence of earlier activity discussed below.

On some of the 1:5000 vertical photographs, notably those taken in April 1978, are slight traces of short lengths of bank (ie light-toned marks) which run across the spur on a roughly east–west and north–south alignments. In some cases they seem to form small rectangular shapes reminiscent of ancient fields (Fig 2.7). The photographic evidence for these banks lies at the extreme limits of perception and there are absolutely no supporting ground data. The suggestion that these marks are indeed the remains of ancient fields can be made for three reasons. Firstly, the marks run across parts of two modern fields which are divided by a parish boundary and separately managed, thus making it extremely unlikely that they are caused by modern agriculture. Secondly, there exists to the west of the yew wood, on the slopes of the spur, a grass-covered field in which earthwork remains of ancient fields survive and have been planned as such (Fig 2.7). Thirdly, a number of slight lynchet-like features were noted within the yew wood during the 1996 RCHME survey. The alignments of earthwork fields and traces on air photographs are similar and suggestive of a coherent block of fields.

The Stepleton–Hanford spur on which the air photograph evidence has been found is, over the area in question, a reasonably level surface. Lynchets would have been unlikely to form on such a level surface and the 'banks' on the photographs are more likely to be the bands of protected chalk on which stones from the topsoil were dumped to construct boundaries after field clearance. Subsequent ploughing would locally scatter these stone 'walls' and, as with other degraded banks on Hambledon Hill, may not cut so deeply into the more compact chalk below them.

The 'fields' can be argued either to pre-date or post-date the outwork. The east–west alignment of the 'fields' is such that their axes lie at about 45° to the

Stepleton–Hanford outwork system, although no direct association between the two can now be identified. Linear features and field systems of later date have been studied elsewhere in Wessex and clear statements can be made concerning their relationships (eg Bowen 1978). The relevant one in this case is that if a linear feature pre-dates a field system then the fields' axes invariably respect the course of that feature. This is nowhere seen on the Stepleton–Hanford spur, which leaves the conclusion that the fields – if they are in fact fields – were initially laid out earlier than the construction of what has been shown to be an early or middle Neolithic earthwork. Cultivation of the individual fields not crossed by the outwork may, of course, have continued after that date and their surviving form may bear more relationship to a later prehistoric use than to their original design.

Counter to this is evidence from the excavations. Sections across the Neolithic earthworks show them to have been nearly levelled before deposits, including what look like ploughsoils, containing Beaker and early Bronze Age pottery, accumulated in the tops of the largely silted ditches. Such undulations may have offered little obstacle to cultivation of the spur in the third millennium. Additional evidence for a post-Neolithic date is the slight linear scarp, aligned with the field traces, which has been mapped from surface evidence between the Stepleton enclosure and the yew wood (Fig 2.7). That scarp overlies the outworks.

In 1982, excavation at Hanford disclosed two complexes of small-scale 'flint mines', comprising pits *c* 1 m deep connected by short 'galleries'. They corresponded to two irregular dark areas planned from air photographs. Using these 'known' dark areas as control information, a further 19 similar features were identified on the photographs (eg Fig 2.6) and mapped (Fig 2.7). Their positions on the spur tend to follow the contour and they lie on, or close to, the Upper/Middle Chalk boundary. Of this total, ten may result from tree clearance when Coombe Wood was enclosed in the 1960s, although the marks are large for tree removals. They now lie in arable land close to the wood's boundary in an area that the 1947 vertical photographs show to be tree-studded. Lack of mapping control on these photographs precludes accurate planning of these trees and hence precise comparison with present-day depressions. A further two dark patches lie within the densest area of 'recent' quarrying and are therefore suspect. But seven remain to indicate possible similar 'flint mines'. The status of the two excavated examples is uncertain. They were quarries of some kind, but not flint mines, and they appear to have been of third rather than fourth millennium BC date, a thousand years later than the Neolithic use of the hill (Ch 3.6.3). They were also dissimilar to Neolithic flint mines elsewhere (Barber *et al* 1999).

Like the fields previously discussed, most of these marks lie at, or beyond, the limits of inference of the photo interpreter and it must be mentioned that two dark patches at the Hanford end of the spur may have been within the 1982 excavation trench but were not reflected by any recognised archaeological features. However, accuracy of planning does not allow a definite statement to be made regarding their location, and an error in survey or rectification of 3–4 m would place both beyond the trench.

On the slopes east of the Stepleton enclosure is a single dark patch in an area that the 1947 photographs show to be free of trees and scrub. Its significance as a possible 'mine' or early quarry lies in the observation that an earthwork bank appears to curve slightly to pass it. The bank is physically linked to a probable lynchet which follows a change in slope to curve around the lower parts of the spur. The lynchet and bank are likely to post-date the 'mine' and thus give some support to its acceptance as such and allow some credibility to be extended to those others dismissed above as hollows eroded by tree roots or the cavities left by fallen trees.

All suggested 'mines' are shown on the plan of the spur and are ranked according to the likelihood of their attribution (Fig 2.7).

The main causewayed enclosure (Fig 2.9)

Surface quarrying was mentioned above in connection with the Stepleton–Hanford spur, and the 1924 photographs show traces of similar quarrying across much of the area of the main causewayed enclosure and, further, show it to have been active at that date and parochially organised (Fig 2.3; Crawford and Keiller 1928, pl III). By 1945 quarrying had ceased, and most of the surface evidence of this activity was eradicated by conversion of the downland to arable in 1960, although the less-flattened Child Okeford (west) sector still exhibits depressions and disturbance remaining from quarrying.

Damage to earthwork features by levelling prior to cultivation of the hill is dramatically shown on many air photographs of the 1960s. It is on a number of these that the suggestion of an inner enclosure of some 60 m diameter was noticed, as on photographs dated 1965 and 1968 respectively (Smith 1971, pl 7; Palmer 1976a, pl 20 upper). Lack of fixed control did not allow precise placement of this feature, but it did not appear to have been caused by the quarrying. In 1975 a trench was opened and the feature tested by excavation (site C) but this produced no evidence of an inner enclosure or of any other subsoil disturbances that may have caused these marks to form. In fact, the features within site C, some of which were of considerable size, did not appear to correlate with any marks on air photographs and it may be that those photographs have recorded only the recent, almost topsoil-confined, disturbances.

Little new survey was carried out by RP on the main causewayed enclosure other than the planning of its earthworks in Child Okeford parish in conjunction

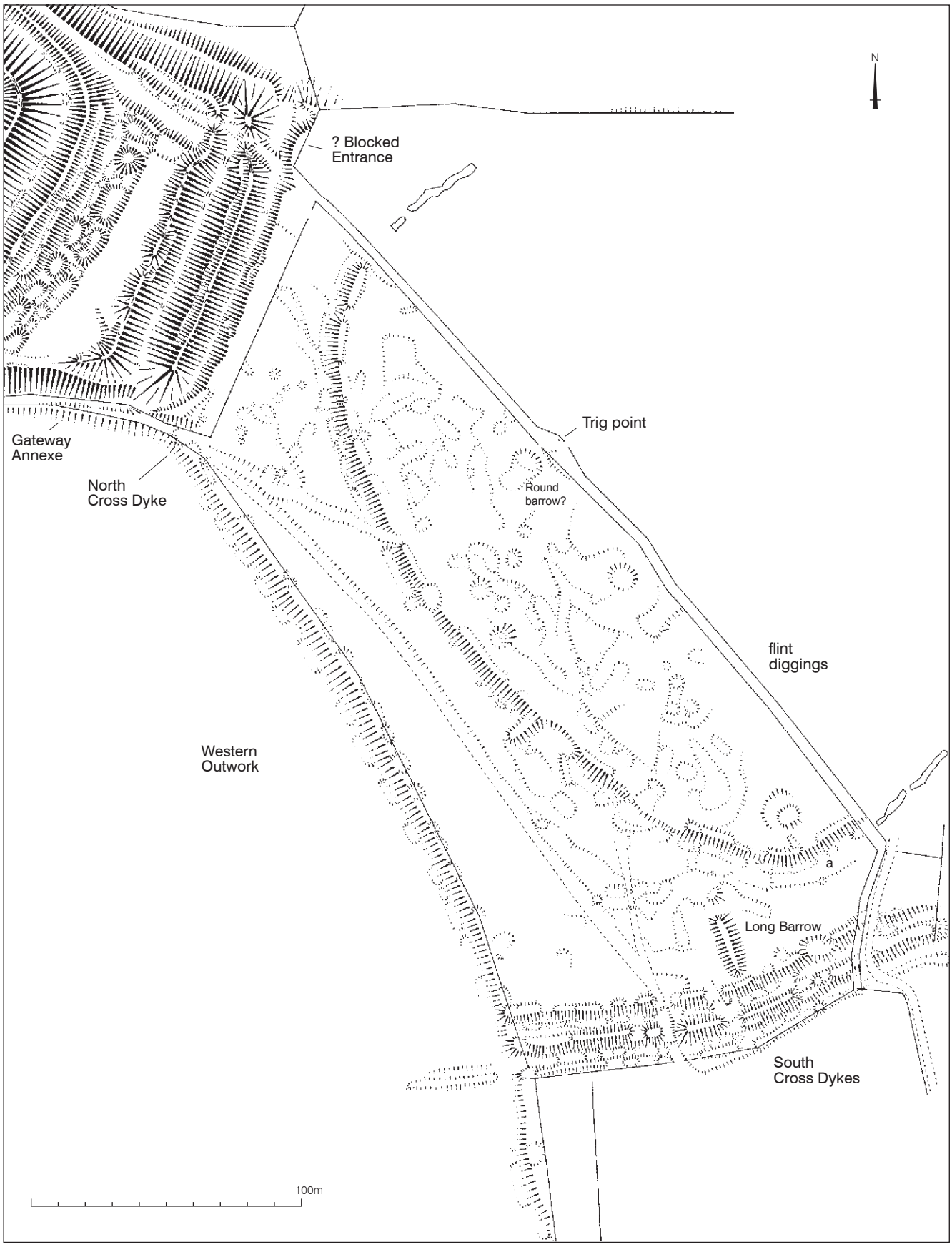

Fig 2.9 The heart of the Neolithic complex, as surveyed in 1996. The south cross-dykes survive as substantial earthworks, although cut by later tracks, while the south long barrow is a replica of the original mound, whose bulldozed remnant was excavated in 1977. The main causewayed enclosure and the western outwork are mostly defined by the more prominent outer scarps of their banks; the bank and ditch segments are of minimal height and depth. The possible fragment of a north cross dyke, mostly destroyed by the hillfort's gateway annexe, was first identified in 1996; its interpretation must remain tentative. © Crown copyright, NMR

with investigations of the western outwork in 1982 (ms plan, Hambledon archive). This work resulted in an increase in the number of recognised ditch segments above those planned by RCHME (1970, 130). The incomplete arc of the main causewayed enclosure (north side – Fig 2.1) now lies on a dense wood-covered slope. Only a slightly more pronounced section of the lynchet along the fenceline has been seen on the ground which might suggest that the circuit once was complete, but the dense vegetation makes reliable fieldwork difficult. Air photographs offer no concrete evidence, but there is the slightest suggestion of a scarp on the 1924 photographs (viewed stereoscopically) which is later followed by an unusually vigorous line of scrub/trees on the 1947 cover. If this anomaly does represent the line of the enclosure ditch, it is not surprising that virtually no ground evidence was found, and it would require tree clearance and excavation to substantiate. The course of this possible ditch would closely follow the 600 ft contour, as is also suggested by the abrupt turn at the north extent of the outer east cross-dyke (Fig 2.1). The supposed course lies on steep ground, but in so doing matches the situation of parts of the south-east arc of the enclosure ditch (as on excavation sites A and J).

The 1996 RCHME survey added new details (Fig 2.9). On the south-western side of the enclosure, the causewayed ditch is partly terraced into the natural slope of the hill, creating a fairly prominent continuous scarp, above which the remains of a slight causewayed bank survive more intermittently. At least twelve bank segments can be identified on the surface, 4.2 m wide on average and ranging from 12.0 m to 27.0 m in length. Below the scarp, traces of the causewayed ditch survive mostly as slight depressions, but in places simply as a level terrace. At least eighteen ditch segments were recorded, on average 2.6 m wide and ranging from 5.5 m to 22.5 m in length. The causeways through the bank and ditch generally coincide, but in some cases are slightly offset from one another, in one case by as much as 5 m. The earthwork is best preserved at the southern corner of the enclosure, where the scarp survives to a height of 1.0 m and the bank is at best 0.4 m high; the ditch measures no more than 0.2 m deep. The excavations demonstrated that in the plough-damaged section, the bank in fact usually remained only as a ridge in the natural chalk, formerly protected by the overlying bank material, while the ditch segments survived to a depth of *c* 2 m below the present surface. Desmond Bonney's section in his trench M (now preserved in the NMR) recorded the feature prior to ploughing.

A possible counterscarp bank, 5.3 m wide and 0.2 m high, extends for 50 m parallel to the southern corner of the enclosure (Fig 2.9: a). The bank does not appear to be causewayed and was not recorded on site P1 a few metres to the west. A minimal scarp, which seems to carry the line of the bank westwards in an arc away from the enclosure, probably results from much later activity, either the flint diggings or agriculture. Also at a, the terminal of a section of the main bank appears to turn inwards at an oblique angle for *c* 8 m, coinciding with a causeway across the ditch. The opposite terminal of the bank does not do likewise, and the earthwork almost certainly relates to later disturbance, despite its somewhat entrance-like appearance.

A discontinuous linear scarp, of minimal height, extends for at least 85 m roughly parallel to the western side of the enclosure, some 13 m uphill from it. The earthwork seems to be of some antiquity, since it is apparently interrupted by some of the post-medieval gravel diggings. Although no comparable feature was revealed in Mercer's trenches A and N, the alignment of the scarp suggests that it may be contemporary with the enclosure, or alternatively a slight lynchet associated with later agriculture following the line of the enclosure scarp.

Much of the area has been disturbed by shallow later nineteenth and earlier twentieth-century flint diggings. In several places the enclosure earthwork has been considerably damaged, and a number of the original causeways have clearly been modified by later trackways, which probably provided cart access to the extraction pits.

The Shroton spur

On the Shroton spur, 50 m lower than the main causewayed enclosure and itself on a change in slope, is a curving earthwork which runs from one side of the spur to the other (Fig 2.1). It was planned, trenched, and shown to be Neolithic by Desmond Bonney (RCHME 1970, 151). It was further excavated in 1976 on sites K/L and M. Study of available air photographs after the 1976 season showed there to be a further two linear features which crossed the spur below and roughly parallel to this outwork. Ground investigation showed traces of both as soil marks and one, the higher (west) feature, remained as a low earthwork in pasture at its north and south ends, and was surveyed as such. Investigation for this field survey identified a number of strip lynchets in the south field in which later air photographs also showed a single block of ridge and furrow which was bounded by the two cross-spur features (Fig 3.73). Probing – not the most effective technique to undertake on the Hambledon chalk – provided the suggestion of the presence of a cut feature following the western soil mark, and the surface collection of a fairly dense flint scatter, whose character reflected that from the excavated enclosure, lying apparently between the Neolithic outwork and its downslope parallel, promised further the likelihood of a prehistoric feature, or features.

In 1978 two small trenches were cut in the south pasture field to test the presence of these two features, but with uninformative results. The course of the west feature was found to coincide on its north side with a boundary shown on the OS 1:10,560 sheet and on a

tithe map (1858) of Shroton, and which was fenced at the time of the 1947 vertical photography. The features now seemed unlikely to be of prehistoric date, and further small-scale excavations in 1981 showed evidence of some use during the Second World War (Ch 3.4). The extent of the western feature, its use as a boundary, and the association of both with earlier field remains make them likely to be of medieval origin.

The cross-dykes

The location of the main causewayed enclosure, with cross-dykes augmenting the layout on the gentle slopes of the Hanford and Shroton spurs (Fig 2.1), suggested the possibility that corresponding earthworks on the third spur – the hillfort or north spur – were similarly placed. Using the south cross-dykes (Fig 2.9) as a model, topographical similarity suggests that the hillfort spur cross-dykes would lie directly below the massive Iron Age gateway annexe, although in parts they may extend beyond them. Indeed, a short feature was located on the ground and seen on one set of vertical air photographs to emerge near the south end of the outer Iron Age earthwork and run roughly parallel to the ditch of the main causewayed enclosure. This was surveyed as a possible Neolithic cross-dyke in 1976, but the evidence is now against this. The 1924 photographs show the feature to lie in what was then an area of surface quarrying, while more recent cover has provided no evidence of a cross-dyke even in the most favourably lit photographs. Additionally, RP's experience of the earthworks encountered on Hambledon Hill had increased since the feature was surveyed in 1976, and re-examination in 1982 – plus the photographic evidence – suggested it more likely resulted from quarrying.

The 1996 RCHME survey identified a trace of a bank 0.2 m high, which may be the remnant of the innermost element of such a cross-dyke (Fig 2.9). It extends for only 15 m from west to east, on a slightly different alignment from the Iron Age counterscarp bank which seems to overlie it. The alignment also coincides with slight irregularities in the form of the western outwork, although the supposed junction between the two earthworks lies on the line of a modern track, and has consequently been almost levelled. The projected alignment of the earthwork to the east would have lain some 30 m from the perimeter of the main causewayed enclosure (slightly further than the other two cross-dykes). If the earthwork were similar in form, it would have been all but destroyed by the construction of the outer ditch of the Iron Age gateway annexe. However, there is a series of 'scallops' in the upper edge of the outer side of the southernmost Iron Age ditch, which appear more regular than erosion alone might produce. It is possible that they result from the incorporation of a pre-existing, relatively shallow and segmented ditch into the Iron Age ditch.

Another feature, a low scarp now under wood and scrub, can be seen stereoscopically on the 1924 photographs running from the north end of the Iron Age gateway annexe parallel to the curve of the main causewayed enclosure (Fig 2.1). This was located on the ground in 1977 and surveyed. It lies on very steep ground but may be part of a cross-dyke although it would not align comfortably with the course suggested by RCHME's 1996 survey.

The western outwork

The western outwork was first noted by Gardner in his description of the hill in *Wessex from the Air,* but was thought to represent the path of a track leading towards the hillfort's south-west entrance and to be contemporary with its use (Gardner 1928, 51–2). This explanation was not felt to be entirely satisfactory, and perusal of Crawford's aerial photograph early in 1982 brought realisation that the feature was lit by the sun in exactly the same manner as was the adjacent part of the main causewayed enclosure. Scanning from south-west to north-east, the photograph (Fig 2.3) shows shadow-highlight-shadow: highly suggestive of a ditch and bank, and so matching the earthworks of the main causewayed enclosure. More recent vertical photographs showed the feature as little more than a line of differential growth on a minimal scarp or terrace that lay just downslope from a modern fence. The increased stereoscopic resolution of these photographs also showed the feature to be on steep ground – not the ideal location for a track that, given a free choice of route, would be expected to run along the gentler slope a few metres higher to the east.

The course of the earthwork was traced on the ground during the 1982 season, extending in a gentle arc along the main break of slope (Fig 2.9). In places the ditch – marked by a line of thorn – was little more than a break of slope, but elsewhere the presence of ditch segments could be suggested, although nowhere did they survive as differences of more than a few centimetres on the present surface. The remains of the bank, represented by the terrace upon which it was constructed, showed occasional scoops which may be the marks from levelling or terracing the chalk prior to the actual bank building and/or may be quarries for bank material. The modern fence had recently been removed but could be seen to have followed the upper line of the bank terrace. Two trenches cut into the western outwork later in 1982 proved this earthwork to be of Neolithic date (Ch 3.3.5).

The full extent of the western outwork is unknown. At its southern end, it turns slightly eastward before fading into the natural slope and hints towards a connection with the angled ditch at Hanford. However, its relationship (if any) with the Hanford earthwork cannot be determined: there is no surface evidence for a continuous earthwork and excavation and geophysical survey conducted over its suggested course provided

only negative evidence (D Evans 1983). All traces of its north end were first thought to have been buried beneath the Iron Age ramparts, but the 1996 survey recorded hints of what may be an extension of its course towards the 'relict' outwork, and perhaps even beyond. The most recent fieldwork also clarified the sequence of the western outwork and the southern cross-dykes, which had been surveyed in 1982 prior to testing this relationship by a small excavation.

The 1996 RCHME survey re-examined the western outwork and its relationship to other earthworks on the hill. Seen from below, it was apparent that the outwork comprises a slight enhancement of the steep natural slope to form a continuous scarp up to 1.2 m high. Along the base of the accentuated scarp, eighteen fairly uniform ditch segments survive as depressions of minimal depth. They are 2.5 m wide on average and between 5.5 m and 17.0 m long; however, in places only a level terrace exists. The intervening causeways appear to be between 1.0 and 4.0 m wide, and in some cases coincide with less steep sections of the main scarp. Along the upper edge of the scarp is a series of shallow scoops, subcircular or oval in plan, measuring up to 0.1 m deep and between 3.5 m and 9.0 m in diameter. There is no clear pattern in the siting of the scoops; they do not appear to have coincided regularly with either the ditch segments or the causeways. There are also three small mounds, widely separated, each apparently associated with an adjacent scoop. In view of the relatively good preservation of the rest of the outwork, these would appear to be a genuine reflection of the form of the original earthwork, rather than remnants of a continuous bank. The earlier survey considered that the northern end of the outwork was probably lost beneath the ramparts of the Iron Age hillfort, but the recent survey suggests that it may have descended the contours obliquely in order to join or incorporate the relict outwork. To the east of the scarp of the relict outwork (Fig 2.10), a scarp up to 1.2 m high continues along the fenceline immediately to the north of the track. The fresh appearance of this earthwork is certainly partly due to erosion caused by the track and there are no surviving indications of any ditch at the base of the scarp. However, the alignment of the earthwork differs very slightly from that of the track and – more importantly – from that of the Iron Age rampart, suggesting that it is not associated with either. A prominent scarp in the middle of the track seems to indicate the point at which the earlier earthwork was graded, presumably to facilitate the passage of vehicles. To the east of this, the scarp seems to be overlain by a counterscarp bank associated with the later gateway annexe, which is itself difficult to distinguish from the extremely steep natural slope. However,

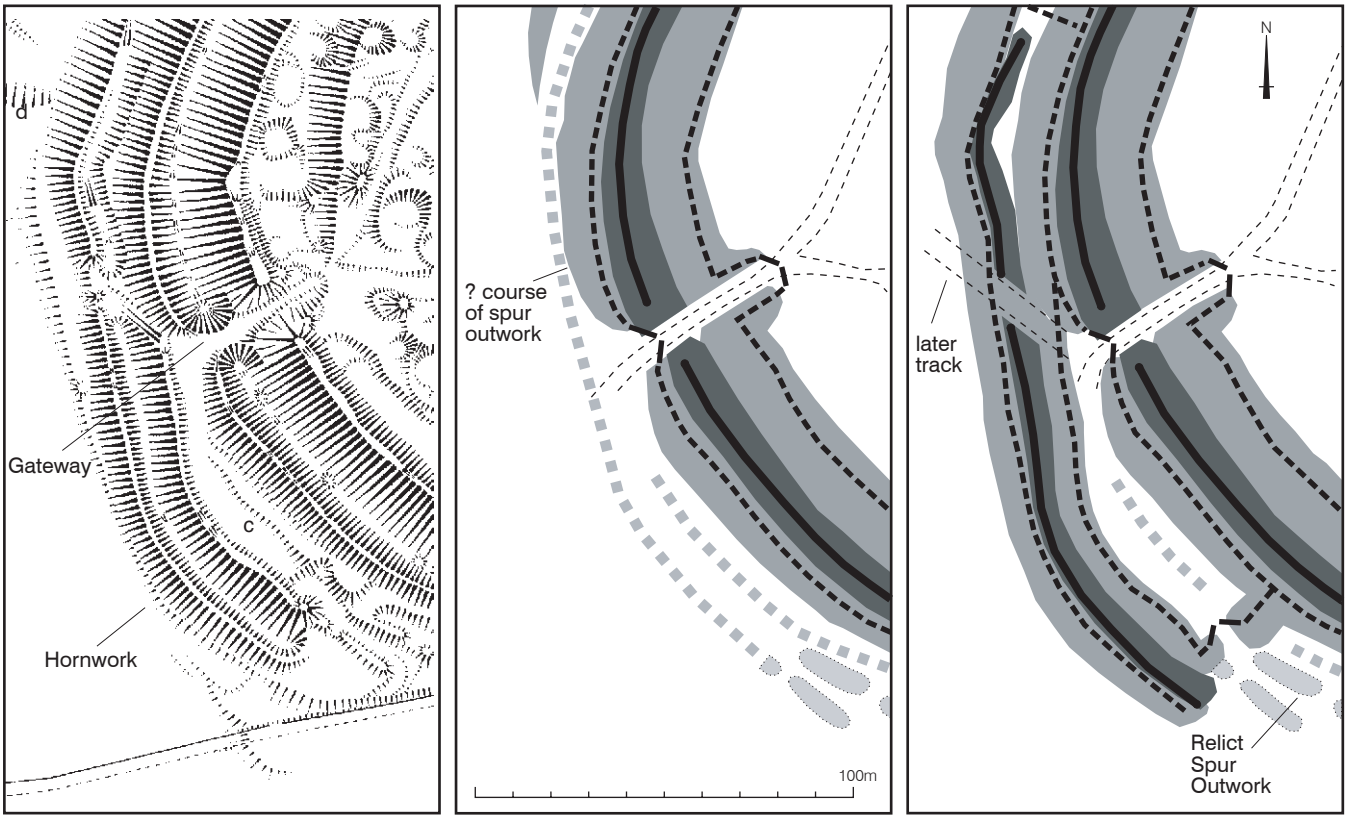

Fig 2.10 Relict spur outwork (hillfort south-west entrance). Only short lengths of the double line of causewayed banks and ditches project from beneath the hornwork added to the Iron Age hillfort's south-western gateway. Towards the northern end of the hornwork, at d, a slight deflection in the line of the additional rampart may also reflect the presence of the underlying Neolithic earthwork. © Crown copyright, NMR

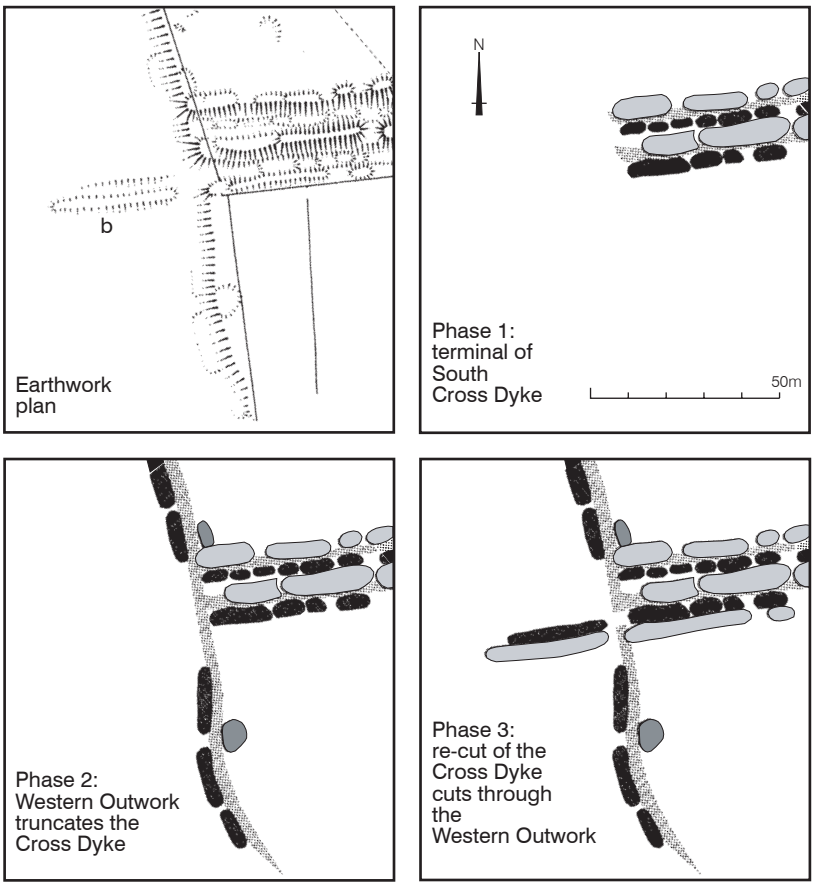

Fig 2.11 Interpretation of the relationship between the southern cross-dykes and the western outwork, based on analysis of the earthwork stratigraphy. Circumstantial support for the proposed sequence was encountered in the 1958–9 and 1977 excavations of the outer cross-dyke (see Figure 3.43), but the most compelling evidence remains the superficial form of the earthworks. © Crown copyright, NMR

the alignment of the rest of the feature suggests that it would have joined the western outwork obliquely at the point where it meets the putative northern cross-dyke.

The relationship between the western outwork and the southern cross-dykes is complex (Fig 2.11). For the most part, the western outwork appears to have incorporated the terminal of the cross-dyke, bending minimally to respect the two main banks and ditches but slightly truncating them. This indicates that the western outwork is later, and this relationship would concur with the chronological sequence suggested by the excavation of the Stepleton–Hanford outwork. However, there are two indications that the cross-dyke may have been modified again after the construction of the western outwork. Firstly, the scarp of the western outwork is absent on the line of the outer ditch, suggesting that the outer ditch was extended so as to cut through the western outwork, probably in the course of the V-shaped recutting revealed in Bonney's trenches A and B and on site P2 (Fig 3.43).

Secondly, to the west of the western outwork is a very slight 35 m long segment of bank and ditch (Fig 2.11, b). This also appears to be contemporary with the recutting of the rest of the cross-dyke, in that its alignment continues the line of the counterscarp bank and outer ditch of the cross-dyke. Here, the distinctly rounded terminal of the eastern end of the bank suggests that it respects the western outwork. The 'reversed' position of the ditch in relation to the bank is also significant, since here it was clearly dug solely to create the bank which equates to the counterscarp bank of the cross-dyke. Along the course of the rest of the cross-dyke, the equivalent ditch was presumably dug initially to provide material for the main outer bank, which lies on its opposite (south) side.

Hillfort spur

The location of the main causewayed enclosure, on the knoll from which the hill's three main spurs radiate, gives an impression of deliberate central placement. This is further enhanced by the additional broadly contemporary use of the Stepleton and Shroton spurs, while the presence of a long barrow on the hillfort spur shows that the Neolithic population was making some use of the whole hilltop. By the early 1980s, developing knowledge of the Stepleton–Hanford earthwork system made it probable that more use had been made of the hillfort spur than had been recognised in 1977. Investigations were severely constrained by the presence of the Iron Age hillfort – the ramparts and internal structures of which are likely to have masked or

destroyed most evidence of earlier earthworks. Consequently the initial examination of the hillfort spur was mostly in search of possible early features obtruding from below the hillfort's outer ramparts. Topographically (and retrospectively) the presence of such features was unlikely on the steep slope, and all that initial fieldwork and air photo interpretation detected were a number of lynchets and former field boundaries lying on the steep slopes below the hillfort.

Further work was carried out on the hillfort spur during the 1982 season. By that date the detection of the western outwork had increased both knowledge and awareness of Neolithic activity on the hill as well as serving to refine RP's abilities to investigate these features. Survey that year included the following four features.

Relict spur outwork (hillfort south-west entrance) (Fig 2.10)

Field investigation in this area was carried out for two reasons. The first was the inclusion on the RCHME plan (1970, facing page 82) of two slight scarps which seemed unrelated to the Iron Age entrance system; the second was the discovery of the western outwork, which prompted an attempt to trace it further.

The features planned by RCHME reflected two past activities. One was a Z-shaped scarp which appeared to be part of a terraced ramp crossing the mouth of the hornwork (RCHME 1970, 83). The other showed as one side of what appeared to be a pair of hollows which, in 1982, were traced from the hornwork mouth until cut by the modern track along whose course to the east they must once have run. All are likely to have been contemporary with the Iron Age use of the hill.

The defences of the Iron Age hillfort make it difficult now to visualise the natural form of the spur on which they lie and which would have awaited the attention of Hambledon's Neolithic engineers. The OS contours show there to be a drop of some 15 m from the hillfort's gateway annexe (at that date, 1982, the apparent northern limit of the western outwork) to its south-west entrance, while the contour line itself runs from the gateway annexe, across the Iron Age defences, to curve around just inside the ramparts at the south-west corner of the hillfort. If the western outwork did once continue to the north, either route – the hornwork rampart or the contour – may have been probable. Elsewhere on the hill the outwork system shows some preference for following the contours, although from Hanford it has to fall some 30 m before swinging round the Stepleton enclosure. What does appear more consistent is its topographical position, and for much of its course the outwork system lies on, or close to, the break in slope between the gently domed spur tops and their steeper sides. Using topography as a guide, it would appear most likely that if, as seems probable, the western outwork continued to encompass the hillfort spur, it would have done so by a route similar to that now taken by the modern track, from the southern edge of which the hill falls almost precipitously. In so doing it would drop the 15 m and begin to swing around the spur towards the north close by the hillfort's south-west entrance. This suggested route has, in part, been confirmed by the 1996 RCHME survey.

The 1982 survey identified four slightly depressed segments in the outer and lower of the two hollows. These were interpreted as possible traces of a length of causewayed ditch, perhaps remaining from an extension of the Neolithic outwork system. At that date, no other evidence for the existence of pre-Iron Age earthworks was recognised in the south-western part of the hillfort. However, the 1996 RCHME survey added further details to the plan of the earthworks which clarifies their form and may increase their known extent.

The relict spur outwork comprises the remnant of a double or triple causewayed cross-dyke underlying the hornwork of the south-western gateway of the Iron Age hillfort. It remains visible as an earthwork for 50 m, curving south-eastwards away from the south-eastern tip of the hornwork, but the more recent survey seems to confirm that it formerly extended in a convex arc across the full width of the spur. The form of the spur outwork seems to have been similar to that of the other outworks and cross-dykes. Two segments of an outer bank, 5.2 m wide and 0.6 m high on average, can be identified, separated by a causeway 1.5 m wide. To the east of this, three segments of a second causewayed bank survive, the causeways coinciding with those in the outer bank. The causewayed ditch which was probably associated with the bank cannot be identified as a distinct feature. The bank is 6.0 m wide, its outer face 1.6 m high and its inner 0.2 m high; the shortest of the three segments is 10.0 m long and the longest 18.5 m long.

A possible third element of the earthwork survives as an irregular scarp between 1.0 m and 1.6 m high, apparently underlying the base of the Iron Age outer rampart. Both this scarp and the outer face of the inner bank seem to merge with the newly identified continuation of the western outwork (Fig 2.9), but this does not necessarily imply that the two earthworks are contemporary (see below). The scarp continues to the north-west within the area enclosed by the hornwork; this section may be a counterscarp bank associated with the Iron Age ramparts prior to the addition of the hornwork, but it seems more likely that it is a 'fossilised' element of the spur outwork.

A dog-leg in the course of the Iron Age counterscarp bank (Fig 2.10, d) also suggests that the spur outwork is preserved beneath the later earthworks. The dog-leg, which is particularly clear on the aerial photographs taken in 1924 (Fig 2.3) is at variance with the line of the outer rampart, and is also slightly misaligned with the hornwork. A break of slope continues northwards from this point before merging with the face of the outer rampart. This hints that some form of earlier earthwork may have continued towards the

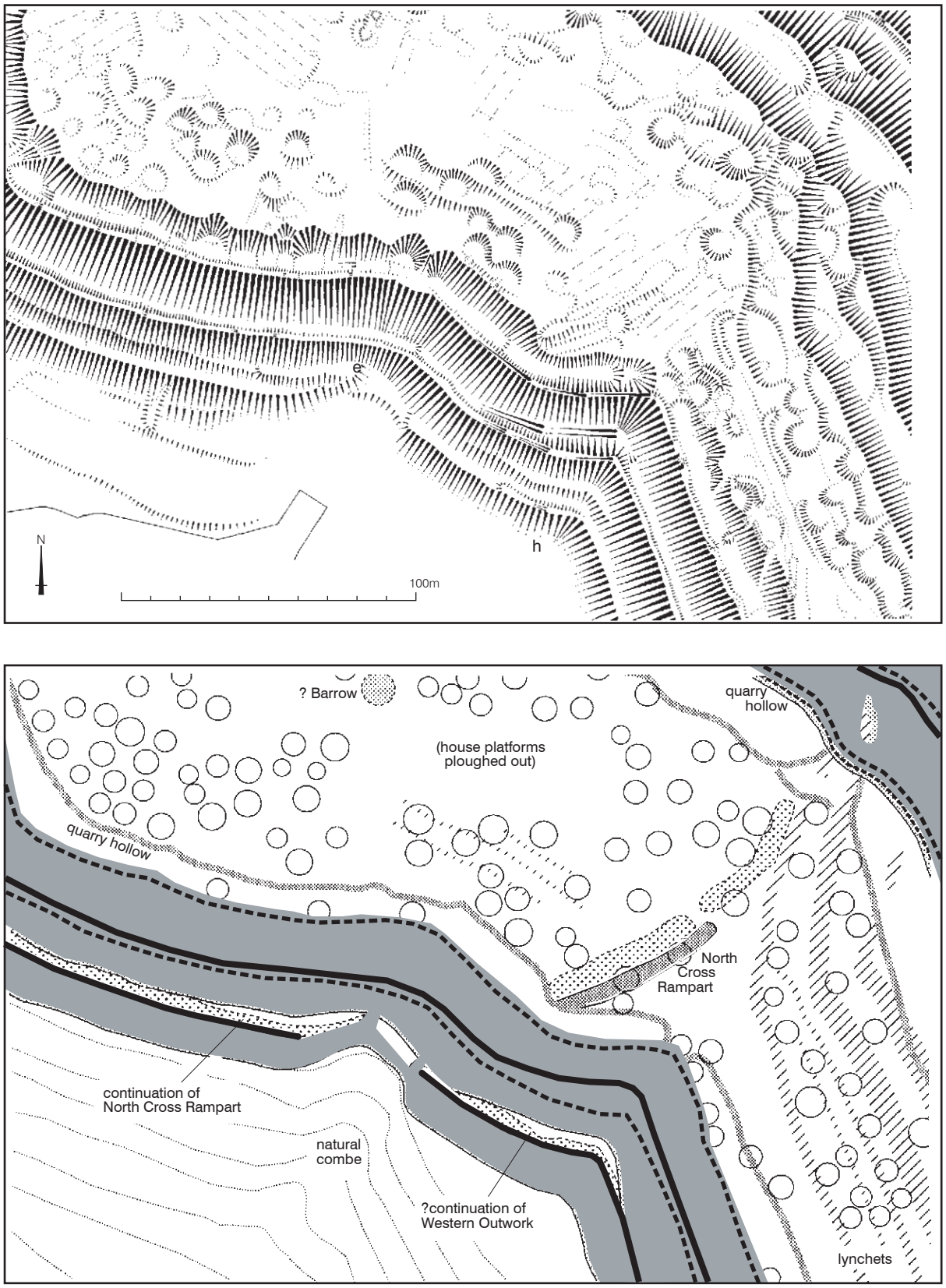

Fig 2.12 North cross rampart. As a result of field survey in 1982, this earthwork, long accepted as the first phase of the Iron Age hillfort, was reinterpreted as a possible Neolithic enclosure. The more detailed and extensive survey undertaken in 1996 seems to confirm that the cross rampart is part of a complete enclosure and even hints that an equivalent of the western outwork may have extended this far northwards. However, trial excavation in 1986 recovered a bone fragment from the primary silts of the cross rampart's ditch which later yielded a date in the early first millennium cal BC, suggesting that the enclosure may after all be of later prehistoric origin. *© Crown copyright, NMR*

north cross rampart. Possible traces of such an earthwork are visible intermittently in the face of the outer rampart, and the anomalous berm further north (Fig 2.12, h) may be associated with the same feature.

Hillfort 'scoop ditches' (Fig 2.9)

'Scoops' were first recognised by Heywood Sumner (1913, 16) within the hillfort's gateway annexe in his description of the earthworks on Hambledon Hill, and are shown in his and the RCHME plan (1970, facing page 82). Early in the Hambledon project it was thought possible that the scoops were the remains of suspected cross-dykes, likely to have spanned the easy approach between the main causewayed enclosure and the hillfort spur. Investigation and survey were undertaken in 1982 in an attempt to clarify this suspicion.

The area between the hillfort ramparts and those of its gateway annexe was then rarely grazed and had been colonised by thorn and scrub. Its north-eastern end was impenetrable in 1982, but a sufficient extent of scoops remained to be examined, and the 1982 plan agreed broadly with that made under easier conditions by RCHME almost 25 years earlier. Although originally thought possible as Neolithic earthworks, the scoop ditches are clearly unfinished ditches relating to the Iron Age hillfort. Later RCHME investigations, under scrub-free conditions in 1996, confirmed this interpretation.

North cross rampart (Figs 2.12–13)

Considerable time and effort, both on the ground and through scrutiny of air photographs, was expended by RP in examination of the hillfort – particularly its north end – in the hope of finding evidence of Neolithic structures there. The north part of the hillfort is, however, covered by hut platforms, and search there proved fruitless. Returning on foot from this area in 1982 it was noticed that the ditch of the hillfort's so-called 'first phase' appeared segmented, and the stereoscopic pair of air photographs (Fig 2.13) confirmed that the line of the earthwork was distinct from the later phases of the Iron Age ramparts. A new survey was consequently carried out by RP.

The feature now survives as a low cross-spur rampart that was designed to cut off, or perhaps to enclose, the hill's domed northern end. Differential vegetation on the hill's east and west sides, and the density of Iron Age features on the east, made it more straightforward for RP to investigate the western end of the earthwork. On the west side is a low rounded bank which appears segmented to its south, and beyond these – surviving between quarry ditches and hut platforms – is a short length of similarly degraded scarp which, in 1982, was interpreted as a possible second parallel rampart. The 1996 RCHME survey showed this scarp to be the southern side of the ditch. That survey also showed all previously observed 'ditch segments' to be caused by later house platforms, and that the earthwork as a whole had been slighted by post-medieval ploughing. On the highest ground, the bank is lost (or absent) for some 15 m but its alignment can be traced over the crest of the spur to the east where it emerges as a scarp from under a house platform. From there it can be followed down slope until lost beneath the later Iron Age ramparts.

The 1996 RCHME survey suggests that the course of the western end of the cross-spur earthwork

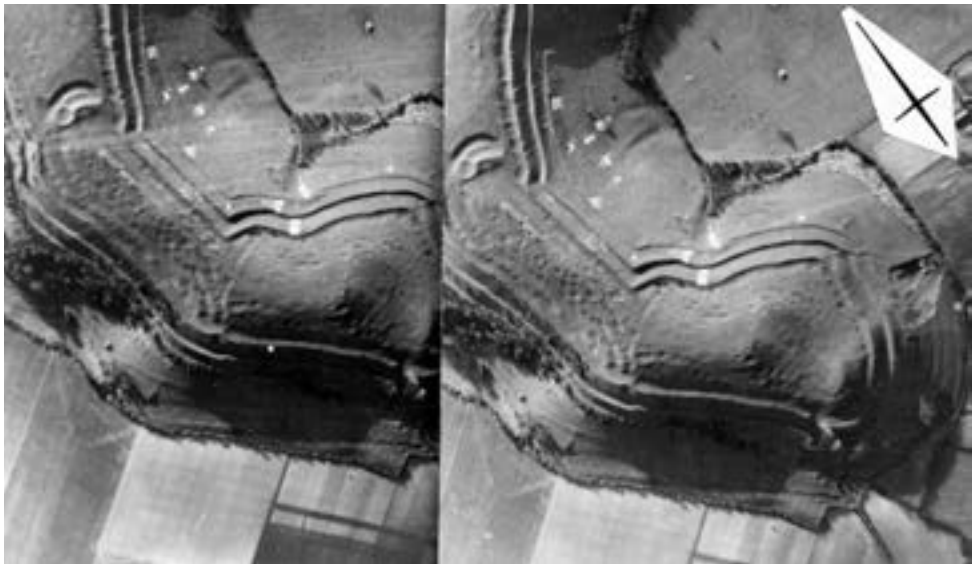

Fig 2.13 A stereoscopic pair of vertical air photographs showing the north part of the Iron Age hillfort within which the north and south cross ramparts lie across the spur. The hillfort long barrow and its location on the spur ridge can be seen to advantage stereoscopically as can the pock-marks remaining from the numerous hut platforms. A stereoscopic image should be obtainable using a pocket stereoscope. Photographs © crown copyright (NMR, RAF photography), CPE/UK/1944: 2328-2329 (23 January 1947)

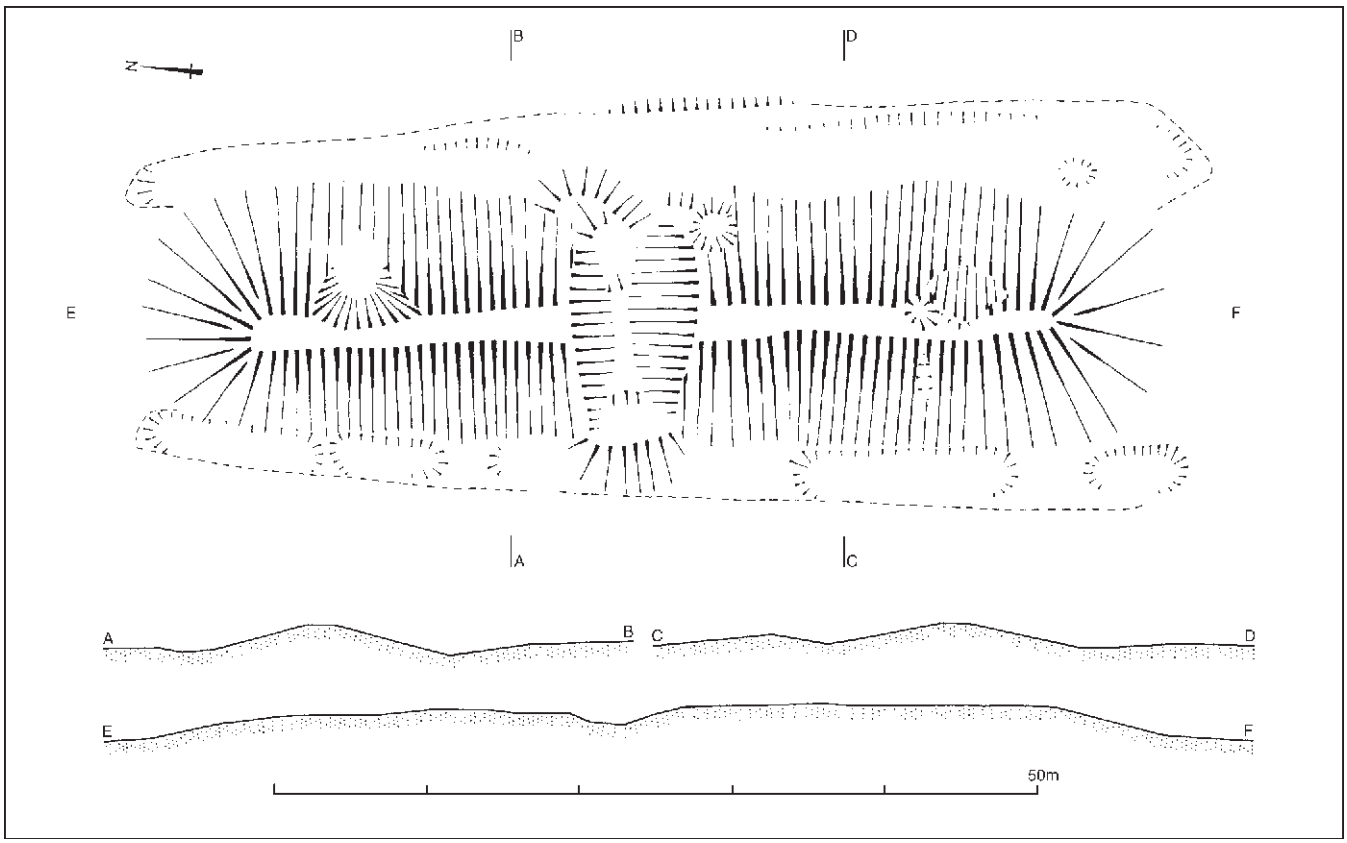

Fig 2.14 Hillfort long barrow.

was designed to lead smoothly into the head of a steep-sided natural coombe. Immediately to the north of the coombe, a scarp (Fig 2.12, e) that is formed by a slight accentuation of the steep natural slope, and is distinct from the Iron Age outer rampart, appears to continue the projected line of the cross-spur earthwork within the hillfort. As it runs northwards, the scarp merges with the outer face of the rampart, but can be traced as a slight break of slope as far as the northernmost end of the hillfort spur.

The major irregularities in the Iron Age ramparts on the east side of the hill seem to represent remnants of the possible pre-hillfort scarps, rather than the course of the north cross rampart. However, a section of the quarry hollow inside the inner rampart has been left undug (Fig 2.12, as first noted by Gardner 1928, 50), perhaps indicating that at that point the line of the north cross rampart was respected in the construction of the Iron Age ramparts. Together with the scarp on the western side of the hill, this may indicate that the earthwork was not simply a cross-dyke as was initially thought, but completely enclosed the northern end of the spur (an area of some 5.8 ha). The similarity of this conjectural enclosure, both in plan and location, to the causewayed enclosure underlying the early Iron Age hillfort at Maiden Castle, Dorset, seemed to add further weight to RP's theory that the earthwork was of Neolithic origin.

A Neolithic origin for the north cross rampart was therefore long treated as a plausible – even probable – working hypothesis. However, a 5 m-wide section excavated across the ditch in 1986 produced a single fragment of long bone stratified in the lower fill of the ditch. This subsequently provided a radiocarbon determination which probably places the construction of the earthwork early in the first millennium BC (Ch 4).

Hillfort long barrow (Fig 2.14)

A survey of the hillfort long barrow was undertaken by RP. The barrow is prominently sited close to the midpoint of the hillfort spur and made use of a slight natural ridge – most clearly seen at its north end – which determined the barrow's alignment. The mound remains up to 2.5 m high, is flat-topped, and has been only slightly disfigured by scrub colonisation. The mound and its side ditches are trapezoid in plan, with the broader end to the south. The ditches are of different widths and, near their centres, are overlain by spoil from an undated cut through the mound, presumably of archaeological or antiquarian origin. The ditches survive only as minimal depressions in the ground, but are emphasised by differential growth of grass and the presence of nettles. Within them, particularly on the west side, slight traces of segmented construction can be suggested. The lack of damage done during the Iron Age is remarkable.

2.5 Endpiece

The field survey undertaken on Hambledon Hill in parallel with the programme of excavations had limited aims and focused principally on extending our knowledge of what was deduced to be Neolithic activity. Suggested new features were surveyed and planned following field investigations and air photo interpretation and filed to await (or not) testing by excavation. This report retains the chronological sequence of those investigations so as to allow our unravelling of the system of earthworks on Hambledon Hill to be followed. Along with the detection work, surveyed plans were also made of known upstanding Neolithic earthworks, principally the west part of the main causewayed enclosure and its southern cross-dyke and the hillfort long barrow. These surveys provide little more than an impression of what was visible on the surface at the time and had little accompanying interpretation or discussion. In these cases, the 1996 RCHME work provides additional information.

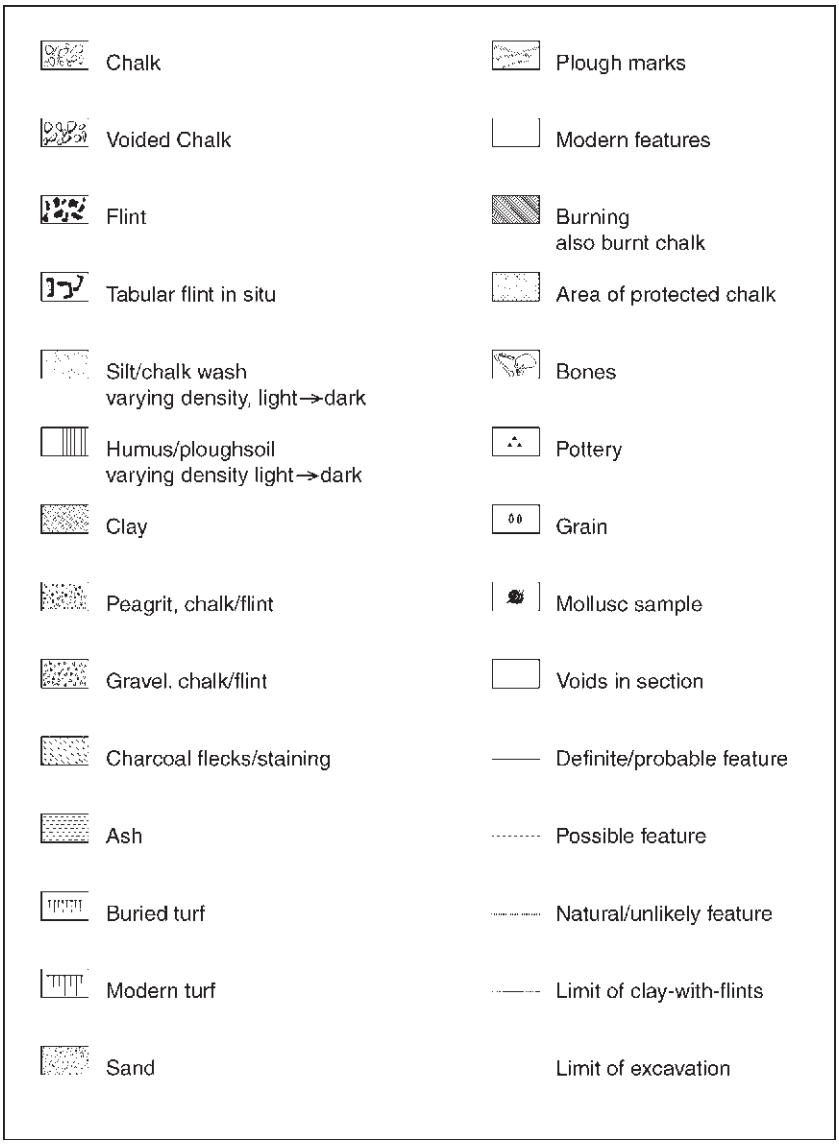

Fig 3.1 Plan and section conventions.

3 Excavations

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3.1 Methods

3.1.1 Excavation

In general, the ploughsoil was stripped mechanically to within approximately 50 mm of the surface of the corrupted bedrock. The final thin layer of ploughsoil was then removed by hand. All features present in the subsoil surface, regardless of their apparent character, were planned and photographed prior to excavation. Transects of the ploughsoil were hand-dug along the edges of sites B, C and J in the main enclosure and on the Stepleton and Hanford spurs before machining. Sites E, F, P and WOWK in the central area were entirely hand-dug, as were all trenches on the Shroton spur, areas 4C and 4E–G on the Stepleton spur, and the trench on the hillfort spur. In 1982 sections were cut by machine to investigate valley side and valley bottom sediments (see 5.3), and one of them, in Stepleton Meadow (= Everley Water Meadow), was extended by hand. Subsequent trenches in Everley Water Meadow were stripped of topsoil and alluvium by machine in 1983 and 1984.

A single recording system was followed from the first season in 1974 to the last in 1986, developing in response to the archaeology. As in most systems in use until the adoption of single, consecutive series of context numbers, it was season- and subsite-based. A separate grid was laid out for each excavated area, its orientation dictated by the terrain and the earthworks, if any. These grids provided the basis for recording in that area. The excavated areas themselves were surveyed into the overall plan. It was impossible to leave permanent markers in the ground, as annual ploughing and other agricultural activity meant that even hedgerow locations could not be regarded as secure. The locations of points on plans and individually recorded finds were determined by triangulation from the grid pegs of each subsite. The location of one of the groups of sherds making up the vessel illustrated as P57, for example, is 'DCD3 1.45 m, DCD4 4.55 m', ie it was 1.45 m from peg DCD3 and 4.55 m from peg DCD4. Depths were measured from the nearest surviving twentieth-century ground surface. They thus help to relate finds to the immediate stratigraphy, but may be related to each other only within a very small compass. Within each subsite, ditches were numbered from 1 if more than one was present ('ditch 1', for example, was applied to many different ditches, according to subsite and season), the segments of each ditch were numbered or lettered from 1, I or A, and features were numbered from 1. The letters I and O were omitted from alphabetic sequences to avoid confusion with the numbers 1 and 0. Layers within each feature or ditch segment were numbered independently, starting at the top. In 1974, but not in subsequent seasons, the layer numbers in the main enclosure ditch were prefixed with 'D'. It follows that none of the notations used to describe a context is unique, although the *combination* of notations is, as in a postal address. The context of the skeleton of a young man found with an arrowhead among his ribs in the inner Stepleton outwork ditch is thus '1B D1 SA Q4 L4', or, in full 'Area 1B ditch 1 segment A quadrant 4 layer 4'. During post-excavation, a single sequence of segment numbers has been applied to each ditch. These are used in this volume; the 'original notation' section of each segment catalogue entry provides correlation with the initial designation.

Ditch segments were excavated by diverse methods, in order to maximise the kinds of information obtained. Some were dug in plan, some in quadrants, some in multiple cross-sections, and some in longitudinal sections. The excavated proportion of any fully exposed segment ranged from 15% to 100%, with a mean of 70%. Arbitrary subdivisions were variously dubbed sections (S or ST), sectors (SCT), quadrants (Q), cuttings (C), and units (U). In large ditches, especially the inner Stepleton outwork, the inner and outer halves of these subdivisions were sometimes distinguished by the addition of a compass point. Finds from cutting 13 in segment 5 of this ditch, for example, were recorded as from C13N (the inner, north side) or C13S (the outer, south, side). Particulars of the excavation of individual segments are to be found in the segment catalogue for each ditch. Discrete features were half-sectioned or dug in quadrants and, once the sections were recorded, were fully excavated. Primary recording was by notebook, drawings and photographs. Context sheets were completed for discrete features and for soil layers in or out of ditches by extracting the relevant information from these records. Texture, colour and the frequency and nature of inclusions in soil layers were recorded, but Munsell colour descriptions were deliberately eschewed as offering a specious illusion of accuracy as, at least at Hambledon, differential damp, light and other conditions made the whole proceeding inconsistent.

Most finds or groups of finds were treated as small finds, ie triangulated from grid pegs, with their depths recorded from the surface. These were given a

temporary number (TN, starting from 1 for each supervisor each day) on the label and in a list in the site notebook. Other finds went into a tray labelled with the context notation. In finds processing, bulk finds were sorted by material type and all were given numbers in a running sequence, the temporary numbers of measured-in finds being converted to numbers in the same sequence which were added to the labels. In 1974 there was a main series of find numbers, starting at 1, and other concurrent series for particular material types, also starting at 1, but prefixed by HB (human bone), AB (animal bone), FS (foreign stone), C (charcoal), and M (molluscs). This was largely abandoned in subsequent seasons, during which artefacts and bone were all numbered in a single sequence and charcoal was sometimes given find numbers and sometimes sample numbers. A separate series of charcoal numbers, again prefixed by 'C', was reinstated in 1979.

In 1982, when widely scattered subsites were investigated, each had its own series of find and charcoal numbers, each starting at 1 and each prefixed by a different code: CB (Combe Bottom), HN (Hanford spur), RW (Rolf's Wood), SL (Stepleton Lynchet), SM (Stepleton Meadow = Everley Water Meadow), ST (Stepleton spur), and WOWK (western outwork). Finds from the fieldwalking survey, undertaken from 1976 to 1982, were prefixed HHS and had their own sequence of numbers, starting at 1 each year. A unique find reference thus consists of a code, a year and a find number, a minority of the last prefixed by a further notation. The young male skeleton referred to above is thus ST78 2755, while skulls and skull fragments found near the base of the main enclosure ditch in 1974 are HH74 HB1 and HB6, and two of the pine charcoal fragments dated to the Boreal period, described in the next section, are HN82 C115 and HN82 C123. Bulk samples were taken from deposits that appeared rich in charred plant remains. Flotation was carried out in the central area in 1974 and on the Stepleton spur in 1979 and 1981. Other recovery methods included wet- and dry-sieving. Details of recovery and processing are given by Jones and Legge (see 6.2).

3.1.2 Feature categorisation

The ploughed-down state of shallow features like pits and postholes often made it difficult to distinguish deliberately cut features from natural indentations in the surface of the chalk. At first, features were classed intuitively as definite, probable, possible, unlikely, or natural. By the time of the first season of area excavation on the Stepleton spur in 1978, a more formal system had developed, in which a feature was awarded a score of up to ten points for clarity of edge, character of fill, presence of charcoal, presence of other finds, a clear postpipe, and the presence of a burial – the last two each scoring ten by themselves. The scores were then translated into categories: 8–10 definite, 5–7 probable, 1–3 possible. In the course of preparing this report there has been a return to a more flexible approach, largely because the emphasis on individual attributes under-valued both the overall morphology of a feature and its spatial relation to other features.

3.1.3 Phasing in Neolithic ditches

A phasing scheme for the ditches of the central area was developed during excavation and initial analysis and has been employed in several publications (eg Mercer 1980, 27–39; Mercer 1988, 94–7). It is applied here to all Neolithic ditches, with modifications, and in full recognition that it serves to describe stages in the infilling of individual ditch segments, rather than to denote contemporaneity, which did not always obtain, whether between ditches or between segments of the same ditch (Ch 4).

I. Primary silts and other deposits, with the *caveat* that traces of recutting in the primary silts may mean that some of the earliest deposits may have been completely removed.
II. Silts and other deposits overlying primary silts.
III. The main fill, occupying most of nearly every segment, consisting of chalk rubble, flint nodules, Clay-with-Flints where present, and finer material derived from the ditch sides and adjoining bank.
IV. Scattered pits, spreads, and occasionally larger features characterised by a powdery, ashy grey fill ('grey pits') in the main enclosure and south long barrow, by varying combinations of burnt material in the Stepleton enclosure
V. Slower, finer silts with a predominantly earthy matrix, largely derived from the adjoining topsoil.
VI. Recuts and deposits along the line of largely silted ditches, made within the earlier Neolithic. These were narrow, generally shallow, gully-like slots in the central area, where successive slots are designated VI/a, VI/b, VI/c and VI/d; intervening silts VI/1 and VI/2
VII. A setting of flint nodules, with some chalk and other rocks overlying the VI slots in the central area only, seen as a separate deposit in the field, but arguably the weathered top of the fills of the phase VI slots, which were often packed with flint and chalk lumps. This was sometimes succeeded by recuts and deposits of Beaker and/or early Bronze Age date where any attribution was possible, designated VII/a and VII/b and pre-dating the VIII/a ploughsoils. VII/1 is applied to ploughsoils of dark brown earth with comminuted chalk and flint, identical in form and stratigraphic horizon to the phase VIII/a ploughsoils, but pre-dating VII/a and VII/b recuts on the Stepleton and Hanford spurs.
VIII/a. Ploughsoils of dark brown earth with comminuted chalk and flint, filling the hollows in the tops of silted ditches and sealed in the central area by the pre-1960s turfline

VIII/b–g. Recent deposits and disturbances, including the pre-1960s turfline (VIII/d) and the overlying recent ploughsoil (VIII/g)

In the outer south cross-dyke R/a–c denote the fills of a substantial recut of unknown but arguably Iron Age date.

In the course of analysis, a series of numbered context groups was developed to distinguish broadly related contexts and finds. The phase VI slots in the main causewayed enclosure, for example, are group 7 and the phase VI fills of the Stepleton enclosure are 59. These are summarised in Table 3.1 and provide contextual shorthand which is employed, for example, in some of the tables in Chapters 8 and 10.

3.2 Pre-Neolithic activity

The earliest deposits in a palaeochannel in the Iwerne valley at the base of the hill may date from the Late Glacial period (Bell *et al*, Ch 5). There is, however, no evidence of any human presence at this time. On the hill itself, *Pinus sylvestris* charcoal from two contexts has been dated to the Boreal period (4.7.1; Austin *et al,* 6.1). The features concerned are 350 m apart (Fig 3.2) and different in character. They, and other possibly related features, are described in detail, because, while the dates are unambiguous, the status of the features is not. Some or all may have been of natural origin.

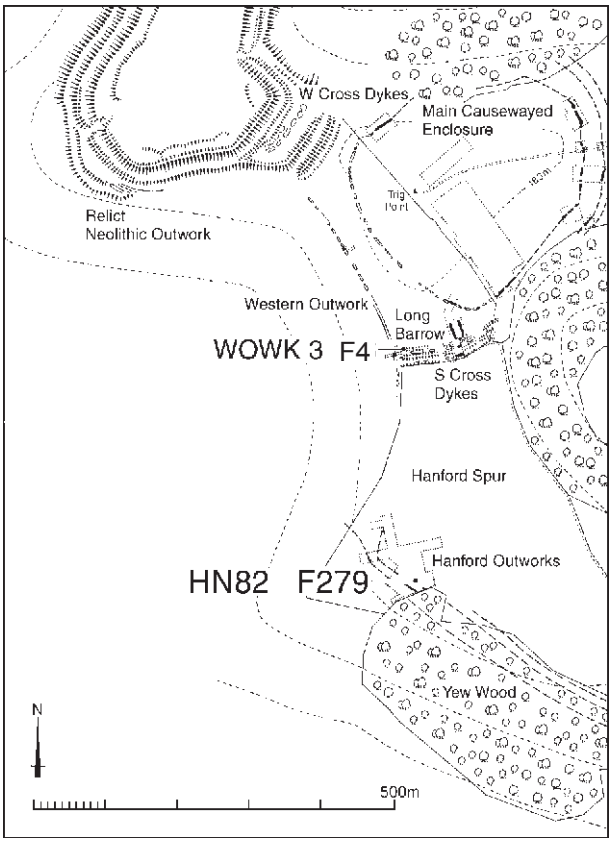

Fig 3.2 Location of features containing pine charcoal of Boreal age.

The central area

WOWK3 F4 lay within the protected chalk of the inner south cross-dyke bank, close to its west butt (Fig 3.44). It seemed to be a posthole in which a shallower east socket was truncated by a deeper west one (Fig 3.3). In the east socket was a postpipe-like concentration of charcoal. The 40 fragments extracted by wet-sieving consisted almost entirely of mature *Pinus sylvestris*, the only other taxon being *Corylus/Alnus*. The precise location of the bulk sample from which the charcoal was wet-sieved is unknown. Since charcoal was concentrated in the east socket, it is likely that the sample came from there. A manually retrieved charcoal find from a depth of 0.22 m must have been in the west socket, since the east one was only 0.12 m deep. It consisted of *Fraxinus excelsior.* A fragment of burnt flint from 0.30 m must also have come from the west socket, the deepest part of which was north of the section line (Fig 3.3). A fragment of pine charcoal was submitted for radiocarbon dating, to determine whether it was indeed of Neolithic date (rather than the remains of a recent fence post). The resulting measurement of 8160–7590 cal BC (OxA-7816, 8725±55 BP) prompted the submission of two fragments of *Fraxinus* from the west socket. These proved to be Neolithic, dating to *3650–3510* cal BC (OxA-8861, 4780±45 BP) and *3640–3420* cal BC (OxA-8862, 4690±45 BP).

The west socket thus seems to have formed part of the cross-dyke bank, whether or not the ash wood was structural. The simplest interpretations for the presence of Boreal charcoal in the east socket are (1) that the charcoal was redeposited, (2) that a Neolithic posthole was cut into a natural feature of Boreal age, or (3) that a posthole of Boreal age was truncated by a Neolithic one. If the Boreal charcoal were the remnant of a wider episode of vegetation-burning one might expect charcoal of contemporary taxa to be widely, if thinly, distributed in the surrounding area. It is not. WOWK3 F5, a Neolithic pit base only 2 m from WOWK F4 (Fig 3.44),

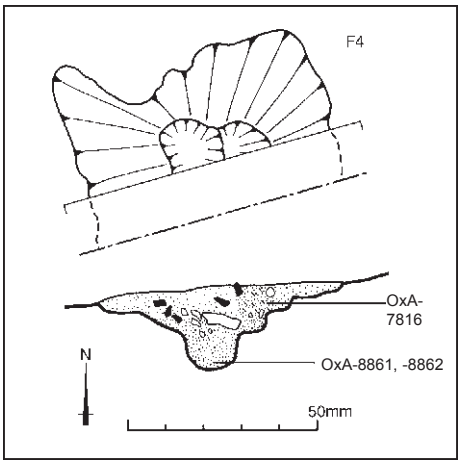

Fig 3.3 Central area. WOWK3 F4, showing probable location of radiocarbon samples. For location in relation to other features see Figure 3.44.

Table 3.1 Context groups and phases

Group	*Earthwork*	*Phase*	*Description*	*Date range*
1			Discrete Neolithic features in central area	Fourth millennium cal BC
2	Main enclosure		Bank area	Multiperiod, includes Neolithic features
3	Main enclosure	I–II	Basal deposits and silts	Fourth millennium cal BC
4	Main enclosure	III	Chalk rubble and related fills	Fourth millennium cal BC
5	Main enclosure	IV	'Grey pits'	Fourth millennium cal BC
6	Main enclosure	V	Slow silts	Fourth millennium cal BC
7	Main enclosure	VI	Slots	Fourth millennium cal BC
7.1	Main enclosure	VI/1, VI/2, etc	Inter-slot silts	Fourth millennium cal BC
8	Main enclosure	VII	'Cap'	Fourth millennium cal BC
9	Main enclosure	VII/a	Beaker/EBA deposits	Third or second millennium cal BC
10	Main enclosure	VIII/a	Old ploughsoils in ditch tops	Multiperiod
11	Main enclosure	VIII/b–g or U/S		Misc & unstratified
12	Inner E cross-dyke	I–II	Basal silts	Fourth millennium cal BC
13	Inner E cross-dyke	III	Chalk rubble & related fills	Fourth millennium cal BC
14	Inner E cross-dyke	V	Slow silts	Fourth millennium cal BC
15	Inner E cross-dyke	VI	Slots	Fourth millennium cal BC
16.1	Inner E cross-dyke	VII/a	Butchery deposit	Early third millennium cal BC
16.2	Inner E cross-dyke	VII/a	Beaker/EBA deposits	Third or second millennium cal BC
17	Inner E cross-dyke	VIII/a	Old ploughsoils in ditch tops	Multiperiod
18	Inner E cross-dyke	VIII/b–g or U/S		Misc & unstratified
19	Outer E cross-dyke	I–II	Basal silts	Fourth millennium cal BC
19.1	Outer E cross-dyke		Bank area	Multiperiod
20	Outer E cross-dyke	III	Chalk rubble & related fills	Fourth millennium cal BC
21	Outer E cross-dyke	V	Slow silts	Fourth millennium cal BC
22	Outer E cross-dyke	VI	Slots	Fourth millennium cal BC
22.1	Outer E cross-dyke	VII/a	Post-slot deposits	Third or second millennium cal BC?
23	Outer E cross-dyke	VIII/a	Old ploughsoils in ditch tops	Multiperiod
24	Outer E cross-dyke	VIII/b–g or U/S		Misc & unstratified
25	Inner S cross-dyke		Bank area	Multiperiod
26	Inner S cross-dyke	I	Basal silts	Fourth millennium cal BC
27	Inner S cross-dyke	III	Chalk rubble & related fills	Fourth millennium cal BC
27.1	Inner S cross-dyke	V	Slower silts	Fourth millennium cal BC
28	Inner S cross-dyke	VI	Slots	Fourth millennium cal BC
29	Inner S cross-dyke	VII/a	Later recut & overlying layer	Third or second millennium cal BC
30	Inner S cross-dyke	VIII/a	Old ploughsoils in ditch tops	Multiperiod
31	Inner S cross-dyke	VIII/b–g or U/S		Misc & unstratified
32	Outer S cross-dyke		Bank area	Multiperiod
32.1	Outer S cross-dyke		Outer bank area	Multiperiod
32.2	Outer S cross-dyke	I–II	Basal silts	Fourth millennium cal BC
32.3	Outer S cross-dyke	III	Chalk rubble and related fills	Fourth millennium cal BC
33	Outer S cross-dyke	R	V-profiled recut	Probably first millennium cal BC
34	Outer S cross-dyke	VIII/a	Old ploughsoils in ditch tops	Multiperiod
35	Outer S cross-dyke	VIII/b–g or U/S		Misc & unstratified
36	Long barrow	I–II	Basal silts	Fourth millennium cal BC
37	Long barrow	III	Chalk rubble & related fills	Fourth millennium cal BC
37.1	Long barrow	IV	'Grey pit'	Fourth millennium cal BC
37.2	Long barrow	V	Slow silts	Fourth millennium cal BC
38	Long barrow	VI	Slots	Fourth millennium cal BC
38.1	Long barrow	VI/1, VI/2	Inter-slot silts	Fourth millennium cal BC
39	Long barrow	VII	'Cap'	Fourth millennium cal BC
39.1	Long barrow	VII/a	Beaker/EBA pits in NE ditch	Beaker/EBA
40	Long Barrow	VIII/a	Old ploughsoils in ditch tops	Multiperiod
41	Long barrow	VIII/b–g or U/S		Misc & unstratified
42	Western outwork		Bank areas	Multiperiod
43	Western outwork	I–II	Basal silts	Fourth millennium cal BC
44	Western outwork	III	Chalk rubble & related fills	Fourth millennium cal BC
44.1	Western outwork	VI	Slot	Fourth millennium cal BC
44.2	Western outwork	V	Slot silts	Fourth millennium cal BC
45	Western outwork	VIII/a	Old ploughsoils in ditch tops	Multiperiod
45.1	Western outwork	VIII/b–g or U/S		Misc & unstratified
46			Central area misc & unstratified	Misc & unstratified

Group	*Earthwork*	*Phase*	*Description*	*Date range*
46			Central area misc & unstratified	Misc & unstratified
47	Shroton spur outwork		Bank area	Multiperiod
48	Shroton spur outwork	I–II	Basal silts	Fourth millennium cal BC
49	Shroton spur outwork	III	Chalk rubble & related fills	Fourth millennium cal BC
50	Shroton spur outwork	V	Slow silts	Fourth millennium cal BC
51	Shroton spur outwork	VIII/a	Old ploughsoils in ditch tops	Multiperiod
52	Shroton spur outwork	VIII/b–g or U/S		Misc & unstratified
53			Discrete Neolithic features on Stepleton spur	Fourth millennium cal BC
54	Stepleton enclosure		Bank area	Multiperiod
55	Stepleton enclosure	I–II	Basal deposits & silts	Fourth millennium cal BC
56	Stepleton enclosure	III	Chalk rubble & related fills	Fourth millennium cal BC
57	Stepleton enclosure	V	Slow silts	Fourth millennium cal BC
58	Stepleton enclosure	IV	Pits with burnt material dug into some segments	Fourth millennium cal BC
58.1	Stepleton enclosure	IV	Stable surface at interface of slow silts and 'midden'	Fourth millennium cal BC
59	Stepleton enclosure	VI	Midden-like accumulation, sometimes probably in recut	Fourth millennium cal BC
59.1	Stepleton enclosure	VII/a	Recut	Third or second millennium cal BC
60	Stepleton enclosure	VIII/a	Old ploughsoils in ditch tops	Multiperiod
61	Stepleton enclosure	VIII/b–g or U/S		Misc & unstratified
62	Inner Stepleton outwork		Bank area	Multiperiod
62.1	Inner Stepleton outwork		Gateway	Multiperiod
62.2			Saxon graves in inner outwork bank	Early first millennium AD
63	Inner Stepleton outwork	I	Basal deposits & silts	Fourth millennium cal BC
64	Inner Stepleton outwork	III	Interstratified other rubble fills, burning	Fourth millennium cal BC
65	Inner Stepleton outwork	V	Slower silts	Fourth millennium cal BC
66	Inner Stepleton outwork	VII	Slower silts 2	Third or second millennium cal BC
67	Inner Stepleton outwork	VII/a	EBA 'Midden'	Second millennium cal BC
68	Inner Stepleton outwork	VIII/a	Old ploughsoils in ditch tops	Multiperiod
69	Inner Stepleton outwork	VIII/b–g or U/S		Misc & unstratified
70	Middle Stepleton outwork		Bank area	Multiperiod
71	Middle Stepleton outwork	I	Basal silts and burning	Fourth millennium cal BC
72	Middle Stepleton outwork	III	Chalk rubble fills	Fourth millennium cal BC
73	Middle Stepleton outwork	V	Slow silts	Fourth millennium cal BC
74	Middle Stepleton outwork	VIII/a	Old ploughsoils in ditch tops	Multiperiod
75	Middle Stepleton outwork	VIII/b–g or U/S		Misc & unstratified
76	Outer Stepleton outwork		Bank areas	Multiperiod
77	Outer Stepleton outwork	I	Basal silts	Fourth millennium cal BC
78	Outer Stepleton outwork	III	Chalk rubble & related fills	Fourth millennium cal BC
79.1	Outer Stepleton outwork	VII/1	Pre-recut ploughsoils	Third or second millennium cal BC?
79.2	Outer Stepleton outwork	VII/a	Recut	Third or second millennium cal BC
80	Outer Stepleton outwork	VIII/a	Old ploughsoils in ditch tops	Multiperiod
81	Outer Stepleton outwork	VIII/b–g or U/S		Misc & unstratified
82			Stepleton spur misc & unstratified	Misc & unstratified
83			Hanford 'flint mines'	Later third millennium cal BC
84			Discrete Neolithic features on Hanford spur	Fourth millennium cal BC
85	Inner Hanford outwork	I	Basal silts	Fourth millennium cal BC
86	Inner Hanford outwork	III	Chalk rubble & related fills	Fourth millennium cal BC
87	Inner Hanford outwork	V	Slower silts	Fourth millennium cal BC
88.1	Inner Hanford Outwork	VII/1	Pre-recut ploughsoils	Third or second millennium cal BC
88.2	Inner Hanford outwork	VII/a	Recut(s)	Third or second millennium cal BC
88.4	Inner Hanford outwork	VIII/b–g or U/S		Misc & unstratified
89	Outer Hanford outwork	I	Basal silts	Fourth millennium cal BC
90	Outer Hanford outwork	III	Chalk rubble & related fills	Fourth millennium cal BC
91	Outer Hanford outwork	V	Lower tertiary fills	Fourth millennium cal BC
92.1	Outer Hanford outwork	VII/1	Pre-recut ploughsoils	Third or second millennium cal BC
92.2	Outer Hanford outwork	VII/a	Recut	Third or second millennium cal BC
92.3	Outer Hanford outwork	VIII/a	Upper Tertiary fills	Multiperiod
92.4	Outer Hanford outwork	VIII/b–g or U/S		Misc & unstratified
93		VIII/b–g or U/S	Hanford spur misc & unstratified	Misc & unstratified

Table 3.1 (*cont'd*)

Group Earthwork	*Phase*	*Description*	*Date range*
94		Hillfort spur undated features	Probably first millennium cal BC
95		Hillfort spur bank area	First millennium cal BC
96		Hillfort spur EIA contexts	First millennium cal BC
97		Hillfort spur misc & unstratified	Misc & unstratified
98		Everley Water Meadow pre-burnt mound	Second millennium cal BC or earlier
99		Everley Water Meadow burnt mound	Mid second millennium cal BC
100		Everley Water Meadow post-burnt mound	Post-second millennium cal BC, mainly Roman, medieval and post-medieval

for example, contained charcoal only of *Fraxinus excelsior*, *Quercus* sp, and Maloideae (a family the most common member of which is hawthorn). The nearest finds of pine charcoal, all single fragments from Neolithic contexts with more abundant charcoal of various deciduous taxa, were from 90 m to the north-east, in a treethrow hole on the site of the main enclosure bank which also contained Neolithic artefacts (P1 F24+F24A); from 150 m to the north-west in a posthole in the western outwork bank, oak charcoal from which is dated to *3630–3350* cal BC (OxA-7815, 4660±40 BP; Fig 3.45: WOWK2 F6); and 225 m to the north-east, in a pit containing a rich earlier Neolithic assemblage (N F5). Furthermore, the compactness and coherence of the charcoal in WOWK3 F4, where it appeared to lie in a postpipe, is scarcely compatible with redeposition.

The Hanford spur (Fig 3.4)

Circumstances here were rather different, in that three features containing pine charcoal lay within 23 m of each other. HN82 F279 was more than twice the size of WOWK3 F4. Its edges were well-defined, and its bowl-shaped form more regular than the plan immediately suggests, the lobate extensions being only slight hollows in the surface of the chalk. It was unlike any of the many natural features on the Hanford spur. A depression in the base was filled with dark humic loam with dense chalk fragments (L5). Above this were two successive, apparently naturally silted layers, the first grading from compact dark grey ashy silt with a few chalk fragments on the upslope side (L4A) to friable light to mid-brown silty loam with small subangular chalk on the downslope side (L4B), the second from dark grey-brown humic loam with dense small chalk fragments on the upslope side (L3A) to a similar matrix with rather more chalk on the downslope side (L3B). Above these was a skin of friable brown loam with peagrit (L2), which seemed to have been cut by the excavation of a pit with shelving sides surviving to 0.90 m in diameter, filled with dark brown humic loam with dense large flint fragments and some chalk (L1), visible in the surface of the unexcavated features as a subcircular area *c* 1 m in diameter. There were no artefacts or food remains. Burnt material seemed to have silted into the feature from the east (upslope) side. *Pinus sylvestris* charcoal was recovered by wet sieving from L4A, L3A, L2 and L1. Single fragments from L4A and L3A were dated to 7580–7200 cal BC (OxA-7845, 8400±60 BP) and 7600–7380 cal BC (OxA-7846, 8480±55 BP). The only other charcoals recovered were one fragment of *Corylus*/*Alnus* from L2 and one indeterminate fragment, possibly of Betulaceae, from L1. The relationship between F279 and F62 to the east was unclear, partly because of difficulty in distinguishing the lower fill of F62 from decayed natural chalk. There were no finds from F62.

F773 was of similar size and shape to F279, and lay 15 m to the south-west within the protected chalk of the outer Hanford outwork bank. It was originally seen as a posthole forming part of that bank. This feature too had clear edges and seemed to have been deliberately cut and to have silted naturally, with light-coloured chalky silt with a few chalk lumps (L3) on the base and sides, overlain by compact light grey-brown silt with some chalk lumps and a little flint (L2). L2 graded upwards into medium brown silty loam, some chalk and much flint (L1). In plan, the flint fragments appeared concentrated around a central stone-free area *c* 0.50 m in diameter, although there was little hint of this in section, where L2 and L1 were not readily distinguished (Fig 3.4). Fragments of *Pinus sylvestris* charcoal were found at a depth of 0.36 m, which would probably place them in L2. A single fragment of *Corylus avellana* charcoal came from the same layer and an indeterminate fragment from a depth of 0.15 m. F773 is undated, and was unlike any of the other possible postholes on the sites of the Hanford outwork banks (Fig 3.136). Its resemblance to F279 and the presence in it of *Pinus sylvestris* and *Corylus avellana* charcoal suggest comparability.

Also within the protected chalk of the outer Hanford outwork bank, 23 m from F279, was a smaller, steeper-sided, flat-based feature, F507, which may have been a posthole or may have been part of the natural hollow at the edge of which it lay (Fig 3.4: F790+F785). Charcoal wet-sieved from a sample taken from 0.10 m deep (ie possibly from the relatively chalk-free area of the fill) consisted entirely of mature *Pinus sylvestris*. A manually retrieved charcoal find from 0.15 m deep has not been located.

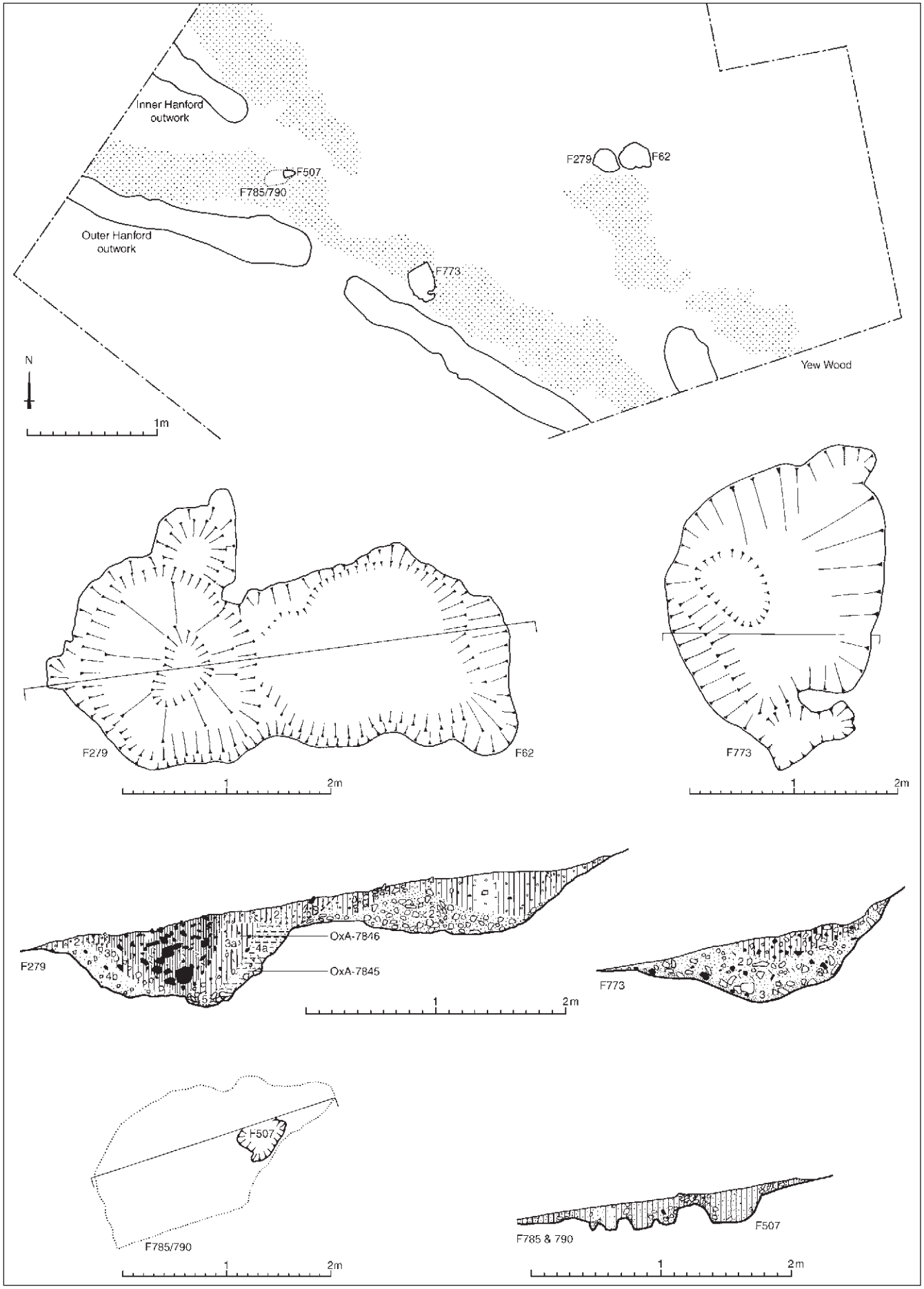

Fig 3.4 Hanford spur. HN82 F279 and other features mentioned in this section. A full plan of features on the Hanford spur is to be found in Fig 3.134.

The Stepleton spur

There were no dated Mesolithic features on the spur. In the bank area of the inner outwork, however, was a feature with some resemblance to those described above, apparently pre-dating the bank. 4C F500 was pear-shaped with shelving sides and a rounded base. It measured 2.45 m by 1.99 m and survived to 0.50 m deep (Figs 3.113, 3.116). It seemed to have silted naturally, largely from upslope. There were no artefacts, but the middle silts were dark with burnt material, from which samples were taken, although they have not been located. These layers were sealed by a loamy upper fill, and thus cannot be attributed to the burning of the overlying Neolithic rampart (see 3.5.4).

The only two identifications of pine charcoal from the Stepleton spur were from a feature of uncertain age in the inner outwork bank some 50 m to the east of this feature and in a Neolithic level in the inner outwork ditch 150 m to the north-west.

Discussion

While pine may well have formed part of the Neolithic forest cover (Austin *et al*, 6.1), *Pinus sylvestris* charcoal from two of the four features described above was of Boreal age. It furthermore occurred in all four without artefacts and either alone (HN82 F507) or with charcoal of species compatible with a Boreal age (*Corylus*/*Alnus* in the east socket of WOWK3 F4, *Corylus*/*Alnus* and ?Betulaceae in HN82 F279, *Corylus avellana* in HN82 F773). While *Corylus* is the most frequently identified taxon from Neolithic contexts, other taxa, especially *Quercus* and Maloideae, are almost as frequent, and collectively far more so (Austin *et al*, 6.1). The absence of these other taxa and of Neolithic artefacts from features in areas of Neolithic activity suggests that they were already silted when that activity took place, and that the Boreal age of the charcoal from WOWK3 F4 and HN82 F279 may be the age of all four features.

The east socket of WOWK3 F4 appears to have held a post little more than 0.10 m in diameter. If so, this would have been much smaller than the massive pine posts of comparable date which stood near Stonehenge (Cleal *et al* 1995, fig 25). HN82 F279 is of similar size to the Stonehenge features, and L1, packed with flint and some chalk, might have been the base of a socket in a severely ploughed-down posthole. This is made less likely by the apparent silting-in of the lower layers and by the apparent cutting of L2 before the deposition of L1, although this relationship was not completely clear in the earthy fills, and L2 could have been the base of a grassland soil butting against the flint and chalk in the centre of the pit. The closest analogy for F279 may be pit 9580 at Stonehenge. F773 was of very similar size and shape, with less obvious, although possible, flint packing, and may have been coeval with F279.

Unlike these two features, F507, also undated, resembled nearby postholes. It may have been contemporary with F279, or it may have been part of the Neolithic bank structure, whether the pine charcoal was structural or redeposited. Redeposition is more likely here than in the central area, since pine charcoal was present in this part of the spur.

The burning of pine at two separate places on the hill in the eighth millennium is likely to have been the result of human action (Mellars 1976). There was contemporary activity on the hill, whether or not the two features with Boreal pine charcoal were coeval and whether or not they were deliberately dug. Identifiable Mesolithic artefacts in the vast flint assemblage, however, are confined to one or perhaps two cores (Saville, 10.2). The near-absence of diagnostic artefacts, in contrast to their abundance on the Clay-with-Flints in Cranborne Chase to the east (Barrett *et al* 1991, 29–30; Arnold *et al* 1988) suggests that contemporary activity in the two areas differed in nature and intensity. It also means that other features of the period on the hill may remain unrecognised, since not all the charcoal from the hill has been identified, especially from pits on the Stepleton spur. The location of Mesolithic or possibly Mesolithic features on sites later covered by earthwork banks suggests that they, like the earthworks, were placed in conspicuous, break-of-slope locations, from where they would be visible from lower ground. In the case of the Mesolithic features, both posts and smoke and flames may have been intended to be seen. In the case of WOWK3 F4, the coincidence of a ten-thousand-year-old posthole truncated by a seven-thousand-year-old one, is rendered less implausible by this locational consideration. Indeed, the only pine charcoal identification (from N F5) which was not from a break-of-slope location was from near the crown of the hill.

3.3 The central area

3.3.1 Introduction

The central area of the hill (Fig 3.5) was quarried for flint into the early twentieth century. 'The whole area of the circular camp has for many years been the site of extensive flint-digging, and its pitted surface as seen in the air photograph [Fig 2.3] is a graphic record of this activity. No habitation sites can be detected now, and except for a few flint flakes and a scraper no relics are known to have been found there, though careful inquiry has been made of the workmen' (Gardner 1928, 47). The quarries were dug in pasture, which obtained up to the early 1960s, when the larger part of the central area was ploughed.

3.3.2 The main causewayed enclosure

The form and size of the enclosure are described in Chapter 2. A possible inner circuit, inferred from air photographic evidence (Palmer 1976a, pl 20), was disproved by the excavation of sites B, C, and N. Between

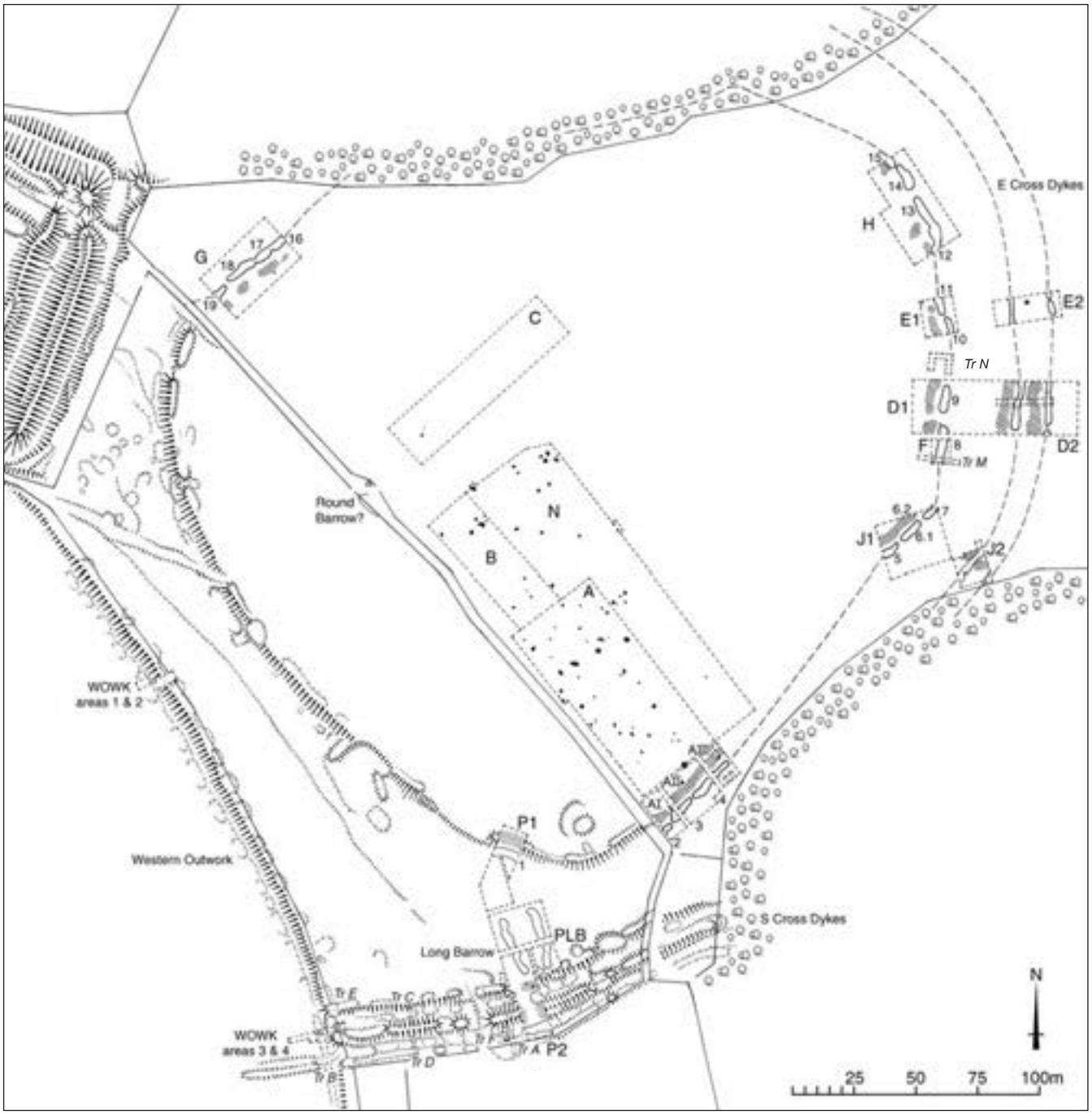

Fig 3.5 Central area. The excavations of Bonney (1958–60) and Mercer (1974–82), showing definite and probable Neolithic features. Bonney's trenches are labelled in italics. Those of Sieveking and Erskine (1951) were in the west and south of the main enclosure circuit but are not precisely located.

1974 and 1977 20 segments were excavated, five of them totally and four almost so. One (segment 8) had already been sectioned by Bonney in 1960 (Bonney archive, trench M), when the causeway between a further two segments and the butt of one of them were also investigated (Bonney archive, trench N). The excavated segments comprise approximately 20% of the circuit. The only investigations in the less degraded south-west part of the circuit have been the excavation of site P1 in 1977 and the trenches cut by Sieveking and Erskine in 1951. The vastly greater remainder all lay in the severely ploughed north-east part of the enclosure.

The bank

Vestiges of upstanding bank were excavated only in Bonney's trench M in 1960 and on site P1 in 1977.

Bonney's trenches M and N (1960)

At the base of the bank exposed in a 1.80 m wide section was up to 0.35 m of 'mixed chalk and flint blocks of varying sizes & much light coloured granular soil'. This layer formed a band approximately 4.30 m wide and contained small quantities of Neolithic Bowl pottery, struck flint, and animal bone. It lay directly on the natural chalk, the surface of which was up to 0.10 m

Table 3.2 Postholes in the central area, including possible postholes where they may form part of structures

* = recorded, but missing or unidentified

Structure	*Feature*	*Category*	*Date*	*Length (m)*	*Width (m)*	*Depth (m)*	*Form*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
E entrance of main enclosure	D1 F1	Definite	Earlier Neolithic or later	0.80	0.80	0.40	Subcircular plan, near-vertical sides, flat base	L2 0.11 m of grey chalk wash with small chalk and flint lumps. L1 dark brown 'greasy' soil with peagrit, chalk and flint lumps. Continuous layer of larger nodules and chalk lumps over top. No sign of postpipe	Could be part of main enclosure entrance, if nodules over top were packing collapsed into now ploughed-down posthole once post rotted or removed, in which case grogged and R-B sherds could be intrusive	*Animal bone*. L1: * *Pottery*. L1 (all plain body sherds): 1/5 g flint-tempered, ?Neolithic Bowl, 1/6 g grogged, ?Beaker, 1/4g WA fabric E101, Roman	3.19
Main enclosure bank	P1 F15	Definite	Earlier Neolithic	0.15	0.10	0.20	Ovoid at top, subcircular at base, almost vertical-sided	Chalky silt and comminuted chalk cf P1 F29	Perhaps truncated basal socket of larger posthole,		3.6
	P1 F25	Definite	Earlier Neolithic	0.41	0.40	0.23	Subcircular, deeper and steeper to S side	Soft-textured, yellowish-brown humic soil, with chalk lumps and patches of chalky silt, largish flints as packing		*Animal bone*. * *Pottery*. 3 sherds/9 g Neolithic Bowl *Lithics*. 3 flakes *Charred plant remains*. Hazelnut shell recorded, not kept	3.6
	P1 F29	Definite	Earlier Neolithic	0.32	0.31	0.30	Subcircular, deeper socket to one side	L1 Black humic material with peagrit, large flint fragments (packing?) at base of wider, upper part lighter peagrit with small flint and chalk fragments in mid-fill, dark humic material on top	No visible postpipe, profile suggests post = <0.10 m in diameter	*Pottery*. 12 sherds/40 g Neolithic Bowl *Lithics*. 8 flakes (1 of chert) *Charred plant remains*. <10 g hazelnut shells Charcoal. *Corylus avellana*	3.6
Inner E cross-dyke	D2 F2	Probable	Earlier Neolithic?	0.80	0.60	0.35	Ovoid, shelving sides, flattish base with socket *c* 0.10 m × 0.07 m, 0.10 m deep	L2 (in socket) white chalky material and ?silt. L1 light brown/cream soil with compact chalk lumps and small flint; 1 flint nodule; slab of chalk tipped at an angle close to side of feature	Within protected chalk of inner E cross-dyke bank, aligned with F3, F4, F5	L2: '3 possible charcoal flecks' and 'possible seed' noted, not recovered	3.37, 3.38

	D2 F3	Probable	Earlier Neolithic?	0.80	0.70	0.15	Ovoid, saucer-like profile	L2 brown soil with chalk lumps. L1 loose, brown, gravelly-textured soil with chalk and flint lumps, some shattered flint spalls and 1 or 2 sizeable flint lumps. Weathered chalk lumps concentrated at W edge. Surface appearance of ring of brown discoloured chalk surrounding inner oval of grey soil	Aligned with D2 F2, F4, F5. Superficial appearance of packing and pipe could reflect very base of original posthole		3.37, 3.38
	D2 F4	Possible	Earlier Neolithic?	0.90	0.58	0.07	Ovoid, saucer-like profile, irregular	Brown soil with weathered chalk lumps and flint	Aligned with D2 F2, F3, F5		3.37, 3.38
	D2 F5.	Possible	Earlier Neolithic?	0.70	0.50	0.10	Subtriangular plan	Brown-grey soil with chalk lumps and some flint	Aligned with D2 F2, F3, F4		3.37, 3.38
	D2 F9	Probable	Earlier Neolithic?	0.45	0.40	0.14	Subquadrangular plan	L2 small chalk lumps with some broken flint. L1 dark brown-grey compact soil with small flint and chalk fragments filling ?postpipe *c* 0.18 m across and 0.09 deep against N side of feature		*Charcoal*. L2: * L1: *	3.37, 3.38
Outer E cross-dyke bank	D2 F18	Possible	Earlier Neolithic?	0.6	0.48	0.12	Subquadrangular, shelving sides	Sticky brown soil with dense broken flint and 2 nodules	Just W of inner edge of protected chalk of outer E cross-dyke		3.37, 3.38
Inner S cross-dyke bank	P2 F16	Definite	Earlier Neolithic	0.18	0.18	0.20	Subcircular, almost vertical-sided	Brown silt with charcoal flecks		*Charcoal*. *	3.42
	P2 F17	Definite	Earlier Neolithic	0.20	0.20	0.10	Subcircular	Grey-brown silt with charcoal flecks; large flints (packing?) on W side	Shallowness compared with P2 F16 may result from position higher upslope	*Charcoal*. *	3.42
	WOWK3 F4	Definite	E socket Boreal? W Earlier Neolithic?	0.70	0.40	0.30	Irregular. Section and plan suggest 2 successive sockets, E one 0.12 m deep and >0.13 m wide with postpipe =>0.10 m in diameter, W one *c* 0.22 m deep and 0.14 m wide (deepest part not on section)	E socket: grey-brown silt with chalk fragments, surrounding apparent postpipe with charcoal flecks. W socket: grey-brown silt with chalk fragments and flint and chalk ?packing, orange-brown clay at outer edge	E socket may have been an earlier feature, truncated by a later posthole relating to the inner S cross-dyke. Alternatively, Boreal charcoal may have been redeposited in a later feature	*Unclassified burnt flint*. W socket: 6 g *Charcoal*. E socket (bulk samples, likely to correspond to charcoal concentration shown on section) C30 – 1 fragment *Corylus/Alnus*; C31 – 37 fragments *Pinus sylvestris* (mature wood);	3.3, 3.44

Table 3.2 (*cont'd*)

Structure	*Feature*	*Category*	*Date*	*Length (m)*	*Width (m)*	*Depth (m)*	*Form*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Western outwork bank										C32 – 2 fragments *Pinus sylvestris* 8725±55 BP OxA-7816) on *Pinus sylvestris* charcoal from WOWK82 C31 W socket (depth 0.22 m): C4–12 fragments *Fraxinus excelsior* 4780±45 BP (OxA-8861) and 4690±45 BP (OxA-8862) on *Fraxinus excelsior* charcoal from WOWK82 C4	
	WOWK2 F5	Definite	Earlier Neolithic	0.20	0.20	0.15	Subcircular	Dark grey silt with charcoal and 20% chalk		*Charcoal*. *	3.45
	WOWK2 F6	Definite	Earlier Neolithic	0.23	0.23	0.23	Subcircular, possible flint packing around rim	Dark grey silt with charcoal and 20% chalk	Section suggests post = <0.10 m in diameter	*Charcoal*. C22 *Quercus* sp, C35 *Quercus* sp with 1 frag *Pinus sylvestris* 4660±40 BP (OxA-7815) on single fragment of *Quercus* charcoal from C22	3.45
	WOWK3 F6	Definite	Earlier Neolithic	0.20	0.20	0.15	Subcircular	Grey-brown clay silt with 50% chalk		*Charcoal*. *	3.44
Long barrow	PLB4 – 5 F6	Possible	Earlier Neolithic	0.35	0.40	0.10	Subcircular, tapering profile	Black humic material with large flint fragments and some chalk lumps. Large flints seemed concentrated around edge in plan, throughout upper part of fill in section	In causeway between two segments of long barrow ditch, at SE end	*Pottery*. 7 sherds/14 g Neolithic Bowl *Lithics*. 3 flakes, 1 misc retouched	3.47

higher than that of the chalk beyond. It was flanked by 'chalk blocks, some flints, mixed with light coloured soil' which stopped short 2 m from the ditch edge. Overlying both was up to 0.30 m of 'weathered chalk, & some flints mixed with dark soil', extending over the natural chalk to the inner edge of the ditch, where it interleaved with the phase VIII/a (tertiary) fills, under no more than 0.10 m of topsoil and turf. The apparent height of the bank at the time of survey was due more to the natural slope than to any surviving deposits (Bonney archive; RCHME 1996, fig 5 (top)).

Trench N, also dug in 1960, was cut to investigate one of the wider causeways rather than to section the bank and ditch. Here there was no trace of the bank or of protected chalk, although a later track through the 5.50 m wide causeway might have removed both. Some 2.00–4.00 m from the inner edge of the ditch, within the area where any bank would have stood, were an irregular shallow pit up to 3.30 m across, with a fugitive edge, and a smaller, circular, feature 0.60 m in diameter. No finds were recovered from either.

Site P1 (1977)

Here turf and topsoil overlay dark brown-black soil with chalk lumps and finely comminuted chalk (L3), continuous with the phase VIII/a deposits in the top of the enclosure ditch (Fig 3.6). This in turn overlay up to 0.30 m of black/brown soil with flint nodules and fragments, chalk lumps, and flint and chalk 'peagrit' (L4), in the base of which features could be distinguished. L4 overlay, in different areas, dark brown clay with large weathered chalk lumps (L5), in all probability a natural deposit, and a patchy skin of degraded chalk with interstitial chalk wash (L6), almost certainly the eroded surface of the natural chalk, neither of which contained cultural material. At one point at the base of L4 were 136 plain body sherds/282 g, most of them from a single bowl, together with *Betula* charcoal. Also in L4 were a further 91 sherds/311 g of Neolithic Bowl, 21 pieces of struck flint, fragments of animal bone and a small amount of *Corylus* charcoal. The visibility of postholes and natural features in L4 suggests that it was a remnant of the pre-bank soil rather than the base of the bank. At its highest, the almost certainly truncated surface of L4 was *c* 0.50 m above the surface of the chalk beyond the bank. In the overlying layers were a further 18 sherds/102 g of Neolithic Bowl pottery, including P3 (Fig 9.1), struck flint and animal bone fragments.

Under L5 and L6 was a band of protected chalk, relatively well preserved and uneroded, *c* 5.50 to 5.70 m wide and 1.50 m from the then ditch edge, rising up to 0.30 m above the chalk surface to either side. Features

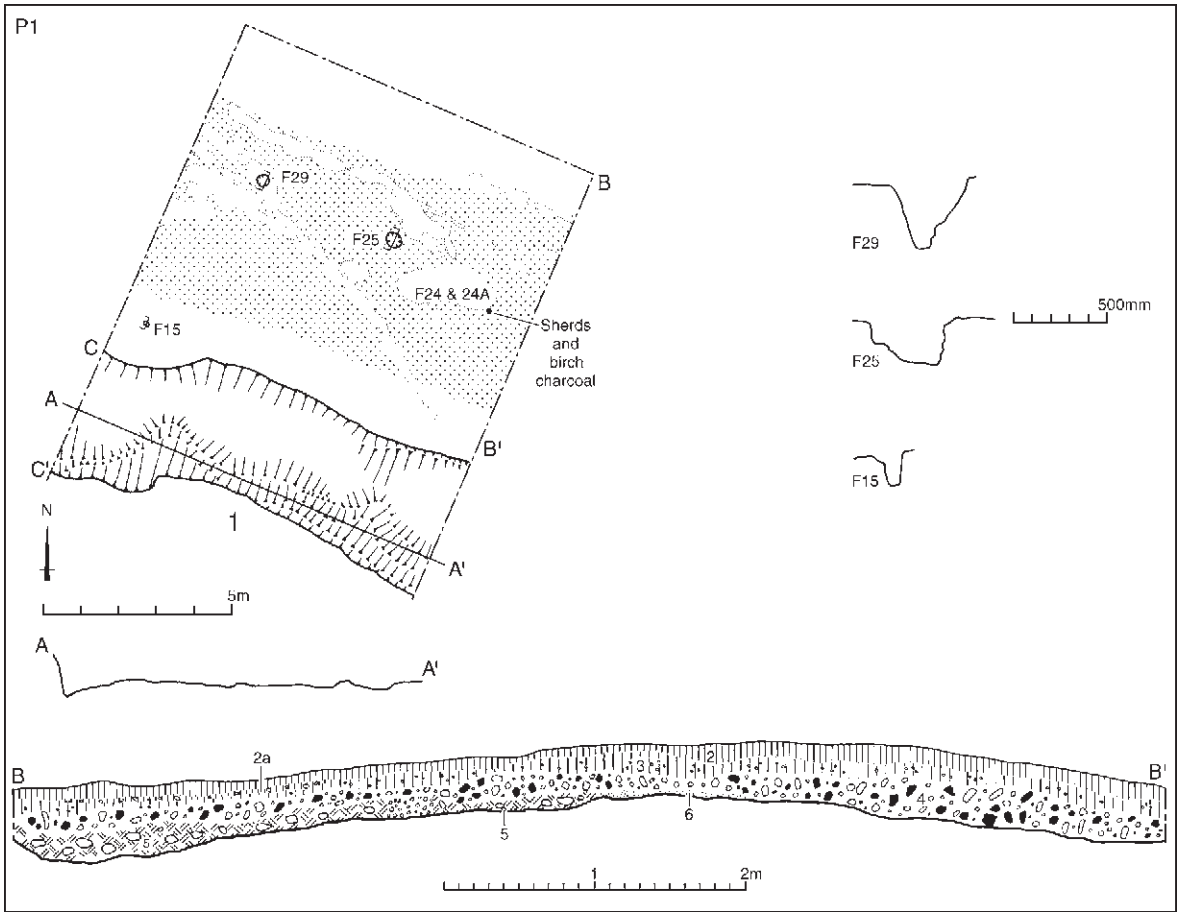

Fig 3.6 Main enclosure, site P1. Plan with profiles of postholes in bank area, longitudinal profile of ditch floor, and section through degraded bank.

within this band included natural ones, some of which, like treethrow hole F24, contained Neolithic artefacts. There were also two postholes, F25 and F29, 3.60 m apart towards the inner edge of the protected surface (Fig 3.6). Both contained flint nodule packing and small quantities of Neolithic Bowl pottery, struck flint, and animal bone. F29 also contained charred hazelnut shell and *Corylus* charcoal. Beyond the protected surface, near the ditch edge, was a smaller posthole, F15, without packing or finds. In the light of these results, the two features in the bank area on Bonney's trench N may have been a posthole and a natural feature.

The rest of the circuit

Elsewhere all that remained of the bank was a band of protected chalk, without definite features and often scored by ploughmarks. On site D1 it reached an exceptional width of 6.80 m, otherwise its width ranged from *c* 1.00 to 5.00 m. Distance from the surviving ditch edge ranged from almost nothing to 3.50 m. It usually continued across causeways. Where breaks occurred, it was unclear whether they were original or the result of subsequent ploughing and other erosion. Some gaps corresponded to the widest causeways: between segments 8 and 9, 13 and 14, and 18 and 19 (Figs 3.19, 3.24, 3.27), as well as in Bonney's trench N. Chalk rubble entering the ditch segments from the inner edge indicates that the bank was largely of chalk (Figs 3.7, 3.9, 3.13, 3.20, 3.23, 3.31, 3.33). On site H, where the ditch cut through patches of Clay-with-Flints, predominantly clay fills extended beyond the clay-cut stretches of ditch in segment 13, suggesting that superficial clay deposits were used to build the bank (Figs 3.24–26).

The ditch

Dimensions can be only approximate, given that the original form of the segments will have been modified by erosion, solution, recutting and other agencies. No tool-marks were recorded, but a detached chalk block still *in situ* in the floor of segment 14 may represent the process of original excavation (Fig 3.26). The fully excavated segments were between 5.00 and 20.00 m long, most clustering between 7.00 and 12.00 m. They were 2.00 to 5.00 m wide, most clustering between 3.00 m and 4.00 m, and had maximum depths of 0.80 m to 2.30 m below the surface of bedrock, most clustering between 1.50 m and 2.00 m. Rog Palmer's survey of the west part of the enclosure indicates that the unexcavated segments still visible there may be rather shorter. They have the same length range, but cluster between 4.00 and 10 m.

While adjacent segments were generally aligned on each other, the opposed butts of segments 10 and 11, 12 and 13, 14 and 15, and 18 and 19 were offset (Figs 3.23–24, 3.27), and only the south-west end of segment 4 aligned with segment 3 (Fig 3.9). Almost all were originally dug as two or more intercutting pits, marked by contractions in the sides and steps and humps in the bottom. Sub-segments were often of unequal depth, seen particularly sharply in segments 11 and 14 where one sub-segment seems no more than a shallow 'tail' of the other (Figs 3.23, 3.26). Many causeways were less than 1.00 m wide. Any distinction between a single segment made up of well-defined intercutting pits, like segment 13 (Fig 3.24), and others divided by slight causeways, like segments 16 to 18 (Fig 3.27), is arbitrary. Segments tended to merge more in the north-east and north-west than elsewhere.

Possible entrances

Topography indicates that the main entrances would lie on the three spurs by which the central area is most easily approached. In the north-west of the circuit there seems to be a particularly marked gap between two segments just to the west of the track which crosses the enclosure (Fig 2.8). In the south, giving onto the Stepleton and Hanford spurs, a wide causeway in the inner (and originally the outer) south cross-dyke on site P2, beside a deep, expanded, out-turned segment butt, may have corresponded to an unexcavated entrance in the main enclosure between segment 1 and the next segment to the west (see 3.3.4).

In the east of the circuit, giving onto the Shroton spur, some of the wider causeways in the enclosure ditch itself corresponded not only to breaks in the protected chalk but to other characteristics which suggest that they may have been entrances. On site D1 the butts of segments 8 and 9, flanking a 5.30 m causeway, were deeper and wider than the remainder of each segment and than most of the other excavated segments. The causeway corresponded to a break in the protected chalk and to the clearest break shown in the first RCHME survey of the then surviving bank (RCHME 1970, 130), as well as to the widest recorded band of protected chalk, perhaps reflecting an originally more massive bank; it also lay in the same position relative to the crown of the spur as aligned causeways in both east cross-dykes (Figs 3.5, 3.19, 3.37). At the south side of the causeway a vertical-sided feature 0.80 m in diameter may have held the post of a gate or other barrier. While this was the size and shape of a posthole, however, there was no sign of a postpipe. Flint nodules and chalk lumps formed a continuous capping rather than lateral packing, and three small, abraded body sherds from its upper layer were respectively in earlier Neolithic, Beaker or early Bronze Age, and Roman fabrics (Fig 3.19: D1 F1). This could be interpreted as a severely truncated Neolithic posthole into which packing had collapsed following the decay or removal of the post, and into which two intrusive scraps of pottery (weighing only 6 g and 4 g) were introduced.

Some of the same characteristics recur at two other wide causeways, both facing onto the Shroton spur. The 5.50 m causeway in Bonney's trench N coincided with breaks of uncertain date in the bank and the

protected chalk, with a possible posthole, and with a particularly wide and deep adjoining segment, 3.36 m across and 1.80 m deep. A 4.5 m wide causeway between segments 13 and 14 on site H corresponded to a break in the protected chalk surface, although here a patch of Clay-with-Flints may have rendered any bank shadow invisible, and to an exceptionally wide (5.00 m) and fairly deep (1.60 m) butt in segment 14 (Fig 3.24). Both this and the causeway between segments 8 and 9 coincided with some of the few flint beach pebbles from the site (Fig 3.69). Any entrance giving on to the hillfort spur awaits identification. If central to the spur, it would lie south-west of site G.

Phases I and II

These represent a period during which fine chalky silts formed on the ditch bottom, from which they were sometimes removed, and particular deposits were made. At least two phases can often, but not always, be distinguished. Abrupt, even vertical, upper edges to the primary silts often indicated that their central parts had often been removed from the ditch bottom (Figs 3.13, 3.18, 3.28–29, 3.31). Primary silts tended to be continuous across conjoined sub-segments. There is no unambiguous evidence for the cutting of one part of a pit-dug segment before any other. In segment 18, however, the stratigraphy could be consistent with the cutting of the shallower south-west sub-segment at the same time as the recutting of the deeper north-east one and of segment 17 (Figs 3.29, 3.31). Finds of all kinds were scarce in the primary silts, which were often sterile or virtually so. A marked exception is segment 13, where the Clay-with-Flints through which the segment was cut provided raw material for knapping which had been carried out on the spot.

Child burial (Figs 3.27, 3.29, 3.32–34)

In segment 18 a juvenile (HH76 1948) was buried in an ovoid grave cut into the ditch base in a corner of the shallower of two sub-segments. It was not clear whether the grave had been cut through primary silt. The skeleton lay flexed, on the left side, facing north-west, with the head bent back and the hands drawn up in front of chest. The feet were not recovered. Contraction into a smaller area than the grave might suggest an organic container. There were three tubular bone beads in the head area, one made from the tibia of a large bird, perhaps a swan, and a flint flake in front of the hands. All but the skull was covered by a tabular flint cairn built directly over the body.

Cairns

Heaps of flint with some chalk were built directly on the chalk or over a thin wash of silt in segments 1, 5, 6.1 and 6.2. It is not clear whether two cairns (one less convincingly defined than the other) in segment 16 lay on the primary silt or in a recut made through the earlier part of the chalk rubble fills of phase III. Most cairns incorporated a few sherds, some fragments of animal bone, and sometimes charcoal. The best defined of three on the base of segment 1 also contained the skulls of a young juvenile and an older juvenile, without mandibles (Fig 3.7); some fragments of the young juvenile skull were cut-marked (McKinley, 7.1), and there was Pomoideae and *Corylus* charcoal inside one of the skulls. A cairn in segment 6.2 incorporated some of the disarticulated remains of a child (Fig 3.18).

Bands of dumped material

In segments 2, 3, 8 and 11 a band of earthy material conforming to the sinuosities of the ditch edges was placed along the midline of the bottom of the ditch, sometimes directly on the bare chalk, sometimes on the primary silt or in a channel cut through it (Figs 3.10, 3.20, 3.23). In segment 8, successive changes in colour and consistency suggested that the band consisted of a series of small dumps, a possibility heightened by the occurrence in it here and in segments 2 and 11 of sherd groups each found at a single spot and each derived, or mainly derived, from one pot. Such cohesion suggests careful placing, perhaps even of material in perishable containers such as bags or baskets.

Pottery, animal bone and charcoal were abundant in these deposits in comparison with the often near-sterile primary silts. Human remains were invariably present, including skulls and/or skull fragments in every case except segment 2. In segment 3 there was a row of three crania, one of them fragmented between two findspots (Figs 3.9, 3.11, 3.12). Some interval seems to have elapsed before the deposits were covered over. In segment 2 a concentration of finds at the top of the deposit may have weathered out from or been placed on its surface. In segment 3 the band was partly capped by a skin of hard-packed, clay-like chalk silt with some iron-staining, tentatively interpreted at the time of excavation as a trampled surface. In segment 8 a charcoal patch and two joining groups of fragments of a single infant skull were found at the interface of the deposit and the overlying chalk rubble.

Other deposits and features

These were slight and of uncertain character. In segment 1 a small heap of dark grey clay with chalk lumps and much charcoal was piled on the ditch bottom; in segment 6.1 a localised 'dark brown deposit' underlay the primary silt. There was an irregular row of eight possible stakeholes in the primary silt of segment 14, although it was not clear from what level the stakes (if stakes they were) had been inserted (Fig 3.26). In segment 9, two lenses of ashy material were tipped onto the primary silt in the south butt from the possible entrance causeway between segments 8 and 9.

II/III interface

On the apparently stable surface of the phase II silts in segment 6.1 were the articulated lower axial skeleton and femora of a young man. The skeleton had been

gnawed by dogs and there were numerous cut-marks on the femurs. Nearby were a pig vertebra, a cattle tibia and a cattle vertebra. The skeleton was covered by a diffuse spread of flint nodules contained in a dark, charcoaly matrix (Figs 3.15–17; McKinley, 7.1).

Phase III

The phase III fills, which occupied the bulk of almost every segment, typically consisted of three main elements: (1) vacuous chalk rubble, gravitated from the sides and bank to the centre and most abundant in the south-east and north-west, where the ditch is on a pronounced slope, interleaved at the sides and butts with (2) runs of finer silts, chalky when derived from the interior, earthier when derived from the exterior, and topped by (3) more heavily weathered, comminuted, and cemented chalky deposits. This silting pattern sometimes seems to have been allowed to begin immediately after a partial removal of the basal silts, seen in sharp, near-vertical edges at their junction with the chalk rubble fills (Figs 3.13, 3.18, 3.28–29). Recuts in the already accumulating chalk rubble fills, subsequently filled with more chalk rubble, were occasionally observed, as in segment 16 (Fig 3.28), and may have been more frequent. Artefacts, animal bone, and human bone, the last mainly skull and long bone fragments, were scattered throughout, with some well-defined deposits, including an alignment of human and cattle bone placed at an hiatus in silting in the south-west end of segment 4 (Fig 3.13), and distinct tips of artefacts, animal bone and charcoal in the east of the enclosure, in segments 9, 11, 13, and 14, and Bonney's trench N. Also noteworthy are three complete or fragmentary cattle skulls, without mandibles, in segments 4, 9 and 11 (Figs 3.13–14, 3.22). In segments 17 and 18 this phase is marked by a concentration of articulating groups of animal bone, especially feet, which persists in this area to the end of the Neolithic sequence (extending in phase IV to segment 16, but not to segment 19).

Phase IV

Cut into the chalk rubble fills were scattered pits, seldom more than 1.50 m in diameter, characterised by their soft, loose, grey, ashy fill. In segments 1 and 4, and perhaps 11 and 18, such pits were cut while chalk rubble fills were still accumulating (Figs 3.7, 3.30). The pits in segments 3 and 5 were cut once the phase III surfaces had stabilised. The pits almost always contained charcoal, and occasionally also contained small quantities of burnt flint, with very little other cultural material, among which human longbone fragments and a cut-marked human mandible fragment in segment 1 are exceptional.

In the north-west part of the circuit deposits of this phase took a different form, although still characterised by grey, ashy fills. The only pits comparable with those around the rest of the circuit were in segment 18. In segment 17 the ashy deposit seems to have been dumped in the centre of one sub-segment. In segments 16 and 19 it filled troughs rather wider than the subsequent slots, dug along most of the length of the segments (Figs 3.28, 3.35). The extensive phase IV deposits in segments 16, 17 and 19 were rich in cultural material, including the exceptional, for example a beaver patella, mustelid and rodent bones, a fragment of grape vine charcoal, fragments of box wood charcoal (otherwise represented only by one find from site H), and a high frequency of pottery of clay from Jurassic sources, exceeding the general level in phases V and VI, where such wares became more widespread. All three contained human remains. In segment 19, skull fragments from an older adult male with mandible, cervical vertebra and rib fragments, patella and finger phalanx were found next to or extracted from the south-west face of the excavation, suggesting that more of the same individual may remain unexcavated. Articulated animal bone continued to be concentrated in this area.

Phase V

Cultural material was scarce in the more slowly accummulated silts of phase V, except in a few segments, notably 3, 7, 9, 13, 16 and 17, all but the last two being well separated from each other. This may suggest that the material resulted from individual, small-scale, episodes of activity, especially in segment 7 where artefacts and animal bone were concentrated in a single thin silt layer (Fig 3.18: L5).

Phase VI

Still within the earlier Neolithic, when the ditch was a shallow depression in which fine silts continued to accumulate, a series of slots was cut along its deepest surviving part, which varied between the midline and the outer edge. These slots respected the limits of the underlying segments, sometimes even sub-segments, and many were recut, along all or part of a segment, up to four or five times (Figs 3.7, 3.9, 3.13, 3.15, 3.18, 3.20–23, 3.25–26, 3.28–29, 3.31, 3.35). Their dark fills were generally characterised by a clayey texture, often described as 'greasy', abundant flint and chalk lumps – larger, more frequent and sometimes more angular than those in the deposits through which the slots were cut – and a high concentration of cultural material. Colour, texture and inclusions varied between segments, between recuts in a single segment, and sometimes laterally within one cut, as in segment 1. This, combined with clustering of finds, suggests discrete dumps, raising the same possibility of organic containers as some of the phase II deposits. Most conspicuous among the contents were large quantities of substantial, well-preserved animal bone, often in groups and including articulating material (Figs 3.8, 3.9, 3.15, 3.21, 3.22). Disarticulated human remains consisted mainly of skull and longbone fragments, as in previous phases. Artefacts were denser than in any previous set of

deposits, including, for example, over a third of the Neolithic Bowl pottery from the main enclosure, pottery differentiated from the earlier assemblages in fabrics, forms and frequency of decoration (Smith, 9.1.1). In segment 9 the slot was widest and richest in finds next to the possible entrance suggested above. In segment 14 slot-cutting was punctuated by the dumping of two successive spreads of material similar in matrix and content to the fill of slots elsewhere, at least one of them introduced from the wide causeway between segments 13 and 14, which may have been another entrance.

Where the surfaces of slots had not been truncated, their fills tended to be mounded up above the sides, as in segments 1, 11, 13, 14 (Figs 3.8, 3.23, 3.25–26). The same seems to have obtained in segment 9, where material in the slot was described as standing proud into the overlying layer, and in segments 17 and 18, where bone and flint seemed to protrude from the slot into the overlying layers, to the extent that in places these layers seemed to abut it rather than run over it. It is as if the soil fraction of originally mounded-up fill had weathered away leaving the more durable elements behind. In segment 1 a flint cairn (F8) was built on the base of a slot, and one, possibly two, posts may have been set into the same slot (Fig 3.8).

Phase VII

A setting of flint nodules and fragments, occasionally incorporating fossils, chalk lumps, cores, and stone implement fragments, frequently capped the slots (Figs 3.8, 3.28). The flint setting has been seen as a distinct, final deposit. If the slot fills were originally mounded up, however, the 'cap' might simply have been the weathered, durable residue of their topmost part, the erosion of the soil matrix having concentrated the nodules in a single horizon. In favour of this interpretation is the lack of stratigraphic division between slot fill and overlying 'cap' together with similar stone size and density in both (eg Figs 3.8, 3.20, 3.23, 3.28, 3.35). Alternatively, the stones of a subsequently deposited capping may have gradually sunk into the softer underlying slots. In segment 19 the larger flints were stacked on one another. In segment 1, the only excavated segment not subjected to recent ploughing, removal of the topmost flints revealed five discrete concentrations of nodules and chalk lumps, one (Fig 3.8: F6) corresponding to the limits of a recut, one (Fig 3.8: F3) to the more convincing of two possible postholes in the slot, and one (Fig 3.8: F2) to a cairn of stones on the slot base. Whatever the relation between slot and capping, the cap may originally have been piled up in heaps rather than in a continuous band, and may have incorporated now perished components, whether posts or organic material. One motive for the accumulation of so many stones may have been to protect the meat and bones in the slots from scavengers.

Articulated child burial

A young juvenile (HH76 3046) was buried in a grave cut into the north angle of the north-east butt of segment 17. The child was flexed, on its right side, facing south, with the arms at the sides and with two carved chalk lumps behind the head (Fig 3.34). It lay under an overhanging slab of *in situ* tabular flint, the edge of which seems to have been broken off as the grave was cut. Further flint slabs were placed over the body; others found in the immediate area may have been displaced from a larger cairn (Figs 3.27, 3.29, 3.30, 3.34). The skeleton is dated to a period slightly later than the filling of the slots by two radiocarbon determinations with a mean of *3380–3320 cal BC* (4550±60 BP (OxA-7039) and 4565±60 BP (OxA-7040); Fig 4.12) and must have been cut into the ditch from a high level. Its location in the side of the causeway between segments 17 and 16, at a considerably higher level than the floor of either, left it beyond the limits of the phase IV and (just) of the phase VI deposits, overlain by predominantly earthy fills in which the upper sides of the grave cut would not have been easily distinguished, especially if it were backfilled with the extracted material (Fig 3.29). The unusual ending of the upper slot well short of the north-east butt may have resulted from its truncation by the grave.

Phase VII/a

Truncated soils?

In segment 8, a skin of peagrit lay between the phase V silts and the phase VIII/a deposits, running to the inner edge of the slot (Fig 3.20: section B–B', L3A). It contained Beaker pottery, which formed a single assemblage, linked by fragments of a single vessel (Fig 9.10: P168), with further sherds scattered over the top of the slot. This seems most readily interpreted as the base of a worm-sorted soil, almost all of which was destroyed by the ploughing that generated the phase VIII/a deposits (in this case L3). The accumulation of almost no deposit over a period of at least a thousand years between the filling of the slots and the currency of Beaker, and the formation of a worm-sorted peagrit layer would both be compatible with the presence of a stable soil, which might suggest grassland over the ditches in the interval between earlier Neolithic and Beaker activity. There was a comparable peagrit layer in segment 6.1, without the accompanying Beaker, while in segments 16 to 19 a skin of peagrit underlay a layer of small, weathered chalk lumps, generally only one lump deep, which in turn underlay the phase VIII/a deposits (Figs 3.28–29, 3.31, 3.33, 3.35: L4). These may have been remnants of an originally more extensive earthworm-sorted grassland soil. The date of their formation, however, remains uncertain. Molluscan evidence points to clearance on the hill, with a substantial amount of woodland remaining, in Beaker and early Bronze Age times (Bell *et al*, Ch 5). Stability, and hence lack of accumulation in the middle and late

Neolithic, could have been a product of the almost completely silted state of the ditch, in a partly or wholly wooded environment. The Beaker sherds in segment 8 could furthermore have been sorted to the base of a mid- to late third millennium grassland soil rather than a pre-existing one.

Features

In segment 10 a steep-sided recut truncated almost all the earlier deposits, sometimes reaching the ditch bottom (Fig 3.23: L6). It was filled with dark, gravelly soil, like that of the overlying phase VIII/a deposits (in this case L3), with which it seemed continuous, and contained comminuted rather than well-preserved, bone and a little Beaker pottery. Most of the earlier fills of the adjoining south butt of segment 11 were removed by a pit-like recut (Fig 3.23: L6A). In the north of the same segment, a possible post-phase VI recut was filled with the lower layers of the phase VIII/a deposits (Fig 3.23: section D–D', L3A). Only the recut of segment 10 is dated by artefacts, the other features are related to it by stratigraphic horizon, fill character and proximity.

Phase VIII/a

A ubiquitous horizon overlying the often flattened and truncated surface of the preceding layers had all the characteristics of a ploughsoil: dark, earthy matrix, unsorted, comminuted flint and chalk gravel, an excess of durable struck flint over rapidly degradable pottery. It is likely to represent intermittent cultivation up to the establishment of the turfline above it, which was current up to levelling in the early 1960s. Ridge and furrow on the Shroton and hillfort spurs (Palmer and Oswald, Ch 2) suggests that cultivation in the central area too could have continued at least into the medieval period. The 674 sherds/2078 g of pottery from these layers are, by weight, 78% Neolithic Bowl, 18% Beaker or early Bronze Age, 1% Bronze Age, 1% Roman and 2% indeterminate. A disparity between the mean sherd weight of Bowl (3.5 g) and Beaker (2.1 g) would be consistent with the Beaker having being subject to attrition almost from deposition on a pre-cultivation surface, while the Bowl would have been only gradually ploughed out of the top of the ditch.

Superficial deposits

These typically consisted of patches of the pre-1960s turfline overlain by current ploughsoil. The paucity of ploughsoil finds reflects mechanical stripping; the paucity of finds from the hand-excavated turfline is genuine. The composition of the few finds from both points to little post-Neolithic discard of artefacts.

Noteworthy are ten sherds of Late Bronze Age pottery from four separate findspots at the base of the recent ploughsoil on site G, closest to the hillfort. A single, small Late Bronze Age rim sherd in the phase VI slot on site E was presumably intrusive.

Superficial deposits were comparable throughout the central area and will not be further described.

Main causewayed enclosure segment catalogue

The following conventions are used throughout the segment catalogues:
Segment dimensions are maxima, with depth measured from the surviving surface of the chalk at the inner edge of the ditch.
The only animal bones listed are specimens identified to species and anatomical part; almost all, even of these, are highly fragmentary.
Lithics are of flint unless otherwise stated.
* = recorded, but unidentified or missing

Segment 1 (Figs 3.7–3.8)

Original notation. HH77 site P CD, or CD1, or CD area 1 (later site P1).
Form. Pit-dug in at least three intercutting sub-segments, the completely excavated central one being 5.50 m long.
Length c 18.00 m, *width* 3.90 m, *depth* 1.40 m.
Excavation. *c* 35%. Dug in plan except for axial section cut along phase VI slot. Neither butt lay within the 10 m wide excavated area. Length estimated from earthwork and AP evidence.

Phase I. Three heaps of flint nodules and chalk lumps on ditch bottom, F11 in NW sub-segment, F10 (the most coherent) and F12 in central sub-segment. Conical-profiled heap of dark grey clay with small chalk lumps and much charcoal on ditch bottom (F13), visible only in the SE section, 0.18 m wide, at least 0.26 m long, 0.22 m high.

Grey-beige chalk silt with some chalk lumps (L8) at junction of the bottom and lower sides of the ditch, with more frequent chalk lumps against the outer side of the NW end (L9B). SE section seems to show uninterrupted natural silting. Steep angle of L8 and L9B in NW section suggests that they may have been cut away.

Human remains

F10: Skulls of older juvenile and young juvenile, both without mandibles, crushed and fragmented when found, but apparently deposited complete, incorporated in cairn (HH77 682, 725, 848, 849, 852, 1037). Cut-marks on parts of young juvenile skull (HH77 725, 849)

Animal bone and/or antler

F10: *cattle* femur, humerus
F11: *pig* teeth
F12: *
L8: *

Pottery

F10: 2 body sherds/16 g Neolithic Bowl pottery. F11: 1 body sherd/18 g of Neolithic Bowl pottery. L8: 3 sherds/7 g Neolithic Bowl pottery

Lithics

L8: 7 flakes

Charcoal

F10, inside one of skulls: 2 fragments Maloideae, 1 of *Corylus avellana*
F13: mainly *Corylus avellana*, some *Carpinus betulus* and *Quercus* sp
L8: *

Phase II. Dense chalk lumps in chalk silt (L7, L7A, L9A), deepest at inner side, where deposit clearly laminated at SE end. Profile suggests truncation at NW end and on outer side at SE end.

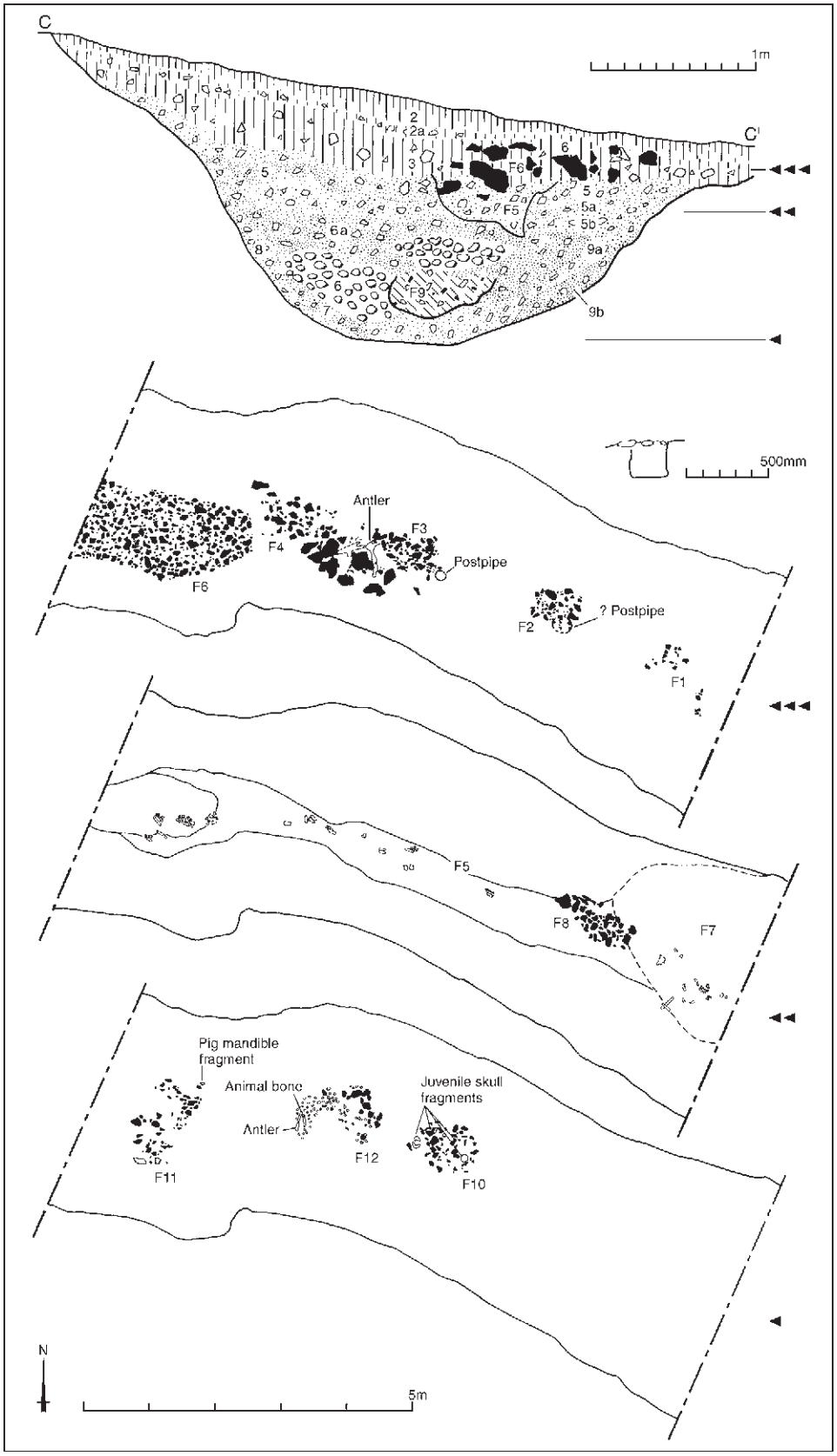

Fig 3.7 Main enclosure, site P1. Section of segment 1, with plans of phase I, phase VI and phase VII deposits. Particulars in segment catalogue.

Human remains
L7: Adult tibia shaft fragment (HH77 621), older subadult/adult distal humerus shaft fragment (HH77 911)

Animal bone and/or antler
L7: *roe deer* antler fragment (HH77 771); *cattle* humerus, radius, tibia, metacarpal, horncore; *caprine* humerus, teeth, horncore

Pottery
L7: 222 sherds/464 g Neolithic Bowl pottery, including joining sherds of at least 2 vessels, one of them split between two findspots *c* 3.50 m apart

Lithics
L7: 9 flakes, 2 scrapers

Charcoal
L7: *Fraxinus excelsior*

Phase III. Chalk rubble with some flint, vacuous, encrusted and angular towards centre-bottom (L6), giving way to smaller, more rounded fragments in silty or clayey matrices (L6A in NW, L5C–D in SE). In NW, phase IV pit F9 was interstratified with phase III.

Animal bone and/or antler
L6: *

Pottery
L6: 5 sherds/20 g Neolithic Bowl pottery

Phase IV. Pit F9 cut into lower part of phase III fills, covered by their upper part. Sinuous, irregular outline, 1.00 m north-east to south-west, >1.40 m south-east to north-west, 0.65 m deep. Friable grey-black fill with chalk lumps, clay, much charcoal and some flint. Two particularly dark areas, subcircular and surrounded by brown clayey material, observed in surface before excavation. Comparable feature may have been present in SE section.

Human remains
F9: Older adult mandible fragment, charcoal-stained, probably cut-marked (HH77 610), 2 adult L femur shaft fragments (HH77 581)

Animal bone and/or antler
F9: *pig* scapula; *cattle* scapula, ulna, tarsal, teeth; *caprine* humerus, femur, metacarpal

Pottery
F9: 38 sherds/130 g Neolithic Bowl pottery

Lithics
F9: 16 flakes, flake from ground implement

Unclassified burnt flint
F9: 43 g

Charcoal
F9: *Corylus avellana*, *Quercus* sp, Maloideae, *Prunus* sp

Phase V. Small, weathered chalk lumps with varying admixtures of chalk peagrit and flint in an earthy matrix (L3A, L4, L5, L5A, L5B) silted to an almost level surface across the ditch, chalk fragments denser on the bankward side, pocket of clay at SE end.

Animal bone and/or antler
L5 *

Pottery
L5: 3 sherds/10 g Neolithic Bowl pottery. L4: 1 sherd/3 g Neolithic Bowl pottery

Lithics
L5: 4 flakes

Phase VI. VI/a: F5, slightly sinuous slot up to 1.30 m wide and 0.30 m deep, with sharper edge at outer side than inner, cut along the midline of silted ditch. Flint nodules (F8) piled on its bottom at junction of central and SE sub-segments. Fills of F5 generally dark and earthy with frequent small, weathered chalk lumps, but with lateral variation, matrix ranging from clayey material to discoloured chalk silt, with one area of vacuous chalk rubble and flint. Vertical-sided, circular feature 0.12 m in diameter and 0.12 m deep, filled with dark brown clay in central sub-segment, at junction of two distinct fills in F5, apparently a postpipe, with no trace of posthole or packing. If so, the post was either placed in F5 as it was backfilled or driven into the already filled slot. Second, bowl-profiled, clay-filled pocket of similar diameter 2.00 m to the SE less convincing as an artificial feature.

Human remains
F5: Two subadult skull fragments, maxillary molar, other tooth fragments (HH77 360); possibly human femur shaft fragment in cluster of animal bone (HH77 590)

Animal bone and/or antler
F5: *pig* tooth; *cattle* tibia with astragalus and calcaneum (all articulated – HH77 358), mandible fragment, tooth
F8: *

Pottery
F8: 7 sherds/33 g Neolithic Bowl pottery

Lithics
F5: reflaked cutting edge end of ground flint axehead (HH77 505). F8: 1 flake

^{14}C
F5: *3680–3620 cal BC (68%) or 3590–3520 cal BC (27%)* (4870±45 BP; OxA-8851) on HH77 358

Phase VI/b: In NW sub-segment light-coloured chalk silt fill of F5 clearly truncated by recut filled with very dark brown gritty clayey soil with chalk lumps and flint. This was not given a separate feature number – finds from F5 and NW recut distinguishable only if measured-in or plotted. In SE sub-segment F7 (difficult to define – over-excavated?) seems to have cut F5.

Animal bone and/or antler
F7: *pig* mandible; *cattle* scapula, mandible, teeth, vertebrae, rib fragments; *caprine* femur, tibia.
NW recut: *cattle* scapula, femur, tarsal, 2 vertebrae; *caprine* scapula, tibia

Pottery
F7: 240 sherds/1002 g Neolithic Bowl pottery, including P41 (Fig 9.3)

F5 (VI/a) or SW recut (VI/b)

Animal bone and/or antler
Pig 4 humeri, ulna, metapodial, teeth; *roe deer* tibia; *cattle* scapula, femur, metatarsal, 2 phalanges, vertebra, tooth; *caprine* tibia, metacarpal, horncore

Pottery
185 sherds/668 g Neolithic Bowl pottery, including P87 (Fig 9.7) and 76 sherds/220 g in Darvill's fabric 2iv (shell with recrystalised ooliths) from lugged vessel *c* 140 mm in diameter with simple pointed rim

Lithics
21 flakes, 2 scrapers

Unclassified burnt flint
54 g

Charcoal
Mainly *Quercus* sp, with *Corylus avellana*, *Fraxinus excelsior*, *Carpinus betulus*

Fig 3.8 Site A towards the end of the first season in 1974, from the south, showing the degraded and variegated state of the stripped chalk surface. Photographic section HMS Heron neg no. 10157. © Crown Copyright/MOD

Phase VII. Five concentrations of flint nodules and chalk lumps along the top of the phase VI deposits, extending down into them. F6 completely covered SW recut of F5. F2, F3 and F4 all in central sub-segment. F2 more-or-less coincided with F8 (underlying phase VI flint cairn) and with more dubious of two clay-filled features in F5. F3 at NW edge of apparent postpipe in the slot. F1 over NW sub-segment.

Animal bone and/or antler
F1: *
F3: *
Spread of nodules between F3 and F4: antler pick

Pottery
F6: 9 sherds/31 g Neolithic Bowl pottery
F2: 1 sherd/4 g Neolithic Bowl pottery
Not located to feature: 1 sherd/1g Neolithic Bowl pottery

Lithics
F1: flake
F2: 4 flakes
F4: 2 flakes
Not located to feature: 67 flakes, core, serrated flake

Phase VIII/a. Dark brown/black earthy matrix with abundant weathered chalk lumps, finely comminuted chalk and some flint (L3), overlain in NW by band of comminuted chalk in dark earthy matrix, apparently eroded from the bank.

Animal bone and/or antler
L3: *rodent* 2 scapulae

Pottery
L3: 4 sherds/4g Neolithic Bowl pottery

Lithics
L3: 14 flakes

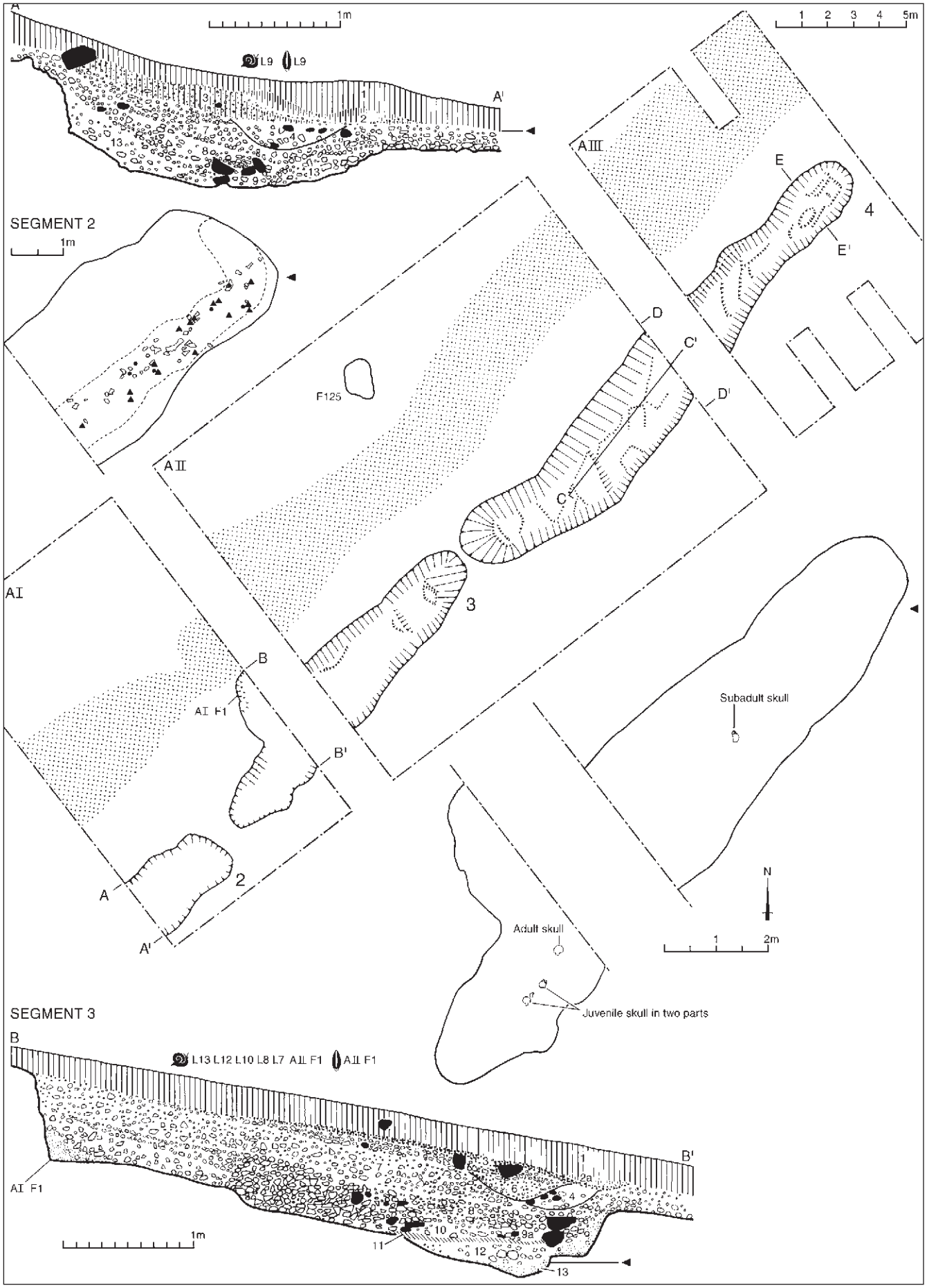

Fig 3.9 Main enclosure, site A. Plan, section of segment 2 with plan of phase VI deposits, section of segment 3 with plan of plan of skulls and skull fragments on primary silt.

Upper levels and unstratified. Recent turfline survived as up to 0.15 m of inclusion-free black, humic material (L2) beneath thin skin of current soil in hollow at the top of ditch.

Animal bone
L2: *

Pottery
L2: 2 sherds/2g Neolithic Bowl pottery

Lithics
L2: 33 flakes, 2 serrated flakes, 2 edge-trimmed flakes, 4 scrapers, 1 misc retouched

Other artefacts
L2: WWII cartridge case

Segment 2 (Figs 3.9–3.10)

Original notation. HH74 DA1, ditch area 1, or ditch 1 (later site AI), segment 1. Layers prefixed with D. Finds often located by grid square, eg A20.
Form. Slightly sinuous plan, steep inner face and shelving outer face; blocky structure of *in situ* chalk visible in ditch bottom and sides.
Length c 16.00 m, *width c* 2.50 m, *depth* 1.00 m.
Excavation. *c* 25% excavated, dug in plan. Only 4 m of segment lay in excavated area. Length estimated from earthwork and AP evidence.

Phase I. Friable grey chalky silt and chalk rubble (L13) over lower sides and angles of the ditch, not extending over the centre.

Phase II. Band of light brown silty soil up to 0.80 m wide and 0.15 m deep, with small chalk lumps and some large fragments of flint (L9) along the still bare centre of the ditch bottom, its outline conforming to the slight lateral curves and rounded butt of the ditch plan. Finds concentrated at the top of deposit, at interface with overlying rubble layer (L8), as if placed on or weathered out from its surface.

Human remains
L9: 2 juvenile rib fragments, 2 juvenile fibula fragments, all found together (HH74 AB 315)

Animal bone and/or antler
L9: *cattle* scapula, tibia, rib; *caprine* rib
L9/L8 interface: *pig* 3 scapulae, 2 teeth; *cattle* 3 tibiae, metacarpal, 3 vertebrae, horncore; *caprine* pelvis fragment

Pottery
L9: 29 sherds/95 g Neolithic Bowl pottery. L9/L8 interface: 53 sherds/237 g Neolithic Bowl pottery, all but one sherd clustered together near butt and from single vessel (flint-tempered, closed, lugged bowl with simple rounded rim 200 mm in diameter; HH74 838)

Lithics
L9: 6 flakes

Unclassified burnt flint
L9: 12 g

Charred seeds and/or nutshell
L9: 2 indet cereal grains, 1 seed cf *Vicia/lathyrus*

Charcoal
L9: C*orylus avellana*

Molluscs
L9: predominantly shade-loving

Phase III. Chalk rubble and compact chalk silt (L8), derived from the interior and capped in places by hard-packed chalk silt with some iron staining. Chalk silt with chalk rubble, flint and soil derived from exterior (L10) also patchily present.

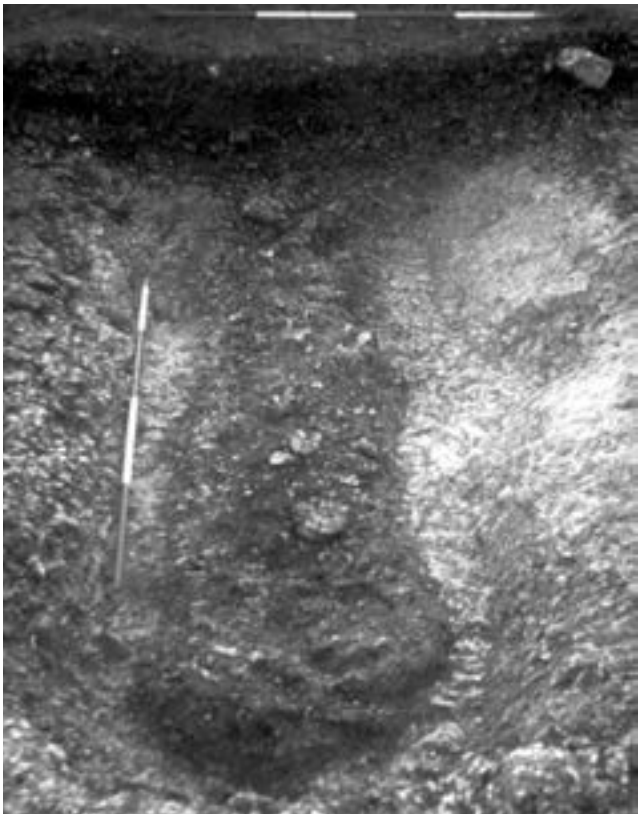

Fig 3.10 Main enclosure, site A, segment 2. Band of cultural material in and on L9, looking south-west towards section A–A'.

Pottery
L8: 18 sherds/89 g Neolithic Bowl pottery

Lithics
L8: 5 flakes

Phase V. Brown soil with small chalk lumps, some small flints, and iron staining (L7).

Phase VI. Slot up to 0.80 m wide and 0.20 m deep cut along outer edge of silted ditch, north-east end turning to run along the ditch butt. Fill of dark brown silty soil with numerous small chalk and flint fragments (L4).

Animal bone and/or antler
L4: *pig* 2 radii, metacarpal, teeth; *cattle* scapula, 4 humeri, pelvis fragment, 2 tarsals, tooth, 3 phalanges, 2 vertebrae, 2 skull fragments, 2 ribs, teeth; *caprine* 2 humeri, radius, femur

Pottery
L4: 45 sherds/245 g Neolithic Bowl pottery, including P104

Lithics
L4: 42 flakes (1 chert), 2 cores, 4 edge-trimmed flakes, scraper, 1 misc retouched

Unclassified burnt flint
L4: 5 g

Phase VIII/a. Dark brown soil with much flint and comminuted chalk (L3), the chalk fragments rather larger towards the bottom.

Animal bone and/or antler
L3: *cattle* tarsal, 2 phalanges

Pottery
L3: 9 sherds/65 g Neolithic Bowl pottery, including P56

Lithics
L3: 33 flakes, core, serrated flake, leaf arrowhead

Upper levels and unstratified. Recent turfline survived as up to 0.10 m of inclusion-free black, humic material (L2) in hollow at top of ditch, beneath current ploughsoil (L1).

Lithics
L1: 2 flakes, core

Upper levels in segment 2 or 3
Lithics
AI L1: 21 flakes, core, 2 misc retouched

Segment 3 (Figs 3.9, 3.11–3.12)

Original notation. HH74 DA1, ditch area 1, or ditch 1 (later site AI), segment 2 + HH74 DA2, ditch area 2, or ditch 2 (later site AII), segment 1. Divided into sub-segments A (SW part) and B (NE butt). Layers prefixed with D. Finds often located by grid square.

Finds from grid square D20, in which lay NE butt of segment 3 and SW butt of segment 4, ascribable to either only when plotted or measured-in, leaving imprecisely located residue.
Form. Irregular plan, with expansion to NW against AI/AII baulk. This lobe (AI F1) had sharp, apparently artificially cut, NW edge and contained no cultural material. Relationship to segment uncertain. Certainly present before phase V silts formed over both it and ditch. Distinct sub-segment in NE butt, defined by causeway standing to about half the depth of segment.
Length 13.10 m, *width* 3.00 m, *depth* 1.50 m.
Excavation. *c* 85%. Site AI: exploratory 2 m wide section cut along SW side of AI/AII baulk to establish stratigraphy; 1 m wide baulk left to SW as source for flotation samples, removed after excavation of initial section and SW butt. Site AII: excavated in plan. AI/AII baulk left in place.

Phase I. Chalky silt with chalk rubble (AI L13, AII L12) over lower sides and angles of the ditch, thickest in NE, only occasionally extending over centre. Very steep angle at outer edge of SW end of site AII may suggest recutting.

Charred seeds and/or nutshell
AI L13: <10 g hazelnutshell fragments

Molluscs
AI L13: predominantly shade-loving

Phase II. Band of grey chalky soil up to 1.00 m wide and 0.13 m deep, with chalk lumps, some flint and some charcoal (AI L12, AII L13), along centre of ditch bottom, overlain in SW of the segment by thin skin of hard-packed, clay-like chalk silt with some iron-staining, thought at time of excavation perhaps to have been a trampled surface (AII L11).

Human remains
AI L12, AII L13: row of human skulls and skull fragments, separated from ditch bottom by *c* 0.10 m of deposit. From SW to NE: fragments of young juvenile cranium, joining facial area of same skull, mature adult female skull (all 3 finds HH74 HB 1), young subadult (female?) skull (HH74 HB 6), all without mandibles

Animal bone and/or antler
AI L12: *cattle* metacarpal; antler fragment.
AII L13: *pig* scapula; *cattle* tarsal

Lithics
AI L11: 1 flake
AI L12: 1 flake

Charcoal
AI L12: Maloideae

Fig 3.11 Main enclosure, site A, segment 3, joining juvenile skull fragments and adult skull in south-west butt, looking north-west.

Fig 3.12 Main enclosure, site A, segment 3. Subadult skull and section, looking south-west

Molluscs
AI L12: predominantly shade-loving

Phase III. Vacuous chalk rubble, large flint nodules gravitated to the bottom-centre, graduating through rubbly chalk silt and deposits with some admixture of soil, accumulated intermittently from both sides.

Human remains
AI L9: juvenile R fibula shaft fragments (HH74 AB 346) near SW butt at edge of small concentration of animal bone and pottery

Animal bone and/or antler
AI L9, in group described above: *cattle* acetabulum, 3 tibiae (1 articulated with astragalus; both HH74 AB 91), fibula fragment, metacarpal; antler fragment (HH74 AB 69).

AI L10: *cattle* humerus, astragalus, mandible
AII L10: *pig* 2 tibiae, metatarsal; *cattle* scapula, humerus, ulna, mandible

Pottery
AI L9, in group described above: 9 sherds/15 g Neolithic Bowl pottery

Lithics
AI L8: 3 flakes

Charcoal
AII L8: indeterminate

Molluscs
AI L10: approx equal mixture of shade-loving and catholic
AI L8: approx equal mixture of shade-loving and catholic.

Phase III deposits in segment 3 or 4

Lithics
AII 5m sq D20 L10: 5 flakes

Animal bone
AII 5m sq D20 L10: *caprine* rib

Charcoal
AII 5m sq D20 L9: Maloideae, *Quercus* sp

Phase IV. Irregular ovoid pit, 0.90 m × 0.55 m and 0.35 m deep (AII F1), cut into the top of the rubble fills in NE butt, filled with grey, charcoal-flecked organic soil with a few fragments of burnt flint. No sign of *in situ* burning. Also at interface of chalk rubble fills and phase V silts was thin layer of compressed chalk and grey chalk silt (AII L11).

Animal bone and/or antler
AII F1: *roe deer* metacarpal (?modified); other bone, some burnt
AII L11: *cattle* tarsal, phalanx; *caprine* teeth, rib

Pottery
AII L11: 22 sherds/58 g Neolithic Bowl pottery

Charred seeds and/or nutshell
AII F1: 1 grain *Triticum* sp, <10 g hazelnut shells

Charcoal
AII F1, 50% identified by AML as hawthorn type and *Prunus* sp. from fairly large timbers with a blackthorn twig fragment

Molluscs
AII F1: predominantly shade-loving

^{14}C
AII F1: *3630–3580 cal BC (6%) or 3540–3310 cal BC (89%)* (4480±130 BP; HAR-1885) on charcoal described above

Phase IV in segment 3 or phase I in segment 4

Lithics
AII 5m square D20 L11: flake

Phase V. Earth-chalk silts derived from both sides, chalk content highest in the compressed chalk and chalk silt of AII L7, on inner side of centre and NE, there overlain by thin band of orange-brown soil with small chalk lumps and peagrit(AII L4).

Human remains
AI L7: subadult/adult radius fragment (HH74 AB 82), juvenile fibula fragment (HH74 AB 347)
AII L7: adult, ?female, L radius shaft (HH74 AB 260)

Animal bone and/or antler
AI L7: *pig* tarsal; *roe deer* femur; *cattle* scapula, radius, metatarsal, axis vertebra, skull fragment; *caprine* pelvis fragment, vertebra, horncore
AII L4: *pig* tarsal

Pottery
AI L7: 9 sherds/50 g Neolithic Bowl pottery
AII L4: 23 sherds/62 g Neolithic Bowl pottery, including parts of P114

Lithics
AI L7: 11 flakes, 1 edge-trimmed flake, 2 misc retouched
AII L7: 3 flakes, 1 misc retouched
AII L4: 14 flakes, serrated flake, 1 edge-trimmed flake, 1 misc retouched

Molluscs
AI L7: predominantly shade-loving

Phase V in segment 3 or phase III in segment 4

Pottery
AII 5 m square D20 L7:7 sherds/60 g Neolithic Bowl pottery

Lithics
AII 5 m square D20 L7: 4 flakes, 1 misc retouched

Animal bone
AII 5 m square D20 L7: *cattle* rib

Phase V in segment 3 or in segment 4

Pottery
AII 5 m square D20 L4: 29 sherds/149 g Neolithic Bowl pottery

Lithics
AII 5 m square D20 L4: 17 flakes, scraper

Animal bone
AII 5 m square D20 L4: *

Charcoal
AII 5 m square D20 L4: Maloideae

Phase VI. VI/a: slot >0.60 m wide and up to 0.20 m deep cut along outer edge of silted segment, stopping short of both butts. Fill of dark brown soil with numerous small, weathered fragments of chalk and flint (AI L4, AII L6), showing some longitudinal colour variation. Finds recorded from it minimal, since much of it cut away by VI/b slot, from which it was distinguished only retrospectively on site AII.

Animal bone and/or antler
AI L4: *cattle* scapula, 2 humeri, 2 radii, pelvis fragment, tarsal, 2 vertebrae, skull fragment, horncore; *caprine* humerus

Pottery
AI L4: 21 sherds/106 g Neolithic Bowl pottery, including P142

Lithics
AI L4: 17 flakes, fragmentary group XVI stone axehead (S7), slightly burnt sarsen quern or rubber fragment

Phase VI/b: slot up to 1.00 m wide and 0.40 m deep cut roughly along the line of VI/a slot, removing variable amount of it and of underlying phase V deposits, stopping short of both butts. Fill of dark brown soil with much small gravelly chalk and flint and peagrit, with some larger chalk lumps and flint nodules (AI L6, AII L5), cultural material densest in the NE 5 m.

Human remains
AII L5: incomplete adult female R humerus (HH74 AB 211), adult, ?male, R humerus shaft (HH74 AB 201).

Animal bone and/or antler
AII L5: *pig* 2 femora, 2 tibiae, mandible; *large artiodactyl* radius; *roe deer* scapula; *red deer* metatarsal; *cattle* scapula, 2 humeri, radius-ulna, 4 radii, 10 pelvis fragments, 2 femora, 4 tibiae, 3 metacarpals, 2 metatarsals, 2 tarsals, tooth, 3

mandibles, tooth, 2 phalanges, 5 vertebrae, 3 ribs; *caprine* pelvis fragment, scapula, rib

Pottery
AI L6: 6 sherds/52 g sherds Neolithic Bowl pottery
AII L5: 96 sherds/745 g Neolithic Bowl pottery, including substantially represented vessels P55, P66, P114, P123, P139, P66, the most complete, consists of 35 sherds/306 g found together 3 m from the NE butt and 2 sherds/106 g found 5 m away in segment 4. Some pottery probably derived from underlying deposits, which contained sherds of some of same vessels, eg P114

Lithics
AI L6: 3 flakes, piercer, edge-trimmed flake, 1 misc retouched
AII L5: 85 flakes, 2 cores, 2 scrapers, edge-trimmed flake, 2 misc retouched

Other artefacts
AII L5: 1 fragment/2 g amorphous fired clay

Charcoal
AII L5: *Fraxinus excelsior*

Molluscs
AII L5 Predominantly shade-loving

Phase VI/a in segment 3 or segment 4

Pottery
AII 5 m square D20, L6: 1 sherd/4 g Neolithic Bowl pottery

Phase VI/b in segment 3 or segment 4

Animal bone
AII 5 m square D20, L5: *cattle* metacarpal, vertebra

Pottery
AII 5 m square D20, L5: 2 sherds/3 g Neolithic Bowl pottery

Lithics
AII 5 m square D20, L5: 4 flakes, 1 misc retouched

Charcoal
Maloideae

Phase VII. No flint capping identified during excavation, but all three sections show flint nodules and fragments in the phase VIII/a deposits over the area of the slot only.

Phase VIII/a. Gravelly dark brown soil with much flint and comminuted chalk (AI L3, AII L3), stonier, lighter-coloured soil along outer edge of ditch (AI L3A).

Human remains
L3: Young juvenile molar (HH74 AB 79)

Animal bone and/or antler
L3: *cattle* tibia, 2 pelvis fragments, metacarpal; *caprine* scapula

Pottery
L3: 80 sherds/274 g of Neolithic Bowl pottery, including parts of P114

Lithics
L3: 23 flakes, 2 edge-trimmed flakes, scraper, edge-trimmed flake, 2 misc retouched

Unclassified burnt flint
L3: 17 g

Other artefacts
L3A: Glass (stopper top?)

Phase VIII/a in segment 3 or segment 4

Animal bone and/or antler
AII 5 m square D20 L3: *cattle* tibia; *caprine* humerus

Pottery
AII 5 m square D20 L38 sherds/7 g Neolithic Bowl pottery

Lithics
AII 5 m square D20 L33 flakes

Upper levels and unstratified. Recent turfline survived patchily as up to 0.20 m of inclusion-free black, humic material (L2) in hollow at the top of the ditch, beneath current ploughsoil (L1).

Animal bone and/or antler
Roe deer femur; *cattle* scapula, radius-ulna, tibia, pelvis fragment, metacarpal, phalanx, sacrum; *caprine* tibia

Pottery
15 sherds/89 g Neolithic Bowl pottery

Lithics
L2/L3: 6 flakes
L1/L2: 7 flakes, 1 misc retouched
L1: 84 flakes, 3 scrapers

Charred seeds and/or nutshell
AII L2: 1 indeterminate cereal grain

Molluscs
AII L2: catholic and open country

Upper levels of segment 3 or 4

Animal bone and/or antler
*

Pottery
4 sherds/16 g Neolithic Bowl pottery

Lithics
13 flakes, serrated flake, scraper, 1 misc retouched

Ploughsoil of site AII as a whole:

Lithics
26 flakes, 2 cores, 4 scrapers, 2 misc retouched

Segment 4 (Figs 3.9, 3.13–3.14)

Original notation. HH74 DA2, ditch area 2, or ditch 2 (later site AII), segment 2 or area C + HH74 DA3, ditch area 3, or ditch 3 (later site AIII). Layers prefixed with D. Finds often located by grid square.
Form. Marked change of alignment and depth *c* 6 m from SW butt; change of alignment and constriction *c* 4m from NE butt. Bottom stepped, becoming deeper from SW to NE and retaining the jagged, blocky irregularities of the chalk.
Length 20.60 m, *width* 3.20 m, *depth* 1.90 m.
Excavation. *c* 90%. Site AII: 4.50 m of SW butt excavated in plan, axial section cut along remaining 6 m. Finds from grid square D20, in which lay the NE butt of segment 3 and the SW butt of segment 4, can be ascribed to one or the other only when plotted or measured-in, leaving a residue which cannot be located to either. They are listed under segment 3. Site AIII: three 2 m wide transverse sections cut (A, B and C from SW to NE), intervening 1 m baulks subsequently removed; AII/AIII baulk left in place.

Phase I. Grey silt with varying admixtures of chalk lumps (AII L15, L13; AIII L11A, L11B), becoming blockier towards bottom, often laminated, derived from inner edge, starting to form before comparable, but thinner, silts from outer edge (AII L12, L16, L11; AIII L12, L10). Inner edge showed untruncated natural silting; steep, concave profile of the outer edge might suggest recutting.

Human remains
AIII L10: adult R femur shaft (HH74 HB 8)

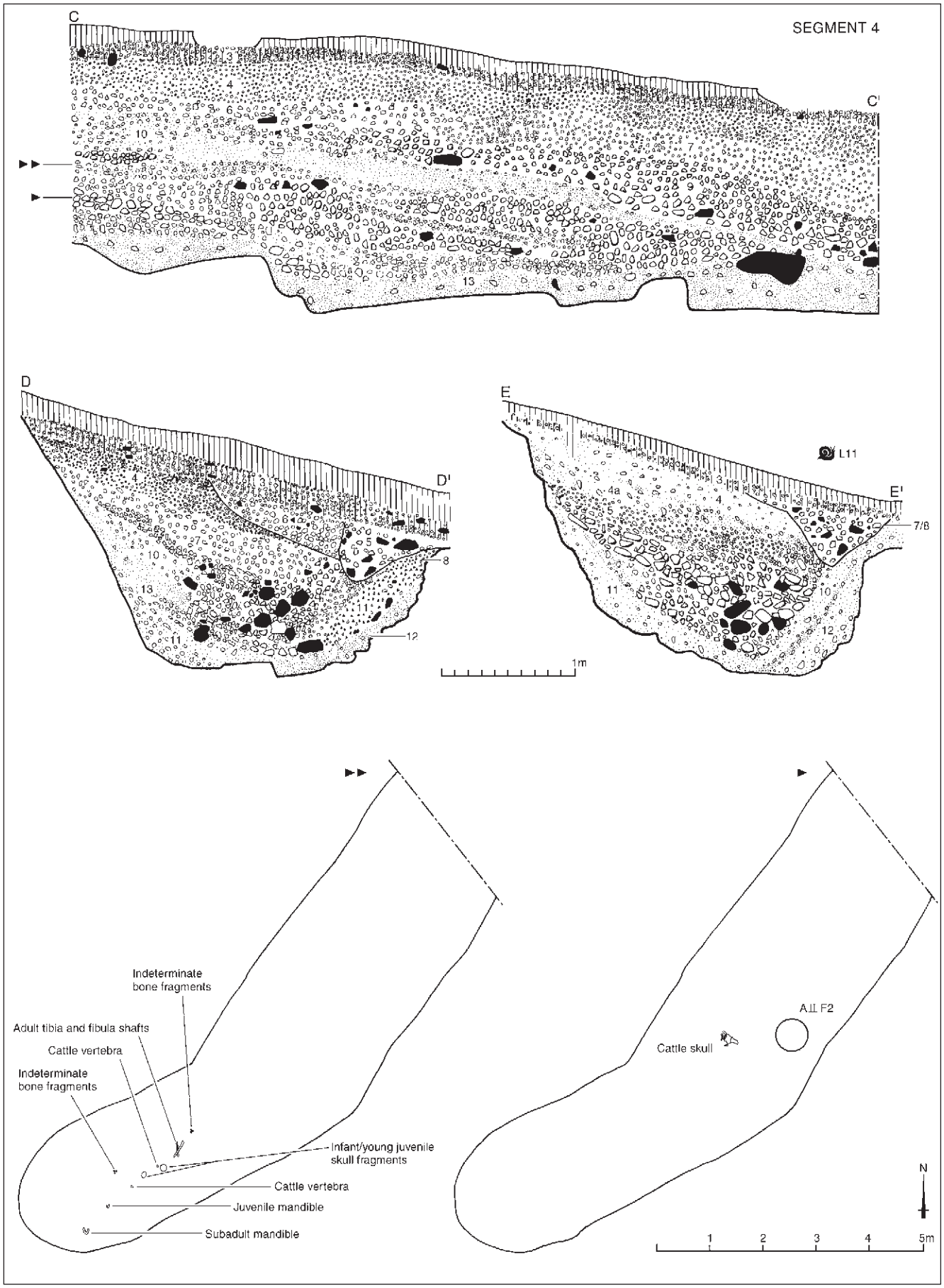

Fig 3.13 Main enclosure, site A, segment 4. Sections with plans showing finds at successive levels in rubble fills. Particulars in segment catalogue.

Animal bone and/or antler
AII L12: *cattle* tarsal
AIII L12: *cattle* scapula
AIII L11: *caprine* tibia
AIII L10: *cattle* pelvis fragment, tarsal; *caprine* tarsal

Pottery
AIII L12: 6 sherds/16 g Neolithic Bowl pottery
AIII L10: 5 sherds/8 g Neolithic Bowl pottery

Lithics
AIII L10: flake, edge-trimmed flake
AIII L12: flake

Molluscs
AIII L11: predominantly shade-loving

Phase III. Vacuous chalk and flint rubble (AII L9; AIII L9) interleaved with fine silts like those of phase I, the thicker and more extensive of which were given separate layer numbers (AII L14, L10, L8; AIII L9A), and overlain by chalk lumps in a soil matrix (AII L7; AIII L5).

Bone alignment
In SW end, from SW to NE: incomplete subadult human mandible (HH74 HB 5; fitting skull HH74 HB 6 from phase II deposits in segment 3); incomplete older juvenile human mandible (HH74 HB 2); bovine axis vertebra (HH74 AB 310); fragments of human infant or juvenile skull without mandible (HH74 HB 3); bovine lumbar vertebra (HH74 AB 309); further fragments of same infant or juvenile human skull (HH74 HB 4), overlying 9 sherds/36 g of a plain bowl (P12), more of which was found in silts of phase V; crossed human adult L tibia and fibula shafts, possibly from the same individual (HH74 AB 301, 304, 308); unidentified bone fragments (HH74 AB 305). All in thin run of silt in rubble of AII L9, except for one set of skull fragments (HB 3) from the rubble and subadult mandible (HB 5) in AII L8 silt.

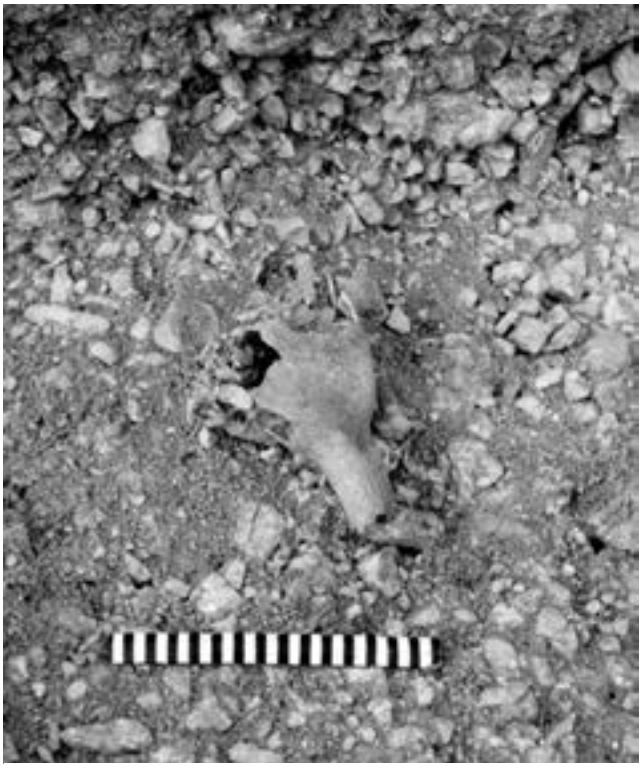

Fig 3.14 Main enclosure, site A, segment 4. Fragmentary cattle skull near base of phase III rubble fills.

Other human remains
AIII L9A: juvenile fibula shaft fragments (HH74 AB 77)

Other animal bone and/or antler
AII L10: *red deer* antler pick (HH74 AB 401); *cattle* 3 radii, pelvis fragment, 4 vertebrae
AII L9: *pig* 2 tarsals; *red deer* antler (HH74 AB 426); *cattle* 2 scapulae, 2 humeri, radius-ulna, radius, femur, 2 tibiae, 2 metatarsals, 2 vertebrae, skull without mandible (HH74 AB 492, at bottom of layer, below level of bone row)
AIII L9: *red deer* antler crown 'rake' (HH74 AB 261); *pig* humerus, phalanx; *cattle* phalanx, vertebra, skull fragment; *caprine* 2 humeri
AIII L9A: *cattle* tibia; *caprine* phalanx
AII L7: *cattle* scapula
AIII L5 *cattle* radius.

Animal bone frequent in SW and centre of segment, scarce in last *c* 5 m of the NE butt

Other pottery
AII L14: 1 sherd/12g Neolithic Bowl pottery
AII L10 4 sherds/71 g Neolithic Bowl pottery
AII L9 30 sherds/182 g Neolithic Bowl pottery including part of P39
AII L9A: 4 sherds/17 g Neolithic Bowl pottery
AIII L9: 83 sherds/244 g Neolithic Bowl pottery
AII L7: 15 sherds/64 g Neolithic Bowl pottery
AIII L5: 2 sherds/14 g Neolithic Bowl pottery

Pottery fairly evenly distributed along segment

Lithics
AII L10: flake, scraper, Old Red Sandstone rubber fragment (S25), joining further fragment from phase VI
AII L9: 4 flakes
AII L9A: 2 flakes
AIII L9 5 flakes, 2 scrapers
AIII L5: 14 flakes

Charcoal
AII L9: *Quercus* sp (94 fragments in single find), *
AII L7: *Corylus avellana*

Phase IV. Pit *c* 0.70 m in diameter and 0.30 m deep (AII F2) cut into the first influx of chalk rubble, subsequently covered by silt, then further chalk rubble. Dark grey, ashy soil fill mounded up above pit top and included orange-stained chalk fragments. No charcoal or *in situ* burning.

Animal bone and/or antler
Cattle vertebra; *caprine* 2 mandibles

Pottery
4 sherds/9 g Neolithic Bowl pottery

Lithics
Flake

Phase V. Succession of soil layers with small, discoloured chalk lumps and peagrit (AII L4; AIII L4, L4A).

Animal bone and/or antler
AII L4: *cattle* scapula, tibia
AIII L4: *

Pottery
AII L4: 3 sherds/18 g Neolithic Bowl pottery, including part of P12
AIII L4: 3 sherds/20 g Neolithic Bowl pottery

Lithics
AII L4: 9 flakes, core, 1 misc retouched
AIII L6: flake
AIII L4: 6 flakes, serrated flake, 1 edge-trimmed flake, 1 misc retouched

Phase VI. Slot up to 1.00 m wide and 0.30 m deep cut along the outer edge of the silted segment, recurving sharply short of the SW butt and following the curve of the NE butt.

Phase VI/a: Earlier cut distinguished on site AII and in adjacent SW end of site AIII. Filled with dark brown soil with lumps of weathered, discoloured chalk (AII L6; AIII L8).

Animal bone and/or antler
AII L6: *pig* tibia; *cattle* metacarpal, metatarsal
AII L6A: *pig* radius, tarsal; *cattle* humerus, tarsal; *caprine* tibia, pelvis fragment
AIII L8: *cattle* 3 scapulae, femur, tibia, metacarpal, mandibles, 4 vertebrae, rib

Pottery
AII L6: 7 sherds/24 g Neolithic Bowl pottery
AIII L8: 16 sherds/90 g Neolithic Bowl pottery

Lithics
AII L6: 5 flakes, scraper
AIII L8: 8 flakes, scraper, Greensand quern or rubber fragment (S25), slightly burnt

Phase VI/b: Later slot filled with dark loamy soil, becoming more 'greasy' or 'clayey' with depth and containing large chalk lumps and flint nodules (AII L5; AIII L7, L7/8). Cultural material densest near butts and centre.

Human remains
AII L5: *c* 6 weathered skull fragments, probably from one ?male adult (HH74 AB 357–8, 364, 382, 384), in area *c* 0.70 m × 0.30 m near centre of segment, among animal bone and artefacts

Animal bone and/or antler
AII L5: *pig* 2 scapulae, 5 humeri, radius, femur, 2 tibiae, carpal; *cattle* 2 scapulae, 4 humeri, 2 radii, ulna, 2 pelvis fragments, 6 tibiae, metacarpal, 2 metatarsals, tarsal, mandibles, phalanx, vertebra, horncore, rib fragments; *caprine* femur, tibia, metacarpal
AIII L7: *pig* 3 humeri, radius, metacarpal, 2 mandibles; *cattle* 3 scapulae, 3 humeri, 2 radii, 2 pelvis fragments, femur, 3 tibiae, metacarpal, 2 metatarsals, 3 tarsals, tooth, phalanx, 3 vertebrae, skull fragment; *caprine* 3 radii, femur

Pottery
AII L5: 55 sherds/543 g Neolithic Bowl pottery, including P98, P116, P133 and part of P66
AIII L7: 68 sherds/215 g Neolithic Bowl pottery

Lithics
AII L5: 30 flakes, 5 scrapers, 4 misc retouched
AIII L7: 28 flakes, core, edge-trimmed flake, 4 scrapers, flake from large group IV axehead, Heathstone quern or rubber fragment, quartzite (Chesil?) beach pebble hammerstone, joining fragment of Greensand rubber from the phase III (S25);

Charcoal
AII L5: *Corylus avellana*
AIII L7: *Fraxinus excelsior*

Phase VII. No flint capping identified during excavation. Some transverse sections show flint nodules and fragments in phase VIII/a deposits over slot, but not elsewhere.

Phase VIII/a. Dark brown soil with comminuted chalk and flint (L3), inclusions generally larger at outer edge than inner.

Animal bone and/or antler
L3: *Cattle* femur, tibia

Pottery
L3: 9 sherds/41 g Neolithic Bowl pottery

Lithics
L3: 31 flakes, 2 edge-trimmed flakes, 4 scrapers, piercer, 5 misc retouched, unworked chalk marl slab

Unclassified burnt flint
L3: 31 g

Upper levels and unstratified. Patches of recent turfline survived as up to 0.10 m of inclusion-free black, humic material (L2) in hollow at the top of the ditch, beneath current ploughsoil (L1).

Pottery
L2: 2 sherds/15 g Neolithic Bowl pottery
L1: 10 sherds/30 g Neolithic Bowl pottery

Lithics
L2: 20 flakes, edge-trimmed flake, knife
L1/L2: 8 flakes, 2 scrapers, quartzite (Chesil?) beach pebble hammerstone
L1: 188 flakes (1 chert), core, 9 scrapers, piercer, 5 misc retouched

Unclassified burnt flint
L1: 52 g

Segment 5 (Fig 3.15)

Original notation. HH76 site J(U) (later site J1), segment 3
Form. Pit-dug in two intercutting sub-segments, bilobate plan.
Length 7.20 m, *width* 3.5 m, *depth* 1.45 m.
Excavation. 100%. In quadrants. W (Q1) and E (Q3) quadrants removed first, then N (Q2) and S (Q4). Finds measured-in by offsets from longitudinal datum rather than by triangulation.

Phase I. Chalky silt with chalk lumps in angles of sides and bottom, 0.20 m on parts of bottom, possibly truncated before deposition of phase II deposits (L12, L9 in NE subsegment, L8 in SW). Cairn of large flint nodules in NE butt, approx 1.90 × 1.00 m, standing to 0.65 m high (L11=F17). Finds recorded as from 'W cairn' are here assigned to L11, which lay W of the cairn in segment 6. They could also have come from L10, W of L11, which contained many large flints and was seen as a deposit on the ditch bottom, although sections suggest that it was the fill of a later cut.

Animal bone and/or antler
L12: *pig* mandible; *cattle* humerus, radius, tibia, pelvis fragment, tooth, horncore, vertebra, 5 ribs; *caprine* radius
L8 in quadrant 1: *cattle* humerus, metatarsal, rib
W cairn (L11): *cattle* scapula, humerus; *caprine* metacarpal

Pottery
L12: 4 sherds/50 g Neolithic Bowl pottery
L8: 5 sherds/53 g Neolithic Bowl pottery
W cairn (L11): 3 sherds/44 g Neolithic Bowl pottery

Lithics
L12: 1 flake, Old Red Sandstone fragment
L9: 1 flake
W cairn (L11): Old Red Sandstone quern or rubber fragment

^{14}C
Q1 L8: *3660–3500 cal BC* (4805±45 BP; OxA-8855) on cattle rib and metatarsal fragments HH76 1942.

Phase II. Grey to brown-grey silt with larger, more frequent chalk lumps than in phase I, and some flint (L8 in NE, L8A), truncated at junction with L10.

Animal bone and/or antler
L8: *

Lithics
L8: 3 flakes

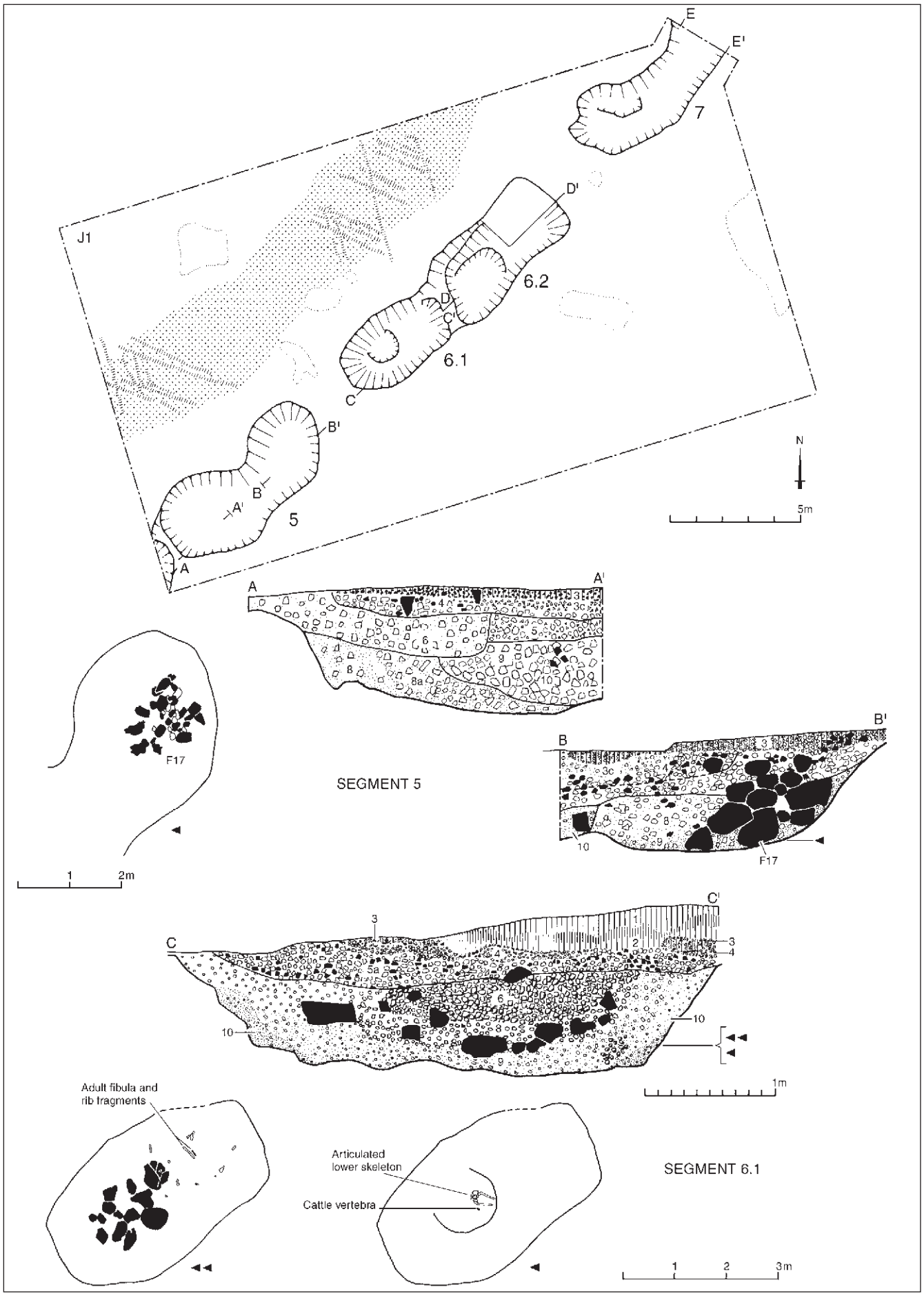

Fig 3.15 Main enclosure, site J1. Plan, sections and detailed plans of segments 5 and 6.1. Particulars in segment catalogue.

Charred seeds and/or nutshell
L8: *

Phase III. Vacuous chalk rubble, at inner edge only (L7), truncated by L10.

Animal bone and/or antler
L7: *

Phase IV. Sections show L10 as the fill of a cut through earlier deposits to the bottom of the ditch. In N centre of segment, L10 was up to 0.25 m of 'black soil and bone' with large flint nodules and much chalk rubble. Upper fill of cut formed by dark brown soil with flint and chalk (L9 in N centre of segment) and L10 in NE, grey silt with small chalk lumps (L10 in NE).

Animal bone and/or antler
L10 in N centre: *
L10/9 interface in N centre: *cattle* scapula, humerus, vertebra fragment; *pig* tarsal; *red deer* antler (HH76 2848)
L9 in N centre: *pig* 2 scapulae; *cattle* humerus; *caprine* metatarsal, *caprine* humerus.

Pottery
L9 in N centre: 14 sherds/463 g Neolithic Bowl pottery.

Phase V. Silts with small, rounded chalk lumps surviving at inner and outer edges (including deposits called L6 at outer edge of segment).

Animal bone and/or antler
L6: *

Pottery
L6: 4 sherds/34 g Neolithic Bowl pottery

Lithics
L6: flake

Phase VI. VI/a: slot up to 0.35 m deep and >0.50 m wide along midline of ditch in SE end of segment, filled with soil with small chalk lumps and a few small angular flints (L5A), truncated at outer edge by VI/b slot.

Animal bone and/or antler
L5A: *Pig* mandible; *cattle* 3 phalanges; *caprine* femur

Pottery
L5A: 18 sherds/208 g Neolithic Bowl pottery

Lithics
L5A: 7 flakes.

Phase VI/b. Slot up to 0.40 m wide and 0.25 m deep cut along midline of ditch, extending to NE end of segment, filled with soil, chalk blocks and small angular flints (L5).

Animal bone and/or antler
L5: *cattle* humerus, pelvis fragment, tarsal, maxilla with teeth, 2 articulating thoracic vertebrae

Pottery
L5: 10 sherds/91 g Neolithic Bowl pottery, including P30

Lithics
L5: flake, core.

Phase VI/c. Slot up to 0.35 m deep and 0.35 m wide, truncating L5 in SW 1.70 m of segment, running along midline of segment and extending to SW end, soil fill, with flint and larger, sparser chalk lumps than in L5A and L5 (L6 in SW centre).

Human remains
L6: Subadult/young adult skull fragments (HH76 1475)

Animal bone and/or antler
L6: *cattle* scapula, humerus, pelvis fragment, tooth

Pottery
L6: 3 sherds/27 g Neolithic Bowl pottery

Lithics
L6: serrated flake

Phase VI/d. Slot up to 0.15 m deep and 0.40 m wide along midline of segment, truncating L5 and stopping short of both butts; loam fill (L4, L4A) with comminuted chalk and abundant flint and chalk blocks, larger than in L5.

Human remains
L4: Subadult metatarsal fragment (HH76 1966)

Animal bone and/or antler
L4: *pig* pelvis fragment, atlas vertebra; *cattle* humerus, 2 tibiae, pelvis fragment (modified), metacarpal, metatarsal, maxilla with teeth, atlas vertebra; *caprine* pelvis fragment
L4A: *pig* radius; *cattle* tooth
L4/L5 (undifferentiated): *cattle* tooth

Pottery
L4/L5 (undifferentiated): 1 sherd/4 g Neolithic Bowl pottery

Lithics
L4A: 4 flakes.

Phase VII. Concentration of flint nodules along the top of L4

Animal bone and/or antler
L3B/4: *pig* tarsal; *cattle* scapula, tooth

Phase VIII/a. Soil layers with varying admixtures of comminuted chalk, chalk lumps and flint (L3, L3A–D).

Human remains
L3: Adult L femur shaft (HH76 2904)

Animal bone and/or antler
L3B: *cattle* ulna
L3C: *pig* femur; *cattle* radius, phalanx
L3C/D: *cattle* vertebra, mandible

Lithics
L3C/D: 2 flakes
L3C: Old Red Sandstone quern or rubber fragment (HH76 2902)

Upper levels and unstratified. Recent turfline (L2) underlying current ploughsoil (L1).

Pottery
Unstratified: 14 sherds/6 g Neolithic Bowl pottery

Other artefacts
L2: Iron fragment, ?slag

Segment 6.1 (Figs 3.15–3.17)

Original notation. HH76 site J(U) (later site J1), segment 2, quadrants 1 and 4.
Form. Subrectangular, edges slightly convex in plan. Subcircular hollow approx 1.40 m in diameter cut in bottom.
Length 4.50 m *width* 2.70 m, *depth* 1.00 m.
Excavation. 100%. Dug in two longitudinal sections (set out as two quadrants of what was initially seen as a single segment). NW quadrant (Q1) removed first, then SE (Q4). Finds measured-in by offsets from longitudinal datum rather than by triangulation.

Phase I. Site notebook records 'dark brown deposit … under wash [ie fine silt] and surrounded by it' on ditch bottom in quadrant 1, no dimensions, but apparently localised. Otherwise, chalky silt with some chalk blocks (L12, L10) against sides and angles of segment. Abrupt edge of L10 suggests truncation.

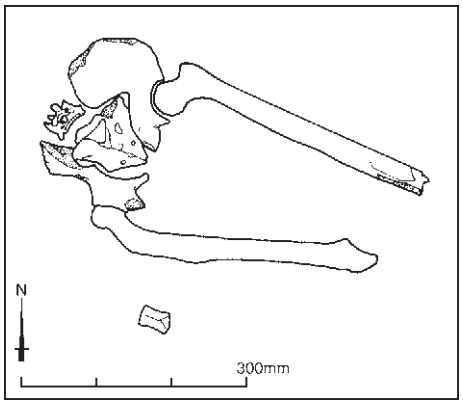

Fig 3.16 Main enclosure, site J1, segment 6.1. Detail of human remains and cattle vertebra on surface of L9.

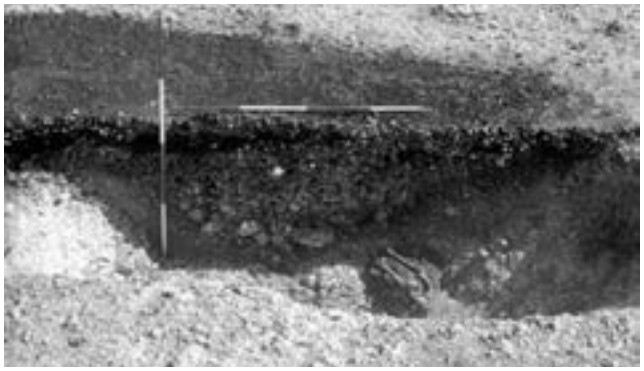

Fig 3.17 Main enclosure, site J1, segment 6.1. Articulated, dog-gnawed pelvis and femora of young male (HH76 2625) on surface of L9, with longitudinal section, looking south-east.

Phase II. Chalky silt with larger and more frequent, patchily vacuous, chalk blocks (L9), extending over bottom and sides of ditch, filling circular hollow in bottom.

Human remains

L9: Adult ?male R fibula fragments (HH76 2035) and slightly sooted rib fragment (HH76 2033), both possibly from the same individual as articulated lower body HH76 2625 from surface of L9, and found in its immediate area. Subadult/adult L humerus fragment (HH76 2688). Older juvenile L femur fragment (HH76 2032), possibly from the individual more of whose skeleton was found in a cairn in segment 6.2 (HH76 3030, etc.)

Other animal bone and/or antler

L9: *pig* femur; *cattle* vertebra; *caprine* mandible

Phase II/III interface. Diffuse spread of flint nodules approx 2.00 m × 0.70 m (F17 = L11) on surface of L9, covering articulated lower half-skeleton. Nodules surrounded and covered by up to 0.30 m of charcoal-stained grey silt with chalk blocks (L8), which may have been deliberately placed over them.

Human remains

Surface of L9, under nodule spread: articulated lower axial skeleton and femora of young/younger mature male adult, lying prone with femora higher than pelvis, conforming to surface of underlying silt; bones dog-gnawed, femurs cut-marked (HH76 2625)

L8: subadult or small adult femur shaft fragment (HH76 1868)

Animal bone

Surface of L9, under nodule spread, close to skeleton: *pig* vertebra; *cattle* tibia, vertebra (all HH76 2625)

F17: *

L11, 'On top of cairn' (=F17): *cattle* tibia, carpal

L8: *cattle* femur, metatarsal

Pottery

F17: 3 sherds/20 Neolithic Bowl pottery

L8: 1 sherd/11 g Neolithic Bowl pottery

Lithics

L8: flake

Unclassified burnt flint

L8: 35 g

^{14}C

3460–3370 cal BC (mean of 4765±54 BP (OxA-7773) and 4725±40 BP (OxA-7774)) on lumbar vertebra from HH76 2625

Phase III. Dark brown clayey silt with chalk lumps and peagrit (L7, L7A) at edges of segment; accumulation of chalk rubble, with varying degrees of vacuity and discolouration (L6, L6A–C).

Human remains

L7: Older juvenile L femur shaft fragment (HH76 2044), joining HH76 2032 from L9

L6C: subadult/adult L fibula fragment (HH76 2029)

Animal bone and/or antler

L7: *pig* tibia; *cattle* humerus, radius, metacarpal, vertebra

L6: *cattle* tibia, vertebra; *caprine* humerus

L6C: *pig* pelvis fragment; *cattle* ulna; *caprine* scapula, ulna, metacarpal, tooth

Pottery

L7: 36 sherds/383 g Neolithic Bowl pottery, including P80 as well as 20 sherds/343 g in fresh, unabraded condition from a flint-tempered, uncarinated open bowl 280 mm in diameter, found together near SW butt (HH76 1657)

L7A: 6 sherds/37 g Neolithic Bowl pottery

L6: 2 sherds/26 g Neolithic Bowl pottery, one of them a rim sherd (HH76 864) joining two others from the slot in the same segment, all forming part of a pot more fully represented in segment 7

L6C: 2 sherds/10 g Neolithic Bowl pottery

Lithics

L7: flake

Phase IV?. F16, described as 'grey depression', cut through L7, perhaps to ditch bottom, in quadrant 1, next to NE side of cairn F17. Sketch in site notebook suggests small, sub-circular pit. This may have been the edge of L8 visible in plan against the edge of L6.

Animal bone and/or antler

F16: *

Pottery

F16: 3 sherds/9 g Neolithic Bowl pottery

Charcoal

F16: *Corylus* with 1 fragment Maloideae

Phase V. Unnumbered silts drawn at SW end of segment as continuous with L7.

Phase VI. Slot up to 0.45 m wide and 0.30 m deep cut along midline of segment, stopping short of SW end, extending to NE, soil fill with dense chalk lumps and flint nodules (L5/L5A). Two successive cuts may have been present, but were not clearly distinguished.

Animal bone and/or antler

L5: *cattle* humerus, tarsal, vertebra

L5A: *cattle* scapula, humerus, pelvis fragment, teeth, horncore (cut)

Pottery

L5: 2 sherds/48 g Neolithic Bowl pottery

L5A: 10 sherds/72 g Neolithic Bowl pottery

Two rim sherds from L5 and L5A (HH76 969, 2663) join each other and third from L6, all forming part of a pot more fully represented in segment 7

Lithics

L5A: 4 flakes, leaf arrowhead, sarsen fragment (HH76 2623)

Phase VII/a. Peagrit (L4)

VIII/a Soil layers with abundant flint fragments (L3, L3A, L3B).

Upper levels and unstratified. Recent turfline (L2) overlain by current ploughsoil (L1).

Segment 6.2 (Figs 3.15, 3.18)

Original notation. HH76 site J(U) (later site J1) segment 2, quadrants 2 and 3.

Form. Pit-dug in two sub-segments, producing slightly waisted plan, SW sub-segment deeper than NE.

Length 5.70 m, *width* 3.00 m, *depth* 0.80 m.

Excavation. *c* 85%. Dug in two longitudinal sections (set out as two quadrants of what was initially seen as a single segment). NW section (Q2) excavated below slot only in SW half.

Phase I. Chalky silt, deepest in the NE, with varying densities of chalk blocks (L9), covering the bottom and sides of the segment. Flint nodule cairn at NW side of SW butt ('E cairn'), incorporating incomplete, disarticulated child skeleton, built either on ditch bottom or after the accumulation of some or all of L9.

Finds from 'pit fill' in this segment were recorded at the very end of the excavation. There is no other record of this feature.

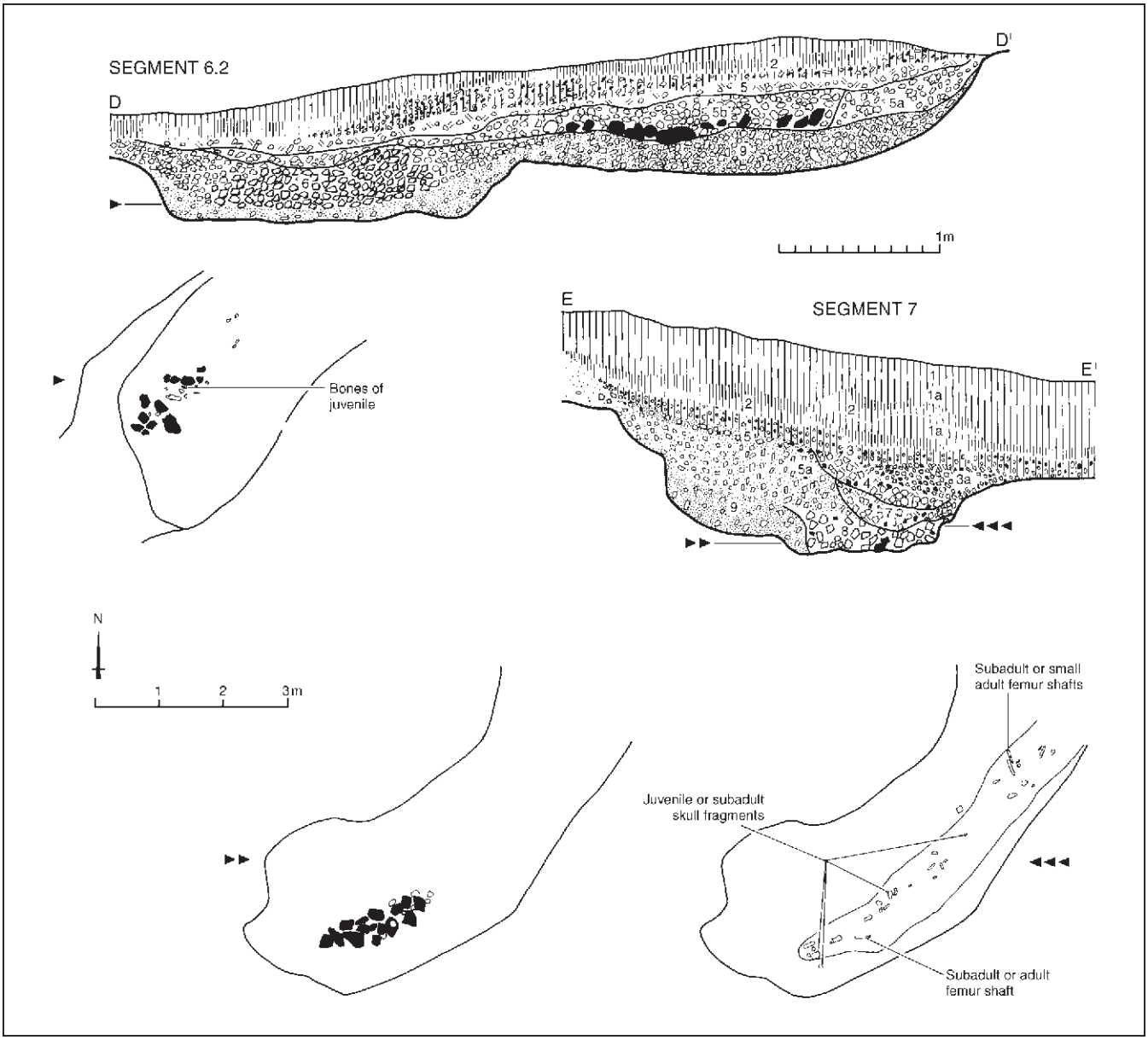

Fig 3.18 Main enclosure, site J1. Longitudinal section of segment 6.2 with plan of cairn on base, transverse section of segment 7 with plan of bone in L7.

Human remains
E cairn: bones of older juvenile, *c* 37% recovery – almost complete mandible, fragments of clavicle, ribs, R fibula, R femur, both tibiae, R & L ilia (HH76 3030, 3034, 3036–38, 3040–41, 3043)

Animal bone and/or antler
E cairn: *cattle* 2 phalanges
L9: *cattle* ilium fragment (HH76 2977) near NE butt, relatively light and gracile cattle or red deer ilium fragment 0.10 m away (HH76 2976)
'Pit fill': *

Pottery
E cairn: *
'Pit fill': 2 sherds/20 g Neolithic Bowl pottery, refired

^{14}C
L 9: *3660–3500 cal BC (94%) or 3420–3400 cal BC (1%)* (4790±45 BP; OxA-8853) on HH76 2976; *3520–3400 cal BC* (4620±40 BP; OxA-8852) on HH76 2977

Phase III. Stained, vacuous chalk lumps with some small flint nodules (L6), in SW sub-segment.

Phase V. Possibly represented by compact comminuted chalk in an orangey-brown matrix (L8), apparently filling cut into SE edge of ditch.

Phase VI. VI/a: in SW sub-segment, slot >0.30 m wide and *c* 2.50 m long (L7) cut slightly SE of midline of ditch. Lower fill of clayey loam with flints (L7A, not on section); upper of dark matrix with flint and comminuted chalk (L7B, not on section). In NE sub-segment, slot 0.60 m wide, >1.70 m long and 0.30 m deep cut along midline of ditch, gritty, clayey loam fill with dense chalk blocks and some flint (L5A).

Animal bone and/or antler
L7: *pig* tibia
L7B: *cattle* sacrum; *caprine* humerus
L5A: *pig* metapodial; *cattle* 2 humeri, radius, pelvis fragment, tarsal, 5 vertebrae; *caprine* tooth

Pottery
L7B: 1 sherd/27 g Neolithic Bowl pottery
L5A: 5 sherds/125 g Neolithic Bowl pottery

Lithics
L7B: flake, 1 misc retouched
L5A: 8 flakes, scraper, 1 misc retouched

Phase VI/b: slot at least 0.60 m wide and up to 0.50 m deep cut along midline of most of segment, removing all but NE-most end of L5A. Large flint nodules towards base in NE and chalk lumps throughout (L5B).

Human remains
L5B: Part of subadult/mature adult frontal, with ?healed wound (HH76 3009). Subadult/adult ?female R femur shaft (HH76 3011). Subadult R femur shaft and adult R tibia shaft, found together (H76 3012)

Animal bone and/or antler
L5B: *pig* maxilla fragments; *cattle* vertebra

Phase VI/c: slot up to 0.80 m wide and 0.16 m deep cut along midline of segment. Orange clayey loam fill with chalk lumps and comminuted chalk (L5).

Human remains
L5: fragments of L and R adult parietals, found together in SW butt (HH76 695)

Animal bone and/or antler
L5: *cattle* radius, tibia, pelvis fragment, mandible

Pottery
L5: 1 sherd/4 g Neolithic Bowl pottery

Phase VII. Flint nodules in dark clayey loam (L4) with rather less flint and more chalk at its base (L4A), immediately over L5. Upper nodules standing up into overlying soil layers (L3B/4)

Pottery
L4: 1 sherd/1 g Neolithic Bowl pottery
L3B/4: 2 sherds/4 g Neolithic Bowl pottery

Phase VIII/a. Dark soil matrix with varying combinations of chalk and flint fragments (L3, L3A, L3B).

Animal bone
L3B: *cattle* metacarpal

Pottery
L3B: 6 sherds/15 g Neolithic Bowl pottery

Upper levels and unstratified. Recent turfline (L2) overlain by current ploughsoil (L1). Treehole over causeway between segments 6.1 and 6.2

Segment 7 (Figs 3.15, 3.18)

Original notation. HH76 site J(U) (later site J1), segment 1.
Form. SW butt inturned, expanded, and pointed at tip. Slight hollow in ditch bottom near butt.
Length >6.10 m, *width* 2.70 m, *depth* 0.90 m.
Excavation. In plan, NE butt outside excavated area. N corner of excavation extended *c* 1 m to provide true transverse section. Finds measured-in by offsets from longitudinal datum rather than by triangulation.

Phase I. Concentration of flint along ditch, location and extent unclear (L10, L10A). L10 also applied to silt layer with chalk blocks. Up to 0.25 m of light-coloured silt with chalk blocks (L9) surviving along inner side and base of ditch, cut away at outer side.

Human remains
L10A: subadult/adult ??female L radius and ulna fragments (HH76 2833)
L10: subadult incisor (HH76 2702)

Animal bone and/or antler
L10: *caprine* tibia, tooth, 2 phalanges
L9: *pig* 2 tarsals (including calcaneum from HH76 2900); *cattle* scapula (from HH76 2900), articulating radius and ulna (HH76 2897), tibia, vertebra; *probably caprine* 2 fragmentary bone points, both made on metatarsals (Fig 8.33: HH76 2897)

Pottery
L10: 1 sherd/3 g Neolithic Bowl pottery
L9: 1 sherd/12 g Neolithic Bowl pottery

Lithics
L10: core. L9: flake

^{14}C
L9: *3520–3400 cal BC* (4825±30 BP; OxA-7775) on HH76 2897, *3680–3620 cal BC (56%) or 3600–3520 cal BC (39%) (*4855±45 BP; OxA-8854) on cattle scapula fragment HH76 2900
3670–3510 cal BC (4820±45 BP; OxA-8906) on pig calcaneum HH76 2900

Phase II. Flint nodule cairn at outer side of SW butt, built on primary silt.

Animal bone and/or antler
*

Pottery
2 sherds/8 g Neolithic Bowl pottery

Lithics
Flake

Phase III (or IV?). Up to 0.25 m of grey clayey deposit with fairly large chalk lumps and flint fragments, lying directly on ditch bottom (L8), filling hollow cut into L9.

Animal bone and/or antler
L8: *pig* scapula, pelvis fragment, phalanx. *Cattle* lumbar vertebra, sacrum

Pottery
L8: 43 sherds/150 g Neolithic Bowl pottery, including 37 sherds/76 g, all found together near the NE edge of the excavation (HH76 2639, 2653, 2654), from an open, uncarinated bowl with simple flat rim, *c* 120 mm in diameter of clay with red pellet inclusions and some flint, a few sherds of which were found in segment 6.1 and perhaps a further sherd of which came from the slot in this segment (HH76 2611)

Lithics
L8: 2 flakes

Phase V. Orange-brown silts surviving at inner edge, with inclusions ranging up from comminuted chalk with some chalk lumps (L6) to varying combinations of weathered chalk lumps and flint fragments (L5A, L5). L5, a small depth of silt overlying the perhaps truncated surfaces of the other two, was rich in cultural material, especially in the NE 4m of the segment.

Human remains
L5A: Older mature/older adult ?female occipital fragments (HH76 1572)

Animal bone and/or antler
L6: *pig* tooth; *cattle* phalanx; *caprine* humerus, tooth
L5A: *pig* tooth, *cattle* femur, pelvis fragment, metacarpal, tarsal, 4 phalanges, vertebra; *caprine* femur (modified)
L5: *pig* humerus, 2 tibiae, metatarsal, tarsal, tooth, maxilla, phalanx, 2 vertebrae; *cattle* 2 scapulae, 4 humeri, pelvis fragment, metacarpal, 2 metatarsals, 3 tarsals, teeth, mandible, phalanx, vertebra, horncore; *caprine* pelvis fragment, 2 femora

Pottery
L6: 49 sherds/166 g Neolithic Bowl pottery
L5A: 55 sherds/227 g Neolithic Bowl pottery
L5: 100 sherds/303 g Neolithic Bowl pottery.

Lithics
L6: 14 flakes, 2 edge-trimmed flakes
L5A: 13 flakes, edge-trimmed flake, scraper, Old Red Sandstone quern fragment
L5: 25 flakes, serrated flake, 2 edge-trimmed flakes, scraper, 1 misc retouched

Charcoal
L5A: *Quercus, Corylus avellana, Carpinus betulus*
L5: *Prunus* sp, *

Phase VI. VI/a: Slot up to 0.90 m wide and 0.30 m deep cut along outer edge of ditch, removing earlier silts and following curve of segment, filled with dark brown clayey loam with chalk lumps and flint nodules (L7).

Human remains
L7: Fragments of older juvenile/young subadult skull without mandible (HH76 1870, 1912) found close to each other in SW butt; further fragments (HH76 1908) 1.50 m to NE and unlocated (HH76 1928), two teeth (HH76 1856) 3.0 m to NE. L and R older juvenile/young subadult femur shafts, possibly a pair (HH76 1852, 1855), lay parallel to each other at the NE end of the excavation. Several teeth, probably not all from same individual. Older subadult/adult L femur shaft (HH76 1911) close to SW butt. Subadult/adult rib fragments and tarsal fragment (HH76 1915) and subadult clavicle fragment, slightly burnt (HH76 1839) unlocated within layer

Animal bone and/or antler
L7: *pig* radius-ulna, ulna, 2 metacarpals, tooth; *roe deer* humerus; *cattle* scapula, 2 radii, 3 pelvis fragments, femur, 2 metatarsals, teeth, 2 vertebrae, 20 large rib fragments; *caprine* humerus, metatarsal

Pottery
L7: 13 sherds/70 g Neolithic Bowl pottery, including 1 sherd possibly from vessel most fully represented in L8

Lithics
L7: 6 flakes, Old Red Sandstone rubber fragment, Greensand fragment

Charcoal
L7: *Corylus avellana*

Phase VI/b: First slot recut as shallower gully up to 1.10 m wide and 0.15 m deep following same line, skin of brown clayey loam with peagrit on sides and base (L4A), main fill of brown clayey soil with chalk blocks and flint nodules (L4).

Animal bone and/or antler
L4A: *cattle* radius, femur, metatarsal, phalanx, vertebra; *caprine* tarsal
L4: *pig* humerus, ulna, femur, metatarsal, mandible, tooth; *cattle* scapula, 2 humeri, radius, ulna, femur, 2 pelvis fragments, metatarsal, tarsal, maxilla, tooth, 2 phalanges, 4 vertebrae, rib fragments; *caprine* humerus, ulna (modified), mandible, teeth, 2 phalanges

Pottery
L4A: 62 sherds/101 g Neolithic Bowl pottery, including 36 sherds/66 g of a single vessel (closed carinated bowl with expanded rim, flint-tempered), most of them at one location, but with odd sherds 1.00 to 1.50 m away
L4: 25 sherds/104 g Neolithic Bowl pottery, including 9 sherds/44 g of a single vessel found in 2 groups 0.65 m apart

Lithics
L4A: 9 flakes, 2 serrated flakes, 3 scrapers, leaf arrowhead, 1 misc retouched
L4: 21 flakes, 2 cores, 2 edge-trimmed flakes, 2 scrapers, 1 misc retouched, fragment of banded tuff axehead (S9)

Phase VII. Dark matrix with large flint nodules (L3B/4)

Animal bone and/or antler
L3B/4: *cattle* humerus, teeth

Pottery
L3B/4: 3 sherds/11 Neolithic Bowl pottery

Phase VIII/a. Dark soil with varying combinations of flint and chalk fragments, smallest in L3A, filling the hollow over the slot (L3, L3A, L3B, L3C).

Animal bone and/or antler
L3B: *cattle* humerus, tooth
L3C: *

Pottery
L3B: 2 sherds/4 g Neolithic Bowl pottery

Lithics
L3B: 11 flakes, edge-trimmed flake, leaf arrowhead in apparently non-local parti-coloured red and white flint
L3C: 5 flakes

Other artefacts
L3B: 2 small iron fragments

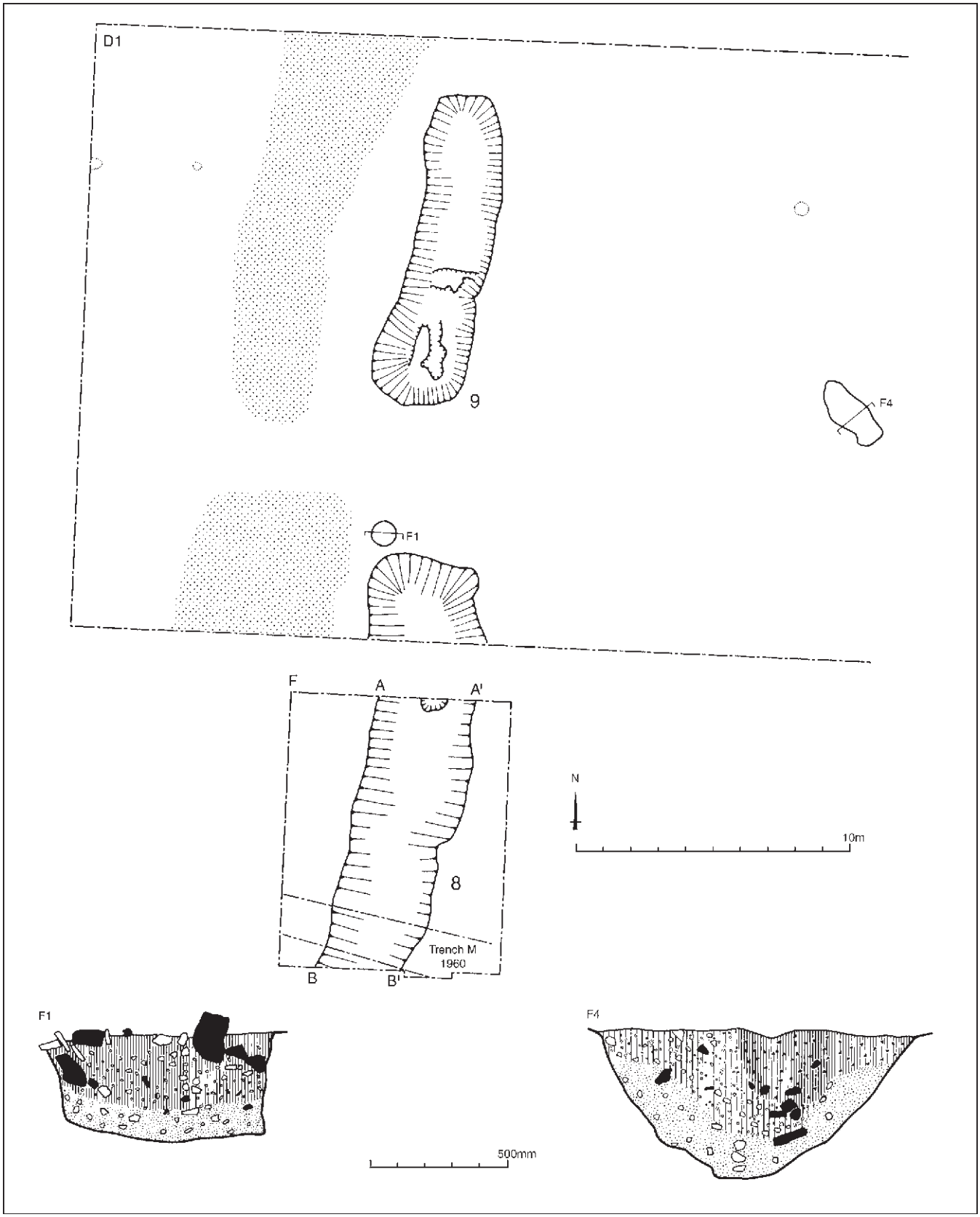

Fig 3.19 Main enclosure, sites F and D1, segments 8 and 9. Plan, with sections of D1 F1 and F4.

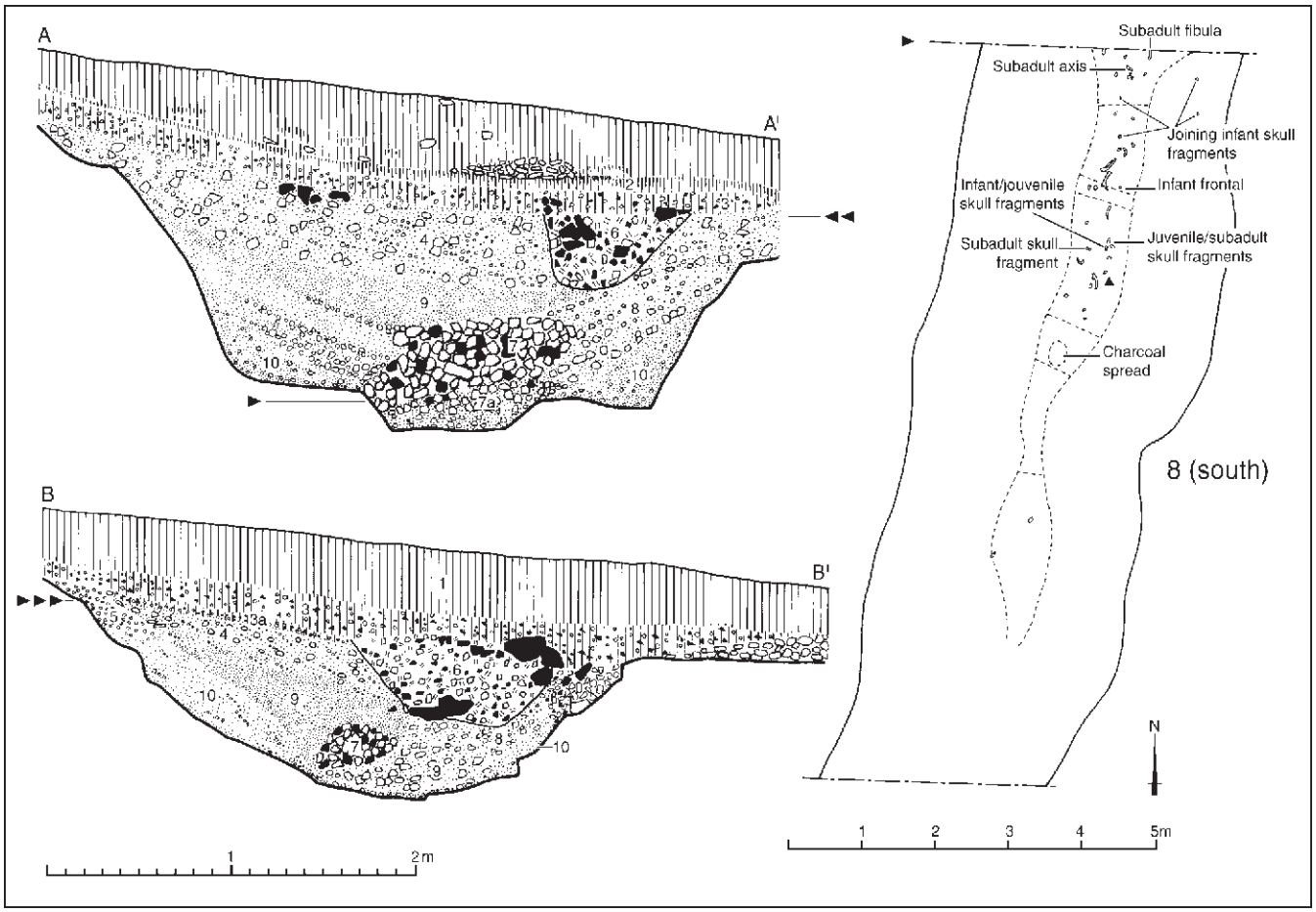

Fig 3.20 Main enclosure, site F, segment 8 (south). Plan of deposit on floor of segment 8, with two sections.

Upper levels and unstratified. Recent turfline represented by dark, stone-free band up to 0.20 m thick, recently displaced bank by ploughsoil (L1A) incorporating more turf (L2A), overlain by current ploughsoil (L1).

Animal bone and/or antler
L1: *

Lithics
L1: 2 flakes

Segment 8 (Figs 3.19–3.21)

Original notation. Bonney's Trench M, 1960; HH75 site F; HH75 site D1, segment A.

Form. Pit-dug, in least two intercutting sub-segments. Shallow trough approx 1.00 m wide and >0.50 m long cut into ditch bottom, running into N end of site F, possibly truncating primary silt. N sub-segment wider than S and deeper by *c* 0.30 m. Narrowing at S end suggests proximity of butt recorded indicated by earthwork and AP evidence.

Length >15.00 m, *width* 4.00 *m*, *depth* 1.50 m.

Excavation. 80%? Sectioned obliquely in 6 ft (1.83 m) wide trench in 1960. In 1975 turf and topsoil stripped by hand and 1960 trench re-excavated, remainder of ditch dug in three transverse sections (1, 2, 3 from N to S) after hand-removal of ploughsoil. N butt on site D1 dug in plan after machining. 2 m baulk left between sites D1 and F.

Phase I. Granular, grey-white chalky silt over bottom, angles and lower sides of ditch, with some small chalk lumps, especially towards centre(Tr M L10, site F L10; site D1 L11 (inner, finer-grained), L10 (outer, coarser-grained), continuous at S end and in E butt, probably cut at N end of site F by trough described above, base of which was covered by up to 0.10 m of brown soil with small, rounded chalk lumps.

Animal bone and/or antler
Site F L10: *cattle* radius, femur, metatarsal, rib fragment
Site D1 L11: *pig* tibia; *red deer* antler fragment

Pottery
Site F L10: 11 sherds/42 g Neolithic Bowl pottery
Site D1 L11: 1 sherd/14 g Neolithic Bowl pottery

Lithics
Site D1 L11: serrated flake, 1 misc retouched

Charcoal
Site F L10: *Prunus* sp with *Fraxinus excelsior* and indeterminate

Phase II. Band of brown soil and voided chalk rubble up to 1.00 m wide, 0.10 m deep and at least 8.00 m long laid along midline of ditch, conforming to sinuosities of plan (site F L7A), narrowing to S, widening to N and stopping short of both butts: N end in baulk between sites F and D1, S end in Trench M, where it was absent from S section but noted in N in both 1960 and 1975. Colour and consistency varied, with successive lengths recorded, from N to S, as loose vacuous chalk, dark fill with tight-packed rubble, chalk rubble, dark fill with vacuous rubble, charcoal-rich, light with semi-vacuous rubble, dark with vacuous rubble, and charcoal-rich. Possibly formed of a series of dumps. Longitudinal section tentatively interpreted as showing dumping starting in S with material tipped from N. Certainty impossible.

Finds densest to N. Some apparently placed on or weathered out from surface of deposit. Subcircular charcoal spread *c* 0.25 m diameter described as 'Hearth/fire? Just in layer', young infant mandible and skull fragment (HH75 2137) from L7 were 'just on top of' L7A, 'just in' L7A were older infant skull fragments (HH75 2138) forming near-complete skull with further fragments from L7A/L7 interface (HH75 2023), the two groups 0.50 m apart. Young infant frontal at base of L7 possibly aligned with these, placed upright with eye sockets facing S (HH75 2135).

Human remains

Site F L7A, all in N sub-segment: older infant parietal fragment, almost complete occipital (HH75 2138, joining skull fragments HH75 2023 from L7A/L7 interface); older infant/young juvenile 2 finds of skull fragments (HH75 2109, 2115); subadult/adult skull fragments, cut-marked and slightly charred (HH75 2101), fibula shaft fragment (HH75 2177), young subadult mandible fragment, cervical vertebra fragments, fibula shaft fragment, 3 loose teeth (HH75 2183, extracted from bulk find of animal bone, mandible joins HH75 2136 from L7), subadult axis vertebra (HH75 2176). In addition, joining infant skull fragments (HH75 2024, 2025) from findspots *c* 0.40 m apart near the N face of site F, recorded as from interface of L8 and L10, 'could be from layers 7/7A' according to the site notebook

Animal bone and/or antler

Site F L7A: *pig* humerus, radius, tibia, 3 pelvis fragments, 2 mandibles; *red deer* utilised antler fragments (HH75 2096, 2099, 2149 – the last 2 pick-like); *cattle* humerus, radius-ulna, radius, ulna, acetabulum, femur, 3 tibiae (1 ?modified), 2 metatarsals (1 ?utilised), astragalus, mandible, 3 phalanges, carpal, axis vertebra, 2 horncores, rib; *caprine* 2 thoracic vertebrae

Pottery

Site F L7A: 142 sherds/294 g Neolithic Bowl pottery, including 4 groups each found together and each from, or probably from, a single pot: 10 plain body sherds/30g (HH75 1935), 40 sherds/60 g from bead-rimmed vessel (HH75 2127), 10 sherds/36 g from open uncarinated bowl with an inturned rim (HH75 2120), 6 sherds/28 g from closed uncarinated bowl with simple pointed rim (HH75 2118), all flint-tempered. Each may well have been buried as a single sherd

Lithics

Site F L7A: 3 flakes

Charcoal

Combined charcoal collection from length of site F L7A: *Corylus avellana* with *Fraxinus excelsior*, *Quercus* sp, Maloideae

Phase III. Vacuous chalk rubble at ditch centre (Tr M L9, elsewhere L7) with some bands of finer material (eg site D1 L7A), grading at inner edge into fine chalky silt interleaved at N with bands of clean chalk rubble with a calcareous 'mould' (site F L9), grading at outer edge into interleaved bands of fine earthy silt and discoloured chalk lumps (site F L8 (lower), site D1 L9), overlain by concreted white chalk wash without cultural material, derived from interior (Tr M L8, site F L9) and by loose grey-brown earthy silts with flint and chalk lumps, the latter smaller and more weathered than in underlying layers, derived from the exterior (site F L8 (upper), site D1 L8).

Human remains

Site F L7A/L7 interface: infant skull fragments, with possible cut-marks (HH75 2023), joining others from L7A (HH75 2138). See description of II above.

Site F L7, 'just on top of' L7A: young infant mandible and skull fragments (HH75 2137).

Site F L7: *young infant* almost complete frontal, teeth (HH75 2135); young subadult mandible (HH75 2136, joining fragment HH75 2183 from L7A); site F L8: older juvenile/subadult fibula shaft fragment (HH75 2017)

Site D1 L7: adult 3 parietal fragments (HH75 337)

Site F L8/L10 (possibly L7/L7A): infant skull fragments (HH75 2024, 2025).

Animal bone and/or antler

Site F L7: *pig* 2 scapulae, 2 humeri, pelvis fragment, mandible, maxilla, 3 phalanges; *red deer* antler fragments (HH75 2015); *cattle* 6 scapulae, radius-ulna, 4 radii, ulna, 2 femora, tibia, 3 pelvis fragments, 3 metacarpals, metatarsal, 8 tarsals, 4 phalanges, 3 vertebrae, 3 skull fragments, 3 horncores; *caprine* tibia, phalanx

Site D1 L7: *pig* humerus, 2 tibiae, mandible, maxilla; *red deer* antler fragments (HH75 337); *cattle* radius, ulna, pelvis fragment, metatarsal, teeth, 4 mandibles, phalanx, 2 vertebrae, skull fragment, horncore; *caprine* 2 radii, 3 teeth

Site D1 L7A: *roe deer* antler fragment (HH75 312); *cattle* scapula, mandible, vertebra

Site D1 L9: *pig* tibia; *red deer* worn, cut-marked antler tine (HH75 440); *cattle* 2 femora, pelvis fragment, metacarpal

Site D1 L8 *pig* scapula, *cattle* rib.

Pottery

Tr M L9: 15 sherds/26 g Neolithic Bowl pottery, 1 sherd/1g Beaker

Tr M L8: 7 sherds/53 g Neolithic Bowl pottery

Site F L7: 172 sherds/554 g Neolithic Bowl pottery, including P37, sherds making up a substantial part of which lay at 3 findspots within 0.40 m of each other at the same level near the top of L7 (HH75 1846, 30 sherds/110 g; HH75 1892, 45 sherds/148 g; HH75 2013, 1 rim sherd/8 g)

Site D1 L7: 4 sherds/32 g Neolithic Bowl pottery

Site D1 L7A: 1 sherd/8 Neolithic Bowl pottery

Site F L9: 1 sherd/7 g Neolithic Bowl pottery

Beaker sherd (sf 17) shown near top of the chalk rubble fills on N section of Tr M may owe apparent stratigraphic position to projection onto section from 4 ft 8 in (1.40 m) away.

Lithics

Tr M L9: butt of partly ground flint axehead

Site F L7: 7 flakes, utilised flake, 2 serrated flakes, edge-trimmed flake, scraper

Site D1 L7: 5 flakes, scraper, 3 misc retouched (1 of chert), fragments of amphibolite axehead (S4), (Chesil?) beach pebble hammerstone, unworked (Chesil?) beach pebble

Site D1 L7A: sandstone rubber or smoother

Site F L9: 1 flake

Site D1 L9: utilised flake

Site D1 L8: flake, scraper, burnt Upper Greensand fragment, ?from quern or rubber

Burnt flint

Site D1 L7: 69 g

Charcoal

Site F L8: *Corylus avellana* with some Maloideae.

Phase V. Brown, earthy silts with rounded, weathered chalk blocks, concentrated towards centre) and discoloured peagrit (Tr M L6, site F L4, L5, site D1 L4 at outer edge), L5, L5A (at inner).

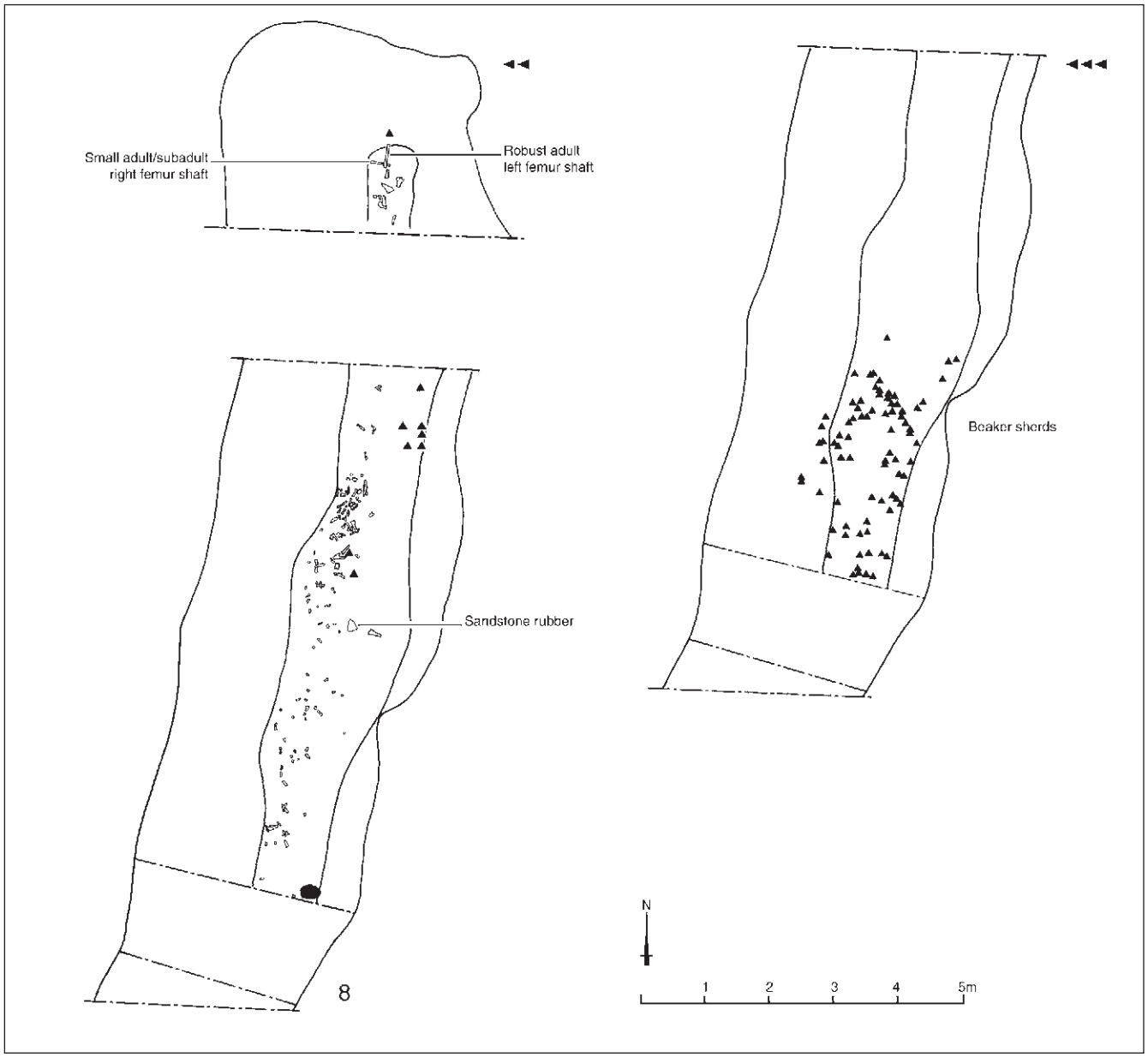

Fig 3.21 Main enclosure, sites D1 and F, segment 8. Plans of phase VI slot and of Beaker sherds in L3A above it.

Animal bone and/or antler

Site F L5: *pig* tibia; *cattle* scapula; *caprine* radius
Site D1 L4: *pig* femur, tibia

Pottery

Site F L5: 1 sherd/3 g Neolithic Bowl pottery
Site D1 L4: 8 sherds/38 g Neolithic Bowl pottery
Site D1 L5A: 1 sherd/1 g Neolithic Bowl pottery

Lithics

Site F L5: 5 flakes
Site D1 L5: 4 flakes, 1 utilised flake, 1 misc retouched
Site D1 L4 3 flakes, 1 core, Old Red Sandstone quern fragment, Upper Greensand quern or rubber fragments

Phase VI. Slot up to 0.45 m deep and 0.70 m wide, steeper-sided at inner face than outer, cut into outer edge of virtually silted ditch, stopping short of N butt, dark brown clayey fill with chalk lumps and flint nodules (Tr M L7, elsewhere L6). Homogeneous in N sub-segment. In S sub-segment this fill continued along lower part of slot, with much animal bone, as in N, and infiltrated by calcareous 'mould'. Bone deposit separated by sterile zone of tightly packed chalk lumps from upper fill, also clayey but without any calcareous 'mould' and containing Beaker pottery. Boundaries indistinct. All removed as L6, although distinction was noted. Some lithics and animal bone listed here may, if from S sub-segment, have come from upper part of L6 (= phase VII/a).

Human remains

Site F L6, all in N sub-segment: subadult/adult R radius fragment (HH75 1684); adult R femur shaft fragment (HH75 1753)
Site D1 L6: adult ?female R femur shaft, probably cut-marked (HH75 241); adult ?male fairly robust L femur shaft (HH75 238), crossed over HH75 241 in N butt.

Animal bone and/or antler

Site F L6: *pig* 6 scapulae, 6 humeri, 2 radii, ulna, 4 pelvis fragments, 4 femora, tibia, 3 metacarpals, metatarsal, 2 phalanges, 3 carpals, tooth, maxilla, skull fragment; *red deer* antler fragments, tarsal, phalanx; *cattle* skull fragment,

10 scapulae, 4 humeri, 7 radii, 7 ulnae, 12 pelvis fragments, 5 femora, 6 tibiae, 5 metacarpals, 7 metatarsals, 4 mandibles, teeth, 5 phalanges, carpal, 21 vertebrae, 2 skull fragment, horn core, 6 ribs; *caprine* 2 scapulae, 7 humeri, 4 radii, 6 pelvis fragments, 4 femurs, 6 tibiae, fibula, 4 metacarpals, 4 metatarsals, 2 tarsals, teeth, 11 phalanges, carpal, 3 vertebrae, horncore

Site D1 L6: *pig* tibia; *cattle* femur, pelvis fragment, vertebra

Pottery

Site F L6: 68 sherds/226 g Neolithic Bowl pottery, including P146, almost all from N sub-segment

Site D1 L6: 2 sherds/56 g Neolithic Bowl pottery

Lithics

Site F L6, mainly from N sub-segment: 59 flakes, serrated flake, 5 edge-trimmed flakes, 3 scrapers, flaked axehead, 5 misc retouched, (Chesil?) beach pebble hammerstone, Old Red Sandstone rubber, 2 Old Red Sandstone fragments, burnt Greensand quern or rubber fragment, Greensand fragment, 2 unused quartzite pebbles

Site D1 L6: 4 flakes 1 of chert), scraper, 2 misc retouched

Phase VII. Continuous band of flint nodules running length of site F along top of slot, standing proud of it in L3, and continuing onto site D1, where artefacts in L3 were restricted to area of nodules.

Phase VII/a. Upper part of L6 in S sub-segment (see VI above), clayey but without any calcareous 'mould' and continuous with 0.04 m thick band of peagrit in earthy matrix without larger inclusions (L3A) at inner edge of S sub-segment.

Animal bone and/or antler

Site F L3A: *cattle* tooth.

Pottery

Tr M L6/L7: 6 sherds/14 g Beaker (1 comb-impressed, 5 rusticated)

Site F L6 (upper, in S sub-segment) 171 sherds/380 g Beaker (95 plain; 29 comb-impressed, a few, including P164, with fragmentary reserve motifs; 16 incised; 31 rusticated, stabbed or impressed, including parts of P168)

Site F L3A: 1 sherd/4 g Neolithic Bowl pottery; 197 sherds/459 g Beaker (84 plain; 45 comb-impressed, a few with fragmentary reserve motifs; 68 rusticated, stabbed or otherwise impressed, including P165, parts of P168)

Beaker forms single assemblage, including P161, P163–5, P168, with sherds of some vessels in both L6 and L3A. Dominated by plain and rusticated and other impressed sherds. Decoration includes geometric motifs of Clarke's Southern tradition (1970), as on P164.

Lithics

Site F L3A: 49 flakes, 2 cores, 2 scrapers, piercer, 2 misc retouched, (Chesil?) beach pebble hammerstone, pebble hammerstone from Chalk, Heathstone rubber fragment, Old Red Sandstone fragment.

Unclassified burnt flint

Site F L3A: 4 g

Charcoal

Site F, S sub-segment, L6 (upper), at a single spot, associated with Beaker pottery: 50% identified by AML as *Quercus*, *Corylus*, Maloideae

Site F L3A: *Quercus*.

^{14}C

2920–2460 cal BC (4140±100 BP; HAR-9169) on charcoal described above

Phase VIII/a. Dark brown loam with flint and chalk 'gravel' and larger fragments (L3). Larger nodules and finds confined to outer side on site D1.

Animal bone and/or antler

Site F L3: *pig* humerus; *cattle* radius, ulna, teeth, phalanx; *caprine* teeth

Site D1 L3: *pig* humerus.

Pottery

Site F L3: 51 sherds/72 g Beaker (31 plain; 2 comb-impressed; 14 rusticated or otherwise impressed, including parts of P165), almost all from S sub-segment; 2 sherds/2 g Roman

Site D1 L3: 76 sherds/183 g Beaker (66 plain, including P161, P163; 10 comb-impressed); 1 sherd/4 g Roman

Lithics

Site F L3: 85 flakes, serrated flake, 4 scrapers, piercer, 2 knives, 5 misc retouched, quartzite hammerstone

Site D1 L3: 1 misc retouched, Old Red Sandstone quern or rubber fragment, flake from quartzite cobble

Charcoal

Site F L3: *Corylus avellana* with *Fraxinus excelsior*, *Carpinus betulus*, Maloideae

Upper levels and unstratified. Recent turfline (L2), cut by Trench M (1960), both underlying current ploughsoil (L1). Recent treehole (still with roots) in N sub-segment.

Animal bone and/or antler

L2: *. L1: *cattle* humerus

U/S: *cattle* pelvis fragment

Pottery

L1: 8 sherds/40 g Neolithic Bowl pottery

U/S: 3 sherds/15 g Neolithic Bowl pottery

Lithics

L2: 39 flakes, utilised flake, 2 serrated flakes, 3 edge-trimmed flakes

L1: 112 flakes (3 of chert), utilised flake, 2 cores, 2 edge-trimmed flakes, 3 scrapers, 5 piercers, knife, fabricator, 8 misc retouched, jadeite axehead (S11).

***Segment* 9** (Figs 3.19, 3.22)

Original notation. HH75 site D1, segment B (later segment 2).
Form. Pit-dug in at least two intercutting sub-segments, most of segment smooth, rounded and fairly shallow, *c* 4 m of S butt sharper, more jagged and stepped down from rest. Depth estimated from ranging rod standing in S butt in photograph. Cultural material concentrated towards S butt throughout sequence.
Length 11.6 m, *width* 3.45 m, *depth c* 1.8 m.
Excavation. 100%, dug in plan with occasional temporary sections.

Phase I. Chalky silts with rounded chalk lumps, of varying colour and consistency (L14, L11, L10, L9), which merged into each other; greyish at the N end, darker, sometimes pinkish or orange-coloured, towards the S. Site notebook records that L9 was also applied to silty layers at higher levels, so that not all L9 finds may have come from primary silt.

Animal bone and/or antler

L11: *cattle* horncore (HH75 1067)

L10: *pig* femur (HH75 895); *cattle* tibia; *caprine* astragalus

L9: *cattle* radius (HH75 749), tooth

Pottery

L14: 6 sherds/29 Neolithic Bowl pottery

L11: 7 sherds/25g Neolithic Bowl pottery

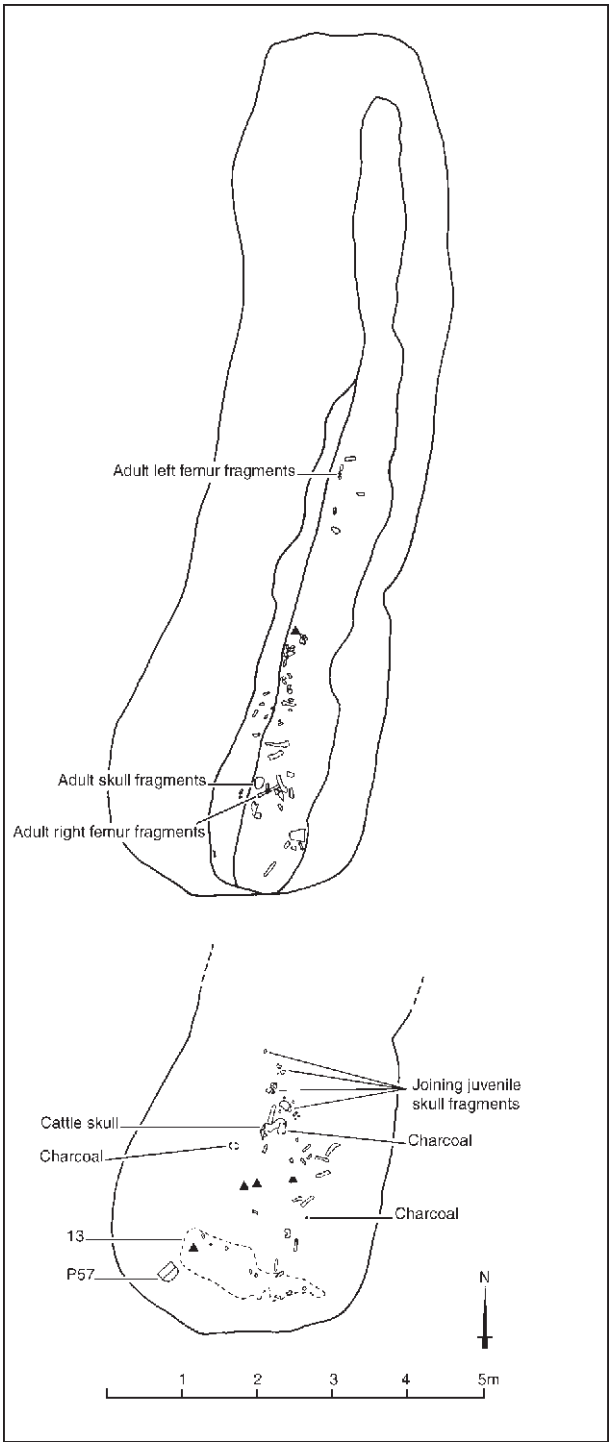

Fig 3.22 Main enclosure, site D1, segment 9. Plans of phase II and phase III deposits in butt (lower) and of phase VI deposits (upper).

L10: 9 sherds/4g Neolithic Bowl pottery
L9: 24 sherds/108 g Neolithic Bowl pottery

Lithics

L11: edge-trimmed flake, 'red pebble (broken)' (discarded)
L10: flake, 1 misc retouched
L9: 3 flakes, scraper, 1 misc retouched

Charcoal

L9: *Corylus avellana* and Maloideae with *Fraxinus excelsior*, *Quercus* sp, *Acer campestre*

^{14}C

L11: *3640–3490 cal BC (75%) or 3460–3380 cal BC (20%)* (4735±40 BP; OxA-7772) on HH75 1067
L10: *3670–3520 cal BC* (4820±45 BP; OxA-7771) on HH75 895. L9: *3370–3310 cal BC* (4520±40 BP; OxA-7770) on HH75 749, probably not from primary silt

Phase I/III interface

Pottery

Surface of L9: 62 sherds/582 g from a large, plain, flint-tempered Bowl (P57) at inner side of S butt. Further 187 sherds/883 g of same vessel at two findspots in L7, also at inner edge of S butt, within 1m, horizontally, of each other and of sherds on surface of L9.

Phase II. Three successive thin lenses against centre of S butt, as if tipped from causeway. Directly on primary silt, just E of the sherds described above, was an irregular spread of charcoaly, ashy material, with maximum dimensions of 1.90 × 0.70 m (L13). This was separated by a lens of fine, silty chalk (L10A) from a further lens of ashy grey silty soil with charcoal and small chalk lumps (L12). Photographs show L13 and L12 to have been grey and powdery, as if deposited and covered before any fine ashy component could be rained away. All three graded into rubble of L8A.

Animal bone and/or antler

L13: *pig* tooth; *cattle* femur, tibia, astragalus, tooth; *caprine* tibia, phalanx
L12: *pig* ulna; *cattle* mandible; *caprine* metacarpal, phalanx

Pottery

L13: 1 sherd/18 g Neolithic Bowl pottery
L10A: 11 sherds/80 g Neolithic Bowl pottery
L12: 38 sherds/108 g Neolithic Bowl pottery, including 21 sherds/20 g possibly from same vessel as 6 sherds/62 g from L10A

Lithics

L13: 5 flakes, core, 1 misc retouched
L10A: flake, 2 scrapers. L12: 8 flakes

Charcoal

L13: *Corylus avellana* with *Quercus* sp, Maloideae, *Prunus*
L12: *Corylus avellana* with Maloideae, *Prunus* sp, *Sorbus* sp, *Cornus sanguinea*

^{14}C

L13: *3630–3600 cal BC (3%) or 3530–3390 cal BC (92%)* (4645±40 BP; OxA-7027) and *3640–3560 cal BC (25%) or 3540–3380 cal BC (70%)* (4695±45 BP; OxA-7824), both on *Corylus* charcoal
L12: *3640–3490 cal BC (75%) or 3470–3380 cal BC (20%)* (4735±40 BP; OxA-7028) and *3770–3630 cal BC* (4900±40 BP; OxA-7029), both on *Corylus* charcoal; *3950–3390 cal BC* (4840±150 BP; (HAR-1886) on charcoal 50% identified as *Sorbus* sp and *Corylus*, not twiggy

Phase III. Near S butt only, loose chalk rubble with pronounced silt content (L8A), elsewhere chalk and flint rubble with wash, vacuous and blocky near the bottom, more weathered and concreted higher up, earthy and discoloured at outer side (L8), less so at inner side (L7). Lenses of silt within chalk rubble, some called L9, which was also applied to part of the primary silts. Upper part of rubble fills in S butt described as 'very compact large chalk blocks all lying at a sharp downward angle'.

Some or all finds from L9 may have come from phase III. See phase I above.

Human remains

L8A: Young juvenile maxilla with teeth (HH75 1350), and frontal and parietal fragments (HH75 1179, 1180), all joining, in three separate, closely spaced deposits at N end of concentration of animal bone in S butt. Frontal and parietal fragments from bottom of L8A, ie perhaps placed on surface of primary silt. Possible cut-marks on frontal and parietal

Animal bone and/or antler

L8A: *pig* tibia; *cattle* 2 scapulae, humerus, radius-ulna articulated with 3 carpals (HH75 1585), 'pelvic girdle' (HH75 1639), 2 femora, metacarpal, 2 metatarsals, 3 phalanges, 2 vertebrae, skull fragments (found together; HH75 1206), skull with horn cores (HH75 1613), 2 horn cores (HH75 1146, 1499), 5 ribs; *caprine* tibia, sacrum; *goose* radius

L8: *dog* articulating metacarpals and phalanx (HH75 932); *pig* femur, tibia, tooth, phalanx; *roe deer* metacarpal, shed antler (HH75 1080); *red deer* carpal, antler crown 'rake' (HH75 1178), and beam fragment (HH75 1234), lying together; *cattle* 5 scapulae, humerus, 3 radii, ulna, 2 femora, tibia, 2 patellae, ilium, 3 metatarsals, tarsal, teeth, maxilla, 2 vertebrae, skull fragments, horn core, 4 ribs; *caprine* humerus, radius-ulna, tibia, ilium, astragalus, 4 phalanges, vertebra, 2 horncores

L7: *dog* phalanx; *pig* radius, ulna, 2 ilia, metatarsal, mandible; *roe deer* phalanx; *red deer* acetabulum, antler, antler pick (HH75 830); *cattle* 3 scapulae, 5 humeri, radius, 2 femora, tibia, patella, ilium, 5 metacarpals, 2 metatarsals, teeth, 2 mandibles, phalanx, 8 vertebrae, skull fragment, horn core; *caprine* humerus, radius, femur, 2 tibiae, metatarsal, vertebra, 2 skull fragments, rib

Pottery

L8A: 23 sherds/198 g Neolithic Bowl pottery

L8: 89 sherds/443 g Neolithic Bowl pottery

L7: 432 sherds/2469 g Neolithic Bowl pottery, including 18 sherds/582 g of P82 and sherds of P57 noted above

Lithics

L8A: flake, core, edge-trimmed flake, 2 scrapers, piercer

L8: 11 flakes, scraper, (Chesil?) beach pebble hammerstone, amphibolite axehead fragment (S5; possibly from same implement as S10, from segment 10), 2 fragments Old Red Sandstone

L7: 20 flakes, serrated flake, edge-trimmed flake, scraper, flake from ground implement, 6 misc retouched, (Chesil?) beach pebble hammerstone, unworked (Chesil?) beach pebble, Chalk ball (HH75 775)

Other artefacts

L8: Object of puddled chalk (HH75 867)

Charcoal

L8A: *Corylus avellana* with *Prunus* sp. and *Carpinus betulus*

L8: *Corylus avellana* with *Quercus* sp, *Corylus*/*Alnus*, Maloideae

L7: *Corylus avellana* with *Carpinus betulus*, Maloideae

^{14}C

L8A: *3460–3360 cal BC*, mean of 4735±60 BP (OxA-7016) and 4690±60 BP (OxA-7015) on articulated cattle radius-ulna, radial, ulnar and intermediate carpals (HH75 1585)

L8: *3710–3630 cal BC (88%) or 3560–3530 cal BC (7%)*, mean of 4870±40 BP (OxA-7098) and 4855±60 BP (OxA-7097) on articulating dog metacarpals and phalanx (HH75 932).

Phase V. Soil with flint and chalk gravel (L5) at inner edge. Similar silts with higher soil content (L4) at outer edge.

Animal bone and/or antler

L4: *

L5: *pig* humerus, radius, ulna, tibia, calcaneum, tooth; *cattle* ulna, femur, 3 tibiae, metatarsal, tooth; *caprine* teeth

Pottery

L4: 1 sherd/6 g Neolithic Bowl pottery

L5: 14 sherds/145 g Neolithic Bowl pottery, including 1 sherd/18 g of P82, most of which was found in L7, some in L6

Lithics

L5: 3 flakes, 1 misc retouched

Charcoal

L5: *Quercus* sp

Phase VI. Slot *c* 0.40 m deep, ranging from *c* 0.30 m wide in N to 0.90 in S cut into underlying layers along length of ditch. Plan suggests that this cut through an earlier slot confined to S end and slightly closer to inner edge of ditch, but relationship not completely clear. Filled with dark brown 'sticky' soil with large flint nodules (L6). Finds concentrated in S, where three successive stages of deposition were identified: on the bottom of the slot, half-way up it, and standing proud into L3. Vertical location of individual finds noted only occasionally. Ashy patch near N end of finds concentration.

Human remains

L6: All on bottom of slot. Grouped with animal bone in S butt: adult R femur shaft fragments, possibly cut-marked (HH75 653); young/young mature adult skull fragments, one possibly cut-marked (HH75 699, 700); mature adult maxilla fragments (HH75 607, 608)

Imprecisely located in S of slot. Older subadult/adult L femur shaft fragments (HH75 598)

Animal bone and/or antler

L6: *pig* 2 scapulae, 3 humeri, radius-ulna, 4 radii, tibia, ilium, ischium, metapodial, mandible, phalanx, 2 vertebrae, 2 skull fragments; *roe deer* skull fragment; *red deer* antler crown 'rake' (HH75 582); *cattle* 4 scapulae, 3 humeri, radius-ulna, 5 radii, 7 acetabula, 2 femora, 4 tibiae, 6 ilia, ischium, metacarpal, 2 metatarsals, astragalus, calcaneum, teeth, maxilla, 4 vertebrae, horncore, rib; *caprine* scapula, 2 humeri, radius, femur, 6 tibiae, 2 ilia, metatarsal, tooth, 2 vertebrae, 2 skull fragments, horncore

Pottery

L6: 45 sherds/166 g Neolithic Bowl pottery, including 4 sherds/68 g of P82, most of which was found in L7 with 1 sherd in L5

Lithics

L6: 1 flake, quartzite or quartzitic sandstone pebble hammerstone

Phase VII. Concentration of flint nodules along outer edge of L3, with artefacts and animal bone confined to area of nodules and to S end of segment, probably the upstanding part of L6. See VI and VIII/a.

Phase VIII/a. Black soil with gravelly chalk (L3). Larger nodules confined to outer edge; finds confined to S end of band of nodules along line of slot, probably in upstanding part of L6.

Animal bone and/or antler

L3: *pig* scapula, 6 humeri, 6 radii, 2 ulnae, 2 acetabula, metacarpal, 2 metatarsals, calcaneum, 3 mandibles, maxilla, 2 phalanges, 2 skull fragments; *red deer* tarsal, vertebra; *cattle* scapula, radius, ulna, acetabulum, tibia, metacarpal, mandible, tooth, 3 maxillae, 2 phalanges, vertebra, rib; *caprine* femur, tibia, tooth 2 vertebrae

Pottery

L3: 223 sherds/694 g Neolithic Bowl pottery, including P83, P112, P141 and further plain body sherds probably from P83 or P112

Lithics

L3: 22 flakes, 2 edge-trimmed flakes, 6 misc retouched, Old Red Sandstone rubber fragment

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), overlain by ploughsoil (L1).

Animal bone and/or antler

L2: *cattle* metacarpal, vertebra, skull fragment

Lithics

L2: 1 flake, 1 scraper, 1 misc retouched
L1: 1 misc retouched

Segment 10 (Fig 3.23)

Original notation. HH75 site E1 OCD I or segment I (OCD = outer causewayed ditch).
Form. Expanded and almost 0.80 m deep at N butt, only 0.50 m deep in constriction near S side of excavation, reaching 0.78 m deep in S section. At least two sub-segments. Gently shelving sides. Butt offset to E from that of segment 11. On steep slope, hence relative shallowness, especially at outer edge? Fills less chalky than around most of circuit, because of shallower depth, which would have provided less chalk for bank, and substantial recutting.
Length >6.8 m, *width* 3.2 m, *depth* 0.85 m.
Excavation. Turf and topsoil stripped by hand. Segment divided into 3 transverse cuttings (I, II, III from S to N), separated by baulks that were eventually removed.

Phase I. Chalky silt (L9, L7) with chalk lumps of varying size and density.

Phase II. Chalky silt (L7A, L7 (upper) in extreme S of excavation), with denser, larger chalk lumps than phase I silts.

Phase V. Orange-brown clayey loam with peagrit and weathered chalk lumps (L5, L4A).

Phase VI? 'Sticky' rich brown soil with large flint nodules and chalk lumps (L8) in a band 0.50 m wide, surviving to *c* 0.15 m deep, confined to extreme S edge of excavation, occupying deepest part of ditch floor, in which it appeared to fill a shallow cut, truncating phase I and II silts. Site notebook emphatic that cut also truncated phase V silts.

Animal bone and/or antler

L8: *cattle* rib

Pottery

L8: 6 sherds/31 g Neolithic Bowl pottery

Lithics

L8: 3 flakes, 1 scraper

Charcoal

L8: Maloideae

Phase VI. Slot surviving to 1.00 m wide and 0.70 m deep, cut through Phase V, II and I deposits, sometimes to ditch bottom. Surviving in centre and N, possibly removed and/or severed from L8 in S by phase VII/a recut. Filled with 'loamy, spongy, brown soil' with large flint nodules and chalk lumps (L6A, L6B).

Animal bone and/or antler

Complete bones and substantial fragments from L6B contrasted with very fragmented bone from L6 (phase VII/a).
L6A: *caprine* tibia
L6B: *pig* scapula, humerus, metatarsal, mandible; *red deer* antler fragment; *cattle* articulated tibia and astragalus (HH75 2007), also 2 scapulae, fibula, lateral maladies, ilium, 3 metatarsals, calcaneum, phalanx, 3 vertebrae, skull fragment, rib; *caprine* tibia

Pottery

L6A: 1 sherd/11 g Neolithic Bowl pottery
L6B: 77 sherds/437 g Neolithic Bowl pottery, including 11 sherds/124 g of a beaded-rimmed vessel (HH75 2055), found together, 3 sherds/43 g of an expanded-rimmed vessel (HH75 2085, 2113) with one joining sherd *c* 0.50 m from the other two; 1 grog-tempered body sherd/8 g with stabbed decoration, Beaker or EBA

Lithics

L6A: 4 flakes, edge-trimmed flake
L6B: 34 flakes, core, 2 serrated flakes, edge-trimmed flake, ground axehead fragment (HH75 1870), 2 misc retouched, 2 joining fragments of greenstone adze (S6, near group XVII), found *c* 0.50 m apart, one of them next to the flint axehead fragment

^{14}C

L6B: *3670–3510 cal BC (90%) or 3420–3380 cal BC (5%)* (4801±50 BP; OxA-8850) on HH75 2007

Phase VI/*2.* Orange-brown clayey loam with peagrit and weathered chalk lumps, silted from interior (L4), almost indistinguishable from underlying phase V silts but partly overlying L8.

Animal bone and/or antler

L4: *

Pottery

L4: 1 sherd/4g Beaker

Lithics

L4: Fragment of amphibolite axehead (S10), possibly from same implement as S5 (HH75 815) from segment 9

Phase VII/a. Steep-sided recut up to 0.35 m deep and 1.30 m, truncating all earlier deposits, sometimes reaching almost to ditch bottom, cutting into outer ditch edge in S. Filled with dark soil with chalk and flint gravel and charcoal flecks (L6), which was similar to L3. Apparently homogeneous, except in N butt, where successive bands of fill with inclusions of varying sizes suggest that it was left to silt naturally, an impression enhanced by the way L3 dips into the top of the recut here, while L6 seems planed off in other sections.

Animal bone and/or antler

Bone from L6 was very fragmented, in contrast to that from L6B
L6: *pig* scapula, humerus, radius, 4 tibiae, fibula, ilium, 2 ischia, pubis, 2 metapodials, teeth, 2 phalanges, vertebra; *red deer* antler base fragment (HH75 1916); *cattle* humerus, radius, femur, metacarpal, 3 metatarsals, mandible, teeth, vertebra; *caprine* radius, 2 tibiae, teeth

Pottery

L6: 169 sherds/489 g Neolithic Bowl pottery; 26 sherds/42 g Beaker, including P162; 2 sherds/8 g indeterminate grog-tempered EBA

Lithics

L6: 151 flakes, 2 cores, serrated flake, 7 edge-trimmed flakes, 6 scrapers, piercer, oblique arrowhead (HH75 1233), 8 misc retouched, single fragments of Old Red Sandstone and Greensand, sandstone pebble fragment

Charcoal

L6: Maloideae with *Corylus avellana*

Phase VIII/a. Dark soil with comminuted chalk and flint and some larger chalk lumps, especially towards top (L3).

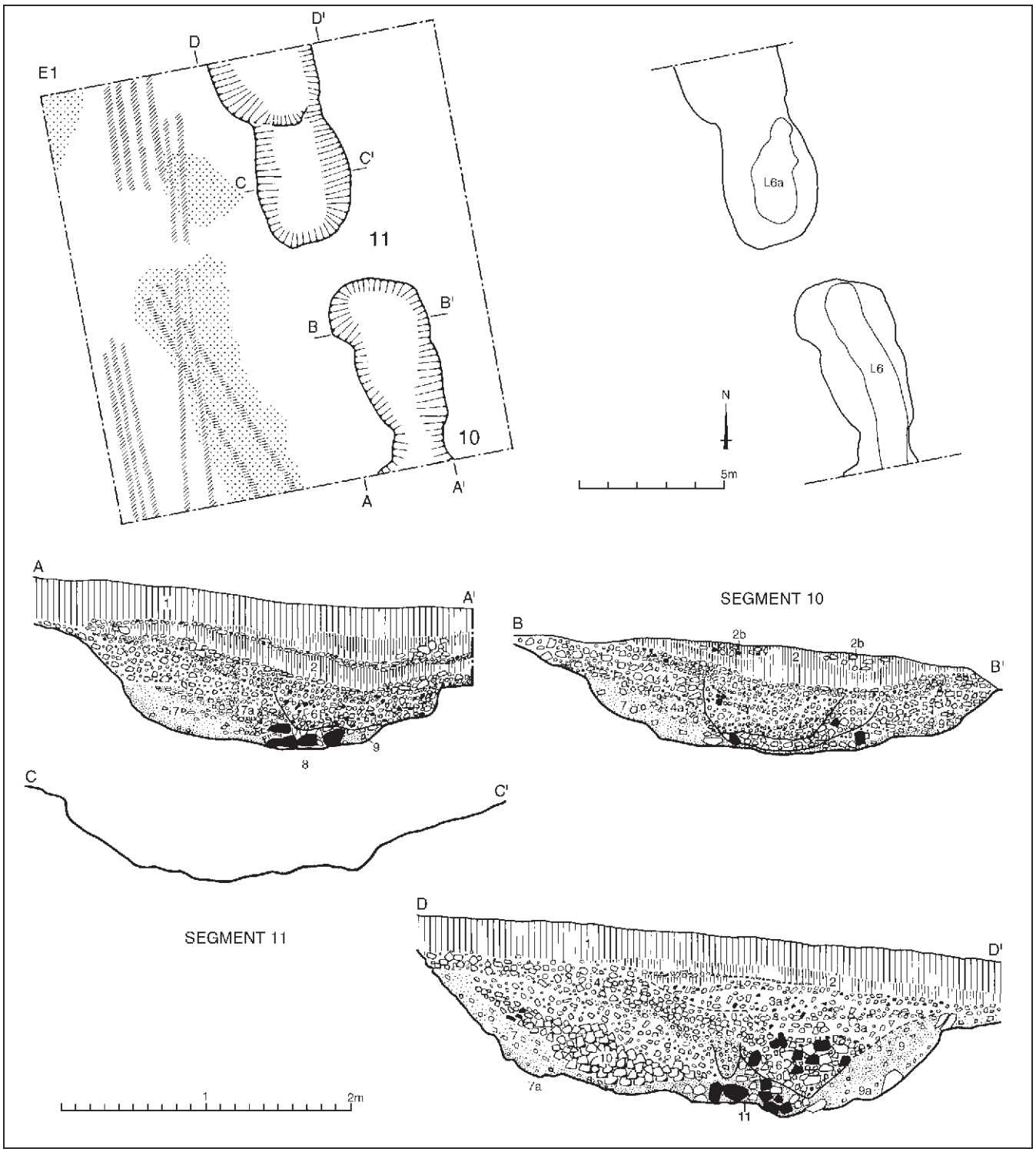

Fig 3.23 Main enclosure site E1. Plan, sections, and outline of phase VII/a recuts in segments 10 and 11.

Animal bone and/or antler

L3: *pig* humerus, radius-ulna, radius, metatarsal, astragalus, teeth, phalanx; *red deer* antler fragments; *cattle* femur, ischium, metatarsal; *caprine* mandible

Pottery

L3: 19 sherds/33 g Neolithic Bowl pottery; 12 sherds/22 g Beaker

Lithics

L3: 14 flakes, core, 2 scrapers, 1 misc retouched, Greensand fragment, ?shale fragment

Charcoal

L3: *

Upper levels and unstratified. 0.05 to 0.40 m of inclusion-free black, humic material (L2) made up of *in situ* turf (L2C), band of concreted chalk and flint (L2B), displaced turf (L2A), all overlain by modern ploughsoil (L1).

Animal bone and/or antler

L2: *pig* tooth

Pottery

L2: 1 sherd/2 g Beaker; 1 sherd post-medieval

Other artefacts
L2: C18–19 coin

Upper levels of segment 10 or 11

Animal bone and/or antler
L1: *

Pottery
L1: 1 sherd/5 g Neolithic Bowl pottery, 1 sherd/3 g Beaker

Lithics
L1: 41 flakes, 2 edge-trimmed flakes, scraper, rod, 7 misc retouched

Other artefacts
L1: green glass fragments

Segment 11 (Fig.3.23)

Original notation. HH75 Site E1 OCD II or segment II (OCD = outer causewayed ditch).
Form. At least two sub-segments. N sub-segment deepest and widest, S very shallow, no more than 0.65 m, almost shelf-like near causeway, with slight hollow in butt. On steep slope.
Length >6.7 m, *width* 3.9 m, *depth* 1 m.
Excavation. Turf and topsoil stripped by hand. Segment dug in plan with two temporary baulks

Phase I. Chalky silts with chalk lumps at inner edge (L7 (lower), L7A) and of gritty chalk-soil silt with chalk lumps at outer edge (L9, L9A).

Phase II. Ashy grey-brown chalk/soil silt with chalk rubble (L11), lying in a band *c* 1.00 m wide along centre of ditch floor along most of segment, sometimes overlapping inner edges of primary silt, and perhaps cut into them. Surface of L11 not initially distinguished from L10, some finds from it recorded as from L10, listed below as from 'L10'. Grey, 'dusty' silt with chalk lumps, from outer edge (L9B); up to 0.15 m of chalky silt with dense chalk lumps, from inner edge (L7B).

Human remains
'L10': older mature adult ?male mandible (HH75 1848)

Animal bone and/or antler
L11: *pig* acetabulum; *cattle* humerus, phalanx, rib
'L10': *cattle* humerus, horncore with attached skull fragment (HH75 1439); *caprine* humerus

Pottery
L11: 126 sherds/395 g Neolithic Bowl pottery, including 85 sherds/309 g from vessel with a simple flat rim, found scattered, 31 sherds/54 g from vessel with out-turned rim, found together, and sherds of at least 3 other vessels
'L10': 76 sherds/210 g from an open uncarinated bowl with simple rounded rim and vertically-perforated lug, found together

Lithics
L11: 11 flakes, fragment from ground flint axehead (HH75 1824), unworked limestone fragment (HH75 1969)

Charcoal
L11: 50% identified as hawthorn type, not twiggy, found at single spot

^{14}C
L11: *3630–3580 cal BC (5%) or 3530–3310 cal BC (90%)* (4560±90 BP; HAR-1882) on charcoal described above

Phase III. In N sub-segment only, vacuous chalk rubble with lenses of soily silt, in which finds concentrated (L10), followed from inner edge by progressively smaller and more rounded chalk lumps in grey chalky silt (L7 (upper)).

Human remains
L10: juvenile L parietal and L mandible fragments (HH75 2128), 3 older infant/juvenile rib fragments (HH75 1715), 0.50 m from HH75 2128

Animal bone and/or antler
L10: *cattle* astragalus, phalanx, 3 carpals, horncore with attached skull fragment (HH75 1439), if not actually from L11 (see phase II); *caprine* tibia

Pottery
L10: 6 sherds/56 g Neolithic Bowl pottery

Lithics
L10: 8 flakes

Phase IV. Subcircular pit (F2) *c* 0.30 m in diameter, cut down to ditch floor just N of junction between sub-segments, apparently during accumulation of phase III fills, since it was not visible in L5. Filled with friable grey loam 'with high sodium carbonate content' and several large flints.

Phase V. Orange-brown silt with discoloured chalk lumps and flint nodules, the latter mainly in the lower part (L5). Grey-brown soil with compact chalk lumps, derived from causeway (L4A).

Phase VI. VI/a: in N sub-segment, V-sectioned slot, at least 0.15 m wide and 0.25 m deep, cut through phase III deposits into primary silt, filled with fine brown silt with discoloured, yellow chalk rubble(L8). L8 seems to have silted into slot from inner edge, where it was continuous with a thin spread of similar material (L8A).

Animal bone and/or antler
L8: *pig* humerus; *red deer* antler fragment; *cattle* 2 carpals

Phase VI/b: slot up to 0.80 m wide in N sub-segment and up to 0. 40 m deep cut along ditch to outer side of centre, truncating L8, narrowing to 0.30 m wide in S sub-segment, filled with dark brown sticky loam with large flint nodules, chalk lumps and small gritty orange chalk fragments (L6).

Animal bone and/or antler
Bone was concentrated at the surface of L6
L6: *dog* humerus; *pig* scapula, 3 humeri, 2 radii, 3 ulnae, acetabulum, 2 tibiae, ilium, 3 ischia, pubis, metacarpal, R and L astragali and calcanea from small juvenile, teeth, 2 vertebrae; *roe deer* ilium; *cattle* 2 humeri, 2 tibiae, metacarpal, astragalus, tooth, vertebra; *caprine* 2 radii, 3 tibiae, ischium, astragalus

Pottery
L6: 37 sherds/187 g Neolithic Bowl pottery, 1 sherd/10 g from an upright, pointed rim above a converging neck, in a sandy fabric with some flint and vegetable matter, apparently from a late Bronze Age jar (HH75 1726). Possibly intrusive, possibly result of recorded difficulty of distinguishing between L3 (phase VIII/a) and L6

Lithics
L6: 20 flakes, 2 serrated flakes, 2 edge-trimmed flakes, scraper, 1 misc retouched

Phase VI/*2 (and/or V?)*: brown loam with decayed, orange-coloured chalk lumps, becoming larger with depth (L4), silted from interior. Overlain in S butt by similar deposit with larger chalk lumps (L4A), apparently derived from causeway.

Relationship between L4 and slots unclear: sketch in site notebook shows L6 cut through L4. Section of N face shows L4 overlying L8 and L6. Photographs unclear because brown loam matrix of L4 blends into that of L3 and its subdivisions. Very similar silting likely to have occurred before and after the cutting of the slots, as in segment 10.

Animal bone and/or antler
L4: *

Lithics
L4: 2 flakes

Phase VII/a. In S sub-segment only, irregular, pear-shaped cut 3.50m long and up to 0.40 m wide, taking out most of fill, in places cutting down to natural chalk, truncating and removing L6. Filled with material similar to L6 but loamier and with calcareous 'mould' and smaller, scarcer chalk lumps and flint fragments (L6A). See also VIII/a below.

Animal bone and/or antler
L6A: *pig* fibula, ilium, metatarsal; *caprine* tibia

Pottery
L6A: 7 sherds/73 g Neolithic Bowl pottery

Lithics
L6A: 3 flakes

Phase VIII/a. Brown/orange loam with peagrit and chalk lumps (L3). In N face of excavation possible cut or cuts into L4 and the very top of L6 was/were filled with material like L3 but with inclusions of varying size and density (L3A, L3B), perhaps suggesting that they were left open, to be filled as ploughsoils began to accumulate in the ditch top.

Pottery
L3: 1 sherd/4 g Beaker

Lithics
L3: 11 flakes, 1 unworked fragment ?shale

Upper levels and unstratified. Recent turfline (L2) split into *in situ* black loam (L2C), sometimes separated by a band of concreted chalk and flint (L2A) from overlying brown, loamy redeposited turf (bank material? – L2B) which stopped *c* 2 m short of causeway. Rectangular hearth or camp fire (F1) cut through (L2) into L3, contained charred branches over fibrous material (?grass).

Animal bone and/or antler
F1: *

Lithics
L2: 18 flakes, scraper, 3 misc retouched. F1: scraper

Unclassified burnt flint
F1: 251 g

Other artefacts
L2: clay pipe stem fragment, green glass fragments

Charcoal
F1: *

Segment 12 (Fig 3.24)

Original notation. HH76 Site H OCD I or segment 1 (OCD = outer causewayed ditch).
Form. Steep-sided at inner edge, shelving to almost nothing at outer, conforming to slope of hill. NW butt of largely unexcavated segment joined by trough *c* 4.00 m long, 0.80 m wide and 0.60 m deep to SE butt of segment 13.
In an area with much Coombe Rock and other chalk-derived deposits, as well as substantial patches of Clay-with-Flints. Segment cut in chalk, with a fairly chalky fill.
Excavation. Topsoil machined off. Segment dug in two transverse sections, one (cutting g) across the butt.
Length >2.4 m, *width* 1.8 m, *depth* 1.5 m.

Phase I. Laminated orange-brown clayey silt with runs of gravel (L13), derived from inner edge giving way to chalkier silts with varying densities of chalk lumps (L15, L9) towards centre and outer edge.

Phase III. Heavily corticated flint nodules, mainly vacuous, sometimes in chalky silt with small chalk lumps (L10), derived from interior, smaller quantities of dark loam with flint blocks from exterior (L14, L5), followed by clayey, chalky silts with progressively smaller chalk lumps (L11, L12) from interior. Loose brown loam with flint nodules in trough area (L7, L5).

Pottery
L5: 12 sherds/27 g Neolithic Bowl pottery

Lithics
L11: 79 flakes, 6 cores, core fragment, 4 flaked lumps. L7: 91 flakes, core, edge-trimmed flake, 1 misc retouched. L5: 105 flakes, serrated flake, 1 misc retouched

Phase V. Light brown loam with varying densities of rounded chalk lumps (L4A, L4).

Animal bone and/or antler
L4A: *
L4: *

Pottery
L4: 1 sherd/16 g Neolithic Bowl pottery

Lithics
L4: 59 flakes, 2 misc retouched

Phase VI. Cut up to 0.30 m deep and 1.80 m wide at inner edge of ditch, filled with orange loam with chalk pebbles and peagrit (L8).

Animal bone and/or antler
L8: *pig* tooth

Pottery
L8: 1 sherd/2 g Neolithic Bowl pottery

Lithics
L8: refitting blade and core (HH76 1680), 222 further flakes (1 with edge gloss), 3 further cores, core fragment, edge-trimmed flake, scraper

Phase VIII/a. Red-brown loam with peagrit (L3, L6).

Animal bone and/or antler
L3: *caprine* tibia

Pottery
L6: 1 sherd/1 g Neolithic Bowl pottery. L3: 2 sherds/21 g Neolithic Bowl pottery

Lithics
L6: 51 flakes, 4 cores (1 possibly Mesolithic, HH76 2210, Saville, Ch 6), core fragment, 1 misc retouched.
L3: 2 flakes

Upper levels and unstratified. Pre-1960s turfline (L2) overlain by modern ploughsoil (L1, L1B). Over trough between segments 12 and 13 displaced bank material probably represented by orange clay with chalk pebbles (L1A) overlying turfline.

Animal bone and/or antler
L1B: *cattle* ilium, metatarsal

Lithics
L2: 51 flakes, utilised flake, core fragment, piercer
L1B: 16 flakes, scraper, 1 misc retouched
L1: core, 1 misc retouched
U/S: 11 flakes

Upper levels of segments 12–15 (site H as a whole)

Animal bone and/or antler
L1: *. U/S: *

Pottery
U/S: 7 sherds/56 g Neolithic Bowl pottery

Lithics
L1: 231 flakes (2 burnt), 2 edge-trimmed flakes, scraper, piercer, knife, 4 misc retouched. U/S: 235 flakes (1 burnt), core, serrated flake, 2 edge-trimmed flakes, 7 scrapers, 2 piercers, 4 misc retouched, Greensand fragment, unworked pebble of fine-grained, banded rock

Unclassified burnt flint
U/S: 40 g

Segment 13 (Figs 3.24–3.25)

Original notation. HH76 site H OCD II or segment 2 (OCD = outer causewayed ditch).
Form. At least 4 sub-segments, ditch bottom stepped between them. Deepest approx 4 m SE of NW butt. Deep, shelving inner edge, shallower, steeper outer edge.
In an area with much Coombe Rock and other chalk-derived deposits, as well as substantial patches of Clay-with-Flints. SE sub-segment cut in Clay-with-Flints, remainder in chalk, fills predominantly clay and flint, with a substantial admixture of chalk only towards centre (part of cut a) and towards, though not in, NW butt (part of cut e).
Length 7.7 m, *width* 4.5 m, *depth* 1.6 m.
Excavation. 85%. Topsoil machined off. Shallow machine trenches cut to locate ditch. Approx 1 m long axial section in SE butt (cutting j), transverse sections 0.80–1.50 m wide across rest (cuttings d, f, a (= 2 contiguous cuttings with intervening transverse section), e, b from SE to NW). Cuttings a and b removed first. 1 m baulk left standing between cuttings e and b.

Phase I/II. Orange-brown to brown clayey silts, with predominantly flint (occasionally chalk) inclusions and sometimes laminated (cut j L12, L11; cut d L14, L12, L11, L10; cut f L13, L11, L10; cut a L16, L15, L13, L11(SE), L10, l7(NW), L10B; cut e L13; cut b L16, L15, L11, L10, L6.

Lithics
Cut j L12: 12 flakes, core
Cut j L11: 64 flakes, 2 core fragments, flaked lump, edge-trimmed flake
Cut d L11: 29 flakes, core, flaked lump
Cut d L10: 69 flakes

Phase III. Predominantly clayey silts, with more frequent, predominantly flint, inclusions, and with large nodules and/or chalk lumps concentrated towards the centre, sometimes vacuous. Weathered, rounded chalk lumps often concentrated in upper layers (cut j L14, L13, L8, L6 (NW); cut d L13, L9, L8, L7, L6; cut f L12, L9, L8, L7, L6; cut A l14, L12, L11 (NW), L9, L8, L7(SE), L6, L4 (centre); cut e L14, L12, L11, L9, L8, L7, L6; cut b L14, L12, L9, L7.

Animal bone and/or antler
Cut j L7: *red deer* antler fragment. Cut j L6 (NW) *caprine* tooth
Cut j L6: *caprine* tooth
Cut a L7: *pig* radius-ulna
Cut e L9: *cattle* ischium
Cut e L6: *cattle* scapula, radius, acetabulum; *caprine* metatarsal

Pottery
Cut j L7: 64 sherds/63 g Neolithic Bowl pottery
Cut d L9: 34 sherds/80 g Neolithic Bowl pottery
Cut d L6: 18 sherds/61 g Neolithic Bowl pottery
Cut e L6: 15 sherds/50 g Neolithic Bowl pottery
L7: 1 sherd/2 g Neolithic Bowl pottery

Lithics
Cut j L8: 270 flakes, 7 cores, 2 core fragments, 2 flaked lumps, piercer
Cut j L7: 315 flakes, 2 cores, flaked lump, 2 edge-trimmed flakes, 2 misc retouched
Cut d L9: 142 flakes, 4 cores, 3 core fragments, 3 flaked lumps, edge-trimmed flake, 1 misc retouched, Greensand fragment
Cut d L8: 22 flakes
Cut d L7: 27 flakes
Cut d L6 57 flakes
Cut e L12: 14 flakes
Cut e L11: 12 flakes
Cut e L9: 30 flakes
Cut e L8: 22 flakes
Cut e L7: 7 flakes
Cut e L6: 41 flakes
Cut b L8: 8 flakes
L9: 7 flakes, 1 misc retouched
L8: 33 flakes, core, flaked lump
L7: 29 flakes, core fragment, serrated flake

Unclassified burnt flint
Cut d L9: 2 g

Charcoal
Cut e L11: *Quercus* sp
Cut e L8: *
Cut e L6: *Quercus* sp

Phase V. Silts of varying composition with flint and chalk inclusions (cut j L9, cut j L4B; cut e L2, L4, cut b L8, L4), often culminating at the inner edge in rounded, washed chalk lumps in a loamy matrix (L3 in most cuttings, also cut j L10 and L2B), while silts from exterior had higher clay and/or sand content.

Animal bone and/or antler
Cut e L3: *pig* tarsal; *cattle* scapula, radius, acetabulum, 2 tibiae
Cut b L3: *cattle* tooth

Pottery
Cut j L10: 1 sherd/5 g Neolithic Bowl pottery
Cut d L3: 20 sherds/44 g Neolithic Bowl pottery
Cut f L3: 1 sherd/1 g Neolithic Bowl pottery
Cut a L4: 3 sherds/40 g Neolithic Bowl pottery
Cut e L3: 1 sherd/2 g Neolithic Bowl pottery
Cut b L4: 2 sherds/11 g Neolithic Bowl pottery
Cut b L3: 10 sherds/29 g Neolithic Bowl pottery

Lithics
Cut j L9: 60 flakes, flaked lump, edge-trimmed flake, edge-glossed flake, 3 piercers, Old Red Sandstone fragment
Cut d L3: 218 flakes, core fragment
Cut a L4: 5 flakes
Cut e L3: 13 flakes, edge-trimmed flake
Site b L8: 116 flakes
Cut b L4: 17 flakes
Cut b L3: 161 flakes, core, serrated flake
L3: 115 flakes, serrated flake, piercer, 1 misc retouched

Unclassified burnt flint
Cut b L3: * (with hazelnut shell)

Charred seeds and/or nutshell
Cut b L3: Charred hazelnut shell (HH76 sample 31). Recorded as from L3, although measurements place it in L5, the phase VI slot, which cut L3 here. Definition was difficult in the dark clay and earth fills of the butt

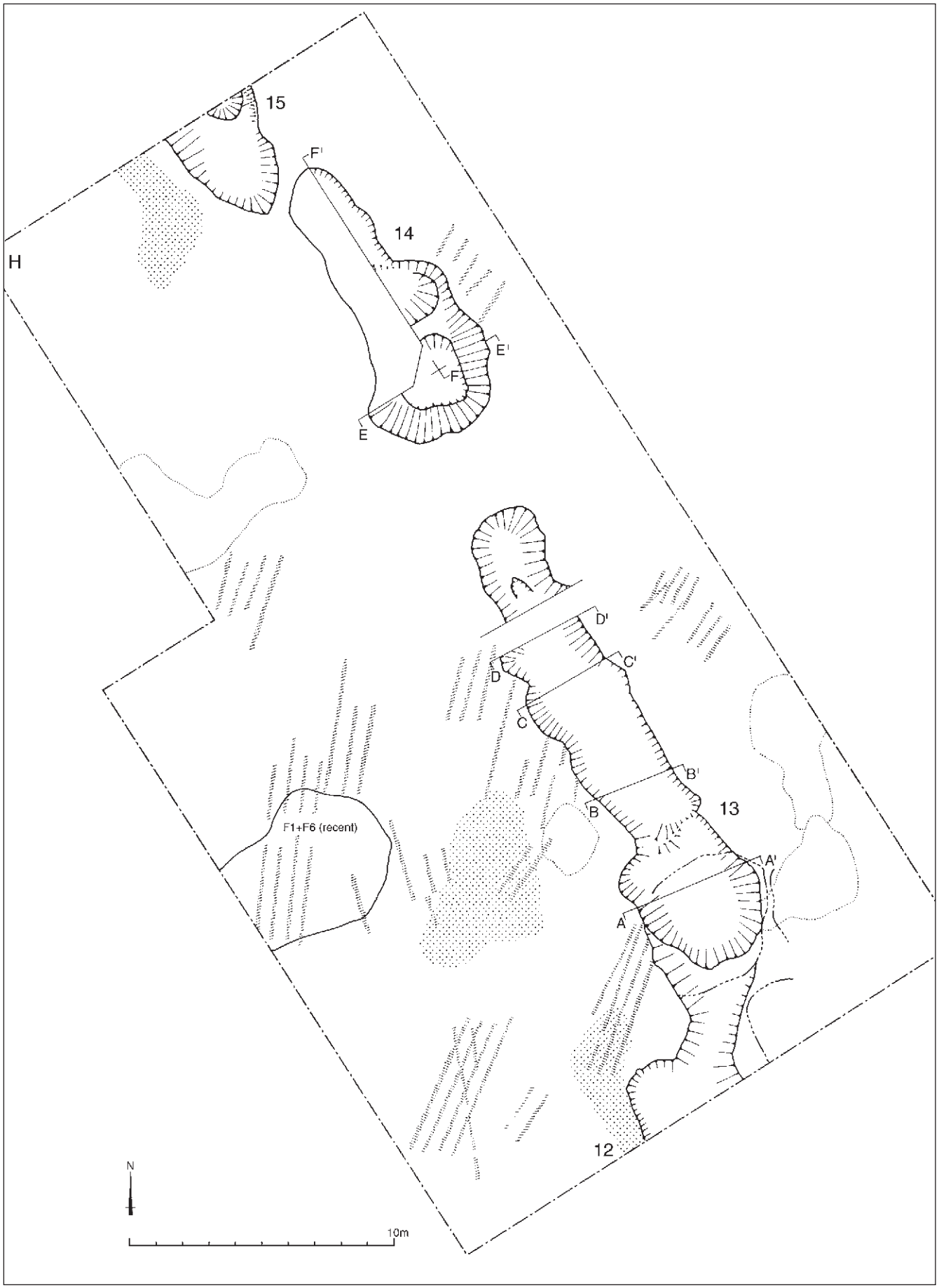

Fig 3.24 Main enclosure, site H.

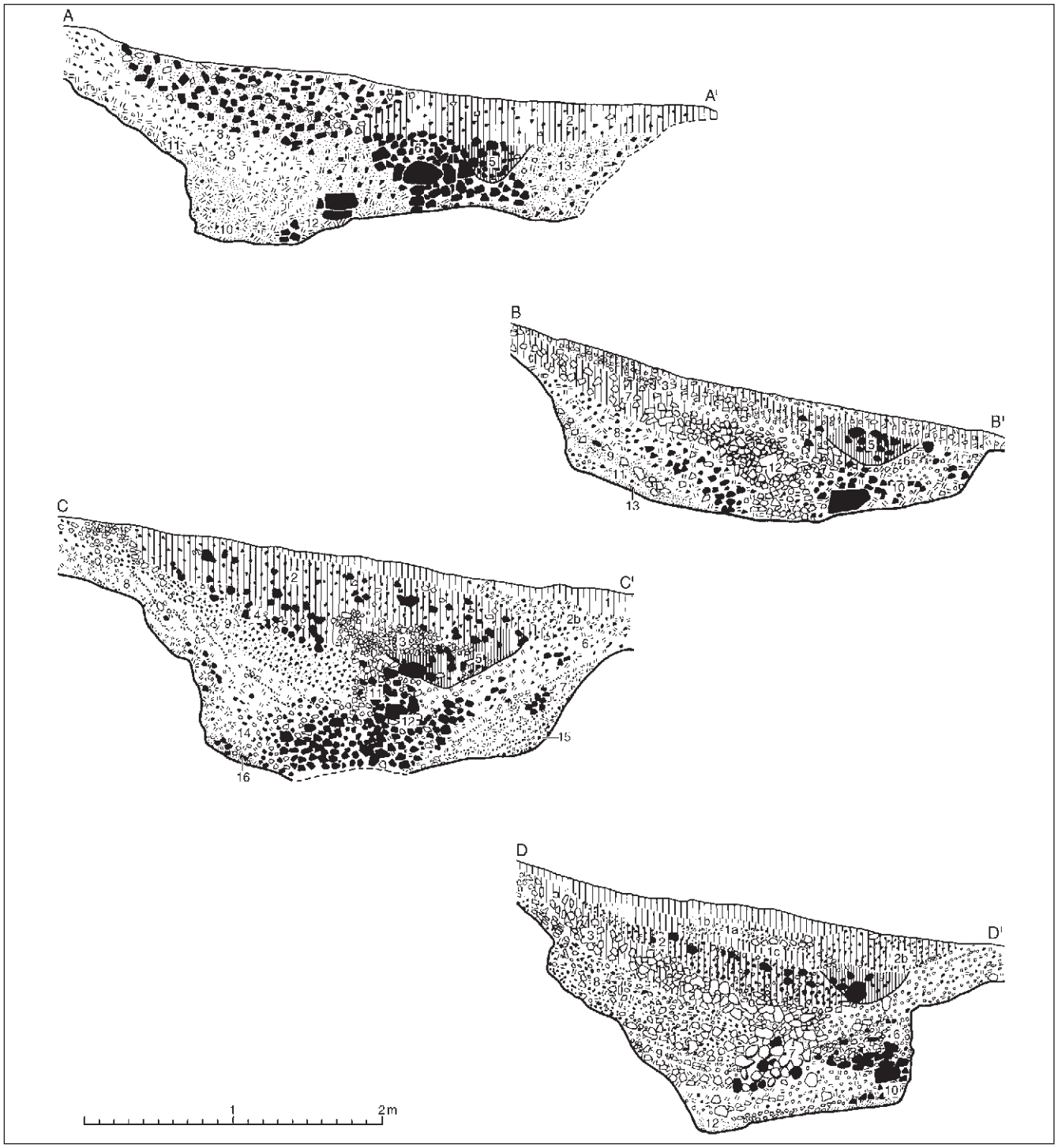

Fig 3.25 Main enclosure, site H. sections of segment 13.

^{14}C

3520–3310 cal BC (4520±80 BP; HAR-2369) on hazelnut shell described above.

Phase VI. Slot up to 0.70 m wide and 0.20 m deep cut towards outer edge of ditch, stopping 3 m short of SE butt and 2 m short of NW, filled with dark brown loam with large flint nodules (L5), the nodules concentrated towards the top. Fill mounded-up in some sections.

Animal bone and/or antler

L5: *pig* scapula, 2 ulnae, tibia, calcaneum; *cattle* scapula, 2 humeri, ischium, teeth, 2 phalanges, vertebra, skull fragment, 2 ribs; *caprine* 2 humeri, teeth, vertebra

Pottery

L5: 120 sherds/253 g Neolithic Bowl pottery, including part of P106, most of which came from phase VI contexts in segment 14

Lithics

L5: 1218 flakes, 11 cores, 4 core fragments, 3 flaked lumps, 5 serrated flakes, 3 edge-trimmed flakes, scraper, 2 piercers, flake from polished implement, leaf arrowhead, 3 misc retouched, beach pebble hammerstone, Greensand fragment.

Unclassified burnt flint

See phase V

Fig 3.26 Main enclosure, site H, sections and detail of segment 14.

Charcoal
Quercus sp, Maloideae

Charred seeds and/or nutshell
See phase V

^{14}C
See phase V

Phase VII. Band of flint nodules and artefacts recorded within phase VIII/a deposits at early stage of excavation, immediately above slot and expanding to wider spreads in each butt. As excavation progressed, this resolved into mounded-up fill of slot and exposed topmost parts of phase III deposits in butts, where slot did not extend.

Phase VIII/a. Mainly dark loam with flint gravel, sometimes also with peagrit and small clay patches (L2 throughout), sometimes also a clayey deposit from exterior (L4 in cuts j, d, f, L3 in cut j).

Animal bone and/or antler
L2: *cattle* tibia, skull fragment

Pottery
L2: 17 sherds/52 g Neolithic Bowl pottery
L4: 7 sherds/16 g Neolithic Bowl pottery
Cut j L3: 1 sherd/26 g Neolithic Bowl pottery

Lithics
L2: 1420 flakes, 7 cores, core fragment, 2 flaked lumps, 2 edge-trimmed flakes, piercer, laurel leaf, 10 misc retouched, unworked (Chesil?) beach pebble
L4: 67 flakes, serrated flake, piercer

Charcoal
L2: *Cornus* sp

Upper levels and unstratified. Pre-1960s turfline occasionally surviving in small patches (eg cut e L1C), sometimes divided from current ploughsoil (L1) by bands of clay with small flint inclusions, perhaps the result of levelling the bank (eg cut e L1A)

Animal bone and/or antler
L1: rabbit pelvis. U/S: *

Lithics
L1: 52 flakes, scraper, laurel leaf, 1 misc retouched
U/S: 170 flakes

Segment 14 (Figs 3.24, 3.26)

Original notation. HH76 site H OCD III or CD III or segment 3 (OCD = outer causewayed ditch).
Form. Two bowl-like sub-segments in SE and centre, divided by wall of unexcavated chalk up to 0.80 m high, leading to different silting patterns in each. Narrower, shallower 'tail' to NW, only *c* 0.50 m deep and virtually devoid of finds. Widest at SE butt, deepest in centre. Stepped profile, reflecting blockiness of chalk in lower part of profile. One block *in situ* but detached (apparently loosened but not removed) near SE butt.

In an area with much Coombe Rock and other chalk-derived deposits, as well as substantial patches of Clay-with-Flints. Segment cut in chalk, fills a mixture of clay and chalk, with more chalk higher up and in centre and NW sub-segments.
Length 11.5 m, width 5.1 m, *depth* 2.3 m.
Excavation. *c* 60%. Topsoil machined off. Transverse section cut 2.30 m from SE butt cutting c), axial section cut along remainder, with only NE side removed (cutting k). SE corner of axial section collapsed before it could be drawn.

Phase I/II. SE sub-segment: alternating lenses of fine chalk and clay silts at inner edge (cut c L22, L21, L20, L19), orange clay with flint blocks on base (cut c L23), orange silt at outer edge, with runs of flint and chalk pebbles at outer edge (L12). Central sub-segment: dense chalk silt (cut k L21) on base, under orange clay with flint gravel (cut k L19) and, in centre only, orange clayey silt with a little chalk and flint (cut k L23).

In L12, close against outer edge of SE sub-segment, were eight possible stakeholes, 120–130 mm in diameter, filled with completely stone-free light brown clay, most of them in a rough line *c* 2 m long at intervals of 0.10 to 0.30 m. Not observed in overlying layers, but this was a dark loam with fine gravel and streaks of clay (cut k L4) in which they would have been difficult to see. Unclear from what level stakes (if stakes they were) were inserted.

Animal bone and/or antler
L12: *pig* phalanx

Pottery
L12: 3 sherds/10 g Neolithic Bowl pottery

Lithics
L12: 7 flakes, edge-trimmed flake

Phase III. SE sub-segment: from interior predominantly chalky silts with chalk lumps and flint nodules and progressively smaller from bottom to top, sometimes vacuous towards centre (cut c L18, L17), flint more frequent to NW (cut k L14, L15); in centre brown-black loam with chalk pebbles (cut c L14) interleaved with vacuous nodules and chalk lumps); from exterior, darker, more clayey layers with dense, smaller chalk and flint inclusions (cut c L11, L13). Central sub-segment: vacuous flint nodules and fragments (cut k L20) with intervening band of finer silt (cut k L22), overlain by chalky silts with dense chalk blocks (cut k L17, L13), loamier matrix towards top (cut c L16). NW sub-segment: brown loamy matrix with dense chalk blocks (cut k L18)

Animal bone and/or antler
Cut k L17: *cattle* rib

Pottery
Cut k L14: 22 sherds/223 g Neolithic Bowl pottery

Lithics
Cut k L17: 4 flakes, unworked banded sandstone pebble

Charcoal
Cut c L13: *Corylus avellana*, *Carpinus betulus*, Salicaceae
Cut k L15: *Corylus avellana*

Phase V. Earthy silts with small flint and chalk pebbles, mainly from interior (cut c L16, L15, L3; cut k L4)

Phase VI. Exceptional here in including deposits as well as slots and in extent of silts separating episodes.

Phase VI/a. Slot *c* 0.30 m wide and deep cut *c* 0.80 m from outer edge of ditch, starting *c* 2.50 m from SE butt and running at least 6.50 m NW into shallow 'tail' of segment, filled with orange loam with dense peagrit(cut k L11).

Spread of dark, virtually black, loam with flint blocks, flint and chalk 'gravel' and much charcoal (L9), extending from *c* 1 m inside SE butt for 4.7 m into central sub-segment; up to 2.30 m wide, 0.45 m deep in SE sub-segment, as little as 0.05 m deep towards centre, indicating dumping from causeway at SE end. Variously described as a dumped deposit and the fill of a shallow cut, sections suggest former.

Human remains
L9: occipital fragments (HH76 2206) and fragmentary R parietal (HH76 2224), probably from same mature or older adult, found *c* 0.50 m apart at same depth. Parietal joins fragment HH76 2193 from L7

Animal bone and/or antler

A sentence in the site notebook may refer to L9 and/or L7: 'The bone has a tendency to be dumped in little deposits'

L11: *dog* skull, with atlas and 1 cervical vertebra, found respectively 10 mm and 140 mm behind it (HH76 2835); *cattle* radius-ulna

L9: *dog* tibia, humerus, 2 metatarsals; *pig* 2 scapulae, humerus, ulna, 2 metapodials, calcaneum, 2 teeth; *roe deer* scapula, innominate; *red deer* tooth; *cattle* 2 scapulae, 4 humeri, 2 ulnae, acetabulum, femur, 2 tibiae, 3 metacarpals, 8 phalanges (3 of them found articulated – HH76 2218), 3 vertebrae, horncore; *caprine* scapula, humerus, 2 astragali, vertebra

Pottery

L9: 165 sherds/942 g Neolithic Bowl pottery, including P143 and most of P106, part of which was found in a phase VI context in segment 13

Lithics

L11: 22 flakes, core, edge-trimmed flake, piercer, unclassified biface, scraper/knife, 1 misc retouched. L9: 133 flakes, core fragment, 3 serrated flakes, 2 edge-trimmed flakes, 5 scrapers, piercer, 1 misc retouched, 5 Greensand fragments

Unclassified burnt flint

L9: 2.5 g

Charcoal

L9: *Quercus* sp, *Corylus avellana*, *Fraxinus excelsior*, *Fagus sylvatica*, *Buxus sempervirens*, *Ulmus* sp, *Carpinus betulus*, Maloideae, Salicaceae

^{14}C

L9: *3680–3620 cal BC (56%) or 3600–3520 cal BC (39%)* (4855±45 BP; OxA-8849) on HH76 2218

Phase VI/1: from exterior, brown-black loam with fine flint gravel, little chalk, streaks of brown clay (cut c L10, cut c L8, cut k L4); in central sub-segment loamy deposits with flint gravel and dense peagrit (cut k L7, L8), overlying NW end of L9 and perhaps part of L11. High finds content of L7 and presence of possibly articulating bone may suggest a dumped deposit rather than a silt.

Human remains

L7: fragmentary older mature/older adult parietal (HH76 2193) from base of layer, joining parietal fragment HH76 2224 from L9, which was found *c* 0.10 m away and less than 0.10 m deeper; worn adult incisor (HH76 2799) found *c* 1.50 m NE of parietal fragments

Animal bone and/or antler

Cut k L7: *dog* radius, ulna, metatarsal, 2 vertebrae, ribs (HH76 2099 – found >2 m from dog skull in L11); *pig* humerus, 2 radii, ulna, tibia, metatarsal, vertebra; *cattle* humerus, radius and ulna (possibly fitting, from same find as dog bones), femur, ilium, metacarpal, metatarsal, astragalus, 4 vertebrae; *caprine* femur, teeth, 2 vertebrae

Pottery

Cut k L7: 30 sherds/125 g Neolithic Bowl pottery

Cut k L4: 2 sherds/4 g Neolithic Bowl pottery

Lithics

Cut c L8: 7 flakes

Cut k L7: 37 flakes, core, 2 serrated flakes, 2 edge-trimmed flakes, piercer, 1 misc retouched, Greensand fragment

Cut k L8: 46 flakes

Cut k L4: 4 flakes

Unclassified burnt flint

Cut k L8: 13 g

Phase VI/b: spread of 'greasy' brown loam (L6) with smaller flint and chalk inclusions than L9 and less charcoal, extending from *c* 1 m inside SE butt for 4.50 m into central sub-segment; up to 3 m wide, 0.35 m deep in SE sub-segment, *c* 0.20 m deep towards centre, centred towards outer edge of ditch, overlying L9 at centre, divided from it by phase VI/1 deposits at edges. Variously described as dumped deposit and fill of a shallow cut, sections suggest former

Animal bone and/or antler

L6: *pig* tooth. Bone fragments found but not identifiable

Pottery

L6: 158 sherds/523 g Neolithic Bowl pottery, including sherds of P106

Lithics

L6: 110 flakes, core, 3 serrated flakes, 2 edge-trimmed flakes, 5 scrapers, 3 misc retouched

Charcoal

L6: *Quercus* sp

Phase VI/2: light brown sandy loam with small flint fragments (cut c L4), overlying inner edge of L6, excavated only in SE butt

Animal bone and/or antler

Cut c L4: *

Pottery

Cut c L4: 12 sherds/27 g Neolithic Bowl pottery

Lithics

Cut c L4: 202 flakes, 2 serrated flakes, 3 edge-trimmed flakes, 2 scraper

Phase VI/c. Slot up to 0.75 m wide and 0.30 m deep cut into L4 and underlying layers towards inner edge of ditch, starting 1.50 m NW of SE butt, filled with dark loam with flint gravel and chalk peagrit throughout and large flints in upper 0.15 m (L5); fill mounded up *c* 0.08 m above edges of cut, matrix consistent throughout. Excavated only in SE butt, for length of 0.30 m.

Animal bone and/or antler

L5: *pig* tibia; *cattle* 2 scapulae humerus, femur, ischium, metatarsal, vertebra

Pottery

L5: 1 sherd/1 g indeterminate

Lithics

L5: 39 flakes, core, flaked lump, edge-trimmed flake, scraper, 2 misc retouched

Phase VII. Concentration of flint in top of L5, without differentiation of matrix (see VI/c above)

Phase VIII/a. Dark brown loam with flint gravel and chalk peagrit from interior (L2, cut c L2B), higher clay content towards centre (cut k L3); lighter, sandy loam with peagrit and occasional flint from exterior (cut c L4B)

Animal bone and/or antler

L2: *red deer* metatarsal

Cut k L3: *caprine* radius, tibia

Pottery

Cut k L3: 9 sherds/23 g Neolithic Bowl pottery

Lithics

L2: 35 flakes, edge-trimmed flake

Cut c L2B: 43 flakes, piercer

Cut k L3: 24 flakes, pick, 1 misc retouched

Upper levels and unstratified. Recent turfline represented by band of dark stone-free soil (cut c L1, cut k L1B), overlain by what may have been displaced bank material (L1A) and ploughsoil (L1).

Human remains
Cut k L9+L13 (probably from L9): adult R femur shaft fragment, cut-marked (HH76 3014)

Animal bone and/or antler
L1: *cattle* ilium, metatarsal
Cut k L9+L13 (probably from L9): *pig* humerus; *cattle* scapula, humerus, 2 tibiae, metatarsal, calcaneum, 2 vertebrae; *caprine* ischium, tooth
U/S: *cattle* tibia, horncore

Pottery
Cut k L9+L13 (probably from L9): 30 sherds/266 g Neolithic Bowl pottery
U/S: 1 sherd/16 g Neolithic Bowl pottery

Lithics
L1: 23 flakes, 1 misc retouched
Cut k L9+L13 (probably from L9): 12 flakes, core, core fragment, edge-trimmed flake, scraper, 1 misc retouched
Cut c L3+L5 (probably from L5): 5 flakes
U/S: 32 flakes, serrated flake, edge-trimmed flake, scraper, 2 misc retouched, Old Red Sandstone fragment, unworked sandstone pebble

Unclassified burnt flint
L1: 5 g

Segment 15 (Fig. 3.24)

Original notation. HH76 site H OCD IV or CD IV or segment 4 (OCD = outer causewayed ditch).
Form. SE butt of largely unexcavated segment, pointed in plan, smoothly sloping sides. In an area with much Coombe Rock and other chalk-derived deposits, as well as substantial patches of Clay-with-Flints. Segment cut in chalk, with mixed clay and chalk fills.
Length > 4.5 m, *width* 3.9 m, *depth* 1.3 m.
Excavation. Topsoil machined off. Section cut by machine against NW edge of site, part-way down through ditch fill, to establish location. Remainder hand-dug.

Phase I/II. Laminated chalk and clay silts from interior, with some small chalk lumps (L10), clayey silts with more abundant chalk pebbles from exterior (L4).

Lithics
L4: 2 flakes

Phase III. From interior, large, heavily patinated flint nodules with chalk lumps, largest towards base, sporadically vacuous with patches of chalk silt (L7), grading upwards at centre into light brown loam with chalk blocks (L6), separated from it at inner edge by intervening laminated chalky silts with runs of chalk and flint gravel (L8). From exterior, orange-brown clay with runs of gravel, from exterior (L9).

Animal bone and/or antler
L7: *cattle* right tibia, astragalus and lateral malledus, probably articulating, found together with left radius-ulna; also humerus, 2 further tibiae
L8: *cattle* scapula
L6: *pig* tooth

Pottery
L7: 5 sherds/16 g Neolithic Bowl pottery

Lithics
L7: 2 flakes, core
L9: 53 flakes, serrated flake, 5 edge-trimmed flakes, scraper, 2 misc retouched

Charcoal
L7: *Fraxinus excelsior*

Phase VI. VI/a: slot up to 0.90 m wide and 0.30 m deep cut towards outer edge of ditch, stopping *c* 2.50 m short of SE butt of segment, filled with black loam with clay streaks and large flint blocks, the latter concentrated towards the centre-top L5A).

Phase VI/b: slot up to 0.50 m wide and 0.30 m deep cut along, possibly into, outer edge of ditch, stopping *c* 1.30 m short of SE butt of segment, truncating L5A, filled with orange-brown loam with flint blocks (L5).

Animal bone and/or antler
L5: *

Pottery
L5: 9 sherds/12 g Neolithic Bowl pottery

Lithics
L5: flake, scraper

Phase VII. Flint blocks concentrated towards centre-top of L5A, without differentiation of matrix (see VI/b above).

Phase VIII/a. Brown-black loam with small, washed chalk pebbles (L3) overlain by band up to 0.10 m thick of similar matrix with dense gravel and peagrit (perhaps a worm-sorted horizon beneath overlying pre-1960s turfline.

Animal bone and/or antler
L3: *cattle* tibia

Pottery
L3: 3 sherds/22 g Neolithic Bowl pottery

Lithics
L3: flake

Upper levels and unstratified. Pre-1960s turfline (L2) overlain by orange clay with chalk pebbles, probably displaced bank material (L1A) and ploughsoil (L1).

Animal bone and/or antler
L2: *. U/S: *

Pottery
L2: 4 sherds/ 29 g Neolithic Bowl pottery

Lithics
L2: 2 flakes, serrated flake. L1: 5 flakes, edge-trimmed flake

Segment 16 (Figs 3.27–3.28)

Original notation. HH76 site G DS (= ditch segment) 4.
Form. At least 2 sub-segments, remainder outside excavated area. NE sub-segment slightly deeper than SW. Stepped profile of outer edge reflects recut. Segments 16 and 17 linked by trough up to 0.45 m deep and 0.17 m wide.
On site G tabular flint was exposed in the ditch sides and outcropped sporadically on the surface. There were also patches of Clay-with-Flints.
Length >6.8 m, *width* 3.2 m, *depth* 1.47 m.
Excavation. Largely in plan, L9A dug in 6 quadrants (sic), 2 m transverse section cut through chalk rubble layers against NE edge of site.

Phase I. Compact chalk wash with some chalk lumps (L11), on inner edge of ditch. Cairn of large tabular flint slabs against NE section, 0.90 m × 0.70 m, standing to 0.50 m high. Possible second cairn of one very large slab lying on a few small flint lumps in SW sub-segment, 0.50 m × 0.40 m, standing to 0.40 m. Cairns may have been built on base of recut rather than or original ditch (see phase III below).

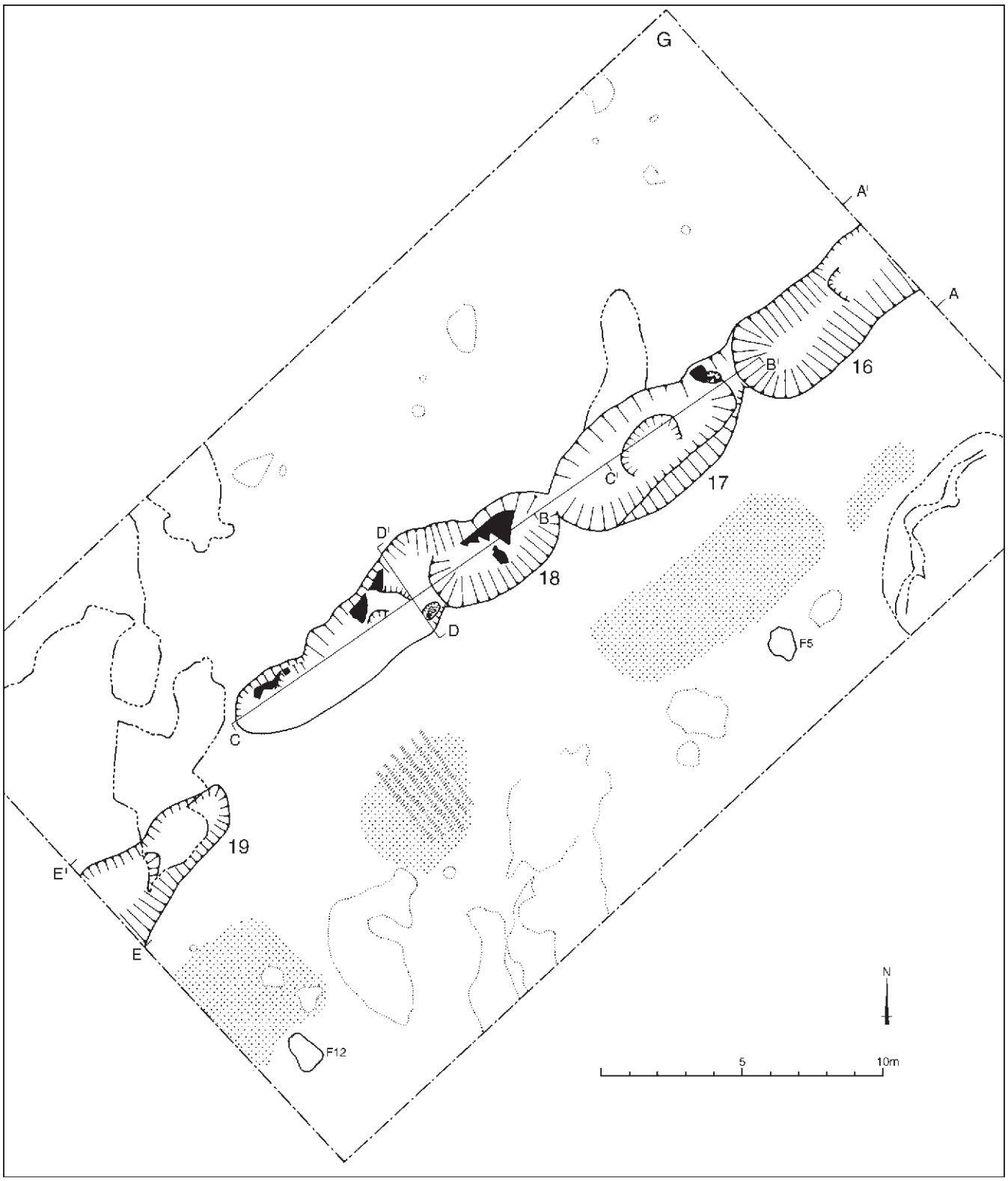

Fig 3.27 Main enclosure, site G.

Animal bone and/or antler

L11: *pig* acetabulum and ilium (HH76 2144)

SW ?cairn: beside cairn, almost on ditch bottom but in silt and rubble of L10 which surrounded it, bone recorded in field as 'bovine rib' (HH76 2824)

^{14}C

L11: *3640–3560 cal BC* (4735±40 BP; OxA-7767) on HH76 2144

Phase II. Chalky silt with chalk lumps overlying L11 (unnumbered), not always distinguished in excavation from siltier parts of L10.

Phase III. Chalk and flint rubble (L10), vacuous in places, semivacuous with much silt in others, filling steep-sided recut extending into ditch bottom. Distinct at NE end of SW sub-segment, probably present in NE sub-segment.

Animal bone and/or antler

L10: *pig* maxilla, 2 phalanges; *cattle* 2 radii-ulnae, femur, astragalus, vertebra; *caprine* phalanx. See phase I above

Pottery

L10: 19 sherds/51g Neolithic Bowl pottery

Lithics

L10: 4 flakes, serrated flake, scraper

Phase IV. Black-grey charcoal-stained silt (L9A) filling trough 1.20 m wide, 0.50 m deep and at least 5.70 m long, cut into L10 towards outer edge, tapering to a point 0.80 m short of SW butt.

Human remains

L9A: adult L and R humerus shaft fragments (HH76 1598, 1929)

Animal bone and/or antler

L9A: *pig* scapula, 7 humeri, radius-ulna, articulating radius and ulna (HH76 1258), 4 further radii, 5 further ulnae, 3 acetabula, 4 femora, 3 tibiae, fibula, ilium, 15 metapodials, 8 tarsals, teeth, mandibles, 5 maxillae, 9 phalanges (2 possibly articulating, HH76 1929), 2 skull fragments; *roe deer* metatarsal; *cattle* 5 scapulae, humerus, radius-ulna, radius, 2 ulnae, 3 acetabula, 3 femora, 3 tibiae, 2 patellae, ilium, ischuim, pubis, articulating metacarpal and tarsal (HH76 1895), 6 further metapodials, 2 further tarsals, teeth, mandible, 11 phalanges, carpal, 2 probably articulating lumbar vertebrae (HH76 1720), 12 further vertebrae, 3 skull fragments, ribs; *caprine* scapula, 7 humeri, 2 radii-ulnae, 2 radii, 2 ulnae, 3 femora, 10 tibiae, 2 ilia, 4 metapodials, 3 tarsals, 14 teeth, mandible, 4 phalanges, horncore; *stoat/polecat/martin* 2 humeri, radius (HH76 2007, 2012)

Pottery

L9A: 259 sherds/1200 g Neolithic Bowl pottery, including P19

Lithics

L9A: 125 flakes (11 burnt), 4 serrated flakes, 4 edge-trimmed flakes, leaf arrowhead, 3 misc retouched

Unclassified burnt flint

L9A: 13 g

Charcoal

L9A: *Corylus avellana*, *Fraxinus excelsior*, cf *Fagus sylvatica*, *Carpinus betulus*, *Quercus* sp, *Ulmus* sp, *Buxus sempervirens*, Salicaceae, Maloideae

Phase V. Silty chalk rubble (L9) sporadically overlying L9A, itself overlain by a loose brown earthy matrix with chalk peagrit (L8), both derived from interior

Animal bone and/or antler

L9: *pig* humerus, metatarsal, 2 tarsals, tooth, maxilla, phalanx; *red deer* carpal; *cattle* scapula, 2 tibiae, tarsal, 2 teeth; *caprine* tibia, radius, 2 metacarpals

L8: *pig* scapula, ulna, tibia; *cattle* humerus, carpal; *caprine* 2 radii, horncore

Pottery

L9: 14 sherds/144 g Neolithic Bowl pottery, including P108

L8: 32 sherds/124 g Neolithic Bowl pottery

Lithics

L9: 7 flakes, edge-trimmed flake, 1 misc retouched

L8: 107 flakes, serrated flake, 3 edge-trimmed flakes, piercer, unclassified biface, leaf arrowhead, 3 misc retouched, cylindrical Greensand object (HH76 1395)

Phase VI. VI/a: soft brown clay loam of 'fudge-like' consistency, with chalk lumps and some flint (L8A), filling slot up to 0.60 m wide, 0.30 m deep and at least 3.80 m long, cut into L8 and L9 close to outer edge, tapering to a point 2.50 m short of SW butt.

Animal bone and/or antler

L8A: *pig* 2 mandibles, 3 maxillae, vertebra; *cattle* humerus, acetabulum, ilium, teeth, phalanx, skull fragment; *caprine* tibia, teeth

Pottery

L8A: 11 sherds/40 g Neolithic Bowl pottery, including P93

Lithics

L8A: 3 flakes, edge-trimmed flake

Phase VI/1. Hard clay/chalk silt (L7)

Animal bone and/or antler

L7: *cattle* phalanx; *caprine* tibia

Phase VI/b: dark brown 'sticky' clay loam, darker than L8A, with large flint nodules and chalk lumps (L6) , filling slot up to 1 m wide, 0.40 m deep and at least 4.40 m long, cutting L8A at outer edge, with rounded end stopping 2 m short of SW butt.

Animal bone and/or antler

L6: *pig* 2 scapulae, 2 humeri, ulna, tibia, 2 fitting metacarpals (HH76 868), further metacarpal, metatarsal; *cattle* humerus, ulna, metacarpal, 3 mandibles teeth, 2 phalanges, rib; *caprine* 3 humeri, radius, femur, tibia, teeth

Pottery

L6: 17 sherds/93 g Neolithic Bowl pottery, including 3 sherds of P19, most of which came from L9A

Lithics

L6: 8 flakes, serrated flake, edge-trimmed flake

Phase VI/b (L6) finds from segments 16–19 (site G as a whole) not attributed to segment.

Animal bone

*

Pottery

1 sherd/9 g Neolithic Bowl pottery

Lithics

11 flakes, serrated flake, scraper

Phase VI/2. Light soil with chalk 'gravel' (L5), underlying L4.

Phase VII. Large nodules and chalk lumps in and projecting above L6, first seen among the small, fragmented flint of L3. Impossible to tell if L6 was originally mounded up or if stones were placed along the top of it and sank into it.

Phase VII/a. Chalk peagrit (L5), underlying band of small, water-worn chalk lumps generally only 1 lump deep (L4), sometimes apparently abutting L6, sometimes clearly overlying it.

Phase VIII/a. Dense shattered, fragmented flint nodules, interspersed with large nodules, in black-brown soil matrix (L3).

Animal bone and/or antler

L3: *pig* radius; *cattle* tooth

Lithics

L3: 17 flakes, 3 edge-trimmed flakes

Phase VIII/a (L3) finds from segments 16–19 (site G as a whole) not attributed to segment.

Pottery

1 sherd/10 g grog-tempered, early Bronze Age or Beaker

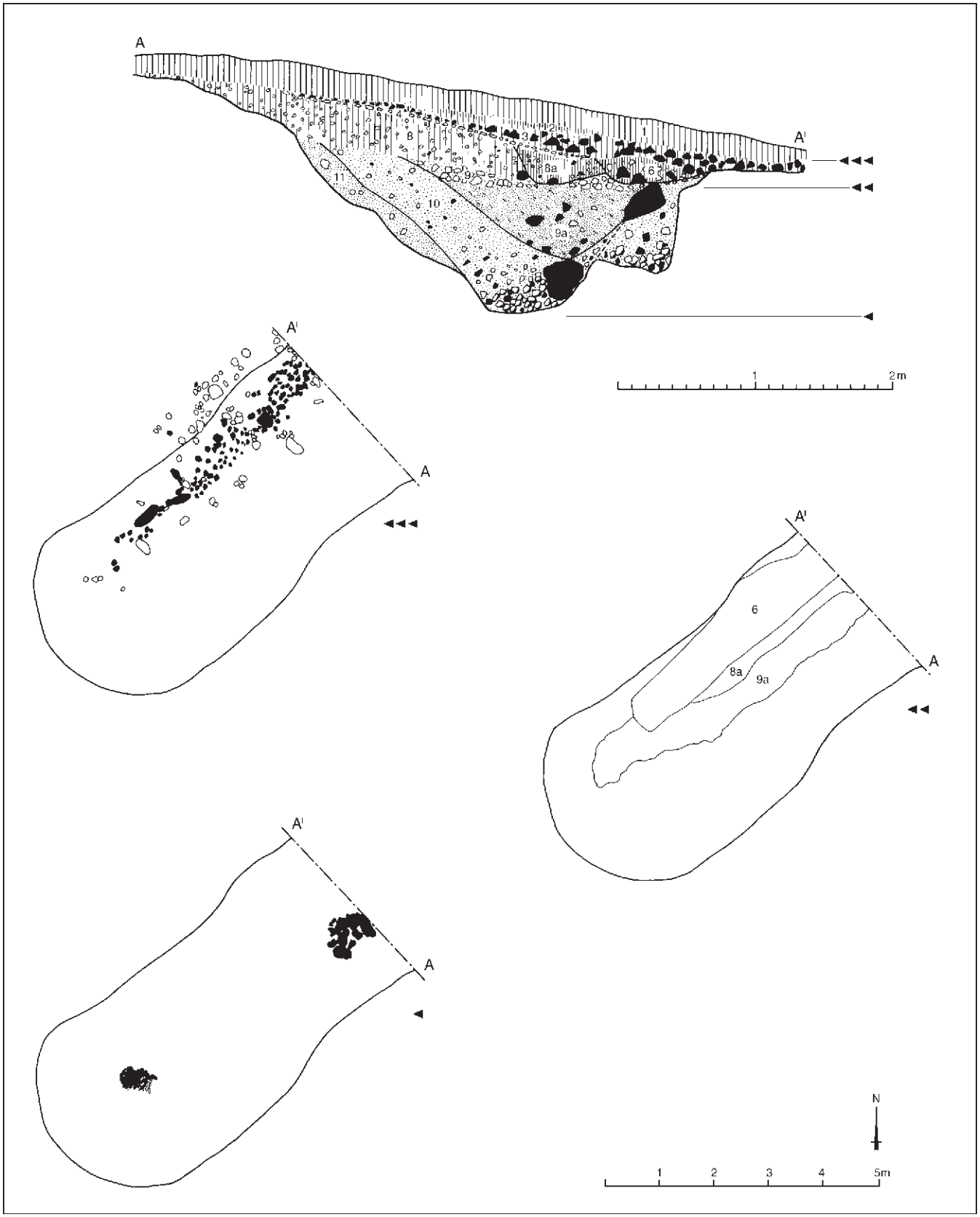

Fig 3.28 Main enclosure, site G, segment 16. Transverse section with plans of flint cairns on or near base, phase IV and phase VI recuts, and flint and chalk packing and/or capping of second phase VI recut.

Upper levels and unstratified. Pre-1960s turfline of black-brown fibrous humus with few inclusions (L2) overlain by current ploughsoil (L1).

Pottery

L2/L3: 2 sherds/23 g grog-tempered early Bronze Age or Beaker, 1 sherd/1 g indeterminate

Lithics

L2/3: 5 flakes, 1 misc retouched. L2: 3 flakes, 1 misc retouched

Upper levels of segments 16–19 (site G as a whole)

Animal bone and/or antler

L1: *
U/S: *

Pottery

L1: 10 sherds/90 g Late Bronze Age, 24 sherds/26 g indeterminate prehistoric
U/S: 1 sherd/10 g Neolithic Bowl pottery

Lithics

L1: 83 flakes, core, flaked lump, 2 serrated flakes, 8 edge-trimmed flakes, 3 scrapers, 2 piercers, 12 misc retouched, 2 unworked flint (Chesil?) beach pebbles, quartzite cobble hammerstone, Greensand fragment. U/S: 8 flakes, unclassified biface, laurel leaf, 1 misc retouched, Old Red Sandstone rubber, 2 Old Red Sandstone fragments, Sarsen rubber fragment, unworked grey sandstone pebble, unworked Lias fragment

Other artefacts

U/S: iron ?nail

Charcoal

L1: 'carbonised wood'

Segment 17 (Figs 3.27, 3.29–3.30, 3.34)

Original notation. HH76 site G DS (= ditch segment) 3.
Form. Steep-sided at inner edge and SW butt, gently shelving at NE butt, deepest at centre and SW. Stepped profile at outer edge reflects recut. Centre of NW side cut through Clay-with-Flints. Causeway between segments 17 and 18 slightly sunken.
Length 7.5 m, *width* 4 m, *depth* 1.5 m.
Excavation. 100%. In quadrants (a W, b N, c S, d E; a and d removed first). Batter on axial section to avert fall of vacuous chalk rubble.

Phase I. White chalky silt with some chalk lumps and occasional flint fragments (L11), continuous over sunken causeway with segment 18.

Phase III. Steep recut into ditch floor, deepening segment and truncating L11, filled with succession of rubbles and silts (collectively L10). Unstable, vacuous rubble prevented completion of section to ditch floor SW of centre, some matrices earthy rather than chalky, especially at SW end.

Human remains

L10: Older infant: vault fragment, 2 occipital fragments, fragments of atlas and 2 other cervical vertebrae, L clavicle fragment, R scapula, rib fragments, adult ?ulna/radius fragment (all HH76 2999), from NE end of segment.

Animal bone and/or antler

L10: *dog* mandible; *pig* humerus, tibia; *cattle* scapula, humerus, radius-ulna, radius, acetabulum, femur, 2 tibiae, 2 metacarpals, tooth, 2 articulating phalanges (HH76 2785), carpal, articulating lumbar vertebrae and sacrum (HH76 2808), further vertebra, rib; *caprine* tibia, teeth, skull fragment

Pottery

L10: 68 sherds/214 g Neolithic Bowl pottery, including part of P31, the rest of which came from L9 and L8

Lithics

L10: Flake, edge-trimmed flake

Charcoal

L10: *Quercus* (HH76 sample 40)

^{14}C

L10: *3590–3530 cal BC* (4830±30 BP; OxA-7099) on articulating cattle phalanges HH76 2785; *3620–3510 cal BC*, mean of 4835±55 BP (OxA-7022) and 4700±65 BP (OxA-7023) on articulating cattle lumbar vertebrae and sacrum HH76 2785; *4330–4270 cal BC (4%) or 4260–3790 cal BC (91%)* (5220±110 BP; HAR-2370) on oak charcoal HH76 sample 40

Phase IV. Loose, grey, charcoal-stained silt with small charcoal fragments (L9A), up to 0.45 m deep in centre, covering ovoid area *c* 3.50 m × 1.70 m centred in deeper, recut part of segment, probably dumped rather than placed in a cut. Pocket of clay in E quadrant.

Human remains

L9A: adult frontal fragments, slightly charred (HH76 2923); adult parietal fragment found with juvenile skull and rib fragments and tooth (HH76 2796); older infant/juvenile skull fragments (HH76 1158, joining part of HH76 2741), juvenile skull fragments (HH76 2826, part of HH76 2741), skull fragments with mandible (HH76 2792), fragments of vertebrae, (HH76 2826, 2741) ribs (HH76 2741, 2826), and maxillary teeth (HH76 2741, 2826). Found at 3 or 4 separate points in E quadrant

Animal bone and/or antler

L9A: *dog* acetabulum; *pig* 2 scapulae, 3 humeri, 2 radii, 2 ulnae, 3 femora, 6 tibiae, pubis, 5 metapodials, 2 mandibles, 2 maxillae, teeth, 2 tarsals, 3 phalanges, 2 vertebrae; *red deer* 2 articulating phalanges (HH76 1354), 5 further phalanges, antler fragments; *cattle* 5 humeri, radius-ulna, 3 tibiae, 2 patellae, ilium, 6 metatarsals, 8 tarsals, 6 mandibles, 2 maxillae, teeth, 14 phalanges, 2 articulating carpals (HH76 2745), 6 further carpals, 11 vertebrae, 4 skull fragments, 2 horncores, rib; *caprine* acetabulum, 3 femora, 2 tibiae, metatarsal, 2 phalanges, sacrum, rib; *rodent* humerus; *beaver* patella

Pottery

L9A: 105 sherds/584 g Neolithic Bowl pottery, including P126, part of P31, and 34 sherds/198 g from an organic-tempered open, uncarinated bowl with solid oval lug and simple rounded rim (HH76 2877, 2924, 2930)

Fired clay

L9A: 6 fragments/24 g, no added inclusions, impressions possibly from wattles, possibly from finger-moulding (HH76 1509)

Lithics

L9A: 66 flakes, 4 serrated flakes, 3 edge-trimmed flakes, piercer, unclassified biface, 2 misc retouched, hammerstone, Upper Greensand quern or rubber fragment, burnt

Unclassified burnt flint

L9A: 35.5 g

Charcoal

L9A: *Quercus* sp, *Fagus sylvatica*, *Acer campestre*, Salicaceae, *Ilex aquifolium*, *Fraxinus excelsior*, *Tilia* sp, *Cornus* sp, *Corylus avellana*, Maloideae, cf *Viburnum* sp, *Buxus sempervirens*, *Carpinus betulus*, *Prunus* cf *spinosa*, *Vitis vinifera*

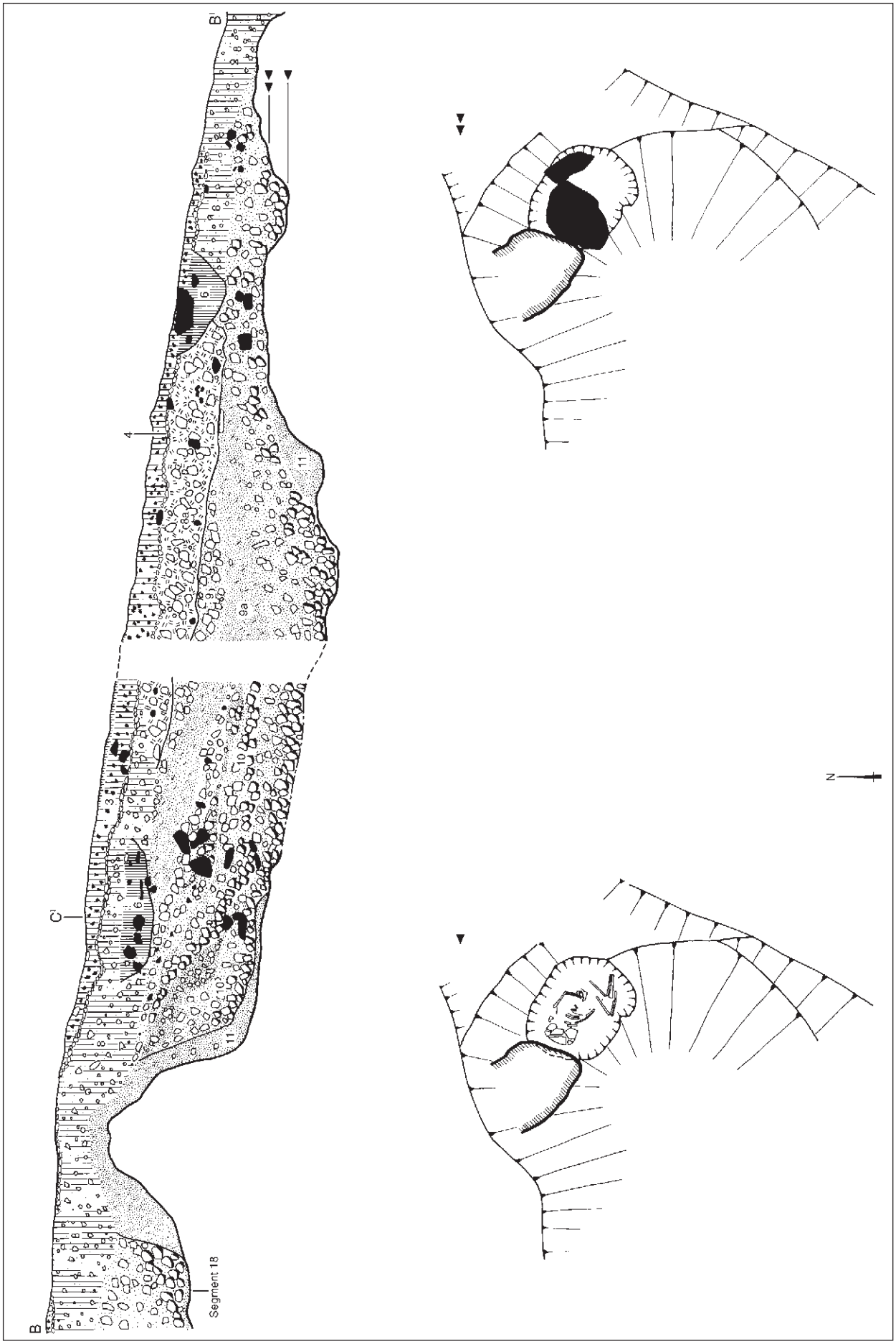

Fig 3.29 Main enclosure, site G, segment 17. Longitudinal section with plan showing child burial HH76 3046 in north-east quadrant and flint capping over it.

^{14}C

L9A: *3530–3390 cal BC* , mean of 4625±5 5 BP (OxA-7058) and 4725±60 BP (OxA-7019) on articulating red deer phalanges HH76 1354; *3570–3490 cal BC (70%) or 3460–3380 cal BC (25%)*, mean of 4800±65 BP (OxA-7020) and 4800±65 BP (OxA-7021) on articulating cattle carpals HH76 2745; *3650–3390 cal BC* (4670±100 BP; HAR-2375) on charcoal 50% identified as oak, hazel/alder and ?hawthorn type, not twiggy, HH76 sample 82; *3640–3550 cal BC (21%) or 3540–3400 cal BC (74%)* (4610±90 BP; HAR-2377) on charcoal 50% identified as oak from large timbers, HH76 sample 79

Phase V. Compact chalk lumps in chalky silt (L9).

Animal bone and/or antler

L9: *pig* scapula, humerus, 3 femora, 2 tibiae, ilium, 2 ischia, metacarpal; *cattle* humerus, 2 acetabula, 2 pubes, 3 metapodials, tarsal, maxilla, carpal, 4 vertebrae; *caprine* 3 tibiae, ischium, tarsal, horncore

Pottery

L9: 6 sherds/ 106 g Neolithic Bowl pottery, including part of P31, the rest of which came from L10 and L8

Lithics

L9: 22 flakes, serrated flake, piercer, Greensand quern or rubber fragment, burnt

Phase VI. Slots in segment 17 were planned only in the first two quadrants excavated. Their size and form elsewhere are inferred from sections, information in the site notebook, and the distributions of measured-in finds

Phase VI/1–3: slots were cut during the accumulation of a brown, earthy silt with comminuted chalk (L8), which had begun to form before the first slot was cut and continued to form after the last was filled. Horizons within it were not distinguished during excavation.

Animal bone and/or antler

L8: *pig* 2 scapulae, 5 humeri, pubis, 2 metapodials, 2 maxillae, tooth, phalanx, skull fragment; *red deer* metacarpal, phalanx; *cattle* radius, acetabulum, femur, 3 metapodials, 2 tarsals, 3 mandibles, teeth, phalanx, 3 vertebrae, horncore, rib; *caprine* 4 humeri, acetabulum, tarsal, phalanx, vertebra

Pottery

L8: 25 sherds/194 g Neolithic Bowl pottery, including part of P31, the rest of which came from L10 and L9

Lithics

L8: 15 flakes, 3 edge-trimmed flakes, scraper

Phase VI/a: slot *c* 0.30 m deep, 1.00 m wide, 4.50 m long cut into centre of segment, stopping well short of both butts; filled with dark brown 'fudge-like' clay with large, closely-packed chalk lumps and some flint lumps (L8A).

Human remains

L8A: Adult calcaneum fragment (HH76 1841), young adult ?male mandible (HH76 1071) and fitting lower first incisor (HH76 1252)

Animal bone and/or antler

L8A: *pig* scapula, 3 humeri, ulna, tibia, 2 articulating metatarsals (HH76 2787), 2 further metapodials, mandible, teeth, vertebra; *red deer* mandible, 2 phalanges; *cattle* humerus, 2 acetabula, femur, 2 ischia, 4 metapodials, tarsal, 4 mandibles, teeth, 2 articulating phalanges (HH76 2861), 9 further phalanges, 6 carpals, 5 vertebrae, 3 skull fragments, rib; *caprine* scapula, humerus, femur, tibia, ilium

Pottery

L8A: 7 sherds/104 g Neolithic Bowl pottery

Lithics

L8A: 10 flakes, 3 serrated flakes, edge-trimmed flake

Charcoal

L8A, found with human mandible: *Quercus* sp, *Fraxinus excelsior*

^{14}C

L8A: *3460–3370 cal BC* (4790±60 BP; OxA-7017) on articulating pig metatarsals HH76 2787; *3470–3350 cal BC* (4695±60 BP; OxA-7018) on articulating cattle phalanges HH76 2861

Phase VI/2. Hard chalk/clay silt (L7), preceding second slot.

Animal bone and/or antler

L7: *pig* ulna, ischium, teeth; *caprine* radius, metacarpal

Phase VI/b: slot up to 0.20 m deep and 0.80 m wide, tapering to NE, cut in apparent arc, roughly parallel to curve of outer segment edge and *c* 0.50 m from it, entering axial section only at NE and SE ends, stopping *c* 0.50 m short of SW butt, and perhaps 1 m short of NE butt. Filled with dark brown 'sticky' clay loam with flint nodules and lumps (L6). L6 may originally have been mounded up: Excavation of bottom of L3 in N quadrant was difficult, 'as bone and flint seemed to be protruding from beneath the layer of water-washed chalk [L4]'.

Animal bone and/or antler

L6: *pig* femur, astragalus, teeth; *roe deer* femur; *cattle* scapula, radius, acetabulum, femur, 5 tibiae, ilium, ischium, 3 metapodials, 2 loose teeth, 2 tarsals, 2 phalanges, 3 carpals, 5 vertebrae, horncore; *caprine* 3 radii, femur, tibia, metapodial, tarsal

Pottery

L6: 19 sherds/216 g Neolithic Bowl pottery, including P5, P94 and 2 sherds/24 g with internal sooty residue (HH76 1706)

Lithics

L6: 19 flakes, 6 serrated flakes, scraper, leaf arrowhead, 1 misc retouched

Phase VII. Concentration of large flint nodules along line of upper slot

Child burial. Ovoid grave *c* 0.80 m × 0.70 m with near-vertical sides cut into N angle of NE butt, *c* 0.20 m deep in chalk at outer edge, breaking edge of slab of *in situ* tabular flint in ditch side, 0.10 m deep at inner edge (just visible in axial section). Most of skeleton of older infant/young juvenile placed flexed, on R side, facing S, with arms at sides. Covered by overhanging edge of *in situ* flint slab and by at least two

Fig 3.30 Main enclosure, site G. Child burial (HH76 3046) in segment 17.

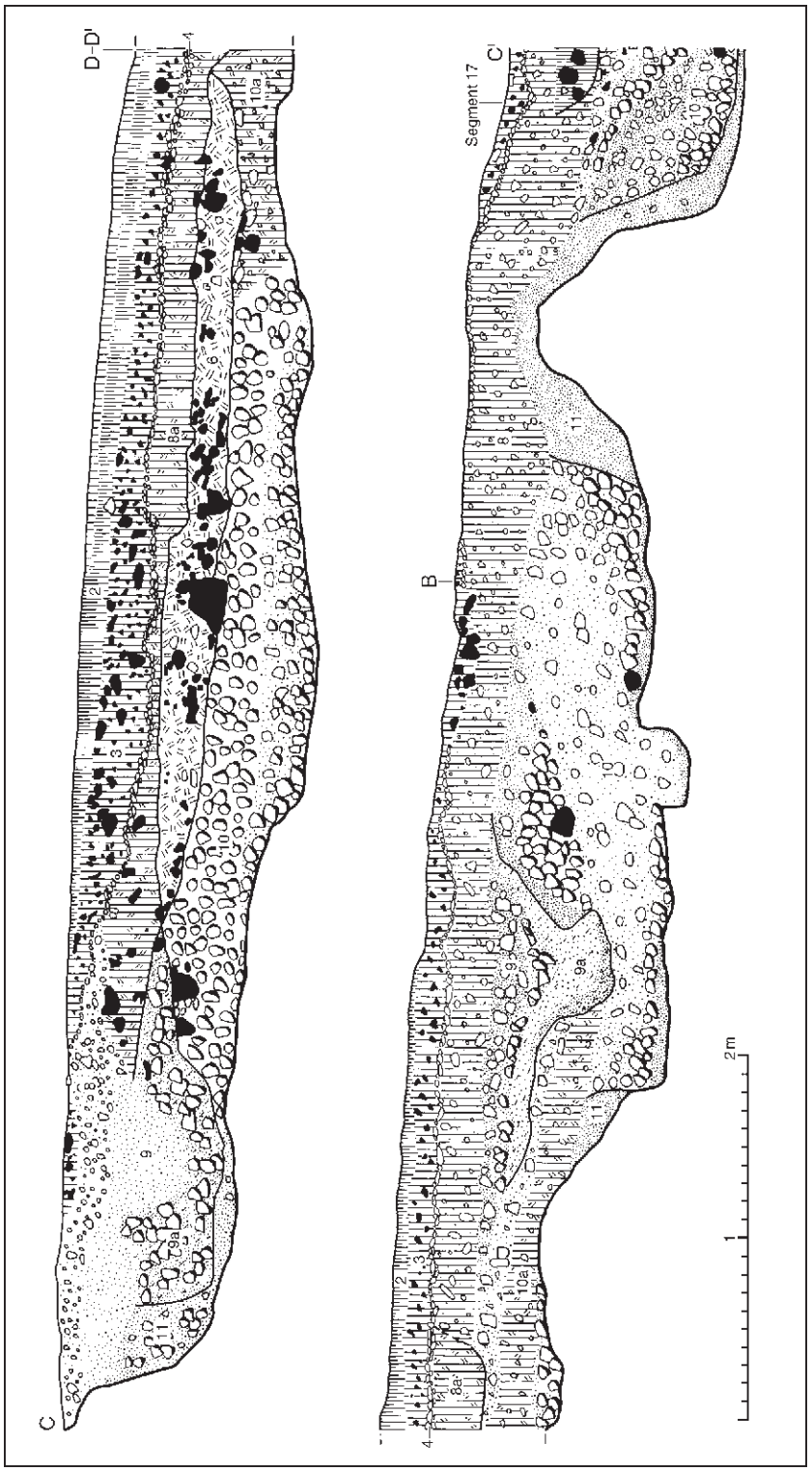

Fig 3.31 Main enclosure, site G, segment 18. Longitudinal section.

further slabs of flint. Further flint slabs to S may have been displaced grave covering. Precise stratigraphic position difficult to determine, because grave cut was not clearly distinguished in the predominantly earthy ditch fills, probably a reflection of its having been backfilled with the material dug out of it. Possible displacement of a former cairn suggests subsequent disturbance. Observation was also hampered by the fact that the burial was discovered, recorded, and lifted in heavy rain on the last day of the excavation. Given the uncertain stratigraphy in this shallow NE butt, bones from a child of comparable age found in this area and attributed to L10 (phase III, HH76 2999), may possibly have been displaced from the burial, since they show no duplicates with it. The unusual cessation of the upper slot well short of the NE butt may reflect its having been truncated by the insertion of this burial.

Human remains

Articulated skeleton of young juvenile with prematurely fused cranial sutures (HH76 3046)

Chalk artefacts

Two chalk lumps, carved with criss-cross lines but no clear pattern, behind head

^{14}C

3380–3320 cal BC, mean of 4550±60 BP (OxA-7039) and 4565±60 BP (OxA-7040) on skeleton

Phase VII/a. Chalk peagrit (L5), underlying band of water-worn chalk lumps generally only 1 lump deep (L4).

Animal bone and/or antler

L5: *red deer* phalanx
L4: *

Lithics

L5: 2 flakes

Phase VIII/a. Dense shattered, fragmented flint, with very few large nodules, in black-brown soil matrix (L3).

Animal bone and/or antler

L3: *dog* humerus; *pig* phalanx, loose tooth; *cattle* teeth, vertebra; *caprine* metapodial, tooth

Pottery

L3: 13 sherds/63 g grog-tempered early Bronze Age or Beaker

Lithics

L3: 9 flakes, 4 edge-trimmed flakes, piercer, leaf arrowhead, Greensand fragment, quartzite pebble fragment

Upper levels and unstratified. Pre-1960s turfline of black-brown fibrous humus with few inclusions (L2) overlain by current ploughsoil (L1).

Animal bone and/or antler

L2/3: *roe deer* antler fragment (HH76 2059). U/S: *roe deer* tarsal; *cattle* 2 radii, 2 metapodials, tarsal, maxilla, 2 vertebrae

Pottery

L2/3 3 sherds/5 g Neolithic Bowl pottery. U/S: 4 sherds/4 g Neolithic Bowl pottery, 1 sherd/3 g indeterminate

Segment 18 (Figs 3.27, 3.31–3.34)

Original notation. HH76 site G DS (= ditch segment) 2.
Form. 2 sub-segments, deeper to NE where depression in base of NE sub-segment reflected recut. Offset to NW from segment 19.
Length 13.5 m, *width* 3.3 m, *depth* 1.2 m.
Excavation. *c* 70%, in quadrants (a W, b N, c S, d E); a and d removed first, c left unexcavated. L3 excavated in 0.50 m wide transverse sections in W quadrant.

Fig 3.32 Main enclosure, site G. Child burial (HH76 1948) in segment 18.

Phase I. Compact chalky silt with some chalk lumps (L11), continuous over sunken causeway with segment 17, present only patchily in SW sub-segment.

Phase I or II. Burial in irregular ovoid grave 0.75 × 0.35 m cut into relatively shallow base of ditch in S corner of S sub-segment, unclear whether cut through primary silt. Child skeleton with head bent back, lying flexed on L side, facing NW into side of grave, hands drawn up in front of chest, feet missing. Contraction into space considerably smaller than grave, especially bending-back of head, may suggest organic container. All but skull directly covered by cairn of tabular flint, *c* 0.50 m × 0.50 m, standing 0.60 m high above pit.

Human remains

Articulated skeleton of older juvenile, feet missing, prematurely fused cranial sutures (HH76 1948)

Lithics

Flint flake immediately in front of hands in photographs and on one plan. Cannot be traced.

Worked bone

Three tubular bone beads (HH76 2004) in head area, one made from large bird (?swan) bone, one from a mammal limb bone, one from a small mammalian bone (caprine-sized phalanx?)

^{14}C

3660–3540 cal BC, mean of 4810±45 BP (OxA-7768) and 4795±70 BP (OxA-7769) on femur of HH76 1948

Phase III. In NE sub-segment, distinctive yellow-stained vacuous chalk rubble filled almost vertical-sided recut which truncated primary silts (all L10). Succeeded by variegated rubbles, often discoloured and/or vacuous, extending over both sub-segments, grading upwards into silts, some earthy, in NE. 'Brown clay-loam with worn chalk gravel' (L10A) near centre of segment, sometimes over base of ditch, sometimes over 0.15 m of rubble.

All finds were from the NE sub-segment.

Animal bone and/or antler

L10: *pig* scapula, humerus, tibia; *cattle* distal tibia fragment, calcaneum, astragalus, navicular-cuboid, cuneiform, lateral malledus, all found in articulation (HH76 2970), also 2 humeri, radius-ulna, radius, further tibia, ilium, metacarpal, 4 further tarsals, mandible, phalanx, carpal, rib

Pottery

L10: 21 sherds/102 g Neolithic Bowl pottery, including P113

Lithics

L10: 2 flakes

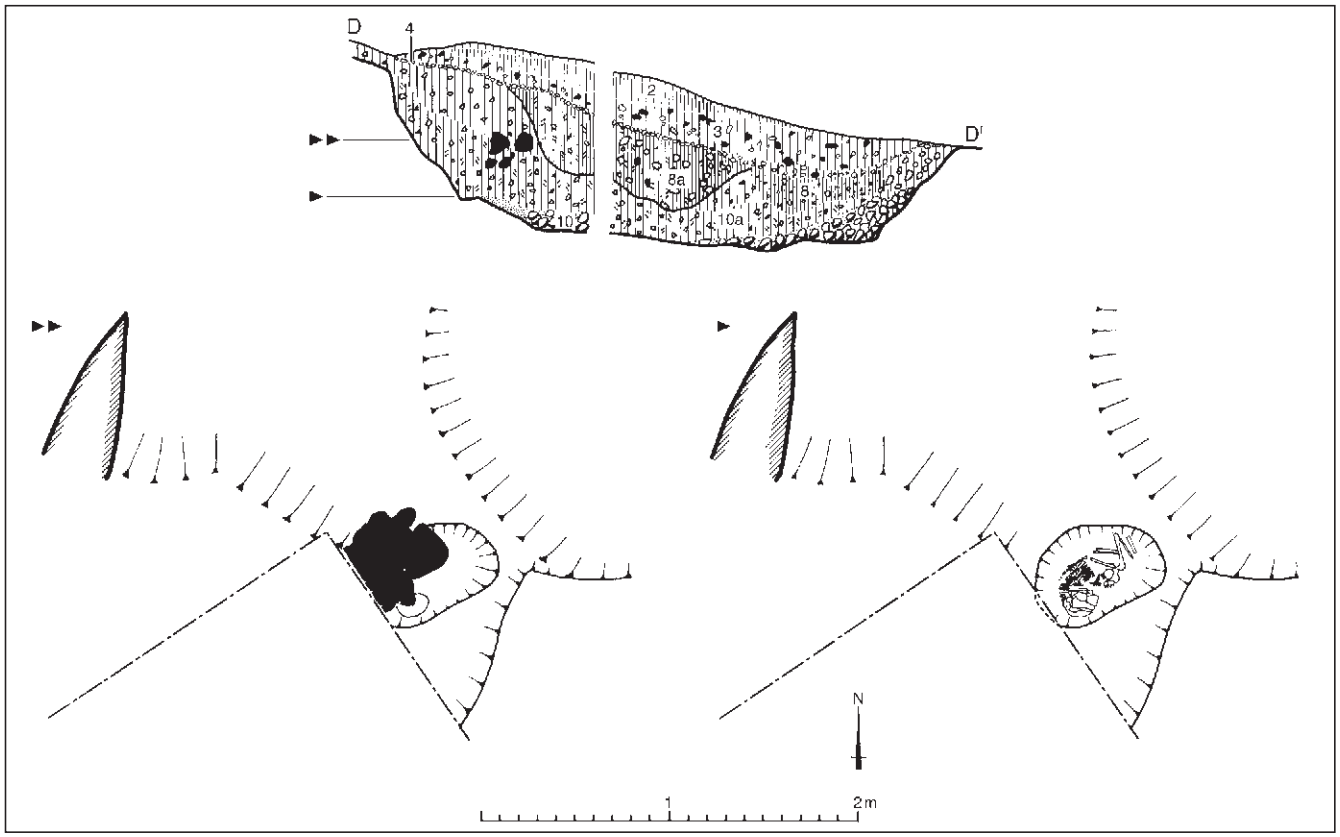

Fig 3.33 Main enclosure, site G, segment 18. Transverse section and plans showing child burial HH76 1948 and the flint cairn built over it.

^{14}C

L10: *3370–3330 cal BC* (4562±27 BP; UB-4269) on HH76 2970

Phase IV. 2 pits. In SW half of NE sub-segment: pit *c* 0.70 m in diameter and 0.40 m deep, with lower fill of dark grey-stained chalky silt, with numerous small charcoal flecks and upper fill of loose, partly vacuous chalk rubble with some grey silt and charcoal fragments (both L9A). In SW butt of SW sub-segment pit *c* 1.40 m in diameter and 0.40 m deep, filled with slightly vacuous charcoal-stained silt (also L9A, some left unexcavated in quadrant c). Upper fills of both spread thinly outwards around pits and depressed at centre, perhaps by weight of more solid overlying layers.

Human remains

L9A NE (quadrants b and d): Adult R femur fragment (HH76 2954, joining HH76 2956 from L8A)

Animal bone and/or antler

L9A NE (quadrants b and d): *cattle* humerus, 2 ulnae, femur, metacarpal, tarsal, 2 articulating carpals (HH76 1216), 2 vertebrae; *caprine* humerus, tibia, vertebra. L9A SW (quadrant a): *pig* mandible, phalanx, 2 carpals; *cattle* metapodial, tarsal; *caprine* 3 humeri

Pottery

L9A NE (quadrants b and d): 22 sherds/123 g Neolithic Bowl pottery

Lithics

L9A NE (quadrants b and d): 2 flakes, serrated flake

Charcoal

L9A NE (quadrants b and d): cf *Betula* sp

Charred seeds and/or nutshell

L9A SW (quadrant a): Charred seeds noted among charcoal flecks during excavation, sample taken for flotation, fate unknown

Phase V. Overlying L9A in NE sub-segment, vacuous white chalk rubble overlain by compacted chalk rubble and chalky silt (both L9). Overlying L9A in SW sub-segment, compact chalky silt (also L9). Both sinking into L9A, both apparently final stages of secondary fills making up L10.

Animal bone and/or antler

L9 NE (quadrants b and d): *pig* radius-ulna, tibia; *caprine* vertebra; L9 SW (quadrant a): *cattle* radius-ulna

Pottery

L9 NE (quadrants b and d): 18 sherds/79 g Neolithic Bowl pottery; L9 SW (quadrant a): 1 sherd/15 g Neolithic Bowl pottery

Lithics

L9 NE (quadrants b and d): edge-trimmed flake

Phase VI. VI/a: lower slot confined to SW sub-segment, more than 0.40 m wide and 0.30 m deep and at least 4.70 m long, filled with soft, brown clay with larger, more abundant flint nodules than upper slot (L6). S side left unexcavated in quadrant c.

Successive slots in SW sub-segment recognised only when most of both excavated, and relation of one to other was difficult to define. Attribution of finds to upper or lower slot in quadrant a is thus tentative: some, even most, finds recorded from L6 may have come from L8A=L5A, especially as animal bone recorded as from L6 was 'mainly ... on top of some nodules in a dark clay loam matrix – that is to say about half-way down into the slot'.

Human remains

L6: older adult maxillary premolar (HH76 1126)

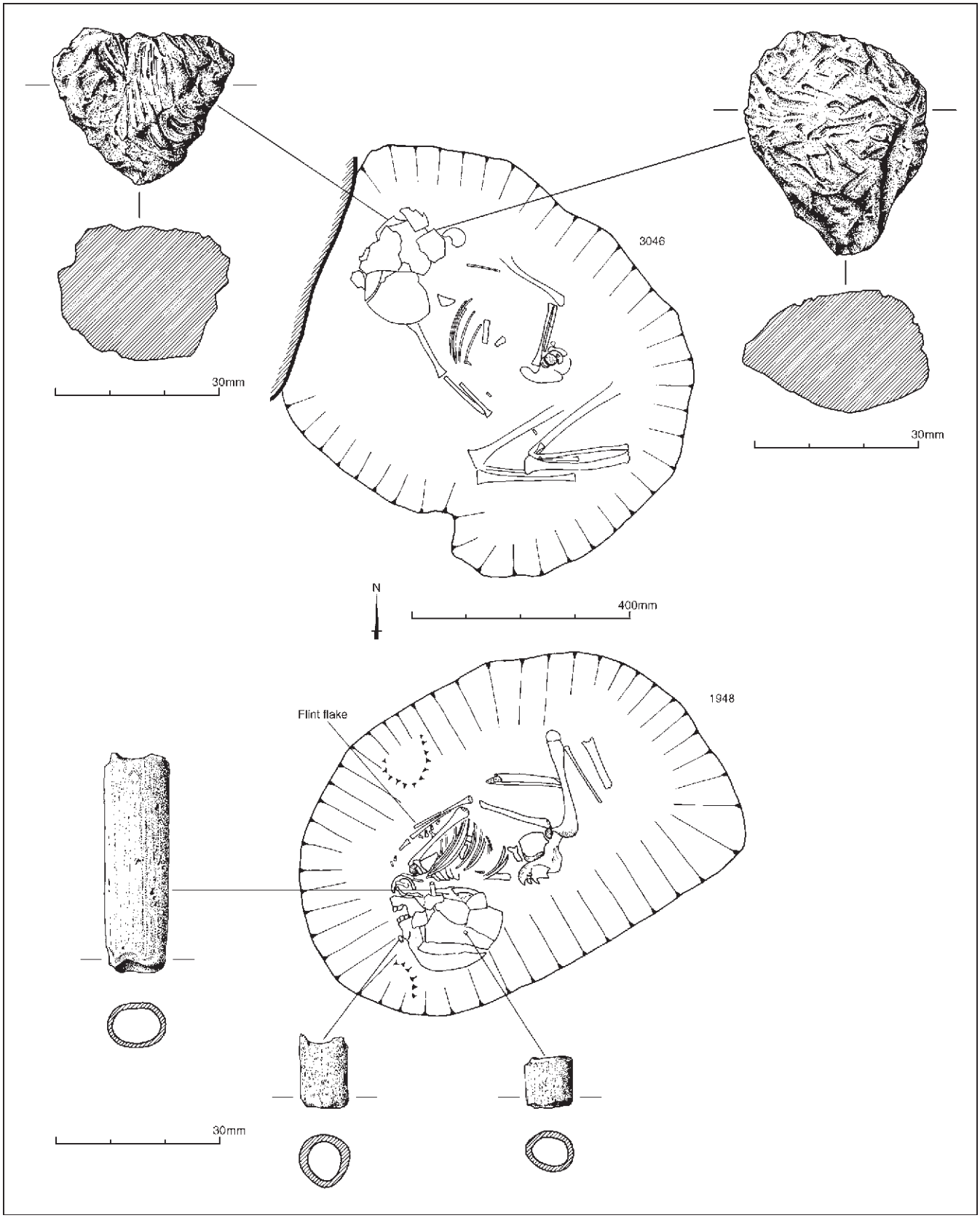

Fig 3.34 Main enclosure, site G, segments 17 and 18. Detailed plans of child burials HH76 3046 and 1948, with associated artefacts.

Animal bone and/or antler

L6: *pig* 3 ulnae, tibia, 2 metapodials, 2 tarsals, 3 mandibles, maxilla, tooth, phalanx; *roe deer* metacarpal; *cattle* 2 tibiae, articulating lateral malledus and astragalus, found together (HH76 1256), tooth, phalanx, carpal, rib; *caprine* femur, tibia

Pottery

L6: 91 sherds/258 g Neolithic Bowl pottery

Lithics

L6: serrated flake, edge-trimmed flake, 1 misc retouched

Phase VI/1–2: underlying L6 in SW sub-segment, hard yellow-white clay-chalk silt (L7). Throughout segment, variegated brown to dark brown earthy silts with chalk lumps peagrit and lumps (L8), accumulating before cutting of upper slot, unknown relation to lower.

Animal bone and/or antler

L7: *pig* radius, mandible. L8: *pig* humerus, radius-ulna, tibia, metapodial; *red deer* phalanx *cattle* pubis, metapodial, phalanx, 2 vertebrae, skull fragments

Pottery

L7: 7 sherds/16 g Neolithic Bowl pottery. L8: 43 sherds/135 g Neolithic Bowl pottery, including P65

Lithics

L8: 5 flakes

Phase VI/b: upper slot running through both sub-segments, *c* 0.60 m wide, 0.40 m deep and at least 10.50 m long, filled with dark clay-loam with flint nodules and chalk lumps (L8A=L5A in SW sub-segment, L8A in NE). N of axial section in NE sub-segment.

Attribution of finds to upper or lower slot in SW sub-segment is tentative (see VI/a above). In NE there was only the upper slot (L8A).

Human remains

L8A NE (quadrant b): Adult R femur shaft fragment, cut-marked (HH76 2956, joining HH76 2954 from L9A)

Animal bone and/or antler

L8A NE (quadrant b), bone often in small clusters: *dog* tibia; *pig* humerus, radius, 2 ulnae, femur, patella, 2 metapodials, 2 tarsals, maxilla, tooth, skull fragments; *red deer* 2 phalanges; *cattle* 4 radii, ulna, acetabulum, 3 femora, 2 tibiae, ischium, pubis, 4 metapodials, possibly articulating astragalus and navicular-cuboid, found together (HH76 2806), 4 further tarsals, tooth, 7 phalanges, 2 carpals, 6 vertebrae, rib; *caprine* humerus, radius, tooth, phalanx. L8A=5A SW (quadrant a): *cattle* 2 tibiae, phalanx, vertebra

Pottery

L8A NE (quadrant b): 55 sherds/257 g Neolithic Bowl pottery

Lithics

L8A NE (quadrant b): 9 flakes, serrated flake, scraper, Heathstone fragment

Fill of one or both slots seems to have been mounded up: flint and bone protruded through L4 from below in SW sub-segment.

Phase VII/a. Chalk peagrit (L5), underlying band of water-worn chalk lumps generally only 1 lump deep (L4).

Animal bone and/or antler

L4: *pig* tooth, *cattle* femur, *caprine* tibia

Pottery

L4: 15 sherds/45 g Neolithic Bowl pottery

Lithics

L4: flake, scraper, perforated chalk lump (HH76 653)

Phase VIII/a. Dense shattered, fragmented flint, with very few large nodules, in black-brown soil matrix (L3).

Animal bone and/or antler

L3/4: *pig* humerus

L3: *pig* 2 humeri, acetabulum, tibia, tooth; *cattle* metapodial, phalanx, teeth, horncore; *caprine* 2 tibiae, vertebra

Pottery

L3: 34 sherds/175 g Neolithic Bowl pottery, 19 sherds/28 g grog-tempered early Bronze Age or Beaker, 1 sherd/5 g indet

Lithics

L3/4: flake, edge-trimmed flake. L3: 15 flakes, edge-trimmed flake, 2 scrapers, 1 misc retouched, Greensand quern or rubber fragment, Heathstone fragment

Upper levels and unstratified. Pre-1960s turfline of black-brown fibrous humus with few inclusions (L2) overlain by current ploughsoil (L1).

Animal bone and/or antler

L2: *caprine* tooth

U/S: *pig* maxilla; *cattle* metacarpal, vertebra, rib; *caprine* tibia

Pottery

U/S: 1 sherd/5 g Neolithic Bowl pottery

Lithics

L2: 20 flakes, scraper. U/S: flake

Segment 19 (Figs 3.27, 3.35)

Original notation. HH76 site G DS (= ditch segment) 1.
Form. One sub-segment, in pointed NE butt, stepping down to second, deeper, wider, one running into edge of site. Part of base and NE wall cut in Clay-with-Flints.
Length >5.9 m, *width* 3.4 m, *depth* 1.45 m.
Excavation. In plan, temporary transverse section cut near butt.

Phase I. Coarse chalky silts (L10, lower).

These and overlying vacuous chalk rubble both seem to have been called L10 during rapid removal at end of excavation. Since the finds were not measured-in, it is impossible to tell from which deposit they came.

Where it is recorded whether finds were from the SW or NE part of the segment, they are from the SW.

Human remains

L10: Older adult long bone shaft fragment, 3 incisors, 2 premolars (HH76 2984)

Animal bone and/or antler

L10: *pig* humerus, patella; *cattle* radius; *caprine* acetabulum

Pottery

L10: 10 sherds/65 g Neolithic Bowl pottery

Lithics

L10: flake

^{14}C

L10: *3640–3490 cal BC (94%) or 3470–3450 cal BC (1%)* (4705±45 BP; OxA-7765) on cattle radius, *3640–3500 cal BC* (4730±40 BP; OxA-7766) on pig humerus, both HH76 2077

Phase III. Vacuous chalk rubble (L10 upper). Chalk rubble and underlying initial silts both seem to have been called L10 during rapid removal at end of excavation. Since the finds were not measured-in, it is not possible to tell from which deposit they came.

For finds, see phase I above

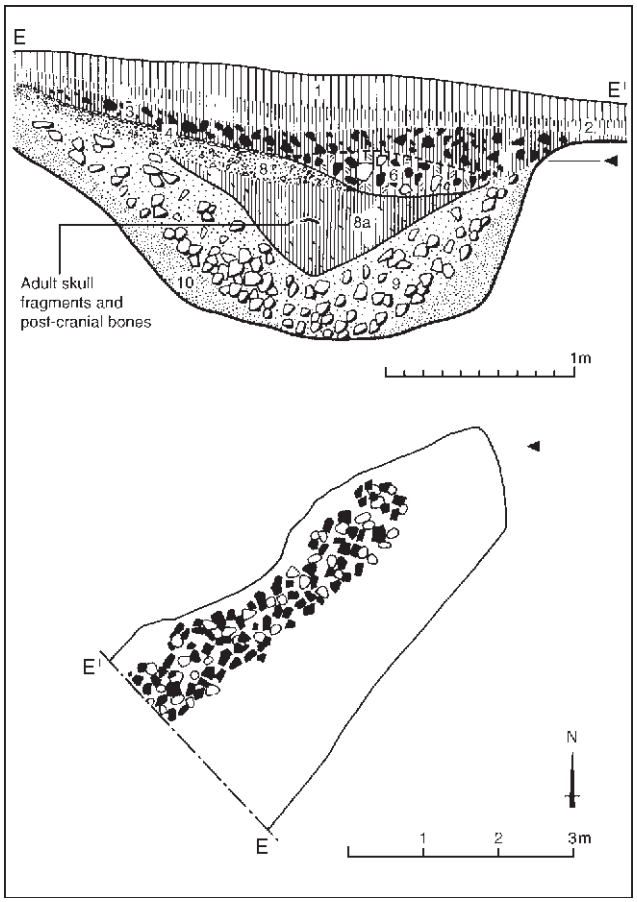

Fig 3.35 Main enclosure, site G, segment 19. Transverse section and plan of flint and chalk packing of phase VI slot.

Phase IV. Trough *c* 1.50 m wide and 0.50 m deep cut slightly to outer side of midline of ditch for at least 3.50 m, running into SW side of excavation, probably stopping short of NE butt, filled with loose dark brown soil with abundant small charcoal fragments and flecks (L8A).

Human remains

L8A: older adult mandibular molar (HH76 1621), older male adult skull fragments found together, with cervical vertebra fragment, carpal and finger phalanx (HH76 1823, 1824), joining further skull fragments extracted from section *c* 0.20 m away together with mandible, cervical vertebra fragments, rib fragments, humerus fragment, patella and finger phalanx (HH76 3052), young/mature adult L talus and distal end of L tibia (HH76 3053). Possible cutmarks on R parietal of older adult

Animal bone and/or antler

L8A: *cattle* 2 humeri, radius, ulna, 4 tibiae, ilium, metapodial, 2 mandibles, teeth, vertebra; *caprine* tibia, metapodial, tooth; *hare or rabbit* tarsal (perhaps intrusive, given softness of deposit)

Pottery

L8A: 22 sherds/128 g Neolithic Bowl pottery, 1 with internal sooty residue

Lithics

L8A: 16 flakes, 3 serrated flakes, edge-trimmed flake, scraper

Charcoal

L8A: *Quercus* sp, *Corylus avellana*, Salix sp, Maloideae, *Buxus sempervirens*

Phase V. Hard clayey silts with angular flint (L3C), brown earthy silts with chalk peagrit (L8).

Animal bone and/or antler

L3C: *pig* maxilla

L8: *pig* radius, ulna; *cattle* calcaneum

Pottery

L3C: 2 sherds/4 g Neolithic Bowl pottery

L8: 13 sherds/57 g Neolithic Bowl pottery

Phase VI. Slot up to 1.50 m wide and 0.25 m deep cut near outer edge of segment, widest near butt and stopping just short of it, tapering towards SW section, truncating NW edge of L8A. Filled with dark clay loam with numerous larger flint nodules water-worn chalk lumps (L3B=L6).

Human remains

L3B=L6: older mature adult mandible fragment (HH76 988), adult molar (HH76 1183), robust R humerus shaft (HH76 1177); last 2 from same area as HH76 1823, 1824, 3052 in L8A

Animal bone and/or antler

L3B=L6: *pig* humerus, radius, ulna, femur, mandible, maxilla; *cattle* radius, ulna, metapodial, tarsal, 2 mandibles, teeth, carpal; *caprine* 2 scapulae, humerus, tooth

Pottery

L3B=L6: 83 sherds/259 g Neolithic Bowl pottery, including P124

Lithics

L3B=L6: 59 flakes, 7 serrated flakes, 4 edge-trimmed flakes

Unclassified burnt flint

L3B=L7: 2 g

Charcoal

cf *Quercus* sp

Phase VII. Band of nodules along outer side of segment, over L3B=L6, stopping short of butt. At SW end 'The pattern of large nodules indicates some sort of flint cairn with the large flints actually stacked on one another'. Nodule capping and fill of slot indistinguishable in section.

Phase VII/a. Chalk peagrit (L5), underlying very thin discontinuous band of water-worn chalk lumps (L4). L4 and L5 seemed sometimes to overlie slot and capping, sometimes to abut them.

Human remains

L4: older mature/older adult premolar (HH76 1101)

Animal bone and/or antler

L4: *pig* tibia, ulna, rib

Pottery

L5: 1 sherd/33 g Neolithic Bowl pottery (P26). L3C: 2 sherds/4 g Neolithic Bowl pottery. L5: 1 sherd/33 g Neolithic Bowl pottery (=P26)

Lithics

L4: serrated flake, edge-trimmed flake

Phase VIII/a. Black-brown soil matrix with dense shattered, fragmented flint, with numerous large nodules (L3), extending over most of segment, dark earth with less flint (L3A) in butt beyond capping.

Animal bone and/or antler

L3: *pig* astragalus, mandible, teeth; *cattle* scapula, radius, vertebra

L3A: *cattle* humerus, acetabulum, metatarsal, 2 vertebrae; *caprine* tibia

Pottery

L3: 28 sherds/84 g Neolithic Bowl pottery, 7 sherds/12 g grog-tempered early Bronze Age or Beaker, 1 sherd later Bronze Age, 2 sherds/4 g indet

L3A: 12 sherds/78 g Neolithic Bowl pottery, 1 sherd/1 g grog-tempered early Bronze Age or Beaker, 13 sherds/33 g indet

Lithics

L3/L6: 2 flakes

L3: 63 flakes, 5 serrated flakes, 2 edge-trimmed flakes, 3 scrapers, 1 misc retouched

L3A: 21 flakes, 3 edge-trimmed flakes

Unclassified burnt flint

L3A: 2.5 g

Charred seeds and/or nutshell

L3: <10 g charred hazelnut shell

Upper levels and unstratified. Pre-1960s turfline of black-brown fibrous humus with few inclusions (L2) overlain by current ploughsoil (L1).

Lithics

L1: 10 flakes, 2 misc retouched

3.3.3 The east cross-dykes

The two east cross-dykes span the Shroton spur of the hill in an arc parallel to the main causewayed enclosure ditch and *c* 25 m outside it. They both run for some 280 m, their terminals obscured by the woodland on the steep sides of the spur. At the south end, aerial photographs taken when tree cover was less extensive show the earthworks turning through an angle at the top of the slope, like the enclosure ditch immediately north-east of site J1. At the north end they diverge outwards from the enclosure. The distance between the two ditches ranges from 6.50 m on site J2, near the south end, to 10.50 m on site D2 and 14.50 m on site E2, both near the centre of the spur. Early in the twentieth century they were well enough preserved for Gardner to write 'a good section shows them as rising 5 ft [1.50 m] out of their ditch and measuring about 30 ft [9 m] over all' (1928, 44, fig 5: section D–E), and seem to have been little changed by the time of the first RCHME survey in the late 1950s.

Both earthworks were sectioned in Bonney's trench L in 1960 and investigated on sites D2 (incorporating Bonney's trench L), E2, and J2 in 1975–6. The cross dyke excavations comprised 47 m of the inner and 36 m of the outer, respectively *c* 14% and 13% of the total, allowing for incomplete excavation of the segments on site J2 (Fig 3.36).

The banks

Bonney's trench L

At the base of the still visible inner bank was a band of 'tightly compacted chalk blocks and fragments' 1 m wide and up to 0.10 m thick, the solid chalk beneath it standing higher than the chalk beyond. This band was flanked by further compacted chalk blocks, this time in a light-coloured soil matrix and some flint, which extended beyond the west end of the trench and, to the E, appeared to be continuous with the phase V (secondary) ditch fills. In the outer bank trench L cut through a possible causeway (Bonney archive plan; RCHME 1970, 130) so that preservation may have been better to either side of the trench. Within the trench, the surface of the protected chalk was slightly domed across the entire space between the inner and outer cross-dykes (RCHME 1996, fig 5, second from top). Overlying deposits were obscured by a disturbed area immediately E of the inner ditch. Beyond this, a layer up to 0.30 m thick of compacted chalk blocks in a light-coloured soil matrix with some flint, like the material flanking the central band of the inner bank area, extended to within *c* 2 m of the outer ditch edge. Both bank areas were overlain by up to 0.15 m of 'weathered chalk fragments, flints & much dark soil', interleaved with the phase VIII/a (tertiary) fills in the inner ditch and continuous with them in the outer. At the apparent tail of the inner bank, this layer contained a Beaker sherd in fresh condition and quern fragments (petrology no. Do 107; Evens *et al* 1972, 273; Clough and Cummins 1988, 151). In the outer bank it contained a small undecorated body sherd of Beaker fabric. Above it were topsoil and turf.

Sites D2, E2, and J2

Protected chalk was best preserved on site D2, where it survived in the inner bank area as a band 3.10 to 5.30 m wide, its jagged inner edge clearly in the process of being ploughed away. Within it were several exiguous shallow, subcircular features (Figs 3.37–38), all but F2 surviving to no more than 0.15 m deep. Almost all could be interpreted as natural hollows or as holes from which chalk blocks had been dragged during ploughing. Some, however, had posthole-like characteristics. In F2 there was possible packing in the form of a chalk lump tilted at an angle close to the side and a flint nodule, and a socket in the base had a different fill from the rest of the feature, possibly with charcoal flecks. The surface appearance of F3 suggested a central postpipe with surrounding chalk packing, although this was not confirmed in excavation. In F9 there was a possible postpipe, with charcoal flecks in it and in the surrounding fill. These observations combine with the alignment and even spacing of F2, F3, F4, and F5 to suggest that at least some of these almost-vanished features may have been remnants of a post-built structure within the bank, although this is far from certain.

In the outer bank area, protected chalk on sites D2 and J2 survived, at its best preserved, across almost all of the space between the two ditches, measuring between 7.00 and 3.50 m wide and scored by ploughmarks. On site D2 a single possible posthole, without finds (F18), lay at its inner edge and a cattle scapula was embedded in the fragmented chalk surface near its outer edge. It was impossible to tell whether the bone had been at the base of the pre-bank soil or of a destroyed feature.

The ditch fills generally suggested the former presence on the inner side of banks of chalk, flint and earth, perhaps rather more substantial for the outer ditch than for the inner. In segment 3 of the inner ditch, however, chalk was scarcer than elsewhere, except in the phase VI slot, and the heavy element in the phase III fills consisted almost entirely of flint. Here, an area of tabular flint, some of it still in place and visible in the ditch side, may have made up a substantial part of the bank.

The ditches

Most of the segments investigated extended beyond the areas excavated. Those near the centre of the spur, however, were particularly long. Segments 4 and 5 of the inner ditch were respectively over 20 m and over 10 m in length, and segment 3 of the outer ditch over 18 m. Segments in the centre of the spur were also the deepest and widest, the massive butt of segment 2 of the outer ditch reaching 2.85 m wide and 1.50 m deep (Fig 3.40: section E–E'). The outer ditch segments tended to be steeper sided and deeper in proportion to their width than the inner, and contained correspondingly more chalk rubble. Segments were pit-dug, which produced wide variations within each, notably in segments 4 and 5 of the outer ditch, where the two opposed butts were no more than shallow shelves, with hollows cut near the butt in each (Fig 3.41). The form of these two segments echoes that of segment 11 in the adjacent part of the main enclosure on site E1 (Fig 3.23).

Entrance?

The slight causeways (less than 1 m wide) separating segments 1–3 of the inner ditch on site J2 and segments 4 and 5 of the outer on site E2 (Figs 3.36, 3.41) contrast with gaps of more than 2 m between segments of both ditches at the south end of site D2 (Fig 3.37). These lie near the centre of the spur where the gradient is gentlest (*c* 1:9, as opposed to *c* 1:4 at the south end on site J2). They correspond to a probable entrance in the main enclosure, although not to any break in the protected chalk of either cross-dyke bank or to any concentration of finds. The few finds from phases I, III and V in both ditches here tended to concentrate in the north where both segments were deepest, away from the wide causeways. This may suggest that their north butts, and possibly an entrance, lie just outside the excavation. The exception to this was struck flint in the phase VI slot of the outer ditch, most of which was close to the causeway.

The causeway in the outer ditch was sunken, dipping to as much as *c* 0.40 m below the surrounding chalk, forming a hollow eventually filled by the latest ditch silts. In the centre of its inner side was a pit *c* 0.90 m in diameter (Fig 3.38: D2 F19) the central part of the upper fill of which was packed with flint nodules and chalk lumps. It contained one plain body sherd in a Neolithic Bowl fabric and a little animal bone. The shelving sides and the absence of any trace of postpipe or socket make it less likely to have been a truncated posthole than the similarly sized straight-sided feature in the corresponding causeway in the main enclosure (Fig 3.19: D1 F1), although their fills were similar, as were the concentrations of flint nodules and chalk lumps in both. The presence in D1 F1 of two small post-Neolithic sherds and the similarity of the upper fills of both features to the phase VIII/a ditch fills raises the possibility that they may post-date the earthworks.

Fills

The ditch fills show uninterrupted natural silting until the cutting of slots in phase VI. Segment 1 of the outer ditch was minimally investigated and it is not discussed here. The available information is summarised in the catalogue.

Phases I and II

The angles between the ditch floors and sides were sharp and unweathered, the lowest parts of the walls often being near-vertical, with no sign of any cleaning out of the initial silts. These were almost devoid of cultural material. In the inner ditch the most notable exception was a slight concentration of animal bone fragments, struck flint and charcoal towards the north end of segment 4. In the outer ditch a few scraps of animal bone lay on the ditch bottom in the north of segment 3, there was a group of cattle and caprine bone fragments near the centre of segment 4, and, in a hollow in the floor of the north butt of the same segment, a length of red deer antler beam with a battered trez tine (Fig 3.41: OxA-8856) was found with a cattle radius fragment and a flint scraper.

Deposits of two kinds were made after a small depth of silt had accumulated. In segment 1 of the inner ditch a flint cairn was built, covering a few flint flakes and fragments of animal bone. A displaced cairn may be represented near the centre of segment 2 by a concentration of flint nodules where the phase VI slots were cut down to the primary silt (Fig 3.36: sections A–A', B–B'). These are comparable with cairns in the adjacent part of the main enclosure on site J1 to the northwest (Figs 3.15, 3.18). Adult skulls without mandibles were placed in segments 4 and 5 of the inner ditch and segment 3 of the outer, the latter on almost the same radius as that from segment 4 of the inner ditch.

Phase III

Chalk rubble tended to occupy a larger proportion of each segment in the outer than in the inner ditch, and was vacuous in the deeper, steeper-sided sub-segments. Accumulations of rubble graded into more compact silts with smaller inclusions. Phase III fills were often without cultural material. Slight concentrations of finds tended to match those in phase I–II, in the north ends of segment 4 of the inner ditch and segment 3 of the outer, and in the north of segment 4 of the outer ditch.

Phase V

The slower, earthy secondary silts of the inner ditch were similarly sterile or near-sterile except in the north end of segment 4 and segment 5. A young adult male mandible from segment 5 may have come from the same individual as the skull near the bottom of the same segment. In the outer ditch rather larger quantities of cultural material of all kinds, including further fragmentary human remains, were concentrated towards the centre of segment 3, recalling localised concentrations of finds in the phase V silts of the main enclosure ditch.

Phase VI

Slots were cut into every excavated segment of the inner ditch and into segments 3, 4 and 5 of the outer ditch during the accumulation of secondary silts in the ditch tops. Up to four successive slots were cut in segment 2 of the inner ditch and two in segments 4 and 5 of the outer, with elsewhere apparently only one. The slots were comparable in size and location to those of the main enclosure, and those of the inner ditch had similar clayey fills with numerous large flint and chalk inclusions, although this obtained only in segment 5 of the outer ditch. Artefacts and animal bone were less uniformly abundant than in the main enclosure. They were completely absent from segment 3 of the inner ditch and were numerous only in segment 4 of the inner ditch, where they reached densities like those of the main enclosure and showed some of the same characteristics, including groups of articulating animal bone and a group of sherds from a single vessel.

In the outer ditch finds in segment 3 were scarce, chief among them being a concentration of animal bone towards the north and 28 pieces of struck flint, together with a disc-shaped, hourglass-perforated shale bead, in the south butt. In segment 4 animal bone was most abundant, including articulating groups, mainly of goat and perhaps from a single animal, while in segment 5 lithics and pottery were frequent, including four groups of sherds from single vessels in Jurassic fabrics, one group incorporating a flake from a group VIII stone axehead (S13).

Phase VII

Flint nodules and fragments capped the slots in the inner ditch and segments 3 and 5 of the outer, possibly, as in the main enclosure, representing the weathered tops of their main fills. No such capping was noted in segment 4 of the outer ditch, where heavy inclusions were concentrated towards the bottom of the slots and the upper fills merged into the phase VIII/a deposits. The nodules were sometimes dense, those in segment 4 of the inner ditch being described as 'packed together'.

Phase VII/a

Truncated soil? In segments 1 and 2 of the inner ditch a thin band of dense, small, rounded chalk lumps with some flint in a little brown soil (Fig 3.36: L6) overlay the slots, and sometimes the silt succeeding them, forming a white band around the nodules at the top of the slot. In segment 4 of the same ditch, a patchy lens of brown soil with flint and chalk peagrit and rounded chalk lumps lay between the fills of the slots and the later recuts and the base of the phase VIII/a deposits (Fig 3.39: L4) . It is impossible to tell whether these were sorted horizons at the base of a vanished soil, as thin peagrit bands in segments 6.1, 8 and 16–19 of the main enclosure may have been, or whether they were the base of the lowest of the overlying phase VIII/a ploughsoils.

Bone deposit. In segment 1 of the inner ditch a compact butchery deposit, in which two cattle and a caprine were represented was found in the upper fill of the phase VI slot. It subsequently proved to be of late Neolithic date, a period otherwise little represented on the site (2920–2700 cal BC; 4255±50 BP; OxA-8893). It is not clear whether the deposit was in a localised cut, or whether all of the upper slot fill, or indeed the entire slot in this segment, was of this age. The small quantity of pottery and struck flint from the same layer are early Neolithic. Beaker pottery from the overlying relict ploughsoils would post-date the bone deposit. Contemporary activity in the adjoining segment may be represented by two possible cuts, both undated and both later than the second of two slots (Fig 3.36).

Features. In segment 4 of the inner ditch a 'hearth' excavated by Bonney in 1960 was a steep-sided recut (RCHME 1996, fig 5, third from top) with a rich assemblage of Beaker pottery, lithics, animal bone and charcoal, as well as a human femur fragment possibly derived from the Neolithic ditch deposits. The Beaker from here, and from later contexts in the same segment, forms a coherent, Early style, assemblage, distinct from the Late style assemblage from segment 8 of the main enclosure, only 30 m away. Its localised nature is emphasised by the small quantity of Beaker pottery in segment 3 of the outer ditch only 10 m away, where there were 12 sherds/50 g of Beaker and related pottery from all contexts, in contrast to 558 sherds/957 g from all contexts in segment 4 of the inner ditch.

Other phase VII/a features are characterised by fills similar to the overlying phase VIII/a deposits and by a low density of animal bone and artefacts, which include the occasional Beaker sherd. A feature in the butt of segment 4 seems to have been recut up to three times and at one stage to have been left open, exposing the ditch floor to more weathering than elsewhere. A recut at the same stratigraphic horizon in segment 2 of the outer ditch also seems to have been left to silt up, with lenses of soil like the phase VIII/a deposits, into which they graded, interspersed with dark, inclusion-free bands likely to represent turf fragments falling from the sides (Fig 3.40: section E–E'). This echoes the natural silting of a phase VII/a feature in segment 10 of the main enclosure (Fig 3.23: sections A–A' and B–B', L6).

Phase VIII/a

In segments 3, 4, and 5 of the inner ditch the VIII/a deposits were more-or-less homogeneous ploughsoils like those of the main enclosure and the rest of the central area. In segments 1 and 2 of the inner ditch and in segment 1 of the outer ditch, at the steeper south edge of the spur, there were several dark earthy layers with varying combinations and densities of flint and chalk inclusions, at their most numerous in segment 1 of the inner ditch, at the lower, steeper end of the site (Fig 3.36: L4A, L4, L3B/4, L3B, L3C, L3A), in the case of L4 with a dense, quite large flint component. These might be interpreted as successive ploughsoils spilling down the edge of the hill into the ditch top, as distinct from actual cultivation over the ditch. Similar processes are represented by what seemed to be a recent soil slip covering the south-west part of site J2 at the time of excavation. In these circumstances the density of flint nodules and fragments in L4 here could have been an effect of gravity. In L3B/L4 of segment 2 of the inner ditch, 155 sherds/400 g from a single open, uncarinated Neolithic Bowl with a T-shaped rim may represent a vessel, or a substantial part of one, originally placed in or on the top of the slot and subjected to relatively little later disturbance. Their mean weight of 2.5 g, low as it is, exceeds that of 1.3 g for the Beaker sherds from the phase VIII/a fills of segment 4, where the contrast with a mean weight of 2.9 g for Beaker sherds from the phase VII/a recuts beneath suggests that there the phase VIII/a material may indeed have been degraded by ploughing.

Inner and outer east cross-dyke segment catalogue

Inner east cross-dyke

Inner east cross-dyke segment 1 (Fig 3.36)

Original notation. HH76 site JL (later site J2) Cross Ditch 1 or XD1 segment 2A.

Form. Expanding at NE butt, sides steep to top of primary silt, then shelving. Extended out of excavated area.

Length >3.7 m, width 3 m, depth 0.70 m.

Excavation. <50%, dug as 1 of 3 alternating longitudinal sections of what appeared to be a single segment but proved to be segment 1 and part of segment 2. SE side of segment 1 and of SW butt of segment 2 removed as Q6. NW side (Q5) left unexcavated. Flint nodule concentration in top of segment excavated in 0.30 m wide transverse strips.

Phase I. Chalky silt with chalk lumps (L13).

Phase II. Cairn of large flint nodules with some chalk blocks, in section, at least 1.50 m across, standing to 0.50 m high.

Animal bone and/or antler

Under flint cairn: *dog* humerus; *cattle* mandible; *caprine* teeth

L11: *

Lithics

Under flint cairn: 3 flakes.

L11: flake

Phase III. Powdery matrix with chalk blocks, often vacuous (L12).

Phase V. Clayey loam with peagrit, large chalk lumps, some flint nodules (L10), overlain by thin lens of clayey loam with peagrit (L9), then by a chalky matrix with fragments with some flint (L8).

Animal bone and/or antler

L10: *caprine* phalanx

Lithics

L10: 6 flakes, flaked lump

Phase VI. Slot up to 0.50 m wide and 0.40 m deep cut along outer edge of ditch, curving inwards at NE butt, where it shows in longitudinal section. Lower fill of dark brown clayey material with flint fragments, chalk lumps and large flint nodules (L5), upper fill of dark brown soil with small flint fragments (L5A). Late Neolithic radiocarbon date on animal bone deposit from L5A (see VII/a below) makes it unclear whether all of L5A was of this date or whether bone lay in localised recut.

Animal bone and/or antler

L5: *pig* 2 humeri, tooth; *cattle* humerus, tibia, teeth, vertebra

Lithics

L5: edge-trimmed flake, scraper, 1 misc retouched

VI/1: slot here interleaved with earthy silt with flint and chalk fragments (L7), continuous over causeway with segment 2.

Phase VII. Dense flint nodules above line of slot (not in section).

Phase VII/a. Dense small, rounded chalk fragments with some flint in a little brown soil (L6), forming white band 0.03–0.10 m deep around nodules at top of slot, continuous over causeway with segment 2. Against W baulk, slot thought perhaps to have been cut through L6 because of rounded chalk among the bone deposit in L5A. Impossible to tell if this applies to localised recut, containing late Neolithic bone deposit described below, or to whole of L5A.

Animal bone and/or antler

L5A in a single deposit close to W baulk: *pig* humerus, ulna, 3 femora; *cattle* 3 scapulae, 4 humeri, 4 radii, 2 ulnae, 2 femora, 3 tibiae, ischium, 2 metacarpals, 3 metatarsals, 3 tarsals, teeth, 3 mandibles, phalanx, carpal, 2 articulating vertebrae planned as if found in articulation (HH76 680), 9 further vertebrae, skull fragment, 2 horncores; *caprine* humerus, radius, 2 femora, tibia, ischium, 3 metacarpals, tarsal, 2 phalanges, 3 vertebrae

Pottery

L5A: 2 sherds/8g Neolithic Bowl pottery

Lithics

L6: 2 flakes

L5A: 6 flakes, 3 edge-trimmed flakes, 3 scrapers, piercer, leaf arrowhead

^{14}C

L5A: 2920–2700 cal BC (4255±50 BP; OxA-8893) on articulated cattle vertebrae HH76 680

Phase VIII/a. Earthy matrix with very small flint fragments and chalk lumps, occasional nodules sticking up from below (L4A), overlain by flint nodules and fragments solidly packed in earthy matrix (L4 – separated from the top of the slot by most of L7 and all of L6 and L4A, hence not interpretable as capping), grading upwards into dark brown-black soil with moderate-sized flint fragments and some chalk (L3B/4, L3B), overlain by dark brown-black soil with flint and chalk peagrit (L3A). Thin band of rain-washed chalk pebbles (L3C) seemed to run through part of L4A.

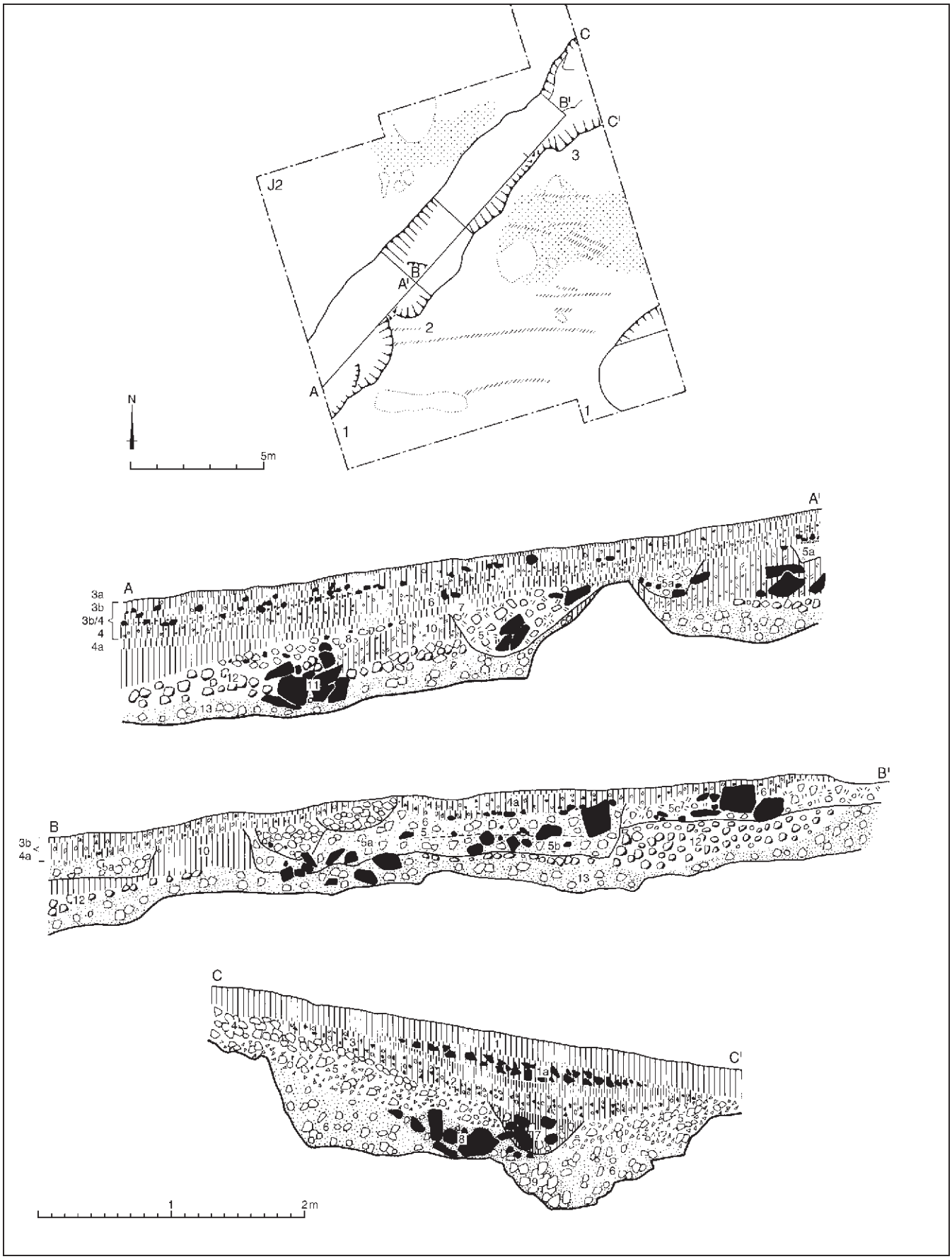

Fig 3.36 East cross-dykes, site J2. Plan, with sections of segments 1, 2, and 3 of the inner cross-dyke.

Animal bone and/or antler
L4A: *cattle* tooth
L4:*

Pottery
L4: 75 sherds/127 g Beaker (grogged fabric, very small and abraded, some, including 1 rim fragment, with horizontal rows of indeterminate impressions)

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1). Recent soil slip left area of dark soil in SW corner of site.

Lithics
U/S: 2 flakes

Inner east cross-dyke segment 2 (Fig 3.36)

Original notation. HH76 site JL (later site J2) Cross Ditch 1 or XD1 segment 2.
Form. Two sub-segments, deeper to SW.
Length 7.70 m, *width* 2.79 m, *depth* 0.90 m.
Excavation. *c* 40%, in 3 alternating longitudinal sections: Q6 (most of which lay in segment 1), Q3, Q2. Opposed sections (Q5, Q4, Q1) left unexcavated. Finds measured-in by offsets from longitudinal datum rather than by triangulation.

Phase I. Chalky silt with chalk lumps (L13 throughout, L6A in Q2).

Phase II. Large flint nodules concentrated near centre of L13 and in slot (L5A) immediately above may represent a cairn like that in segment 1, displaced when the slot was cut.

Phase III. Vacuous chalk blocks, generally small (L12).

Phase V. Clayey loam with peagrit, large chalk lumps, some flint nodules (L10, L4A in Q2), with concentration of large flint nodules in SW, overlain near centre by lens of clayey loam with chalk and flint.

Phase VI. VI/a: slot *c* 20 m deep surviving in NE end, with 'sticky' brown clayey fill with discoloured chalk, flint fragments and large flint nodules and slabs (L5C).

VI/b: L5C cut away in centre by deeper slot *c* 0.70 m wide and 0.30 m deep, sometimes cut into primary silt, with 'sticky' light brown lower fill with discoloured chalk lumps, flint in centre and much redeposited calcium carbonate (L5B, L5A in Q2), grading into upper fill like L5C, L5, L4 in Q2).

Animal bone and/or antler
L5A: *pig* humerus; *cattle* scapula, tibia, mandible
Q2 L4: *cattle* vertebra

Pottery
L5A: 3 sherds/29 g Neolithic Bowl pottery

Lithics
L5A: flake, piercer, spherical Greensand object

VI/1: at SW butt slots interleaved with of earthy silt with flint and chalk fragments (L7), continuous over causeway with segment 1.

Phase VII. Nodule concentrations in surface of slot.

Phase VII/a. Dense small, rounded chalk fragments with some flint in a little brown soil, 0.03–0.10 m thick (L6), forming white band around nodules at top of slot, continuous over causeway with segment 1. Perhaps also two unnumbered cuts, one of them cutting L6 and both of them directly underlying L4A (Fig 3.36).

Animal bone and/or antler
L6: *cattle* mandible

Phase VIII/a. Some or all of these present along length of segment: earthy matrix with very small flint fragments and chalk lumps, occasional nodules sticking up from below (L4A), grading upwards into dark brown-black soil with moderate-sized flint fragments and some chalk (L3B/4, L3B), overlain by dark brown-black soil with flint and chalk peagrit (L3). Thin band of rain-washed chalk pebbles (L3C) seemed to run through part of L4A.

Animal bone and/or antler
L4A: *cattle* tooth
L3B/4: *pig* fibula
L3B: *cattle* metacarpal

Pottery
L3B/L4: 155 sherds/400 g, very small and abraded, from an open uncarinated bowl with a T-shaped rim, 210 mm in diameter L3B: 5 sherds/6 g Beaker/early Bronze Age

Lithics
L3B/L4: 2 flakes

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1).

Inner east cross-dyke segment 3 (Fig 3.36)

Original notation. HH76 site JL (later site J2) Cross Ditch 1 or XD1 segment 1.
Form. Step formed by *in situ* tabular flint at inner edge of base.
Length >3 m, *width* 3.5 m, *depth* 1 m.
Excavation. In quadrants, W quadrant left unexcavated.

Phase I. Dark brown silt with chalk blocks (L9) in deepest part of base, chalky silt with chalk lumps (L6) to either side.

Animal bone and/or antler
L6: *pig* scapula

Phase III. Grey silt with large flint nodules and some smaller chalk lumps (L8 lower).

Phase V. Small chalk blocks with little silt (L8 upper) at outer edge, under orange gravelly soil with chalk lumps (L5), overlain at inner edge by small discoloured chalk lumps (L4).

Animal bone and/or antler
L5: *
L4: *pig* humerus; *cattle* tibia; *caprine* tooth

Pottery
L4: 6 sherds/18 g Neolithic Bowl pottery

Lithics
L4: 16 flakes, edge-trimmed flake

Phase VI. Slot 0. 70 m wide and 0.35 m deep, with a dark fill containing flint nodules and chalk lumps (L7).

Phase VII. Nodule concentration in surface of slot.

Phase VIII/a. Dark brown-black soil with flint and chalk fragments (L3).

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1). Concentration of flint nodules within L1 above L2 in hollow of ditch top.

Inner east cross-dyke segment 4 (Figs 3.37, 3.39)

Original notation. Bonney's trench L, 1960, inner ditch. HH75 site D2 Cross Ditch I or XDI.
Form. Sinuous plan, at least three sub-segments, widest and shallowest at rounded butt, deepest at N side of excavation. Base and lower sides retained stepped profile of blocky chalk through which ditch cut. Some *in situ* tabular flint.
Length >20.3 m, *width* 3.8 m, *depth* 1.1 m at N face of excavation, 0.70 m at butt.

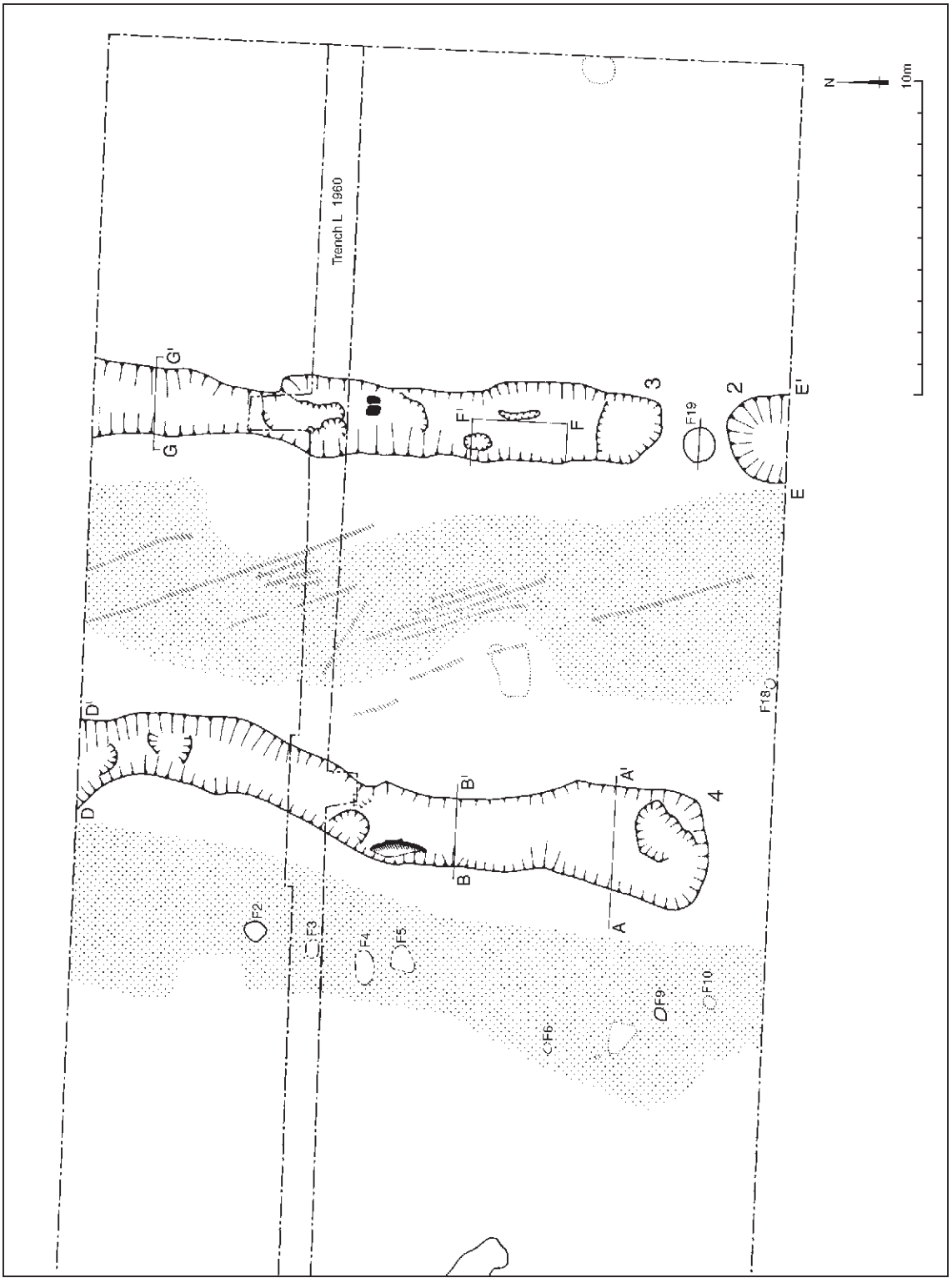

Fig 3.37 East cross-dykes, site D2. Plan.

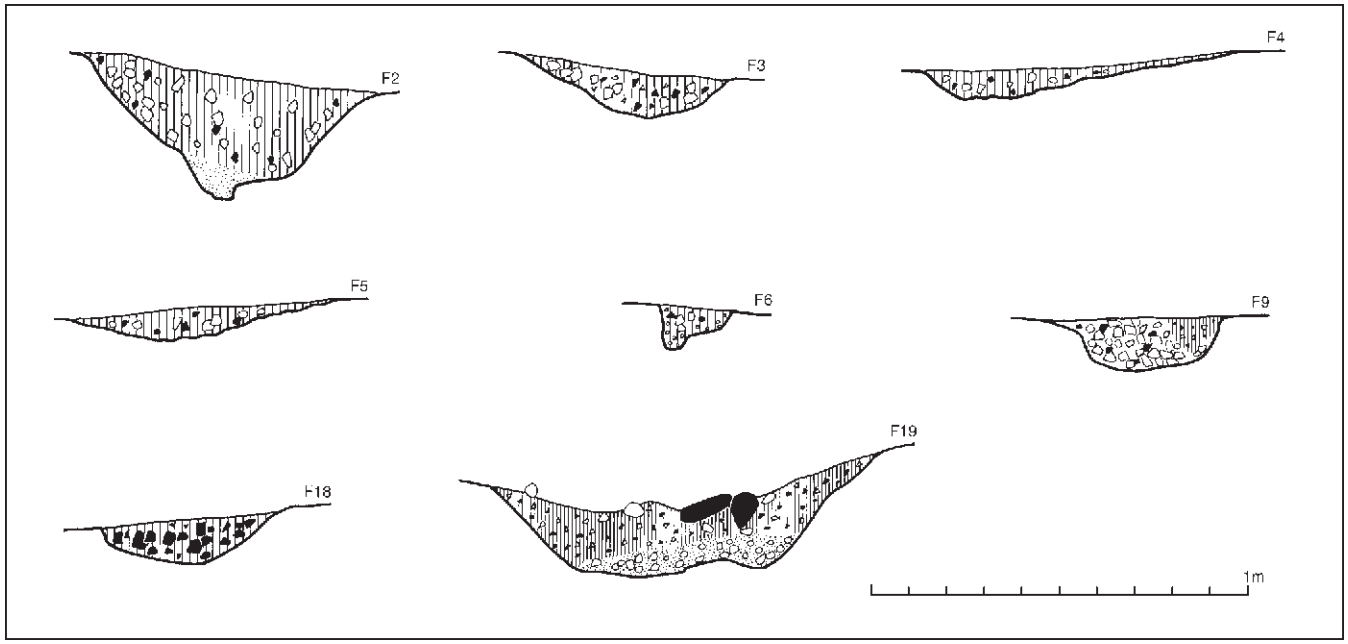

Fig 3.38 East cross-dykes, site D2. Sections of definite and possible features.

Depth in N and concentration and nature of finds there may suggest butt not far beyond limit of excavation.

Given that the ditch was cut entirely in chalk, there was surprisingly little chalk rubble in the fills.

Excavation. 1960: trench 1.20 m wide cut across bank and ditch, extended *c* 0.90 m to S in ditch to excavate 'hearth'. 1975: 5 transverse sections across ditch, numbered 1 to 5 (or I to V) from N to S; cutting I 2.00 m wide, cuttings II–V each 5.00 m wide. I, III and V removed first, then II and IV.

Phase I. Chalky silt with some angular chalk lumps and a little flint (L11), noticeable soil content in CIV, clean in CIII. Sometimes continuous over ditch bottom, sometimes removed by phase VI and VII/a recuts.

Animal bone and/or antler

L11, mainly at N end: *pig* mandible; *red deer* antler tip with 2 very worn tines (HH75 313); *cattle* rib (HH75 314), overlying antler; *caprine* humerus, acetabulum, mandible

Pottery

Tr L, possibly in initial silt, possibly in rubble fills: 6 sherds/96 g Neolithic Bowl pottery, found together

Charcoal

L11: Charcoal found at single spot in CII towards N end, 50% identified by AML before ^{14}C-dating as *Corylus/Alnus* (not twiggy), undated remainder all *Corylus* (HH75 1535)

^{14}C

L11: *3640–3330 cal BC* (4660±100 BP; HAR-9168) on charcoal HH75 1535 described above; *3680–3620 cal BC (74%) or 3590–3530 cal BC (21%)* (4880±45 BP; OxA-8864) and *3680–3620 cal BC (71%) or 3590–3530 (24%) cal BC* (4875±45 BP; OxA-8863) on single hazel fragments extracted from undated residue of sample for HAR-9168; *3660–3500 cal BC (80%) or 3440–3370 cal BC (15%)* (4870±55 BP; OxA-8856) on antler HH75 313; 3910–3640 cal BC (4955±45 BP; OxA-8857) on cattle rib HH75 314

Phase I/phase III interface

Human remains

Tr L, on surface of phase I silts: mature female skull without mandible, root-marked and slightly weathered, 'at an angle resting on the side of the forehead with only *c* 1 in. [25 mm] of filling separating it from the bottom' (Bonney archive)

Phase III. Towards centre, discoloured silty matrix with flint blocks, partly vacuous in N, and some chalk fragments (L10); silty matrix with smaller, angular chalk lumps, mainly derived from inner edge (L9); grading upwards at N and S ends by compact chalky silt with small chalk lumps, especially towards centre (L8, L8A).

Animal bone and/or antler

L10, all in CI at N end or CII just S from it: *pig* radius, femur; *cattle* carpal, tooth, mandible, 2 ribs; *caprine* 2 humeri, mandible, tooth

L9: *

Pottery

Tr L: see phase I above

L10, in CI at N end: 8 sherds/28 g Neolithic Bowl pottery

L8–L10, in CI at N end: 1 sherd/4 g Neolithic Bowl pottery

L9, in CI at N end: 1 sherd/10 g Neolithic Bowl pottery

Lithics

Tr L: *

Site D2 L10, almost all in CII, towards N end: 103 flakes, 2 cores, 1 misc retouched

L8: flake, serrated flake

Charcoal

L9–L10, in CI at N end: *

Phase V. From exterior, brown, 'sticky' matrix with small, discoloured chalk lumps and peagrit (L7). From interior, light brown, compact, 'sticky' matrix with chalk and flint peagrit (L5A), underlying darker orange-brown with less dense chalk lumps and chalk and flint peagrit (L5). In CII, the first stage of the phase VI slot seemed to have been cut through L5A and covered by L5.

Animal bone and/or antler

L7, in CI at N end: *

L5A, in CI at N end: *

Pottery

L7, in CI at N end: 5 sherds/111 g from a single Neolithic Bowl (P117), found together

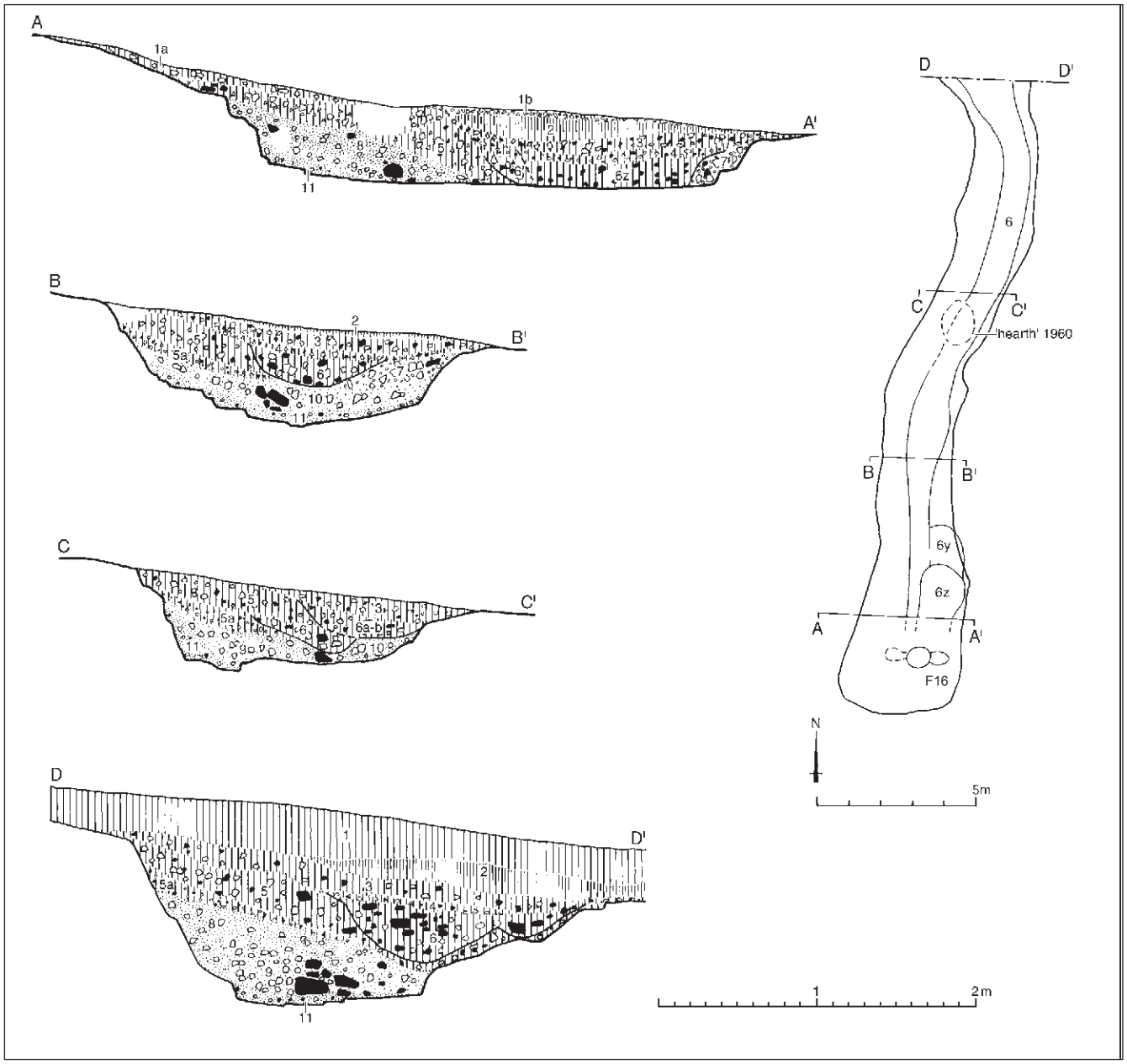

Fig 3.39 East cross-dykes, site D2. Sections of inner cross-dyke and plan of phase VI and later deposits.

L5, in CI at N end, 6 sherds/27 g Neolithic Bowl pottery

Lithics

L7: 5 flakes

L5: 2 flakes

Charcoal

L7:*

Phase VI. Slot up to 1.00 m wide and 0.35 m deep cut towards outer edge of ditch, filled with 'sticky' dark brown soil with chalk lumps and dense flint nodules and smaller broken flint (L6), excavated in CII as L6D (the lower fill) and L6C (cleaning and removal of flint blocks). Profile in N face of excavation suggests two successive cuts.

Animal bone and/or antler, concentrated in N (CI), and centre (CIII)

CII L6D: *pig* tibia; *red deer* scapula; *caprine* vertebra

CII L6C: *pig* articulating radius and ulna found together, further radius, further ulna, acetabulum, femur, 2 adjoining metatarsals found together, further metatarsal, fitting astragalus and calcaneum found together, teeth, mandible; *red deer* tibia; *cattle* scapula, radius, ulna, tooth, phalanx, rib; *caprine* radius-ulna, ulna, phalanx

L6: *pig* 4 scapulae, 9 humeri, radius-ulna, 6 radii, 3 ulnae, 2 acetabula, 3 femora, 4 tibiae, ilium, 4 ischia, 5 metapodials, 2 tarsals, teeth, 3 mandibles, maxilla, 5 phalanges, vertebra, 2 skull fragments; *roe deer* antler fragment; *red deer* antler fragments, concentrated in S butt; *cattle* 2 scapulae, humerus, radius-ulna, ulna, 2 femora, 2 tibiae, 4 metapodials, teeth, vertebra, 2 skull fragments, rib; *caprine* 2 humeri, 2 radii, ulna, acetabulum, 3 femora, 5 tibiae, ilium, ischium, astragalus, 2 vertebrae

Pottery

CII L6C: 9 sherds/58 g Neolithic Bowl pottery

L6: 62 sherds/149 g Neolithic Bowl pottery, including 48 sherds/87 g from single flint-tempered pot with simple rounded rim, all from N 2 m of slot; 2 sherds/3 g Beaker

Lithics
CII L6C: 3 flakes
L6, concentrated in CIII in the centre: 43 flakes, 5 serrated flakes, edge-trimmed flake, 2 piercers, leaf arrowhead, 4 misc retouched, 2 crumbs Old Red Sandstone

Charcoal
L6: *

Phase VII. Flint blocks and rounded chalk concentrated in top of L6, where not removed by phase VII/a cuts. 'Not really layered rather packed together' in CII

Phase VII/a. Tr L: pit *c* 1.00 m wide and 0.50 m deep and perhaps *c* 1.50 m long, with shelving sides, cut to bottom of ditch, filled with 'dirty black soil with some chalk fragments, large flints, charcoal etc.'. Recorded as 'hearth', but without evidence of *in situ* burning. Surrounded by further artefacts and animal bone.

Human remains
Tr L 'hearth', from Charles Higham's 1963 animal bone report (Bonney archive): 3 fragments from a single femur shaft

Animal bone and/or antler
Tr L 'hearth', from Charles Higham's 1963 animal bone report (Bonney archive): *pig* scapula, 2 teeth; *roe deer* phalanx; *red deer* mandible, antler tine; *cattle* femur, metatarsal, tooth, phalanx, vertebra, skull fragments; *caprine* tibia, tooth

Pottery
Tr L 'hearth': 95 sherds/331 g Beaker/EBA (68 plain, 1 with fine parallel twisted cord impressions, 24 comb-impressed, 2 rusticated)

Lithics
Tr L 'hearth': *c* 100 pieces of struck flint, mainly unretouched flakes, not examined in detail; glauconitic quartzite (probably Greensand) quern or rubber fragment (petrology no. Do 107; Evens *et al* 1972, 273; Clough and Cummins 1988, 151)

Unclassified burnt flint
Tr L 'hearth': *

Charcoal
Tr L 'hearth': *Corylus avellana*, *Fraxinus excelsior*, Maloideae, *Prunus* sp, *Ulmus* sp

Beaker from here and from overlying layers forms single, stylistically early, assemblage. Almost all comb-impressed decoration is of simple, parallel horizontal lines, except for a few fragmentary instances of what may be Clarke's motif 4 (1970, 20, 427).

S butt: E–W row of 3 intersecting pits (F16) cut into ditch bottom. Probably part of series of recuts truncating phase VI slot and earlier layers, collectively *c* 1.20 m wide and 0.20 m deep and extending *c* 6.00 m from butt, their N limit marked by ridge in ditch bottom and angle in outer ditch edge. Ditch floor at base of deepest recut more weathered than elsewhere, suggesting that it stood open. Deepest filled with dark brown soil with broken flint and very little chalk (L6Z), shallower (earlier?) one with brown soil with much flint and more chalk (L6Y), a third with brown soil with much broken flint (L6X).

Animal bone and/or antler
L6Z: *pig* humerus; *cattle* scapula. L6Y: *cattle* radius

Pottery
L6Z: 1 sherd/3 g Neolithic Bowl pottery, 1 plain body sherd/2 g in Beaker fabric. L6X: 1 sherd/1 g Neolithic Bowl pottery

Lithics
L6Z: 2 flakes. L6Y: flake, 1 misc retouched. L6X: 2 flakes

N of 'hearth'. Brown soil with small flints and chalk fragments removed in two spits (L6A, L6B) from top of chalk lumps and flint blocks in L6. L6A and L6B seemed to grade into L4, or L3 where L4 absent. They filled a definite depression, also visible in N face of Tr L, where its fill is shown as continuous with the overlying layer, probably continuous from deposits related to 'hearth'.

Animal bone and/or antler
L6B: *. L6A: *

Pottery
L6B: 1 plain sherd/1 g from Beaker rim. L6A: 9 sherds/11 g Beaker (6 plain, 2 comb-impressed, 1 with broad subsquare impressions)

Lithics
L6A: piercer

Phase VII/a or VIII/a. Patchy lens of brown soil with flint and chalk gravel and rounded chalk lumps (L4, L4A) less stony than L3, directly overlying fills of slot or grading into their upper surface; directly overlying phase VII/a recuts; underlying phase VIII/a soils (L3). Uncertain if base of L3 or truncated base of previous soil.

Animal bone and/or antler
L4: *pig* L and R mandibles found together, teeth; *cattle* scapula, ischium, teeth

Pottery
L4A: 2 sherds/6 g Beaker (comb-impressed)
L4: 46 sherds/95 g Beaker (35 plain, 11 comb-impressed)

Lithics
L4: 13 flakes, core fragment, serrated flake, scraper, 2 misc retouched

Phase VIII/a. Dark brown soil with comminuted chalk and flint, largely derived from interior, blockier towards outer edge, darker in area of 'hearth' (Tr L L3 in S section, L5 and L2 in N section. Site D2 L3, L3A).

Taking 1960 and 1975 excavations together, finds were densest in CIV, above almost sterile phase VII/a recuts L6X–L6Z, rather than in CIII, above artefact-rich Tr L 'hearth'.

Animal bone and/or antler
L3: *pig* calcaneum, tooth; *cattle* teeth; *large bird* ulna

Pottery
Tr L: 31 sherds/107 g Beaker/EBA (15 plain, 16 comb-impressed, 2 sherds/5 g in flint- and grog-tempered fabric
L3: 2 sherds/2 g Neolithic Bowl pottery, 237 sherds/253 g Beaker (205 plain, 21 comb-impressed, 10 with broad, subsquare impressions)

Fired clay
L3: clay disc pinched-up into minute cup-like object

Lithics
L3: 55 flakes, core, edge-trimmed flake, 6 scrapers, 4 misc retouched, quartzitic sandstone flake, Greensand, Old Red Sandstone and Heathstone fragments

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), overlain by displaced bank material (L1A – compact crust of chalk lumps and soil up to 0.30 m thick, L1B – gravelly chalk and chalk lumps) and by ploughsoil (L1). Animal burrows (F14, F15). Some unstratified material from 1960 backfill.

Animal bone and/or antler
L2: *pig* maxilla; *caprine* scapula

U/S: *

Pottery

L2: 127 sherds/115 g Beaker (109 plain, 17 comb-impressed, 1 with broad, subsquare impressions), 1 sherd 'Victorian'. L1: 1 sherd 'glazed'
U/S: 5 sherds/9 g Neolithic Bowl pottery

Lithics

L2: 10 flakes, 2 scrapers, 1 misc retouched, flake from group VI axehead (S12)
L1A: 4 flakes. L1: 19 flakes, scraper, piercer, unclassified biface, 1 misc retouched
U/S: 3 flakes.

Inner east cross-dyke segment 5 (Fig 3.41)

Original notation. HH75 site E2 Cross Ditch I or XDI.
Form. Irregular plan, outer edge more indented and shallower than inner, shelving into slope of hill in centre of excavated area. At least 2 sub-segments.
Length >10 m, *width* 1.90 m, *depth* 0.90 m.
Excavation. Turf and topsoil stripped by hand. Area then excavated in 4 transverse sections between 2 and 3 m wide, named cuttings 1, 2A, 2B, and 3 from N to S. C1 and C3 removed first, then C2A and C2B.

Phase I. Grey chalky silt (L11) from interior and orange chalk-clay silt with chalk lumps (L12) from exterior, covering lower sides and angles, not always extending over base.

Animal bone and/or antler

L12: *cattle* radius (HH75 2052)

Lithics

L12: serrated flake. L11: 5 flakes, serrated flake

^{14}C

L12: *3660–3490 cal BC (79%) or 3460–3370 cal BC (16%)* (4785±60 BP; OxA-8892) on cattle radius HH75 2052

Phase III. Grey-brown silty matrix with angular chalk lumps, occasionally vacuous (L10, L9), grey chalky silt with chalk and flint rubble and some peagrit (L8), all from interior.

Human remains

Base of L9, only just above ditch floor: young adult ?male skull without mandible, probably cut-marked (HH75 1360), on L side, facing E

Animal bone and/or antler

L9: *cattle* mandible; *caprine* tibia, phalanx
L8: *pig* humerus, teeth; *caprine* scapula

Lithics

L9: flake
L8: 5 flakes

Charcoal

L9: *

Phase V. Soil, occasionally clayey, with chalk lumps and in places peagrit (L5, L5A), grading upwards into orange clayey soil with chalk lumps and peagrit (L4), both from interior. Orange-brown soil with chalk lumps and peagrit (L7) from exterior.

Human remains

L5, *c* 0.60 m away from skull HH75 1360: incomplete young/younger adult ?male mandible (HH75 1340), possibly from same individual as skull HH75 1360 in L9.

Animal bone and/or antler

L5, all from C2A, in N centre of excavated part of segment: *pig* 4 humeri; *cattle* humerus, radius, femur, tibia, phalanx; *caprine* radius, 2 tibiae
L4: *pig* humerus; *cattle* femur, 2 tibiae; *caprine* tooth

Pottery

L5: 3 sherds/12 g Neolithic Bowl pottery

Lithics

L5: 17 flakes (1 of chert), 2 cores, serrated flake, 2 edge-trimmed flakes, 1 misc retouched, Old Red Sandstone quern fragment, unworked flint (Chesil?) beach pebble
L4/L5: 14 flakes, serrated flake, 2 misc retouched
L4: 11 flakes (1 chert), 2 serrated flakes, scraper

Phase VI (and VII/a?). Slot up to 1.00 m wide and 0.50 m deep, often cut to base of ditch. As little as 0.60 m wide in S. Lower fill of clayey soil with chalk and flint lumps (L6A) patchily present. Main fill of dark brown soil with chalk lumps and flint nodules, more flint in S than in N. Identified only with difficulty in S–centre of excavated part of segment. Single sherd from L6A came from C3, in S. All finds in L6 from C1 and C2A, in N and N centre.

Beaker sherds, low level of cultural material and the character of the fills suggest that, at least in N and N centre, L6 may have been the fill of a Beaker-period recut like those in the main enclosure on site E1 and that L6A may have been the phase VI slot.

Animal bone and/or antler

L6: *pig* metatarsal; *red deer* antler fragments (many from same antler) found together against side of slot; *cattle* tibia, tooth, mandible, horncore; *caprine* tibia, tooth

Pottery

L6A: 1 sherd/2 g Neolithic Bowl pottery
L6: 22 sherds/221 g Neolithic Bowl pottery, 5 sherds/12 g Beaker

Lithics

L6: 17 flakes, 2 edge-trimmed flakes, 1 misc retouched, Old Red Sandstone disc (S27)

Phase VII/a. See phase VI above

Phase VIII/a. Dark brown soil with small chalk and flint lumps and peagrit (L3).

Animal bone and/or antler

L3: *red or roe deer* antler fragment; *cattle* ulna, metatarsal.

Pottery

L3: 30 sherds/71 g Neolithic Bowl pottery

Lithics

L3: 18 flakes, core, serrated flake, edge-trimmed flake, 3 scrapers, leaf arrowhead, 1 misc retouched

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), overlain by ploughsoil (L1).

Pottery

L2: 32 sherds/74 g Neolithic Bowl pottery; 7 sherds/6 g Beaker

Lithics

L2: 10 flakes, scraper, 2 misc retouched (1 of chert). L1: 14 flakes, 4 scrapers, 3 misc retouched

Outer east cross-dyke

Outer east cross-dyke segment 1 (Fig 3.36)

Original notation. HH76 Site JL (later site J2) Cross Ditch 2 or XD2.
Form. Unknown, only SW butt within excavated area.
Length >3.5 m, *width* >2 m, *depth* >1 m.
Excavation. Axial section cut through 2.00 m of SW butt, N of and out of alignment with longitudinal axis. Opposed section left unexcavated.

Phases I–III. Chalk lumps in grey chalky silt, largest and most frequent at base, becoming smaller and sparser upwards (L6), incorporating one mass of vacuous chalk lumps (L6A). These layers filled most of the butt.

Phase V. Light brown silt with chalk and flint peagrit (L5) overlain by darker brown silt with rather larger chalk and flint (L4), just possibly the fill of a slot.

Phase VI. See phase V above.

Phase VIII/a. Dark brown soil with large flint fragments (L3B), under dark brown soil with fine flint fragments (L3A).

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1). Recent soil slip left area of dark soil in SW corner of site.

Outer east cross-dyke segment 2 (Figs 3.37, 3.40)

Original notation. HH75 site D2 cross-ditch II or XDII cutting V segment B (later segment 1).
Form. Only N butt within excavated area. Steep sides, fairly flat base. L4, L3, L2 continuous across slightly sunken causeway between segments 2 and 3.
Length >1.9 m, *width* 2.85 m, *depth* 1.5 m.
Excavation. As S side of cutting V, one of five transverse sections across ditch, numbered 1 to 5 (or I to V) from N to S; CV 5.00 m wide, encompassing F19 and S butt of segment 3.

Phase I. Chalky silt with densely packed chalk blocks (L8B), grading upwards into finer chalky silt (L7, L7A, L7B).

Animal bone and/or antler
L7: *cattle* metacarpal

Phase III. Vacuous, angular chalk blocks with some flint (L8A), chalky silt and 'dust' with rounded chalk lumps (L6).

Phase V. Buff-brown silts with varying frequencies of small chalk inclusions (L5D) grading upwards into more densely-packed fine chalk and flint fragments, still in silty matrix (L5C, L5B, L5A).

Layer which extended across causeway and was called L4 seems to have been of similar composition to these phase V deposits, described as 'yellow/orange gravelly soil on top of chalk of causeway'.

Animal bone
L4, 'yellow/orange gravelly soil on top of chalk of causeway': *cattle* tibia

Phase VII/a. Cut *c* 1.60 m wide and 0.40 m deep filled with dark soil with peagrit (L4D, L4B), grading into L3A and L3B at the top and interspersed with thin bands of dark, stone-free soil of varying extent (including L4C, L4A).

Lithics
L4: flake
Probably L4: fragment of ground axehead

Phase VII/a or Phase V. L4 finds from CV which cannot be attributed to segment 2 or segment 3.

Animal bone
L4: *pig* tibia

Lithics
L4: flake

Phase VIII/a. Brown soil with peagrit and chalk lumps (L3B), underlying dark brown-black soil with peagrit (L3A).

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2C), under remnants of displaced turf and earthworks (L2B, L2A, L1A). Recent ploughsoil (L1).

Outer east cross-dyke segment 3 (Figs 3.37, 3.40)

Original notation. 1960 Bonney's trench L, outer ditch. HH75 site D2 Cross Ditch II or XDII, cuttings I–IV and N part of V, segment A (later segment 2).
Form. At least 2 sub-segments, junction marked by constriction. Narrower and deeper in N, shallower again towards N limit of excavation. Stepped down towards S butt. Angular profile, generally with steep lower side at inner edge, often minimal wall at outer edge. Some *in situ* tabular flint on ditch base. L4, L3, L2 continuous across slightly sunken causeway between segments 2 and 3.
Length >18 m, *width* 2.6 m, *depth* 0.95 m.
Excavation. 1960: trench 1.20 m wide cut across bank and ditch, extended *c* 2.00 m to N in ditch after skull found in section. 1975: 5 transverse sections across ditch, numbered 1 to 5 (or I to V) from N to S; cutting I 2.00 m wide, cuttings II–V each 5.00 m wide. CI, CIII and CV removed first, then CII and CIV. CV encompassed N butt of segment 2, causeway, F19 and S butt of segment 3.

Phase I–II. Fine chalky silt with small chalk lumps (Tr L lower part of L14 and L13, Site D2 L9). Unexcavated silts in hollow at bottom of Tr L (F21).

Human remains
Tr L, in 'clean chalk blocks with much chalk wash', *c* 50 mm above ditch bottom: young/younger mature adult female skull, without mandible, weathered and root-marked.

Animal bone and/or antler
Site D2 L9: *pig* metacarpal and 2 other indeterminate finds, all on bottom of ditch

Pottery
Tr L 'within 6 in [150 mm] of bottom': 2 sherds/1 g Neolithic Bowl pottery

Lithics
Site D23 F21: flake

Charcoal
Tr L: *

Phase III. Vacuous chalk rubble with flint (site D2 L8) present only in deepest part of ditch, towards N limit of excavation in CII and CI, grading into white chalky silt with chalk lumps and flint blocks (L8B) in N section. Succeeding these layers and extending throughout, grey-brown chalky silts with chalk lumps (Tr L upper part of L14 and L13, site D2 L7), sometimes succeeded by 'sticky' brown soil with chalk lumps, chalk 'dust' and flint nodules (site D2 L6).

Human remains
L6 or L7 (CI): juvenile/subadult skull and rib fragments (HH75 441)

Animal bone and/or antler
Site D2 L7: *cattle* radius-ulna (CII). Site D2 L6: *caprine* calcaneum (CII)

Pottery
Tr L L14 (upper): 6 sherds/18 g Neolithic Bowl pottery
Site D2 L6: *

Lithics
Site D2 L6: 2 flakes (CV)

Phase V. Fine orange soil with comminuted chalk and flint and larger chalk lumps (Tr L part of L12, Site D2 L5), grading upwards into orange-brown soil with comminuted chalk and flint and discoloured chalk lumps, darker and blockier towards centre (Tr L L11, Site D2 L4). Upper part graded into L3.

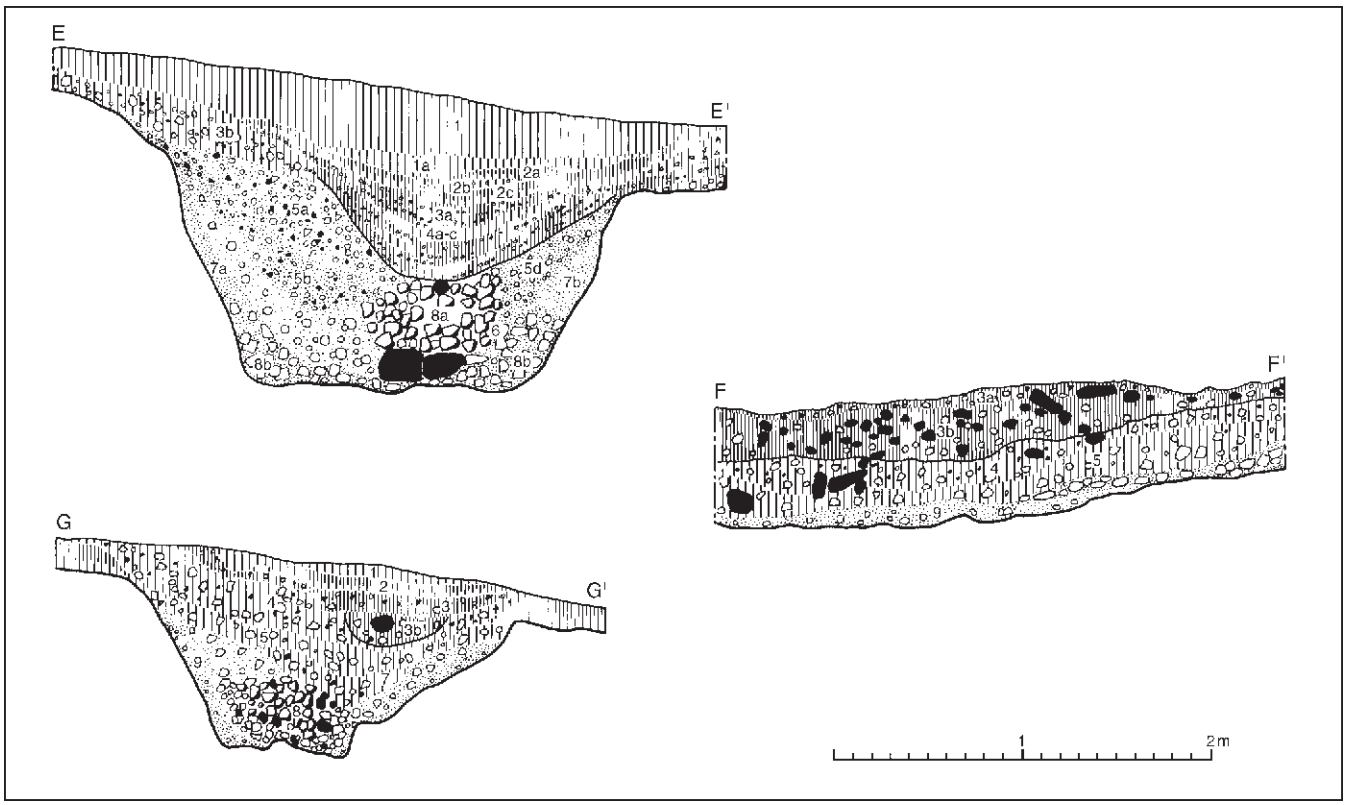

Fig 3.40 East cross-dykes, site D2. Sections of outer cross-dyke.

Human remains
Site D2 L5: adult/subadult L femur shaft (HH75 1449; CII)

Animal bone and/or antler
Site D2 L5: *pig* acetabulum, phalanx; *red deer* radius; *cattle* scapula, acetabulum, tooth, 2 vertebrae; *caprine* tooth, mandible
Site D2 L4: *pig* scapula, tibia; *cattle* scapula, humerus, mandible; *caprine* 2 humeri, femur, tooth

Pottery
Site D2 L5: 3 sherds/19 g Neolithic Bowl pottery
Site D2 L4: 2 sherds/15 g Neolithic Bowl pottery, 1 sherd/4 g Beaker, 4 sherds/8 g R-B. Both Beaker and R-B sherds found during early definition of L4; provenance not completely certain

Lithics
Site D2 L5: 4 flakes
Site D2 L5 or L4: 14 flakes, serrated flake, 2 misc retouched
Site D2 L4, concentrated in CIII, near centre: 76 flakes, edge-trimmed flake, 3 misc retouched

Charcoal
Site D2 L5: *

Phase VI. Slot up to 1.00 m wide and 0.25 m deep cut along segment towards outer edge, filled with dark brown soil with flint nodules and chalk lumps (Tr L part of L12, Site D2 L3B).

Animal bone and/or antler
Tr L: *
Site D2 L3B, heavily concentrated in CII, towards N: *pig* scapula, 2 humeri, ulna, teeth; *cattle* radius, ulna, tooth, 2 mandibles, 2 vertebrae; *caprine* 2 humeri, teeth, horncore

Pottery
Site D2 L3B: 13 sherds/26 g Neolithic Bowl pottery, 1 sherd/1 g Beaker

Lithics
Site D2 L3B, all but 1 flake in CIV: 27 flakes, serrated flake, piercer, 2 misc retouched, shale bead (disc *c* 25 mm diameter, <5 mm thick, with central hour-glass perforation; HH75 1358) found 0.10 m above bottom of slot, also in CIV

Phase VII. Concentration of nodules along line of slot.

Phase VIII/a. Dark brown-black soil with small chalk and flint fragments (Tr L L5b, L2; Site D2 L3A, L3).

Animal bone and/or antler
Site D2 L3: *pig* tooth; *caprine* vertebra

Pottery
Tr L: 2 sherds/4 g Neolithic Bowl pottery, 2 sherds/20 g Beaker/EBA, 1 sherd/4 g R-B
Site D2 L3: 7 sherds/25 g Beaker/EBA

Lithics
Site D2 L3: 46 flakes

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1), intervening band of displaced bank material (L1A) in S butt only. Backfill of Bonney's trench L re-excavated (DF1=F20).

Animal bone and/or antler
Site D2 L2: *caprine* horncore
L1/L2: burnt antler fragments
F20: *

Pottery
Site D2 L2 or L3: 1 sherd/19 g Neolithic Bowl pottery (horizontally perforated elongated lug)
F20: 'white-glazed'

Lithics
Site D2 L2: 2 flakes, scraper
Site D2 L1/L2: 2 flakes

Site D2 L1: 12 flakes, 1 misc retouched, unworked chert pebble
Site D2 DF1=F20: 5 flakes
U/S: 1 flake

Outer east cross-dyke segment 4 (Fig 3.41)

Original notation. HH75 site E2 Cross Ditch II or 2 (or XD II or 2), cuttings 2–4 (later segment 2).
Form. 2 sub-segments, deep, bowl-like S butt, shallow 'tail' to N, at most 0.50 m deep, with slight depression in N butt. Flat base, steep sides, stepped profile. Relatively little chalk in fills of shallower, N sub-segment.
Length 6.1 m, *width* 2.1 m, *depth* 0.95 m.
Excavation. 100%. Hand-stripped then excavated in transverse sections *c* 2.5 m wide, denoted cuttings 2, 3 and 4 from N to S. C3, in centre, removed first, then C2 and C4 in the butts.

Phase I. Chalky silt with chalk lumps (L10).

Animal bone and/or antler
L10: *cattle* radius, femur; *caprine* mandible, teeth, all part of group of *c* 20 bone fragments found near centre of segment. Also L10: *red deer* antler beam section with trez tine, battered (HH75 2171); *cattle* radius, found together on bottom of depression in floor of N butt (HH75 2171)

Lithics
L10: scraper, found with antler and cattle radius

^{14}C
L10: 4497±26 (UB-4267) on antler HH75 2171

Phase III. Vacuous chalk rubble, with some large flint nodules or fragments (L9), grading at inner edge into laminated chalky silts with chalk rubble (L7), at outer edge into grey-brown silt with chalk lumps (L8).

Animal bone and/or antler
L9: *cattle* phalanx, vertebra
L8: *pig* tooth; *cattle* femur, vertebra
L7: *pig* teeth; *caprine* 2 humeri

Pottery
L9: 2 sherds/21 g Neolithic Bowl pottery
L8: 15 sherds/78 g Neolithic Bowl pottery, including 10 sherds/38 g from one vessel, found together.
L7: 7 sherds/31 g Neolithic Bowl pottery

Lithics
L9: 2 flakes, edge-trimmed flake
L8: flake
L7: 2 flakes, serrated flake

Phase V. Clayey orange soil with chalk lumps and peagrit (L5), derived from interior, chalk lumps larger and more frequent towards bottom (L5B), smaller and scarcer towards top (L5A). Orange clayey soil with peagrit and some chalk lumps (L6A) derived from exterior, chalk lumps denser towards centre (L6B).

Animal bone and/or antler
L5: *pig* humerus
L6B: *pig* humerus; *cattle* scapula, teeth

Pottery
L5: 1 sherd/6 g Neolithic Bowl pottery
L6B: 2 sherds/11 g Neolithic Bowl pottery

Lithics
L5: 5 flakes, scraper
L6B: 4 flakes, serrated flake

Phase VI. VI/a: slot up to 0.50 m wide and 0.30 m deep cut near outer edge of shallow N sub-segment, stopping *c* 1 m short of N butt, perhaps originally extending along whole segment. Filled with soft light brown loam with chalk lumps and flint nodules (L4).

Human remains
L4: Adult ?foot phalanx (HH75 1949)

Animal bone and/or antler
L4: *pig* acetabulum, femur, mandible, vertebra; *cattle* joining acetabulum ilium and pubis found together (HH75 2088), humerus, 2 radii, ulna, metatarsal; *caprine* articulating metacarpal and 3 phalanges (found together, HH75 1949), humerus, metatarsal, astragalus, 2 phalanges, 4 vertebrae (found together, HH75 2092), scapula, mandible, tooth, rib

Pottery
L4: 6 sherds/21 g Neolithic Bowl pottery, from a single vessel, found together

Lithics
L4: 6 flakes, 2 edge-trimmed flakes, 1 misc retouched

VI/b: slot up to 0.60 m wide and 0.40 m deep cut close to outer edge of deeper S sub-segment for length of 2.20 m, stopping *c* 0.60 m short of S butt, probably removing earlier slot. Filled with orange-brown clayey material with chalk lumps and some flint nodules becoming denser with depth (L4A), grading upwards into L3 (phase VIII/a).

Animal bone and/or antler
L4A: *pig* humerus, 2 tibiae, mandible (both sides found together); *cattle* 2 humeri, radius, 2 ulnae, 2 acetabula, metacarpal, tooth, mandible, vertebra; *caprine* articulating tibia, astragalus and calcaneum, found together (HH75 2069), humerus, radius-ulna, ulna, 3 femora, 3 phalanges, 3 vertebrae

Pottery
L4A: 1 sherd/52 g Neolithic Bowl pottery

Phase VI find not attributable to segment 4 or 5:

Lithics
L4: sarsen quern or rubber fragment, slightly burnt

Phase VIII/a. Dark brown-black loam with chalk lumps and peagrit (L3).

Animal bone and/or antler
L3: *cattle* tibia, tarsal

Pottery
L3: 8 sherds/48 g Neolithic Bowl pottery, from a single vessel, found together

Lithics
L3: 6 flakes (1 of chert), serrated flake, scraper

Phase VIII/a finds in segment 4 or 5:

Human remains
L3: adult premolar (HH75 1775)

Lithics
L3: flake, edge-trimmed flake

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1).

Superficial and unstratified finds not attributable to segment 4 or 5:

Lithics
L2: 11 flakes, 1 misc retouched

Outer east cross-dyke segment 5 (Fig 3.41)

Original notation. HH75 site E2 Cross Ditch II or XDII, cutting 1 (later segment 1).

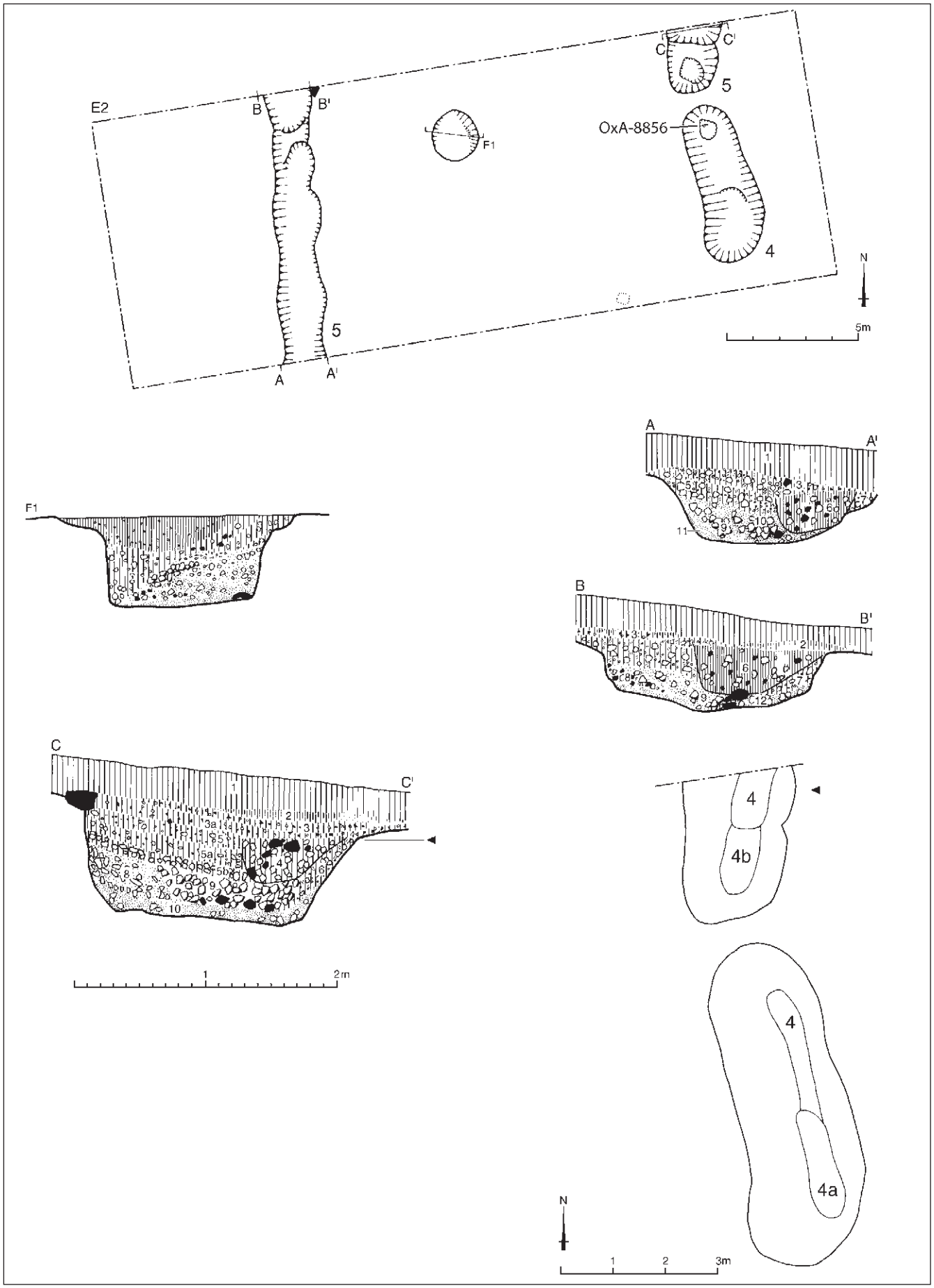

Fig 3.41 East cross-dykes, site E2.

Form. Only S butt within excavated area. At least 2 sub-segments, deep to N, very shallow in S, with steep-sided pit-like hollow *c* 1.00 m in diameter cut in S butt. Flat base and steep sides in N.
Length >2.7 m, *width* 2 m, *depth* 1 m.
Excavation. Hand-stripped then excavated as part of cutting 1, a transverse section *c* 2.5 m wide against N side of excavated area.

Phase I. Grey-green chalky silt with chalk lumps (L10).

Phase III. Vacuous chalk and flint rubble (L9) interleaved with grey chalky silts with varying admixtures of chalk lumps (L8, L7).

Animal bone and/or antler
L7: *cattle* radius, ulna, rib

Pottery
L7: 2 sherds/10g Neolithic Bowl pottery

Lithics
L7: 3 flakes

Phase V. Orange-brown soil with varying admixtures of chalk lumps and peagrit (L5B, L5A, L5 from interior, L6 from exterior).

Animal bone and/or antler
L5: *cattle* femur

Pottery
L5: 1 sherd/20 g Neolithic Bowl pottery. L6: 7 sherds/14 g Neolithic Bowl pottery

Lithics
L5: 2 flakes, 1 edge-trimmed flake

Phase VI. VI/a: slot *c* 0.60 m wide cut close to outer edge of ditch, stopping *c* 0.50 m short of S butt, filled with 'sticky' brown material with dense chalk lumps, some large, and a few large flint nodules (L4B), surviving only in S sub-segment.

Animal bone and/or antler
L4B: *pig* femur; *cattle* scapula, metatarsal, astragalus, horncore

Pottery
L4B: 32 joining body sherds/179 g from a single bowl, in a Jurassic fabric, from 2 findspots *c* 0.20 m apart in S butt (HH75 1378, 1549). Further 1 sherd/10 g Neolithic Bowl pottery

Lithics
L4B: 8 flakes, 1 misc retouched, Greensand quern fragment, unworked spherical Greensand chert pebble

VI/b: slot up to 0.70 m wide and 0.30 m deep cut close to outer edge of ditch in N sub-segment, truncating first slot, filled with 'sticky', fairly loose brown soil with chalk lumps concentrated towards the base and sparser than in L4B and large flint blocks, especially towards the top (L4).

Animal bone and/or antler
L4: *pig* scapula, teeth; *cattle* vertebra, tooth; *caprine* radius

Pottery
L4: 58 sherds/278 g Neolithic Bowl pottery, largely made up of 4 groups of body sherds each from a single findspot and a single vessel, and all in Jurassic fabrics (HH75 1534, 1706, 1722, 2000). One group (HH75 2000) found with flake from group VIII stone axehead (S13)

Lithics
L4: 118 flakes (1 chert, 1 burnt, 1 utilised), 3 cores, 2 serrated flakes, 9 edge-trimmed flakes, 3 scrapers, piercer, unclassified biface, pick, rod, leaf arrowhead, 4 misc retouched, flake from group VIII axehead (S13)

Unclassified burnt flint
L4: 21 g

Charcoal
L4: *

Phase VII. Nodule concentration in top of L4.

Phase VIII/a. Dark brown soil with chalk and flint lumps and peagrit (L3).

Animal bone and/or antler
L3: *cattle* 2 vertebrae, horncore

Pottery
L4B/3: 9 sherds/20 g Neolithic Bowl pottery

Lithics
L3: 18 flakes (1 burnt), serrated flake

Upper levels and unstratified. Recent turfline represented by band of dark brown to black stone-free soil (L2), under recent ploughsoil (L1).

Animal bone and/or antler
L2: *pig* humerus, tooth

Pottery
L2: 5 joining body sherds/40 g Neolithic Bowl pottery

Lithics
L2: 27 flakes (1 burnt), 3 scrapers, piercer, 1 misc retouched

Unclassified burnt flint
L2: 1 g

Other artefacts
L2: recent 'decorated bronze buckle', 'cartwheel' penny of George III

3.3.4 The south cross-dykes

These earthworks and their relation to the western outwork are described and discussed in Chapter 2. The salient points that emerge from the earthwork survey and air photographic evidence are that the western outwork bank seems to have truncated the cross-dyke banks, and that a recut westward extension of the outer cross-dyke, associated with a slight counterscarp bank and probably made at a much later date, cut through the western outwork (Figs 2.3, 2.9, 2.11). The south cross-dykes both run for 170 m across the southern spur of the hill. Unlike the east cross-dykes, they are not concentric with the main enclosure, lying between 10 m and 35 m away from it, built more-or-less straight across the spur as if location on the narrowest neck of land was a primary consideration and proximity to the main enclosure a secondary one. An outward bow around the south end of the long barrow suggests that the barrow may already have been in place when they were built. The two ditches are *c* 8 m apart. As with the east cross-dykes, both terminals lie below the breaks of slope at the sides of the spur. The earthworks remain visible, and form the boundary between Hanford and Child Okeford parishes. They are, however, much reduced, their line broken by quarries and tracks.

Both banks and ditches were sectioned in Bonney's trench A in 1958 and excavated on site P2, less than 10 m to the east, in 1977. The inner ditch was sectioned in Bonney's trenches C and E in 1959 and in WOWK

area 4 (incorporating trench E) in 1982, when part of the bank area was exposed in WOWK area 3. The outer ditch was sectioned in Bonney's trenches D and F in 1959; his trench B was located to section its westward extension. Leaving this last trench aside, 15 m of the inner cross-dyke and 14 m of the outer have been excavated, respectively *c* 9% and 8% of the totals.

The banks

Earthwork and air photographic evidence suggests that the banks were broken by causeways at less frequent intervals than the ditches. Even where they appear best preserved, the banks have, on excavation, proved to owe much of their apparent height to the slope of the hill and to consist of a combination of old ploughsoils and truncated pre-bank soils over slightly elevated areas of protected natural deposits.

Bonney's trench A

Both cross-dyke banks were represented by bands of protected chalk rising to as much as 0.40 m, 9.00 m wide beneath the inner bank and 7.00 m wide beneath the outer. The protected chalk of the counterscarp bank was almost imperceptible (RCHME 1996, 11). The weathered, fissured chalk surface had light brown clayey soil in the interstices of the chalk blocks and graded upwards into a light brown clayey deposit up to 0.15 m thick, with weathered chalk fragments and some flint and with large flint nodules at its base. This was at least 8.50 m wide in the inner bank area, 6.50 m wide between the two ditches and 3.00 m wide in the area of the counterscarp bank. Above this in all three banks were up to 0.25 m of soil with weathered chalk fragments and small flint fragments, continuous with the phase VIII/a fills of the ditch tops and overlain by *c* 0.10 m of current topsoil and turf.

Site P2

The protected chalk of the inner bank extended from the ditch lip for *c* 6 m to the edge of the south long barrow ditch, as did the apparent rise of the bank; that of the outer ditch was up to 6.80 m wide; and there was none beneath the counterscarp bank. The weathered, broken, discoloured surface of the chalk was full of irregular, natural hollows, some filled with Clay-with-Flints. The depth of deposits above it was consequently uneven. Under the higher parts of the banks, the surface of the chalk was covered by up to 0.18 m of pale brown silty material with chalk lumps (eg Fig 3.42, section A–A': L2B; section B–B': L7). This was generally sterile, with the characteristics of a natural, Coombe Rock-like, deposit. In the inner bank area, however, the distal ends of a cattle tibia and fibula were found in articulation with four tarsals in L2B, where there were also a fragmentary cattle scapula and charcoal. The articulated lower limb (HH77 2123) is dated to *3640–3550 cal BC (53%) or 3540–3490 cal BC (33%) or 3470–3410 cal BC (9%)*; 4708±26 BP; UB-4268). The two bone finds lay within 1.50 m of each other and of a pit (P2 F14) rich in artefacts and animal bone cut into L2B near the highest part of the bank (Fig 3.42). Here L2B directly underlay the phase VIII/a ploughsoils. The bone finds must have lain near the base of the pre-bank soil or in the base of an unrecognised feature. In the lower part of the inner bank area, L2B and related deposits were succeeded by dark brown clay with chalk lumps (Fig 3.42, section A–A': L2; section B–B': L6), resembling Clay-with-Flints but containing four flint flakes, all found near the ditch edge. A similarly constituted layer in the outer bank area (L8) was up to 0.20 m of yellow-brown clay with flint nodules up to 70 mm long, smaller chalk lumps and finely comminuted chalk. This was an unambiguously natural deposit, completely sterile and cut by the inner edge of the outer ditch.

In the inner bank area the clay layer was overlain by a dark earthy layer up to 0.14 m thick with peagrit and small flint and chalk lumps (Fig 3.42, section B–B': L5), containing 7 sherds/116 g of Neolithic Bowl pottery, 46 flint flakes, a scraper, a little burnt flint and a few animal bone fragments. Features were visible in its surface. F9, F12, and F15 contained a small amount of Neolithic Bowl pottery and struck flint and may have been intercutting pits, distinguished with difficulty in the patch of Clay-with-Flints in which they lay. F14, on the other hand, had an almost black humic fill with a rich assemblage of animal bone and artefacts, including three fragmentary leaf arrowheads, all of chert. It was cut almost entirely in the superficial deposits, only just reaching into the top of the chalk. The only features cut to any depth in the chalk were postholes F16 and F17, both with charcoal-flecked fills. Flint nodules at the west edge of F17 on the surface of the chalk may have been packing.

All three bank areas were covered by dark soil with comminuted chalk and flint which was continuous with the phase VIII/a fills of the ditches and was up to 0.10 m thick (Fig 3.42, section B–B': L4). Finds were densest in the inner bank area, including 61 pieces of struck flint, among them a further leaf arrowhead, and over 50 sherds of Neolithic Bowl pottery. In the outer bank area there were only 12 flakes and one sherd. In the counterscarp bank, where L4 directly overlay the chalk, there were 6 sherds and 25 flakes, all from a single, slightly deeper, hollow. A recent trackway and related features cut the surface of L4, immediately under the topsoil (Fig 3.42).

At the inner edge of the bank area on site PLB, there was only a single dark humic layer with fragmented chalk and flint (LB3 L3/12), cut by the barrow ditch and sometimes overlying a skin of Clay-with-Flints rather than the top of the chalk. LB3 L3/12 contained artefacts and animal bone, with one Roman sherd and a few in Beaker or early Bronze Age fabrics alongside the more abundant Neolithic Bowl pottery. It seems likely that, while two successive layers survived downslope on site P2, here, closer to the surface,

they had been amalgamated by the ploughing which generated L4 and by natural processes, the surface of the chalk through which the barrow ditch was cut becoming broken down in the process. Rootlets were growing in L3/12 at the time of excavation.

WOWK area 3

Under the west butt of the inner south cross-dyke bank, which was still visible as a reduced earthwork at the time of excavation, was the base of a possible post-hole with two successive sockets (Fig 3.44: WOWK3 F4). The Boreal charcoal in the earlier socket is discussed in Ch 3.2. The second, deeper socket, which seemed to truncate the first, contained what may have been flint and chalk packing, a fragment of burnt flint, and *Fraxinus excelsior* charcoal, two fragments of which were dated to *3650–3510 cal BC* (4780±45 BP; OxA-8861) and *3640–3550 cal BC (47%) or 3540–3420 cal BC (48%)* (4690±45 BP; OxA-8862). Whether or not the second socket formed part of the structure of the cross-dyke bank, the charcoal almost certainly predates its construction.

The butt of the cross-dyke bank and the bank of the western outwork were so close that the protected chalk of both merged (Fig 3.44). Just beyond the surviving inner edge of the protected chalk was a pit base (WOWK3 F5) containing small quantities of Neolithic Bowl pottery, struck flint, a heathstone chip, a quartzite pebble, charred hazelnut shells and charcoal. The visible bank consisted of a greater thickness of topsoil, underlain in the east part of the cutting by up to 0.05 m of dark orange-brown more clayey silt with abundant small chalk fragments (L3), which contained a single Neolithic Bowl body sherd. The turf and topsoil of the cutting as a whole contained 3 sherds/4 g of Neolithic Bowl pottery, 9 flakes, an edge-trimmed flake, a scraper, heathstone fragments, quartzite and other pebbles, and charred hazelnut shell.

The ditches

The wide, flat-bottomed profile of the inner ditch on site P2 (Fig 3.43) was matched in Bonney's trenches A and C. The butt of the segment excavated on site P2 was particularly wide and deep, its outer edge shallowing towards the section. It formed one side of a causeway as much as 10 m wide, on the evidence of the earthwork evidence and of differential vegetation growth observed at the time of excavation.

The outer ditch on site P2 was originally divided by a 'step' near the east side of the excavation. Near the west side of the excavation there was a constriction in plan, corresponding to a narrow causeway, or at least to a change of width and depth at the junction of two sub-segments. These features, and the original fills, were cut through by a V-profiled ditch (Fig 3.43), also recorded in Bonney's trenches A, D and F (RCHME 1996, 11), over a length of at least 55 m. It almost certainly runs the entire length of the outer ditch, as well as extending beyond it across the western outwork, corresponding to the recut identified from the earthwork and air photographic evidence described above. The east section shows the recut truncating the original ditch fills (Fig 3.43: section E–E'). In the west section, just beyond the former causeway, the profile strongly suggests that some of the original ditch survived at the inner edge, but there is no differentiation in the fills (Fig 3.43: section D–D'). The original fills may have been cleaned out at the time of the recut.

Entrance?

The wide causeway in the inner cross-dyke immediately west of the south long barrow coincided with a break in the protected chalk of the inner bank, not all of it readily attributable to a recent track (Figs 3.5, 3.42), and its west part could have overlapped with the original narrow causeway in the outer cross-dyke. Alternatively the corresponding causeway in the outer ditch could have been offset to the west. Entrance by this means would have entailed skirting the butt of the outer cross-dyke bank, which still stood as a slight visible earthwork in 1977, unless this bank was extended only when the V-profiled ditch was cut. Such an offset entrance would compare with that suggested for the east cross-dykes on site D2 (Fig 3.37). A continued route along the west side of the long barrow into the main enclosure is impossible to demonstrate because of the extent of quarrying on this part of the main enclosure circuit (Figs 2.3, 3.5; RCHME 1970, 130).

Of the remaining gaps in the cross-dykes, that followed by a former track to the east of the long barrow corresponds to a quarried area, while the two outermost tracks on the spur, both still (1998) in use, clearly post-date the cross-dykes, cutting through their banks and, in one case, the main enclosure bank as well (Fig 2.9).

Fills

Fills in the west butt generally contained more chalk than on site P2 in the centre of the spur, a reflection of the presence of Clay-with-Flints on the latter. It is difficult to tell how far some of the other differences in silting patterns described here are due to differences in ditch shape and in the slope of the hill, and how far to human intervention.

Phase I

An exceptional deposit on the floor of the west butt of the inner ditch in Bonney's trench E1 is described in his 1959 notebook: '... the filling of the ditch became steadily dirtier ... A sample was taken of this dirty grey occupation soil with its small chalky "peas" nut shells etc. In it were found 3 chipped & polished flint axes within a few inches of one other ... Associated with them were further sherds of pottery, flint flakes & bones + numerous hazel nut shells.' The section drawing shows this deposit lying directly on the ditch bottom, butting against chalky primary silt. It was

confined to trench E1. The axeheads are missing, having last been seen in Rougmont House, Salisbury, shortly before it was vacated by RCHME in the mid-1990s. The longitudinal section cut in the same butt in 1982 shows an almost vertical band of fine silt against the terminal (Fig 3.44, section B–B': L19), suggesting that the earliest silts may have been cleaned out here.

A single concentration of oak, hazel and possibly birch charcoal was found in a fine grey powdery silt filling the angle of ditch bottom and inner wall in Bonney's trench A and was dated to *3670–3400 cal BC* (4740±90 BP; NPL-76; Callow *et al* 1965, 158).

In the primary silts of the inner ditch butt on site P2 155 sherds/302 g from a single bowl were found at two separate points. Most of the other finds were cattle bone, including two right scapula fragments, found together, and right and left radius fragments, also found together. There were also further scattered sherds and small quantities of struck flint and charcoal. The surviving primary silts of the outer cross-dyke were almost sterile, the most notable find being fragments of a goat skull.

Phase III

At the west end of the inner cross-dyke, in WOWK area 4, and in Bonney's trench C, the main ditch fills were of chalk and flint rubble with runs of silt, as elsewhere in the central area. On site P2, the earthy matrix and low chalk and flint content of the phase III fills in both ditches were exceptional (Fig 3.43). An adult human tibia fragment may have come from L10 in the inner ditch, although there is some doubt as to its provenance.

Phase V

In the extreme west butt of the inner ditch there was a cream-coloured chalky silt (Fig 3.44, section B–B': L20), exceptional at this level. This may have been run-off from the then newly constructed western outwork bank, which would have stood next to the cross-dyke butt. Within less than 1 m of the butt this gave way to light brown earthy, clayey silts like those of the rest of the central area (Fig 3.44: L23). A bone artefact (1959 sf 3) came from a similar deposit in Bonney's trench C. These silts had no counterpart on site P2. It may be that the single slot-like feature here, which was cut from the surface of the phase III fills (Fig 3.43, section C–C': L9) was earlier than the successive recuts in the west butt, which were cut into the phase V fills (Fig 3.44: sections A–A', B–B'. In this case L7 and L8 on site P2 would correspond to L20 and L23 to the west.

Phase VI

There were three successive slots in the west butt of the inner cross-dyke (Fig 3.44, sections A–A', B–B': L21, L7, L3). The last of them, L3, was marked by a concentration of large flints and chalk lumps similar to those of slots elsewhere in the central area. All were rich in artefacts and food remains, finds from L7 including 21 sherds/689 g, most of them large and well preserved, from a single bowl (P46), found at seven points within 1 m of each other near the butt. A late Bronze Age rim sherd from 1 ft to 1 ft 10 in. (0.30 m to 0.55 m) deep in Bonney's trench E1 may have been intrusive in one of these recuts, but the depth makes it difficult to attribute it to a particular layer. These slots were characterised by frequent charred hazelnut shells, unaccompanied by charcoal. These seem to have been found at every level in Bonney's trench E1, and the combined hazelnut shell finds from the butt make up one of the largest concentrations from the site, in contrast to none at all from the same ditch on site P2 (Fig 3.71).

Slot-cutting and -filling in the inner cross-dyke seem to have been discontinuous from segment to segment. No slot was recorded in Bonney's trench C. Like L3 in the west butt, the single slot on site P2 contained large flint nodules and some chalk lumps. A cluster of bone at one side included two groups of articulating cattle vertebrae (HH77 1198 and 1291). The silt layers overlying the slot on Site P2 were very different from each other. L8, confined to the butt, was relatively rich in cultural material which seems to have derived from the causeway. L7, more extensive, earthier and poorer in cultural material, seems to represent natural silting from the ditch sides and banks.

Phase VII/a

A steep-sided trough, with a loamy fill (L6) cut into the butt of the inner ditch on site P2 (Fig 3.43) was virtually devoid of finds but contained abundant flint nodules.

The weathered chalk and dense fractured flint of L5, which sealed it, suggest that it was the base of a ploughsoil. Two now (1998) missing sherds from L5 were respectively recorded as 'Iron age?' and 'pot base (flat) frag'.

V-profiled recut

The recut in the outer cross-dyke truncated the phase III fills and could have removed subsequent deposits. Above a thin skin of primary silt it was filled with clean, often vacuous, chalk and flint rubble, fresher, larger, more angular and less earthy than any of the surviving phase III fills. A substantial part of this must have consisted of chalk freshly excavated from the ditch bottom and inner edge when the recut was made. At least at the east end of site P2 the chalk rubble was derived largely from the exterior (Fig 3.43: section E–E'), indicating that most of the upcast from that operation went to form the counterscarp bank, which would accord with the earthwork evidence.

In 1959 Bonney sectioned the recut where it seems to extend beyond the original outer cross-dyke and to be visible as an earthwork, 'Trench B ... cut N–S across outer ditch of southern dyke at its western end on the shoulder of the slope at a point beyond the termination of the inner ditch ... No ditch – only a slight hollow – prob. result of rain scour'. The section (RCHME 1996, 11, bottom right) shows two slight humps of protected

Table 3.3 Inner south cross-dyke and western outwork: incidence of Neolithic Bowl pottery by cutting

Ditch	*Inner S cross-dyke*				*W outwork*	
Cutting	*Bonney's trenches E and E1 + WOWK82 area 4*	*Bonney's trench C*	*Bonney's trench A*	*Site P2*	*WOWK82 area 4*	*WOWK82 area 1*
Length of ditch excavated	3.00 m	0.90 m	1.20 m	4.50 excluding causeway	2.00 m	3.00 m
Total Neolithic Bowl pottery from all contexts	227 sherds/2380 g	–	18 sherds/74 g	345 sherds/1022 g	1/18 g	48 sherds/284 g
Weight of pottery per metre of ditch	793 g	–	62 g	227 g	9 g	94 g

chalk flanking a flat-based hollow *c* 1.50 m wide and 0.07 m deep. The recut may be discontinuous: Bonney's trench B seems to coincide with a break in the earthwork in the most recent survey (Fig 2.9). Alternatively, clean chalk rubble filling like that of the recut further to the east may, in a cutting less than 1 m wide, have appeared to be the weathered top of the natural chalk.

The date of the recut remains unclear. The small quantity of animal bone and earlier Neolithic artefacts present may have derived from the original ditch fills. The development of the overlying phase VIII/a ploughsoils, continuous over both ditches and all bank areas on site P2, and the truncation of upper ditch fills which that entailed, are likely to have been progressive. The deposits immediately underlying them may be of differing ages. The form of the recut is unmatched among the Neolithic earthworks on the hill, and is most readily paralleled among Iron Age ditches. The contrast between the profiles of the causewayed enclosure and hillfort ditches at Maiden Castle is relevant here (Sharples 1991, fig 50).

Phase VIII/a

Ploughsoils were absent from the steep slope of the west butt. More-or-less homogeneous ploughsoils, containing Neolithic and later material, were continuous across site P2. In the outer ditch top at the east side of site P2 accumulation of ploughsoils was punctuated by a deposit of light brown loam with few inclusions (Fig 3.43, section E–E': L5).

Superficial deposits

In the inner cross-dyke in Bonney's trench A, immediately under the turf, was a feature cutting through the phase VIII/a ploughsoils and extending to the bottom of the ditch, removing a substantial amount of the fills. It had an apparently homogeneous soil fill with very small weathered chalk fragments which contained animal bone, struck flint, 22 sherds/77 g of Neolithic Bowl pottery, 3 plain body sherds/19 g in Beaker or early Bronze Age fabrics and 1 sherd/2 g in a Roman fabric. Its stratigraphic position, the same as that of the recent wheelruts and related features on site P2 and unlike Bonney's Beaker 'hearth' on site D2, which was sealed by the phase VIII/a ploughsoils, indicates a recent date.

Distribution of Neolithic material

In the inner ditch cultural material seems to have been deposited preferentially and purposefully in the extreme west butt and the butt beside the wide causeway on site P2, a process seen most clearly in the group of three flint axeheads at the base of the former. Pottery serves as an index of this (Table 3.3), summed for each cutting because some finds from the 1958–9 excavations have lost their precise provenances. The presence of substantial parts of single vessels in the primary silts on site P2 and in the slot in the west butt enhances this impression.

Inner and outer south cross-dyke segment catalogue

Inner cross-dyke site P2 (segment 1) (Figs 3.42–3.43)

Original notation. HH77 site P2 XDI.
Form. Widest and deepest in butt, with flat base and symmetrically sloping sides, steep in their lower part. Narrower and shallower towards E section , with shallow shelf at outer edge merging into slope of hill.
Length >4.5 m, *width* 4.2 m, *depth* 1.2 m.
Excavation. Turf and topsoil stripped by hand. Ditch excavated mainly in plan. Transverse section cut *c* 2 m from butt after excavation of L6. Slot (L9) longitudinally sectioned E of transverse section. 1.90 m wide box section cut through bank area, divided into 1 m strips, numbered from S1 at N end to S5 at S end.

Phase I. Grey chalky silt covering base and angles of ditch in butt (L12), grading upwards into yellower clayey silt with chalk lumps (L11) which sometimes lay directly on ditch bottom in E.

Animal bone and/or antler

L12: *pig* humerus, tibia; *cattle* 2 R scapulae found together in butt (HH77 845), R and L radii found together in butt 0.70 m from scapulae (HH77 846), phalanx. L11: *pig* acetabulum; *cattle* rib

Pottery

L12: 136 sherds/271 g from neutral-profiled bowl with solid oval lugs and simple rounded rim 220 mm in diameter, in flint-tempered fabric (HH77 737), found together in north-west corner of butt; further 19 sherds/31 g Neolithic Bowl pottery from other findspots.
L11: 15 sherds/92 g from same vessel as HH77 737, found together *c* 1.30 m away, near centre of butt (HH77 738); further 15 sherds/37 g Neolithic Bowl pottery from other find-spots

Lithics

L12: 7 flakes.

L11: 6 flakes, core

Charcoal

L12: *Fraxinus excelsior*, *Corylus avellana*, Maloideae, from single find in butt.

L11: *Carpinus betulus*, *Fraxinus excelsior*, *Ulmus* sp, Maloideae, Salicaceae

Phase III. Grey/brown soil with small chalk lumps and a few flint fragments, vacuous (L10), derived entirely from inner edge.

Human remains

L10: Adult tibia shaft fragment (HH77 634) recorded in original human bone catalogue. Missing 1998. Context problematic. May have come from here

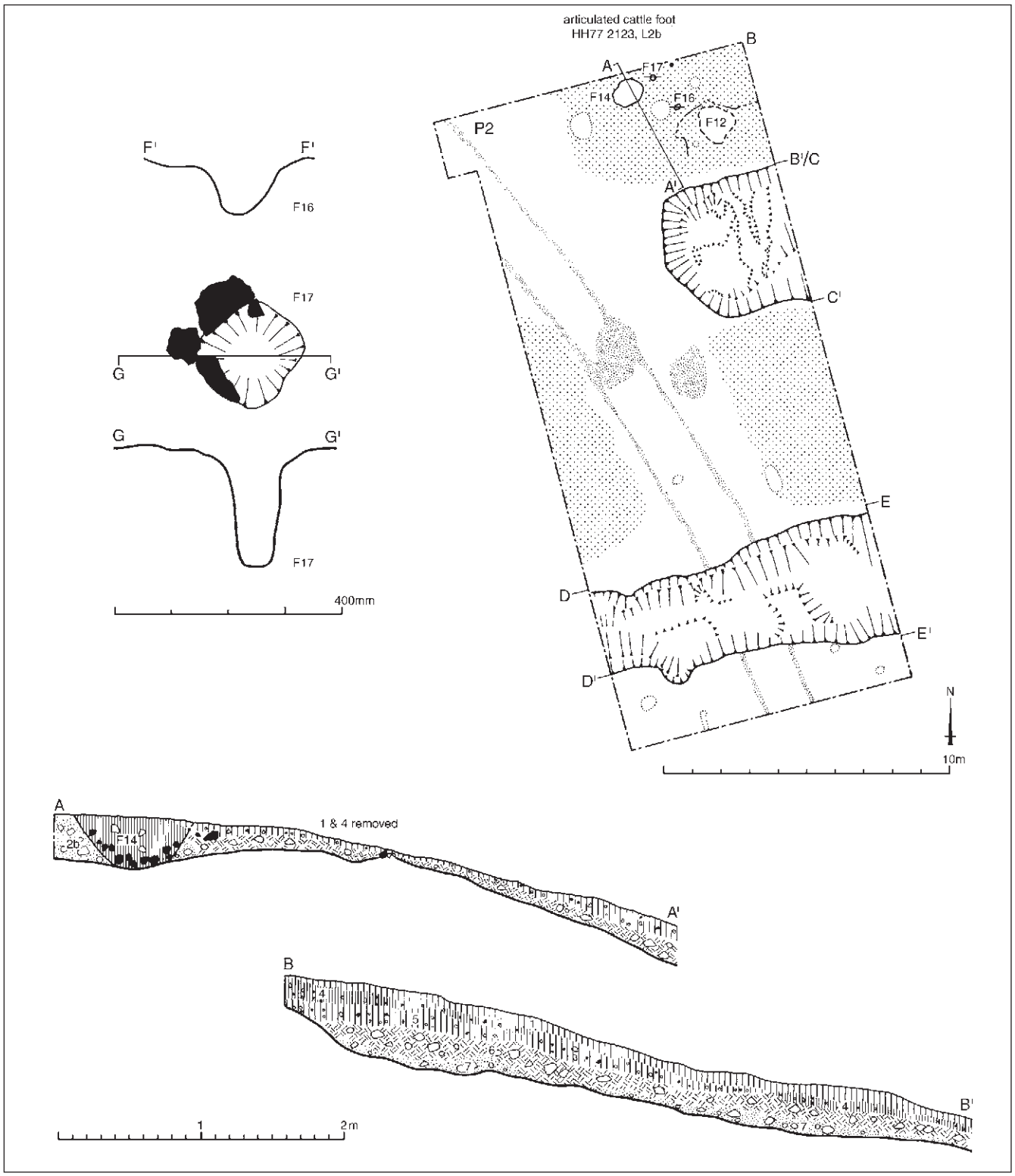

Fig 3.42 South cross-dykes, site P2. Plan, with sections of inner cross-dyke bank area and features.

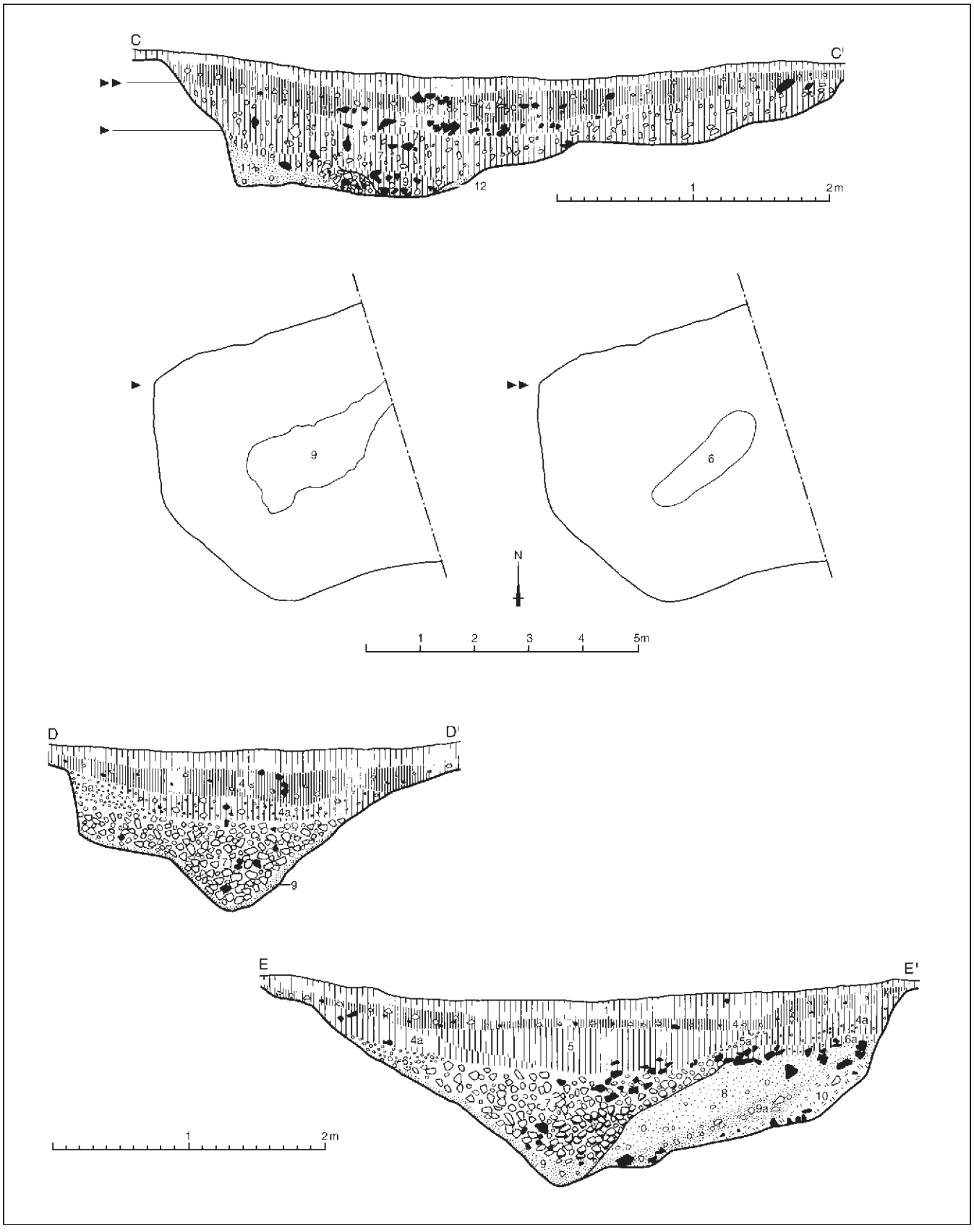

Fig 3.43 South cross-dykes, site P2. Sections.

Animal bone and/or antler
L10: *cattle* R scapula, humerus, acetabulum, tibia, mandible, carpal, rib; *caprine* scapula, 2 tibiae, rib

Pottery
L10: 12 plain body sherds/58 g from single Neolithic Bowl pottery in flint-tempered fabric, found within 0.40 m of each other; further 13 sherds/64 g Neolithic Bowl pottery

Lithics
L10: 18 flakes, 2 scrapers, rod/scraper

Charcoal
L10: *

Phase VI. Single slot (L9) exceptional in having been cut when little or no slower silts (phase V elsewhere) had accumulated. L8, most of which overlay L9, described in site notebook as possibly interleaving with it, although this is not recorded in either section. L8 and L7 are here described as phase VI/1 and VI/2.

VI/a: slot cut through phase III and phase I deposits to ditch bottom, stopping *c* 1 m short of butt. 1.50 m wide and centrally located at butt end, 0.70 m wide and close to outer edge of ditch in E section. Filled with coarse red/brown soil with large flint nodules and occasional chalk lumps (L9).

Animal bone and/or antler
L9: Cluster of bone at N edge of slot, *c* 2.80 m from butt, including *cattle* articulating cervical and thoracic vertebrae (HH77 1198), articulating lumbar vertebrae (HH77 1291), rib; *caprine* vertebra. In rest of layer: *pig* tibia, calcaneum, tooth; *red deer* scapula; *cattle* scapula, 2 humeri, tibia, metacarpal, metatarsal, teeth, 4 vertebrae; *caprine* tooth, vertebra

Pottery
L9: 41 sherds/158 g Neolithic Bowl pottery.

Lithics
L9: 42 flakes, edge-trimmed flake, 5 scrapers, 2 misc retouched, hammerstone

Unclassified burnt flint
L9: 44 g

Charcoal
L9: *

^{14}C
L9: *3530–3500 cal BC (3%) or 3460–3370 cal BC (92%)* (4730±30 BP; OxA-7825) on HH77 1198, *3380–3320 cal BC* (4560±30 BP; OxA-7826) on HH77 1291

VI/1: grey, charcoal-stained silt with chalk and flint lumps (L8), occurring in butt and at outer edge, described as sometimes interleaved with slot, although this is not recorded in either section

Animal bone and/or antler
L8: *cattle* metacarpal, metatarsal, tooth, phalanx

Pottery
L8: 76 sherds/221 g Neolithic Bowl pottery

Lithics
L8: 10 flakes, edge-trimmed flake

Charcoal
L8: *Ulmus* sp, *Corylus avellana*, *Taxus baccata*

Charred seeds and/or nutshell
L8: <10 g hazelnut shell

VI/2. Brown matrix with chalk and flint lumps, sometimes surrounded by hard concretions, derived from both sides of ditch and occurring throughout excavated area (L7).

Animal bone and/or antler
L7: *cattle* 2 femurs, 2 metatarsals

Pottery
L7: 11 sherds/43 g Neolithic Bowl pottery

Lithics
L7: 8 flakes

Phase VII/a. Steep-sided trough *c* 2.30 m × 1.70 m and 0.40 m deep cut into butt end, filled with soft brown loam with dense flint nodules (L6). Overlain by dark brown soil with thinly scattered water-worn chalk lumps and dense shattered flint nodules and some water-worn chalk lumps (L5), most extensive at E section, tapering to narrow strip in SW angle of butt. L5 overlain in butt by soft brown loam with a little chalk (L4A).

Animal bone and/or antler
L6: *. L5: *caprine* radius

Pottery
L6: 1 sherd/2 g Neolithic Bowl pottery (Jurassic fabric). L5: 4 sherds/32 g Neolithic Bowl pottery, also 14 missing pottery finds, totalling at least 36 sherds and including a flat base fragment and a sherd described as 'Iron age?'. L4A: 1 sherd (missing)

Lithics
L5: 19 flakes, core fragment, scraper, Old Red Sandstone quern or rubber fragment. L4A: 2 flakes.

Charcoal
L6: *

Phase VIII/a. All overlain by dark soil with comminuted chalk and flint (L4), continuous across both ditches and bank areas, immediately under current turf and topsoil

Animal bone and/or antler
L4: *

Pottery
L4: 6 sherds/13 g Neolithic Bowl pottery, also 1 missing pottery find

Lithics
L4: 6 flakes

Other artefacts
L4: Fe nail

Upper levels and unstratified. Some pre-1960s turfline in butt, overlain by current turf and topsoil (L1)

Animal bone and/or antler
L1: *cattle* teeth

Inner cross-dyke WOWK area 4 (segment 2) (Fig 3.44)

Original notation. Bonney's trench E, with extension E1, 1959. WOWK82 area 4, F17, L1–L7, L18–L27
Form. Rounded butt, curving slightly outwards. Irregular inner edge. Outer edge a shallow step in slope, with upper fills extending downslope beyond it. Steep-sided and shallow (*c* 0.60 m) in butt, gently shelving and deeper to E
Length >4.6 m, *width* 2.60 m, *depth* 1 m
Excavation. 1959: sectioned in N–S trench 0.90 m wide and 4.88 m long, with 1.22 m square extension (Tr E1, 1.75 m long on re-excavation) into S side of butt. 1982: turf and topsoil stripped by hand, site excavated in plan until 1959 trench defined, then old trench emptied and remainder of fill of butt removed. Ditch exposed E of 1959 trench left unexcavated.

Phase I. Chalky silt, generally white to cream-coloured, with varying densities of chalk lumps (WOWK4 L19, L22, L26, L27). Near-vertical edge in butt may suggest cleaning-out.

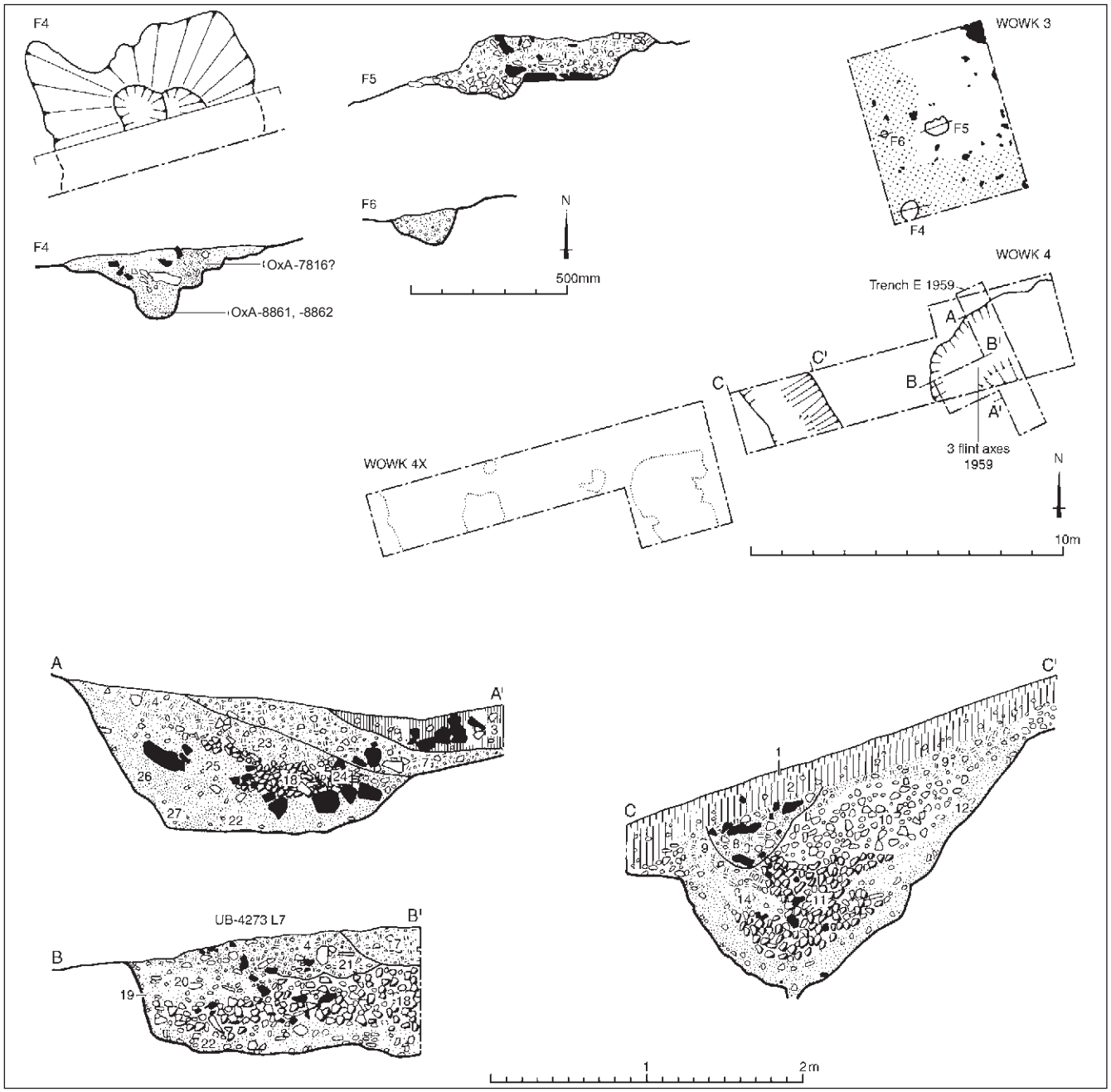

Fig 3.44 Inner south cross-dyke and western outwork, WOWK82 areas 3 and 4.

L22 (on base) seemed to overly L19 (against side). Localised deposit in Tr E1: patch of 'dirty grey occupation soil' on ditch bottom, *c* 0.20 m deep, its E edge abutting clean, chalky primary silt of rest of butt.

Animal bone and/or antler

Tr E: 'Bone fragment'
Tr E1: 'Bones'

Pottery

Tr E1: 'dirty grey occupation soil': rim fragment from flint-tempered Neolithic Bowl, internally bevelled, with perforations made below before firing, 'further sherds of pottery'

Lithics

Tr E1: 'dirty grey occupation soil': '3 chipped & polished flint axes within a few inches of one another', 'flint flakes'

Unclassified burnt flint

Tr E1: 'A few fragments of fire-cracked flint'

Charcoal

Tr E1: 'Practically no charcoal'
WOWK L19: *

Charred seeds and/or nutshell

Tr E1: 'Numerous hazel nut shells'

Phase III. Vacuous chalk and flint rubble, some very large flint slabs (WOWK4 L18), smaller and cemented towards top (WOWK4 L24), interleaved with runs of silt (WOWK84 L25).

Animal bone and/or antler

Tr E: 'Bone fragments'
Tr E1 2ft–2ft 9in: 'Bones'. WOWK4 L18: *pig* metatarsal

Pottery

Tr E1 2 ft–2 ft 9 in: 31 sherds/458 g Neolithic Bowl pottery

Lithics

Tr E1 2 ft–2 ft 9 in: 'flint flakes including some artefacts'

Charred seeds and/or nutshell
Tr E1 2 ft–2ft 9 in: 'carbonised hazel nut shells'

Phase V. Light brown clay silt with 80% small chalk fragments (WOWK4 L23), cream silt with 60% chalk fragments (WOWK4 L20).

Phase VI. VI/a: recut stopping *c* 1 m short of butt, surviving to *c* 0.50 m long, 0.60 m wide and 0.15 m deep, truncated by 1959 trench, cut by phase VI/b slot. Filled with friable grey-brown clayey silt with 70% small chalk fragments and calcareous deposit (WOWK4 L21).

Charcoal
L21: *

Charred seeds and/or nutshell
L21: hazelnut shell recorded, not kept

VI/1: friable dark orange-brown clay silt with 75% peagrit and chalk (WOWK4 L4), at least partly silted from butt end.

Pottery
L4: 8 sherds/12 g Neolithic Bowl pottery

VI/b: slot stopping *c* 1.30 m short of butt, 0.30 m deep and *c* 1 m wide, cut into L4, L21 and underlying deposits. Filled with friable dark orange-brown clay silt with 75% peagrit and small chalk fragments (L7). Almost certainly same as 'layer of dirty material containing squatters' debris' *c* 2 ft 4 in. deep in Tr E.

Animal bone and/or antler
Tr E: 'bones'. L7: *pig* phalanx

Pottery
Tr E: 13 sherds/161 g Neolithic Bowl pottery
L7: 21 sherds/689 g from single flint-tempered Bowl (P46), from 7 findspots within 1 m of each other near butt, most fragments exceptionally large and well-preserved; further 61 sherds/124 g Neolithic Bowl pottery

Lithics
L7: 6 flakes (1 burnt), 2 scrapers

Unclassified burnt flint
Tr E: '1 fire cracked flint'

Charcoal
Tr E: 'no charcoal'. L7:

Charred seeds and/or nutshell
Tr E: 'hazel shells'. L7: 9 separate finds of hazelnut shells, 1 weighing 10 g

^{14}C
L7: *3520–3500 cal BC (2%) or 3470–3370 cal BC (93%)* (4714±33 BP; UB-4273) on hazelnut find WOWK82 C33

VI/c: slot 0.70 m wide and 0.30 m deep cut along outer edge of ditch and into L7, extending into upper fill spread downslope beyond outer ditch lip. Filled with dark brown loam with chalk lumps and large flints (WOWK4 L3). Not excavated in 1982, simply defined in re-exposed E section of 1959 trench and planned on stripped surface E of it. Full width shown in 1959 section, which extended further S. Excavated 1959 in trenches E and E1 as 'layer of chalk fragments and soil mixed together with flint fragments up to 4 in. across', 1 ft–1 ft 10 in. deep in Tr E1.

Animal bone and/or antler
Tr E1: 'bone, teeth'

Pottery
Tr E1: 19 sherds/159 g Neolithic Bowl pottery, 1 sherd/12 g from the rim of a late Bronze Age vessel like P180

Lithics
Tr E1: 'flint flakes – the majority of them waste flakes'

VI?: material from Tr E1 from 1 ft 6 in.–2 ft deep may have come from L7, L3 or the top of the phase III deposits. It consists of:

Animal bone and/or antler
'Bones, teeth'

Pottery
36 sherds/625 g Neolithic Bowl pottery

Lithics
'flints'

Phase VII. Large flint nodules and slabs exposed in surface of L3.

Upper levels and unstratified. Backfill of Tr E (L5) and Tr E1 (L6), overlain by topsoil (L2) and turf (L1).

Animal bone and/or antler
L5: *cattle* mandible
L6: *cattle* mandible
Tr E1 from below turf to 9 in. down: 'bones & teeth'

Pottery
L5: 33 sherds/70 g Neolithic Bowl pottery, 1 sherd/2 g in grog-tempered fabric
L6: 3 sherds/33 g Neolithic Bowl pottery

Lithics
L5: 12 flakes, scraper, piercer
L6: 2 flakes, piercer
Tr E1 from below turf to 9 in. down: 'flint flakes'

Charred seeds and/or nutshell
L5: 6 separate finds of hazelnut shells

Upper levels of WOWK area 4 as a whole

Pottery
L2: 2 sherds/10 g Neolithic Bowl pottery

Lithics
L2: 28 flakes, 2 scrapers, 11 unmodified pebbles (10 quartzite, 1 ?igneous

Unclassified burnt flint
L2: 14 g

Outer cross-dyke site P2

Original notation. HH77 Site P2 XDII or XD2.
Form. At least 2 sub-segments divided by sunken causeway *c* 0.60 m high, 3 m from E section. Original profile flat-bottomed with shelving sides. Original butt probably *c* 1.50 m from W edge of excavation, removed by V-sectioned recut into bottom of ditch, up to 1.50 m deep and extending beyond both sides of excavated area. Ditch cut into Clay-with-Flints in SE. *Length* >10 m, *width* 1.80 m, *depth* 1.40 m.
Excavation. In plan.

Phase I. In SE, silted Clay-with-Flints, possibly with some overcut into *in situ* deposit (L10), overlain at S edge by yellow silt with a few chalk lumps (L9A).

Animal bone and/or antler
L10: *caprine* skull fragments (goat)

Pottery
L10: 1 sherd/ 4g Neolithic Bowl pottery

Lithics
L10: 7 flakes

Phase III. Grey, charcoal-stained silt with chalk lumps (L8), derived from exterior

Animal bone and/or antler
L8: *pig* scapula, humerus, radius, tarsal, mandible; *cattle* 3 ischia, mandible, tooth; *caprine* tooth

Lithics
L8: 10 flakes

Charcoal
L8: *

V-profiled recut. R/a: recut up to 2.80 m wide and 1.50 deep removing inner fills and chalk edge of existing ditch and cutting through sunken causeway in E and full causeway near W side of excavation, V-profiled base cutting into bottom of original ditch. Chalky primary silt with a few chalk lumps (L9), derived from interior.

Animal bone and/or antler
L9: *caprine* scapula

Lithics
L9: 18 flakes

R/b: Clean chalk rubble with some flint, vacuous towards base in E, concreted towards top (L7)

Animal bone and/or antler
L7: *pig* scapula, 4 humeri, ulna, tibia, mandible, tooth; *roe deer* tibia; *cattle* 2 humeri, radius, metacarpal, 3 teeth, phalanx, 3 vertebrae, horncore; *caprine* radius

Pottery
L7: 11 sherds/28 g Neolithic Bowl pottery

Lithics
L7: 21 flakes

Charcoal
L7: *

Phase VIII/a. Compacted yellow-brown sandy loam with dense flint nodules (L6, L6A), discontinuously overlying L7 in E and centre. Dark soil with comminuted flint and chalk and some peagrit (L4A), lensed with peagrit (L5A) at various levels. Overlain in E by soft light brown sandy loam with scarce chalk lumps (L5). L5 where present and otherwise L4A overlain by dark soil with comminuted flint and chalk (L4) finer than L4A and continuous across both ditches and bank areas.

Animal bone and/or antler
L4: *cattle* radius

Pottery
L4: 3 sherds/14 g Neolithic Bowl pottery, also 1 missing pottery find

Lithics
L6: 6 flakes. L5: 3 flakes. L4: 3 flakes (1 utilised), edge-trimmed flake

Upper levels and unstratified. L4 directly overlain by current turf and topsoil (L1)

Lithics
U/S: 1 flake

3.3.5 The western outwork

This earthwork is described and discussed in Chapter 2. Following its discovery, a magnetometer survey was conducted in 1982 towards its north-west end, covering a visible ditch segment and an 18 m-wide area downslope from it, to determine whether there might be a second, outer ditch, given the presence of multiple outworks on other parts of the hill. Part of the visible segment showed as an indistinct negative anomaly which extended south-west of the segment itself, leaving the question of a further ditch unresolved (Evans 1983, 113–16: area WO). In the same year a 2 m-wide section was cut across the ditch next to the west butt of the south cross-dykes (WOWK area 4) with an extension downslope (WOWK area 4X) to check the possibility of an outer ditch, and the area of the cross-dyke and outwork banks was stripped (WOWK area 3; Fig 3.44). 125 m to the north-west, where the outwork was best-preserved, a 3 m wide section was cut (WOWK area 1) and an adjacent area covering the scoop behind it was excavated (WOWK area 2; Fig 3.45). The earthwork thus remains almost entirely unexcavated. The earthwork survey shows that it is distinguished from the other outworks by the frequency of its causeways and the shortness of its segments, which rarely exceed 10 m in length, on much the same scale as those of the two enclosures (Fig 2.8).

The bank

In WOWK area 3 the bank survived only as protected chalk (Fig 3.44). In WOWK area 2 the scoop or platform visible on the surface proved to be 3.30 m wide and to survive to up to 0.30 m deep, separated from the ditch edge by a gap of *c* 3 m and a steep slope. It was filled with very hard, grey chalky silt with small chalk fragments and some flint, with one charcoal find but no artefacts (Fig 3.45). This may have been puddled, heavily compacted chalk surviving at the base of the bank, or may have been a natural deposit in hollows in the surface of the chalk. Visible in its surface were two postholes with dark grey silt fills, one (WOWK2 F5) with charcoal flecks, the other (WOWK2 F6) with abundant charcoal, mainly of oak with a fragment of pine, and with flint packing. One fragment of oak charcoal was dated to *3630–3600 cal BC (4%) or 3530–3350 cal BC (91%)* (OxA-7815; 4660±40 BP)

These features directly underlay topsoil and turf. Here, as in the rest of the western outwork excavations, there was no trace of the relict ploughsoils encountered on other sites, almost certainly because the steepness of the slope would have discouraged cultivation at any period. Topsoil and turf finds from WOWK area 2 comprise a minute sand-tempered body sherd, two flint flakes and a flake from a ground flint axehead.

The ditch

The alignment of the ditch in WOWK area 4 suggests that the butt of the inner south cross-dyke bank was already present when the outwork was built, and that the outwork curved slightly to respect it (Fig 3.44). Any irregularity of plan could be misread in a trench only 2 m wide, but the slight bow in the otherwise smooth curve of the outwork as recorded by earthwork survey (Fig 2.9) indicates that this apparent change of direction may be significant. If the two sections are

representative, the ditch is substantial and its fills reflect natural silting with little time for the steep sides to weather except in their uppermost parts, the only obvious intervention being the cutting of a slot in WOWK area 4. The steep slope may have made infilling particularly rapid. Both sections were exceptionally clean by comparison with adjacent ditches. The scant tally of animal bone and earlier Neolithic artefacts is listed below, the only clearly deliberate deposit being that of a knapping cluster in the slot in WOWK area 4. The contrast between the outwork ditch here and the wealth of finds in the west butt of the inner south cross-dyke, only 3 m away, is striking (Table 3.3), and strongly suggests that the two ditches were used in different ways, perhaps at different times. A concentration of charred hazelnut shells in the slot and underlying layers of the cross-dyke butt, for example, finds no echo in the outwork.

WOWK area 4X

Neither an outer ditch nor any other archaeological features were discovered. Irregular hollows, none more than 0.20 m deep, were all probably natural, some possibly the result of flint-grubbing. All had dark orange-brown clayey fills with chalk fragments. They directly underlay topsoil and turf, finds from which amounted to a miscellaneous retouched flint flake, a small flake of Old Red Sandstone and 3 small, unmodified quartzite pebbles.

Western outwork segment catalogue

WOWK area 4 (segment 1) (Fig 3.44)

Original notation. WOWK82 area 4, F16.
Form. Deep inner edge and shallower outer edge, corresponding to location at break of slope, where gradient increases from *c* 1:5 to *c* 1:3.5. Natural fissure along ditch bottom.
Length >2.20 m, *width* 2.1 m, *depth* 1.55 m.
Excavation. Turf and topsoil stripped by hand. Ditch excavated in plan.

Phase I. Light grey chalky silt, with chalk fragments (L12)

Animal bone and/or antler
L12: *cattle*: unfused epiphysis, fitting tibia from L11

Pottery
L12: 1 sherd/18 g Neolithic Bowl pottery

Lithics
L12: quartzitic sandstone pebble hammerstone, from (Chesil?) beach or quaternary deposits

Phase III. Vacuous chalk and flint rubble (L11) interleaving with runs of silt (L13, L14, L15), grading upwards into smaller, more rounded, cemented chalk rubble (L10).

Animal bone and/or antler
L11: *cattle* tibia, fitting epiphysis from L12

Phase V. Orange-brown clayey silt with numerous small chalk lumps (L9).

Phase VI. Slot up to 0.75 m wide and 0.35 m deep cut near outer edge of ditch, filled with friable dark brown clay silt with chalk lumps and large flint nodules (L8).

Lithics
L8: 141 flakes and chips, 2 cores, found together as tight cluster (WOWK82 88), unmodified quartzite pebble *c* 1 m from cluster

Phase VII. Nodules in surface of L8

Upper levels and unstratified. Topsoil (L2) and stone-free turf (L1). See inner S cross-dyke catalogue for finds from L2 over WOWK area 4 as a whole

WOWK area 1 (segment 2) (Fig 3.45)

Original notation. WOWK82 area 1.
Form. Deep inner edge and shallower outer edge, corresponding to location at break of slope. Chalk in base and sides fresh and angular.
Length c 12.50 m (from earthwork evidence), *width* 2.6 m, *depth* 1.75 m.
Excavation. Turf and topsoil stripped by hand, ditch excavated in plan.

Phase I. Firm, light grey silt with chalk fragments (L5). Finds recorded from 'L4 + primary silt listed below'.

Phase III. Vacuous chalk and flint rubble (L4) interleaved with clayey silt (L3B) and succeeded by smaller, compact, concreted chalk rubble (L3C).

Animal bone and/or antler
L4 + primary silt: *cattle* radius, femur, tooth, vertebra. L4: *pig* radius-ulna, tibia; *cattle* scapula, humerus, radius, ulna, 3 femora, tibia, ilium, metatarsal; *caprine* vertebra

Pottery
L4 + primary silt: 21 sherds/157 g Neolithic Bowl pottery.
L4: 15 sherds/78 g Neolithic Bowl pottery
L3B: 4 sherds/13 g Neolithic Bowl pottery

Lithics
L4 + primary silt: flake

Charcoal
L4: *Corylus avellana*

Phase V. Dark orange-brown clayey silt with chalk and flint fragments (L3A), orange-brown clayey silt with chalk fragments, peagrit and less flint than L3A (L2), dark orange-brown clayey silt with fewer chalk fragments than L2 (L3)

Animal bone and/or antler
L2: *

Pottery
L2: 8 sherds/36 g Neolithic Bowl pottery

Lithics
L2: 11 flakes, 2 misc retouched

Phase VI. Recut tentatively identified during excavation, never satisfactorily defined

Upper levels and unstratified. Dark, loamy topsoil with chalk fragments, stone-free turf (both L1).

Lithics
U/S: 2 flakes

3.3.6 The south long barrow

The long barrow lay along the axis of the southern spur of the hill, oriented north-north-west/south-south-east. Its north-west end was some 18 m from the main causewayed enclosure ditch; its south-east end abutted the tail of the inner south cross-dyke bank, at least in the spread, reduced state of the latter (Fig 3.5). No stratigraphic relationship could be established between

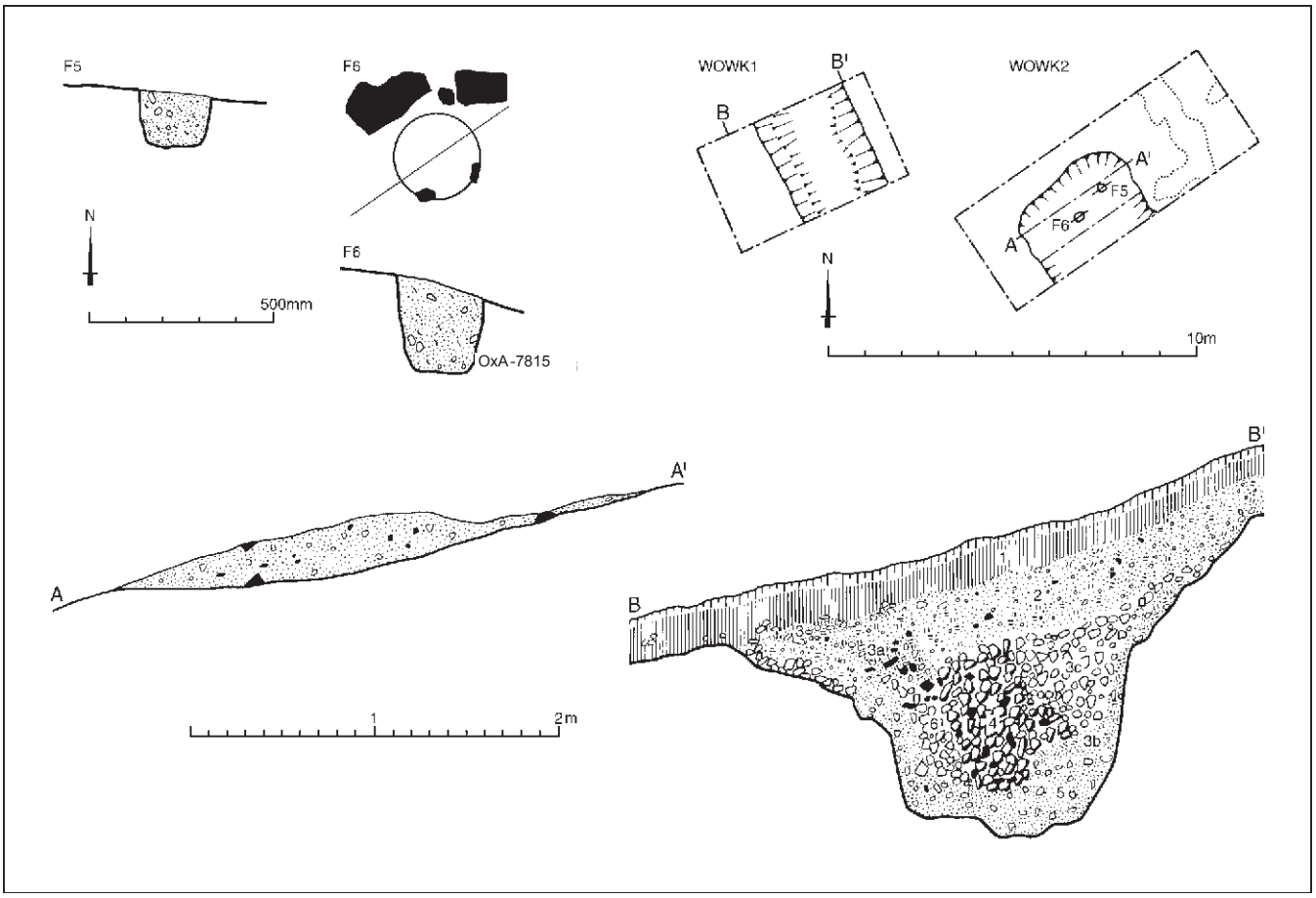

Fig 3.45 Western outwork, WOWK82 areas 1 and 2.

the two, although the way in which the cross-dykes bow around the barrow indicates that it was already in place when they were built, as does the radiocarbon dating of the barrow and the inner cross-dyke (Ch 4). The present barrow mound is a reconstruction, built after excavation in 1977.

History

Crawford's air photograph, taken in 1924, shows a mound that was still well defined and regular, despite being damaged by quarrying (Fig 2.3). Little had changed by the time of RCHME's survey in 1958–60: 'Short and parallel-sided, it is about 85 ft. [26 m] long and 43 ft. [13 m] wide, rising in height from 3 1/2 ft. [1 m] at its north-west end to 7 ft. [2 m] at its south-east end, part of which has been quarried away. In cross profile it is steep and straight sided with a narrow top. There are traces of parallel side ditches, clear on the south-west but much disturbed on the north-east.' (RCHME 1970, 83). The two heights actually reverse the profile recorded in the contour survey made at the time (Fig 3.46). They may have been arrived at by counting the number of contours at each end. There are indeed seven at the south-east end, but, because of the natural slope of the spur, which drops some 1.50 m from north-west to south-east along the length of the barrow, the lowest contours at the south-east end disappear out of the survey without extending to the north-west end. Bonney's contour survey shows the mound to have been flat-topped at the north-west end, sloping done to the south-east, and standing at most 1.80 m above the ground level obtaining beyond the ditches (Fig 3.46). In the early 1960s, shortly after the survey, the barrow was partly levelled by bulldozer. This left it an irregular, spread hump *c* 33 m × 15 m, retaining a straight edge and regular form only on the north-east side. In the account that follows, for the sake of simplicity, the ends of the barrow are referred to as 'north' and 'south' and the sides as 'east' and 'west'. The radiocarbon dates recorded in the segment catalogue provide the basis for an estimated construction date of *3680–3640 cal BC* (see Bayliss *et al,* 4.7.11, Fig 4.16, Table 4.2).

Excavation

The site was deturfed and stripped of topsoil by hand. The area between the barrow and the main causewayed enclosure ditch (LB1 and the south-west part of site P1) was disturbed and without surviving archaeological features, as might be expected from the quarries and trees or shrubs visible in Crawford's photograph. The only finds from the area were two flint scrapers.

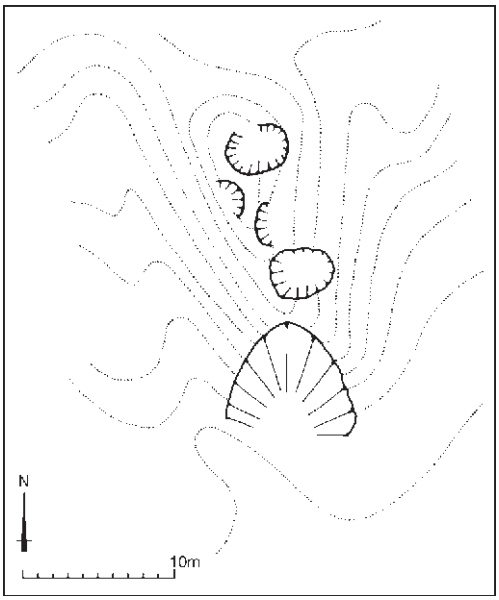

Fig 3.46 South long barrow. Contour survey made by RCHME before the barrow was bulldozed. The hachured hollows are recent flint quarries. Contours at 1 ft intervals.

The barrow itself was divided into quadrants separated by baulks. The west side (quadrants LB2 and LB3) and the east side (quadrants LB4 and LB5) were excavated by different supervisors, separate sequences of layer and feature numbers obtaining in each. Once the current turf and topsoil, the recently displaced mound material, and the pre-levelling turf and topsoil were removed, the exposed deposits were planned and a contour survey was made. The west ditch was then excavated in multiple transverse sections, alternate sections being removed first (Fig 3.47). The north and south halves of the east ditch were each excavated in plan, with a single, central transverse section. The baulks between LB2 and LB3 and between LB2 and LB4 were eventually removed. The natural chalk was frequently capped by Coombe Rock and Clay-with-Flints, the latter often filling substantial hollows.

The mound

In the mound area the degraded top of the chalk bedrock directly underlay the thin current turf and topsoil. Soil layers survived only on the sloping sides of the area, where they were continuous with the phase V and phase VIII/a ditch silts. The protected chalk was higher and slightly wider to the north-west, tapering in width and height to the south-east. The surface of the chalk in the central area was up to 1 m higher than at the outer edges of the ditches (Fig 3.47). The chalk surface had been broken up by roots and cut by quarries corresponding to those planned by Bonney and, in one case, also visible on Crawford's air photograph (Fig 3.47: LB2–3 F5, LB4–5 F14+F16, F15, perhaps F20). Displaced mound material survived in the ditch tops as a brown loam with unsorted, loose chalk and flint rubble (L2) above a well-developed turfline. L2 was thickest in the south-west, where chalk and flint occurred in roughly equal proportions and the layer itself extended beyond the excavated area, thinner in the north-east, where it was confined to the ditch and where chalk seems to have been more frequent than flint. This suggests that the mound was largely pushed to the south-west, corresponding to the irregularity of the south-west edge before excavation. The ditch fills indicated that the make-up of the mound may have been variable. At the south end of the west ditch, fills derived from both interior and exterior consisted mainly of the adjacent Clay-with-Flints (Fig 3.48), although the ditch was chalk-cut, suggesting that, at this side, the end of the mound may have been built largely of clay. The north butts of both ditches were so shallow that the Clay-with-Flints through which they were cut could have made little contribution to the make-up of the mound. A consistently higher frequency of unworked flint in the west ditch than in the east, replicated in L2, may simply reflect the presence of larger adjacent patches of Clay-with-Flints on that side. The possibility of a flint revetment on that side, or of differing revetments on the two sides, cannot, however, be ruled out.

There are two indications of what the mound may once have contained. In the displaced mound material fragmentary human remains were mostly confined to an area *c* 5 m × 3 m over the west ditch (Fig 3.50), with a few outliers over the inner south cross-dyke bank. Animal bone, sherds and struck flint were concentrated in the same area. This may point to the displacement of a single burial deposit. The weathered and fragmented human remains represent at least four adults (Table 7.1). They include the only loose human phalanges from the central area, apart from a single example from phase IV in segment 19 of the main enclosure, which suggests that at least some of the individuals may have been articulated when buried. Cutmarks on a femur and a pelvis fragment, however, show that not all were fleshed or that not all remained so. Finds from the quarries cutting the mound area were similarly localised. LB4–5 F14, at the east-centre of the mound area (Fig 3.47), was the only one to contain animal bone, antler, and small quantities of sherds and struck flint. If the quarry was backfilled with the mound material through which it was dug, the finds might indicate a central deposit. An unworked Jurassic limestone fragment from the topsoil in the central baulk between LB2 and LB4 must have been brought to the site from a distance of at least 10 km, although at an unknown date.

Posthole

On the causeway between the east and south ditches there was what appeared to be a truncated flint-packed posthole (Fig 47: LB4–5 F6), which contained 7 body sherds/14 g in a flint-tempered Neolithic Bowl fabric, 3 flint flakes and a miscellaneous retouched piece.

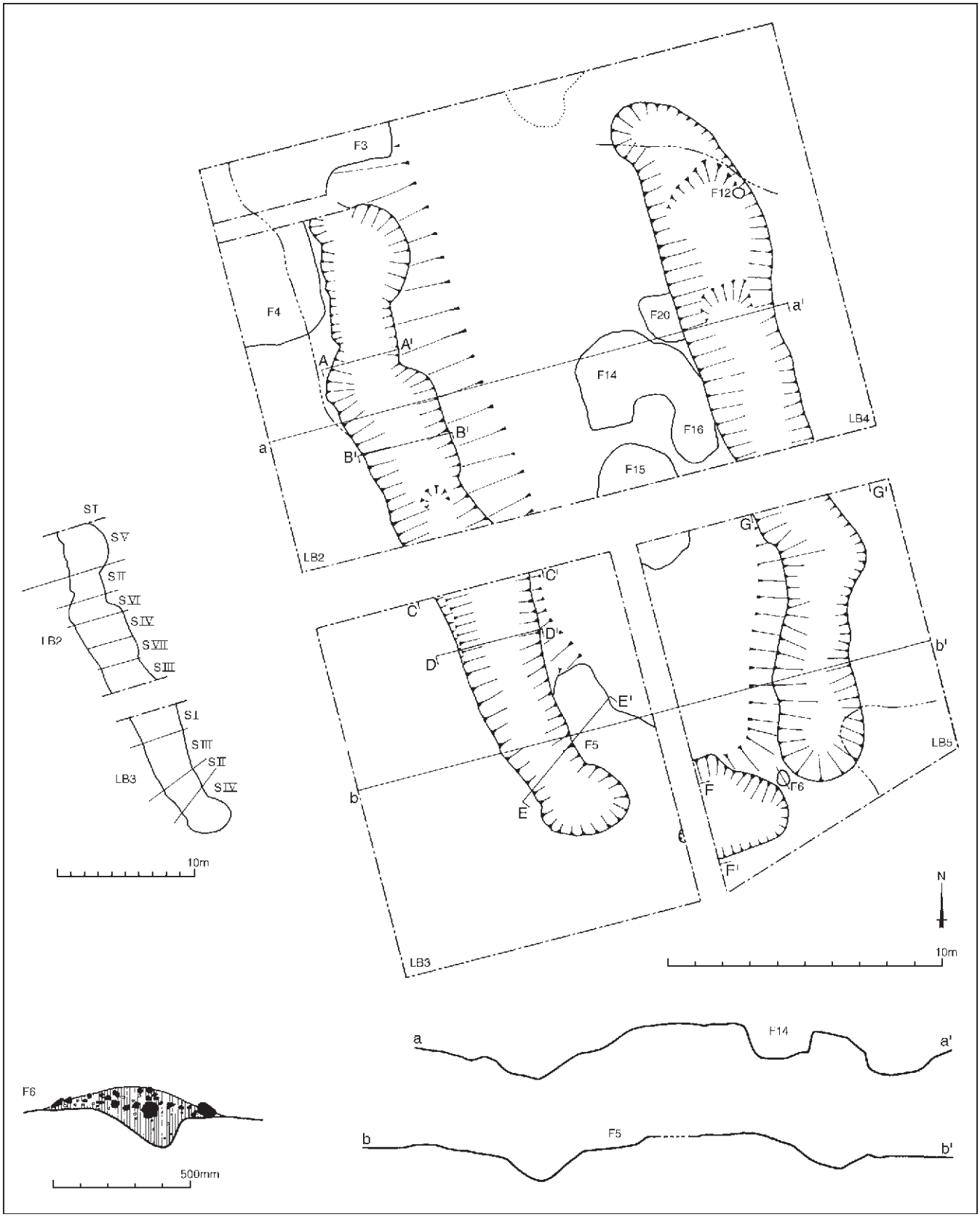

Fig 3.47 South long barrow. Plan with transverse profiles of the surfaces of the natural chalk and location of sections in which the SW ditch was excavated.

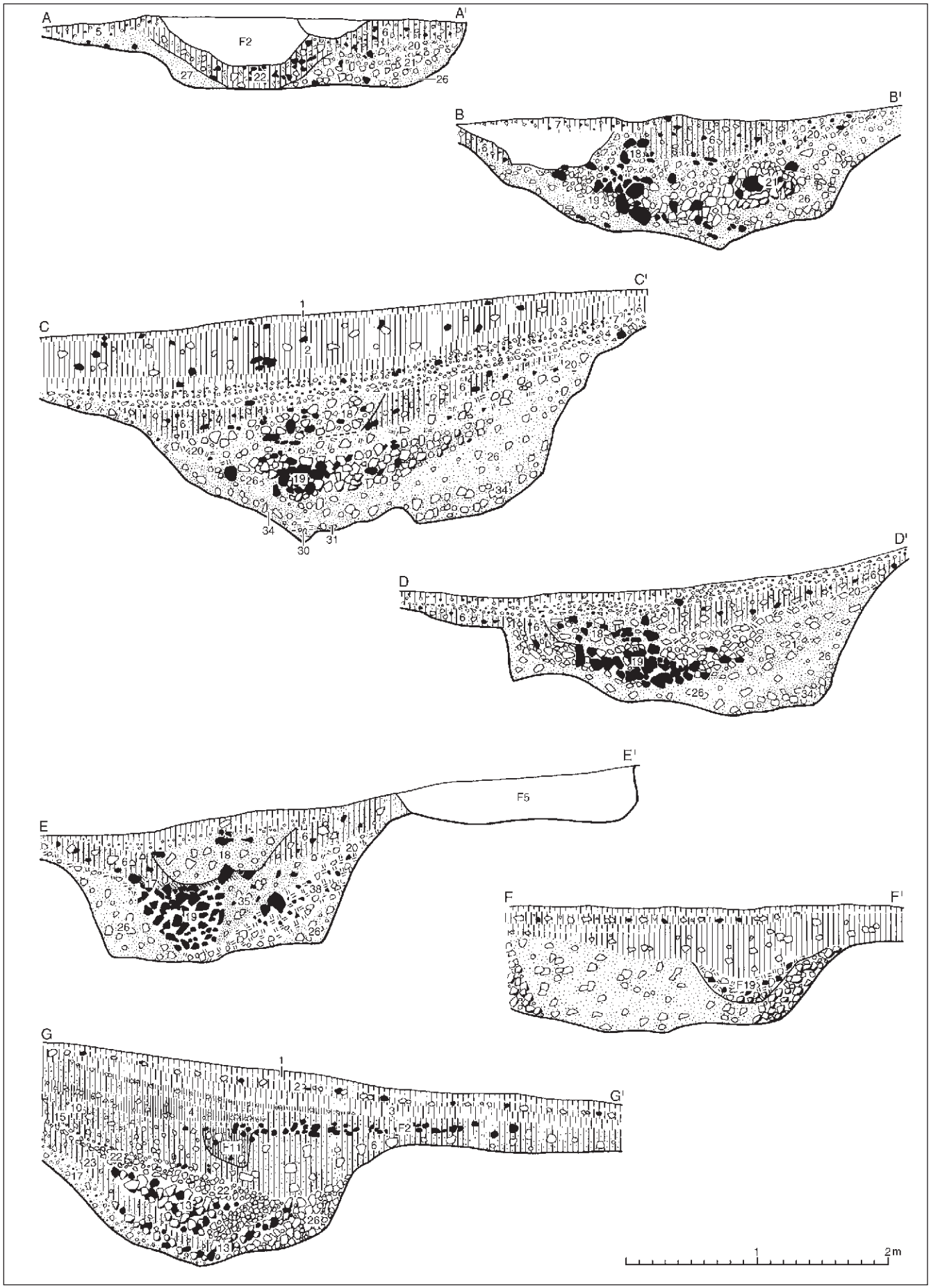

Fig 3.48 South long barrow. Ditch sections.

Its location and its approximate alignment with the phase VI slots suggest that it related to the use of the barrow.

The ditches

The north butts were shallow, surviving to as little as 0.40 m, and were cut into Clay-with-Flints. Their stratigraphy is not easy to relate to that of the rest of the ditches, because of their shallowness, their distinctive fills, and quarry pits cut into the north butt of the west ditch (Fig 3.48: section A–A'). Both ditches were pit-dug, the central sub-segments being the deepest. The south butt of the east ditch was as shallow as the north butt; that of the west ditch was far more substantial (Fig 3.48: section G–G'). A red deer antler crown with two tines, embedded in the chalk floor of the east ditch near the centre (HH77 1018) must have broken off a larger implement, probably during barrow-building. The inner edge of the west ditch just south of the central transverse baulk was so shattered and cavity-ridden that large chalk blocks had fallen from it onto the ditch floor.

Fills

The pit-like south ditch was filled almost entirely by chalk rubble with interstitial silts (Fig 3.48: section F–F'). This may indicate that it was silting when the inner south cross-dyke bank at its outer edge was still bare of vegetation. The more complex fills of the flanking ditches are summarised below, and described in greater detail in the catalogue that ends this section.

Phase I

Discrete features and extensive silts are both attributable to phase I. Substantial parts of several pots occurred in both.

Fig 3.49 South long barrow. Iron Age coin from a recent quarry. The reverse was blank. Scale = 10 mm

In the centre of the west ditch a small patch of silt, chalk dust and, in part, ash and charcoal (Fig 3.48: section C–C', LB2–3 L30, L31) lay directly on the chalk in the angle of floor and outer wall. It is unclear whether this was a deliberate deposit or an accident of silting. Almost certainly deliberate was a larger deposit of brown clay with weathered chalk lumps which filled the north butt of the east ditch and lay directly on its floor (LB4–5 L16). Both deposits contained small quantities of pottery, struck flint and animal bone. South of L16, a small, shallow pit (Fig 3.47: LB4–5 F12) was dug into the ditch floor. No finds were recovered from it. It was not observed in the overlying layers, and is likely to date from the construction of the monument. Once primary silt had accumulated in the west ditch, a small patch of loose silt containing sherds, struck flint, a flake from a stone axehead, burnt bone, and charcoal was placed on its surface towards the south end (LB2–3 L40).

Primary silts included a chalky, rubbly element in the deepest central part of the west ditch (Fig 3.48: section C–C', L34) but were generally earthy, though with a high chalk content, except in areas of Clay-with-Flints in the ditch butts. All the stone artefacts from the primary silts were clustered in an area *c* 1.50 × 1 m in the south end of the west ditch, which was also the site of L40, the burnt bone deposit described above, which contained a flake from an altered Gabbro axehead (S15). In the silts underlying L40 in the same area were a small fragment from a Group I axehead (S14), a quartzite polisher, and two sarsen quern fragments, together with a substantial part of a small cup (P73) and sherds of other vessels. Almost opposite this cluster in the east ditch was a substantial part of a larger vessel (P79), the fabric of which contained slight traces of lipids which could not be assigned to any more precise origin (Evershed *et al*, 7.3), deposited by itself after primary silt had begun to accumulate. These are the two most complete pots from the ditches, and no sherds of either were found in other contexts. Both were contained within the primary silts, with no sign of post-depositional disturbance, and must almost certainly have been incomplete when placed in the ditch.

Four other pots were substantially represented, though less so than P73 or P79, and were dispersed through contexts of several phases, although in each case their earliest occurrence was in phase I (Table 3.4, Fig 3.50). Parts of some seem initially to have been deposited at more than one spot. Sherds of P38 were found *c* 2 m apart in the primary silts of the west ditch, one group coinciding with further sherds in the base of the slot which, in the shallow north butt, cut into the primary silt (Fig 3.48: section A–A', L22), making it likely that the sherds in the slot were displaced from the primary silt when it was cut. Sherds of P105 were found in the north butts of both ditches. In the primary silt of the west ditch there was a second group *c* 8 m away from those in the butt. In the east ditch, the

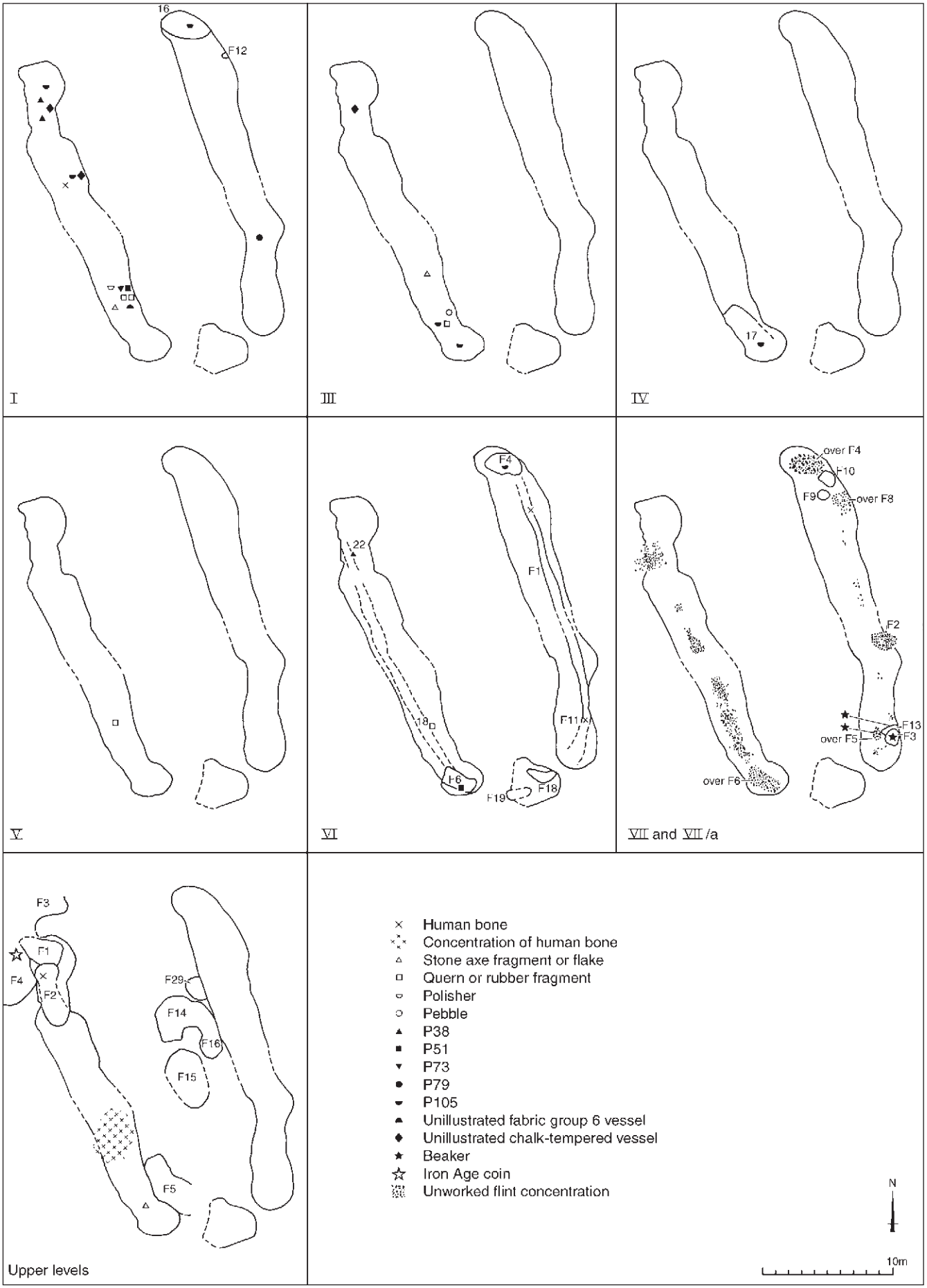

Fig 3.50 South long barrow. Distribution of selected finds by phase.

sherds came from a pit cut into the clay deposit on the butt floor, perhaps in phase VI (LB4–5 F4). Fabric group 5 (characterised by fresh shell), to which the pot belongs, is rare at Hambledon (Table 9.13), and the only pot of that fabric group from the barrow is P105. In these circumstances, six minute fresh shell-tempered body sherds from L16, the clay deposit cut by F4, are likely to have come from the same pot, suggesting that parts of it were placed in both butts soon after the barrow was built, most of those in the butt of the east ditch subsequently being displaced by the cutting of F4.

The taphonomy of P51 and of an unillustrated pot of fabric group 6 is more problematic. The larger, better-preserved sherds of P51 were clustered in the primary silt of the west ditch with P73 and the fragmentary stone implements described above. The smaller, less well-preserved, sherds were *c* 5 m away in the south butt of the same ditch in a pit cut in phase VI (Fig 3.49: LB2–3 F6). F6 was shallow, cutting no deeper than L17, which overlay the phase III fills in the butt (Fig 3.48: section E–E'). The cutting of F6 could not have displaced the sherds from the primary silt, although it could have displaced them from L17 or L18. The fourth, unillustrated, vessel was represented in the same cluster of sherds and stone implements as P51 and P73. Smaller quantities occurred in the phase III fills, as did a fragment (S16) probably from the same altered Gabbro axehead as the flake in the cluster. The greatest quantity, made up of the largest and best-preserved sherds which retained both sooty residue and traces of surface treatment, was found in L17 in the south butt. L17 was placed (or dumped) on the underlying fills without any apparent disturbance to them. If all the sherds are indeed from the same pot, the condition of those from this latest context is not compatible with their entering the ditch from the topsoil or surface, especially as L17 was not silted in.

Phase III

Beyond the very shallow north butts, the ditches were filled with rubble, sometimes vacuous, mainly derived from the interior, grading upwards into smaller, more compact rubble, the matrix varying according to the proportions of chalk and clay in the immediate area. Flint nodules were frequent in the rubble of the west ditch, and scarce in the east, where the rubble was far more markedly interleaved with lenses of finer silt. Artefacts and animal bone were frequent, with generally higher quantities in the west than in the east ditch. Red deer antler fragments, some used, were present, as in the primary silts, and a complete, shed, unworn roe deer antler (HH77 1417) was found near the centre of the west ditch. Animal bone included an articulating cattle astragalus and distal tibia fragment (HH77 2241) from the south butt of the west ditch. Fragmentary stone implements remained confined to a small area north of the same butt, coinciding with the phase I cluster, but expanding to an area *c* 4 m × 1 m, in which were the altered Gabbro axehead fragment mentioned above (S16), a Heathstone quern fragment and an unworked quartzite pebble.

Phase IV

In the south butt of the west ditch the phase III fills were covered by a thin layer of fine silty loam with charred hazelnuts, burnt flint and abundant burnt and unburnt animal bone and artefacts (L17). There was no discolouration of the underlying deposits to suggest *in situ* burning, which is also counter-indicated by the unburnt bone and artefacts. Some of the material had percolated between the vacuous nodules of L19. Its full extent is unclear because of truncation by LB2–3 F6 (Fig 3.50), but burnt bone, burnt flint and charred hazelnut from that feature suggest that L17 extended to the butt. Burnt material was scattered throughout L17, with marked concentrations. One patch of burnt animal bone was so dense that it was thought to be a cremation. The largest quantity of charred hazelnut shell on the site (Fig 3.71) contrasts with the near-absence of charcoal. A small patch of burnt material near the centre of the same ditch at the same stratigraphic horizon may be related.

The genesis of the deposit remains obscure. It may be the residue of a single event, but the presence of sherds from a vessel (possibly two vessels) also represented in the primary silt (described in 'phase I' above) may suggest derivation from another, older context. It is most readily comparable with the 'grey pits' of the main enclosure.

Phase V

Fine, earthy silts formed above the phase III and IV deposits, a process punctuated by the cutting of slots. Artefacts and animal bone were scarce in these levels, although there is an Old Red Sandstone fragment from the same area of the west ditch as the fragmentary stone implements in underlying levels.

Phase VI

At this stage the first recuts were made in the barrow ditches. Slots were cut in both flanking ditches and in the pit-like south ditch, which, despite its proximity to the butts of the other ditches, had so far completely lacked artefacts and bone. In the east ditch, the slot had a humic rather than a clayey fill, with relatively little, patchy, flint and chalk, and contained relatively few artefacts or animal bones, none of which lay in clusters. Human remains were present in the form of an adult femur fragment near the north butt and teeth near the south butt. In the west ditch, clearly cut slots were visible only near the south and north butts (Fig 3.48: section E–E', L18; section A–A', L22). Otherwise, a narrow band of friable brown silt with densely packed flint nodules seems to have been heaped along the deepest part of the hollow in the top of the largely silted ditch (Fig 3.48: sections B–B', C–C', D–D': L18). Finds were more abundant than in the east ditch, but

Table 3.4 South long barrow: substantially represented vessels

Fabric groups 1–8 are described by Smith (9.1) and Darvill (9.2). *Abrasion:* 1 = fresh, 2 = abraded, 3 = badly abraded. *Elements present:* R = rim fragment(s), L = lug fragment(s), PB = plain body sherd(s)

Pot	*Phase*	*Quadrant*	*Section*	*Context*	*Fabric group*	*Sherds*	*Weight*	*Abrasion*	*Approx amount of rim in all contexts*	*Elements present*	
P38	I	LB2	SV	L26	7	15	60 g	2	<5 %	L, PB	Sherds in L26 and L27 (primary silt) *c* 2 m apart. Sherds on surface of L23 (also primary silt) and in L22 (slot) all close to each other and to sherds in L27. Appeared on excavation to be a vessel broken on the base of the slot filled by L22. Presence of sherds in L26 and L27 suggests they may have been displaced from L23 by cutting of slot, which cut into primary silt of shallow NW butt
	I	LB2	SII	L27		27	36 g	3		PB	
	I/VI interface	LB2	SII	L23/L22		2	29 g	2		PB	
	VI	LB2	SII	L22		15	56 g	3		R, PB	
P38?	VI	LB2	SII	L22		25	15 g	3		PB	
P51	I	LB3	SIII	L34	7	6	149 g	1, 2	20%	R, PB	Sherds in L34 (primary silt) clustered with P73 and sherds of unillustrated fabric group 6 vessel and with stone implements. Sherds in L34 and F6 5 m apart. F6 no more than 0.35 m deep and extending only to base of L17, so that sherds could have been derived from L17 but not from primary silt
	VI/b	LB3	SIV	F6 L41		12	125 g	2		R, PB	
P73	I	LB3	SIII	L34	6	23	105 g	1	80%	R, PB	
P79	I	LB5		L17	7	354	1016 g	2	50%	R, L, PB	
P105	I	LB2	SV	L26	5	2	32 g	2	40%	R, PB	Sherds in L26 (primary silt) in SW ditch *c* 8 m apart, HH77 2076 in butt. Given rarity of fabric group 5 (tempered with fresh shell), four body sherds in L16 (primary deposit?) in NE butt may be from same pot. Sherds from F4 in NE butt (phase VI) could have been derived from L16 during cutting of F4
	I	LB2	SVII	L26		25	58 g	2		R, PB	
	VI	LB4		F4		16	148 g	2		R, L, PB	
P105?	I?	LB4		L16		6	4 g	3		PB	
Unillustrated pot in fabric group 6	I	LB3	SIII	L34	6	15	175 g	2	30%	R, PB	Open uncarinated bowl with inturned rim *c* 160 mm in diameter, with wiped/smoothed surface. Sherds in L34 and L40 (primary silt) clustered with P73 and sherds of P51 and with stone implements, all 1–4 m away from sherds in later layers. Sherds in L17 (phase IV) largest and best-preserved, with internal sooty residue, and with surface treatment surviving, as not elsewhere. Unlikely to have been displaced from earlier layer because L17 dumped rather than placed in a cut
	III	LB3	SII	L35		16	92 g	3		R, PB	
	III	LB3	SIV	L19		17	63 g	2		R, PB	
	IV	LB3	SIV	L17		62	548g	1		R, PB	
?same vessel	I	LB3	SIII	L40		39	144 g	2, 3		R, PB	
	III	LB3	SII	L38		1	13 g	3		PB	

Table 3.5 South long barrow: incidence of principal classes of find by phase and quadrant

	Phase		*W ditch*	*E ditch*
N quadrants	I	Human remains	young adult humerus fragment	
		Identified animal bones and teeth	6	1
		Neolithic Bowl	139 sherds/493 g	29 sherds/56 g
		Struck flint	52	19
	III	Identified animal bones and teeth	24	18
		Neolithic Bowl	156 sherds/386 g	26 sherds/122 g
		Struck flint	128	92
		Burnt flint	3 g	
	V	Identified animal bones and teeth	5	6
		Neolithic Bowl	18 sherds/33 g	3 sherds/67 g
		Struck flint	45	31
	VI	Human remains		adult femur fragment
		Identified animal bones and teeth	61	5
		Neolithic Bowl	85 sherds/338 g	40 sherds/302 g
		Struck flint	105	557 (mainly knapping debris in F4)
		Burnt flint	22 g	44 g
	VII/a	Struck flint		80
	VIII/a	Neolithic Bowl	4 sherds/15 g	2 sherds/6 g
		Struck flint	122	12
		Burnt flint	28 g	
S quadrants	I	Identified animal bones and teeth	4	
		Neolithic Bowl	148 sherds/741 g	354 sherds/1016 g (forming P79)
		Struck flint	48	2
		Stone	axe fragment axe flake polisher	
	III	Identified animal bones and teeth	51	26
		Neolithic Bowl	250 sherds/1083 g	6 sherds/41 g
		Struck flint	168	221
		Stone	axe fragment quern fragment pebble fragment	
		Hazelnut shell	<10 g	
	IV	Identified animal bones and teeth	28	
		Neolithic Bowl	150 sherds/969 g	
		Struck flint	36	
		Burnt flint	400 g	
		Hazelnut shell	>80 g	
	V	Identified animal bones and teeth	4	10
		Neolithic Bowl	14 sherds/66 g	7 sherds/5 g
		Struck flint	50	89
		Stone	quern fragment	
		Burnt flint		4 g
	VI	Human remains		5 adult maxillary teeth
		Identified animal bones and teeth	45	20
		Neolithic Bowl	148 sherds/565 g	10 sherds/49 g
		Struck flint	285	19
		Stone	quern fragment	
		Hazelnut shell	<10 g	
	VII/a	Identified animal bones and teeth		11
		Neolithic Bowl		5 sherds/42 g
		Plain & rusticated Beaker		28 sherds/42 g
		Struck flint		480 (almost all from F13)
	VIII/a	Neolithic Bowl	2 sherds/4 g	
		Struck flint	414	
		Stone		flake

still relatively sparse. A heathstone quern fragment came from the area of the earlier stone concentration. Earthy silts like those of phase V continued to accumulate, preserving the heaped-up band of material.

Pits were cut into the north butt of the east ditch and the south butt of the west ditch, both packed with flint nodules (Fig 3.50). The pit in the west ditch (LB2–3 F6) cut through the slot. The relation between that in the east ditch (LB4–5 F4) and the slot was obscured by later pits. Both contained sherds of vessels probably derived from earlier layers, P51 in F6 and P105 in F4 (see 'phase I' above), as well as sherds from other pots. Knapping debris from F4, almost all of flint with heavily abraded cortex, is characterised by irregular cores with few, large, removals.

Phase VII

In the east ditch the sparse, uneven flint and chalk content of the slot gave the impression of a very discontinuous flint capping on its surface; near the centre of the ditch, however, a dense patch of flint nodules (LB4–5 F2), partly overlapping the slot, seemed to have been deliberately laid. In the west ditch the high flint content of L18 produced a distinct, compact band of flint along the length of the slot (Fig 3.50). When the nodules were first exposed they lay in dense patches 1 m to 1.50 m apart, with relatively flint-free areas in between, the nodules only becoming continuous when L18 was fully defined, which suggests that they may originally have been piled in heaps, like the nodules over the slot in segment 1 of the main enclosure ditch nearby (Fig 3.7).

Phase VII/a

In the east ditch small, shallow, bowl-shaped pits were cut through the phase VI features close to both butts (Fig 3.50). Three of those in the south group contained a few rusticated and plain Beaker sherds, in one case (F13) with over 400 pieces of struck flint. While all the fills were humic, F5 in the south was distinguished from the neighbouring pits by much chalk and flint rubble, and F8 in the north by abundant flint nodules.

Phase VIII/a

Immediately below the pre-levelling turfline in both ditches was a dark brown humic loam with dense comminuted chalk, identical to and continuous with the former ploughsoils which covered most of the rest of site P.

Superficial deposits

The barrow was cut by two groups of large pits, one in the mound area, just impinging on the ditches, the other in and beyond the north butt of the west ditch, much of which was cut away (Figs 3.47, 3.50). All, except for LB2–3 F1 and F2 and LB4–5 F20, were cut into Clay-with-Flints. Their predominantly clayey fills are characterised by clear tiplines. Those in the mound corresponded to the flint quarries planned by Bonney (Fig 3.46), some of which are also visible on Crawford's air photograph (Fig 2.3). LB4–5 F14 undercut the chalk to pursue a pocket of Clay-with-Flints. The second group was not previously recorded, perhaps suggesting that these pits were older or more effectively backfilled than the first. Unlike the pits in the mound area, they intercut, with at least three successive phases. The earliest (LB2–3 F4), ended precisely along a boundary between chalk and Clay-with-Flints, which also marks the west edge of the barrow ditch. An Iron Age coin (Fig 3.49, now missing) was found 0.25 m deep in F4 and is tentatively identified from a photograph as a bronze Durotrigian stater with some silver content. This is far more likely to provide a *terminus post quem* for the pits than to date them. Its principal interest is that it evidences Iron Age activity not far from the V-profiled recut in the outer south cross-dyke, which is arguably of that date despite the absence of contemporary artefacts (3.3.4). The latest pit in the sequence (LB2–3 F2) was cut entirely in the barrow ditch, displacing Neolithic material, including a fragmentary adult human femur shaft. Another, F1, was cut partly into the ditch and partly through other pits (Fig 3.50). The density of flint nodules in the ditch fill here would have made it worth quarrying. Topsoil finds included a second Group I axehead fragment (S17), from above the concentration of stone implement fragments in the west ditch.

Problems and possibilities

The stratigraphy of the north butts is not linked with total confidence to that of the deeper parts of the ditches, with which they were not necessarily contemporary. They were so shallow that they would have provided very little mound material, whether for the original monument or an extension. It is conceivable that they flanked a forecourt, or that they related to the sealing of a hypothetical wooden chamber in the barrow.

Semi-complete pots, some of them dispersed horizontally and vertically, occur elsewhere on the hill but are particularly frequent in the barrow ditches. The dispersal poses problems of interpretation. Such a distribution is not entirely attributable to recutting, which was confined to shallow slots and pits which reached the primary silts only in the shallow north butts. Incorporation into the mound during construction, or their presence in a surface scatter of cultural material, followed by progressive silting into the ditch would account for many of the dispersed sherds. Such processes would not, however, account for localised concentrations in upper levels of large sherds from single vessels already represented in the primary silts (Fig 3.50, Table 3.4). These seem to have come from other, protected or semi-protected contexts, such as the interior of a midden or a wooden chamber in the barrow, perhaps together with the rest of the contents of L17.

The frequency of substantially represented pots is accompanied by an unusual balance of fabrics (Table 9.13). The rarity of the fresh shell temper of P105 has already been noted. Also present, some in the primary

silts at the same findspot as sherds of P105, were chalk-tempered sherds unmatched elsewhere on the hill. In comparison with the rest of the central area, fabric group 6 was common and fabrics from Jurassic sources scarce (Figs 3.66, 3.67), frequencies of both echoing those found on the Stepleton spur.

The concentration of stone implement fragments in a small area of the west ditch throughout the sequence might derive from the erosion of a cache of fragments from the mound side. Alternatively, as Smith suggests (10.1.3), it may reflect their deliberate placing in a particular part of the ditch over a long period. The only stone artefact from the east side of the barrow is an unstratified Siltstone flake (S18).

The uneven distribution of stone and pottery noted by Smith (9.1.1, 10.1.3) extends to other classes of find (Table 3.5). In general, there was more cultural material in the west ditch than the east ditch. The main exception was a preponderance of struck flint scattered through the phase III fills in the south end of the east ditch. Other finds related to particular deposits: the sherds of P79 in phase I (quadrant LB5), knapping debris in pit LB4–5 F4 in phase VI (quadrant LB4) and a concentration of struck flint in pit LB4–5 F13 in phase VII/a (quadrant LB5). Once the primary silts had accumulated, artefacts and animal bone in the west ditch were concentrated in the south end, at the 'back' of the barrow (Table 3.5), and the exceptional deposit of L17 was placed in the south butt. If the entrance to the main enclosure on the southern spur of the hill, and hence the route between the central area and the Stepleton spur, was indeed through the wide causeway in the inner south cross-dyke on site P2 and along the west side of the barrow (3.3.4), then the silting barrow ditch may, like the adjacent butt of the cross dyke, have become a focus for deposition, formal and informal. The contrast between over 500 pieces of struck flint in the phase VIII/a ploughsoils in this ditch and 12 in the east ditch suggests that the practice continued during the accumulation of the topmost silts.

It is unclear how much of the mound survived up to the early 1960s. Profiles of the chalk surface recorded on excavation (Fig 3.47) suggest that most of the height difference between the mound and the area outside the ditches recorded in Bonney's survey could be accounted for by the protected chalk alone, leaving at most 0.80 m of mound material. It is possible that the mound, like the cross-dyke and enclosure banks, had already been considerably reduced, and that most of its apparent substance consisted of protected chalk and of topsoil perpetuating the form of the earthwork, with the base of the mound surviving between them to be redeposited over the ditches when the monument was levelled. The barrow appeared substantial when surveyed, but so did the enclosure and cross-dyke banks. The south cross-dykes and the adjacent part of the enclosure, all close to the long barrow, are still impressive earthworks, despite the lack of substance revealed by sections such as Figures 3.6 and 3.42. Alternatively, the long barrow may have offered more of an obstacle to ploughing than the banks, and may have been less reduced.

South long barrow segment catalogue

Long barrow, W ditch (segment 1) (Figs 3.47–3.48)

Original notation. HH77 site PLB LB2 and LB3.

Form. Pit-dug in at least 4 sub-segments. Deepest in centre and SE. NW butt truncated by quarry pits and cut into Clay-with-Flints. Ragged transition from Clay-with-Flints and some Coombe Rock to chalk in LB2 SII. Inner side of ditch immediately SE of central baulk cut through shattered chalk with large cavities: 2–3 lumps of chalk up to 0.30 m high and up to 0.50 m across, 1 including flint nodules, on ditch bottom. Further area of Clay-with-Flints at SE butt, approximating to LB3 SII and SIV.

Length 24 m, *width* 3.6 m, *depth* 1.3 m.

Excavation. 100%. Deturfed and excavated by hand. Two quadrants (LB2 and LB3) separated by 3 m wide baulk (eventually removed), each excavated in multiple transverse sections, with alternate sections removed first. Sections named SI, SV, SII, SIV, SVII, SIII from NW to SE in LB2 and SI, SIII, SII, SIV from NW to SE in LB3. LB2 L18 dug in quadrants or longitudinally sectioned within each section. Much of LB3 L17 dry- or wet-sieved. Area of L2 rich in human bone and other finds also dry-sieved.

Fills in NW sub-segment tended to be rather different from elsewhere. Probably due to the amount of Clay-with-Flints through which ditch cut and, in upper levels, to removal of fills by F2 (Fig 3.50), identified during excavation of SV and SVI but not during preceding excavation of SII which lay between them. L19, L18, L15 in LB2 SII attributed retrospectively to F2.

Phase I–II. Small patch of light brown silt and chalk dust (L31) on ditch floor under central baulk, part of it (L30) including ash. Overlain in deepest part of ditch (LB3 SI, SIII) by chalky silt with chalk rubble fragments derived mainly from interior (L34), in turn overlain throughout ditch by pink-buff silt with few inclusions near centre, more chalk and flint fragments to NW, chalk rubble in centre, clayey consistency in SE (L26), derived mainly from interior, and from interior only in NW, where yellow-buff dissolved chalk (L23) graded into a mottled chalky silt with tan and cream patches (L27) derived from exterior. Further patch of loose silt with burnt material (L40), *c* 0.80 × 0.60 m, on surface of primary silts in SE.

Human remains

L26: Fragmentary young adult humeral head (HH77 1948)

Animal bone and/or antler

L30: *

L34: *red deer* antler tine fragment with attached beam, tine tip very worn

L26: *pig* mandible; *red deer* antler tine fragment with ancient chop or break (broken from tip when latter recovered during excavation of overlaying L19); *cattle* 3 scapulae (including HH77 1256, 1367), 2 metatarsals (including HH77 1366), phalanx (HH77 1948), 2 vertebrae; *caprine* tooth.

L40: * (burnt)

Pottery

L30: 11 sherds/23 g Neolithic Bowl pottery, some with internal sooty residue

L34: 6 sherds/149 g from P51 found in fresh condition at two findspots *c* 0.50 m apart (further sherds of same vessel 5 m away, less well preserved, in F6 in SE butt); 23 sherds/105 g of P73, in fresh condition, found with 1 sherd of P51; 15 sherds/175 g from open uncarinated bowl with inturned rim in fabric group 6 (HH77 2206, 2297; further sherds probably or possibly from same vessel found up through sequence all towards SE end of ditch); further 8 sherds/71 g Neolithic Bowl pottery

L26: 25 sherds/58 g from P105, found together in NW sub-segment (HH77 2076); further rim sherd from same vessel (HH77 2158) 8 m away near centre (more of same pot in LB4–5 F4, near NE butt of opposite ditch); 8 sherds/16 g in chalk-tempered fabric from bowl with simple rounded rim, found with rim sherd of P105 near centre (both HH77 2158), 4 sherds/7 g from same vessel (HH77 1240) found together 5.50 m away in L23 in NW sub-segment (further sherds from same vessel in L21 in same area as HH77 1240); 15 sherds/60 g, including lug and shoulder sherds, from P38 (HH77 2303) found together in NW butt; 27 body sherds/36 g possibly from same vessel (HH77 1298) in L27 in same sub-segment, 2 sherds/29 g in surface of L23 in same area (HH77 1591; further sherds from same vessel in L21 and L22, most on bottom of recut filled by L22, giving impression of pot smashed *in situ*); further 131 sherds/457 g Neolithic Bowl pottery including 1 Gabbroic

L23: 1 sherd/14 g Neolithic Bowl pottery in addition to sherds listed above

L40: 11 sherds/31 g Neolithic Bowl pottery, 6 possibly from fabric group 6 vessel some of which occurred in L34

Lithics

L31: flake

L30: 6 flakes. L34: 3 flakes, 2 sarsen quern fragments. L26: 66 flakes, core, serrated flake, scraper, small fragment of Group I stone axehead (S14), quartzite polisher

L27: 3 flakes

L40: 17 flakes (1 burnt), small flake from axehead of altered Gabbro (S15), probably same implement as S16 from L21 (phase III)

Charcoal

L30: cf *Betula* sp

L26: *Corylus avellana*

L40: *

^{14}C

LB2 L26: *3690–3630 cal BC (90%) or 3560–3530 cal BC (5%)* (4950±55 BP; OxA-7848) on cattle metatarsal HH77 1366; *3680—3620 cal BC (78%) or 3580–3530 cal BC (17%)* (4875±40 BP; OxA-8846) on cattle scapula fragment 1367; *3650–3500 cal BC* (4760±50 BP; OxA-8848) on indeterminate animal bone fragment from HH77 1948; *3670–3620 (41%) cal BC or 3610–3520 (54%) cal BC* (4835±45 BP; OxA-8847) on cattle phalanx from 1948

LB3 L26 (in SI where L26 was applied to a overlying L34): *3630–3580 cal BC (15%) or 3540–3450 cal BC (80%)* (4655±40 BP; OxA-7827) on cattle scapula fragment HH77 1256

Phase III. Chalk and flint rubble, sometimes vacuous, sometimes in silty matrix, derived predominantly from interior, grading upwards into smaller, compact, chalk fragments (all L21), and merging into large, vacuous flint rubble (L19 except in LB2 SV, SII, SVI), partly derived from exterior. On Clay-with-Flints in SE L21 replaced by gritty clay with chalk lumps and small flint fragments, orange to NW, redder to SE (L38), overlain by a reddish silt with smaller chalk and flint lumps (mainly L35). Smaller finds in L19 could have percolated among the vacuous rubble, especially in SE butt (LB3 SII and SIV), where it was overlain by fine, ashy finds-rich L17.

Animal bone and/or antler

L21: *pig* 2 scapulae, 2 humeri, tooth, mandible; *roe deer* complete shed antler, unworn (HH77 1417); *red deer* tarsal; *cattle* scapula, humerus, tibia, ilium, ischium, 2 metacarpals, 2 metatarsals, tarsal, tooth, 2 mandibles, phalanx, horncore, 2 ribs; *caprine* humerus, metatarsal, mandible

L38: *red deer* 2 antler fragments, 1 modified; *cattle* metatarsal

L35: *cattle* tooth

L19, concentrated in LB3 SIII, SIV: *pig* 2 scapulae, radius, femur; *indet small artiodactyl* scapula; *red deer* metatarsal, antler tine tip, unworn, broken in excavation from rest of tine subsequently excavated from primary silt, 2 further antler fragments; *cattle* articulating astragalus and distal tibia fragment (HH77 2241), 3 scapulae, 2 humeri, radius, 2 acetabula, femur, 2 tibiae, 5 metacarpals, 2 metatarsals, teeth, 2 mandibles, phalanx, vertebra, 3 ribs; *caprine* scapula, radius, 2 metacarpals, teeth, skull fragment, rib

Worked bone

L21: Point made on sheep metatarsal (HH77 2134)

Pottery

L21: 178 sherds/391 g Neolithic Bowl pottery, concentrated towards centre, including 2 sherds/9g (HH77 1321) possibly from chalk-tempered vessel represented in primary silt, and rim sherd of P130 (further rim sherd of same vessel from L20 (phase V) in same area)

L38: 8 sherds/44 g Neolithic Bowl pottery, including 1 sherd (HH77 1808) possibly from fabric 6 vessel described under phase I and represented through much of sequence

L35: 49 sherds/215 g, all from same fabric group 6 vessel (HH77 1526, 1527, 1530, 1865, 2080, 2083)

L19, concentrated in SE: 171 sherds/819 g Neolithic Bowl pottery, including P101 and 3 sherds/39 g of P18 from 2 findspots 0.50 m apart (further sherds of same vessel from L17, L18 in same area), most of P99, and 17 sherds/63 g (HH77 2208) from the fabric 6 vessel described above

Lithics

L21, concentrated near centre: 115 flakes (1 burnt), 2 cores, flaked lump, 3 scrapers, altered Gabbro axehead fragment (S16), probably same implement as S15 from L40 (in LB3 SIII)

L38: 8 flakes, edge-trimmed flake, unworked quartzite pebble fragment (in LB3 SII)

L35: 10 flakes, edge-trimmed flake, flake from ground implement, Heathstone quern fragment (in LB3 SII)

L19, concentrated in SE: 135 flakes, 3 cores, 2 serrated flakes, 2 edge-trimmed flakes, 3 scrapers, 5 misc retouched

Unclassified burnt flint

L19: 3 g

Charcoal

L21: *

Charred seeds and/or nutshell

L19: <10 g charred hazelnut shell (in SE butt)

^{14}C

LB 3 SIV L19: *3500–3430 cal BC* (4580±30 BP; OxA-7813) on articulating cattle tibia fragment and astragalus HH77 2241

Phase IV. Band of silty loam (L17), up to 0.07 m deep and 0.50 m wide and >1.00 m long, overlying L19 and adjacent deposits in SE butt, burnt material scattered throughout, with localised concentrations; charcoal (1 find) scarce in proportion to charred hazelnut shell (12 finds); unburnt artefacts and animal bone also abundant. No discolouration or burning of underlying material. Full extent unclear because truncated at very end of butt by LB2–3 F6 (phase VI). Small patch of burnt material at same horizon near centre (in LB3 SI).

Animal bone and/or antler

L17: *dog* metapodial; *pig* humerus, femur, tooth, mandible, maxilla (burnt), phalanx, skull fragment; *cattle* 2 tibiae, 2 metacarpals, teeth, 2 mandibles, 2 phalanges (1 burnt), 5 vertebrae, rib; *caprine* radius. Further finds of burnt bone, especially in NE of layer

Pottery

L17: 2 sherds/75 g of P92, further 3 sherds/95 g possibly from same pot (all in small compass); 3 sherds/16 g of P18 (also represented in L19 and L18 in same area); 62 sherds/548 g from fabric 6 vessel described above (in particularly fresh condition – better than those from lower down the sequence, and with internal sooty residue); further 80 sherds/235 g Neolithic Bowl pottery. Also 1 missing pottery find.

Lithics

L17: 35 flakes (13 burnt), edge-trimmed flake

Unclassified burnt flint

L17: 400 g

Charcoal

L17: Maloideae

Charred seeds and/or nutshell

L17: >80 g charred hazelnut shell

^{14}C

L17: *3460–3370 cal BC* (4741±26 BP; UB-4270) on charred hazelnuts HH77 Sa 167

Phase V. Dark brown to pink silt with weathered chalk lumps near centre, redder, more clayey matrix in NW and SE, flint as well as chalk inclusions in NW (L20). In parts of SE continued to accumulate after deposition of L18.

Animal bone and/or antler

L20: *pig* tibia; *roe deer* tooth; *red deer* 2 worn antler fragments; *cattle* scapula, radius, metatarsal, teeth; *caprine* scapula, tooth

Pottery

L20: 32 sherds/99 g Neolithic Bowl pottery, including rim sherd of P130 (further rim sherd from L21)

Lithics

L20: 88 flakes (1 burnt, 2 utilised), 2 edge-trimmed flakes, 3 scrapers, 2 misc retouched, Old Red Sandstone fragment (LB3 SIII)

Phase VI. VI/a: in NW sub-segment, recut at least 1.30 m wide made almost to bottom of very shallow NW butt of ditch, cutting into primary silt, filled with rich dark brown clayey loam with flint nodules and some chalk (L22 in LB2 SV, SII). Slot removed by later feature in area of step between NW sub-segment and rest of ditch. Elsewhere band of pink-brown silt up to 1.00 wide and 0.30 m deep, with dense, loosely packed nodules (L18 except in LB2 SV, SII) laid along deepest part of silted ditch, often heaped up, apparently not cut in except in SE butt, where a slot up to 1.20 m wide and 0.30 m deep was cut into the underlying silts.

Animal bone and/or antler

L22: *caprine* tooth

L18, concentrated in bottom of deposit and in NW: *pig* scapula, 3 humeri, ilium, 2 mandibles, tooth, 2 phalanges; *red deer* metatarsal; *cattle* 3 scapulae, humerus, 6 radii, 3 acetabula, 3 femora, 2 tibiae, 2 ilia, ischium, pubis, 2 metatarsals, teeth, mandible, 2 phalanges, 8 vertebrae, skull fragment, horncore, 2 ribs; *caprine* scapula, 2 humeri, radius, 3 tibiae, ischium, 2 metatarsals, vertebra, rib

Pottery

L22: 42 sherds/100 g from P38, clustered together near NW butt (HH77 1593, 1594, 1588, 1589, 1590, 1592), probably derived from primary silt when slot cut (see phase I and Table 3.4); further 2 sherds/96 g Neolithic Bowl pottery

L18: 4 sherds/33 g of P119; 2 sherds/4 g of P18 (also represented in L19 and L17); further 63 sherds/219 g Neolithic Bowl pottery

Lithics

L18: 286 flakes (3 burnt, 1 utilised), core fragment, flaked lump, 2 serrated flakes, 4 edge-trimmed flakes, 5 scrapers, piercer, 7 misc retouched, beach pebble hammerstone, Heathstone quern fragment (LB3 SIII)

Unclassified burnt flint

L18: 22 g

VI/1–2: dark brown earthy silts with rounded, comminuted chalk and flint and peagrit (L6), derived mainly from barrow mound, forming around and preserving heaped-up surface of L18.

L6 began to accumulate before deposition of L18 in some parts of ditch.

Animal bone and/or antler

L6: *pig* mandible; *cattle* humerus, pubis, metatarsal, tooth, maxilla, 3 vertebrae (humerus, metatarsal, maxilla, 1 vertebra, all in LB2 SIII); *caprine* metatarsal

Pottery

L6: 39 sherds/94 g Neolithic Bowl pottery, 1 plain body sherd/12 g possibly in a Bronze Age fabric, 1 missing pottery find

Lithics

L6: 74 flakes, serrated flake, 3 edge-trimmed flakes, scraper

VI/b: flat-bottomed pit 2.50 m × 1.30 m, up to 0.35 m deep (LB2–3 F6) cut into SE butt, truncating L17 and L18. Thin lower fill of stiff orange-brown clayey loam with crushed or broken flint (L41). Most of pit filled with soft, dark brown humic loam with dense, large flint nodules and little chalk (L39).

Animal bone and/or antler

F6 L41: *cattle* tooth

F6 L39: *cattle* carpal (burnt)

Pottery

F6 L41: 46 sherds/248 g Neolithic Bowl pottery, including 12 sherds/125 g of P51, against edge of pit (further sherds in L34 (phase I)

F6 L39: 26 sherds/80 g Neolithic Bowl pottery

Lithics

F6 L41: flake

F6 L39: 2 flakes

Unclassified burnt flint

F6 L39: *

Charred seeds and/or nutshell

F6 L39: <10 g charred hazelnut shell

Phase VII. Upper nodules of L18, protruding through L6 except where truncated by F1 and F2 in NW butt and by F6 in SE butt. Called L15. Visible as dense patches of flint 1–1.50 m across, separated by relatively flint-free gaps, in contrast to continuous band of L18, as if material originally piled in heaps.

Animal bone and/or antler
L15: *cattle* teeth; *caprine* metacarpal

Shell
L15: *

Pottery
L15: 16 sherds/21 g Neolithic Bowl pottery, 1 missing pottery find

Lithics
L15: 87 flakes, core, 2 edge-trimmed flakes

Phase VIII/a. Loose, humic brown loam with small chalk fragments (L4), denser and more comminuted than in L6.

Animal bone and/or antler
L4: *

Pottery
L4: 6 sherds/19 g Neolithic Bowl pottery, 7 sherds/6 g Roman, 19 missing pottery finds (2 described as 'samian', 1 as 'R-B')

Lithics
L4, concentrated in SE: 526 flakes, 3 cores, scraper, piercer, 5 misc retouched

Unclassified burnt flint
L4: 28 g

Other artefacts
L4: glass fragment

Upper levels and unstratified. Intercutting features (probably flint quarries) cut into and outside NW butt of ditch, F4 being the earliest, followed by F3, F1 and F2 in that order. NE side of F4 formed by boundary between Clay-with-Flints to SE and chalk to NW. Frequency of finds from F2 due to its being cut entirely in barrow ditch. Further feature(s) cut into ditch fill in LB2 SII, SVI, SIV, SVII recognised only when sections drawn. On Clay-with-Flints in SE, further probable quarry (F5) cut into inner edge ditch butt and adjacent tail of mound. These features and layers overlain by sorted horizon of recent turfline (L7, with dense peagrit), its upper, stone-free zone (L3) and up to 0.40 m of loose brown loam with chalk and flint rubble (L2), resulting from the partial levelling of the barrow mound, deepest in SW and covered by the very thin current topsoil and turf (L1). In mound area loamy fill (L42) of hollow in chalk directly underlay L1. L5 variously recorded as topmost fill of F4 and as equivalent to L7 over features in NW corner of site.

Human remains
F2 L36: fragmentary adult femur shaft (HH77 1677)
L2, concentrated in area *c* 4 m × 3 m over ditch, immediately SE of central transverse baulk (only 1 further find made when baulk removed), with a few other finds scattered to SE over area of inner SE cross-dyke bank: >217 fragments from at least four adults, with only a single skull fragment from a child (HH77 84). Cut-marks on adult femur shaft (HH77 77) and mature adult ischium (HH77 95)

Animal bone and/or antler
F1 L29: *
F2 L25: *; F2 L37: *pig* ischium; *red deer* metatarsal; *cattle* scapula, ulna, femur; F2 L36: *; F2 L19: *pig* humerus, calcaneum; *cattle* radius, 2 ilia, metatarsal, 3 teeth, 2 phalanges; *caprine* 2 radii, mandible
F4 L32: *cattle* 2 teeth
L7: *cattle* 3 teeth
L3: *rabbit* femur
L2: *pig* radius, ulna, acetabulum, tibia, pubis, rib; *red deer* antler fragments; *cattle* 2 scapulae, 2 acetabula, 3 tibiae, ilium, 2 metacarpals, 4 teeth, mandible, phalanx, rib; *caprine* 4 tibiae
L1: *pig* tooth; *cattle* tibia, 2 mandibles, teeth; *caprine* tooth

Pottery
F1 L29: 1 sherd/3 g Neolithic Bowl pottery; F1 L16: 3 sherds/15 g Neolithic Bowl pottery
F2 L36: 1 sherd/1 g Neolithic Bowl pottery; F2 LB2 SII L19: 5 sherds/54 g Neolithic Bowl pottery
F4 L33: 1 sherd/5g Neolithic Bowl pottery
F5 L10: 2 sherds/12 g Neolithic Bowl pottery, 1 missing pottery find. F5 L9: 1 sherd/2 g Neolithic Bowl pottery
L7: 14 sherds/37 g Neolithic Bowl pottery, 5 sherds/7 g indeterminate, 11 missing pottery finds (1 described as 'R-B – samian?', 1 as 'R-B?')
L5: 2 sherds/10 g Neolithic Bowl pottery, 2 missing pottery finds
L3: 1 sherd/5 g Neolithic Bowl pottery, 6 missing pottery finds (1 described as 'samian base', 1 as 'modern glazed')
L2: 23 sherds/95 g Neolithic Bowl pottery, 1 sherd/1 g Roman
L42: 4 sherds/32 g Neolithic Bowl pottery
U/S: 3 sherds/18 g Neolithic Bowl pottery

Lithics
F1 L29: flake; F1 L16: 3 flakes
F2 L25: 13 flakes; F2 L37: 20 flakes; F2 L36: 16 flakes, 1 misc retouched; F2 L19: 6 flakes; F2 L18: flake; F2 L15: 6 flakes
F4 L24: flake, scraper; F4 L33: 3 flakes
F5 L10: 29 flakes, scraper, piercer
L5: 3 flakes, piercer
L7: 330 flakes, 2 cores, flaked lump, serrated flake, 5 scrapers, 4 misc retouched, Group I axehead fragment (S17)
L3: 151 flakes (1 utilised), edge-trimmed flake, scraper, 1 misc retouched
L2: 39 flakes, scraper, piercer, 1 misc retouched
L42: 2 flakes
L1: 24 flakes, scraper, 1 misc retouched, unworked Jurassic limestone fragment from baulk between LB2 and LB4, recent stone ball with hole in side and broken-off nail
U/S: 4 flakes

Unclassified burnt flint
L2: 28 g

Other artefacts
F4 L24: Iron Age coin (HH77 1063). Missing, described as blank on reverse. Identified from photograph as Durotrigian bronze stater with some silver content
L3: brick fragment, cartridge case
L2: metal and leather strap, glass
L1: glass fragments, metal spring, metal chain

Charcoal
F2 L25: *Corylus avellana*, Maloideae

Long barrow, S ditch (segment 2) (Figs 3.47–3.48)

Original notation. HH77 site PLB, LB3 L11=L13; LB5 F19, F18, other un-numbered layers.
Form. Pit with steeply sloping sides, fairly flat base.
Length 4.10 m, *width* 3.70 m, *depth* 0.68 m.

Excavation. *c* 80%. Deturfed and excavated by hand. Most of pit in LB5, separated by unexcavated 1 m wide baulk from SW end of recut in LB3.

Phase III. Clean, sometimes vacuous chalk rubble at sides and over part of base, succeeded by rubble with interstitial silt, sometimes concreted.

Phase VI. Slot 2.10 m long, 0.80 m wide and up to 0.15 m deep (LB5 F18) cut into chalk rubble at NE side of pit, filled with black humic material with chalk lumps. Second slot *c* 1.80 m long, 0.70 m wide and 0.30 m deep, filled with brown clay with some chalk and flint lumps (LB5 F19) cut into chalk rubble, extending beyond SW edge (LB3 L11–L13).

Pottery
LB3 L13: 9 sherds/29 g Neolithic Bowl pottery

Lithics
LB3 L11: 7 flakes
LB3 L13: 3 flakes

Phase VIII/a. Black humic material with chalk fragments.

Upper levels and unstratified. Recent turfline overlain by displaced mound material (L2) and current turf and topsoil (L1).

Long barrow, E ditch (segment 3) (Figs 3.47–3.48)

Original notation. HH77 site PLB LB4 and LB5.
Form. Pit-dug in at least 3 sub-segments. Deepest in centre, shallowest in NW butt (*c* 0.20 m deep). Both butts cut into Clay-with-Flints. SW edge slightly truncated by quarry pits.
Length 25.50 m, *width* 4.00 m, *depth* 0.95 m.
Excavation. *c* 90%. Deturfed and excavated by hand. Two quadrants (LB4 and LB5) excavated in plan, leaving central 3 m-wide baulk. Temporary sections recorded where appropriate.

Phase I. In NW butt: brown clay with weathered chalk lumps (L16) lying directly on Clay-with-Flints of ditch bottom, filling butt to top, extending *c* 3 m along ditch. Elsewhere: light brown silt with small chalk fragments and peagrit, derived from inner edge (L17), brown silt with comminuted chalk (L24) from outer edge. Near NW butt, just beyond L16, small pit *c* 0.10 m deep cut into Clay-with-Flints at junction of ditch bottom and outer side (F12), filled with loamy brown material with flint and chalk fragments. Not observed cutting through ditch fills, possibly primary feature.

Animal bone and/or antler
L16: *pig* tibia
L17: *red deer* antler crown with two terminal tines, beam broken anciently below crown, slight wear on distal tine, embedded in natural chalk of ditch bottom (HH77 1018)

Pottery
L16: 29 sherds/56 g Neolithic Bowl pottery
L17: 354 sherds/1016 g forming P79 (*c* 50% of rim present), found together a little above surface of hump between SE and central sub-segments

Lithics
L16: 19 flakes
L17: 2 flakes

^{14}C
L17: *3680–3630 cal BC (83%) or 3560–3530 cal BC (12%)* (4870±35 BP: OxA-8845) on antler HH77 1018; experimental measurement made on $C_{18:00}$ fatty acid from P79 (see Evershed *et al*, 7.3)

Phase III. Vacuous chalk and flint rubble, largely derived from interior (L13) interleaved with earthy silts from interior (L23) and compacted chalk rubble from exterior (L26), capped by smaller, concreted chalk rubble from interior (L22).

Animal bone and/or antler
L13: *pig* tibia, radius-ulna, metapodial, mandible, 2 phalanges; *roe deer* radius, tibia; *cattle* 3 humeri, 2 radii, femur, tibia, ilium, ischium, pubis, 4 metatarsals, tarsal, tooth, mandible (fairly complete), 4 phalanges, 8 vertebrae; *caprine* humerus, femur, 2 tibiae, mandible, phalanx, vertebra

Pottery
L13: 32 sherds/163 g Neolithic Bowl pottery

Lithics
L13: 299 flakes, 6 cores, 2 core fragments, flaked lump, serrated flake, edge-trimmed flake, 2 misc retouched, hammerstone

Charcoal
L13: *Betula* sp

Phase V. Earthy silt with small chalk fragments from interior (L15) grading into earthy silt with less chalk from exterior (L6), overlain by earthy silt with scarcer, larger chalk fragments (L10) extending from side of mound area into ditch. In places a small depth of L10 accumulated after cutting and filling of F1 and F11 (phase VI). Localised lens of fine, black humic material with few stones *c* 0.05 m deep (L12) between L15 and L10.

Animal bone and/or antler
L15: *pig* 2 metacarpals, possibly articulating (HH77 1403); *cattle* scapula, humerus, metacarpal, 2 metatarsals, astragalus, 2 phalanges, vertebra
L10: *pig* humerus; *cattle* 2 femora, vertebra; *caprine* humerus

Pottery
L15: 12 sherds/49 g Neolithic Bowl pottery, 2 sherds/2g indeterminate, 1 missing pottery find

Lithics
L15: 93 flakes, core, 1 misc retouched
L10: 18 flakes, scraper
L12: 6 flakes

Unclassified burnt flint
L15: 4 g

^{14}C
L15: Mean of *3710–3620 cal BC 3710–3620 (55%) or 3600–3520 cal BC (40%)* (4795±50 BP; OxA-7828 and 4910±56 BP; OxA-7829) on ?articulating pig metacarpals HH77 1403

Phase VI. Continuous slot up to 0.80 m wide and 0.30 m deep (F1 in LB4, F11 in LB5) cut along ditch top, closer to outer edge than inner, stopping just short of SE butt. NW end unclear because of shallowness of butt and other features cut into it. Filled with black/brown humic material with flint and chalk rubble and peagrit, edges indistinct. Kidney-shaped pit 2.75 m × 0.65 m × 0.40 m deep (F4) cut into NW butt, filled with brown clay and densely-packed flint nodules, larger towards base. Relation (if any) to F1 removed by F9 and F10 (phase VII/a).

Human remains
F1: adult femur shaft fragment (HH77 700)
F11: 5 adult teeth (HH77 916)

Animal bone and/or antler
F1: *cattle* 2 tibiae, vertebra; *caprine* tibia
F11: *red deer* tibia, antler tine with slightly worn tip; *cattle* humerus, radius, ulna, 3 tibiae, metatarsal, 4

phalanges, 4 vertebrae, 2 ribs; *caprine* femur, metacarpal, horncore
F4: *cattle* tibia

Pottery
F1: 7 sherds/64 g Neolithic Bowl pottery, including P151
F11: 10 sherds/49 g Neolithic Bowl pottery
F4: 33 sherds/238 g Neolithic Bowl pottery, including 16 sherds/148 g from P105, also represented in phase I contexts in opposite ditch

Lithics
F1: 114 flakes, core fragment, flaked lump, 2 scrapers
F11: 16 flakes
F4: 381 flakes, 31 cores, 3 core fragments, 13 flaked lumps, 7 scrapers, piercer, 3 misc retouched (almost all of flint with heavily abraded cortex, cores mainly irregular, large and with few removals)

Unclassified burnt flint
F4: 44 g

Phase VII. L9 initially seen as discontinuous flint capping over F1+F11. Subsequently resolved into surface of flint-packed fill of F4, flintier patches in surface of F1+F11 (eg F7), and flint-packed fills of F5 and F8, both cutting F1+F11 (see phase VII/a) and of posthole F6. F2, partly overlying F11 and extending beyond ditch edge at base of L4 (Fig 3.50), was, exceptionally, a dense nodule spread which did not prove to be the surface of a feature fill.

Animal bone and/or antler
F2: *caprine* horncore
F7: *

Lithics
F2: 11 flakes, flaked lump
F7: 17 flakes
LB4, 'top of flint cairn in ditch': 20 flakes

Phase VII/a. SE butt: pit 0.35 m deep (F5), filled with loam and chalk and flint rubble, possibly flint-capped, cut into L15 near inner edge of ditch, away from F11; larger pit 0.40 m deep (F13), with humic fill, cut through F5 and F11; smaller pit 0.30 m deep (F3) with humic fill cut through F5 and F13.

NW butt: Pit 0.25 m deep (F8), with humic fill containing abundant flint nodules, cut into outer edge of F1; smaller pit 0.15 m deep (F9), with humic fill, cut into inner edge of F1; pit 0.30 m deep (F10), with humic fill, cut into SE edge of F4.

Animal bone and/or antler
F3: *
F5: *pig* 2 astragali, tooth; *cattle* metatarsal, phalanx; *caprine* pair of astragali.
F13: *pig* radius, femur; *cattle* ilium; *caprine* ilium

Pottery
F3: 1 sherd/3 g in Beaker fabric; 2 missing pottery finds. Overlying F3: 14 sherds/16 g Beaker (simple rim fragment, some plain sherds, some with irregular stabbed decoration)
F5: 3 sherds/26 g Neolithic Bowl pottery, including 1 sherd of P99; 9 sherds/15 g Beaker (simple rim fragment, 6 plain sherds, 2 with fingertip impressions)
F9: 1 sherd/1g indeterminate sand-tempered
F13: 2 sherds/16 g Neolithic Bowl pottery; 4 sherds/8 g Beaker (3 plain, 1 with irregular stabbed decoration); 8 sherds/21 g indeterminate flint- or sand-tempered

Lithics
F3: 9 flakes, edge-trimmed flake, scraper, 1 misc retouched
F5: 6 flakes, 1 misc retouched
F8: 4 flakes
F9: 13 flakes
F10: 61 flakes, 2 misc retouched
F13: 458 flakes, scraper, 2 misc retouched

Phase VIII/a. Dark humic brown loam with small chalk fragments (L4), denser and more comminuted than in L10 and L6, extending from flank of mound area into ditch and beyond its outer edge.

Pottery
L4: 2 sherds/6 g Neolithic Bowl pottery; 7 missing pottery finds (1 recorded as 'flat base', 1 as 'samian')

Lithics
L4: 12 flakes

Upper levels and unstratified. Features (probably flint quarries) cut into mound area and SW side of ditch (F14+F16, F15, F21). All but F21 cut in to Clay-with-Flints. F5, covering and extending beyond NW butt of ditch, probably spoil from quarrying. Further possible feature recognised near centre of ditch during section-drawing. These features and layers overlain by sorted horizon of recent turfline, its upper, stone-free zone (L3) and up to 0.12 m of loose brown loam with chalk and flint rubble (Fig 3.48: L2) resulting from the partial levelling of the barrow mound, covered by current topsoil and turf (L1).

Animal bone and/or antler
F14 L21: *red deer* antler tine fragment; *pig* R and L femora; *cattle* ilium, ischium
F14 L20: *red deer* antler tine fragment, acetabulum, ischium; *cattle* ilium, horncore
F14 L18: *cattle* scapula
F16: *cattle* horncore
L2: *cattle* metacarpal
L1: *pig* tooth; *cattle* metatarsal
U/S: *

Pottery
F14 L20: 1 sherd/4 g Neolithic Bowl pottery
F14 L19: 1 missing pottery find
L3: 5 sherds/10 g Neolithic Bowl pottery; 1 sherd/2 g Roman; 6 missing pottery finds (3 recorded as 'samian')
L2: 11 sherds/77 g Neolithic Bowl pottery, 2 missing pottery finds (1 recorded as 'base')
L1: 10 sherds/66 g Neolithic Bowl pottery

Lithics
F14 L19: 2 flakes. F14 L18: 4 flakes. F16: 1 misc retouched
L5: 4 flakes
L3: 3 flakes
L2: 5 flakes, 1 misc retouched
L1: 43 flakes (1 of chert), scraper, 1 misc retouched
U/S: 32 flakes, 1 misc retouched, siltstone flake (S18)

Unclassified burnt flint
U/S: 16 g

Other artefacts
F14 L21: iron fragment
L3: glass fragments, 3 cartridge cases

Charred seeds and/or nutshell
L1: walnut

3.3.7 Discrete features in the central area

Some 1.15 ha, approximately 15% of the total, of the interior of the main enclosure were excavated in 1974–77, mainly on sites A, B, C and N (Fig 3.51), with further small areas immediately inside the ditch on sites D1, E1, G, H, J1, and P1. Seven discrete features were found outside the main enclosure on sites D2, E2, and P2, and in WOWK area 3 (Figs 3.37–38, 3.41–42, 3.44). The catalogue which concludes this section summarises all definite and probable Neolithic pits from the central area, together with all features likely to have pre-dated or to have been contemporary with the earthwork banks, except for postholes, which are tabulated in Table 3.2 (pp 50–2).

Survival and distribution

Features were generally first seen as patches of pre-1960s turf and topsoil, which survived in hollows while ploughed away elsewhere. The surfaces into which the plough had cut around these patches included solid chalk, fragmented, discoloured chalk, patches of Clay-with-Flints, sand, gravel and Coombe Rock (Ch 1).

Erosion of soil and other deposits from the surface of the hill (Ch 1) almost certainly means that many shallow features will have vanished completely, or been reduced to exiguous hollows. This is made clear by the survival of P2 F9 and F14 under the inner south cross-dyke bank, cut almost entirely into the pre-bank soil and the underlying clay and Coombe Rock, and scarcely penetrating the solid chalk (Fig 3.42). An example of a pit on the point of extinction is A F50 (Fig 3.58). The original distribution of features may thus have differed from that shown in Figure 3.51. G F5 shows that features were cut up to the north-west edge of the enclosure (Fig 3.27), and pits such as P2 F14 and WOWK3 F5 (Figs 3.42, 3.44) show that they were cut outside its limits. E2 F1, between the inner and outer east cross-dykes, may be a further instance, although its complex fills (Fig 3.41) may suggest a natural origin, despite a substantial Neolithic assemblage. The surviving features were concentrated on the more level parts of the excavated areas, close to the crown of the hill in the north-east ends of sites B and N and the south-west end of site C, and on the relatively gentle slope of site A (Fig 3.51) This may reflect original preference or more extensive erosion on steeper slopes. On site N it was noted that ploughsoil finds of struck flint were concentrated in the north, where the features were located.

Form

Pits

There were over 70 pits of certainly or probably earlier Neolithic date. The soil component of their fills was consistently darker and more humic than the overlying modern ploughsoil. Most were subcircular to ovoid in plan. They generally measured between 0.50 m and 2.00 m across, and between 0.10 m and 0.60 m deep (Fig 3.52), their shallowness reflecting truncation by the plough (Fig 1.7). The larger pits tended to concentrate towards the crown of the hill, in the north of sites B and N, although size, especially depth, varied greatly between neighbouring pits, as in pit group III (Fig 3.57).

Some pits occurred in pairs or larger groups (Fig 3.51). Pairs included N F5 and F6, N F10 and F11, and perhaps N F22 and F23, although these last may have been part of a larger group extending beyond the excavated area. The three largest groups are described below.

Pit groups

Pit group I. In the north-east corner of site B at least four pits (B F2, F3+F3A, F13A, F14, perhaps also F13B), were grouped with a natural feature, probably a solution pipe (B F12), and a treethrow hole (B F1+F17+F13), cut by a recent flint quarry (B F1A+F1B+F1C; Figs 3.53–55). Two layers of silt, with little cultural material, had accumulated in B F2 before it was recut. In the earliest silt layer was a burnt, worn fragment of red deer antler beam and trez tine. The recut, although shallower and less extensive than the silt layers, was rich in artefacts and animal bone and included many large chalk lumps. The simpler stratigraphy of the shallower neighbouring pit, B F3, incorporated fewer finds, the most notable of which was a single large sherd from a bowl in a Jurassic fabric, which lay on the pit floor. In B F14, one of the largest pits, chalky silt had accumulated without the incorporation of any cultural material before a Group XVI axehead (S1) and more than half of a small flint-tempered cup (P58) were placed on it (Figs 3.54–55). The cup must have been incomplete when deposited, since it was protected from the plough by the overlying layer, and since further sherds of it occurred in that layer and probably in the neighbouring natural feature, B F12. The cup and axehead were covered by dark soil in which were struck flint, animal bone and two large bowls in Gabbroic fabrics. It is unclear whether these pots were buried complete, since the top of the pit was ploughed down. Sherds of one (P1) were concentrated to the west side and sherds of the other (P2) to the east. Also present were sherds of a lugged, flint-tempered bowl with a decorated rim (P138). P1, P2 and P58 were in fresh condition and almost all the sherds from the pit were attributable to them or to P138, in contrast to the predominance of small, abraded, unattributable sherds in most features. A charred, immature human skull fragment (HH75 611) also came from the pit. Immediately next to this pit, the top of a solution pipe, B F12, seems to have been infilled at the same time, since the small amount of cultural material concentrated in the top 0.10 m includes a few sherds probably from P58 and 11 sherds/56 g, most of them in fresh condition, in Gabbroic fabrics, including P6 and P7, which in this group were found only here and in B F14.

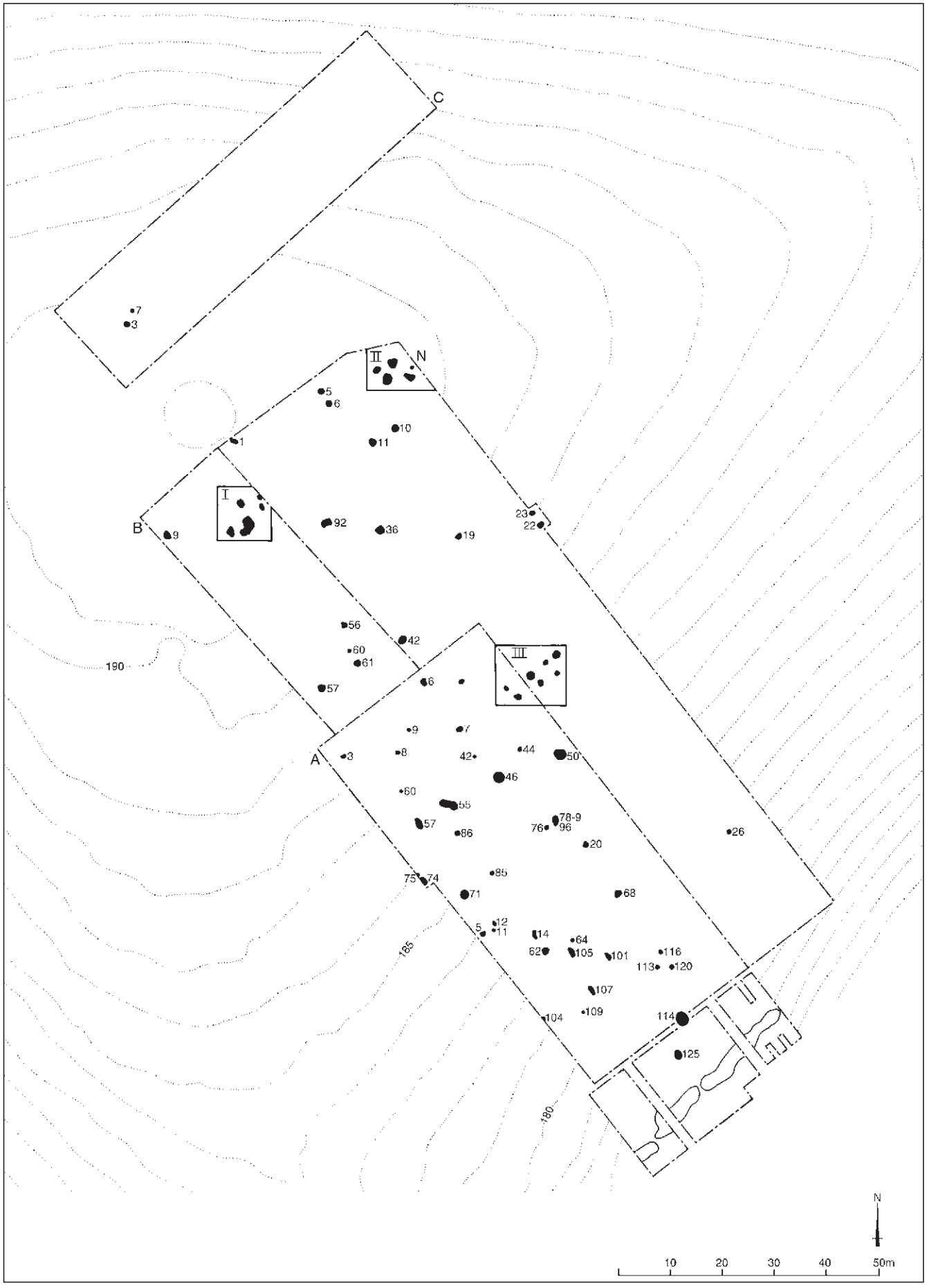

Fig 3.51 Central area, sites A, B, C, and N. Definite and probable Neolithic features, showing pit groups I–III. Contours in metres OD.

Table 3.6 Finds from treethrow hole B F1+F13+F17 and recent quarry B F1A–C

* = recorded, but unidentified or missing

Feature	*Layer*	*Human remains*	*Animal bone*	*Neolithic Bowl*	*Beaker/EBA fabrics (grogged)*	*Lithics*	*Charcoal*
F1	L5			2 sherds/2 g			
	L4					13 flakes, 1 misc retouched	*Quercus* sp, *Corylus avellana*, Maloideae, *Acer campestre*, *Fraxinus excelsio*r
	L3		*Pig* skull fragment; *cattle* scapula; *caprine* calcaneum	18 sherds/108 g		17 flakes, 3 serrated flakes, 2 edge-trimmed flakes	*Corylus avellana*, Maloideae
	L2	Juvenile skull fragments (possibly from B F17, cut into B F1)	*Pig* humerus, radius, pubis, metacarpal, mandible, phalanx; cattle femur	23 sherds/61 g	2 sherds/12 g	24 flakes, 2 serrated flakes, 5 edge-trimmed flakes, 2 misc retouched	Maloideae, *Quercus* sp, *Corylus avellana, Acer campestre*
	L1			2 sherds/5g		10 flakes	Maloideae
	–		*Pig* occipital condyle; cattle rib			26 flakes, scraper	*Corylus avellana*
F13	–		*Rabbit* femur	1 sherd/12 g			
F13 B	–		*	1 sherd/1 g		9 flakes	
Recent quarry	–	Young juvenile mandible fragment	*Pig* mandible, calcaneum *cattle* tibia, metacarpal, tooth, rib	37 sherds/100 g, inc P134	14 sherds/74 g, plain but for 1 sherd with fingernail-impressed decoration Also 1 fragment/3 g fired clay	88 flakes (2 burnt), 3 core fragments, 2 serrated flakes, 2 edge-trimmed flakes, piercer, 3 misc re-touched, Greensand fragment Also 1 g burnt flint	

The relation of the pits to another natural feature is less clear. B F2, F3 and F14 seemed to surround what was almost certainly a treethrow hole, B F1+F13, perhaps cut by another feature, F17 (Fig 3.53). In this feature, Beaker or early Bronze Age sherds were confined to L2, near the surface, while Neolithic sherds also occurred lower down, in L5 and L3 (Fig 3.54; Table 3.6). Its relatively deep central part (F1) fanned out into a ragged, shallow crescent of disturbed chalk and loam (F13), in which recent scrub had rooted. F13A, at the base of F13, seems to have been a disturbed Neolithic pit, recut like B F2. The stratigraphy and the finds from F1+F13 and from F17 and the quarry F1A–C, which cut them would be compatible with at least three interpretations: (1) the tree grew long after the pits had gone out of use; or (2) the pits were cut around a tree, the eventual collapse of which disturbed or destroyed features towards the edges of the root plate (eg F13A) and provided a hollow in which material from them and from the then topsoil could accumulate; or (3) the pits were cut around a pre-existing treethrow hole, in which case material may have been placed in it at the same time as in the pits and the solution pipe, and may have silted into it from the contemporary soil, Beaker and early Bronze Age pottery being introduced to the site only after the treethrow hole was substantially silted.

The excavation of the quarry may have destroyed further pits, and its backfilling would have incorporated artefacts and animal bone from the topsoil. The material from both the treethrow hole and the quarry shows that only a part of the feature group has survived, whether the lost fraction consisted of further pits, of material on and in the vanished surface and topsoil, or both. Juvenile human skull fragments from the treethrow hole echo the charred skull fragment from B F14, and juvenile mandible fragments from the quarry may be coeval. These finds are of particular interest, since human skeletal material was found in only four pits in the central area, including B F14. They are likely to derive from the Neolithic use of the area, but a third millennium date cannot be excluded.

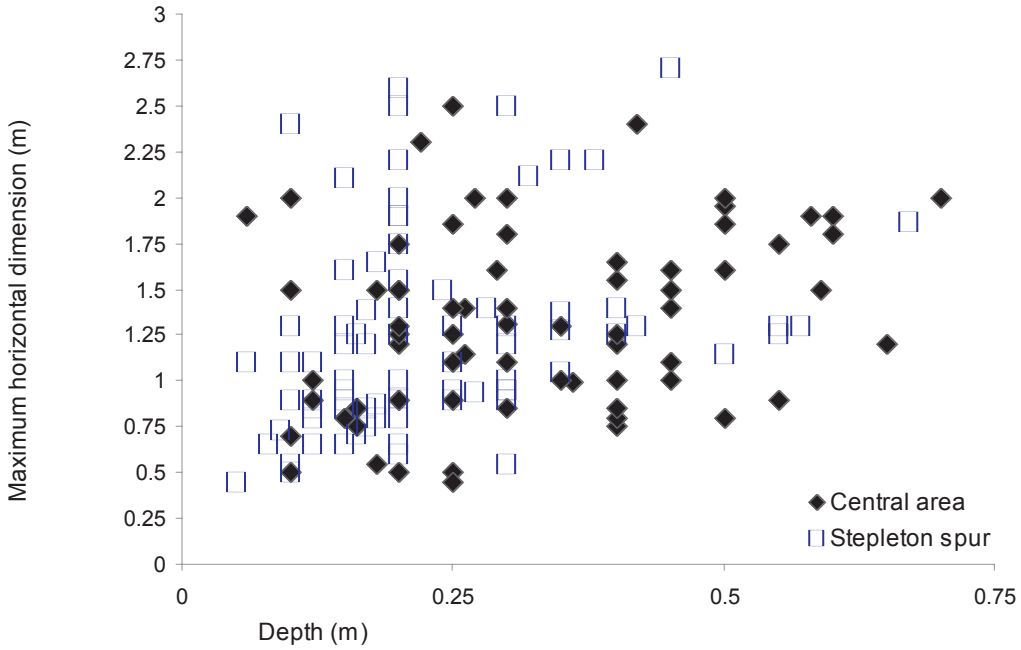

Fig 3.52 Central area and Stepleton spur. Pit dimensions.

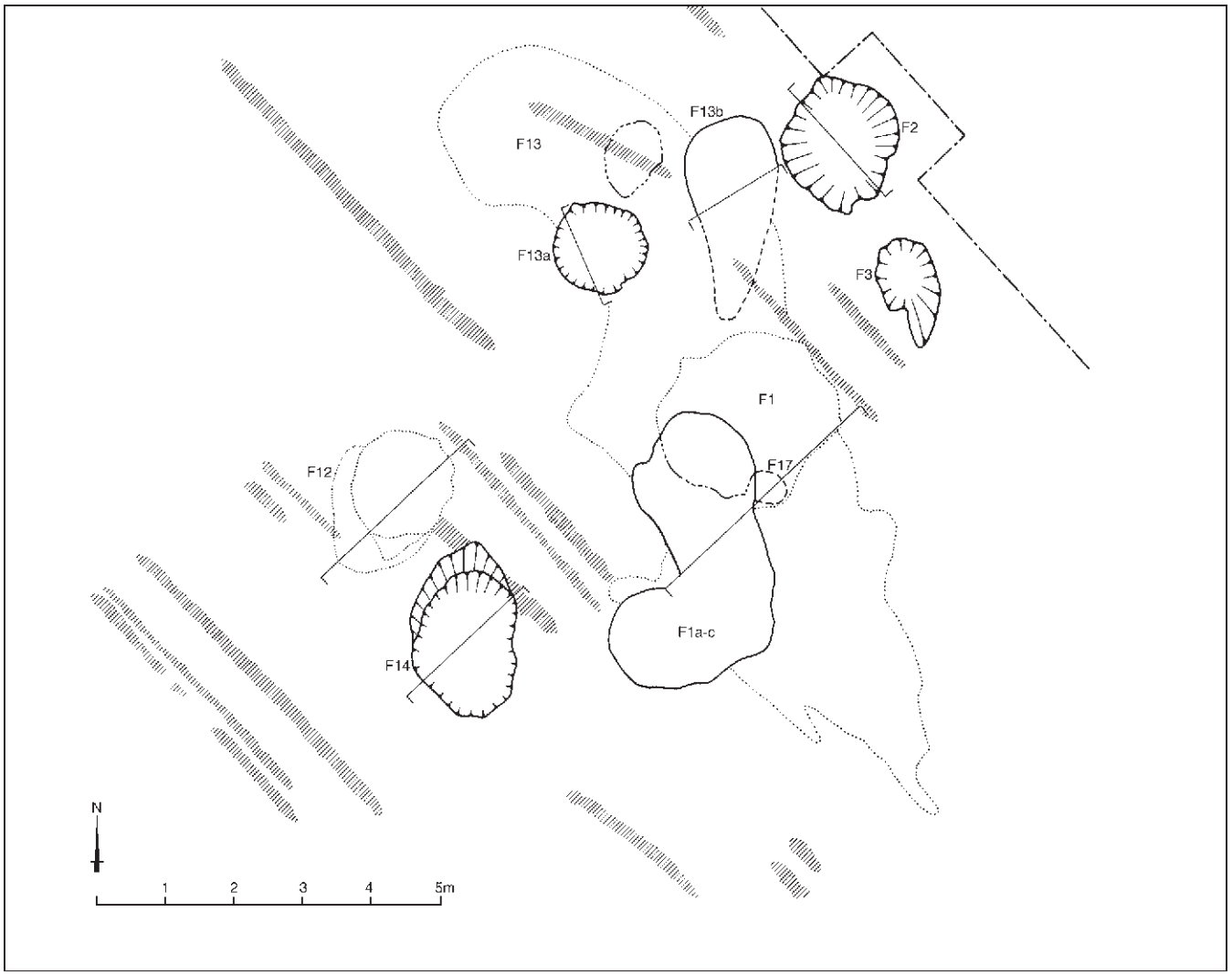

Fig 3.53 Site B, pit group I.

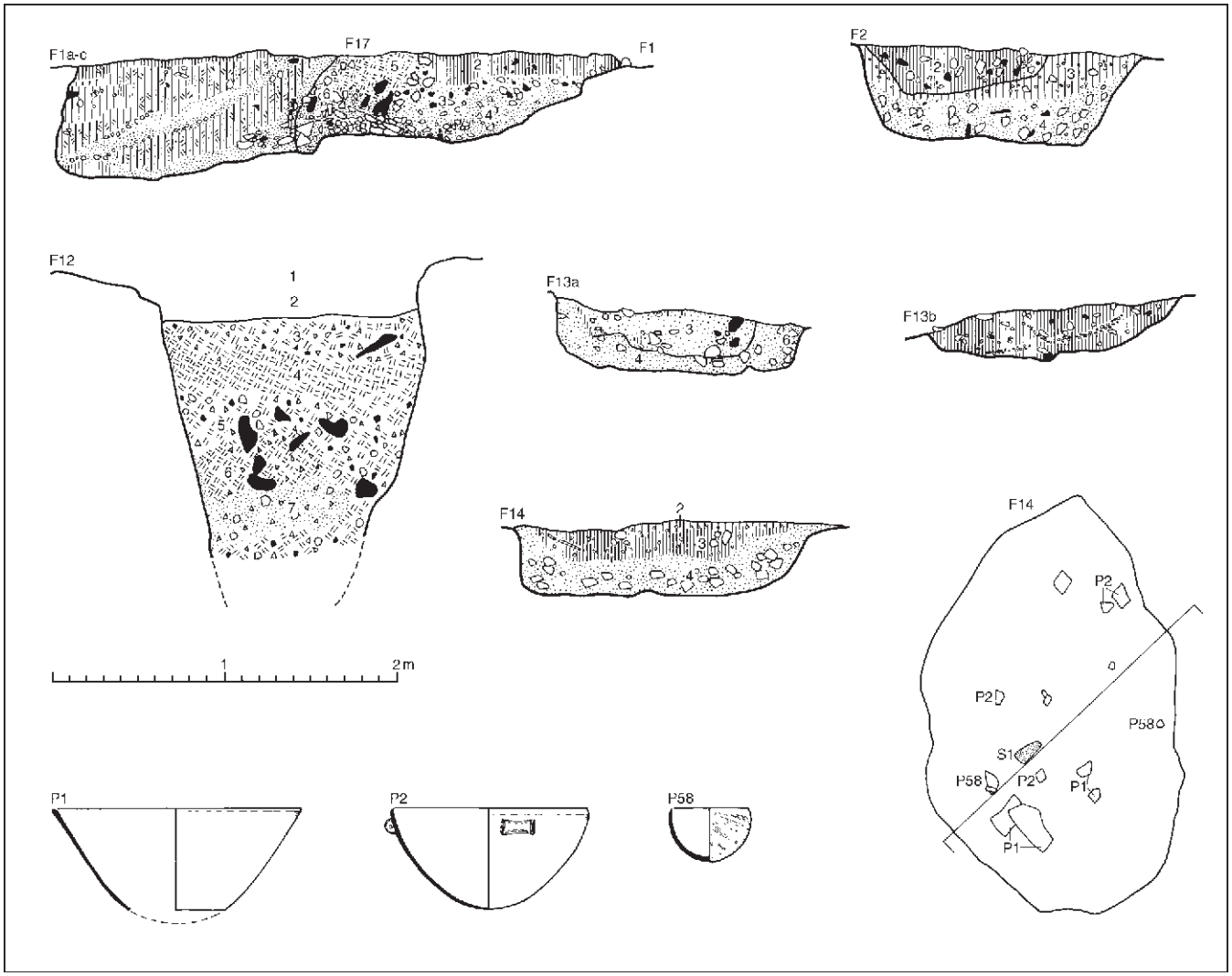

Fig 3.54 Site B, pit group I. Pit sections and detail of B F14.

Pit group II. Five features were clustered in the north corner of site N, near the crown of the enclosure (N F7i/ii, F7iii/vii, F7iv/vi, F7v and F7vii), three of them, all recut, lying in a hollow in the surface of the chalk (F7). The truncated lower silts of all three were relatively poor in cultural material. At the south-west side of N F7ii, the remaining skin of silt and chalk lumps was cut by a tapering cavity up to 0.25 m in diameter filled with stone-free loam, itself truncated by the recut (Fig 3.56). The cavity may have been a root- or animal hole, but its truncation by the recut and the presence of a convincing stakehole in N F10 (Fig 3.59) raise the possibility of the pit having been marked by a stake or post. All the recuts were filled with dark brown, almost black, soil with abundant flint nodules, concentrated near the base of the recut in N F7iii, throughout in the other two, and were rich in cultural material, the assemblage from N F7i including sherds in a Jurassic fabric, possibly from the same pot as a rim sherd from the lower silt in N F7ii. The two remaining pits, N F7v and F7viii, had simpler fill patterns and fewer finds.

Pit group III. Across the boundary between sites A and N seven pits formed two roughly parallel rows aligned north-east/south-west (A F27 and F41; N F17, F25, F82, F90 and F91; Fig 3.57). The original fills of A F41 had been almost completely removed by a recut, the blackened fill of which was replete with burnt material including exceptional quantities of charred cereals (Fig 3.70, Table 6.4) and burnt flint (a bucketful of which was discarded), as well as burnt animal bone and artefacts, charred hazelnut shells and unburnt flint nodules. The near-vertical edges of the truncated earlier fills could not have stood long after recutting, so that the burnt material must been placed in the recut when it was made. The overlying layer lacked the black colour and burnt contents of the first deposit and was tightly packed with broken flint nodules, chips and flakes with cultural material but little soil matrix. The upper fill of the next pit in the row, N F91, was similarly packed with broken flint nodules, plus some chalk, but contained no cultural material at all, although a Neolithic sherd was found in the overlying ploughsoil. The third pit, N F17, was of similar size, depth and fill pattern, but in this case

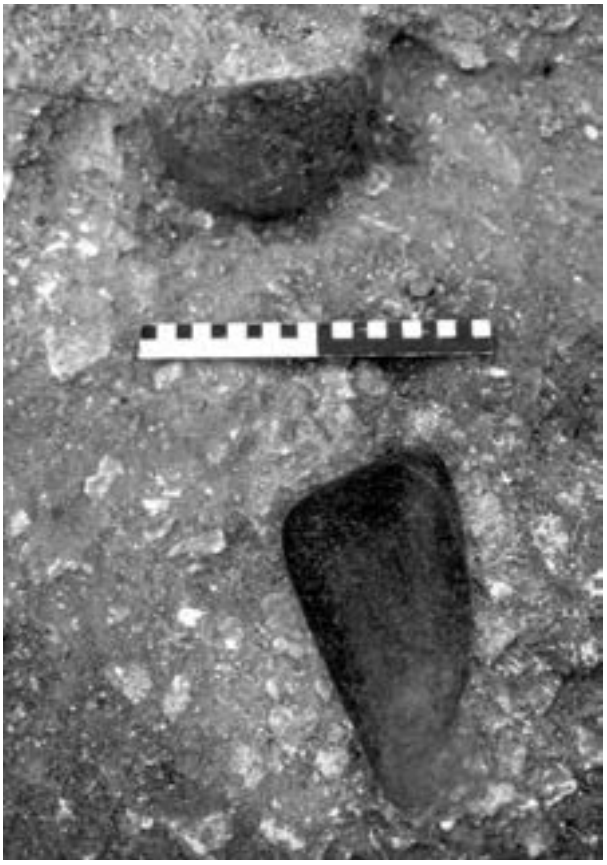

Fig 3.55 Site B, pit group I. Flint-tempered cup P58 and group XVI axe (S1) in situ *in B F14.*

both layers contained cultural material. Exceptionally, the largest quantity of pottery came from the pre-1960s turfline which survived in a hollow at the top of the feature. This included sherds probably from P11, a vessel in a calcite-tempered fabric rare on the site, most of which was found in N F82, 1.50 m away. The initial silt of N F82 itself contained sherds possibly from the same pot, as well as two flint flakes. Flint nodules were piled in the centre of the pit, with antler fragments, covered by brown clayey soil with numerous chalk lumps and considerably more cultural material, including a substantial part of P11. The recut, this time without a concentration of flint nodules, was richest in cultural material despite its small size, and included more of P11, probably derived from the underlying layer.

N F25 was recut, perhaps twice, and filled with soil, flint nodules and chips and much cultural material, including sherds from a vessel represented in the lower silts and almost certainly derived from them. N F90 underwent two or three recuts, the second filled with relatively stone-free loam with charcoal and burnt material, the other(s) with the more common nodule- and artefact-rich soil. There was only a single fill in A F27 and, like A F41, it contained burnt flint, charred hazelnut shell and charcoal, though in much smaller quantities. Most of the pottery from it, all plain body sherds, probably came from a single vessel in a flint-tempered fabric.

The remaining pits

The three pit groups exemplify most of the characteristics of the remaining pits, which, although diverse, form a continuum in which general trends can be distinguished, rather than clear-cut categories into which individual features can be placed.

Form and fills. Rounded profiles, present in pits of all depths, were most frequent among the shallower pits, like A F42 (Fig 3.58), or N F19 (Fig 3.59). The shallower pits predictably tended to have single fills, few recuts, few finds (although there are exceptions such as N F19), and little trace of deliberate placement. This does not, however, seem to be a simple reflection of truncation, since such pits also tended to lack the initial chalky silt common in deeper features, their soil and/or clay fills often lying directly on the pit base, as in A F42. Even among the deeper features, rounded bases tended to be more frequent in pits with clay and/or soil fills lying directly on the base and with few or no finds, as in A F101 or A F113 (Fig 3.58). Such pits may have been backfilled soon after excavation. Their concentration on site A may suggest distinct use of different parts of the enclosed area, or an effect of differential subsoil types. It may be significant that one of the few found on site N, N F26, was isolated in the south-east end of the site, away from other definite features (Figs 3.51, 3.59).

Groups of intercutting pits, absent from the pit groups and generally rare, had similar characteristics, with smooth, rounded profiles and soil fills, and were also concentrated on site A. One of the clearest instances is A F55 (Fig 3.58). Other examples are A F78+F79+F96 and P2 F9+F12+F15 and related features, under the inner south cross-dyke bank. In each case completely silted pits had been cut by later ones, it was not clear how many successive pits there had been, and some features, including the earliest, were without cultural material. Finds were, indeed, at a generally low level, except in A F78. What finds there were seemed concentrated in a single pit (the latest?) in each group and showed no sign of deliberate arrangement. The plans and profiles of some other pits, such as A F50, A F105 or N F82 (Figs 3.58–59), may suggest intercutting, although this was not reflected in their fills.

Flat-based, steeper-sided profiles were more common among deeper pits with more complex fills, like A F7, F41, F46, F64, F74; C F3; N F5, F6, F7i/ii, F23, F25, F42, F82, F90, although the relationship was by no means exclusive, as the range of profiles among the pits in group II makes clear (Fig 3.56). The larger pits tended to concentrate towards the crown of the hill, in the north of sites B and N, although size, especially depth, varied greatly between neighbouring pits, as in pit group III (Fig 3.57).

Recuts occurred in at least 26 pits within and beyond the groups, and were most frequent on site N. Some extended to the base of the pit, as in N F7i/ii (Fig 3.56); others were preserved only in the very top

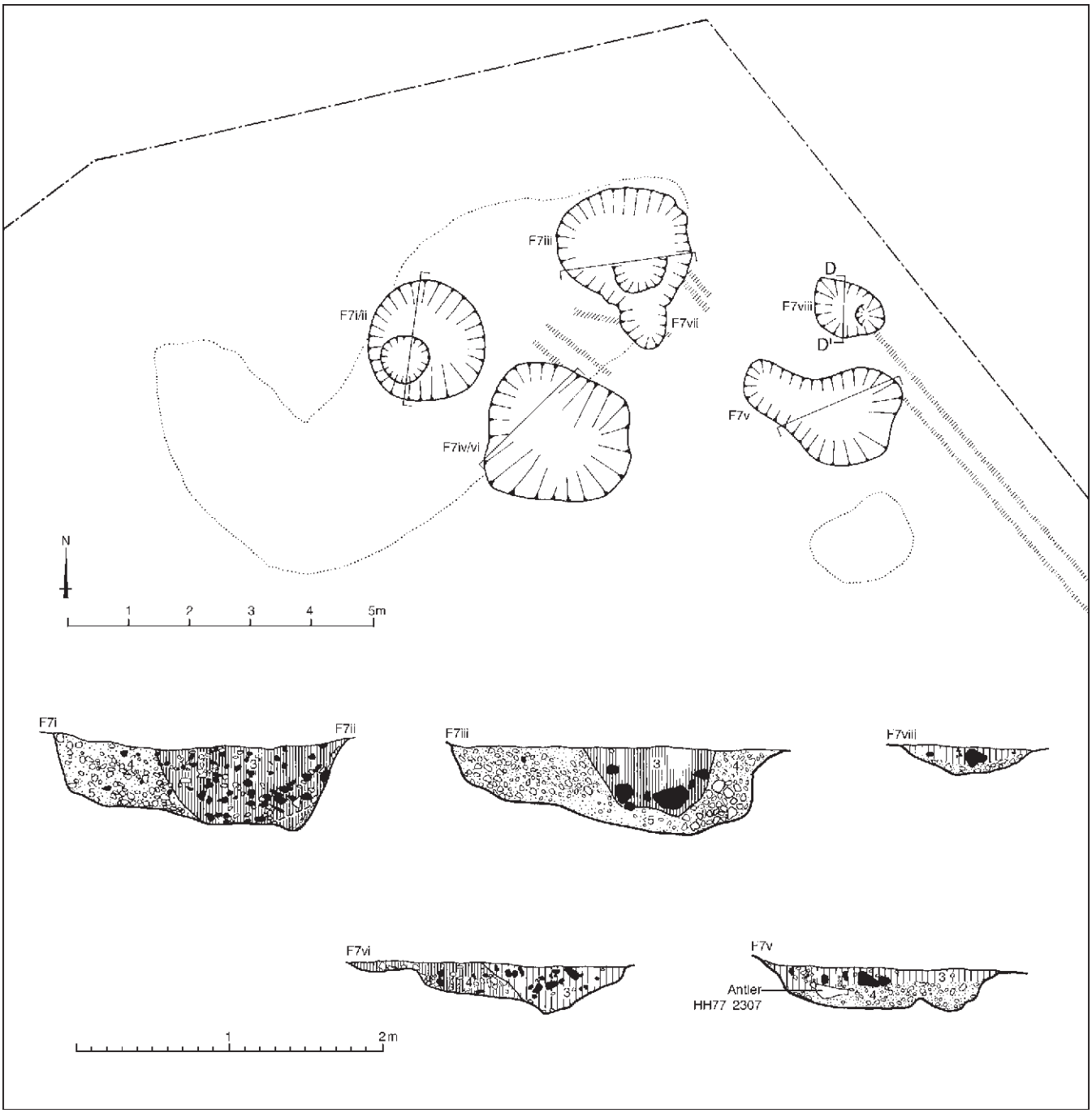

Fig 3.56 Site N, pit group II.

of the surviving fill, as in A F46 (Fig 3.58), indicating that they may originally have been more common. Recuts seem to have made into pits which had silted naturally and where little or no cultural material remained in the original silts. The recuts, on the other hand, were almost always rich in artefacts and were often packed with large flint nodules, accompanied by large chalk lumps, which occasionally dominated, as in B F2 or C F3 (Figs 3.54, 3.59). In some cases, as in N F7i/ii, N F25, and N F82, the original silts of a pit contained sherds of a pot more fully represented in the recut, suggesting that some or all of the finds in the recuts may have derived from the upper parts of the original fills and that these may have been less sterile than the surviving lower parts might indicate. Some recuts were so steep-sided that they must have been infilled almost as soon as they were dug, otherwise their sides would have collapsed. The irregular plans and profiles of some pits with simple fill patterns, like N F7v (Fig 3.56), suggest that they too may have been recut, but completely cleaned out in the process, since the fills were continuous across the irregularities.

Concentration of finds in upper fills. Where recuts were absent, artefacts and animal bone were often placed in the hollows at the tops of silted pits, occasionally

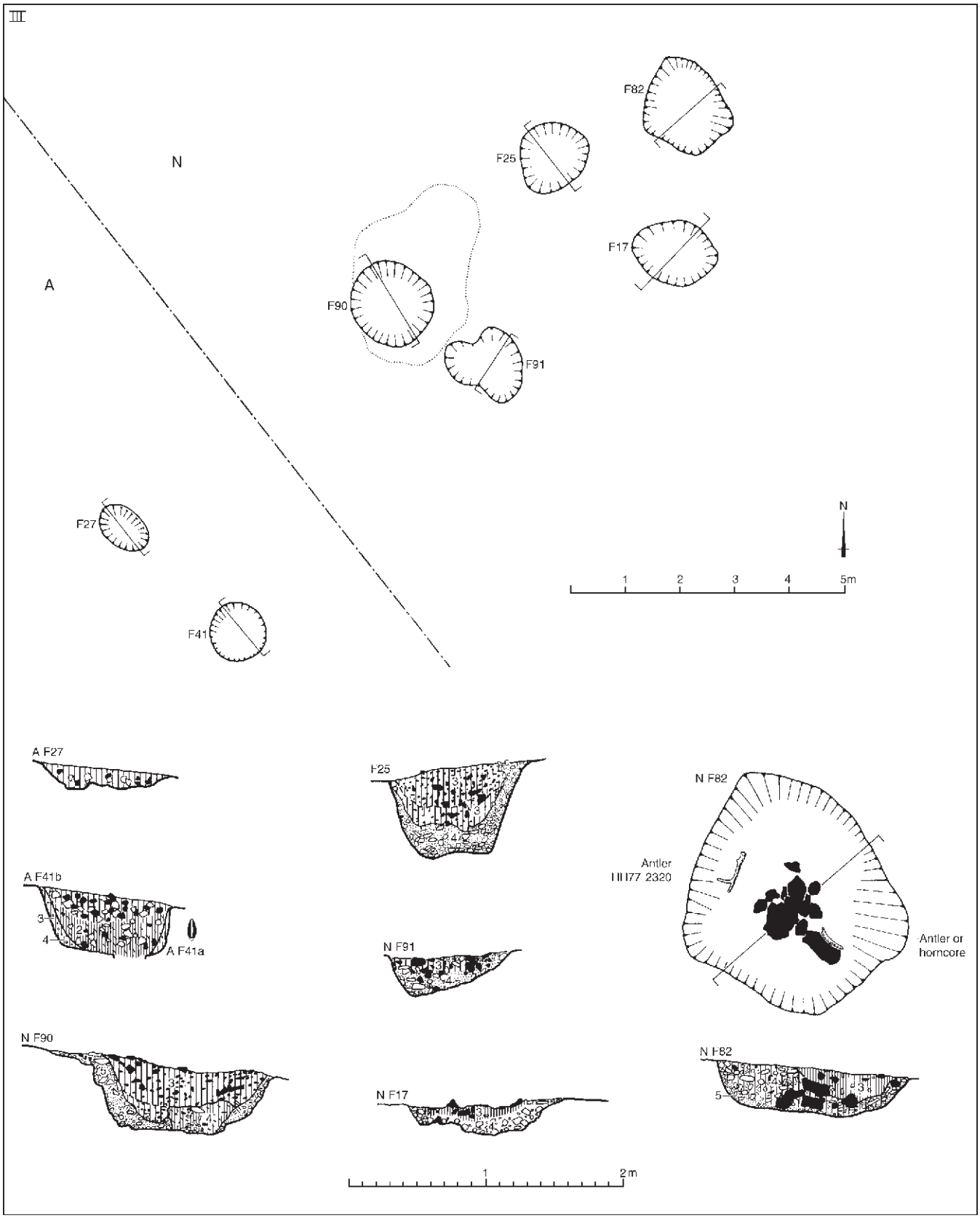

Fig 3.57 Sites A and N, pit group III.

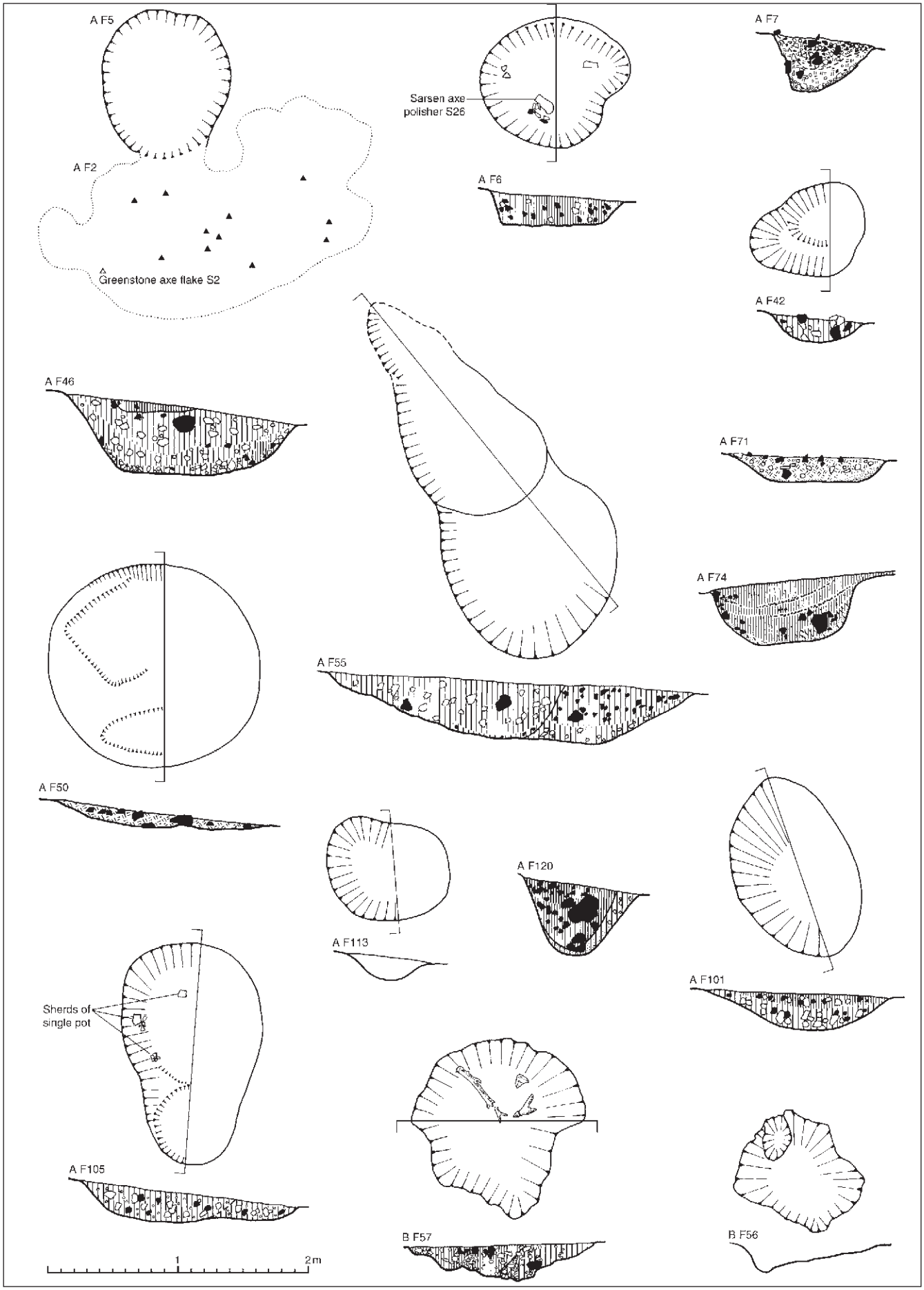

Fig 3.58 Central area, plans and sections of a representative selection of features outside pit groups I–III.

Table 3.7 Summary characteristics of 78 pits in the central area

Totals in bold 30–50% of pits >50% of pits

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Size & shape	1	< 1m max. horizontal dimension	**24**																						
	2	1–1.99 m max. horizontal dimension		**45**																					
	3	2 m or more max. horizontal dimension			**8**																				
	4	<0.25 m deep	14	12	2	**28**																			
	5	0.25–0.49 m deep	9	22	4		**35**																		
	6	0.50 m or more deep	1	11	2			**15**																	
	7	Flat base	7	19	4	4	19	7	**30**																
	8	Rounded base	12	22	2	16	12	8		**36**															
Fill patterns	9	Dense flint nodules or fragments	13	31	4	14	22	12	20	21	**48**														
	10	>1 fill, no recut	6	22	4	12	19	5	13	19	26	**32**													
	11	Finds concentrated in recut(s) or upper fill(s)	6	22	4	5	17	10	20	8	27	14	**32**												
	12	Recut(s)	6	18	2	2	14	10	17	6	21		21	**26**											
	13	Single fill	11	5	2	14	4		3	18	5				**18**										
Contents	14	Pottery	17	39	8	21	30	13	29	26	42	28	30	25	15	**64**									
	15	Struck flint	16	40	8	22	29	12	28	27	42	29	30	25	13	59	**64**								
	16	Charcoal	12	26	7	13	21	11	23	15	30	16	26	22	9	42	45	**45**							
	17	Burnt flint	8	25	6	9	19	13	19	13	27	16	25	20	6	37	39	32	**39**						
	18	Animal bone	7	24	7	5	22	11	7	11	28	6	26	28		37	37	30	28	**38**					
	19	Stone	2	13	4	3	9	7	10	5	15	3	14	13		19	19	17	16	16	**19**				
	20	Antler		9	3		6	13	7	2	11	6	10	7		12	12	12	11	12	7	**12**			
	21	Substantial part(s) of 1 pot or more	1	9	1	3	6	12	9	1	9	4	9	7	1	12	12	11	8	9	12	4	**12**		
	22	Hazelnut shell	5	5		5	4	1	4	4	6	4	3	3	4	9	10	9	7	3	3		2	**10**	
	23	Human remains	2	1	1		3	2	2	2	2	1	4	3		4	4	4	4	4	3		1	1	**4**

directly on top of the accumulated silt, as in B F14, or, more often, deposited in a concentration of flint nodules, as in N F7iv/vi or N F6 (Figs 3.56, 3.59). A noteworthy example is P2 F14, under the inner south cross-dyke bank, where the material among the flint nodules included the largest lithic assemblages from any feature in the central area, distinguished by three leaf arrowhead fragments, all, exceptionally, of chert. The same fill pattern, with flint-packed topmost layers, was recorded for A F85 and A F86, both without surviving finds. Recuts may have been made only when it was no longer possible to place material in a pre-existing pit because little or no hollow remained in the top of it.

Markers. Relocation of pits still visible as hollows would have been relatively easy, relocation of thoroughly silted or backfilled pits less so. Visibility may have been one of the functions of a stake, inserted into the lower fill of N F10 and withdrawn before the pit was recut and the recut filled with artefacts, animal bone and charcoal (Fig 3.59). Other sections, like that of N F7i/ii, may suggest a similar history, although the record is less clear. In the centre of N F42 was a central, tapering, pipe-like area of stone-free loamy material, up to 0.30 m in diameter, overlain by the topmost fill of the pit (Fig 3.59). At the side of A F46 was a vertical-sided pipe approximately 0.11 m in diameter, filled with stone-free loam and cutting through the lowest silts (Fig 3.58). These suggest that stakes or posts may have been used to mark pits to which people later returned, but only the stakepipe in N F10 is fully convincing.

Contents

The artefacts and animal bone in the pits exhibited every degree of pattern or the lack of it, from the highly structured placement of the exceptional artefacts in B F14 (Figs 3.54–55) to the apparently accidental inclusion of a few sherds or flakes, as in A F42 or N F26. Even small quantities of material sometimes showed signs of purposeful arrangement, like the sherds of a single pot in at least three separate heaps in A F105 (Fig 3.58). Pottery and struck flint were almost ubiquitous, other materials rarer (Table 3.7).

Human remains were scarce. In addition to the skull fragment from B F14 and the probably related material from a nearby treethrow hole and quarry, described above, there were two older infant or young juvenile teeth in the lower silt of A F64 and an adult femur fragment in the recut; an adult skull fragment and radius fragment in A F120, probably in the recut; and a fragmentary adult femur head in the recut of N F11.

Animal bone was far more widespread, generally in the form of scant, poorly preserved, often unidentifiable, fragments. The least insubstantial assemblages came from B F2 and F14; N F1, F7i/ii, F7iii/vii, F10, F11 and F25; and P2 F14. Except in the last case bone was concentrated in recuts or upper fills. Cattle are the most frequent species in each, with an anatomical composition suggestive of meat consumption (see Legge, 8.1).

Antler There were three substantial antler deposits. These were two 'rakes' and some fragments in the upper, stone-packed fill of B F57; three 'rakes' and some fragments in N F6, most of them placed on the surface of the lower silts; and two fragments from which slivers had been removed by groove-and-splinter in N F22, where a fragment projecting out of the lower silts was covered with two large flint nodules (Figs 3.58–59; Legge, 8.2). The position of two of these deposits in the lower silts, is echoed in most of the smaller antler finds: in the initial silts of B F2, E2 F1, and N F82; in one of the lower silts of N F1; and on the surface of the initial silt of N F7v (Fig 3.56) and N F25. Given that most finds, including animal bone, came from upper fills or recuts, the positioning of antler lower down in these pits seems to have been deliberate.

Pottery. By far the largest single assemblage, 123 sherds/1280 g, came from B F14, with its semi-complete Gabbroic and flint-tempered vessels – P1, P2, and P58 (Figs 9.1, 9.5), exceptional for the size and fresh condition of their fragments. The next largest assemblage, 173 sherds/738 g from N F82, also included a substantial part of a vessel in a rare fabric – P11 (Fig 9.2), which is calcite-tempered. The assemblage was, however, closer in composition to the pottery from the majority of the pits in the diverse fabrics, small size, and abraded state of most of the sherds. C F3 recalls B F14 in its predominance of well-preserved Gabbroic vessels including P8 and P9 (Fig 9.1). N F42 was the only other pit with more than the odd sherd of this ceramic, in this case P4 (Fig 9.1). It is less clear whether some other fairly substantially represented vessels were deposited incomplete or deposited whole and fragmented by ploughing. These include P63 (Fig 9.5), found 'smashed across the bottom' of L3 in N F42, 15% of the rim of which was recovered; sherds of P25 (Fig 9.2) with other pottery in the recut of N F23; and 35% of the rim of P75 (Fig 9.6) in a probable recut in B F57. Most pits contained relatively small quantities of fragmented, abraded sherds. Fabrics from Jurassic sources are the most frequent after flint-tempered ones.

Lithics. Most pits contained little worked flint or stone, assemblages of over 100 being rare. Cores were scarce, as were scrapers, with serrated flakes by far the commonest finished implement type (see Saville, 10.2). The largest assemblages within the enclosure were from N F7i/ii and A F41. The Group XVI axehead in B F14 is matched by a ground flint axehead in A F71 (Fig 10.17: 152) and fragments or flakes from others in

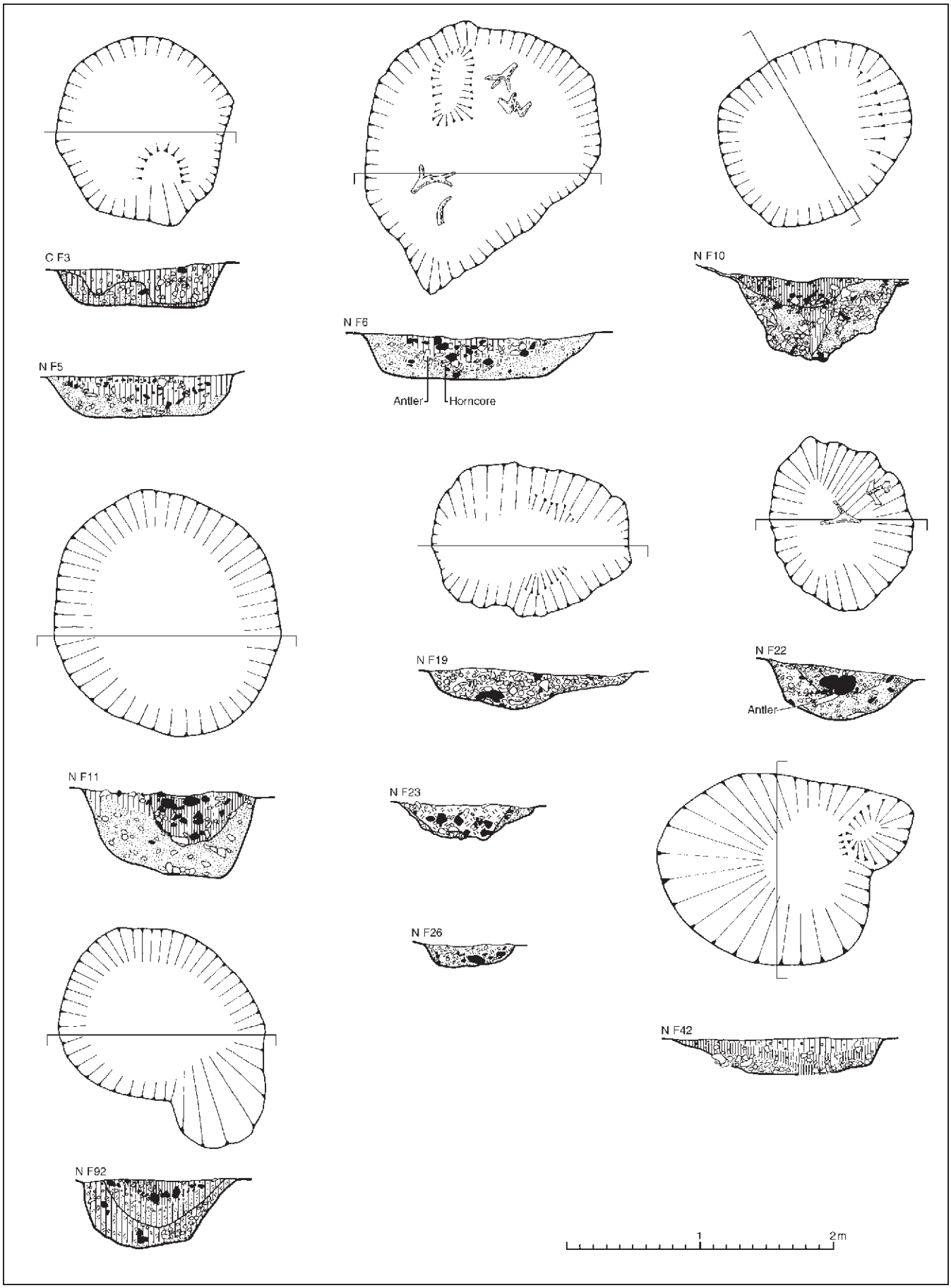

Fig 3.59 Central area, plans and sections of a representative selection of features outside pit groups I–III.

A F41, A F114 and N F7i. Leaf arrowheads in addition to those from P2 F14 came from A F41 and F113 and N F1, F5, F11, F42 and F44 (Fig 10.15: 128, 134, 138, 141). Stone artefacts were almost all fragmented querns and rubbers, some burnt, as in N F7i, F7iv, F22, F23 and F90. A burnt sarsen fragment in F22 echoes the more abundant burnt sarsen in F23 nearby and reinforces the impression that the two features may have been dug and filled as a pair. Noteworthy are a fragmentary sarsen axe-polisher (Fig 10.2: S26) clustered with animal bone and flint nodules at the side of A F6, a Greensand ball (Fig 10.2: S30) from N F82, and a small grooved Greensand fragment, possibly a point sharpener, from N F90 (Fig 10.2: S29). There was a flint beach pebble hammerstone in N F7iv/vi, another in N F7, the hollow in which this feature was cut, and a quartzite hammerstone in the top of natural feature B F12. Two unworked limestone fragments from N F7i/ii must have been brought to the site. Fragmentary stone artefacts almost all came from upper fills or recuts with dense flint nodules and chalk lumps, which raises the possibility that already present objects may have been gathered up with other stones when these fillings were assembled. It is difficult to tell whether the occasional echinoid or other chalk fossil, like those in A F17 or N F1, was a deliberate or an accidental inclusion.

Burnt material. Burnt material of all kinds was widespread, but generally occurred in low quantities, typically a few grammes of burnt flint, perhaps reflecting accidental burning of artefacts or waste, the odd burnt artefact or animal bone, a few fragments of charcoal and, perhaps a couple of fragments of hazelnut shell and, on site A where flotation was undertaken, a few cereal grains. Where identified, the charcoal was mainly of *Corylus avellana* and Maloideae, with some *Quercus*. A F41 in pit group III, described above, stands out from the rest, containing several times more burnt flint and charred cereal grain than any other pit in the central area, as well as a high proportion of burnt artefacts and animal bone, all in a black fill (Fig 3.70; see Jones and Legge, 6.2). Its contents seem to have resulted from an exceptional event. There was charcoal in the initial silt (L4) of A F74, and L3 was interpreted as a lens of burnt material tipped into the pit (Fig 3.58). The total quantity of charcoal and burnt flint was, however, small. L4 of N F90 (Fig 3.57) was particularly charcoal-rich. Like artefacts and animal bone, charcoal was generally found in recuts and upper fills.

Postholes

Demonstrably Neolithic postholes were absent outside bank areas. There may perhaps have been a socket at one edge of B F56, a shallow Neolithic feature (Fig 3.58), but there is no certainty that it held a post. The same may have been true of N F7viii (Fig 3.56).

Natural features

These were abundant. Some, like solution pipe B F12 and treethrow hole B F1 in pit group I, contained Neolithic material and may have been open, even deliberately used, during the fourth millennium. This seems to have been the case with A F2, a treethrow hole containing an earlier Neolithic assemblage including pottery, struck flint, a flake from an ungrouped Greenstone axehead (Fig 10.1: S2), burnt flint, an echinoid and a few charred cereal grains (including emmer wheat) and hazelnut fragments, and yielding a shade-loving mollusc fauna. F2 was probably cut by a Neolithic pit, A F5 (Fig 3.59). The only other treethrow hole certainly of earlier Neolithic date was P1 F24+F24A, under the main enclosure bank (Fig 3.6), which also contained contemporary pottery and struck flint. Generally the absence of stratigraphic relationships made it impossible to tell at what stage Neolithic material had become incorporated in apparently natural features. Many irregular, shallow hollows containing Neolithic material, like those on sites G and H (Figs 3.24, 3.27), may simply have been the bases of natural depressions in the surface of the chalk, filled with surviving pockets of previous topsoils.

Post-Neolithic material

Later finds very occasionally seemed to be intrusive in Neolithic pits. Instances include B F3, disturbed by roots and ploughing, from which came a .303 military cartridge case and a minute plain body sherd in a Beaker or early Bronze Age fabric, despite the presence of a large Neolithic Bowl rim sherd on the pit base. There were small, abraded body sherds in indeterminate and grog-tempered fabrics in the upper layer of N F11 and grogged body sherds in the upper layer of N F19.

Unstratified and redeposited finds

These generally mirrored the composition of those from the pits. There are further sherds in Gabbroic fabrics, including P10 (Fig 9.1). Struck flint is largely of earlier Neolithic character, there are further finds of quern and rubber fragments, including S24 (Fig 10.2). A nephrite axehead, S3 (Fig 10.1) found in the ploughsoil of the interior in 1963 comes from an Alpine source, like a jadeite axehead, S11 (Fig 10.1) from the ploughsoil of site F (Alison Sheridan, pers comm). There is little later material. A single sherd of Peterborough Ware (Fig 9.10: P157) came from the ploughsoil in the north of site A. The largest quantity of Beaker or early Bronze Age material remains the 16 sherds/86 g from the treethrow hole and quarry on site B (Table 3.6). A flint rod (Fig 10.19: 160) from N F7, the hollow in which N F7i/ii, F7iii/vii and F7iv/vi were cut, may reflect third rather than fourth millennium traditions. The historical period is represented by rare sherds and iron fragments, some from quarries.

The pits in the central area share many characteristics with the surrounding enclosure ditch, most obviously a history of being dug, of subsequent silting, and

of deposition of cultural material, with or without further digging. The packing of upper fills and recuts with flint nodules, artefacts and animal bone recalls the filling of the phase VI slots cut into the tops of the enclosure and other ditches, although the clay-rich fills of the slots are not matched here. There may be a hint of contemporaneity in the prevalence in the pits in the central area of pottery from Jurassic sources, which, at 20% by weight of the pottery from the pits, is second in frequency only to 31% by weight from the slots. It is, however, impossible to tell over how long a period pits were dug and redug. Like the surrounding ditch, the pits may have been a continuing focus for deposition, with some complementarity between the two. The near-absence of antler from primary levels in the enclosure, for example, contrasts with antler deposits in three pits and antler finds in others. Larger and more elaborate pits were concentrated towards the crown of the hill.

Catalogue of definite and probable Neolithic features in the central area, and all features in bank areas, excluding postholes

Notes

Layers are described from the bottom up. In many cases layers were identified only after features were half-sectioned, hence the number of finds not attributed to layer. On site N in 1977 the current ploughsoil was universally called L1 and the previous downland soil, the base of which sometimes survived beneath it, L2, so that feature fills were numbered from L3 downwards. In 1974–6 feature fills were numbered from L1 downwards.

Finds not attributed to layer are listed first.

* = recorded but unidentified, missing or not retained.

Lithics are of flint unless otherwise stated.

The only animal bones listed are specimens identified to species and anatomical part, almost all, even of these, are highly fragmentary.

Samples for flotation were taken in the central area only in 1974, hence the restriction of charred cereals and molluscs to features on site A.

Feature dimensions are maxima.

A F3. Pit. Definite. Earlier Neolithic. *Length* 0.75 m, *width* 0.5 m, *depth* 0.16 m
Form. Subcircular, rounded base
Fill(s). Dark grey-brown clay with flints, chalk lumps, charcoal flecks
Comment. Finds concentrated near surface
Pottery. 4 sherds/3 g Neolithic Bowl pottery
Lithics. 4 flakes, edge-trimmed flake, scraper
Charcoal. *

A F5. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 0.85 m, *width* 0.8 m, *depth* 0.3 m
Form. Subcircular, bowl-shaped, possible recut
Fill(s). L2 Brown loam with chalk lumps. L1 (fill of possible recut) dark brown humic loam with large flint lumps, chalk flecks and lumps
Comment. Cut F2 (treethrow hole) according to written record, although relationship is unclear in drawings
Animal bone. *
Pottery. 14 sherds/34 g Neolithic Bowl pottery
L1: 1 sherd/2 g Neolithic Bowl pottery
Lithics. 10 flakes, serrated flake, 2 edge-trimmed flakes
L1:16 flakes (1 burnt), core, serrated flake, piercer, 1 misc retouched
Unclassified burnt flint. 33 g
L1: 39 g
Charred plant remains. L1: *Triticum dicoccum*

A F6. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.1 m, *width* 1 m, *depth* 0.25 m
Form. Subcircular, shelving sides, flat bottom
Fill(s). L2 brown soil with chalk lumps (?natural). L1 loose dark brown soil, many flint nodules, few chalk lumps
Comment. Axe-polisher, bone, and flint nodules clustered to one side. Base and sides difficult to define
Animal bone. *Cattle* phalanx, vertebra
Pottery. 20 sherds/120 g Neolithic Bowl pottery, including P90
Lithics. 19 flakes, core, 1 edge-trimmed flake class A, 2 serrated flakes, edge-trimmed flake, scraper, incomplete fine-grained sarsen axe-polisher with worn hollow on both faces (S26)
Unclassified burnt flint. 146 g
Charred plant remains. Indet cereal, hazelnut shell
Charcoal. Maloideae, *Corylus avellana*, *Quercus* sp
Molluscs. Predominantly shade-loving, but with 31% open country taxa

A F7. Pit. Probable. Earlier Neolithic (Fig 3.58). *Length* 0.75 m, *width* 0.7 m, *depth* 0.4 m
Form. Trapezoid, 1 steep side, 1 shelving side, flat base, possible recut
Fill(s). L3 brown clay with chalk lumps. L2 brown clay with some flint and chalk. L1 brown clay with dense, large, flint nodules and some chalk
Comment. L1 possibly fill of a recut
Pottery. L1: 1 sherd/1 g Neolithic Bowl pottery
Lithics. Flake
L2: flake
Charred plant remains. Hazelnut shell

A F9. Pit. Probable. Earlier Neolithic? *Length* 0.5 m, *width* 0.45 m, *depth* 0.1 m
Form. Subcircular, rounded base
Fill(s). Loose brown soil with chalk lumps, flint nodules, charcoal flecks
Lithics. Flake, 1 misc retouched
Charred plant remains. indet cereal, hazelnut shell
Charcoal. *

A F11+F11A. Pit?/posthole? Probable. Earlier Neolithic? *Length* 0.65 m, *width* 0.40 m, *depth* 0.20 m
Form. Irregular hollow 0.05 m deep (F11), with steep-sided, subcircular central hole 0.15 m in diameter (F11A) with flint slab (packing?)
Fill(s). F11A: black loam (L2). F11: brown loam with chalk blocks (L1)
Comment. Angularity of central hole suggests that a flint may recently have been dragged from it.
Pottery. L1: *
Lithics. L1: 2 flakes
Charred plant remains. *Triticum dicoccum*, *Triticum* sp

A F12. Pit. Definite. Earlier Neolithic. *Length* 0.85 m, *width* 0.6 m, *depth* 0.16 m

Form. Ovoid, 1 end steep, 1 shelving, flat base, possible recut
Fill(s). L2 Brown loam with chalk blocks. L1 dark brown loam with flints
Comment. L1 possibly fill of a recut
Animal bone. *
Lithics. 13 flakes, core, core fragment, 5 serrated flakes, scraper, piercer, 1 misc retouched
Unclassified burnt flint. 90 g
Charred plant remains. Triticum dicoccum, *Triticum* sp
Charcoal. *

A F14. Pit. Definite. Earlier Neolithic. *Length* 1 m, *width* 0.7 m, *depth* 0.12 m
Form. Ovoid, rounded profile, rounded base
Fill(s). L2 brown loam with chalk lumps (natural?). L1 loose, dark brown loam with frost-shattered flint lumps, some large
Comment. Finds noted as from L1
Pottery. 2 sherds/4 g Neolithic Bowl pottery
Lithics. Flake

A F27. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 0.9 m, *width* 0.7 m, *depth* 0.12 m
Form. Ovoid, irregular base
Fill(s). Loose brown soil with flint nodules and chalk lumps
Comment. Cut into chalk lumps with interstitial brown clay. Angular profile may reflect removal of flint and/or chalk lumps during original excavation
Pottery. 76 sherds/85 g Neolithic Bowl pottery, most probably from same vessel
Lithics. 12 flakes, serrated flake, 2 edge-trimmed flakes, 1 misc retouched
Unclassified burnt flint. 174 g
Charred plant remains. Hazelnut shell
Charcoal. *

A F41. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 1 m, *width* 1 m, *depth* 0.4 m
Form. Subcircular, steep sides, flat base with central (natural?) hollow. Recut 0.90 m diameter, 0.20 m or 0.40 m deep
Fill(s). F41A: Fine loose-textured grey-brown soil (L4) under brown soil with chalk lumps and peagrit (L3), both truncated by recut
F41A or F41B: Greasy, grey-to-black, loose-textured soil with flint and chalk fragments, much charcoal (L2)
F41B: Brown soil with abundant broken flint, some chalk (L1)
Comment. Fills of original pit (F41A) truncated by recut (F41B). Unclear to which L2 attributable: appeared lower fill of recut when section drawn, part of original pit when second half excavated. Former seems more likely. Most finds recorded as from F41B (the recut) likely to have come from L2. L2 thought to have been deposited when hot because of discolouration of chalk base beneath it. Most bone recorded as burnt
Animal bone. *Pig* vertebra
Pottery. 201 sherds/370 g Neolithic Bowl pottery, including P122 and 48 sherds/89 g possibly from a single vessel
F41A: 1 sherd/2 g Neolithic Bowl pottery
F41B: 3 sherds/1 g Neolithic Bowl pottery
Lithics. 15 flakes, serrated flake
F41A: 3 flakes
F41B: 183 flakes (5 burnt, 1 edge-glossed), 2 cores, serrated flake, edge-trimmed flake, 2 scrapers, 4 piercers, ground axehead fragment (burnt), flake from ground axehead, leaf arrowhead (chert), 4 misc retouched
Unclassified burnt flint. 52 g
F41A: 553 g, 'another bucket full of burnt flint not kept'
F41B: 731 g
Charred plant remains. F41A: *Triticum dicoccum*, *Triticum* sp, indet cereal, hazelnut shells
F41B: *Triticum dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, hazelnut shell
Charcoal. L2: *
L1: *

A F42. Pit? Probable. Earlier Neolithic (Fig 3.58). *Length* 0.8 m, *width* 0.7 m, *depth* 0.15 m
Form. Pear-shaped, rounded base
Fill(s). Loose brown soil with large chalk and flint lumps
Pottery. 6 sherds/5 g Neolithic Bowl pottery
Molluscs. Shade-loving

F44. Pit. Definite. Earlier Neolithic. *Length* 0.9 m, *width* 0.7 m, *depth* 0.2 m
Form. Pear-shaped, rounded profile
Fill(s). L2 chalk lumps (natural?). L1 Dark brown soil with flint and chalk
Comment. Finds noted as from L1
Pottery. 1 sherd/1 g Neolithic Bowl pottery
Lithics. 2 flakes, serrated flake
Unclassified burnt flint. 11 g
Charcoal. L1: *

A F46. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.9 m, *width* 1.55 m, *depth* 0.58 m
Form. Kidney-shaped, shelving sides, flat base. Recut 0.70 × 0.60 m, 0.10 m deep
Fill(s). L4 yellow-brown soil with smooth chalk lumps, some flint. L3 fine yellow-brown soil with rounded chalk. Pocket of grey-brown soil, almost vertical-sided, 0.11 m in diameter, apparently cutting L4 and L3. L2 brown soil with loose chalk lumps. L1 (fill of recut) loose dark brown soil with flint, chalk
Comment. Finds mainly in recut, a few in L3, L4. Pocket of grey-brown soil in L4 and L3 probably animal – or roothole rather than stakehole.
Animal bone. *
Pottery. 23 sherds/50 g Neolithic Bowl pottery
Lithics. 20 flakes, serrated flake
Unclassified burnt flint. 6 g
Charcoal. L3: *
L2: *
Molluscs. F46B: shade-loving

A F50. Pit? Probable. Earlier Neolithic (Fig. 3.58). *Length* 1.5 m, *width* 1.5 m, *depth* 0.1 m
Form. Circular, undulating base
Fill(s). Brown clay with flint
Pottery. 3 sherds/7 g Neolithic Bowl pottery
Lithics. 30 flakes (2 burnt), edge-trimmed flake, 1 misc retouched
Unclassified burnt flint. 1 g

A F55. Intercutting pits. Definite. Earlier Neolithic (Fig 3.58). *Length* 2.8 m, *width* 0.8 m
Form. Pear-shaped
Comment. SE pit cut by NW, shallow spread to NW may have been 3rd feature. Very similar fills
Pottery. 2 sherds/2 g Neolithic Bowl pottery
Charcoal. *

A F55 NW. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.9 m, *width* 1 m, *depth* 0.6 m
Form. Pear-shaped, rounded base
Fill(s). L2 brown soil with flint. L1 brown soil with chalk lumps
Comment. Cut F55 SE. Possibly ovoid pit + shallower feature

A F55 SE. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 0.8 m, *width* 0.8 m, *depth* 0.5 m
Form. Subcircular, rounded profile
Fill(s). L2 brown soil with chalk pebbles. L1 brown soil with much small flint
Comment. Cut by F55 NW

A F57. Pit. Definite. Earlier Neolithic. *Length* 2 m, *width* 1 m, *depth* 0.1 m
Form. Ovoid, rounded base
Fill(s). Brown/black clay with some chalk and flint
Pottery. 1 sherd/4 g Neolithic Bowl pottery
Lithics. 2 flakes (1 burnt), scraper
Charcoal. *

A F60. Pit? Probable. Earlier Neolithic? *Length* 0.5 m, *width* 0.42 m, *depth* 0.25 m
Form. Ovoid, shelving sides, flat base. Steep-sided recut 0.40 m diameter, 0.20 m deep
Fill(s). Clay with rounded chalk. Recut filled with brown clay with flints and some chalk
Pottery. 1 sherd/1 g Neolithic Bowl pottery

A F62. Pit. Definite. Earlier Neolithic. *Length* 1.31 m, *width* 1.12 m, *depth* 0.3 m
Form. Ovoid, shelving sides, flat base, recut (F62A) 0.60 m diam, 0.20 m deep at SW side
Fill(s). F62: light grey clayey loam with small chalk lumps and some flint nodules in varying combinations of loam, peagrit and larger chalk. F62A: loose loam with peagrit and some chalk
Animal bone. pig tooth, *cattle* teeth
Pottery. 89 sherds/153 g Neolithic Bowl pottery
Lithics. 42 flakes, core, 2 serrated flakes, edge-trimmed flake (burnt), 2 scrapers
Unclassified burnt flint. 176 g

A F64. Pit. Definite. Earlier Neolithic. *Length* 0.99 m, *width* 0.81 m, *depth* 0.36 m
Form. Ovoid, shelving sides, flat base. Probable recut, ovoid, 0.90 m × 0.50 m, reaching to base
Fill(s). L2 peagrit with few finds. L1 (fill of probable recut) loose black loam with a few frost-shattered flints
Comment. Notes on plan record some bone (including human teeth), struck flint and charcoal from L2, pottery from L2/L1 interface, further pottery from L1, as well as burnt and unburnt animal bone, struck flint, stone and charcoal
Human remains. L2: older infant/young juvenile L mandibular molar, L maxillary incisor (HH74 AB 432, 433)
L1: robust adult L femur shaft (HH74 AB 440)
Animal bone. Pig tooth
L1: *pig* teeth; *cattle* scapula, tooth
Pottery. 49 sherds/200 g Neolithic Bowl pottery, including P110
L1: 18 sherds/74 g Neolithic Bowl pottery
Lithics. 101 flakes (10 burnt, 1 chert), core, edge-trimmed flake, 6 scrapers, piercer
L1: 2 scrapers, Old Red Sandstone rubber (S23)
Unclassified burnt flint. 145 g
Charred plant remains. Hazelnut shell
Charcoal. L1 *
L2: *

A F68. Intercutting pits. Definite. Earlier Neolithic. *Length* 2 m, *width* 1.8 m, *depth* 0.45 m
Form. Multilobate, 3–4 pit bases
Comment. Finds recorded from F68A, F68B, F68C. But notebook says all finds from largest pit. Were A, B, C subdivisions of it?
Animal bone. *
Pottery. 2 sherds/2 g Neolithic Bowl pottery
F68A: 3 sherds/13 g Neolithic Bowl pottery
F68B: 3 sherds/13 g Neolithic Bowl pottery
F68C: 2 sherds/3 g Neolithic Bowl pottery
Lithics. F68A: 15 flakes (1 edge-glossed), scraper, piercer, 1 misc retouched
F68B: 2 flakes
Unclassified burnt flint. F68A: 1 g
F68B: 2 g

A F68 NW. Pit. Definite. Earlier Neolithic. *Length* 1.1 m, *width* 0.7 m, *depth* 0.45 m
Form. Ovoid, rounded base
Fill(s). L2 light brown soil with chalk and some flint. L1 brown clay soil with flint and a little chalk
Comment. Part of A F68
Animal bone. *. Plan shows rib *c* 35 mm wide
Pottery. *
Lithics. *
Unclassified burnt flint. *

A F68 SE. Pit. Definite. Earlier Neolithic? *Length* 0.7 m, *width* 0.65 m, *depth* 0.1 m
Form. Subcircular, rounded base
Fill(s). Brown soil with flint and some chalk
Comment. Part of F68

A F71. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.2 m, *width* 1.1 m, *depth* 0.2 m
Form. Subcircular, flat base
Fill(s). Thin skin of silt overlain by brown clay with flint nodules and some chalk
Pottery. 20 sherds/12 g Neolithic Bowl pottery
Lithics. 18 flakes, core fragment, ground axehead
Charcoal. *

A F74. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* >1.1 m, *width* 0.9 m, *depth* 0.5 m
Form. Pear-shaped, shelving sides, flat base
Fill(s). L4 skin of grey-green silt with charcoal. L3 tip of burnt material from NW. L2 fine dark brown silty soil with large flints. L1 fine dark brown silty soil with lenses of flint gravel
Comment. Pottery and struck flint in all layers. Bone in L1. Extended beyond limit of excavation
Animal bone. Pig mandible; *cattle* vertebra, rib
Pottery. 29 sherds/167 g Neolithic Bowl pottery
Lithics. 42 flakes, 2 edge-trimmed flakes, scraper
Unclassified burnt flint. 2 g
Charred plant remains. Hazelnut shell
Charcoal. Maloideae, *Corylus avellana*

A F75. Pit. Definite. Earlier Neolithic. *Length* 0.45 m, *width* 0.3 m, *depth* 0.25 m
Form. Pear-shaped, shelving sides, flat base

Fill(s). Brown clay with flint and some chalk
Comment. Extended beyond limit of excavation. Length minimum
Pottery. 1 sherd/6 g Neolithic Bowl pottery
Lithics. 2 flakes
Charcoal. *

A F76. Pit. Definite. Earlier Neolithic. *Length* 1.1 m, *width* 0.95 m, *depth* 0.3 m
Form. Subcircular, rounded base
Fill(s). L2 brown soil with flint gravel, some flint nodules, chalk lumps. L1 black soil
Pottery. 23 sherds/43 g Neolithic Bowl pottery
Lithics. 17 flakes, 2 misc retouched

A F78. Pit. Definite. Earlier Neolithic. *Length* 1.4 m, *width* 0.8 m, *depth* 0.45 m
Form. Subcircular, bowl-shaped profile
Fill(s). L3 skin of grey-green primary silt with chalk lumps. L2 brown soil with chalk lumps, some flint nodules. L1 dark brown soil with flint
Comment. N end of row of 3 intercutting pits (with F79, F96). Relation to F79 unclear. Some F78 finds may have come from F79
Animal bone. *Pig* scapula, mandible; *cattle* tooth
Pottery. 68 sherds/159 g Neolithic Bowl pottery, including P127
Lithics. 63 flakes, core, serrated flake, edge-trimmed flake, scraper, 1 misc retouched
L2: Greensand rubber
Unclassified burnt flint. 98 g
Charred plant remains. Triticum dicoccum, indet cereal
Charcoal. L3 *
L2: *
L1: *

A F79. Pit. Definite. Earlier Neolithic. *Length* 1.2 m, *width* 1.1 m, *depth* 0.4 m
Form. Subcircular, rounded base
Fill(s). Dark brown soil with flint and some chalk
Comment. Centre of row of intercutting pits (with F78, F96). Relation with F78 unclear. Cut F96. Pottery and flint flakes mentioned in notebook. Are they among F78 finds?
Pottery. *
Lithics. *

A F85. Pit. Probable. Earlier Neolithic? *Length* 1 m, *width* 0.80 m, *depth* 0.35 m
Form. Ovoid, 1 side more shelving than other, rounded base
Fills(s). L3 skin of light brown primary fill. L2 brown soil with flint and chalk. L1 dark brown soil with flint in central area 0.30 m diameter

A F86. Pit. Definite. Earlier Neolithic? *Length* 1 m, *width* 0.85 m, *depth* 0.45 m
Form. Subcircular, bowl-shaped profile
Fill(s). L4 grey-green silty soil with chalk lumps. L3 brown soil with chalk lumps. L2 brown soil with much peagrit. L1 loose dark brown soil with much flint

A F96. Pit. Definite. Earlier Neolithic? *Length* 0.85 m, *width* 0.65 m, *depth* 0.16 m
Form. Ovoid, rounded base
Fill(s). Yellow-brown soil with chalk lumps
Comment. S end of row of 3 intercutting pits (with F78, F79). Cut by F79.

A F101. Pit. Definite. Earlier Neolithic? (Fig 3.58). *Length* 1.4 m, *width* 0.8 m, *depth* 0.3 m
Form. Ovoid
Fill(s). L2 loose light brown soil with much chalk and a little flint. L1 Loose dark brown soil with flint and some chalk
Lithics. 13 flakes, 2 serrated flakes
Unclassified burnt flint. 13 g
Charcoal. Maloideae, *Corylus avellana*

A F104. Pit. Definite. Earlier Neolithic. *Length* >1 m, *width* 0.75 m, *depth* 0.15 m
Form. Irregular plan, rounded base
Fill(s). L3 brown soil with flint chips, nodules, some chalk. L2 lens of gravel flint with small chalk lumps. L1 Fine brown silty soil in modern plough furrows
Comment. Extended beyond limit of excavation. *Length* minimum. Finds noted as from upper levels
Pottery. 8 sherds/5 g Neolithic Bowl pottery
Lithics. 4 flakes

A F105. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.75 m, *width* 1.05 m, *depth* 0.2 m
Form. Pear-shaped, rounded base
Fill(s). Brown soil with peagrit and chalk lumps. L1 brown soil with shattered flint, some chalk
Comment. 2 intercutting pits? All finds in larger (N) one. Sherds of single vessel grouped at 3 or more separate find-spots
Pottery. 125 sherds/351 g Neolithic Bowl pottery, all but 2 sherds/110 g from single flint-tempered open uncarinated bowl with lug and simple flat rim
Lithics. 11 flakes, 2 scrapers
Unclassified burnt flint. 12 g
Charred plant remains. Hazelnut shell
Charcoal. *

A F107. Pit. Probable. Earlier Neolithic. *Length* 1.9 m, *width* 1 m, *depth* 0.06 m
Form. Ovoid, rounded base
Fill(s). Dark grey-brown soil with flints
Pottery. 3 sherds/8 g Neolithic Bowl pottery
Lithics. 4 flakes

A F109. Pit. Probable. Earlier Neolithic? *Length* 0.55 m, *width* 0.5 m, *depth* 0.18 m
Form. Subcircular, bowl-shaped profile
Fill(s). Dark brown clay soil with flint and some chalk
Pottery. 2 sherds/1g Neolithic Bowl pottery

A F113. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 0.9 m, *width* 0.75 m, *depth* 0.25 m
Form. Subcircular, bowl-shaped profile
Fill(s). L2 brown soil with peagrit. L1 loose dark brown soil with flints
Animal bone. *
Pottery. 3 sherds/3 g Neolithic Bowl pottery
Lithics. 27 flakes, core, serrated flake, edge-trimmed flake, leaf arrowhead fragment
Charcoal. Corylus avellana, Maloideae, *Quercus* sp

A F114. Pit. Definite. Earlier Neolithic. *Length* 1.95 m, *width* 1.8 m, *depth* 0.5 m
Form. Subcircular, rounded base, shallow lip (earlier feature?) to S
Fill(s). L2 loose dark brown soil with some flint and a little chalk. L1 brown soil with flints, becoming looser with depth

Comment. Dimensions are for main pit
Pottery. 25 sherds/126 g Neolithic Bowl pottery
Lithics. 20 flakes, scraper, flake from ground axehead, 2 misc retouched

A F120. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 0.9 m, *width* 0.6 m, *depth* 0.55 m
Form. Ovoid, bowl-shaped profile, recut 0.60 m diameter, 0.50 m deep
Fill(s). L3 grey-green silty soil at base grading into light brown soil with chalk lumps, reaching to top of feature where not truncated. L2 (lower fill of recut) loose dark brown soil with flints including large nodules. L1 (upper fill of recut) loose dark brown soil with large flint nodules, some chalk
Comment. Finds concentrated in L1
Human remains. Adult frontal vault fragment and radius fragment (HH74 AB 484)
Animal bone. Cattle tooth, carpal
Pottery. 62 sherds/200 g Neolithic Bowl pottery, including P72
Lithics. 42 flakes, core fragment, serrated flake, edge-trimmed flake, 4 scrapers, 1 misc retouched
Unclassified burnt flint. 8 g
Charcoal. *

A F125. Pit. Definite. Earlier Neolithic. *Length* 1.55 m, *width* 1.1 m, *depth* 0.4 m
Form. Ovoid, rounded profile
Fill(s). L2 fine brown clay with chalk lumps and some peagrit. L1 Loose dark brown soil with much flint, some nodules
Pottery. 8 sherds/16 g Neolithic Bowl pottery
Lithics. 13 flakes, core, 2 edge-trimmed flakes, 1 misc retouched

B F2. Pit. Definite. Earlier Neolithic (Figs 3.53–3.54). *Length* 1.6 m, *width* 1.6 m, *depth* 0.5 m
Form. Subcircular, steep sides, flat bottom. Recut 1.40 m × 1 m × 0.27 m deep
Fill(s). L4 brown chalky silt with chalk lumps and patches of brown soil. L3 earthy matrix with peagrit and chalk lumps. L2 (fill of recut) loose dark brown soil with chalk and flint lumps larger and more frequent than in L3
Comment. L3 may be natural silting. Finds noted as concentrated in centre (ie L2) before layers distinguished
Animal bone. Pig 2 scapulae, 3 humeri, 2 radii, metatarsal, tooth; *cattle* ischium, 2 phalanges, vertebra, 2 horncores; *caprine* femur, tibia, teeth, vertebra, horncore
L4: *red deer* antler fragment, modified and worn
Pottery. 181 sherds/494 g Neolithic Bowl pottery, including P137, *c* half of remainder attributable to 4 vessels
L4: 20 sherd/21 g Neolithic Bowl pottery + 1 missing pottery find
L1: 7 sherds/35 g Neolithic Bowl pottery
Lithics. 122 flakes, 6 serrated flakes, 1 edge-trimmed flake class A, 3 edge-trimmed flakes, piercer, 3 misc retouched
L4: 3 flakes, 2 serrated flakes
L2: 12 flakes, core
L1: scraper
Charcoal. Corylus avellana, Maloideae, *Quercus* sp
L4: *

B F3+F3A. Pit. Definite. Earlier Neolithic (Fig 3.53). *Length* 1.5 m, *width* 0.8 m, *depth* 0.2 m
Form. Subcircular, flat base, shallow 'tail'. Disturbed by plough and roots, edges uncertain
Fill(s). L3 chalky silt. L2 earthy matrix with peagrit and chalk lumps. L1 grey/black soil with peagrit, chalk blocks and roots
Animal bone. *
L1: *
F3A: *
Pottery. 61 sherds/87 g Neolithic Bowl pottery, of which 59 sherds/79 g found as badly preserved single sherd from a vessel in a Jurassic fabric with an expanded rim; 1 plain body sherd/6 g in grogged Beaker/EBA fabric
Lithics. 37 flakes, 1 misc retouched
L3: flake
F3A: flake
Other finds. .303 cartridge case
Charcoal. L1: *Quercus* sp, Maloideae

B F9. Pit. Definite. Earlier Neolithic. *Length* 2 m, *width* 1.4 m, *depth* 0.27 m
Form. Ovoid, sloping sides, rounded base
Fill(s). Earthy matrix with peagrit and chalk lumps
Animal bone. *
Pottery. 42 sherds/70 g Neolithic Bowl pottery
Lithics. 9 flakes, 2 serrated flakes, 1edge-trimmed flake class A, edge-trimmed flake, 2 misc retouched
Charcoal. *

B F13A. Pit. Probable. Earlier Neolithic? (Figs 3.53–3.54). *Length* 1.3 m, *width* 1.3 m, *depth* 0.35 m
Form. Subcircular, flat base, edges indistinct, in base of F13. Recut
Fill(s). L6 compact chalky silt with chalk lumps. L4 beige chalky silt with rare chalk lumps. L3 (fill of recut) very loose, chalky silt with peagrit, chalk and flint lumps, scattered patches of earth
Comment. Neolithic pit with tree-disturbed fill or deeper part of treehole? Topmost layer (L3) certainly disturbed
Animal bone. *
Pottery. L3: 2 sherds/41 g Neolithic Bowl pottery
Lithics. 6 flakes, serrated flake, edge-trimmed flake
L3: 7 flakes, serrated flake, edge-trimmed flake
Charcoal. Corylus avellana, Maloideae
L3: *

B F14. Pit. Definite. Earlier Neolithic (Figs 3.53–3.55). *Length* 2.4 m, *width* 1.4 m, *depth* 0.42 m
Form. Ovoid, sides shelving at 1 end, otherwise steep; flat bottom
Fill(s). L4 chalky silt with dense chalk lumps. L3 black soil with chalk lumps and peagrit, L2 fine black/grey soil with peagrit (= base of pre-ploughing soil)
Comment. P1, P2, P58 all in fresh condition
Human remains. Immature skull fragment, charred (HH75 611)
Animal bone. Pig scapula, 2 metapodials, teeth, mandible; *cattle* tooth, mandible; *caprine* humerus, ischium
L3: *pig* tooth
Pottery. 49 sherds/167 g Neolithic Bowl pottery, probably from L3, including P138 and parts of P2 and P58
L4/L3 interface: most of P58, found as single fragment (now 20 sherds/158 g)
L3: 74 sherds/1113 g Neolithic Bowl pottery, comprising most of P1 and P2 and further sherds of P58. P1 in large fragments at most 0.70 m apart, in W. P2 in smaller fragments, dispersed over 1.20 m, mainly in E. One sherd of P58 1 m away from large fragment at L4/L3 interface.

Lithics. 55 flakes (1 burnt), 4 serrated flakes
L4/L3 interface: Group XVI axehead (S1)
L3: 2 flakes, serrated flake, 2 edge-trimmed flakes class A, edge-trimmed flake
Unclassified burnt flint. 6 g
Charcoal. ^{14}C sample (HH75 559) oak, hazel, hawthorn-type; undated remainder *Quercus* sp with *Corylus avellana*, Maloideae
L3: *
^{14}C. 3780–3490 cal BC (84%) or 3460–3370 cal BC (11%) (4830±80 BP; HAR-9167) on charcoal described above

B F56. Pit and/or posthole. Definite. Earlier Neolithic (Fig 3.58). *Length* 1 m, *width* 0.9 m, *depth* 0.22 m
Form. Irregular plan, asymmetrical profile, rounded base with slight socket at NW edge
Fill(s). Rich black loam with flint fragments and crushed chalk
Comment. Fired clay, edge-trimmed flake and 14 sherds/68 g from same vessel found together
Pottery. 40 plain body sherds/98 g Neolithic Bowl pottery, almost all sand-tempered, most in fresh condition and probably from same vessel
Lithics. Flake (burnt), edge-trimmed flake
Unclassified burnt flint. 17 g
Other finds. 2 fragments/29 g amorphous fired clay with sparse angular flint
Charred plant remains. <10 g hazelnut shell
Charcoal. * (flecks through fill)

B F57. Pit. Definite. Earlier Neolithic (Fig 3.58). *Length* 1.4 m, *width* 1.3 m, *depth* 0.26 m
Form. Subtriangular, shelving sides, undulating base. Recut
Fill(s). L2 orange loam with orange grit and chalk, and occasional flint nodules, 'distinct layer of mouldy chalk wash ... visible amongst' L2, unclear if below L2 or within it. L1 (fill of recut) rich black loam with chalk and flint lumps and crushed flint
Comment. Small area of burning in L1 next to rubber fragments
Animal bone. L1: *pig* tooth, phalanx; *red deer* almost complete, but modified and used, shed antler (HH75 1330), antler crown 'rake' (HH75 579), burnt antler fragment (HH75 545); *cattle* tibia, tooth, mandible (found as substantial fragment, lifted as many), horncore
Pottery. 4 sherds/19 g Neolithic Bowl pottery
L2: 3 sherds/28 g Neolithic Bowl pottery
L1: 144 sherds/401 g Neolithic Bowl pottery, including P75 and P128
Lithics. 2 flakes
L2: 5 flakes
L1: 61 flakes (4 burnt), core, 2 edge-trimmed flakes, scraper, 3 misc retouched, Old Red Sandstone quern or rubber fragments
Unclassified burnt flint. L1: 6 g
Charcoal. L1: ^{14}C sample (HH75 556) identified as a few fragments oak, 1 fragment hazel/alder. Lifted as one piece, presumably oak
^{14}C. L1: *3940–3850 cal BC (9%) or 3820–3620 cal BC (82%) or 3590–3530 cal BC (4%)* (4920±70 BP; HAR-9166) on charcoal HH75 556; 2890–2460 cal BC (4110±80 BP; HAR-2041) on burnt antler HH75 545

B F60. Pit? Probable. Earlier Neolithic? *Length* 0.35 m, *width* 0.4 m, *depth* >0.1 m
Form. Subcircular
Fill(s). L3 loose peagrit with chalk lumps and a few broken flint fragments. L2 sticky black soil with chalk lumps and broken flint fragments
Lithics. L2: 7 flakes, serrated flake

B F61. Pit. Definite. Earlier Neolithic. *Length* 0.9 m, *width* 0.8 m, *depth* 0.2 m
Form. Trapezoid, bowl-shaped profile
Fill(s). L4 rotted chalk wash. L3 earthy fill with peagrit, chalk lumps, flint fragments. L2 sticky black soil with chalk lumps and broken flint fragments
Pottery. L2: 1 sherd/2 g Neolithic Bowl pottery
Lithics. 10 flakes (2 burnt), core, 1 misc retouched
L2: 5 flakes

C F3. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.4 m, *width* 1.25 m, *depth* 0.25 m
Form. Subcircular, steep sides, flat base with hump at one side. Recut
Fill(s). L2 chalky silt with loam and chalk lumps. L1 (fill of recut) Orange-brown loam with dense chalk lumps and some flint
Animal bone. *
L2: *
L1: *
Pottery. 1 sherd/12 g Neolithic Bowl pottery
L2: 7 sherds/30 g Neolithic Bowl pottery, mainly from P84
L1: 94 sherds/245 g Neolithic Bowl pottery, including 75 sherds/149 g in Gabbroic fabrics (many in fresh condition), from P8 and P9
Lithics. 22 flakes, serrated flake, 4 edge-trimmed flakes
L2: 4 flakes
L1: 12 flakes, serrated flake, edge-trimmed flake, scraper, 1 misc retouched
Charcoal. Quercus sp, Maloideae
L1: Maloideae

C F7. Pit? Probable. Earlier Neolithic. *Length* 0.5 m, *width* 0.4 m, *depth* 0.2 m
Form. Ovoid, shelving sides, rounded base. Within larger spread of loam and chalk rubble
Fill(s). Heavy dark brown clay loam with flint nodules
Pottery. L1: 4 sherds/11 g Neolithic Bowl pottery
Lithics. L1: 16 flakes, serrated flake, edge-trimmed flake, 1 misc retouched

D2 F19. Pit. Definite. Earlier Neolithic. *Length* 0.8 m, *width* 0.9 m, *depth* 0.4 m
Form. Subcircular, shelving sides, flat base
Fill(s). L2 concreted chalky silt with chalk lumps. L1 dark brown-black loam with much flint and chalk gravel; flint nodules and chalk lumps at centre
Comment. On causeway between segments of outer cross-dyke
Animal bone. L1: *. Recorded on site as pig teeth and tushes; not in animal bone database
Pottery. L1: 1 sherd/4 g Neolithic Bowl pottery

E2 F1. Pit? Definite. Earlier Neolithic (Fig 3.41). *Length* 2 m, *width* 1.8 m, *depth* 0.7 m
Form. Ovoid, with flat base, almost vertical sides, shallow lip
Fill(s). L9 dark grey silt on base. L6 light brown soil with chalk lumps against E side. L8 dark grey silt with chalk lumps and flints. L7 light grey silt with chalk lumps. L4D grey clayey, chalky silt with chalk fragments. L4E chalky silt

with small chalk fragments. L4C grey clayey, chalky silt with chalk fragments. L5 vacuous chalk blocks. L4B light grey clayey silt with peagrit. L4A light brown silt with chalk lumps. L2 brown soil with chalk lumps. L3 dark brown soil with dense chalk lumps and some flint. L1 dark brown soil with peagrit
Comment. Between inner and outer E cross-dykes. Shape and fills could suggest treethrow hole
Animal bone. L9: *pig* teeth; *red or roe deer* antler fragments, some burnt
L5: *
L2: *cattle* phalanx
L1: *
Pottery. L9: 3 sherds/28 g Neolithic Bowl pottery including rims from 2 vessels
L5: 10 sherds/51 g Neolithic Bowl pottery
L2: 9 sherds/73 g Neolithic Bowl pottery
L1: 18 sherds/31 g Neolithic Bowl pottery
Lithics. L9: 9 flakes (5 burnt), serrated flake, edge-trimmed flake, Greensand quern fragment.
L5: 2 flakes, edge-trimmed flake
L2: 14 flakes, Greensand quern or rubber fragment (burnt)
L1: 63 flakes (2 chert, 2 burnt), scraper, edge-trimmed flake, 2 misc retouched
Unclassified burnt flint. L9: 3 g

G F5. Pit. Definite. Earlier Neolithic. *Length* 1.15 m, *width* 1 m, *depth* 0.26 m
Form. Circular, flat base
Fill(s). Chalky silt with chalk lumps on base, overlain by brown earth with chalk lumps and flint nodules, topped by dark grey soil with chalk lumps and flint nodules, from which at least some of finds came
Animal bone. L2: *
Pottery. L2: 7 sherds/53 g Neolithic Bowl pottery
Lithics. L2: 3 flakes, 3 serrated flakes

N F1. Pit. Definite. Earlier Neolithic. *Length* 1.60 m, *width* 1.20 m, *depth* 0.29 m
Form. Ovoid, with flat base, in butt of probably natural linear feature extending beyond excavation
Fill(s). L5 chalky silt with some small chalk lumps, some flint gravel towards top. L4 dark brown/black soil with small chalk lumps, occasional flint. L3 Brown soil with numerous shattered flint lumps and some flint and chalk peagrit. In ?natural feature to N: L5 dense chalk rubble with little soil. L4 brown clay with closely-packed chalk lumps. L3 soil with flint nodules and flint gravel
Comment. Finds confined to pit at SE end
Animal bone. L4: *red deer* antler implement, probably pick; *cattle* rib; *caprine* humerus
L3: *indet carnivore* acetabulum; *cattle* pubis, 2 astragali, 4 ribs (1 almost complete, at least two further ribs represented by other fragments); *caprine* humerus
L1: *
Pottery. L4: 12 sherds/44 g Neolithic Bowl pottery, all but 1 from a closed, calcite-tempered vessel with a simple rounded rim 150 mm in diameter
L3: 109 sherds/176 g Neolithic Bowl pottery, including 55 sherds/120 g possibly from a single flint-tempered vessel with a solid oval lug and simple flat rim 260 mm in diameter
L1: 1 sherd/4 g Neolithic Bowl pottery
Lithics. L4: 11 flakes, serrated flake
L3: 47 flakes (1 burnt), 2 leaf arrowheads, 1 misc retouched
L1: 3 flakes, edge-trimmed flake, scraper, 1 misc retouched
Unclassified burnt flint. L3: 27 g

N F5. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.8 m, *width* 1.5 m, *depth* 0.3 m
Form. Subcircular, shelving sides, flat base
Fill(s). L5 buff chalky silt with chalk lumps and some flint fragments. L4 brown earthy matrix with chalk lumps and flint nodules. L3 earthy matrix with fragmented flint (?base of pre-ploughing soil)
Animal bone. L4: *pig* metacarpal, teeth; *red deer* antler tine, worn; *caprine* radius
L3: *caprine* humerus
Pottery. L5: 4 sherds/22 g Neolithic Bowl pottery
L4: 17 sherds/43 g Neolithic Bowl pottery
L3: 25 sherds/80 g Neolithic Bowl pottery
Lithics. L5: flake, serrated flake
L4: 18 flakes, 4 serrated flakes, edge-trimmed flake, laurel leaf, 1 misc retouched
L3: 3 flakes, 1 misc retouched
Unclassified burnt flint. L3: 1 g
Charcoal. L5: Maloideae
L4: Maloideae, *Corylus avellana*, *Quercus* sp, *Acer campestre*, *Fraxinus excelsior*, *Pinus sylvestris*
L3: Maloideae, *Corylus avellana*

N F6. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 2 m, *width* 1.75 m, *depth* 0.3 m
Form. Subcircular, shelving sides, flat base
Fill(s). L5 Grey chalky silt with small chalk lumps and pebbles and occasional flint nodules. L4 dark clay matrix with dense, angular chalk lumps and some flint lumps. L3 earthy matrix with frequent flint nodules and occasional chalk lumps
Comment. Given the contents of the pit, discarded iron fragment from L3 must have been either a natural concretion or intrusive
Animal bone. *Pig* premaxilla; *cattle* tooth
L5: *
L4: *red deer* 3 antler 'rakes' (HH77 2042, 2043) and further worn and modified fragments; most on surface of L5, *pig* tooth
L3: *pig* scapula (dog-gnawed), *cattle* scapula, premaxilla, 3 phalanges, 3 vertebrae; *cattle* tooth
Pottery. L5: 16 sherds/24 g Neolithic Bowl pottery
L4: 23 sherds/64 g Neolithic Bowl pottery
L3: 69 sherds/99 g Neolithic Bowl pottery, including P140
L2: 2 sherds/8 g Neolithic Bowl pottery
Lithics. L5: 10 flakes, 2 serrated flakes
L4: 33 flakes (2 burnt), 3 serrated flakes
L3: 81 flakes (1 burnt, 1 of chert), 2 serrated flakes
Unclassified burnt flint. L4: 13 g
L3: 59 g
Other finds. L3: iron fragment
Charcoal. L5: *Quercus* sp
L4: Maloideae, *Corylus avellana*, *Quercus* sp, *Prunus* sp
L3: ^{14}C sample (HH77 Sa 41) Pomoideae, *Quercus* sp, *Corylus* sp Undated remainder Maloideae, *Quercus* sp, *Corylus avellana*. Other charcoal from L3 *Corylus avellana*, Maloideae, *Quercus* sp, *Prunus* sp
^{14}C. 3640–3350 cal BC (4680±80 BP; HAR-3061) on charcoal HH77 Sa 41

N F7. Hollow. Natural (Fig 3.56). *Length* 4.5 m, *width* 2.5 m
Form. Hollow within which pits N F7i/ii, F7ii/vii, F7iv/vi cut
Fill(s). L3 fragmented flint sealing features (?base of

pre-ploughing soil). L2 humic, stone-free remnant of pre-ploughing soil. L1 recent ploughsoil
Animal bone. L3: many antler fragments, no traces of wear (HH77 2670)
Pottery. L3: 142 sherds/250 g Neolithic Bowl pottery
L1: 1 sherd/5 g Neolithic Bowl pottery
Lithics. L3: 41 flakes (1 burnt). 2 edge-trimmed flakes, rod, missing 'piece of sandstone'
L2/L3: 11 flakes (2 burnt)
L2: 248 flakes (5 burnt), core, core fragment, 2 scrapers, rod, 2 misc retouched, beach pebble fragment, Old Red Sandstone fragment
L1: 2 flakes, edge-trimmed flake
Unclassified burnt flint. L3: 8 g
L2+L3: 15 g
L2: 75 g
Other finds. L3: iron nail
Charcoal. L3: Maloideae, *Fraxinus excelsior*, *Quercus* sp
L3 (+ L4 in SW quad): Maloideae, *Corylus avellana*, *Quercus* sp, cf *Betula* sp

N F7ilii. Pit. Definite. Earlier Neolithic (Fig 3.56). *Length* 2 m, *width* 1.8 m, *depth* 0.5 m
Form. Subcircular, shelving sides, flat base. F7ii = recut into S side of pit, steeper sides, flat base. Possible postpipe up to 0.25 m in diameter, cutting silts at SW side, truncated by recut.
Fill(s). L5 silt with some chalk lumps. L4 silt with denser, larger chalk lumps and occasional flint. Un-numbered ?post-pipe of stone-free loam. L3 (fill of recut) dark brown loam with abundant flint lumps. More clay in SW, from adjacent Clay-with-Flints
Comment. Recut F7ii, filled by L3, recognised only after much of SW quadrant excavated. Site notebook states that finds recorded as from F7i L4 in SW quad were from lower part of L3, and hence from recut
Animal bone. L4: *pig* scapula, *red deer* radius, *cattle* vertebra, *caprine* humerus
L3: *dog* mandible; *pig* 3 scapulae, radius, ulna, ilium, 2 ischia, tarsal, tooth; *cattle* humerus, 2 radii, 2 ulnae, femur, 4 tibiae, ilium, ischium, tarsal, phalanx, 4 vertebrae, skull fragment, ribs
Pottery. L4: 15 sherds/134 g Neolithic Bowl pottery, including simple rounded rim sherd in Jurassic fabric possibly from vessel represented in L3
L3 (+ L4 in SW quad): 148 sherds/290 g Neolithic Bowl pottery, including P22 and P91, also 87 plain body sherds/174 g possibly from a single vessel in a Jurassic fabric
Lithics. L4: 83 flakes (11 burnt), core, core fragment, flaked lump, scraper, 1 misc retouched
L3 (+ L4 in SW quad): 190 flakes (10 burnt, 1 of chert), 6 cores, 2 core fragments, 2 flaked lumps, 11 serrated flakes, 7 edge-trimmed flakes, 2 scrapers, flake from ground implement, 1 misc retouched, sarsen quern or rubber fragment (burnt), 3 sarsen fragments (2 burnt), 4 Old Red Sandstone fragments (2 burnt), 2 Greensand fragments (1 burnt), 2 unworked limestone fragments
Unclassified burnt flint. L4: 30 g
L3: 53 g
Charred plant remains. L3: <10 g hazelnut shell
Charcoal. L3 (+ L4 in SW quad): Maloideae, *Corylus avellana*, *Quercus* sp, cf *Betula* sp

N F7iiilvii. Pit. Definite. Earlier Neolithic (Fig 3.56). *Length* 1.75 m, *width* 1.5 m, *depth* 0.55 m
Form. Ovoid pit (7iii) with shelving to vertical sides and rounded base. Central recut filled by L3, 1.70 m diameter, 0.40 m deep, steep sides, flat base. Linear extension or recut to NW, 0.25 m deep (7vii).
Fill(s). F7iii L5 chalky silt with closely-packed angular chalk lumps. F7iii L4 loose grey chalky silt with some charcoal overlain by silt with chalk rubble. F7iii L3 (fill of recut) dark brown earthy matrix with flint nodules, some large, especially towards base. F7vii L4 silt with chalk lumps. F7vii L3 Earthy matrix with flint nodules and small flint fragments
Comment. Relation of F7vii and F7iii uncertain. Dimensions given for F7iii
Animal bone. F7iii L4: *pig* vertebra; *cattle* 2 humeri
F7iii L3: *pig* tarsal; *red deer* base of unshed antler with ancient damage (on surface of L3; HH771945); *cattle* scapula, radius, 2 tibiae, 2 ilia, 2 metacarpals, 2 tarsals, vertebra, rib; *caprine* tibia
F7vii L3: *pig* ulna
Pottery. F7iii L4: 14 sherds/32 g Neolithic Bowl pottery
F7iii L3: 76 sherds/23 g Neolithic Bowl pottery
F7vii L3: 1 sherd/2 g Neolithic Bowl pottery
Lithics. F7iii L4: 4 flakes, serrated flake
F7iii L3: 50 flakes (2 burnt), core, 15 serrated flakes, edge-glossed flake, 3 edge-trimmed flakes (1 of chert), scraper, 3 misc retouched, sarsen fragment, Old Red Sandstone fragment
F7vii L3: 4 flakes
Unclassified burnt flint. F7iii L3: 7 g
Other finds. F7iii L3: bone point made on sheep metacarpal
Charcoal. F7iii L4: *
F7iii L3: Maloideae, *Corylus avellana*

N F7ivlvi. Pit. Definite. Earlier Neolithic (Fig 3.56). *Length* 2.3 m, *width* 2.1 m, *depth* 0.22 m
Form. F7iv subquadrangular, shelving sides, undulating base. F7vi recut *c* 0.35 × 0.30 m, 0. 28 m deep, filled by L3
Fill(s). F7iv L4 dark loam with some flint. F7vi L3 black/brown earthy matrix with flint nodules
Animal bone. L4: *pig* scapula
L3: *stoat/weasel* acetabulum; *cattle* 2 radii, ulna, rib
Pottery. L4: *
L3: 10 sherds/10 g Neolithic Bowl pottery
Lithics. L4: 9 flakes (1 burnt), core, scraper, (Chesil?) beach pebble hammerstone
L3: 20 flakes, 4 serrated flakes, 2 edge-trimmed flakes class A, 3 edge-trimmed flakes, 2 scrapers, sarsen fragment (burnt), 2 Greensand fragments
Unclassified burnt flint. L4: 10 g
L3: 12 g.
Charcoal. L4: *Corylus avellana*, Maloideae
L3: Maloideae, *Corylus avellana*

N F7v. Pit. Definite. Earlier Neolithic (Fig 3.56). *Length* 2.5 m, *width* 1.75 m, *depth* 0.25 m
Form. Pear-shaped, shelving sides, undulating base
Fill(s). L4 buff chalky silt with chalk lumps, at wider, deeper S end only. L3 loose earthy matrix with chalk lumps and flint nodules, some large in S; smaller, scarcer inclusions in N
Comment. Possibly extended or recut. Some root disturbance
Animal bone. L4: *pig* scapula; *red deer* antler fragment (worn and modified, on surface of L4, HH77 2307); *cattle* metatarsal
Pottery. L4: 36 sherds/125 g Neolithic Bowl pottery
L3: 13 sherds/63 g Neolithic Bowl pottery
Lithics. L4: 9 flakes

L3: 19 flakes (1 of chert), edge-trimmed flake, scraper
Unclassified burnt flint. L3: 9 g
Charcoal. L3: *

N F7viii. Pit. Definite. Earlier Neolithic (Fig 3.56). *Length* 1.25 m, *width* 0.89 m, *depth* 0.2 m
Form. Subtriangular, rounded base
Fill(s). L4 chalky silt with chalk lumps. L3 brown soil with flint lumps
Lithics. L3: 10 flakes, 3 serrated flakes, 1 misc retouched

N F10. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.5 m, *width* 1.1 m, *depth* 0.59 m
Form. Ovoid, fairly steep sides, uneven base. Stakehole 0.15 m diameter and >0.35 m deep cutting original fills, truncated by recut 0.90 m in diameter, 0.20 m deep
Fill(s). L5 chalky silt. L4 buff chalky silt with dense, angular chalk rubble and some flint. L4A (stakehole fill) loose, stone-free dark brown soil, with chalk lumps and flint fragments only in upper part where edges broken down. L3 (recut fill) dark brown soil with flint and chalk lumps (substantially higher proportion of flint than in underlying layers)
Comment. Stratigraphy would be compatible with insertion of stake into filled pit, its removal with topsoil trickling into base of stakehole and upper part collapsing, and recutting of pit
Animal bone. *Cattle* radius
L5: *pig* mandible
L4: *
L3: *pig* tibia, 2 maxillae; *red deer* antler tine with worn tip; *cattle* 2 pubes, rib, 10 teeth
Pottery. 10 sherds/10 g Neolithic Bowl pottery
L5: 1 sherd/6 g Neolithic Bowl pottery
L4: 3 sherds/25 g Neolithic Bowl pottery
L3: 79 sherds/220 g Neolithic Bowl pottery
Lithics. 9 flakes
L5: 3 flakes
L4: 15 flakes, Old Red Sandstone chip
L3: 49 flakes, 8 serrated flakes, 2 edge-trimmed flakes class A, edge-trimmed flake, scraper
Unclassified burnt flint. 4 g
L3: 6 g
Charcoal. Corylus avellana, *Quercus* sp
L3: *Corylus avellana*, *Quercus* sp, Maloideae, *Betula* sp, *Prunus* sp

N F11. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.8 m, *width* 1.4 m, *depth* 0.6 m
Form. Ovoid, steep sides, rounded base. Steep-sided recut 0.75 m in diameter, 0.37 m deep
Fill(s). L7 not described. L4 chalky silt with some chalk lumps. L3A light brown soil with chalk lumps and peagrit. L3 (fill of recut) dark loam with large flint fragments and occasional chalk lumps
Comment. Given contents of pit, discarded 'iron' from L4 is likely to have been a natural concretion or intrusive
Human remains. L3: fragmentary adult femur head (HH77 604)
Animal bone. L4: *
L3: *pig* 2 tibiae, teeth, mandible, 2 vertebrae; *cattle* 4 scapulae, humerus, radius-ulna, acetabulum, 3 femora, tibia, ilium, 4 ischia, 3 tarsals, tooth, mandible, 2 phalanges, 2 vertebrae; *caprine* tibia, tarsal, vertebra
Pottery. L4: 17 sherds/73 g Neolithic Bowl pottery
L3: 121 sherds/561 g Neolithic Bowl pottery, 3 sherds/4 g indet sand-tempered, 4 sherds/14 g indet grogged
L1: 3 sherds/8 g Neolithic Bowl pottery
Lithics. L7: 35 flakes, 3 serrated flakes
L4: 5 flakes
L3: 67 flakes (4 burnt), serrated flake, leaf arrowhead, 4 misc retouched, sarsen fragment (burnt), Greensand fragment (?burnt), missing 'sandstone fragments'
L1: 2 flakes
Unclassified burnt flint. L7: 2 g
L3: 30g
Other finds. L4: 'iron'
L3: 2 fragments/4 g amorphous fired clay without added inclusions
Charcoal. L4: *Corylus avellana*, *Quercus* sp
L3: *Quercus* sp, Maloideae, *Corylus avellana*

N F17. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 1.5 m, *width* 1.2 m, *depth* 0.2 m
Form. Ovoid, stepped sides, irregular base
Fill(s). L4 dense chalk lumps with some peagrit. L3 dark brown/black soil with large flint fragments
Animal bone. L3: *pig* tooth
Pottery. L4: 17 sherds/43 g Neolithic Bowl pottery
L3: 18 sherds/80 g Neolithic Bowl pottery
L2: 34 sherds/126 g Neolithic Bowl pottery, including 10 sherds/50 g probably from P11, most of which was found in F82 (1.50 m away), also 22 body sherds/116 g from a single flint-tempered vessel with surface smoothing
Lithics. L4: 9 flakes, core, edge-trimmed flake (of chert), edge-glossed flake, 4 Old Red Sandstone quern or rubber fragments, Greensand fragment
L3: 13 flakes (3 burnt) edge-trimmed flake, 1 misc retouched, Old Red Sandstone quern or rubber fragment
L2: 3 flakes

N F19. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.5 m, *width* 1.1 m, *depth* 0.18 m
Form. Ovoid, shelving sides, rounded base
Fill(s). L3 chalk rubble with occasional flints, patches of gravel and clay
Animal bone. L3: *caprine* tooth
Pottery. L3: 14 sherds/36 g Neolithic Bowl pottery, 7 joining sherds/23 g indet grogged
L2: 16 sherds/47 g Neolithic Bowl pottery
Lithics. L3: 30 flakes, 3 serrated flakes, edge-trimmed flake, 1 misc retouched
L2: flake
Unclassified burnt flint. L3: 30 g
Charcoal. L3: *

N F22. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.25 m, *width* 1.05 m, *depth* 0.4 m
Form. Ovoid, bowl-shaped profile, possible recut 1.00 m diameter, 0. 15 m deep
Fill(s). L5 thin chalky silt. L4 chalky silt with angular chalk lumps and occasional flint. L3 (fill of possible recut) dark clay matrix with large tabular flint nodules
Comment. L3 possibly the fill of a recut
Animal bone. L4: 2 *red deer* antler crown 'rake', grooved and splintered, cut antler beam fragment (both HH77 1826), *pig* acetabulum lying under the other antler fragment
L3: *cattle* skull fragment; *caprine* ulna
Pottery. L4: 7 sherds/7g Neolithic Bowl pottery
L3: 26 sherds/87 g Neolithic Bowl pottery

Lithics. L4: 18 flakes (1 burnt), 2 serrated flakes, edge-trimmed flake class A, unworked micaceous sandstone fragment (burnt)
L3: 100 flakes (5 burnt), 4 serrated flakes, 3 edge-trimmed flakes, sarsen fragment, burnt, on top of layer near centre
L2: flake
L1: 8 flakes (1 burnt), serrated flake, 1 misc retouched
Unclassified burnt flint. L4: 6 g
L3: 15 g
L1 29 g
Charcoal. L4: *
L3: *

N F23. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.25 m, *width* 1 m, *depth* 0.25 m
Form. Subtriangular, shelving sides, flat base. Recut 1.00 m diameter, 0.25 m deep, reaching to base of pit
Fill(s). L5 slight, patchy chalky silt. L4 chalky silt with angular chalk lumps and occasional flint, extending to top of feature, but largely removed by recut. L3 (fill of recut) dark clay matrix with flint lumps
Pottery. L4: 3 sherds/4 g Neolithic Bowl pottery
L3: 268 sherds/388 g Neolithic Bowl pottery, including 196 sherds/268 g forming P25
L2: 78 sherds/86 g Neolithic Bowl pottery
Lithics. L4: 8 flakes, serrated flake
L3: 137 flakes (1 burnt, 1 of chert), 16 serrated flakes, 5 edge-trimmed flakes, 2 piercers, 1 misc retouched, 11 sarsen quern or rubber fragments (burnt), 20+ further sarsen fragments and crumbs (burnt). Sarsen concentrated near centre
L2: 4 flakes, edge-glossed flake
Unclassified burnt flint. L4: 8 g
L3: 111 g
Charcoal. L3: *

N F25. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 1.2 m, *width* 1.15 m, *depth* 0.65 m
Form. Subcircular, steep sides, flat base. Cut into naturally rubbly chalk. Steep-sided recut 0.40 m deep
Fill(s). L4 buff chalky silt with chalk rubble, denser towards base. L3 (fill of recut) black/brown earthy matrix with some flint nodules and chips in lower part, many in upper part
Comment. Section and photograph suggest L3 divisible into fills of two successive recuts, though not thought to be so in field
Animal bone. L4: *cattle* acetabulum
L3: *cattle* 3 scapulae, humerus, radius, acetabulum, ilium, metacarpal, metatarsal, tarsal, mandible, vertebra; *caprine* teeth; *deer* 'a number of pieces of antler' at base of L3
Pottery. L4: 15 sherds/14 g Neolithic Bowl pottery, including 6 sherds/11 g in fabric group 6, probably from vessel represented in L3
L3: 115 sherds/257 g Neolithic Bowl pottery, including 6 sherds/34 g from fabric group 6 vessel probably represented in L4
L2: 4 sherds/4 g Neolithic Bowl pottery
Lithics. L4: 30 flakes, 3 serrated flakes, edge-trimmed flake class A, 2 edge-trimmed flakes, piercer, 1 misc retouched
L3: 114 flakes (3 burnt), 4 serrated flakes, 4 edge-trimmed flakes class A, 4 edge-trimmed flakes, 2 scrapers, 1 misc retouched, heathstone fragment
Unclassified burnt flint. L3: 12 g
Charcoal. L4: *
L3: *

N F26. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 0.8 m, *width* 0.64 m, *depth* 0.15 m
Form. Ovoid, shelving sides, rounded base
Fill(s). L3 Brown silt/clay matrix with chalk and flint lumps
Pottery. L3: 8 sherds/13 g Neolithic Bowl pottery
L2: missing pottery find
Lithics. L3: 6 flakes
Unclassified burnt flint. L3: 10 g
Charcoal. L3: *

N F36. Pit. Definite. Earlier Neolithic. *Length* 1.5 m, *width* 1.3 m, *depth* 0.45 m
Form. Subquadrangular with shelf-like ledge to E, steep sides, flat base. Recut 0.35 m diameter, 0. 23 m deep
Fill(s). L5 chalky silt with small chalk lumps. L4 buff chalky silt with dense angular chalk rubble and occasional flint. L3 (fill of recut) dark black/brown earthy matrix with flint fragments and weathered chalk lumps
Pottery. L4: 11 sherds/34 g Neolithic Bowl pottery
L3: 18 sherds/20 g Neolithic Bowl pottery
Lithics. L3: 19 flakes, 2 edge-trimmed flakes, 1 misc retouched, a few sarsen crumbs (burnt)
Charcoal. L3: *Corylus avellana*, Maloideae

N F42. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.85 m, *width* 1.45 m, *depth* 0.25 m
Form. Pear-shaped, with smaller, second hollow (or pit base?) in narrow NE extension, although fills seemed continuous across both. Shelving sides, flat base. Possible stakehole, tapering from 0.25 to 0.10 m in diameter, cutting L5, sealed by L4
Fill(s). L5 chalky silt with closely-packed angular chalk. L4A (fill of ?stakehole cutting L5) dark, stone-free loam. L4 dark soil matrix with peagrit and chalk lumps. L3 brown soil (lighter than L4) with comminuted flint and chalk
Comment. Stratigraphy could be compatible with the driving of a stake through L5 and its removal, with topsoil trickling into the cavity, before the deposition of L4
Animal bone. *
L3/4: *cattle* scapula
L3: *cattle* scapula; *caprine* ulna
Pottery. 26 sherds/68 g Neolithic Bowl pottery, all possibly from P63
L3/L4, 'smashed across the bottom' of L3: 64 sherds/226 g Neolithic Bowl pottery, all from P63
L3: 160 sherds/395 g Neolithic Bowl pottery, including 20 sherds/69 g in Gabbroic fabric, certainly or probably form P4
Lithics. L3: 64 flakes (2 burnt), 8 serrated flakes, edge-trimmed flake class A, leaf arrowhead (chert)
L2: 2 flakes
Unclassified burnt flint. L3: 1 g
Charcoal. L3: *Corylus avellana*, *Acer campestre*, cf *Betula* sp, Maloideae

N F82. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 1.65 m, *width* 1.4 m, *depth* 0.4 m
Form. Subquadrangular, shelving sides, flat base. Recut 0.70 m diameter, 0.25 m deep at SE edge
Fill(s). L5 thin skin of chalky silt with chalk lumps and some peagrit, grading into L4 light brown clayey soil with chalk lumps, large flint nodules stacked near centre of pit. L3 (fill of recut) dark brown soil with flint and occasional chalk lumps
Animal bone. L4: *cattle* metacarpal; *caprine* horncore. 2 antler finds recorded, not subsequently identified

L3: *cattle* 3 teeth, metatarsal
Pottery. L5: 4 sherds/32 g Neolithic Bowl pottery, calcite-tempered, possibly from P11
L4: 49 sherds/289 g Neolithic Bowl pottery, including 38 sherds/242 g certainly or probably from P11
L3: 120 sherds/417 g Neolithic Bowl pottery, including 39 sherds/202 g from P11
Lithics. L5: 2 flakes
L4: 19 flakes (1 burnt), 2 serrated flakes, edge-trimmed flake
L3: 35 flakes (2 burnt), 5 serrated flakes, edge-trimmed flake class A, 5 edge-trimmed flakes, Greensand ball
Unclassified burnt flint. L3: 5 g
Charcoal. L3: *

N F90. Pit. Definite. Earlier Neolithic (Fig 3.57). *Length* 1.6 m, *width* 1.45 m *depth* 0.45 m
Form. Ovoid, steep sides, flat base. Recut *c* 1.00 m diameter, 0.40 m deep removing most of L6 and L5. Second recut 0.50 m diameter, 0.40 m deep reaching to base from part-way down fill of first, either going out of section or truncated by 3rd recut with fill similar to and not distinguished from first
Comment. Cut in shallow spread of Clay-with-Flints, although pit walls and base chalk
Fill(s). L6 chalky silt with chalk lumps. L5 brown clayey silt with chalk lumps, extending to top of pit. L4 (lower fill of recut?) charcoal-rich black loam with some flint and chalk. L3 (upper fill of recut) dark grey-brown loam with dense flint fragments
Animal bone. L5: *
L4: *
L3: *
Pottery. L5: 5 sherds/10 g Neolithic Bowl pottery
L4: 1 sherd/1 g Neolithic Bowl pottery
L3: 56 sherds/109 g Neolithic Bowl pottery
Lithics. L5: 15 flakes, edge-trimmed flake
L4: 27 flakes (2 burnt), core, 2 serrated flakes, edge-trimmed flake, 3 joining Old Red Sandstone quern or rubber fragments (burnt)
L3: 50 flakes (4 burnt), core, edge-trimmed flake class A, 4 edge-trimmed flakes, small grooved Upper Greensand fragment (point sharpener?), 3 Greensand fragments, 7 Old Red Sandstone fragments (2 burnt)
Unclassified burnt flint. L5: 5 g
L4: 45 g
L3: 6 g
Charcoal. L5: *Corylus avellana*, Maloideae
L4: *
L3: *Corylus avellana*, Maloideae, *Fraxinus excelsior*, *Quercus* sp

N F91 Pit? Probable Earlier Neolithic? (Fig 3.57). *Length* 1.3 m, *width* 1 m, *depth* 0.2 m
Form. Pear-shaped, shelving sides, rounded base
Fill(s). L4 silt with chalk lumps, peagrit and occasional flint. L3 dark brown soil with frequent flint lumps and some weathered chalk
Comment. No finds from within feature, but fills similar to those of Neolithic pits
Pottery. L1: 1 sherd/3 g Neolithic Bowl pottery

N F92. Pit. Definite. Earlier Neolithic (Fig 3.59). *Length* 1.85 m, *width* 1.35 m, *depth* 0.5 m
Form. Pear-shaped, steep sides, rounded base. Cut in Clay-with-Flints. Recut 0.75 m diameter 0.35 m deep
Fill(s). L5 clayey silt with some chalk and flint lumps, charcoal flecks. L4 brown clay-loam with flint lumps, extending to top of pit where not cut away. L3 (fill of recut) soft brown silt/clay loam (L3C) overlain by a yellow-brown matrix with dense flint gravel and chips (L3B), overlain by dark brown soil with dense, larger, flint rubble and chips (L3A)
Animal bone. L3: *cattle* vertebra
Pottery. L4: 6 sherds/3 g Neolithic Bowl pottery
L3: 50 sherds/103 g Neolithic Bowl pottery
Lithics. L4: 2 flakes
L3: 45 flakes (3 burnt), serrated flake, edge-trimmed flake, 1 misc retouched
L1: 2 flakes
Unclassified burnt flint. L3: 24 g
Other finds. L3: shell fragment?
Charcoal. L5: *
L4: *

P1 F24+F24A. Treethrow. Natural. Earlier Neolithic. *Length* 2.6 m, *width* 1 m, *depth* 0.2 m
Form. Kidney-shaped, nebulous outer edges, central hollow (F24A; 0.65 m × 0.30 m, 0.15 m deep)
Fill(s). F24: soft, brown sticky clay-like matrix with chalk and flint, fine brown soft-textured material at base. F24A: sandy-textured fine-grained humic material, with 20 mm chalk lumps and finely comminuted chalk and flint
Comment. Within protected chalk of main causewayed enclosure bank, presumably pre-dating it. Excavated as two features, F24A within F24
Animal bone. F24: *
F24A: *
Pottery. F24: 18 sherds/ 26 g Neolithic Bowl pottery
F24A: 1 sherd/2 g Neolithic Bowl pottery
Lithics. F24: 11 flakes
Charred plant remains. F24: Hazelnut shell recorded, not kept
Charcoal. F24A: Maloideae, *Pinus sylvestris*, *Tilia* sp

P2 F9+F12+F15. Intercutting pits? Definite. Earlier Neolithic. *Length* 1.3 m, *width* 1.25 m, *depth* 0.4 m
Form. Subtriangular.
Fill(s). F9 L3 Orange-brown clayey silt with large chalk lumps. F9 L2 brown clayey soil with peagrit. F9 L1 dark brown/black soil with small chalk & flint lumps. F12 L3 brown chalky silt. F12 L2 dark brown clayey soil with peagrit. F12 L1 brown soil with dense small chalk and flint lumps and peagrit
Comment. In inner S cross-dyke bank area. F9 cut into F12 and F15. F15 ?natural. F9 and F15 cut entirely in pre-bank deposits, above solid chalk, F12 just penetrating top of chalk.
Animal bone. F12 L1: *
Pottery. F9 L2: 2 sherds/6 g Neolithic Bowl pottery
F9 L1: 5 sherds/6 g Neolithic Bowl pottery
F12 L1: 10 sherds/25 g Neolithic Bowl pottery
Lithics. F9 L2: 3 flakes
F9 L1: 2 flakes
F12 L1: 7 flakes, edge-trimmed flake
Charcoal. F12 L1: *

P2 F14. Pit. Definite. Earlier Neolithic. *Length* 0.85 m, *width* 0.6 m, *depth* 0.4 m
Form. Ovoid, bowl-shaped profile
Fill(s). Dark brown humic soil with some chalk, flint lumps concentrated towards sides and bottom centre
Comment. Overlain by L4, cut through bank area L1, L2, L2B, only just penetrating into solid chalk. Initially excavated as LB3 L14

Animal bone. F14: *pig* 2 scapulae ; *cattle* femur, ischium, 3 metacarpals, tarsal, teeth, mandible, phalanx, vertebra; *caprine* 2 metatarsals
LB3 L14: *
Pottery. F14: 32 sherds/103 g Neolithic Bowl pottery, 7 missing pottery finds
LB3 L14: 22 sherds/52 g Neolithic Bowl pottery
Lithics. F14: 439 flakes (5 burnt, 3 of chert), 2 cores, flaked lump, edge-trimmed flake, scraper, flake from ground implement, 3 fragmentary leaf arrowheads (all chert), 1 misc retouched
Unclassified burnt flint. F14: 155 g
Charcoal. F14: *

WOWK3 F5. Pit base? Probable. Earlier Neolithic. *Length* 0.9 m, *width* 0.5 m, *depth* 0.12 m
Form. Irregular. Slight wall upslope, stepped base, no wall downslope
Fill(s). Chalk and flint rubble under dark brown clay silt with 70% chalk
Comment. Just outside L-shaped band of inner S cross-dyke/W outwork protected chalk
Pottery. 10 sherds/21 g Neolithic Bowl pottery
Lithics. 7 flakes, serrated flake, heathstone chip, unworked quartzite pebble
Charred plant remains. <10 g charred hazelnut shell
Charcoal. Fraxinus excelsior, Maloideae, *Quercus* sp

3.3.8 Distributions in the central area

Cultural material was unevenly distributed, laterally and stratigraphically. Individual events stand out most clearly in deposits in pits and on ditch floors. Higher up in the ditch segments silting, recutting, reworking, and redeposition of already present material, and the sheer quantity of finds, often blur the distinction between event and background. Broad patterns are, however, visible in the sum of individual actions and of natural silting over the hundreds of years indicated by the dating programme (Ch 4).

Presentation

Figures 3.60–66 and 3.68–71 and comparable plots for the Stepleton spur summarise distributions across the excavated area and through ditch sequences. Although necessarily schematic, this has been preferred to successive plans which could convey the impression that equivalent levels in the different ditches or segments were contemporary. This is demonstrably not the case in some instances, and probably not the case in others. The panels representing ditch segments are roughly proportionate to their excavated length. Finds from pits and other non-ditch contexts are shown as individual symbols or, if quantities rather than individual finds are portrayed, as shaded discs. The way in which each category of material is represented was determined by its nature and quantity. Any discrepancy between numbers of finds plotted and numbers listed elsewhere in the text reflects the fact that a minority, especially from topsoil, are too imprecisely located to plot.

Differential preservation of bone and antler

Areas of Clay-with-Flints almost certainly affected bone and antler preservation. The largest of these coincided with segments 12 to 15 in the north-east of the main enclosure, where the fills contained much clay and soil and little chalk (Figs 3.25–26). Clay was particularly present in segment 13, part of which was actually cut into Clay-with-Flints. Almost all the identifiable animal bone from this segment came from section e, near the north-west butt, where there was more chalk and less clay than elsewhere, while artefacts were more evenly distributed along its length and were most numerous at the opposite end. Relatively low levels of bone and antler in this part of the circuit may thus not reflect original dispositions, especially in phases I–III where the fills were dominated by clay and flints.

The ditches of the south long barrow were also dug in an area with patches and pockets of Clay-with-Flints. Here, however, the ditch fills contained far more chalk, except in the extremely shallow north-west butts, where there were few finds of any kind, and in the deeper and more prolific south-east butt of the south-west ditch. Here, localised clay layers (Fig 3.48: section E–E': L35, L38) contained artefacts but virtually no bone or antler, in contrast to a more even balance of materials in the chalk-rich fills of most of the ditch. Bone may have been poorly preserved in these layers. In this case, however, the vertical and horizontal extent of the clay layers was so limited that the overall representation of bone and antler in the barrow ditches is unlikely to have been significantly affected.

Individual categories

Human remains

Complete human skeletons, apart from those probably buried in the south long barrow, were confined to two child burials in segments 18 and 17 of the main enclosure (Fig 3.34). A skeleton little displaced from articulation may be represented in segment 19 in the same area where fragments of an older adult, including ribs and a vertebra as well as parts of the skull and mandible (HH76 1823, 1824, 3052) came from a phase IV deposit which extended beyond the excavated area and may have contained more of the same individual. Less completely, in the phase III deposits in segment 17, an older infant was represented by vertebrae, clavicle, scapula and ribs as well as skull fragments (HH76 2999). The only other comparable instance in the central area is in segment 6.2 in the south-east of the enclosure, where fragments from many parts of the skeleton of an older juvenile were built into a flint cairn on the base of the ditch (HH76 3030, 3034, 3036, 3038, 3040–3). Like segment 19, this was next to a segment containing articulated human remains, in this case the cut-marked and gnawed lower axial skeleton and femora of a young

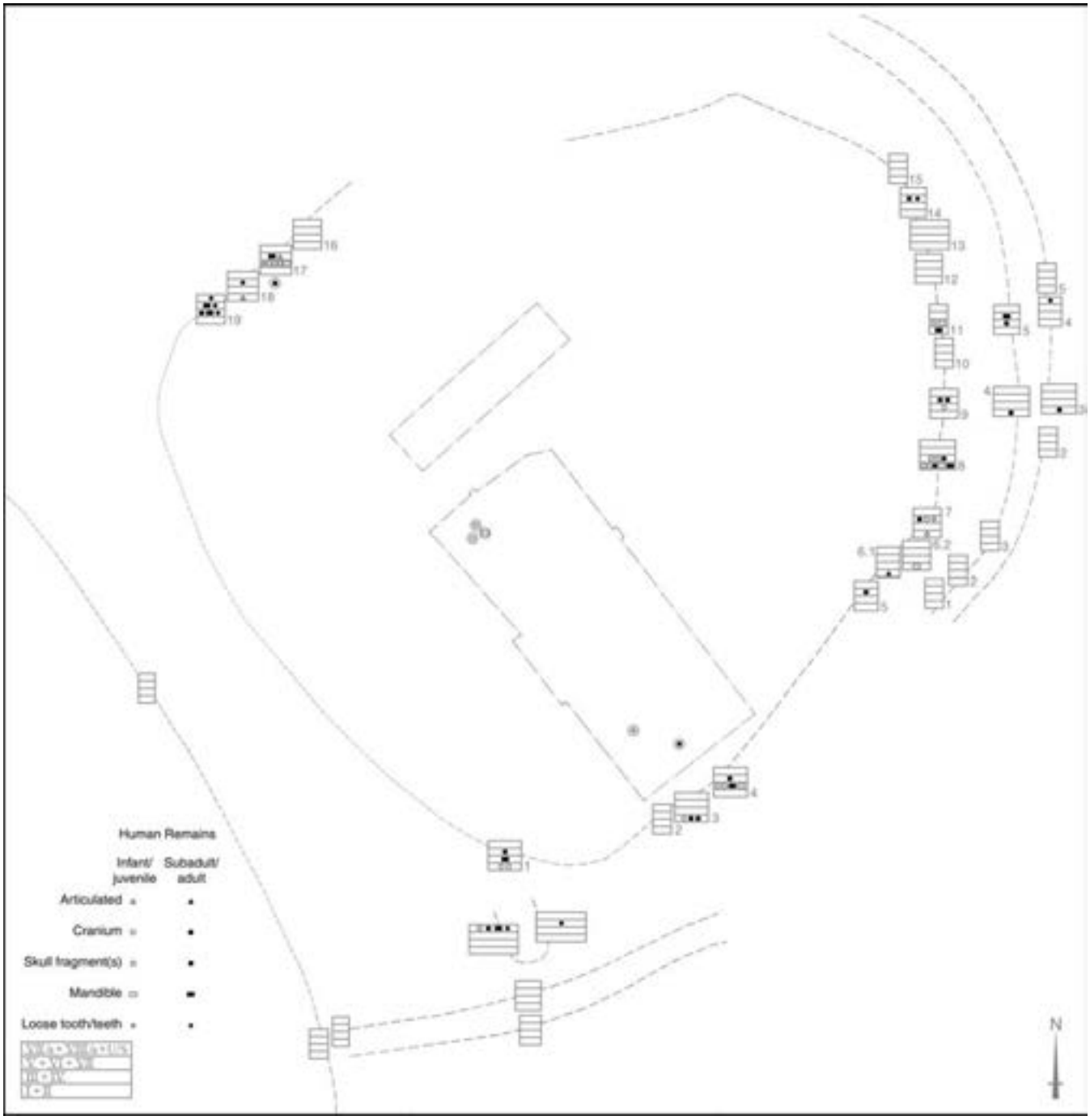

Fig 3.60 Central area. Distribution of articulated human remains, crania, skull fragments and loose teeth.

adult male (HH76 2625) in segment 6.1. In all three cases, other, completely disarticulated, human remains were recovered from the same segments.

Elsewhere, human remains were completely disarticulated and were dominated by skull and limb, especially lower limb, fragments (McKinley, 7.1). This material was, with rare exceptions, fragmented when deposited, as in the case of two joining skull fragments placed a short distance apart on the base of segment 3 of the main enclosure (Figs 3.9, 3.11), or fragments of the same skull scattered through the slot of segment 7 (HH75 1856, 1870, 1908, 1912, 1928). There is the possibility that bodies at earlier stages of the excarnation process were placed only in certain areas of the ditch (segments 17–19, 6.1–6.2). Low numbers in segments 12–15 of the main enclosure may be due to poorer preservation, as discussed above. This does not, however, apply to low frequencies in the cross-dykes, the south long barrow ditches and the pits, which must be authentic. Bone in the pits may have been more vulnerable to destruction, but this would not account for the uneven representation in them of human bone (roughly 1% of the total from the central area), animal bone (roughly 8%) and antler (roughly 38%). Unlike artefacts, human remains were frequent on ditch floors and in primary silts.

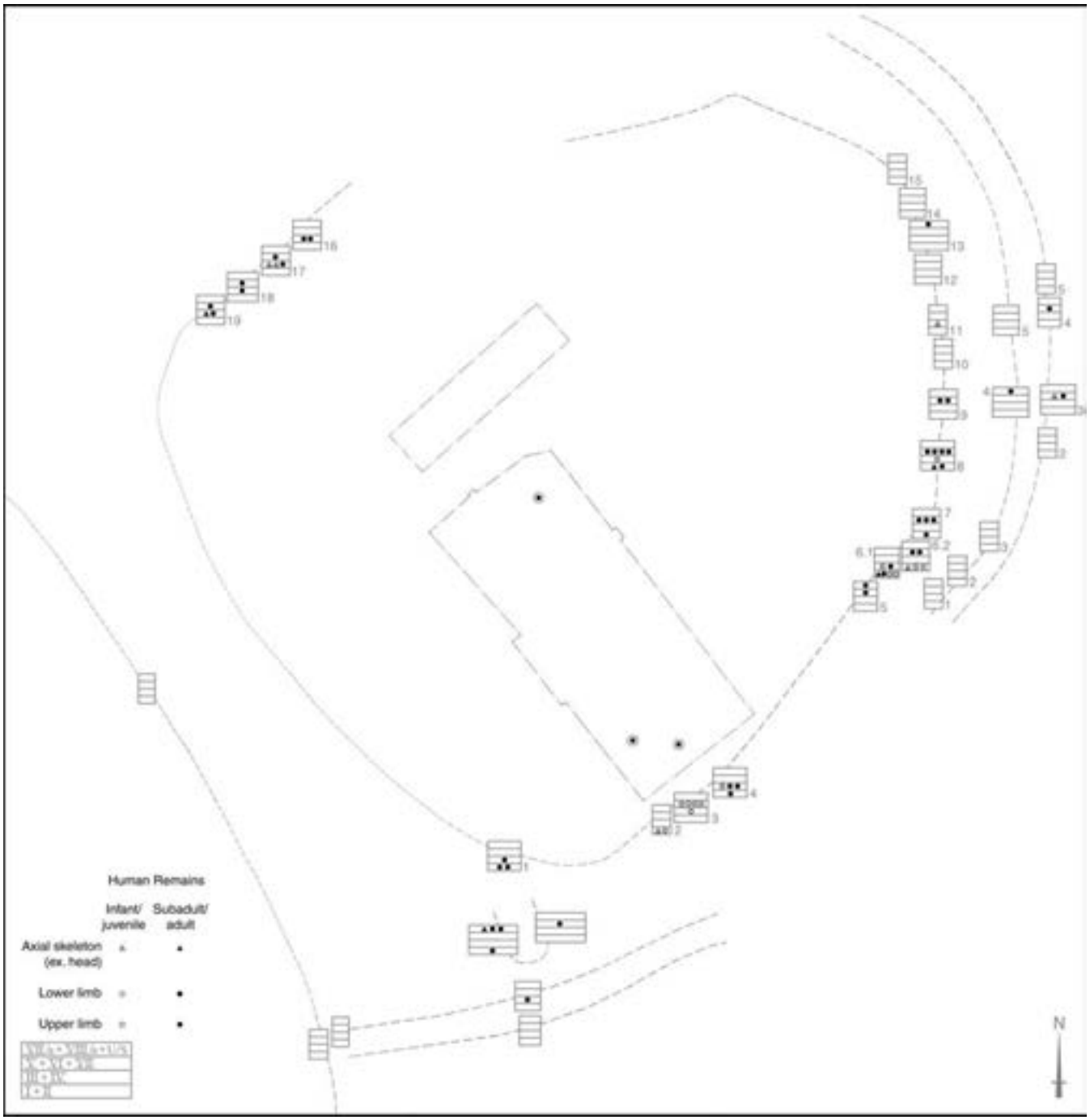

Fig 3.61 Central area. Distribution of disarticulated human bone from the axial skeleton and limbs.

Infant and juvenile remains were scarcer in the phase VI slots than in lower levels. This may reflect greater exposure to scavengers in superficial contexts (see McKinley, 7.1) and perhaps poorer preservation in a less chalk-rich environment, rather than any change in practice.

Animal bone

Animal bone was most abundant in segments 8, 9, 16, and 17 of the main enclosure, but occurred differentially in each group. In segments 8 and 9 substantial quantities were present from the primary silts upwards, while there was none or almost none before phase III in segments 16 and 17 and in segments 19 and 18 adjacent to them. Articulations were commoner in the north-west than in the east. Up to 15 articulations (roughly 40% of those identified from the central area) came from segments 16, 17, and 18 in a collection that provided some 24% of the identified bones from Neolithic levels. Segments 8 and 9, which provided some 19% of the bone, contained at most 4 articulations, only 10% of the total. Almost all are limb extremities, mainly of cattle and pig, and represent the butchery of several animals. It is possible that the residue of large-scale meat consumption was deposited in a circumscribed length of the ditch. In segment 19,

immediately adjacent to segment 18, there were no articulations and animal bone was generally scarce. Complete or near-complete cattle skulls, without mandibles, were found in phase III contexts in segments 4 and 9 (Figs 3.13–14, 3.22) and a dog skull was found in phase VI in segment 14.

Antler

Antler was concentrated in pits near the crown of the hill, much of it grouped in B F57, N F6, and N F22, the first two mainly antler crown 'rakes', in the last the debris of groove-and-splinter working. Many of the finds plotted in Figure 3.62 are fragments. Instances of antler implements on the bases of the ditches that they had apparently been used to dig were rare, in contrast to the Shroton and Stepleton spurs. The most convincing are an antler crown, the tip of which was embedded in the chalk of the east ditch of the south long barrow (HH77 1018), and a utilised antler on the base of segment 4 of the outer east cross-dyke (HH75 2171). Utilised antler fragments near the base of segment 8 of the main enclosure (HH75 2096, 2099, 2149) were weathered and fragmented and formed part of a band of cultural material laid along the floor of the ditch after some primary silt had accumulated. Picks at higher levels, like one incorporated in the flint

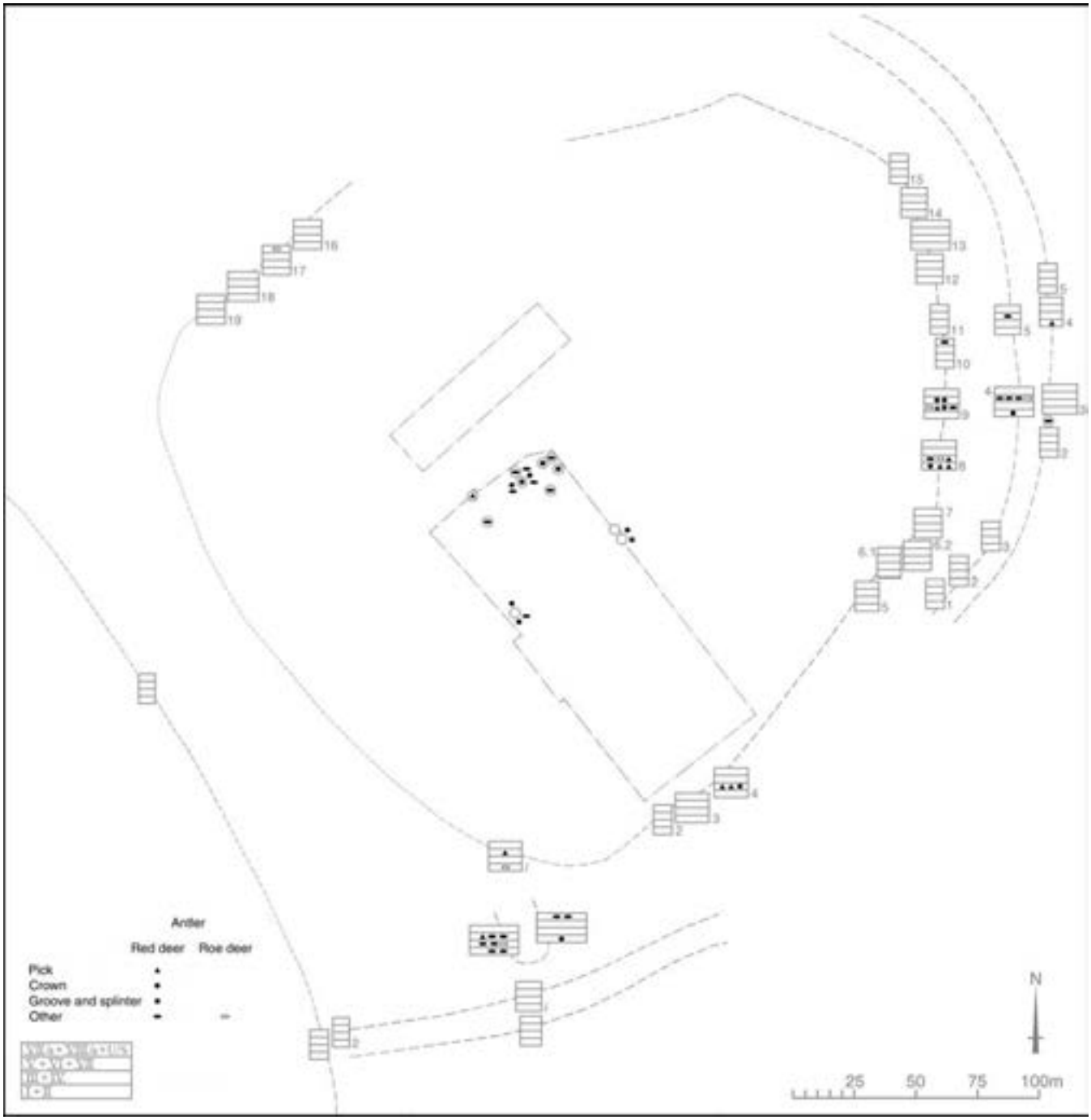

Fig 3.62 Central area. Distribution of antler.

nodule packing of the slot in segment 1 of the main enclosure (HH77 221; Fig 3.7), may have been used to excavate recuts or adjacent pits, or may have been incorporated in the later ditch fills, having been removed from earlier contexts during recutting. The very uneven distribution makes a simple relation to ditch-digging or recutting unlikely. There was, for example, virtually no antler from segments 16–19 of the main enclosure, which were heavily recut. Within the ditches, antler was concentrated in the west ditch of the south long barrow, segments 8 and 9 of the main enclosure, and segment 4 of the inner east cross-dyke, corresponding to probable entrances (Fig 3.62).

Pottery

Salient features of the distribution of Neolithic Bowl pottery include the deposition of 670 sherds/2306 g in the phase I silts of the ditches of the south long barrow, in contrast to generally small quantities of pottery in primary contexts elsewhere. Pit B F14 near the crown of the hill stands out by its 123 sherds/1280 g of pottery. In segment 9 of the main enclosure, the 544 sherds/3110 g of pottery from phase III contexts are more than one and a half times the weight of any other phase assemblage from any segment of the ditch, the next largest being 379 sherds/1651 g from phase VI contexts in segment 14. When approximate density, rather than absolute quantities, is taken into account, pottery is concentrated in the inner south cross-dyke, only 8.4 m of which were excavated, and is scarce in the extensively excavated inner east cross-dyke (Fig 3.67). This reflects concentrations in an expanded butt beside a probable entrance on site P2 and, especially, in the extreme west butt in WOWK area 3 (Table 3.3), where most pottery came from the multiple phase VI slots. An even denser concentration of sherds occurred in the limited phase IV deposit in the south butt of the west ditch of the long barrow (Fig 3.67). The assemblage from pit B F14 consists almost entirely of semi-complete vessels, P1, P2, and P58 (Fig 3.54), the others of the more usual combination of semi-complete vessels (notably in phase I of the long barrow) and sherd material.

Neolithic Bowl pottery fabrics were differently balanced in the central area and on the Stepleton spur (Fig 3.72). There are also variations within the central area. Figure 3.67 shows the frequency of selected fabric groups, including the most numerous, in the most prolific ditch context groups. Flint-tempered fabrics, assumed to be the most immediately local, remain dominant but occur in varying portions to those from more remote sources. Non-flint fabrics were generally rare in the cross-dykes, although the proportion of Jurassic fabrics shown in Figure 3.67 for phase VI in the inner south cross-dyke masks a fairly high percentage on site P2, near the south long barrow (21% by weight of all Neolithic Bowl) , and a lower one in the west butt (just over 1%). Assemblages from the south long barrow, especially from the phase IV deposit, are distinguished by high frequencies of fabric group 6, otherwise scarce in the central area.

In the main enclosure, the maximum frequency of Jurassic fabrics in phase IV reflects their abundance in deposits of that date in segments 15, 16, 17 and 18, where they outweighed flint-tempered ones in all but segment 16. In the pits, the relative levels of Jurassic and flint-tempered fabrics vary between the lower slopes and the crown of the hill. On site A, Jurassic fabrics make up 12% by weight of the pottery from Neolithic pits and flint-tempered fabrics 73%, while on site N the equivalent proportions are 27% and 45%. There are equally strong distinctions between pit groups, with 6% Jurassic and 67% flint-tempered for pit group III, partway down the slope, 52% and 35% for pit group II, near the crown of the hill on site N, and 8% and 34% for pit group I near the crown of the hill on site B, where gabbroic wares were the most abundant non-local fabric group.

Table 3.8 Neolithic Bowl fabric groups in the central area and on the Stepleton spur

Fabric groups 1–8 are described in Chapter 9. Each represents a range of fabrics, particularly diverse in the case of groups 2A and 2B

		Central area			*Stepleton spu*		
Fabric group	*Main inclusion*	*Sherds*	*g*	*% by weight*	*Sherds*	*g*	*% by weight*
1	Gabbroic	181	1492	2.8	17	81	0.2
2	Chalk	21	32	0.1			
2A	Jurassic with ooliths	186	707	1.3	448	1138	2.9
2B	Jurassic with fossil shell	3011	11515	21.6	378	1634	4.2
3	Calcite	232	1054	2.0	43	190	0.5
4	Organic	297	646	1.2	179	726	1.8
5	Fresh shell	165	464	0.9	122	535	1.4
6	Red pellets	604	2791	5.2	3499	12896	32.8
7	Flint	7965	31292	58.7	5779	21031	53.5
8	Sand	1118	3104	5.8	317	954	2.4
11	Sandstone	76	226	0.4	28	104	0.3
Totals		13856	53323		10810	39289	

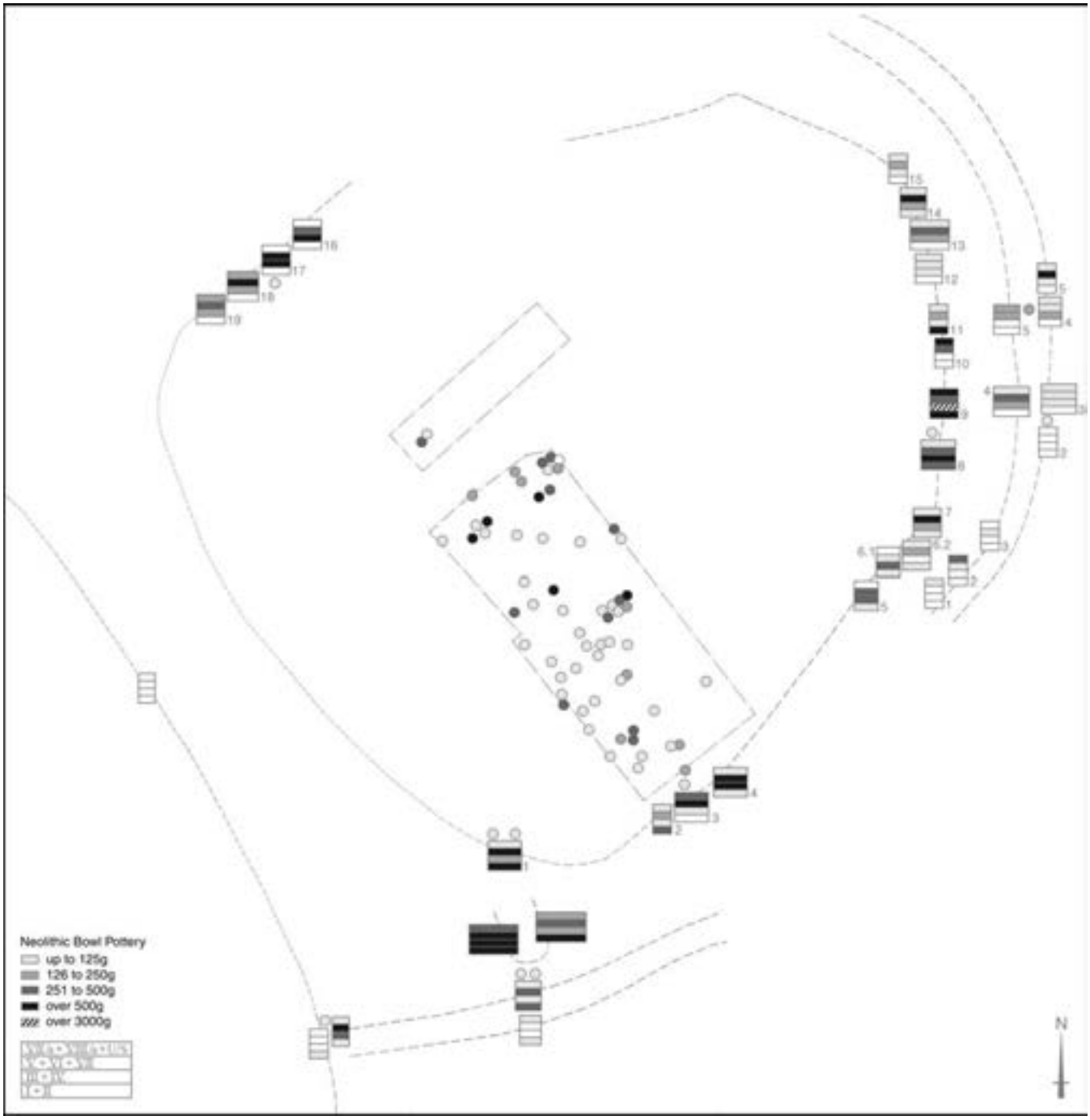

Fig 3.63 Central area. Distribution of Neolithic Bowl pottery.

Pottery from Jurassic sources sometimes occurred so unevenly between adjacent features or ditch segments as to suggest contrasting or unrelated individual episodes, as in phase III in segments 8 and 9 of the main enclosure or phase VI in segments 4 and 5 of the outer east cross-dyke (Fig 3.65). In the second case, most of the sherds in the more prolific context could be attributed to a single vessel. Instances also include two closely spaced pairs of pits on site N: F5 (9 sherds/10 g) and F6 (74 sherds/131 g); and F22 (9 sherds/22 g) and F23 (283 sherds/368 g). These identifiable vessels may suggest that unevenness between adjacent contexts reflects the wider deposition of parts of single pots.

Semi-complete vessels were spectacularly present among gabbroic wares, the most distantly sourced of the non-local ceramics, which were primarily deposited in pits, especially in B F14 and C F3, with only very small quantities in the main enclosures ditches, although attention is drawn to lugs from the phase VI slot in segment 17 and the bank area on site P1 (Fig 9.1: P3, P5). Semi-complete pots in several fabrics characterised the ditches of the south long barrow (Table 3.4)

Fabric groups present in small quantities often seem to represent single vessels. Almost half of the otherwise dispersed calcite-tempered sherds of fabric group 3

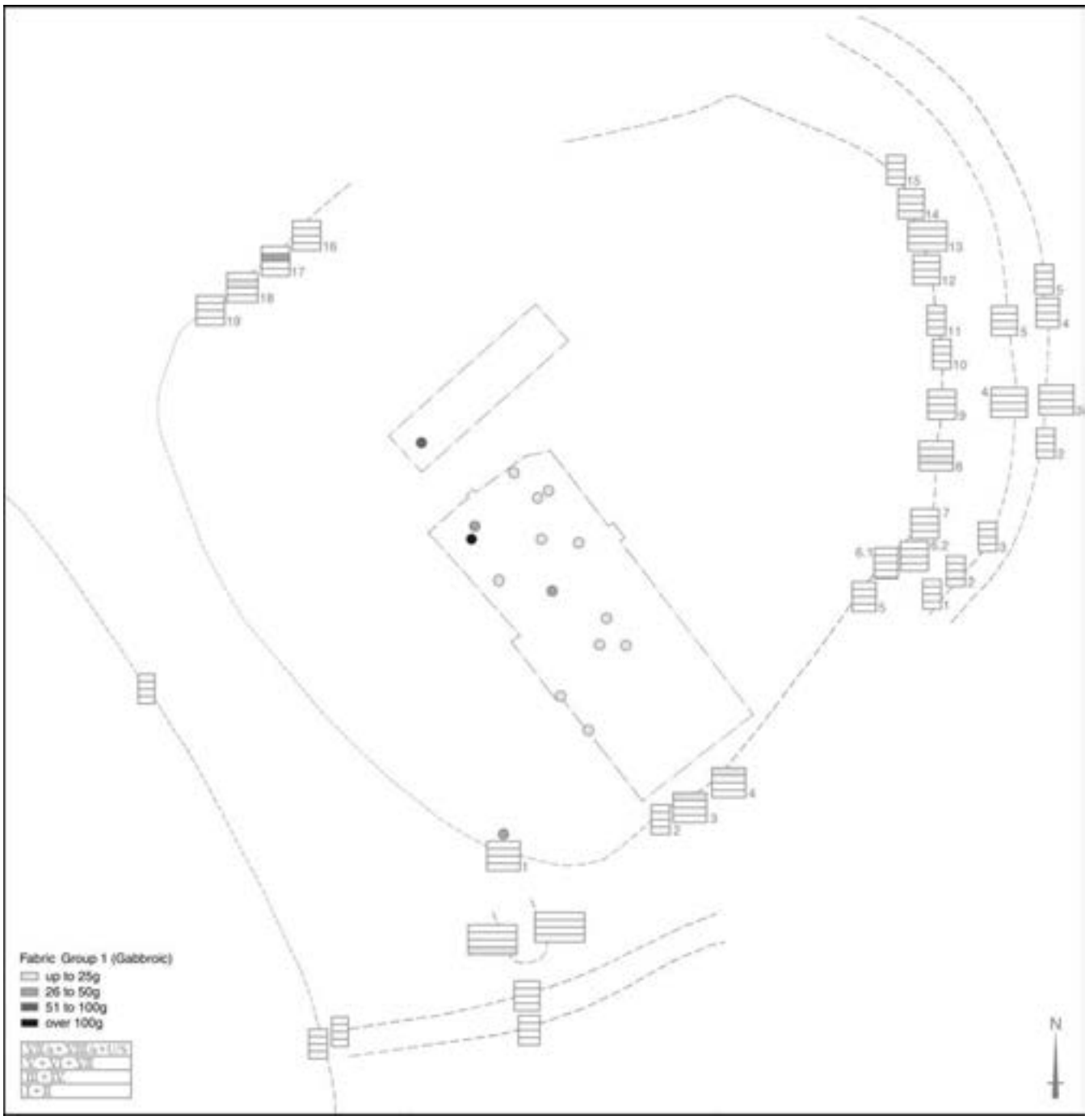

Fig 3.64 Central area. Distribution of Neolithic Bowl pottery of fabric group 1 (Gabbroic).

came from N F82, and belong to one pot, P11 (Fig 9.2). N F82 was also the source of more than half of the sandstone-tempered sherds. Most of the rest came from nearby features, with a few more from the bank area on site P1. None came from any of the ditches. Roughly half of the organic-tempered sherds of fabric group 4 can be attributed to three vessels (not illustrated) from the upper phase VI slot in segment 4 of the main enclosure, from phase IV and phase VIII deposits in segment 17, and from B F57. Well over half of the fresh shell-tempered sherds were accounted for by an unillustrated vessel in B F2 and by P105 from the south long barrow. The rest were widely scattered.

Lithics

Struck flint was generally sparsely and quite evenly distributed, often with more in the upper, post-Neolithic levels of the ditches than in phases I–VI (Fig 3.68). Since this material is overwhelmingly early Neolithic in character (see Saville, 10.2), it is likely to have been ploughed out of the upper Neolithic fills or, especially given the dome-shaped profile of the hill, to have been ploughed at an early date from features and topsoil in the interior. Admixture is, however, likely in areas where Beaker and related pottery is present. The densest concentrations are two areas with Clay-with-Flints, the south long barrow and segments 12–14 of the main enclosure, both the

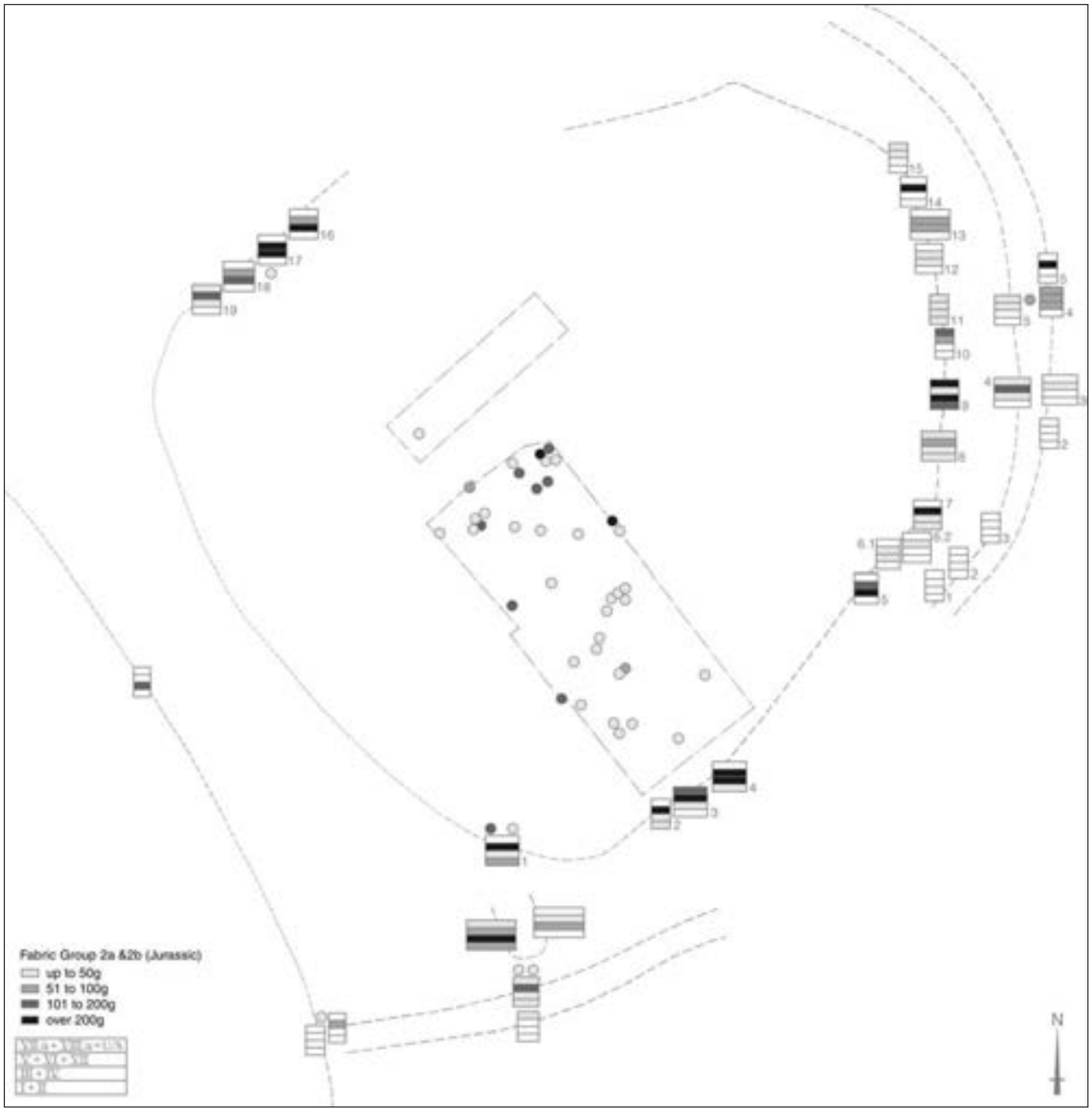

Fig 3.65 Central area. Distribution of Neolithic Bowl pottery of fabric groups 2A and 2B (Jurassic).

sites of historic period flint quarries. Here, especially in segment 13 of the main enclosure, the collections have an industrial aspect (see Saville, 10.2). Cores and flaked lumps figure prominently in segment 13 and to some extent in segments 12 and 14. Numbers remain small, however, with slightly more than 7,000 pieces from the ditch in this area. The impression is of opportunistic working of raw material exposed during ditch digging and/or the weathering of bank or mound. Higher quantities in upper levels suggest that much of the debitage silted gradually into the ditches.

In the south long barrow, cores and flaked lumps were almost all in LB4 F4, a phase VI pit measuring at most 2.75 m across and 0.40 m deep, cut into the north-west butt of the north-east ditch and densely packed with flint. The assemblage comprises 381 flakes, 31 cores, three core fragments, 13 flaked lumps, seven scrapers, a piercer, and three miscellaneous retouched pieces. These do not, however, seem to have derived from the working of nodules from the Clay-with-Flints, since almost all are of flint with heavily abraded cortex, the source of which is not immediately apparent.

Elsewhere percentages of retouched forms are high, often over 10% in pits and in phases I–VI in the main enclosure, the east cross-dykes, and the inner south cross-dyke. Retouched pieces reach over 20% in segments 8 and 9 of the main enclosure, although not in

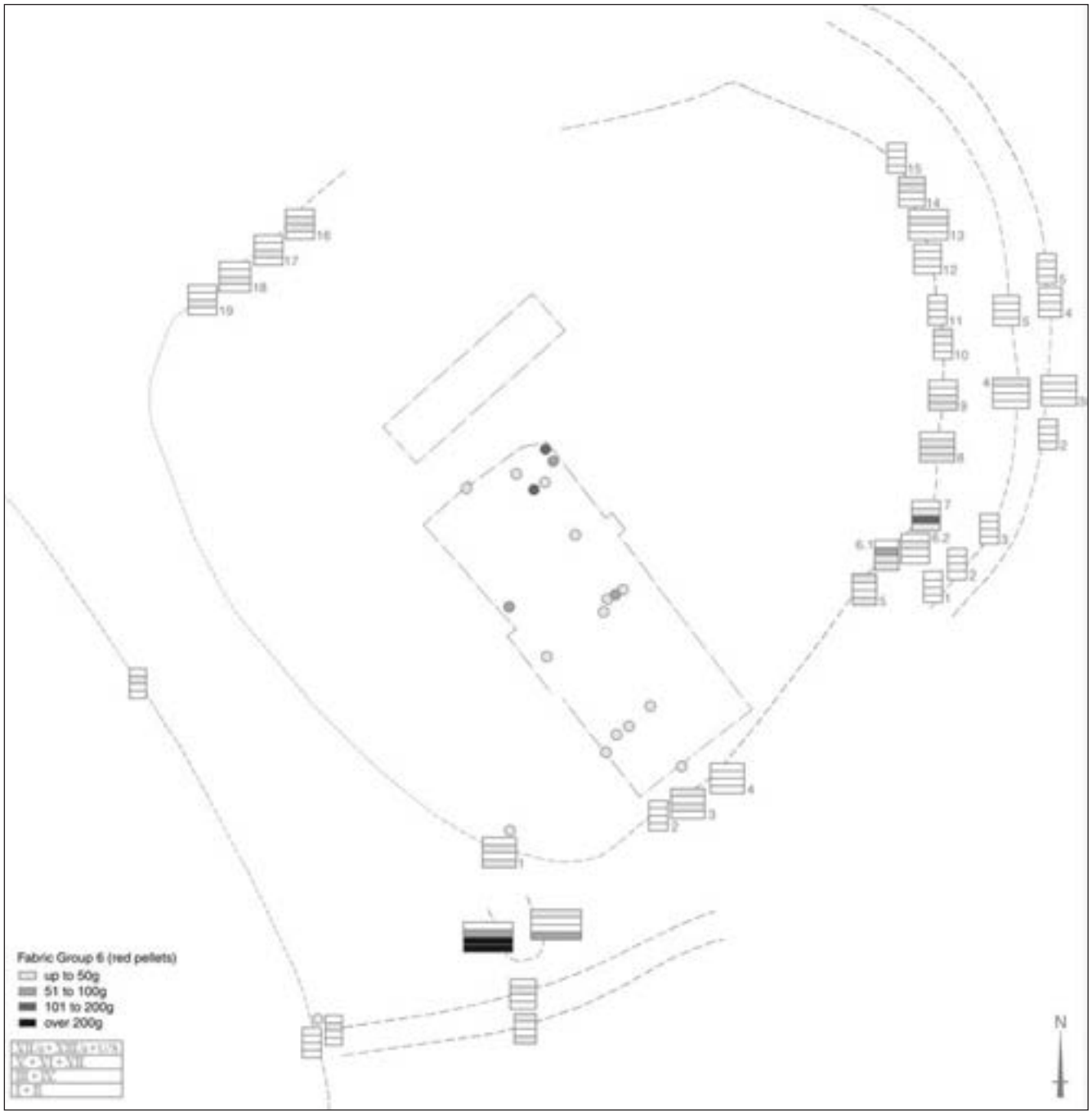

Fig 3.66 Central area. Distribution of Neolithic Bowl pottery of fabric group 6 (red pellets).

nearby segments of the inner and outer east cross-dykes. Cores were scarce, unevenly so around the main enclosure, where phases I to VI in segments 16 to 19 contained no cores at all in a collection of over 600 pieces. If the upper ditch fills and superficial contexts in the surrounding area (site G) are also taken into account, there are still only one core and one flaked lump in a collection of nearly 1000 pieces. Given that cores form more than 1% overall of the struck flint from the enclosure ditch, and are present in segments with less struck flint than these, their absence seems significant. The only flaked lumps from a pit were from N F7i/ii, which also contained more cores than any other pit.

The distribution of flint and quartzite hammerstones corresponds only partly to 'industrial' areas or to the distribution of cores. While there were indeed hammerstones in segment 13, the ditches of the south long barrow, and N F7i/ii, they were also present in and near segment 18 of the main enclosure, where there were no cores, and were most numerous in segments 8 and 9. Here, especially in segment 8, they form part of a concentration of stone artefacts and fragments, including querns, rubbers and axeheads, comparable to that in the west ditch of the south long barrow (see Smith *et al*, 10.1.3).

Edge-trimmed flakes, class 'a' utilised flakes and leaf-shaped arrowheads are fairly evenly and diffusely

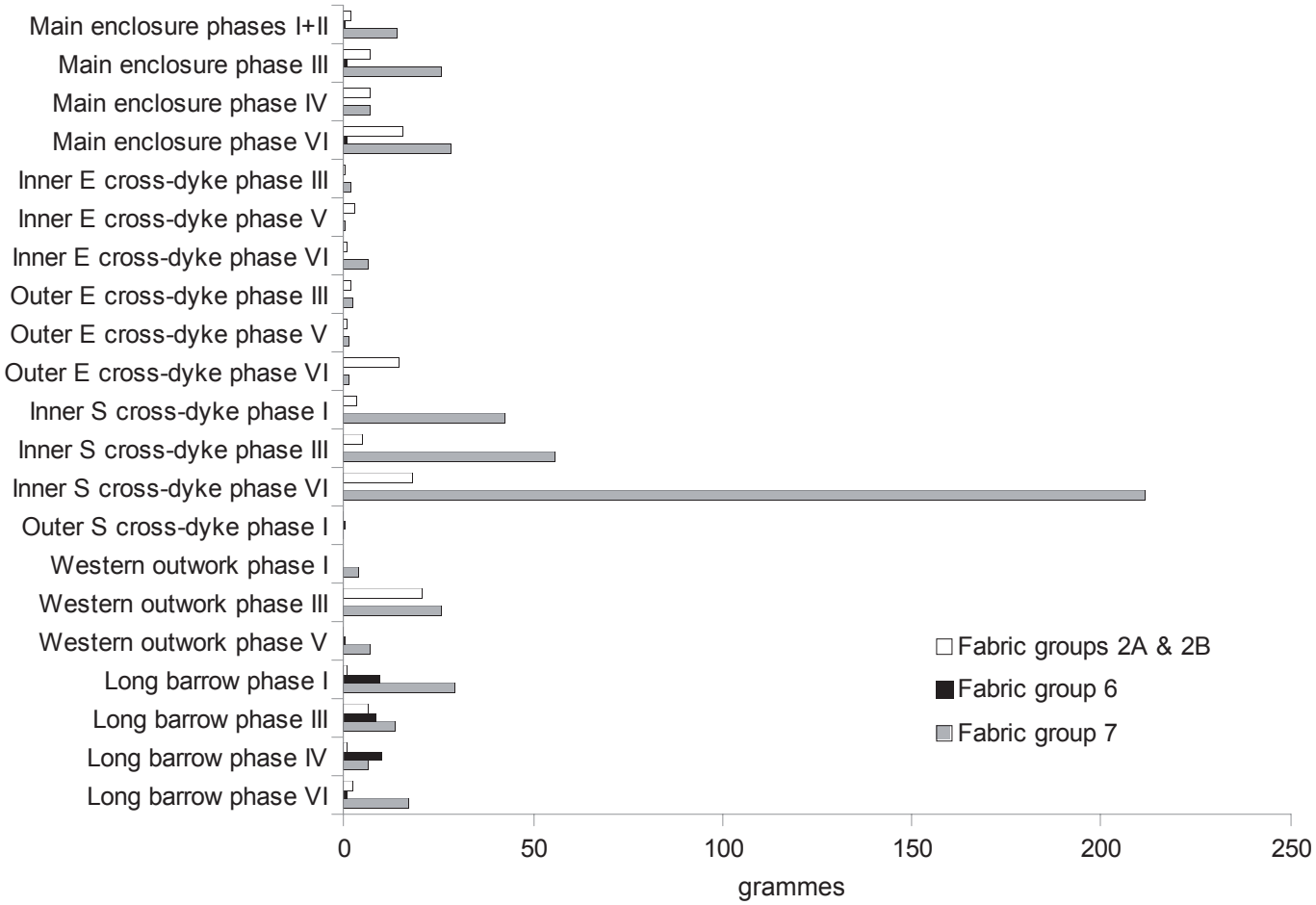

Fig 3.67 Central area: principal fabric groups in ditch contexts, by weight per 1 m length of excavated ditch. For the discontinuous phase IV deposits in the main enclosure and the west ditch of the south long barrow the excavated length of ditch has been reduced to the approximate linear extent of the excavated deposits (25 m and 1.5 m respectively).

distributed, with slight concentrations in those areas where there are generally higher quantities of struck flint. The only noteworthy feature of leaf arrowhead distribution is three fragmentary chert examples in P2 F14 (Table 10.12), which would have been under the inner south cross-dyke bank. Scrapers and serrated flakes, however, show rather complementary distributions. Relatively high numbers of scrapers in the post-Neolithic levels of segments 8 and 10 of the main enclosure, and segment 4 of the inner east cross-dyke, may relate to the Beaker pottery also present there. Scrapers in securely early Neolithic contexts are most numerous in A F64 on the lower slope of the interior, in the south long barrow ditches, and in the phase VI slots of segments 4, 7, and 14. Serrated flakes, on the other hand, are most numerous in pits near the crown of the hill, especially on site N, in the slot of segment 4 of the inner east cross-dyke, in phase III–IV of segment 16 of the main enclosure and in the phase VI slots of segments 13, 14, 17 and 19. The only one of these to coincide with a concentration of scrapers is the phase VI deposits in the south butt of segment 14. Flint and stone axeheads, whether complete or fragmentary, were concentrated in the east of the circuit. Quern fragments, rubbers, and fragments of the rocks from which both were made show some unevenness across the site, with most sarsen in pits near the crown of the hill on site N, and very little Old Red Sandstone in or near segments 16–19 of the main enclosure. Heathstone is represented only by small fragments, except for a quern fragment from the slot in the west ditch of the south long barrow and a quern or rubber fragment from the slot in segment 4 of the main enclosure. Like other stone artefacts, quern and rubber fragments and materials cluster in segments 8 and 9, especially 8, and in the west ditch of the south long barrow.

Burnt flint

Burnt flint is scarce and highly localised, the only conspicuous deposits being in pit A F41 and in the south butt of the west ditch of the long barrow. The discrete, compact nature of both deposits, with little burnt flint extending into adjacent contexts marks them out as rare events.

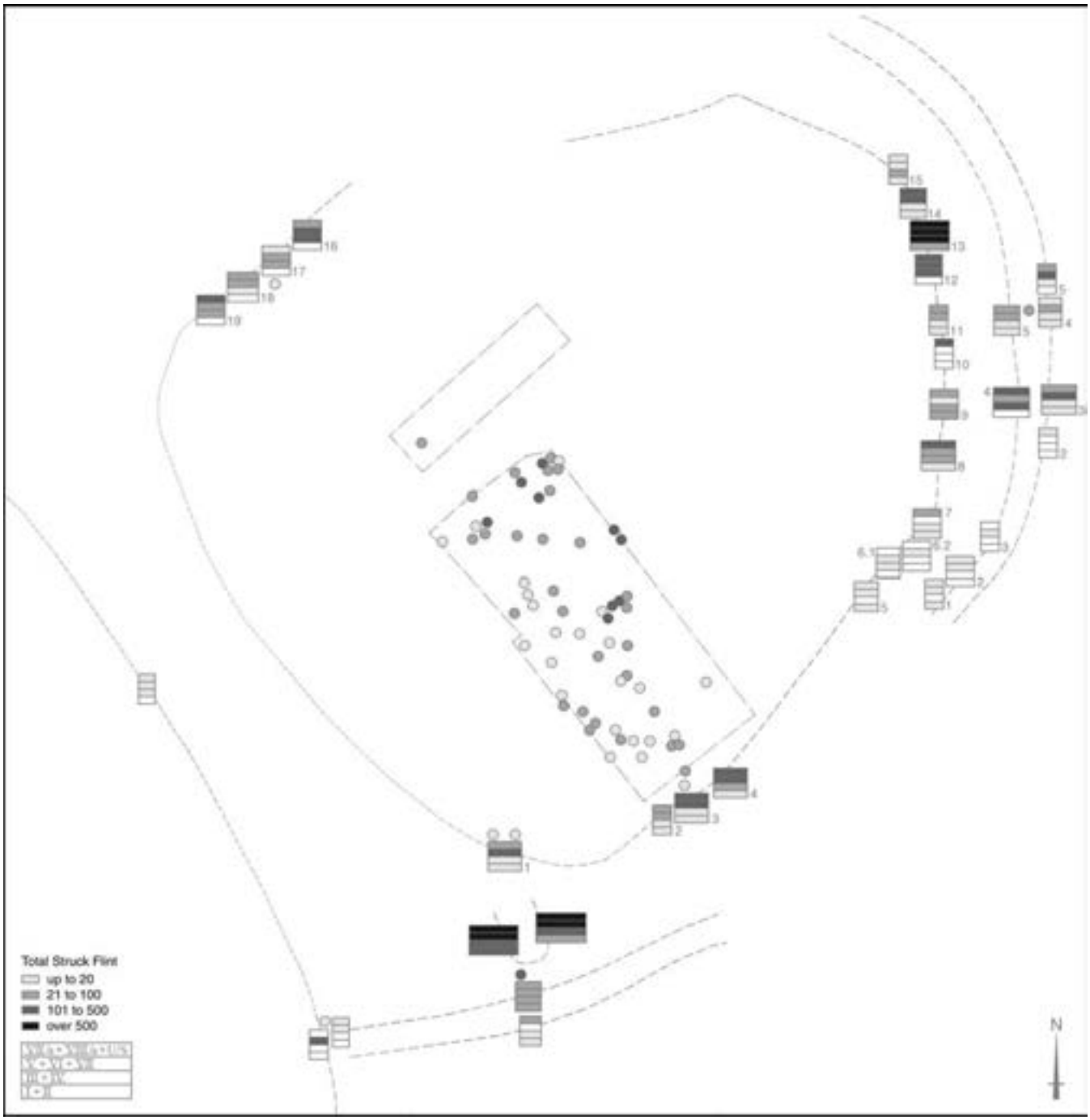

Fig 3.68 Central area. Distribution of struck flint.

Charred plant remains

Distributions here are strongly biased by the fact that flotation was undertaken in the central area only in 1974. Both burnt flint deposits mentioned above contained charred hazelnut. Pit A F41 also contained by far the largest charred grain assemblage from the 1974 season. In the south butt of the west ditch of the long barrow there were more than 80 g of hazelnut shells (Fig 3.71; see Jones and Legge, 6.2). Both hazelnut shell deposits contained little charcoal. Animal bone was scarce in the pit, but abundant in the barrow ditch butt, where so much of it was burnt that the deposit was at first seen as a cremation. A concentration of hazelnut shell in a slot in the inner south cross-dyke butt was also almost without charcoal. In this case, burnt flint was absent and animal bone was scarce.

General patterns

The rarity and distinctiveness of these deposits exemplifies the localised, diverse character of distributions and associations. Whatever the interplay of natural silting, recutting, and deposition in ditch and pit fills, differences between adjacent pits or adjacent segments

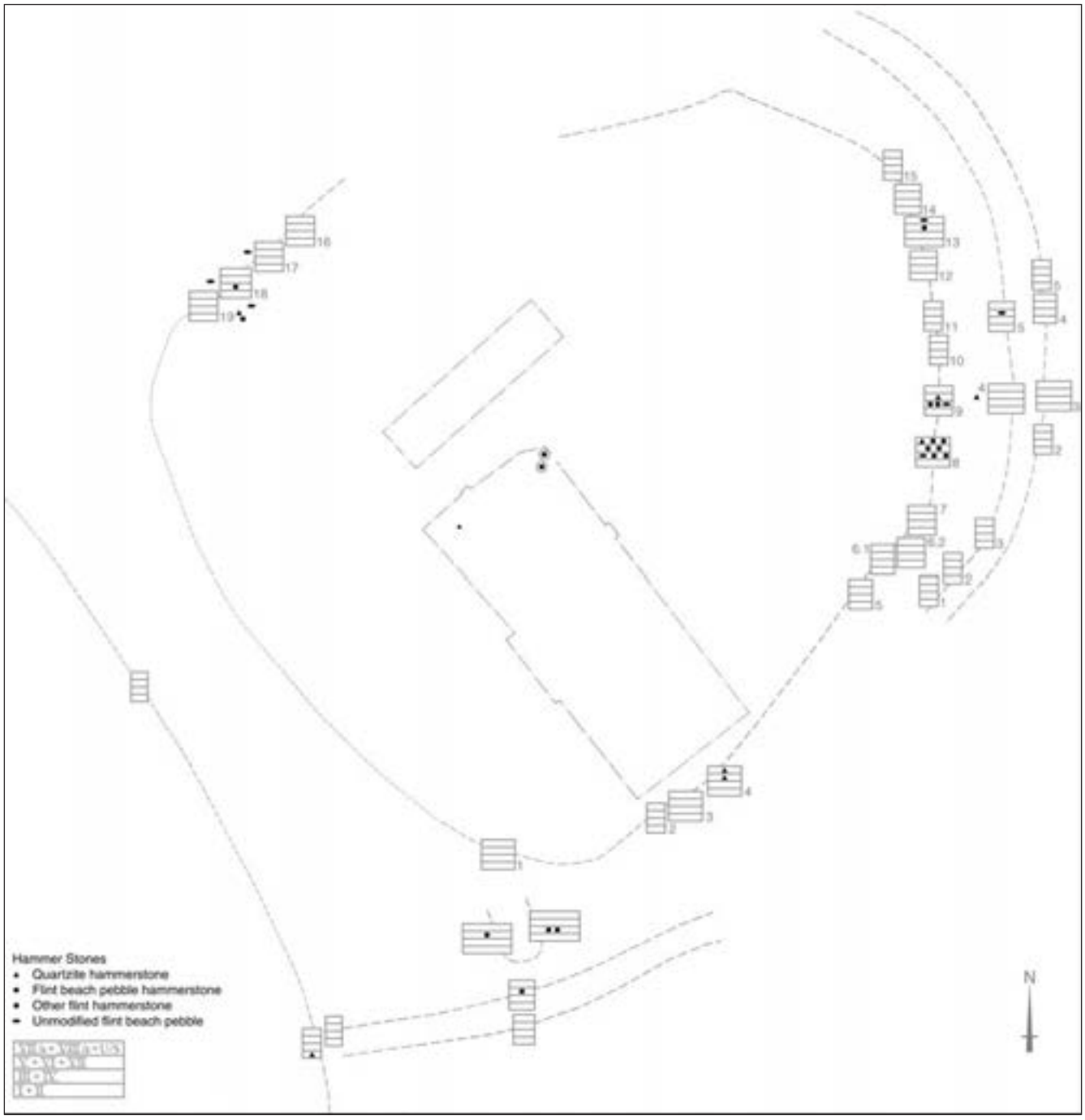

Fig 3.69 Central area. Distribution of hammerstones and unmodified flint beach pebbles.

suggest that each represents a distinct series of small-scale events, and that not all were in use at any one time.

Within this diversity, certain broad patterns are visible across the area, some of them perhaps the result of long-lived practice. With the exception of struck flint, where high numbers in segments 12–15 reflect knapping of immediately available raw material, artefacts and food remains were least frequent in the segments giving onto the steeper part of the hill, including those of the western outwork, and most frequent in those on or close to the centre of the spurs, by which people using the enclosure would surely have come and gone.

An exception to this generalisation is the west butt of the inner south cross-dyke, at the head of one of the steeper parts of the hill. It does not stand out strongly from the distribution plots because of the very small area excavated. Nonetheless, the three flint axeheads in 'dirty grey occupation soil' on its base, a three-times greater density of pottery than in any other excavated section of the same ditch (Table 3.3), the multiple recuts in its upper fills (Fig 3.44) and the second-largest group of charred hazelnuts from the site, show that it was a focus for deposition.

Any entrance giving onto the hillfort spur must remain unexcavated to the south-west of site G, where

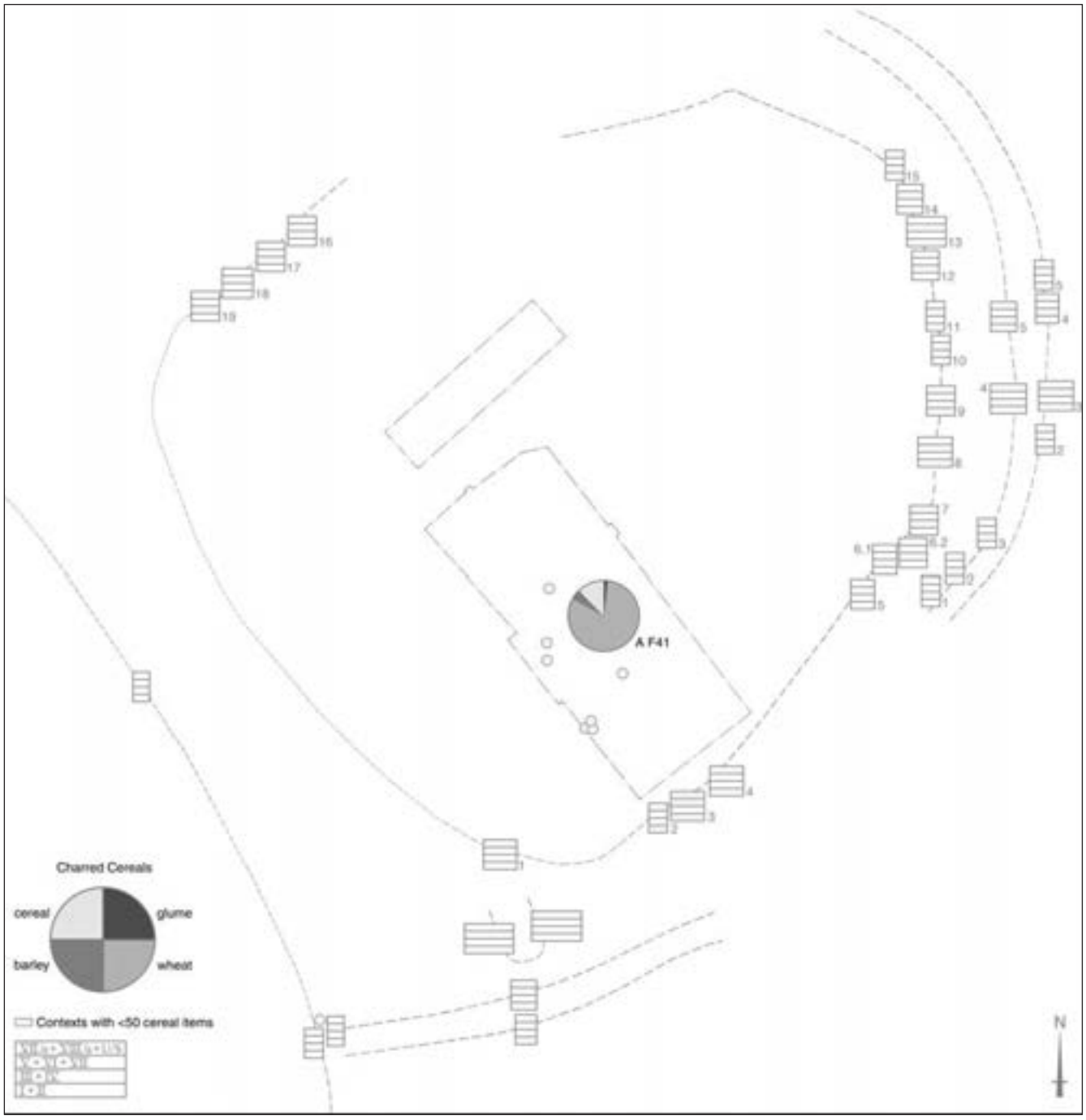

Fig 3.70 Central area. Distribution of charred cereals.

quarries confuse the surviving earthworks. Segments 16–19 on site G were, however, rich in finds, and were distinctive in several ways, perhaps a reflection of their distance from the other excavated segments, the nearest of which was 250 m away. Here were the only two formal, articulated human burials in the central area, one at the beginning of the sequence and one at the end (Fig 3.34). Apart from the earlier of these, the primary silts were almost devoid of finds. Phase IV deposits were extensive, rather than the strictly localised 'grey pits' found elsewhere. The charcoal from them included *Vitis* and *Buxus*. They contained exceptionally high proportions of pottery from Jurassic sources. 40% of the articulations from the central area came from segments 15–18, suggesting butchery nearby. Despite the abundance of animal bone there was no antler in Neolithic levels and only one fragment of roe deer antler in a superficial context. There were no axeheads or axehead fragments. There were no cores in Neolithic levels and very few elsewhere. There was no Old Red Sandstone in Neolithic contexts and very little in others.

Possible entrances giving onto the Shroton and Stepleton spurs have been identified on topographic and morphological grounds. The likelihood of these identifications is reinforced by finds distributions.

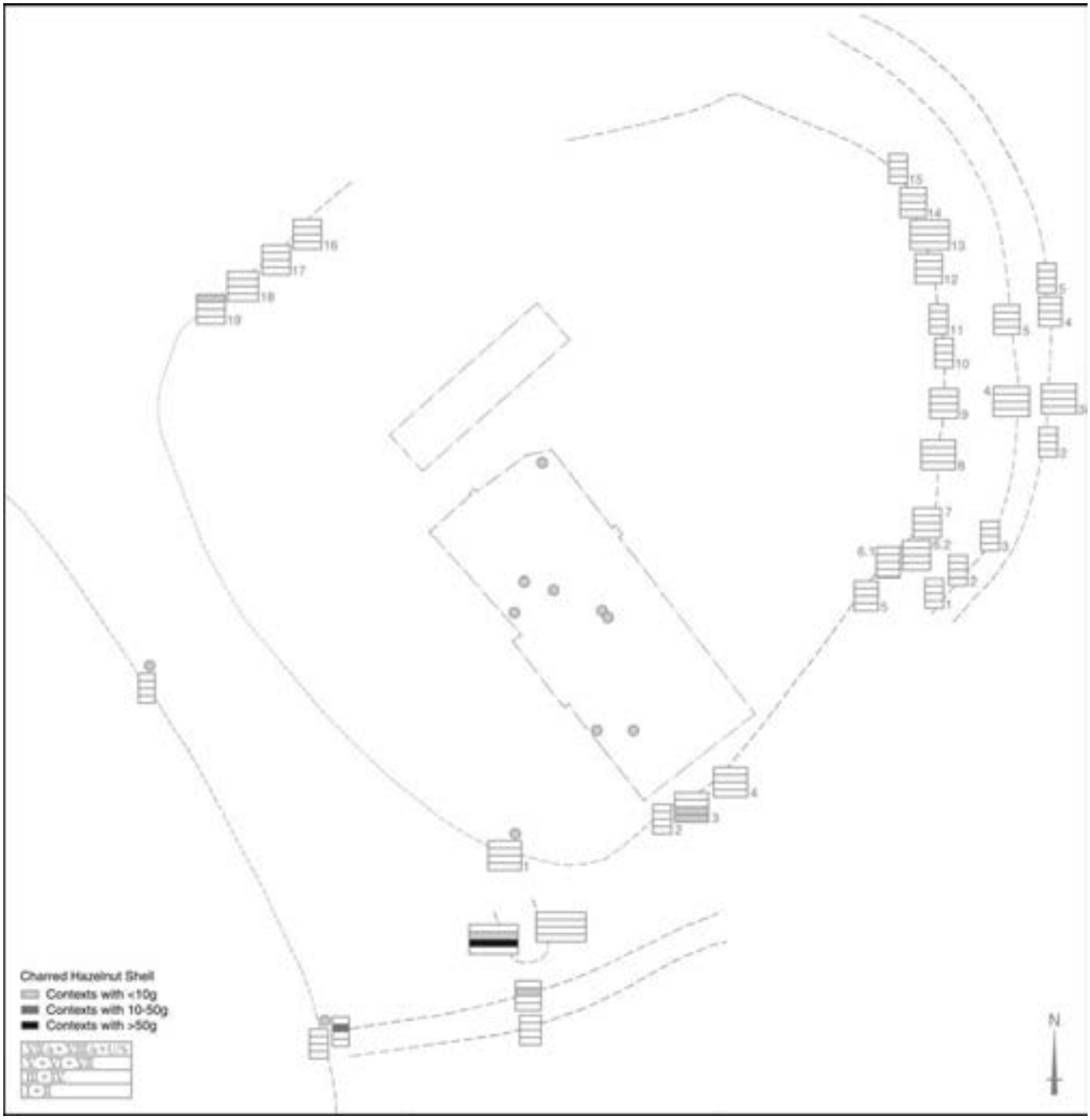

Fig 3.71 Central area. Distribution of charred hazelnut shell.

The most visible is on site D, formed by matching wide causeways in the inner and outer east cross-dykes and a slightly offset wide causeway between segments 8 and 9 of the main enclosure. Segment 4 of the inner cross-dyke, which flanks the entrance, was richest in finds in either of the cross-dykes, although pottery was much less dense than in the inner south cross-dyke (Fig 3.67), and finds generally were not concentrated in the butt beside the causeway. Segments 8 and 9 of the main enclosure are marked out from the rest by concentrations of all kinds of cultural material at all levels (Figs 3.61–71), especially in their deep, wide opposed butts, in which were fragments from the same stone axe. The butts were marked by placed deposits, like a semi-complete pot on the surface of the primary silts in segment 9 or two crossed human femurs in the phase VI slot in segment 8 (Figs 3.21–22). Lithics were particularly concentrated in segment 8, pottery in segment 9 (Figs 3.63, 3.68), and retouched forms were more frequent in both than elsewhere.

This is not the only possible entrance on the Shroton spur. Finds in both east cross-dykes on site D were concentrated towards the north, at the opposite end to the entrance proposed above, and could correspond to

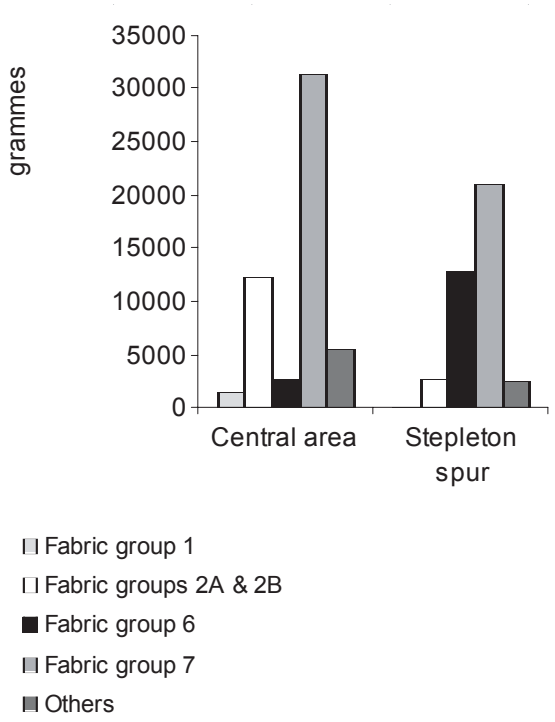

Fig 3.72 Summary of Neolithic Bowl pottery fabric groups in the central area and on the Stepleton spur.

another entrance through the wide causeway in Bonney's trench N. A break in the protected surface corresponding to a wide causeway between segments 13 and 14 on site H (Fig 3.24) was flanked by an extensive dump-like phase VI deposit in the wide south butt of segment 14, sufficiently rich in cultural material to register in the distribution plots.

The concentration of cultural material at all levels in segments 8 and 9, and of stone artefacts in segment 8, is echoed, in a different style, in the west ditch of the long barrow, especially at its south butt. The difference between the filling of the west and east ditches (Table 3.5) may reflect the location of the west ditch at the side of a route between an entrance in the south cross-dykes immediately south-west of the barrow and an entrance west of segment 1 in the main enclosure. Location on this route between the central area and the Stepleton spur is reflected in the high frequency of fabric group 6 (Fig 3.66), otherwise abundant only on the Stepleton spur, and perhaps in the most substantial heathstone quern fragment form the site, heathstone too being prevalent on the Stepleton spur rather than it the central area.

The third and second millennia

Beaker and early Bronze Age pottery was concentrated in two separate, tightly localised, assemblages, adjacent to the proposed entrance between segments 8 and 9 of the main enclosure, one in the upper levels of segment 8, and the other in those of segment 4 of the inner east cross-dyke. Both are dominated by rusticated and plain sherds and are 'domestic'; in the sense of being associated with animal bone, struck flint and charcoal. Although only 30 m apart, they are distinct, the assemblage from segment 8, including P161, P163–5 and P168 (Fig 9.10), exhibiting plastic rustication and elaborate geometric motifs, while that from segment 4 of the inner east cross-dyke has mainly non-plastic rustication, with other decoration almost confined to impressed, parallel horizontal lines. In the south long barrow, smaller quantities of Beaker and related wares were placed in pits cut into the silted east ditch (Fig 3.50), far smaller and shallower than contemporary recuts elsewhere. In both cases, there may have been some recognition of the former entranceways. A round barrow near the centre of the enclosure (Ch 2) may have been built at the same time.

3.4 The Shroton spur

The Shroton spur outwork, described in Chapter 2, lies 330 m east of the east cross-dykes and runs for some 290 m across the full width of the spur in an arc conforming to the contours, its ends obscured by the woods which grow on the north and south flanks. It remains visible as an earthwork, cut through near the centre of the spur by a presently used track and a disused hollow way. Towards the south end, a depression surrounded by spoil and sharper than the bank and ditch is likely to be a pond of historic date (Fig 3.73). The earthwork, which forms a field boundary, was sectioned by Bonney in 1960, and excavated more extensively on sites K/L and M in 1976. At the time of the 1976 excavations the centre, including site M, lay in an overgrown headland at the west edge of an arable field, and the north and south, including site K/L, lay in pasture.

Air photographs such as Figure 3.74 show two banks and ditches, an impression reinforced by survey in the 1950s and 1970s. For a short distance north of the hollow way there may be three banks and ditches. Attempts to locate an outer ditch or ditches by excavation, have, however, met with mixed success (see below, 3.4.2).

3.4.1 The main earthwork

The bank

In Bonney's trench G, the top of the inner bank stood over 2 m above the silted top of the ditch but, like the other excavated Neolithic banks, owed much of its height to the slope and retained no structure. The yellow-brown, clay-like, decayed top of the natural chalk was up to 0.07 m thick and survived as a protected surface 4.50 m wide. At its centre was what may have been the base of a truncated soil, in the form of a friable, brown-grey, stony deposit surviving to 0.09 m deep and 2.30 m wide. On analysis by C C Taylor, under the supervision of Ian Cornwall, it proved to be more acidic and less calcareous than the layers above and below. Above this were up to 0.25 m of light brown

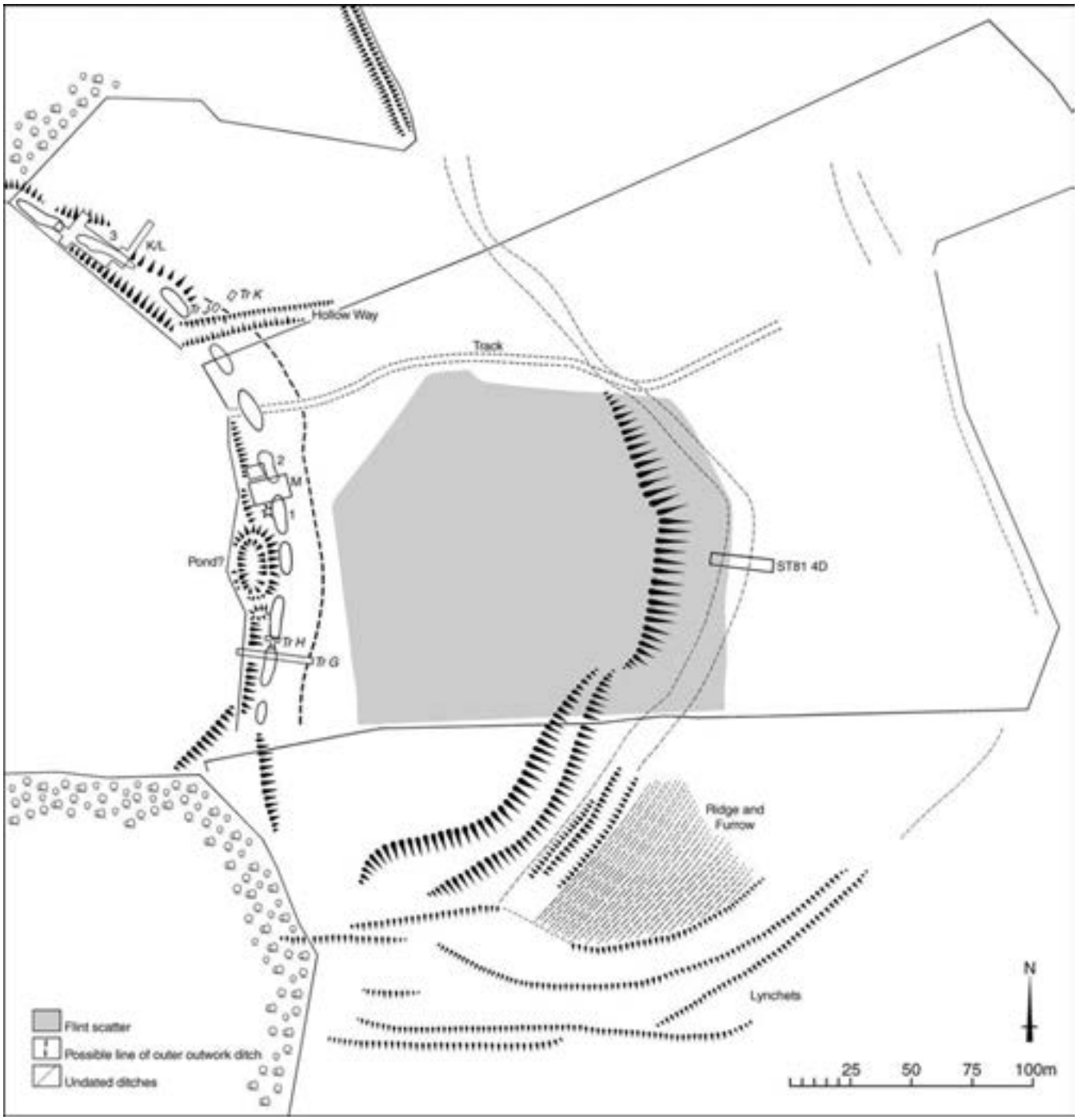

Fig 3.73 Shroton spur. Earthworks and location of excavations.

soil with chalk blocks and peagrit, including sherds of Neolithic Bowl pottery, extending beyond the inner edge of the cutting, and grading into the upper, soil fills of the ditch at the outer edge. Above this were up to 0.30 m of topsoil and turf. There was no break in the bank behind the causeway excavated in Bonney's trench H.

Contour survey in 1976 indicated a break in the bank on site M, corresponding to the causeway in the ditch, but none corresponding to the causeway in the ditch on site K. No relict soils survived. There were, however, vestiges of structures. On site M, a protected band of Coombe Rock or decayed chalk extended across the causeway without a break and was up to 4.50 m wide. Within it, and in a few cases beyond it, were clusters of flint nodules and dark soil, 0.40 m to 0.50 m in diameter (Figs 3.75, 3.76). In the best-defined examples there was a central or lateral flint-free area, some flints were pitched at an angle, and the profiles were interpreted as the bases of much-reduced postholes, perhaps originally holding uprights *c* 0.20 m across (eg Fig 3.75: M F2, F3, F7). Most survived to less than 0.20 m deep, only the deepest one (M F7) penetrating into solid chalk. Finds include a burnt sarsen mortar (Fig 10.2: S28) overlying a minute sherd in a Neolithic fabric in K F4, a burnt ground flint axehead and an

Fig 3.74 The Shroton spur and adjacent parts of the hill, viewed from the north, 23 January 1947, showing, from left to right, a possible outer outwork on the spur, apparently double banks and ditches on the line of the excavated Neolithic outwork, the main enclosure, and the hillfort. Photograph crown copyright (NMR, RAF photography), 2327 FS CPE/UK/1944

indeterminate sherd in M F1, 4 g of amorphous fired clay from M F7, struck flint and Neolithic sherds from M F8, and animal bone from K F2. In addition to the burnt mortar and axehead, there was burnt chalk in M F1, M F8, and possibly M F3; scattered charcoal in M F1, M F3, M F7; larger quantities of charcoal in M F8, and a charred hazelnut in M F1. The less clearly defined examples consisted only of clusters of nodules without depth or definition. Their identification was tentative, the more so as the surface of the bank area on site M was a variegated mixture of Coombe Rock, chalk lumps, peagrit, soil and flint, the last more abundant than elsewhere in the cutting. Nodule clusters were also recorded north of the main excavation on site M, in an area opened to investigate a further area of bank, but time did not permit their full investigation. Burnt chalk was recovered during their definition.

Postholes and possible postholes showed little regularity of plan (Table 3.9). The only pattern to stand out is a rough trapezoid formed by M F8, F7, F5, F4, F13, F12, F10, and F9, which could be seen as revetting an entrance across the causeway and through the break in the bank documented by the contour survey (Fig 3.75). A linear feature across the inner edge of the causeway consisted of pitched flint and chalk lumps in an irregular band up to 0.50 m wide, in a dark soil matrix with peagrit which was not readily distinguished from the surrounding deposit, and which contained neither charcoal nor artefacts (Fig 3.75: F17). It may have been a slot for timbers, or may have been a roothole. Interpretation of the possible entrance revetment is complicated by a radiocarbon date on oak charcoal from M F8, at its outer edge. Oak being a long-lived species, the charcoal could have been older than its context. It was, however, dated to *3520–3310 cal BC* (HAR-2368; 4520±80 BP), and is likely to post-date the construction of the earthwork, and possibly the accumulation of the chalk rubble fills in the ditch as well (see 4.7.8, Fig 4.9).

The ditch

On the evidence of earthwork survey and limited excavation, the ditch consists of eleven segments between 10 m and 28 m long, the longest lying in at the north end, and the segments are separated by causeways between 3.70 m and 12 m long. It was sectioned in Bonney's trench G in 1960, when an adjacent causeway was examined in his trench H, and was excavated more extensively on sites K/L and M in 1976. Forty metres of the ditch and causeways have been excavated, *c* 14% of the total. The ditch seemed to have silted naturally, fills becoming gradually finer and more compact, with no division between phases III and V like that generally seen in the central area. This is probably a reflection of the decayed state of the upper part of the chalk through which it was cut.

Phase I

The initial silts were almost devoid of artefacts, except for antler picks on the base of segment 3 (Fig 3.79). One lay on the floor of the north butt and three more towards the centre, near the articulated remains of a dog and bones of two distal sheep limbs, some of them articulated.

Table 3.9 Postholes and possible postholes in the Shroton spur outwork bank

* = recorded, but missing or unidentified

Feature	*Category (m)*	*Length (m)*	*Breadth (m)*	*Depth*	*Form*	*Fill(s)*	*Comment*	*Finds*	*Figure*
K F1	Possible	0.40	0.20			Cluster of flints			3.78
K F2	Possible	0.70	0.50			Cluster of flints		*Animal bone* L2: horncore or antler fragment, vertebra not identifiable to species	3.78
K F3	Possible	0.40	0.40						3.78
K F4	Possible	0.45	0.30			Cluster of flints		*Pottery* L2: 1 sherd/1 g Neolithic Bowl, under mortar *Lithics* L2: Sarsen mortar, burnt (S28)	
M F1	Possible	0.50	0.50		Subcircular	L2, around edge, loose brown granular soil with chalk lumps and peagrit, separated by 'halo' of dark soil without charcoal from L1. L2, in centre, loose black-brown soil with chalk and flint fragments, scattered charcoal and burnt chalk lumps	At interior edge of bank area, possibly the last vestige of a posthole. without clear edges or base	*Animal bone* L1: * *Pottery* L1: 1 sherd/5 g in indet sand-tempered fabric *Lithics* L2: ground axe, and 5 flakes from it, all burnt *Burnt flint* L2: 9 g, probably from burnt axe *Charcoal* L1: * *Charred plant remains* L1: <10 g hazelnut shell	3.75
M F2	Probable	0.48	0.45	*c* 0.20	Ovoid	Gritty soil with flints (mainly on surface) and some chalk lumps	Base soft		3.75
M F3	Definite	0.40	0.38	*c* 0.30	Subcircular, vertical sides, base ?flat, but very soft	Dark brown gritty soil with charcoal fragments, discoloured (burnt?) chalk lumps towards base, grading upwards into rooty dark grey-black/dark brown loose soil with roots. Flints at E side, some pitched as if defining postpipe		*Charcoal* Lower fill: *	3.75
M F4	Probable	0.48	0.42	*c* 0.21	Subcircular, shelving sides, slightly rounded base	Sticky brown soil with large flints and chalk lumps, grading upwards into loose black-brown soil with same inclusions			3.75
M F5	Possible	0.52	0.50	*c* 0.23	Circular	Dark grey-black gritty soil with large flints	Soft base. Large flint across much of feature could be *in situ* in chalk or collapsed packing		3.75

Feature	*Category*	*Length (m)*	*Breadth (m)*	*Depth*	*Form*	*Fill(s)*	*Comment*	*Finds*	*Figure*
M F6	Possible	0.40	0.35		Subcircular, little depth	Loose dark brown/black soil with flint and chalk, browner and stickier with depth, larger chalk blocks around edge			3.75
M F7	Definite	0.42	0.60	*c* 0.35	Ovoid, steeply shelving sides, rounded base, edges well defined	L3 gritty grey soil with chalk lumps and charcoal (?in base of postpipe). L2 soft, loose brown soil with granular chalk, weathered chalk lumps, charcoal flecks (?at side of postpipe). L1 soft, loose dark brown soil with gravel, granular flint and chalk, c	Penetrated natural chalk, unlike other ?postholes on this site	*Fired clay* L2: 9 fragments/4g amorphous fired clay without inclusions *Charcoal* L3: * L2: *	3.75
M F8	Probable	0.50	0.50	0.13	Subcircular, 1 steep side, 1 shelving side, fairly flat base	Dark brown/black soil with flint, burnt chalk, granular chalk and flint. Flint edging N and W sides of central stone-free area	At outer edge of protected surface, hence virtual elimination of E edge. Section and plan might suggest post =< 0.10 m in diameter	*Pottery* 6 plain body sherds/28 g Neolithic Bowl (flint-tempered) *Lithics* flake, serrated flake *Charcoal Quercus* 4520±80 BP (HAR-2368) on *Quercus* charcoal (HH76 Sa 26)	3.75
M F9	Probable	0.55	?0.45	0.22	Ovoid, steep sides, flat base with step	L2 outer fill at E edge of brown soil with chalk lumps, chalk and flint chips and gravel, butting L1. L1 inner postpipe *c* 0.20 m in diameter of loose dark brown loose soil with some gravel at edges, flint and chalk lumps in top	Edge unclear, could be only 0.25 m wide		3.75
M F10	Probable	0.45	0.45	0.15	Circular, shelving sides, slightly rounded base	Dark brown soil, lighter towards base, with chalk lumps towards edges, flint lumps towards centre		*Lithics* Flake	3.75
M F11	Possible	0.45	0.45	0.05	Circular	Dark grey/black rooty soil with chalk and flint lumps larger and less dense than those of surrounding surface			3.75
M F12	Probable	0.50	0.46	?0.17	Subcircular, vertical sides, flat base	Soft loamy brown soil grading upwards into dark brown/black soil with chalk lumps and large flints	Bottomed onto softer, loamier, lighter brown soil		3.75
M F13	Possible	0.65	0.52	*c* 0.15	Subcircular	Dark brown soil with chalk lumps and large flints. Peagrit near edges	Some pitched flint and chalk at edges suggestive of packing. Large flint lump in centre. Beyond outer edge of protected surface		3.75
M F14	Possible	0.50	0.40	0.07	Subcircular	Gritty brown soil with small chalk lumps grading upwards into dark brown granular soil with chalk lumps, flint lumps and areas of crushed flint and chalk	Beyond outer edge of protected surface. Hence shallowness?		3.75
M F15	Definite	0.58	0.52	0.30	Subcircular, steeply shelving sides, slightly rounded base	L3 slightly grey light brown soil with loose chalk, filling base and W side. L2 loose dark brown soil with gravelly chalk, also silted from W. L1 gritty dark brown/black soil with large flints at centre, surrounded by chalk lumps			3.75

Table 3.9 (*cont'd*)

Feature	*Category*	*Length (m)*	*Breadth (m)*	*Depth*	*Form*	*Fill(s)*	*Comment*	*Finds*	*Figure*
M F16	Possible	0.30	0.20		Subcircular	Cluster of nodular and tabular flint without depth.	Against S edge of excavated area		3.75
M F17	Possible	3	0.30		Linear	Row of pit ched flint and chalk lumps in darker soil, obscured by pea gravel	Section showed no real difference between feature fill and surrounding deposit. Some subsoil disturbance, but indistinct. May have been a roothole.		3.75
M F18	Probable	0.60	0.40	0.15	Subcircular, shelving sides, shelving base	Soft brown soil with peagrit and a few chalk lumps. Ring of flint lumps on top			3.75
M F19	Possible	0.45	0.30		Ovoid		Gravelly soil with flint nodules		3.75
M F20	Possible	0.50	0.35		Circular	Soft dark brown soil with chalk lumps. Flint lumps around N edge			3.75
M F26	Possible	0.36	0.36		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75
M F27	Possible	0.40	0.38		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75
M F28	Possible	0.36	0.34		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75
M F29	Possible	0.48	0.38		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75
M F30	Possible	0.42	0.36		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75
M F31	Possible	0.28	0.28		Subcircular	Planned as cluster of flint and/or chalk lumps	Time did not permit full investigation		3.75

Phases II–III

The main fills everywhere consisted of interleaved coarser and finer elements, which formed part of a single silting process and often graded into each other, with loose, large chalk lumps and flint nodules concentrated at the outer, downslope, edge of the lower fills. Silting lines and temporary surfaces were frequent. A level surface 0.10 m above the primary silts in segment 1 (L5A, not present in section) was thought perhaps to have been trampled. Charcoal was present from early on, always derived from the inner edge. In segment 1 an almost black charcoal-rich lens overlay the primary silt and extended at least 1.50 m from the butt. In segment 2, there was a less extensive charcoal lens, derived from the inner edge, in the same stratigraphic position (Fig 3.77). Towards the south end of segment 3, 100 m away, a layer derived from the inner edge and overlying the primary silts was similarly black with charcoal. Towards the top of it was an articulated dog skeleton, dated to *3540–3370 cal BC* (4705±35 BP; OxA-7830, Fig 3.78, Pl IV).

Charcoal patches and flecks, as well as grey discolouration, occurred throughout segment 3. There were also two further concentrations of burnt material. Near the centre of the segment was a broken scatter of charcoal and other, unidentified, burnt material which was spongy in texture, without definite fragments. The upper part of this was in a compact, discoloured chalky silt with chalk lumps (L6); the lower part in vacuous chalk rubble (Fig 3.79: L7) which also contained disarticulated human bone from at least two adults. This stands out from most of the disarticulated bone from the hill, including metacarpals, metatarsals and phalanges. There were groups of bone which seemed little displaced from articulation, including a cluster of mature adult tarsals, metatarsals and phalanges (HH76 1968). This was, however, made up of bones from left and right feet, both incompletely represented, and, while the first right metatarsal and two first right phalanges indeed appeared articulated, they were older than samples from the ditch base, at *3760–3630 cal BC* (4890±35 BP; OxA-7102; Fig 4.9). Similarly, what at first appeared to be an adult forearm proved to be a radius and a fibula lying side-by-side (HH76 1963). The radius was complete, unlike most of the disarticulated longbones from the site. The fibula shaft was cut-marked, as was an older adult female mandible fragment (HH76 1916). The human bone was more heavily weathered and root-marked than that from other contexts (see McKinley, 7.1).

The radiocarbon date and the condition of the bones are consistent with their being older than their context. Small hand and foot bones, some of them articulating, and a long bone that had not lost its articular ends, suggest, on the other hand, that the remains had not been long exposed (see McKinley, 7.1). The age of the articulating phalanges is compatible with deposition prior to the construction of the earthwork. They may have been exhumed from a pit on the site or brought from elsewhere and placed in the ditch. The alignment of the radius and tibia suggests deliberate arrangement, as may a tendency for teeth and hand and foot bones to lie to the south and larger bones to the north. A substantial part of a small ceramic cup (HH76 1225) at the east edge of the bone scatter may have been an original association or a deliberate later placement, especially as pottery from the phase III deposits in the segment otherwise consists only of 16 sherds/59 g, among which only one rim fragment is represented. It was only here that charcoal was associated with large quantities of unidentified burnt material, which raises the possibility that this was in some way related to the human remains. The unidentified material may have affected radiocarbon measurements made on charcoal samples from this deposit (see 4.7.8).

In the north butt of the segment was a more compact dark, ashy layer with charcoal, lying at an interface in the phase III fills and containing fewer chalk lumps than the layers above and below it (Fig 3.79, section C–C'). A fragmentary perforated chalk object was recovered from it (Fig 10.2: S29).

Animal bone was widespread in phase III. In addition to the articulated dog mentioned above, there were a fitting pig radius and ulna (HH76 1904) and fourth and fifth pig metacarpals from the same individual (HH76 2887), both from segment 2. A poorly preserved cattle skull was among the bone recorded from Bonney's trench G (sf 7). Pottery and struck flint were scarce, the only noteworthy finds being the cup fragment mentioned above and two leaf arrowheads from L6 in segment 3 (HH76 745, 975).

Phase VIIIa

On site M the Neolithic fills were overlain by several thin soil layers with varying admixtures of small, weathered chalk lumps, not all distinguished in section, which may have been successive ploughsoils spilling into the ditch top (L4, L4A, L3, L3A). The latest material from them is a middle Bronze Age Globular Urn, much fragmented (Fig 9.10: P169). On site K/L, there was a single layer of brown-orange soil with peagrit and chalk lumps, derived from the inner, upslope, edge, also likely to have been a ploughsoil (L3), which contained struck flint and a small amount of animal bone, but no pottery.

On each site these layers were succeeded by L2, which extended across the whole excavated area and overlay vestigial postholes in the banks, where it had a higher chalk and flint content than elsewhere and seemed to be reworked bank material. On site M, L2 was a dark, root-disturbed black-brown soil with weathered chalk lumps, peagrit and some flint, probably reflecting the overgrown headland in which the site lay. Finds from it included two missing sherds recorded as samian, as well as a middle Bronze Age lid fragment and sherds in Neolithic and Beaker or early Bronze Age fabrics, struck flint, 32 fragments/113 g of structural daub with rod and sail impressions (see Barclay, 9.4), amorphous fired clay, Old Red Sandstone fragments, and animal bone.

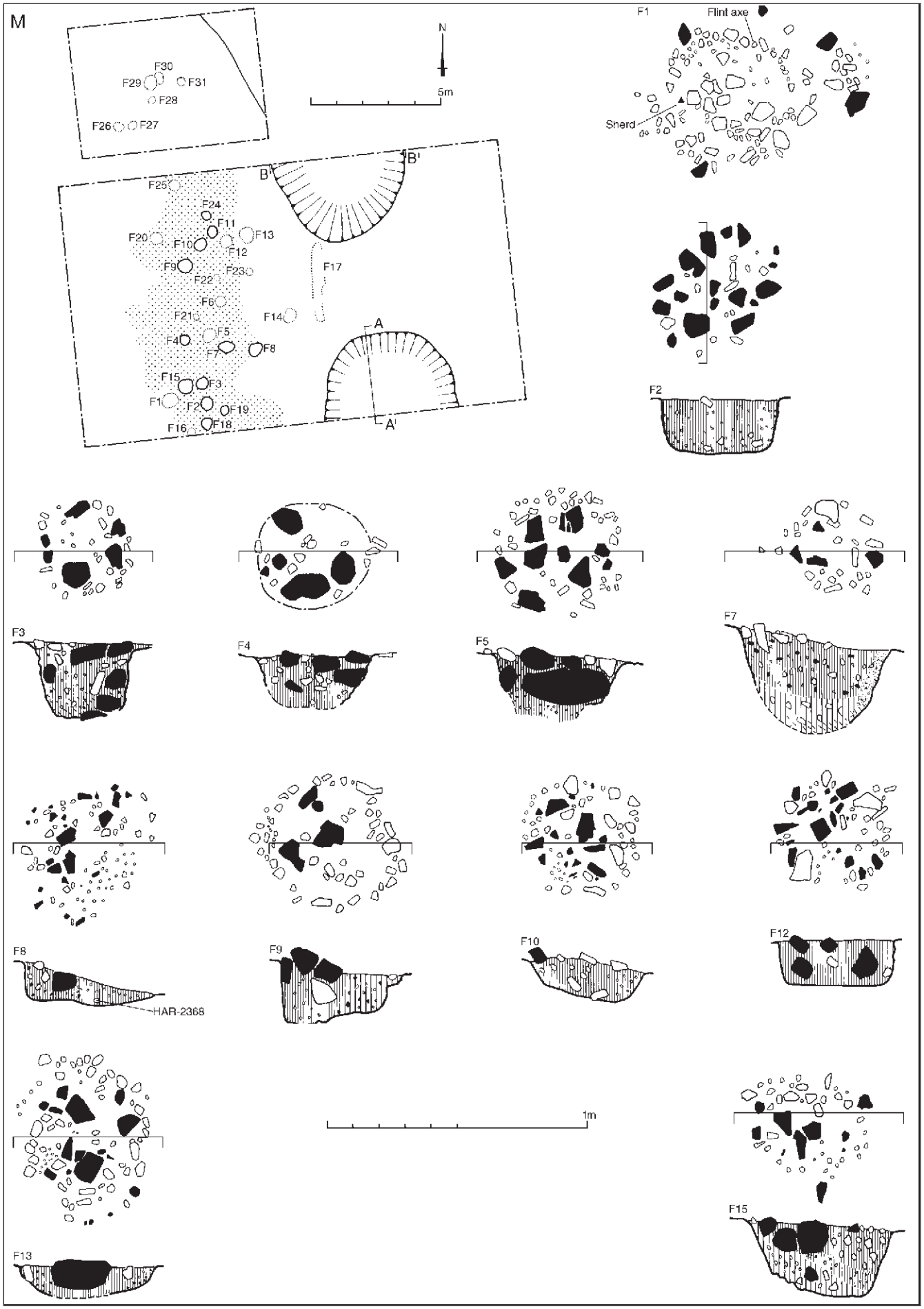

Fig 3.75 Shroton spur site M. Plan, sections of possible postholes.

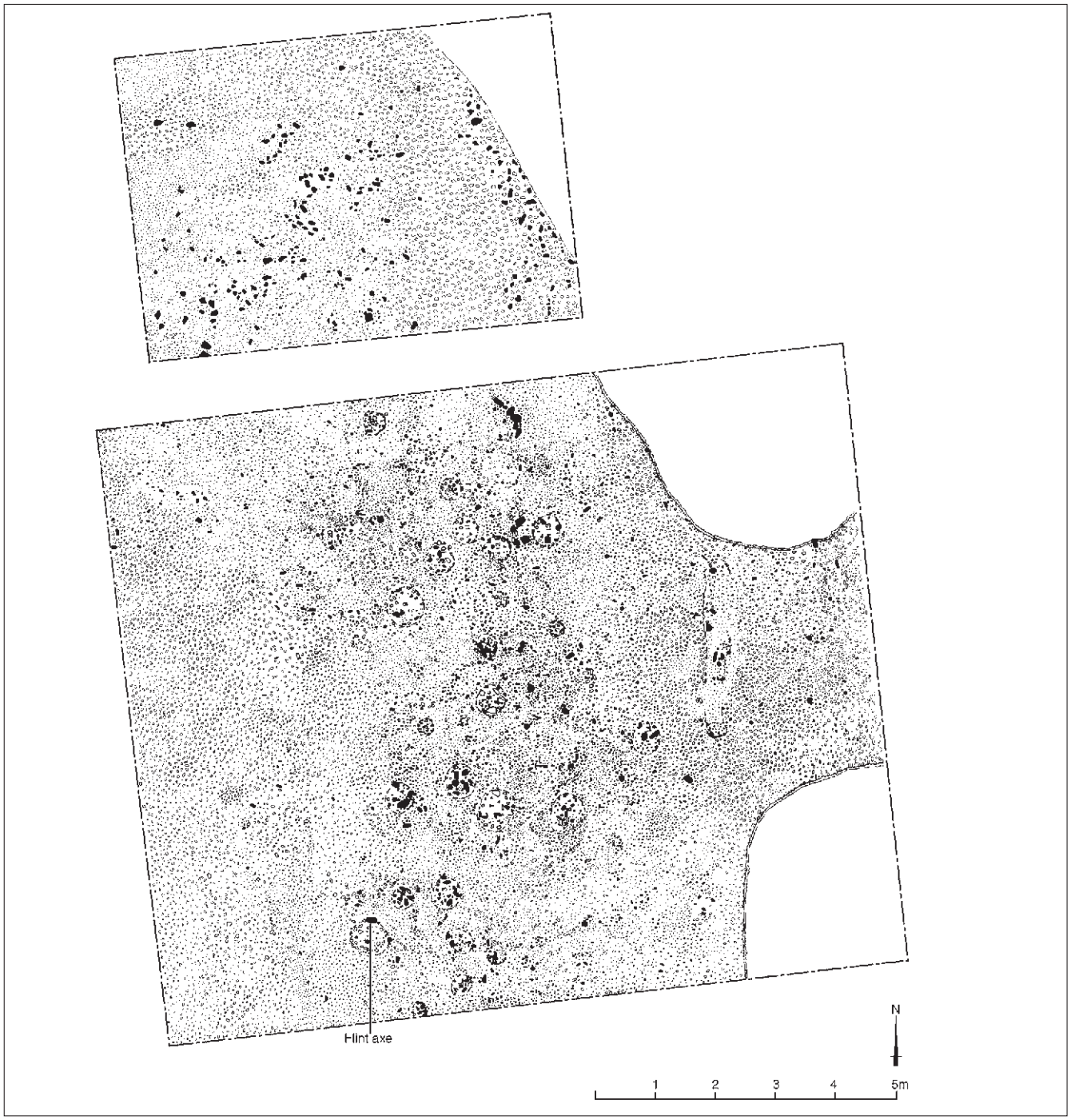

Fig 3.76 Shroton spur site M. Detail of bank area.

A Roman sherd came from the equivalent layer in Bonney's trench G. On site K/L, L2 was a light brown soil with chalk blocks and peagrit which appeared to be a former ploughsoil. In it were small quantities of animal bone, Neolithic Bowl pottery and struck flint. Beneath it in the bank area, among the vestigial postholes, were at least four parallel east-to-west dark streaks *c* 0.20 m wide and *c* 0.50 m apart. They were extremely shallow, and could not be seen in section, but may have been the bases of ploughmarks. Their limited extent reflects the small (4 m × 4 m) area of bank exposed here (Fig 3.78). Unlike ploughmarks in the central area, they could not have been the result of recent cultivation. The ploughing-down of the banks may have begun in the Bronze Age, reflected in the deposition of the lower phase VIII/a deposits with their middle Bronze Age pottery, and continued into Roman times and beyond.

Phase VIII/a or later

The lower phase VIII/a deposits were truncated on sites M and K/L, and possibly in Bonney's trench G, by a substantial recut (Fig 3.77: L5, Figs 3.78–79: L4). Most finds from it are of animal bone; including an articulated cattle acetabulum and femur head; the latest

artefact is a small, plain body sherd in a grogged, Beaker-like fabric. On site M it was thought that the recut might truncate L2 and be of recent date (Fig 3.78: section B–B'). A prehistoric date would, however, be compatible with the composition of the finds from it, with it being confined to the Neolithic segments without encroaching on the causeways, and with the presence of Beaker period recuts in the west of the outer Stepleton outwork (3.5.5) and in the Hanford spur outworks (3.6.2).

Superficial deposits

Finds from the current turf and topsoil include a ground flint axe from site K/L, two further sherds recorded as samian, one from site M and one from site K/L, further fired clay from both sites, and two fragments recorded as Roman brick from site K/L.

3.4.2 The outer earthwork(s)

An outer ditch was most convincingly identified in Bonney's trench J, which sectioned the outer part of a ditch more than 1.90 m wide and at least 1.20 m deep, lying, on surface indications, about 5 m outside the outer lip of the main outwork ditch. Its main fill of loose rubble interleaved with rubble in a silty matrix contained antler fragments and sherds recorded as western Neolithic. Within the main fill were two successive lenses of charcoal, silted from the inner edge (Fig 3.80). Trench K in the same area sectioned what appeared to be a third ditch, 2 m wide and 1 m deep. The sole finds were two flint flakes from an unknown context, and there was no burnt material, although the cutting was only 3 m away from trench J. In Bonney's trench G, no recognisable bank material remained in the outer bank visible on the surface, which was visible in section only as a 4.80 m wide rise in the natural chalk starting 1.80 m east of the outer lip of the inner ditch. Immediately east of this rise, 6.60 m from the outer lip of the inner ditch, was 'a fairly steep-sided pit' *c* 0.50 m deep, and 1.15 m wide, and extending 0.40 m into the trench, filled with 'tightly compacted chalk block & chalky wash – fairly clean'. The only find was a flint flake from the bottom. Given its juxtaposition to the rise in the chalk, this may have been the extreme end of a ditch segment, with neither its full breadth nor its full depth exposed in the trench.

In 1976 a 2 m wide trench extending 17.50 m east from the outer edge of segment 3 was cut in an attempt to locate an outer ditch. After the removal of L2 the ditch seemed visible as a dark north–south strip about 1 m wide, but this proved elusive on further investigation. There may yet be an outer ditch in this area, in that the 2 m-wide trench could have run through a causeway. General earthwork survival east of the inner outwork may have been affected by former cultivation. Ridge-and-furrow on the south side of the spur (Fig 3.73) may, for example, have been more extensive, resulting in differential erosion.

3.4.3 The significance of the charcoal and burnt material

The charcoal and burnt material in segments 1, 2 and 3 of the inner ditch and in Bonney's trench J in the outer must derive from burning close to the inner edge of the ditches, from which it began to erode after the deposition of the primary silts. There was no evidence of *in situ* burning in the ditches: burnt flint and chalk were minimal, and the contained bone and artefacts were largely unburnt. The quantity and extent of charcoal are unmatched in any of the ditches in the central area. If it derived from a single event, then burning took place along at least 140 m of the earthwork, from site M, through Bonney's trench J, to site K/L. No burnt material is recorded from Bonney's trenches G and H. Alternatively, the charcoal could represent a series of unrelated episodes. Fires, for example, might have been lit inside the earthworks over a period of time and the debris from them dumped and/or silted into the ditch. The composition of the charcoal, however, argues against this. Where charcoal from L7 and L6 in segment 3 has been identified it consists of *Quercus* sp and *Corylus*/*Alnus*, in contrast to the single identified sample from the primary silt, which is of *Fraxinus*, and in contrast to charcoal from ditches and pits in the central area, which is made up of a wider range of deciduous species with a high frequency of Maloideae (see Austin *et al*, 6.1).

The restricted composition of the charcoal and the quantity of burnt material are more comparable with the inner outwork on the Stepleton spur, where there is evidence for the burning of the oak uprights and hazel breastwork of a rampart (see 3.5.4). Taken together with vestigial postholes in the bank area, this may represent a similar event. The interpretation is, however, problematic. It does not account for the combination of a burnt axehead, burnt chalk, and unburnt flint nodules in M F1 and of a burnt mortar and unburnt flint nodules in K F4. Since the axehead was accompanied by flakes and fragments detached from it by heat, it must either have been burnt *in situ* or placed in its final context together with the already detached fragments. Nor does it account for the unburnt state of the abundant flint nodules and fragments in the bank area of site M.

The only dated posthole in the bank area (M F8) contained oak charcoal from a tree probably felled after the earthwork had been built and the charcoal-rich fills had accumulated. The charcoal is indeed likely to derive from a burnt post rather than accidental inclusion because it was all oak and because there was enough of it for a conventional Harwell measurement (50–100 g before pretreatment at the time of submission). The sample may date from the construction of the earthwork, with its true age at the very earliest extreme of its distribution; the date may be aberrant; or there may have been at least two episodes of burning. This last could accord with the incorporation of (already present?) burnt artefacts and unburnt flint

nodules in the packing of the same postholes. An original bank structure could have burnt down soon after the earthwork was built, to be replaced when the ditch was largely silted by a palisade set in the reduced bank, with an entrance on site M, where some disturbance to the tops of both banks was recorded in the contour survey. This possibility is rendered less far-fetched by the consideration that an entrance at this point would lie near the centre of the spur, aligned with probable entrances through the east cross-dykes and the main enclosure on sites D2 and D1+F (Fig 1.4), and could have been part of a route into the central area used throughout the life of the complex.

3.4.4 Other activity on the spur

Outside the causeway on site K/L was an irregular hollow in the chalk, perhaps originally a solution feature (K F5), in which were a cattle femur and other bone fragments, thought from their condition to be recent, and a worn, root-marked right adult human femur shaft. If the cattle bone was indeed recent, the human femur may have been derived from a Neolithic context. If the difference in condition simply reflected the generally 'old' state of the human bone from segment 3, then this may have been a Neolithic deposit.

Downslope from the outworks is a Neolithic flint scatter *c* 160 m across (Figs 3.73; see Saville 10.2). Beyond this again are further earthworks, described in Chapter 2. They were sectioned in 1981 because, despite negative preliminary investigations in 1978 and the fact that the outer one was fenced up to at least 1947, their location and their alignment with the Shroton spur outworks suggested that they might be Neolithic. A section 5 m wide and 24 m long, ST81 area 4D (Fig 3.73), showed that the outer earthwork was short-lived and the inner one insubstantial. A negative lynchet up to 0.10 m deep was filled with light grey-brown silt with a few chalk pebbles, and contained a couple of sherds of abraded post-medieval pottery and a fragment of glass. Upslope from the lynchet was a band of protected chalk up to 2.50 m wide, on the other side of which was a ditch up to 1.50 m wide and 0.25 m deep, with blocky, unweathered floor and sides and a jagged, irregular profile. The original earthy, worm-sorted fills were largely removed by a recut extending the length of the trench, the loamy fill of which contained a coin of George III and twentieth-century rubbish, including fish paste jars, bottles, a frying pan and numerous tin can fragments alongside .303 cartridge cases. A handful of similar material in the top of the original fills was thought perhaps to have been intrusive. The only prehistoric finds were five flint flakes and a miscellaneous retouched piece, all unstratified.

Such a slight ditch may have held a hedge, with at least some of the irregularities of its profile due to root growth. The lynchet and protected chalk would have been the result of the plough stopping slightly short of the hedge. Once the hedge was removed and replaced by the boundary immediately to the east, the ditch would have provided a soft, easily dug location for rubbish disposal. The ditch remains undated, although it is suggestive that its south end bounds a block of ridge and furrow (Ch 2; Fig 3.73). Its soilmark, however, is as strong as those of deeper and wider excavated ditches (Fig 3.74), raising the possibility that the excavated area may not have been representative, and that a more substantial, and perhaps older, earthwork remains to be identified along at least part of its line.

Shroton spur outwork segment catalogue

Segment 1 (Figs 3.75, 3.77)

Original notation. HH76 site M segment A.
Form. Rounded butt with gently shelving, slightly stepped end.
Length c 20 m, *width* 5.1 m, *depth* >1.5 m.
Excavation. *c* 16%. Turf and topsoil stripped by hand. Axial section cut N of centre line in 3.20 m of N butt which lay in excavated area. W part removed first, E half excavated to L4 only. Length estimated from earthwork evidence. Topmost *c* 0.50 m cut through Coombe Rock rather than solid chalk.

Phase I. Grey-brown silt with chalk lumps (L7).

Phase II. Charcoal-flecked grey lens, silted from bank and causeway (L6).

Animal bone and/or antler
L6: *pig* phalanx; *cattle* maxilla

Pottery
L6: 3 sherds/11g indeterminate sand-tempered

Lithics
L6: 3 flakes

Charcoal
L6: *

Phase III. Immediately overlying L6, up to 0.10 m of grey silt with chalk lumps, with very hard, compact, level surface (L5A), distinguished in excavation but not visible in section. Thought to result from human action, such as trampling, and/or natural process, such as panning. L5A overlain by up to 0.90 m of grey-white granular silt with chalk lumps, angular and slightly vacuous towards base, smaller, more rounded and more compact towards top (L5).

Animal bone and/or antler
L5A: *
L5: *pig* scapula, teeth, carpal; *cattle* humerus, carpal; *caprine* tooth

Pottery
L5A: 1 sherd/15 g Neolithic Bowl pottery
L5: 1 lug fragment/10 g Neolithic Bowl pottery, 16 body sherds/11 g indeterminate sand-tempered

Lithics
L5: 10 flakes, scraper

Charcoal
L5A: *

Phase V. Probably the uppermost part of L5 (see phase III above).

Phase VIII/a. Successive soil layers with varying admixtures of weathered chalk lumps (L4A, L4, L3A, L3), overlain by dark, gravelly black-brown soil with weathered chalk lumps,

peagrit and some flint (L2A), with fewer chalk lumps towards the top (L2), extending beyond ditch over whole excavated area.

Animal bone and/or antler
L4: *
L3: *caprine* tooth
L2A: *

Pottery
L4A: 1 sherd/3 g ?from Globular Urn represented in L4
L4: 8 sherds/40 g Globular Urn (P169)
L2A: 2 sherds/5 g Neolithic Bowl
L2: 1 sherd/7 g grog-tempered

Lithics
L4: 6 flakes
L3: 19 flakes, 1 misc retouched
L2A: Greensand fragment, burnt
L2: 20 flakes, scraper, 1 misc retouched

Unworked burnt flint
L2: 17 g

Phase VIII/a or later. Recut like those in segments 2 and 3 noted during partial removal of outer side of axial section.

Upper levels and unstratified. Up to 0.15 m of turf and topsoil (L1) much chalk in lower part.

Segment 2 (Figs 3.75, 3.77)

Original notation. HH76 site M segment B.
Form. Rounded butt with gently shelving end. Flat base. Steep inner edge, profile of outer edge perhaps stepped by recut. Ditch base difficult to define because cut into decayed chalk. Length estimated from earthwork evidence.
Length c 16 m, *width* 5.2 m, *depth c* 1.5 m.
Excavation. c 20%. Turf and topsoil stripped by hand. Axial section cut along centre line in 3.2 m of S butt which lay in excavated area. E half removed first. Collapse of transverse section at NW corner near end of excavation meant that section drawing was schematic. Further 4 m of inner lip exposed in extension to N, not excavated.

Phase I. Grey-brown to off-white silt with varying proportions of chalk lumps (L9).

Phase II. Un-numbered, localised charcoal lens *c* 0.07 m thick at inner edge, overlying most of primary silt, underlying phase III deposits towards centre.

Phase III. Silty matrix with concentration of flint nodules (L8), underlying vacuous, angular chalk rubble with some larger flint nodules and chalk lumps (L7), grading upwards into compact grey-brown silt with small chalk lumps (L6).

Animal bone and/or antler
L8: *pig* fitting R ulna and radius (HH76 1904); *cattle* tibia; *caprine* tooth
L8/L7: *pig* tarsal, phalanx; *cattle* humerus
L7A: *cattle* phalanx
L7: *pig* scapula, fourth and fifth metacarpals from same individual (HH76 2887), tarsal; *cattle* femur, metacarpal, carpal, vertebra; 2 humeri; *caprine* teeth
L6: *pig* tibia; *cattle* radius-ulna, femur, tibia, carpal, vertebra, skull fragment; *caprine* phalanx

Pottery
L8: 1 sherd/1 g indeterminate flint-tempered
L6 2 sherds/8 g indeterminate grogged

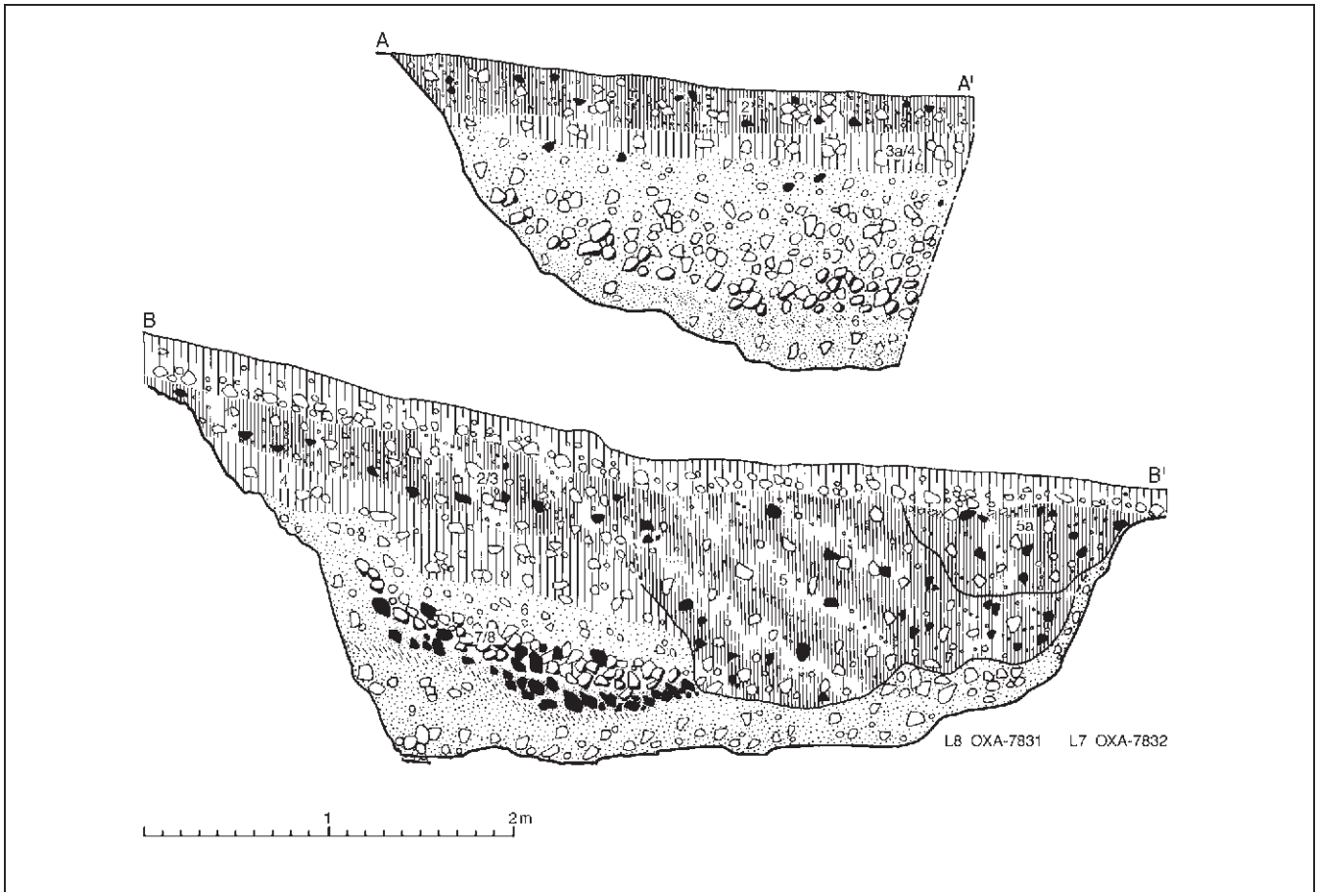

Fig 3.77 Shroton spur site M, ditch sections.

Lithics
L8: 20 flakes
L7: flake
L6: 7 flakes, scraper

^{14}C
L8: *3520–3360 cal BC* (OxA-7831; 4660±45 BP) on HH76 1904
L7: *3520–3340 cal BC* (OxA-7832; 4625±45 BP) on HH76 2887

Phase VIII/a. Successive soil layers with varying admixtures of weathered chalk lumps (L4A, L4, L3), overlain by dark, gravelly black-brown soil with weathered chalk lumps, peagrit and some flint (L2A), with fewer chalk lumps towards the top (L2), extending beyond ditch over whole excavated area. Recut occupying outer side of segment, stopping 1.50 m short of causeway. Filled with dark brown-black soil with peagrit, flint nodules and heavily stained chalk lumps (L5), cutting L4, probably cutting L2–3. Second, shallower, narrower cut through outer edge of first, with similar fill (L5A).

Animal bone and/or antler
L4A: *caprine* teeth, vertebra
L4: *red deer* pelvis fragment *cattle* tarsal, teeth, mandible, rib; *caprine* acetabulum
L3: *pig* humerus
L2A: *caprine* metatarsal, teeth
L2: *pig* humerus, mandible, tooth; *cattle* teeth, phalanx; *caprine* tooth

Pottery
L4: 2 sherds/12 g Neolithic Bowl pottery
L2A: 2 sherds/12 g Neolithic Bowl pottery, 11 plain body sherds/33 g in grogged, Beaker-like fabric
L2: 7 sherds/46 g ?Beaker

Lithics
L4: 4 flakes
L3: 8 flakes, 2 misc retouched
L2: 21 flakes, core, piercer, 2 misc retouched

Unworked burnt flint
L2: 25 g

Phase VIII/a or later. Recut occupying outer side of segment, stopping 1.50 m short of causeway. Filled with dark brown-black soil with peagrit, flint nodules and heavily stained chalk lumps (L5), cutting L4, probably cutting L2–3. Second, shallower, narrower cut through outer edge of first, with similar fill (L5A).

Animal bone and/or antler
L5: *pig* femur, metacarpal; *cattle* humerus, femur, metacarpal; teeth; *caprine* phalanx

Upper levels and unstratified. Up to 0.15 m of turf and topsoil (L1) much chalk in lower part.

Segment 3 (Figs 3.78–3.79, Pl IV)

Original notation. HH76 site K/L, outwork ditch 1.
Form. Sinuous plan, at least 2 sub-segments with higher central area. Gently shelving inner edge, steeper outer edge.
Length c 23 m, *width* 3.9 m, *depth* 1.8 m.
Excavation. c 70%. Turf and topsoil removed by hand. 1 m baulk left between sites K and L, eventually removed. Segment sectioned axially on site K, excavated in plan on site L. Exten-sions to W to investigate bank, to E in search of outer ditch, to S to define length of segment. S-most 6 m left unexcavated.

Phase I. Fine chalky silt with some chalk lumps derived from interior, with diffuse scatter of charcoal flecks (L9), rather darker and earthier silt from exterior (L8).

Animal bone and/or antler
L9: *red deer* 2 antler picks (HH76 1387, 2650); *cattle* femur, metacarpal; *caprine* radius-ulna
L8: *dog* articulated (HH76 2864); *red deer* 2 antler picks (HH76 1081, 2895); *cattle* teeth, *caprine* acetabulum, canon bone, 4 metacarpals, tarsal, 5 phalanges, horncore – at least some of lower limb bones found in articulation, beside dog remains (also HH76 2864). Further bone in this group recovered after plan drawn

Pottery
L9: 8 sherds/30 g Neolithic Bowl pottery

Lithics
L9: flake
L8: 2 flakes

Charcoal
L9: *Fraxinus excelsior*, *
L8: *

^{14}C
L9: *3635–3555 cal BC (71%) or 3540–3505 cal BC (24%)* (UB-4150; 4736±21 BP) on antler pick HH76 1387, *3640–3550 cal BC (73%) or 3545–3515 cal BC (22%)* (UB-4149; 4756±20 BP) on antler pick HH76 2650
L8: *3640–3510 cal BC* (UB-4148; 4753±27 BP) on antler pick HH76 2895, *3640–3490 cal BC*, mean of 4710±55 BP (OxA-7037) and 4770±60 BP (OxA-7038,) both on articulated dog HH76 2864

Phase III. Vacuous chalk rubble and flint nodules, sometimes in light brown soil, gravitated towards outer edge of base (L7), interleaved with and grading into compact grey silt with chalk lumps, diffuse charcoal flecks, and soil patches (L6). Silting lines and bands of chalk lumps (weathered surfaces?) in both. From exterior, soil matrix with peagrit and some chalk lumps (L5). Well-defined deposit of burnt material, including some burnt chalk, *c* 1.50 m × 1.50 m and up to 0.20 m deep at an interface in phase III fills near NW butt. Less well-defined concentration, derived from interior, among rubble at SE end of N sub-segment, *c* 3 m × 1 m, associated with unburnt human remains. Third, derived from interior, in base of L6 at SE end of excavation, extending beyond excavated area.

Human remains
L7, in area *c* 1.50 m × 0.70 m: >127 jumbled fragments from all parts of the bodies of at least two incomplete adults, including articulating 1st R proximal metatarsal, 1st proximal and 1st distal phalanges among other foot and toe bones (HH76 1968), a radius and cut-marked fibula shaft lying parallel to each other (HH76 1963), and a cut-marked mandible fragment (HH76 1916). Not all planned.

Animal bone and/or antler
L7: *dog* tibia, calcaneum (found during removal of baulk between sites K and L, ie overlying and ?derived from dog HH76 2864 in L8), *pig* humerus, 2 ulnae, 2 femora, tibia, tarsal, vertebra, skull fragments; *cattle* humerus, radius, ulna, 3 femora, tibia, carpal, teeth, R and L mandibles 1 m apart, phalanx, 4 vertebrae; *caprine* tibia, phalanx, vertebra; *caprine* tooth, mandible
L6: *dog* vertebrae and rib fragments (HH76 1608) from skeleton found articulated in S face of excavation in charcoal-rich part of L6, most of skeleton left in *situ*; *pig* radius, femur, metatarsal; *red deer* phalanx; *cattle* scapula, carpal; *caprine* 3 humeri, radius-ulna, tibia, 2 metacarpals, metatarsal

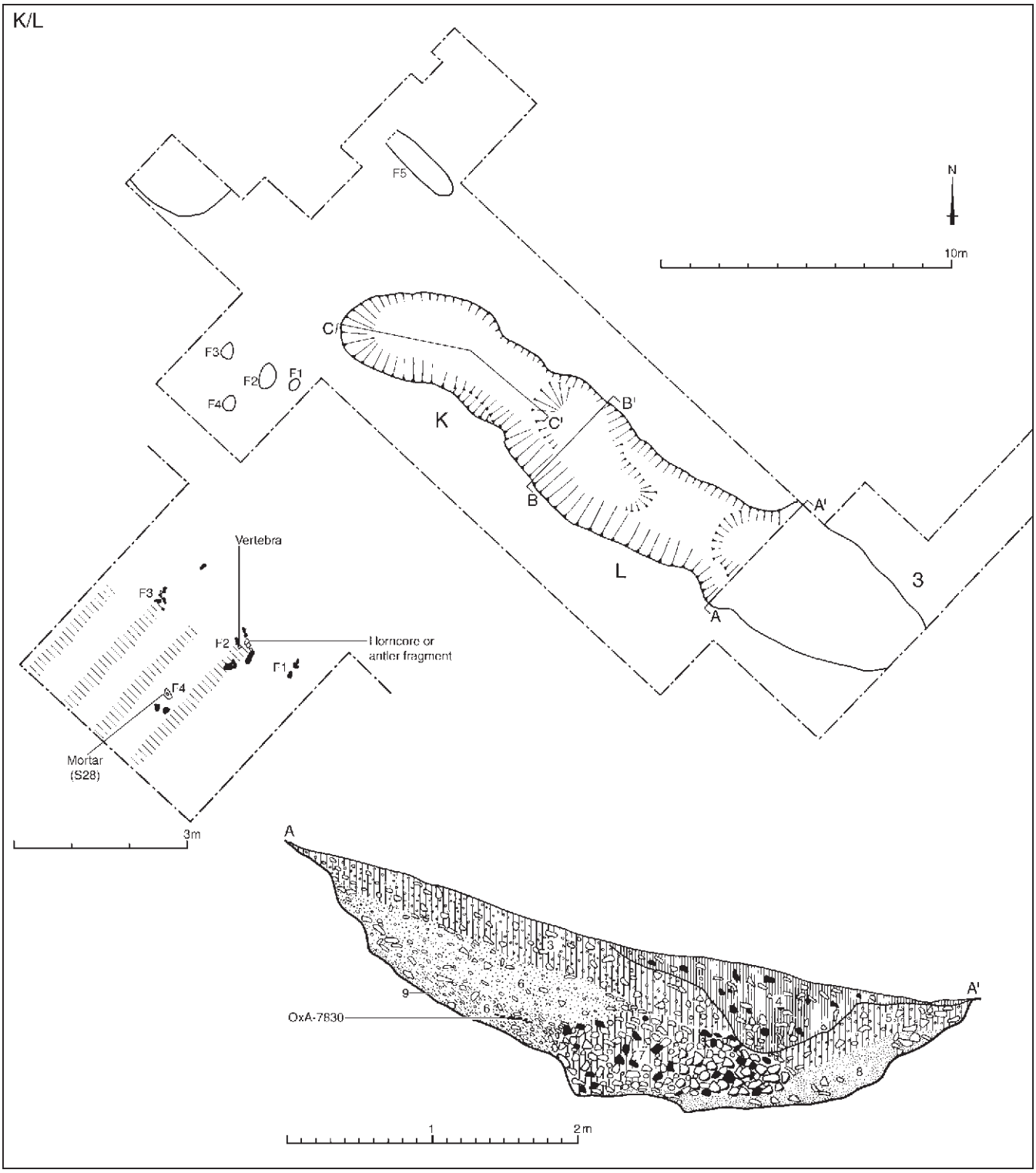

Fig 3.78 Shroton spur site K/L. Plan and section.

Pottery

L7: 26 sherds/110 g Neolithic Bowl pottery, including 16 sherds/56 g from roughly made open, uncarinated cup in sand-tempered fabric, 40 mm high with simple rounded rim 65 mm in diameter and slightly flattened base (HH76 1225, found as single fragment, broke when lifted, 85% of rim present)

L6: 6 sherds/5 g Neolithic Bowl pottery, 16 crumbs/6 g indeterminate flint-tempered

Lithics

L7: 9 flakes, edge-trimmed flake, scraper

L6: 23 flakes, 2 edge-trimmed flakes, 2 leaf arrowheads, 1 misc retouched, fragmentary perforated chalk object, ?spindle whorl (S29; found while sieving burnt material from N of what subsequently became L7)

Unworked burnt flint

L6: 4 g

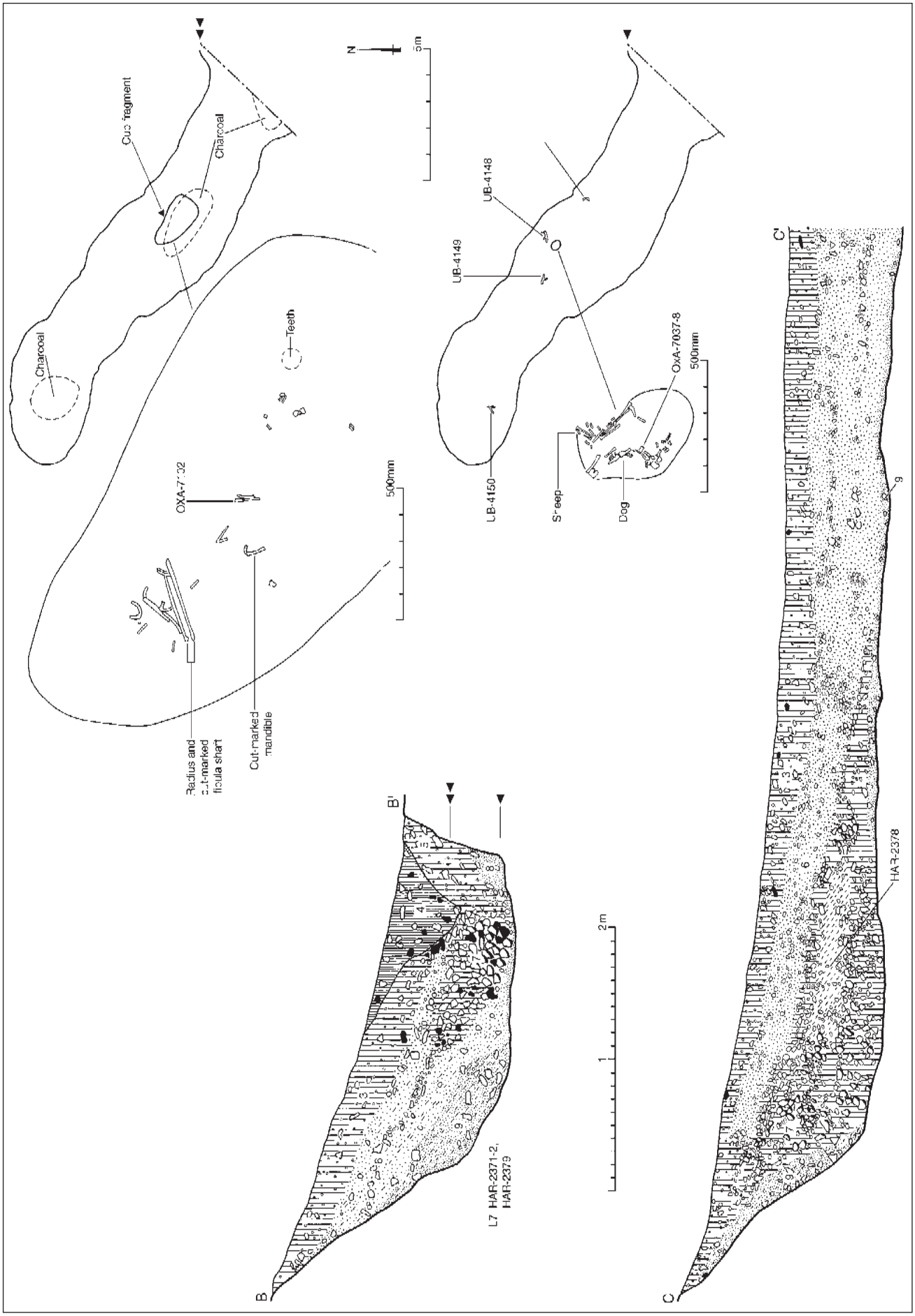

Fig 3.79 Shroton spur site K/L. Sections and detailed plans.

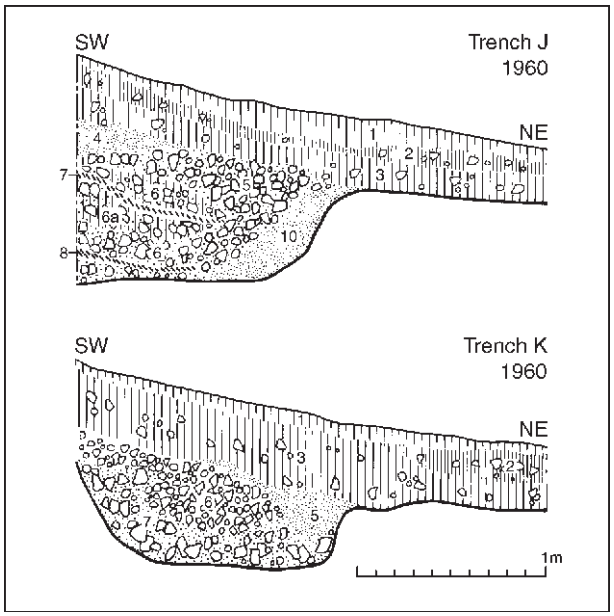

Fig 3.80 Shroton spur, Bonney's trenches J and K, 1960. Sections of outer outwork ditches.

Charcoal

L7, N charcoal concentration: *Quercus* sp, *Corylus/Alnus* (not twiggy) (HH76 Sa 29, 62)

L7, central charcoal concentration: *Quercus* sp, *Corylus/Alnus* (some twiggy), *, 'unidentifiable burnt material – doesn't seem to be burnt wood as it is much more "spongy" with no definite lumps like charcoal frags seems to be stuck together and sometimes comes away in hand-full-size lumps with no particular shape' (HH76 Sa 23, 39, 46, 47, 48, 49, 50, 54)

L7 elsewhere: *Quercus* sp, * (HH76 Sa 21, 86, 63)

L6, N charcoal concentration: *Quercus* sp, unidentified burnt material (HH76 Sa 1, 2, 3, 6)

L6, central charcoal concentration: * (HH76 Sa 34, 42, 44)

L6, S charcoal concentration: *Quercus* sp (HH76 Sa 17)

L6 elsewhere: *Quercus* sp, * (HH76 Sa 5, 7, 8, 9, 28, 27

^{14}C

L7, N charcoal concentration *3920–3870 cal BC (2%) or 3810–3350 cal BC (93%)* (4820±120 BP; HAR-2378) on *Quercus* sp and *Corylus/Alnus* charcoal HH76 Sa 62

L7, central charcoal concentration: *3650–3330 cal BC* (4680±110 BP; HAR-2371) on charcoal and burnt material HH76 Sa 47, *3640–3570 cal BC (11%) or 3540–3330 cal BC (84%)* (4630±80 BP; HAR-2372) on *Quercus* sp and *Corylus/Alnus* charcoal HH76 Sa 46, 3340–2760 cal BC (4350±80 BP; HAR-2379) on *Quercus* sp and *Corylus/Alnus* charcoal HH76 Sa 48+49+50, *3760–3630 cal BC* (4890±35 BP; OxA-7102) on human metatarsal and phalanges HH76 1968

L6, S charcoal concentration: *3540–3370 cal BC* (4705±35 BP; OxA-7830) on articulated dog remains HH76 1608

Phase V. Upper parts of L6 and L5?

Phase VIII/a. Brown-orange soil with peagrit and small chalk lumps, derived from interior (L3), overlain by light brown soil with chalk blocks and peagrit covering whole trench (L2)

Animal bone and/or antler

L3: *cattle* tarsal, tooth

L2: *cattle* radius, tooth

L2 in bank area: *cattle* scapula, metacarpal, sacrum

Pottery

L2: 6 sherds/55 g Neolithic Bowl pottery

Lithics

L3: 28 flakes, leaf arrowhead

L2: 6 flakes

Phase VIII/a or later. Recut up to 1.80 wide and 0.60m deep along outer edge of ditch, filled with dark brown soil with chalk lumps and small flint nodules (L4, originally called FA), cutting L3, in uncertain relation to L2.

Human remains

L4: adult mandibular molar

Animal bone and/or antler

L4: *cattle* articulated acetabulum and femur (HH76 2171), also humerus, radius, tibia, metacarpal, metatarsal, 4 tarsals, tooth, mandible, mandible fragment, vertebra, rib; *caprine* humerus, metatarsal

FA: *

Pottery

L4: 16 sherds/32g Neolithic Bowl pottery, 1 sherd/4 g in grogged, Beaker-like fabric

Lithics

L4: 39 flakes, heathstone quern or rubber fragment

FA: 2 flakes, leaf arrowhead

Upper levels and unstratified. Turf and topsoil (L1).

Animal bone and/or antler

L1: *cattle* tarsal, teeth

Pottery

L1: 2 sherds/13 g Neolithic Bowl pottery

Lithics

L1: 56 flakes, heathstone fragment

U/S: 8 flakes, scraper, ground axe, 1 misc retouched

Other artefacts

L1: 3 sherds/3 g amorphous fired clay without visible inclusions

3.5 The Stepleton Spur

3.5.1 Introduction

Following the identification and survey of the Stepleton enclosure by RCHME (1970, 104), fieldwork and excavation in the course of the 1974–86 project demonstrated that it was a causewayed Neolithic enclosure lying within, and partly replaced by, a succession of three causewayed Neolithic outworks which formed a continuous rampart over 1 km long around the south side of the hill (Figs 2.7, 3.81). The middle outwork (or ditch 3) and the outer outwork (or ditch 4), ran from the head of the steep slope of Coombe Bottom, 100 m north of the enclosure, around the south-east edge of the enclosure, and on westwards along the spur. The inner outwork (or ditch 2) truncated the bank of the middle outwork and stood out by its massive size and distinctive course. To the west it followed the contours of the spur, like the other two outworks (Ch 2). To the east, it conformed to the east and south-east sides of the enclosure, where the original ditch was cut away during its construction.

Excavation showed that all three earthworks ran parallel for at least 110 m west of the enclosure, the inner outwork continuing for at least another 45 m and the middle outwork for at least another 55 m (Figs 3.81, 3.83). From this point onwards, the detail becomes less clear. Magnetometer survey of a 230 m long strip including and running west from area 4F (Fig 3.81) confirmed that ditches were continuous along the area surveyed, but the results were not fine enough to resolve their number (Evans 1983, area ST). Further west, two earthworks are consistently visible, with fragmented hints of a third, sometimes on one side of the more definite earthworks and sometimes on the other. Only two are present on the Hanford spur, where the evidence of earthwork survey has been confirmed by excavation (Figs 2.7, 3.134). It is unclear which of the three ditches does not attain the full length of the spur. Air photographs show the inner outwork cutting the middle outwork bank for only a short distance west of the enclosure (Ch 2), and the inner outwork was not found in area 4F (Fig 3.81), which would be compatible with its ending within 150 m of the enclosure, unless this cutting, which was only 2 m wide, ran through a causeway. Alternatively, all three earthworks may have run to a point east of the Yew Wood, where a change of course, from running along the contours to running obliquely across them, may reflect a separate, later, stage of construction (Ch 2, Ch 4). Efforts made in 1977 to confirm the presence of a possible fourth outwork, beyond the outer outwork, were unsuccessful.

By the end of the 1982 season, almost the entire interior of the enclosure and between 50% and 100% of each of 23 of its ditch segments had been excavated, as had varying lengths of the three outwork ditches (Fig 3.81). The unexcavated areas within the enclosure were occupied by a barn, a water tank, two hedges, and tracks running along the hedges. A species survey of the hedges by Natalie Palk in 1981 indicated that both may be over 1,000 years old, the east–west hedge, which marks the boundary between Hanford and Shroton parishes, being perhaps rather older than the north–south one. The spur is of Middle Chalk, unlike the Upper Chalk of the crown of the hill, and soils and feature fills contained correspondingly less natural flint. The chalk itself was dissected by numerous fissures and, in the south-east, by a large cleft filled with Clay-with-Flints (Fig 3.81).

3.5.2 The Stepleton enclosure

The enclosure lies slightly off the apex of the spur on its southern flank, highest at its north side. The circuit, with a maximum internal dimension of 120 m, encloses just under 1 ha, approximately one-eighth of the area of the main enclosure. It is subpolygonal in plan, its outline made up of a series of conjoined, rather ragged lines.

The bank

Despite the surface visibility of all the Stepleton earthworks into the 1970s, no bank structure or underlying ancient soil survived. All that remained was a band of protected chalk between 1 m and 5 m wide and up to 0.25 m from the inner edge of the ditch. The protected chalk was generally continuous across causeways, with breaks corresponding to the causeway between segments 2 and 3 and, more substantially, to the entire length of segments 6 to 9. These segments were generally shallow and would have provided less bank material than those to either side, so that any original bank may have been more readily ploughed-out, thus depriving the underlying chalk of protection. The scarcity of pits in the zone immediately inside the ditch in this area (Fig. 3.81) certainly suggests that a bank once existed here, although segment 9 contained very little chalk rubble (Fig 3.88: section J–J'). In the north-east sector of the enclosure, protected chalk was so badly preserved that its partial absence may have been the result of subsequent cultivation. Postholes or other features in the bank area were very scarce, and were largely confined to the area of segments 6 to 9 and, especially, of segment 10, in the north-west, where they may be more likely to relate to an entrance than to an originally ubiquitous bank structure (see below). There were few convincing features within or at the edge of the protected chalk outside this area. 4B F208, near segment 16, and 4B F354, near segments 13 and 14, were both possible postholes without finds. 3A F62 and F63, near segment 5, were both almost certainly recent on the evidence of rectilinear plans and, in one case, uncarbonised seeds.

In the south of the circuit, where the enclosure ditch was removed by the construction of the inner outwork, the former presence of an enclosure bank may be reflected in the distribution of features in the protected chalk of the much wider outwork bank. Here, pits were confined to the inner part of the band of protected chalk and absent from the outer part, which was roughly the width of the protected chalk of the enclosure bank elsewhere (Fig 3.81). These would be compatible with the pits having been cut inside the original enclosure bank.

The ditch

The segments ranged from pit-like features such as segments 1, 13, 18, and 19 to substantial ditches 10 m or more long and over 1 m deep, made up of intercutting pits, like segments 2, 4 and 15. They were generally smaller than the segments of the main enclosure, clustering between 3 m and 9 m long and 0.50 and 1.30 m deep. Segment 3 was by the far the largest, at 25 m long and up to almost 2.00 m deep. Most causeways were between 1 m and 4 m wide. In what would originally have been the south of the circuit, the causeways between segments 5, 6, 7, 8 and 9 of the inner outwork were of solid, undisturbed chalk, and must also have been causeways in the preceding enclosure.

Fig 3.81 Stepleton spur. Plan. Definite and probable Neolithic features are shown in black, possible ones in outline.

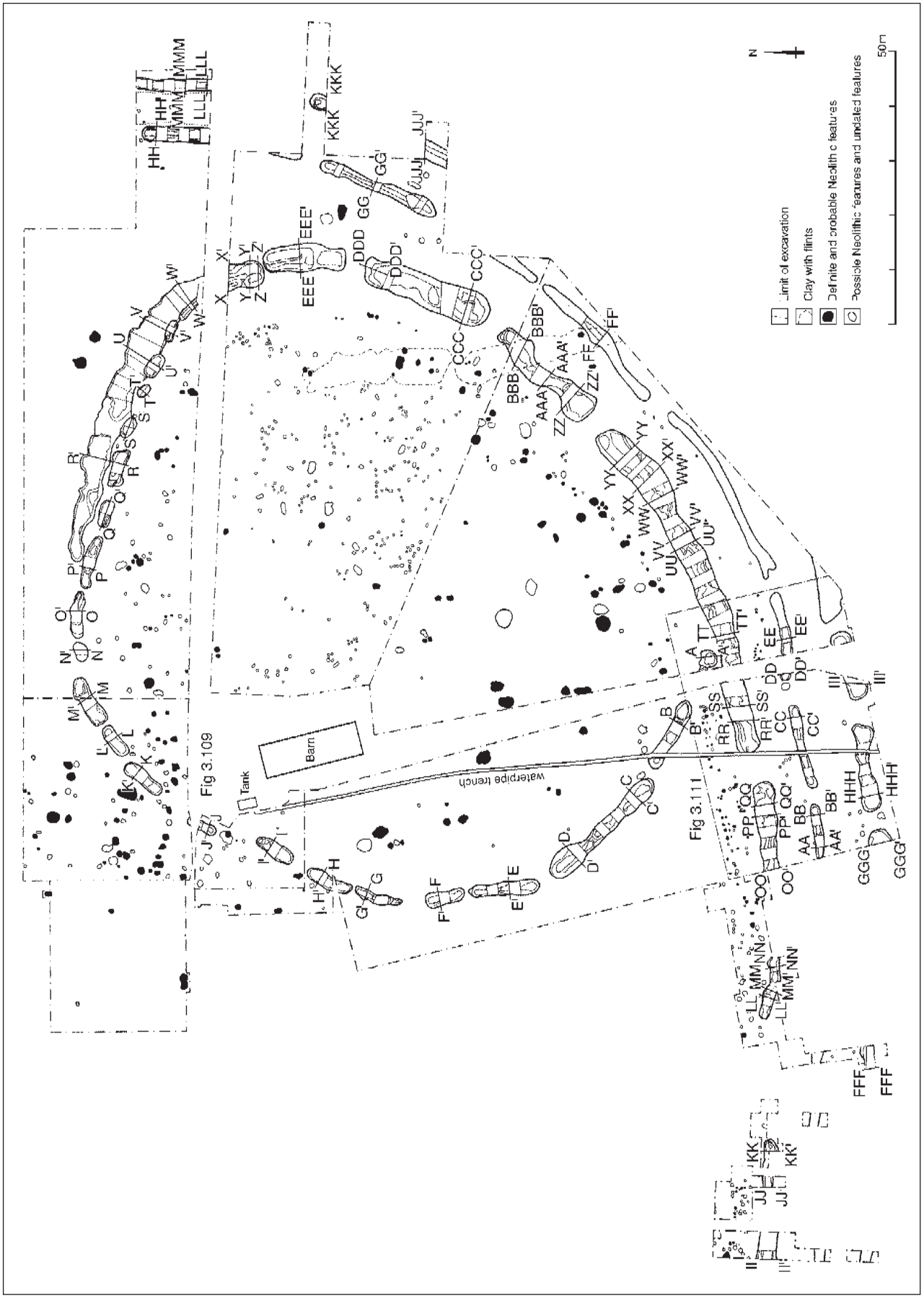

Fig 3.82 Stepleton spur. Key to location of ditch sections and larger-scale plans.

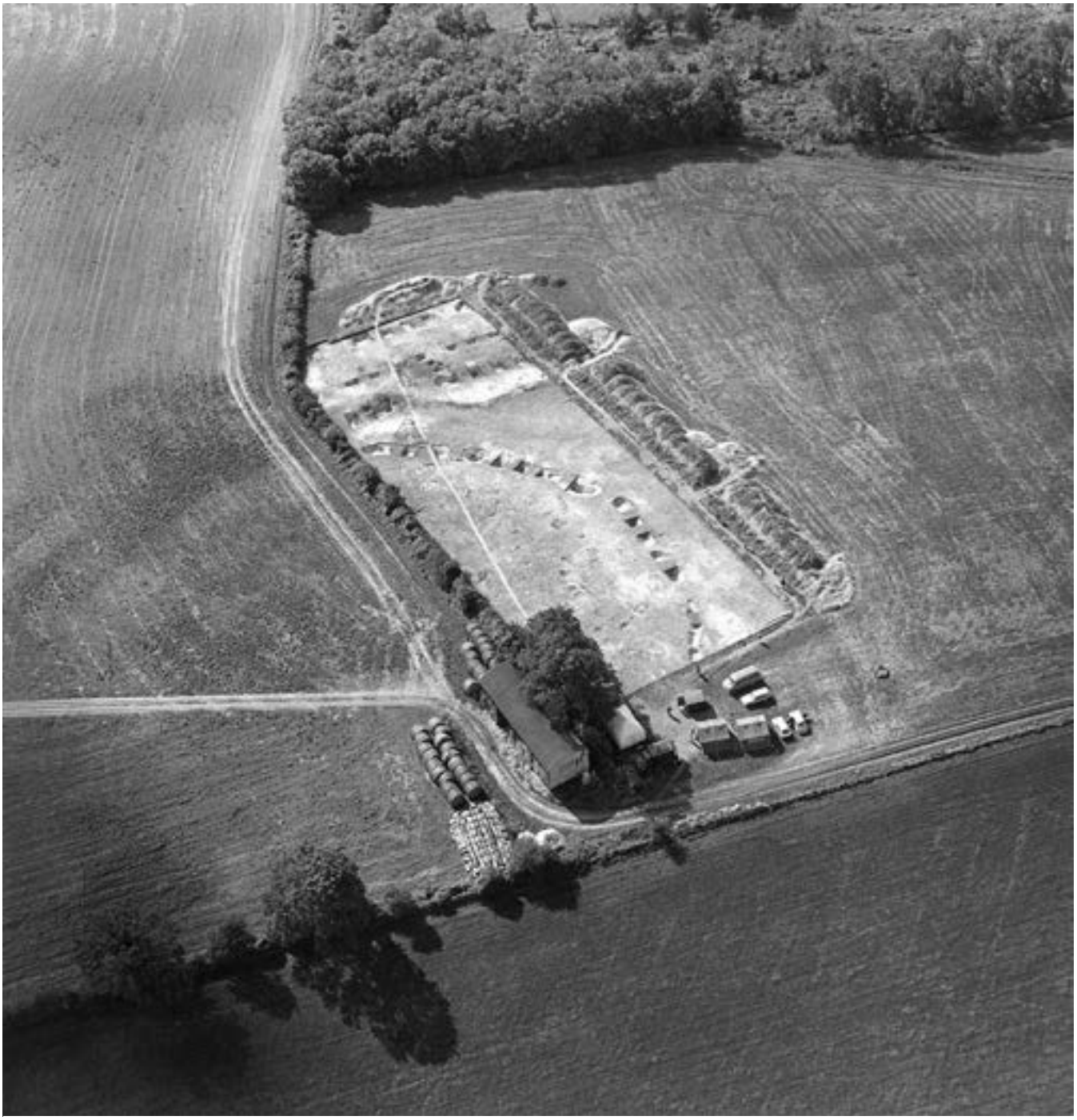

Fig 3.83 Stepleton spur. The end of the 1980 excavation. The west side of the Stepleton enclosure, adjacent parts of all three outworks, and their cropmarks extending to either side of the excavated area. © Crown Copyright/MOD

Possible entrances

The north-west of the circuit gives onto the spur-ridge route between the central area and the main enclosure. There are two exceptionally wide causeways here, between segments 8 and 9 (7.60 m) and 9 and 10 (6.60 m). These possible entrances coincide with a cluster of features immediately outside the circuit and with a flint scatter of earlier Neolithic character further beyond it (Fig 2.2). This part of the enclosure not only lacked any bank shadow and had exceptionally wide causeways; it was also the site of a proliferation of postholes, within and beyond the protected chalk, especially on both sides of segment 10 (Fig 3.109). Interpretation is difficult. Many of the definite or possible postholes survived to less than 0.10 m deep; others may have been completely destroyed. All the postholes between and around segments 7 to 10 could be seen as part of a structure or series of structures in an entrance subsequently split or blocked by the excavation of segment 9, which was shallower than its neighbours and did not align with them. There was a probable posthole between segments 7 and 8 (4A F18). In the causeway

between segments 8 and 9 were three postholes (4A F34, F77, F215) which could have formed part of a gate either alone or with others extending beyond the causeway. F215, the most substantial, was overlain by a shallow hollow filled with material similar to the slower silts of the enclosure ditch (F31). This and the rubble-packed postpipe may suggest that the post was removed and its socket backfilled. Where the protected chalk resumed, there may be a hint of internal bank revetment in the alignment of postholes and possible postholes inside segment 10.

A trapezoid structure in this area (Fig 3.109) may have been an external gate (Mercer 1988, 100), but its form, extent, and date are problematic. Outside the enclosure, substantial, well-defined postholes and a few, slighter, possible postholes lay in a regular plan, the north-east side formed by 4B F71, F65, F219, and F55; the north-west side by F55, F222, F52, F50, and F49; the south-west side by F49, F51, F47, F57, F165, F217, and F63; and the south-east side by two parallel rows: F65, F147, F64, and F217 and F71, F70, F150, F241, F318 and F63. Enclosed within these rows were other probable or possible postholes (4B F59, F72, F147, F218, F224) and two earlier Neolithic pits, 4B F53, which contained a fourth millennium grape pip (see Jones and Legge, 6.2), and F144. The north-west side may have extended beyond the corner through F149 and F44; and the south-west side may have extended through the causeway into the enclosure through F68 and F166. These are the most substantial and best preserved of the rows. The line of the less well-defined north-east side crossed an undated pit (4B F61) and may have extended into the enclosure, running obliquely across segment 10 and the bank, through F172, F173, and F297, cutting into the protected chalk of the bank (Fig 3.109). If these postholes indeed formed a single alignment with the north-east side, that side, if not the whole structure, is likely to have pre- or post-dated the pit, the segment, and the bank.

The postholes lacked closely datable finds and most of them lacked any finds at all. There were flint flakes (generally single) in F44, F47, F50, F176, F218 and F220; small quantities of charcoal in some; and small quantities of charred emmer wheat in F63; of indeterminate cereal in F47; and of charred hazelnut shell in F176. F64, in the centre of the inner south-east row was exceptional in that the post in it seemed to have burnt *in situ*, with relatively abundant finds, some of them burnt, concentrated either in the centre of the lower fill or in a 'halo' around the postpipe in the upper fill. The finds comprised animal bone (burnt and unburnt); 15 flint flakes (three of which were burnt), small quantities of charred emmer wheat, barley and hazelnut shells, a minute plain body sherd (4 g) in a flint- and grog-tempered early Bronze Age fabric and an even smaller sherd in an indeterminate sand-tempered fabric. The sherds could suggest that the structure was built long after the enclosure; although they could have been intrusive, given their small size. Alternatively F64 may not have formed part of the structure on an axis of which it seemed to lie. The apparent structure was within a scatter of probable and possible postholes, so that the imperfectly defined north-east and south-east rows may have been fortuitous, while the better-defined south-west and north-west rows may have supported an entrance structure contemporary with the enclosure. A fourth millennium date for the north-west row would accord with its marking the edge of a dense cluster of Neolithic features (Fig 3.81). The case for a third or second millennium date for part or all of the structure finds some support in further evidence for Bronze Age activity in the vicinity. Segment 9 of the Stepleton enclosure, immediately south of the structure, is the only one with a recut containing Beaker pottery; 4B F126, 4 m north of the structure, contained three body sherds from a vessel in a grog- and flint-tempered early Bronze Age fabric as well as a flat base sherd and plain body sherd from a vessel in an indeterminate sand-tempered fabric; and ST82 F16, 10 m to the west, contained a middle Bronze Age burial (see 3.5.7).

Elsewhere, there were single possible postholes between segments 17 and 18 (4B F370) and 18 and 19 (4B F369), the second corresponding to a 3.75 m wide causeway and to a break in the protected chalk. In the south-west, a probably wide causeway under the unexcavated hedge between segments 1 and 2 corresponded to an absence of protected chalk and to a series of deposits and recuts and a concentration of finds in the south-east butt of segment 2. It is noteworthy that the two ancient hedgerows ran through possible entrances in the north-west and south-west and past the point at which the inner outwork was apparently left incomplete, suggesting that the enclosure and outwork banks were almost continuous when the hedges were laid out.

Phases I and II

Two silting episodes can normally be distinguished. Primary silts lying directly on the segment bases (generally L6) were almost always chalky and light-coloured. In some cases, such as parts of segments 3, 5, 7, and 14, abrupt, almost vertical, edges suggest that they had been cleaned out before the accumulation of subsequent silt which, while still fine, was earthier, with a higher proportion washed from the then topsoil than from the ditch sides (generally L5). A small amount of chalk rubble fill had sometimes accumulated before the deposition of this second silt. Finds were often scarce in both and human remains were completely absent. Where apparently deliberate deposits occurred they were almost always different in kind from those in the main enclosure. The only exception was a small loamy deposit containing charcoal, charred grain and an antler fragment in a hollow in the floor of a butt of segment 12, which recalls small heaps of clay or earth on the bases of segments 1 and 6.1 of the main enclosure.

Otherwise, deposits on and near the ditch base consisted of antler or of knapping debris, both of which continued to be placed in the ditch through subsequent phases.

Antler was frequent in phase I, most spectacularly in segment 3, where an antler pick and two rakes were grouped together in a natural cavity in the south-east butt and a further five picks and a rake came from elsewhere in the segment (Fig 3.86), and in segment 4, where two antler implements lay on the base of the north butt (Fig. 3.89). Almost all were modified and/or utilised, and the likelihood that these implements had been used to dig the ditch is heightened by their often worn or broken state. Broken-off tines with worn points recur in these levels and throughout the sequence. The continued frequency of antler picks and other implements in the phase II silts, notably three picks in the north butt of segment 5, two of them placed side-by-side and identically aligned, may reinforce the impression that these accumulated following recutting, unless the antler implements were originally placed on the bank and/or berm and weathered or deliberately moved from there into the ditch. The use of a pick from the phase II silts of segment 12 as raw material for groove-and-splinter suggests an interval between original use and incorporation in the ditch fills.

Knapping debris was scarcer than in subsequent levels. It occurred, as higher up the sequence, in small, compact deposits, possibly representing single episodes, and consisting almost exclusively of cores, flaked lumps, hammerstones and flakes, as in the south-east and north-west butts of segment 3, the surface of the phase II silts in segment 2, or the centre of segment 22. Struck flint was otherwise scarce, apart from flakes and a fragmentary flaked flint axe in the primary silt of segment 2.

Phase III

Vacuous chalk rubble (generally L4) was absent from segments 9, 19, 21 and 22 (Figs 3.88, 3.91) and present only in small quantities in segments 2, 4, 7, 8, and 11 (Figs 3.84, 3.88, 3.90). It was sometimes symmetrical in section, as in the north-west of segment 3 and in segments 10 and 12 (Figs 3.85, 3.88, 3.90). This may reflect the relatively gentle slope on which the enclosure was built together with relatively insubstantial banks, much of the rubble deriving from the ditch sides, especially in the shallower segments. The phase III fills otherwise consisted of finer silts, some interleaved with rubble and some succeeding it, and of more weathered and concreted rubble; in an increasingly earthy matrix towards the top (generally L3A from the interior and L3B from the exterior). The impression is one of uninterrupted natural silting, with rare exceptions. These include the north-east butt of segment 12, where a pit-like recut (L2A) was made before the formation of L3A and L3B. Like later pit-like recuts, it was distinguished by a charcoal-rich fill with a little burnt flint. It differed from them in containing large quantities of pottery and struck flint. A localised deposit of charcoal-rich loamy material (L3D) above vacuous chalk rubble in segment 16 seemed to have been dumped rather than placed in a recut. A similar charcoal-rich deposit overlying vacuous rubble in the south-east end of segment 17 (L3C, L2A=L3D) contained 1.5 kg of burnt flint, several times more than was recovered from the rest of the enclosure ditch.

Finds of all kinds were more abundant in phase III than in phases I–II, especially in the upper layers (L3A, L3B). In segments 11, 14, 15, 16 and 17 there was a marked preponderance of finds in L3B, derived from the exterior, over L3A, derived from the interior. Segment 10 is exceptional in that, despite a substantial depth of deposit (Fig 3.88, section K–K': L4, L4A, L4.1, L3A), no artefacts or food remains were recovered from any phase III contexts.

Human remains were first deposited in phase III. The earliest in the sequence were fragments, possibly cut-marked, from the skull of a young infant, found together in vacuous chalk rubble (L4) in the north-east butt of segment 12, and joining adult femur shaft fragments from L4 in the south-east end of segment 17. In segment 12, an adult femur shaft was found in L3A, above the skull fragments. Three joining adult fibula fragments came from the same stage in silting in the north-east butt of segment 7.

Antler implements and fragments remained frequent; picks predominantly in vacuous chalk rubble, fragments predominantly in subsequent fills. Two picks were placed side-by-side and identically aligned, at the edge of segment 1. Gnawing marks on one suggest that at least a little time had elapsed between use and burial.

Animal bone occurred consistently but in low quantities, except for a fairly abundant assemblage in L3B in segment 15. Exceptional finds include a red deer scapula damaged by a projectile point from this deposit; an articulated cattle tibia and astragalus within a concentration of struck flakes on the surface of L4 in the north butt of segment 5, and several bones from a blackbird-sized bird in charcoal-rich deposit L3D in segment 16.

Knapping debris continued to be deposited in small, tightly defined clusters, sometimes including refitting material. Each seems to have been the residue, or part of the residue, of a particular episode. A cattle phalanx and red deer antler tine in one such cluster, including two flint hammerstones, in the south-east butt of segment 3, suggest that organic as well as flint hammers may have been deposited with the waste, although the objects are too badly preserved for this to be verified. Most knapping deposits were near the base of the phase III sequence, but two examples may be identified in L3A in the south-west of segment 8 and in the centre of segment 22. Struck flint was otherwise scarce, especially in relation to the volume of pottery, as were quern and rubber fragments.

Pottery became abundant only in the upper phase III fills, and then unevenly. There are instances of several, even many, sherds of a single vessel being found together or in close proximity, as in L3A in the south-west butt of segment 12, L3B in the east end of segment 14, the east end of segment 15, L3B in the east quadrant of segment 16, or L3B in the south-east end of segment 17.

Backfill?

The inner outwork was built while the phase III fills were accumulating in the enclosure. In segment 23, which was truncated by the outwork ditch, the outwork clearly cut the chalk rubble fills of the enclosure ditch (Fig 3.92: section Z–Z'). There is a contrast between the chalk rubble fills of the outwork, which show silting lines and dip from interior to exterior, and those of the enclosure, which are more level and which, where they are not truncated, culminate in a chalky silt tightly packed with angular chalk blocks (Fig 3.92, sections X–X' and Y–Y': L3). At least L3 may represent backfilling and levelling with spoil from the excavation of the outwork. The only axehead of non-local stone from the Stepleton spur (Fig 10.1: S19, of south-western greenstone near group XVII) was found against the inner edge of segment 23 at the interface of L3 and the overlying post-Neolithic ploughsoils, and may have been incorporated in the backfill. If segment 23 was indeed backfilled, the outwork may have been built when relatively little of the phase III enclosure fills had accumulated, which would accord with the similar radiocarbon dates for primary contexts in both (Ch 4).

To the north-west, where the outwork was no more than a hollow, fills at this horizon in segments 19, 21, and 22 were compact and little-differentiated and could also have been backfill (Fig 3.91). In the south, segment 1, within the bank area of the outwork, had apparently naturally accumulated phase III fills capped by a clayey, orange-coloured deposit with rounded chalk rubble and some flint (Fig 3.84, section A–A': L2), which may have been used to level-up after the upper, earthier phase III silts had already accumulated, at the same time as a possible posthole, aligning with those of the inner outwork bank, was cut through the west edge of the segment (Fig 3.111). All these possible backfills contained few or no finds, unlike those in segment 23, which were relatively rich in artefacts and animal bone.

Phase IV

By the time the phase III fills had accumulated, the ditch would have been a series of relatively shallow hollows. A stable surface seems to have developed at this stage. In segment 10 a thin silt lens was observed between the top of the phase III fills and the articulated upper skeleton of a woman. The absence of the lower body and the dry, discoloured and rodent-gnawed state of the bones must reflect exposure, on this surface or elsewhere (Fig 3.88). An articulated dog lay at a comparable horizon in segment 3 (Fig 3.87). Recuts were made from this surface in five segments, all in the west of the enclosure. That in segment 8 was a nodule-packed slot like those of the main enclosure, stopping just short of the segment butts (Fig 3.88, section I–I': L2A). The rest were small pits, two in the south-east butt of segment 2, one in each butt of segment 3, one in the south butt of segment 4, and one in the north butt of segment 7. In segments 4 and 7 there were also localised lenses of material at the same horizon elsewhere in the segments. The pits were characterised by dark, almost black, charcoal-rich fills, distinct from the powdery, grey, ash-rich fills of phase IV recuts in the main enclosure, and were very similar to the pit cut in segment 12 during the accumulation of the phase III fills. There was no sign of burning *in situ*. Finds from them could have been derived from the underlying layers, but were sometimes so much denser than in the layers below, for example in segments 4 and 8, as to suggest that most were introduced with the fills.

Human remains were almost confined to skull fragments. An adult parietal fragment came from segment 8. In the south-east butt of segment 3 numerous immature parietal fragments and a possible mandible fragment were found in two clusters a short distance apart on the top of the fill of the recut. In segment 4 older infant or young juvenile cranial vault fragments and a long bone fragment were clustered in a compact area in a lens of clayey loam in the centre of the segment.

Antler was present only as fragments, including worn tines, and small quantities of animal bone were generally found. Lithics were abundant in one of the recuts in segment 3 and in segment 7. A small amount of burnt flint was often present. Among the pottery there are several distinctive sherds, including P111 from segment 2, P21 and P147 from segment 4, and P48 and P103 from segment 8.

Phase V

A thin layer of earthy silt, sometimes with a notable clay content, was deposited in most segments, often solely or mainly from the interior. Artefacts and food remains were few and undistinctive.

Phase VI

From segment 2 to segment 17, with the exception of segment 9, the latest Neolithic fill was a loamy deposit with weathered, rounded chalk lumps and pebbles and some flint (generally L2), richer in finds than any of the underlying layers, except in segments 5 and 6 where it contained little. Often it seems to have been placed in the hollow remaining at the top of the largely silted segments, sometimes it had been put in a recut along all or part of the segment, most unequivocally in segments 5, 7, 8, 11, 12, 14, and 15. In the last of these there was a recut in the west end and a separate deposit in the east butt. The absence of phase VI and phase IV deposits from the east of the enclosure is consistent

with segments here having been backfilled and/or covered by spoil from the shallow continuation of the inner outwork by this time.

Several characteristics of the earlier fills persisted, finds continuing to be concentrated in one end of some segments, such as the south-east of segment 2, the south of segment 7 or the east of segment 14. The phase VI deposits, however, stand out from the rest by the sheer quantity of all kinds of material. They were thought midden-like at the time of excavation, and seem to incorporate the debris of living, cooking, eating, and drinking as well as more focused deposits. A fragment of daub with wattle impressions came from segment 14.

Among the human remains there were further long bone and skull deposits, this time both adult: fragments of a femur shaft found together in the south butt of segment 4 and joining, charred skull fragments found together in the north-east butt of segment 7. A skull fragment and fragments of ulna, radius, metacarpal, and thoracic vertebra from segment 8 could have derived from the articulated part-skeleton below the phase VI fills in segment 10. A maxilla fragment from L2 in segment 10 itself certainly came from the same individual. Antler occurred mainly as detached tines and other fragments, as in phase IV, with the exception of a pick in segment 4 and a probably utilised roe deer antler in segment 3. This was the only horizon to yield substantial assemblages of animal bone, but almost entirely without articulations, which were generally scarcer in the enclosure ditch than in the outworks. A ground and polished point made on a roe deer metacarpal came from segment 10.

Lithics continued to include concentrations of struck flint, as in segments 2, 6, and 7, but the flakes were associated with utilised and retouched pieces, rather than the cores, flaked lumps and hammerstones which characterised the underlying deposits. The concentrations, like the rest of the struck flint from these levels, seem to include at least an element which has been used and discarded, rather than consisting of primary knapping debris. Quern and rubber fragments were more frequent here than in both the underlying levels and the outworks. Pottery was abundant, most frequently in fabric group 6. Several vessels were represented by numbers of sherds found together, sometimes in separate, closely spaced clusters, as in the case of P144 in the east butt of segment 14. In segment 7, two groups of sherds from the same vessel, found 0.40 m apart, retained internal sooty residue dated to *3430–3370 cal BC* (mean of 4685±35 BP and 4845±50 BP; OxA-7844 and OxA-7926). Extension of these dates to a single Fengate Ware rim fragment in fresh condition (P159) from the same layer in the same segment, is compatible with a *floruit* for Peterborough Ware *c* 3500–2500 cal BC (Gibson and Kinnes 1997, fig 1). An abraded late Bronze Age or early Iron Age body sherd from the same segment is likely to have been intrusive, as are 7 sherds/5 g in a grogged Beaker or early Bronze Age fabric among a much larger quantity of Neolithic Bowl pottery, some of it better-preserved, in segment 10, where there was rabbit disturbance.

These deposits were in some ways very like the phase VI slot fills of the central area. Both were the latest Neolithic layers in the ditches where they occurred. Both contained far more cultural material than any earlier level. Both were (sometimes) placed in recuts. They seem, however, to reflect rather different behaviour. The sticky, clayey texture which often distinguished the slot fills in the central area was never noted here. The even more distinctive flint packing was absent; a relative concentration of flint nodules in one end of segment 5 bears no comparison to their general density in the slots, which in the Stepleton enclosure was matched only in the phase IV recut in segment 8. There was far less consistency in recutting, both in whether it was done at all and in the form which the recuts took. Lastly, there were almost no groups of articulating animal bone, while these were frequent in the central area.

Phase VII/a

The only post-Neolithic recut in the enclosure was in the south-west and centre of segment 9 (Fig 3.88, section J–J': L2). This contained sherds of at least one rusticated and one incised Beaker. Beaker and later material was otherwise confined to the phase VIII/a ploughsoils. The location of the recut at what was probably an entrance may reflect continued recognition and use of the route between the enclosure and the central area.

Phase VIII/a

From segment 2 to segment 18 the often flattened and truncated surface of the layers described so far was overlain by small quantities of what was almost certainly a ploughsoil, with a dark, earthy matrix containing peagrit and small, rounded chalk lumps and pebbles (generally L1). A lower flint content than in the equivalent layers in the central area may reflect the location of the spur on Middle rather than Upper Chalk, as well, perhaps, as a different former pattern of superficial deposits. There was a deliberate policy of hoeing-off the surfaces of the underlying layers during the excavation of the base of L1, in order to avoid contamination of Neolithic levels by later material. As a result, some finds recorded from L1 will have come from the phase VI and phase V fills at the time of excavation, quite apart from those ploughed from the tops of the same deposits in the past. An articulating astragalus and tibia from segment 2 may have had such an origin.

The pottery from these layers is, by weight, 82% Neolithic Bowl, 1% Beaker or early Bronze Age, 1% middle Bronze Age, 14% late Bronze/early Iron Age, 1% Roman and 1% indeterminate. The late Bronze/early Iron Age sherds, including P177, P178, and P179, were almost all in segments 2 and 3. All post-Neolithic pottery was in the west of the circuit.

Stepleton enclosure segment catalogue

Notes (see also p 58)

L1, the relict ploughsoils of phase VIII/a in the ditch tops, was excavated once baulks had been laid out in 1980, but were almost entirely removed during segment-definition, before baulks were laid out, in 1981. The surface of the underlying layers was deliberately hoed-off in the process, in order to avoid contamination of them. The current ploughsoil was almost entirely removed by machine, and is included in the catalogue entries only if there were finds from it.

Segment 1 (Figs 3.84, 3.111)

Original notation. ST79 2B F1 (to N) + F2 (to S).

Form. Subcircular with flat base, shelving sides. Natural fissures in base. Posthole in W edge, visible in section in side. In break in protected chalk of inner outwork bank area. Fills root- and rabbit-disturbed down to L4. Feature to W, most of it under hedge between areas 2B and 3B, likely to be recent, perhaps related to hedge.

Length 3.3 m, *width* 3.5 m, *depth* 1.4 m.

Excavation.100%. Topsoil machine-stripped, segment dug in quadrants.

Phase I. Hard-packed chalky silt with some chalk lumps, mainly from exterior (L6).

Phase II. Grey-stained chalky silt with charcoal, from exterior (L4A).

Animal bone and/or antler

L4A: *red deer* antler pick fragment, double brow tines broken off in antiquity, skull fragment still attached, burr heavily battered, beam fragments present. Found near centre (ST79 2615). Animal bone also present

Lithics

L4A: 3 flakes

Charcoal

L4A: *

Phase III. Vacuous chalk rubble, with charcoal towards centre, with silty matrix and higher flint content towards top, interleaved with finer silts from interior (all L4), incorporating a black-grey charcoal-stained lens (L3C), and silts with more frequent inclusions from exterior (L3B), overlain by silts from interior (L3A).

Animal bone and/or antler

L4: *red deer* 2 antler picks, found side-by-side, identically aligned, against E edge of segment (ST79 2149, 2150)

Pottery

L4: 3 sherds/8 g Neolithic Bowl pottery

L3: 1 sherd/6 g Neolithic Bowl pottery

Lithics

L4: 245 flakes, scraper, 1 misc retouched

L3B: 2 flakes

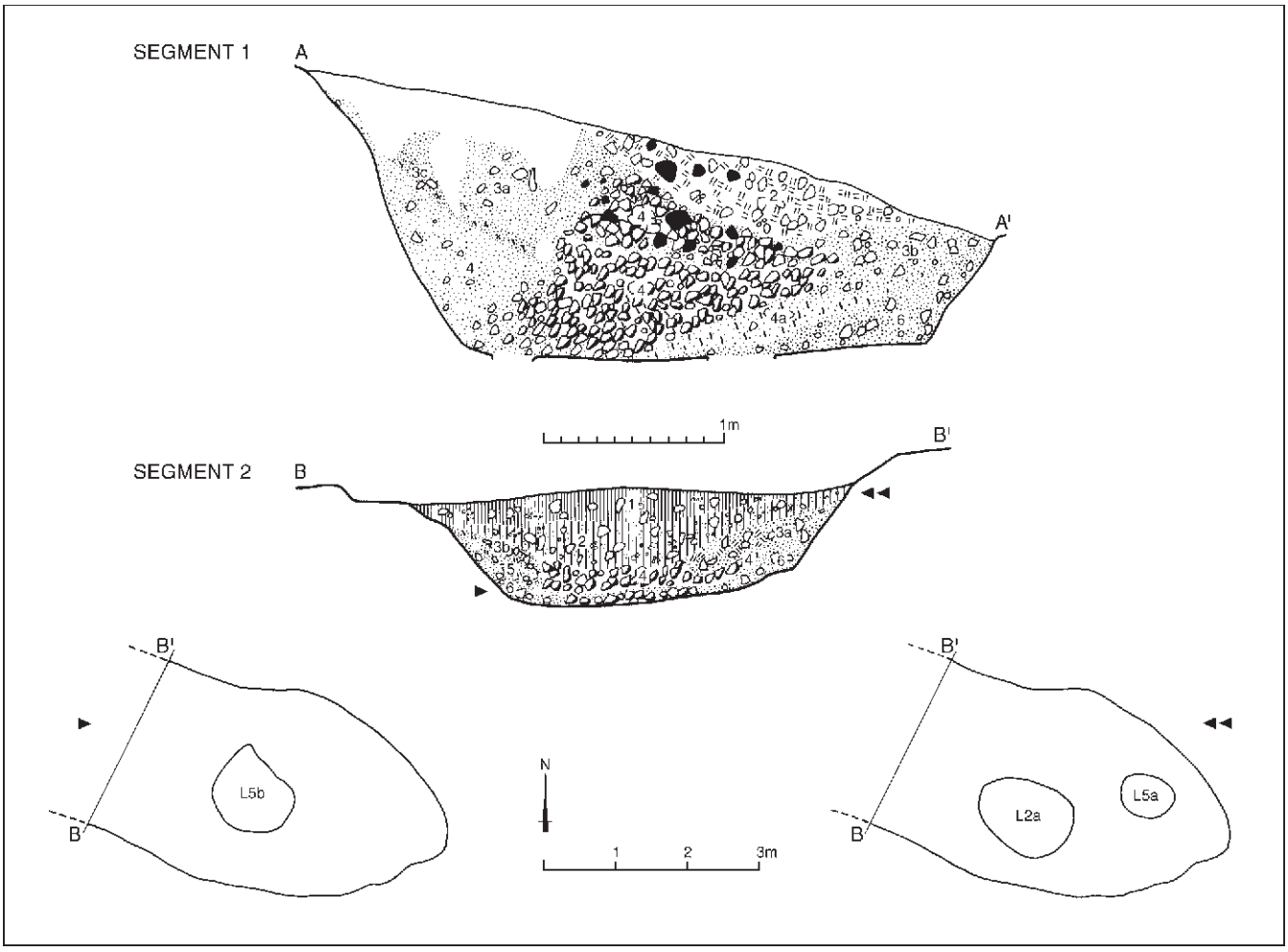

Fig 3.84 Stepleton enclosure. Segments 1 and 2. The voids are rabbit burrows.

Unworked burnt flint
L4: 112 g

Charcoal
L4: *
L3C: *

Backfill? Orange, clayey matrix with smaller, more rounded chalk rubble than in L4, and some flint L2).

Animal bone and/or antler
L2: *

Pottery
L2: 3 sherds/23 g Neolithic Bowl pottery

Lithics
L2: 16 flakes, 2 edge-trimmed flakes

Unworked burnt flint
L2: 421 g

Upper levels and unstratified. Rabbit burrows filled with light, loose soil (L2A), in surface, extending down to L4. 'Quantities of burnt chalk and large heat-shattered flint lumps' noted at N edge of segment during its definition. Ploughsoil (L1).

Animal bone and/or antler
L2A: *

Pottery
L2A: 2 sherds/2 g indeterminate flint-tempered

Lithics
L2A: 4 flakes, hammerstone

Unworked burnt flint
L2A: 62 g

Segment 2 (Fig 3.84)

Original notation. ST80 ditch 1 (or D1) segment 5.
Form. Shallow SE butt, separated from rest of segment by ridge, deepest in N and centre. NW end cut obliquely by pipe trench.
Length 14 m, *width* 2.9 m, *depth* 1.15 m.
Excavation. c 60%. Topsoil machine-stripped. Segment excavated in 3 transverse sections: U16A–B in SE butt, U15 in centre, U14 (angled to line of pipe trench) in NW. U16 excavated in quadrants, U14 and U15 in longitudinal halves. Baulks left standing.

Phase I. Grey/tan silt with chalk lumps, some vacuous chalk rubble towards centre (L6).

Animal bone and/or antler
L6: *red deer* antler tine, tip broken in antiquity; *caprine* tooth

Pottery
L6: 3 sherds/3 g Neolithic Bowl pottery

Lithics
L6: 14 flakes (2 burnt), fragmentary flaked axe

Charcoal
L6: *

Phase II. Grey/tan silt with chalk lumps (L5), almost absent in centre. Compact knapping deposit 1 m × 0.90 m (L5B) on surface of L5 in SE butt, close to ridge separating butt from rest of segment.

Animal bone and/or antler
L5: *pig* teeth; *cattle* tooth

Pottery
L5B: 9 sherds/24 g Neolithic Bowl pottery

Lithics
L5: 28 flakes (1 burnt), edge-trimmed flake
L5B: 193 flakes, 9 cores, 11 flaked lumps, 1 misc retouched, 2 hammerstones

Phase III. Vacuous chalk rubble (L4), interleaved with increasingly clayey finer silts from sides (L5, L4A, L3B, L3A). Charcoal in L4A and L3B in NW butt, at same horizon, from interior and exterior respectively. Knapping deposit 0.60 m × >1.30 m (ST80 1739) near top of L4 close to centre of segment.

Animal bone and/or antler
L4: *cattle* humerus, vertebra
L4A: *pig* mandible
L3A: *cattle* ulna, rib; *caprine* ulna
L3B: *caprine* radius

Pottery
L4: 19 sherds/77 g Neolithic Bowl pottery, concentrated in SE butt, where 15 sherds/61 g found together came from single closed, uncarinated bowl with an internally enlarged rim, in a Jurassic fabric
L3A: 1 sherd/4 g Neolithic Bowl pottery
L3B: 7 sherds/4 g Neolithic Bowl pottery

Lithics
L4, in compact area near top of layer in U15: 35 flakes, 2 cores, flaked lump
L4 elsewhere: 5 flakes
L3A: 12 flakes, scraper, 1 misc retouched

Charcoal
L4A: * (in NW butt)
L3B: * (in NW butt)

Phase IV. 2 localised recuts in SE butt, both truncating L3A, L3B and possibly L4. (1) close to NW baulk, in same area as L5A, ovoid pit 1.30 m × 0.70 m and 0.50 m deep, with flat base and steep sides, filled with fine dark brown/black humic loam with charcoal flecks (L2A): (2) closer to tip of butt, irregular ovoid pit, 0.95 m × 0.40 m with sides shelving gently to centre of base, filled with medium grey silt with charcoal and chalk lumps (L5A=L3C).

Animal bone and/or antler
L2A: *pig* teeth; *cattle* scapula, 2 tarsals, mandible, 3 phalanges, 2 carpals, 2 vertebrae
L5A=L3C: *pig* tibia; *cattle* humerus, 2 radii, carpal; *caprine* teeth

Pottery
L5A=L3C: 1 rim sherd/20 g with cord-impressed decoration (P111)

Lithics
L2A: 109 flakes (3 burnt), 1 misc retouched
L5A=L3C: 12 flakes, leaf arrowhead

Charcoal
L2A: *
L5A=L3C: *

Phase V. Grey/brown clayey loam with chalk lumps and pebbles, derived from interior. In NW butt only; relation to L2A and L5A=L3C not ascertainable, all three lay between L3A+L3B and L2.

Lithics
L3: 3 flakes, scraper, unworked limestone fragment (limestone probably from here, some ambiguity in finds book)

Phase VI. Brown to grey-brown silty to humic loam with rounded chalk lumps and pebbles, some peagrit, and calcareous 'mould' (L2). Generally seemed to fill hollow in top of largely silted ditch; could have lain in a cut in SE side of U15.

Animal bone and/or antler
L2, almost all in SE butt: *pig* radius, ulna; acetabulum, metapodial, skull fragment *cattle* scapula, femur, acetabulum, 5 tarsals, mandible, tooth, 4 phalanges, 4 carpals, 2 vertebrae; *caprine* 2 tibiae, metacarpal; *rodent* femur

Pottery
L2: 11 sherds/95 g Neolithic Bowl pottery

Lithics
L2, almost all in SE butt: 147 flakes, 2 scrapers, piercer, 1 misc retouched, Old Red Sandstone quern or rubber fragment

Phase VIII/a. Dark brown humic loam with peagrit, small, rounded chalk lumps and pebbles (L1). The presence of late Bronze/early Iron Age pottery suggests that the better-preserved animal bone, including an articulation, may also be of this date, if it was not derived from L2 or L3 during the excavation of L1. An atypical gabbroic body sherd, with biotite mica inclusions (ST80 356), here counted as Neolithic, may also be of late Bronze/early Iron Age date.

Animal bone and/or antler
L1: *red deer* articulating astragalus and tibia, phalanx; *pig* ulna, teeth; *cattle* scapula, 4 tibiae, 2 metatarsals, 2 tarsals, mandible, teeth, phalanx, carpal; *caprine* tibia, tooth

Pottery
L1: 53 sherds/159 g Neolithic Bowl pottery, including P150; 34 sherds/170 g late Bronze/early Iron Age, including P178; 1 sherd/2 g Roman.

Lithics
L1: 129 flakes, core, 4 edge-trimmed flakes, scraper, heathstone quern or rubber fragment

Charcoal
L1: *

Charred seeds and/or nutshell
L1: Charred hazelnut shell recorded

Upper levels and unstratified. NW butt cut by pipe trench.

Animal bone and/or antler
U/S: *cattle* tibia

Lithics
U/S: 23 flakes, 1 misc retouched

Segment 3 (Figs 3.85–3.87)

Original notation. ST80 D1 segment 4.
Form. 3–4 sub-segments, substantial ridge between NW butt and centre, slighter step up from SE butt to centre, both butts expanded; steep sides, flat base. Deepest in N butt. Chalk of sides and base blocky, angular and unweathered; depth very uneven. Natural cavity at base of outer angle of SE butt.
Length 25.5 m, *width* 4.5 m, *depth* 1.95 m.
Excavation. *c* 70%. Topsoil machine-stripped. Segment excavated in 5 transverse sections: U13A–B in SE butt, U12, U11 and U10A–B in centre, U9A–D in NW. U13, U10 and U9 excavated in quadrants, U11 and U12 in longitudinal halves. Baulks left standing.

Phase I. Light tan silt with chalk lumps (L6).

Animal bone and/or antler
L6, on floor of cavity in SE butt: *red deer* large antler pick with skull fragment still attached (ST81 1880), two worn antler crown 'rakes' (ST80 1878, 1881)
L6; also in SE butt: *red deer* antler pick (ST80 1879), 2 further picks found together (ST80 1882, 1886 – latter lying on ditch floor)
L6: near centre: *dog* mandible; *red deer* antler 2 picks (ST80 1972, 2013) rake (ST80 1350), 2 tines (ST80 1946, 2181), fragment (ST80 2085); *cattle* tooth

Lithics
L6, concentrated in SE butt: 33 flakes, core, core fragment, hammerstone

^{14}C
L6: *3635–3560 cal BC (84%) or 3540–3515 cal BC (11%)* (4740±19 BP; UB-4153) on antler rake ST80 1881; *3640–3620 cal BC (21%) or 3610–3520 cal BC (74%)* (4772±19 BP; UB-4151) on antler pick ST80 1882; *3645–3620 cal BC (23%) or 3600–3525 cal BC (72%)*, mean of 4792±20 BP (UB-4152), 4735±60 BP (OxA-7042) and 4720±65 BP (OxA-7043), all on antler pick ST80 1886

Phase II. Light tan silt with chalk lumps and pebbles, unevenly present, sometimes interleaved with lower part of rubble fills (L5).

Animal bone and/or antler
L5: *

Lithics
L5 concentrated in NW butt: 23 flakes, core

Phase III. Chalk rubble, vacuous towards base (L4E, L4B, L4) and interleaved with silts (L4D, L4A), smaller, more rounded and in a silty matrix towards the top (L3C, L3A, L3B). Knapping deposit 2.10 m × 0.90 m (L4C) near base of sequence at hiatus between rubble layers L4E and L4B in SE butt.

Animal bone and/or antler
L4C: *red deer* antler tine (ST80 2136), *cattle* phalanx, both forming part of knapping deposit in SE butt
L4B: *dog* mandible in SE butt; *red deer* antler tine in NW butt; *cattle* tooth
L4 in NW butt: *red deer* 2 antler picks (ST80 1125, 1473), mid beam cylinder, with battered surface, badly preserved (ST80 1536); antler tine, used (ST80 1123)
L4: *red deer* antler tine, worn (ST80 1711); *pig* ilium; *cattle* humerus, tibia; *caprine* 2 vertebrae
L3C: *caprine* metacarpal, metatarsal, carpal
L3B: *cattle* scapula, radius-ulna, phalanx, carpal, horncore; *caprine* femur, tooth
L3A: *pig* metacarpal, tooth; *cattle* 3 vertebrae, skull fragment

Pottery
L4B: 16 sherds/32 g Neolithic Bowl pottery
L4: 10 sherds/36 g Neolithic Bowl pottery, including 7 sherds/23 g from a sandstone-tempered vessel in NW butt
L3B: 7 sherds/41 g Neolithic Bowl pottery
L3A: 26 sherds/66 g Neolithic Bowl pottery, including 2 sherds/18 g in sandstone-tempered fabric

Lithics
L4C: 288 flakes, 14 cores, 12 flaked lumps, 2 hammerstones
L4B: 3 flakes
L4, concentrated in NW butt: 44 flakes, core, flaked lump, 1 misc retouched
L3B: 12 flakes
L3A: 24 flakes, serrated flake, 1 misc retouched

Unworked burnt flint
L3A: 107 g in NW butt

Charcoal
L4: *

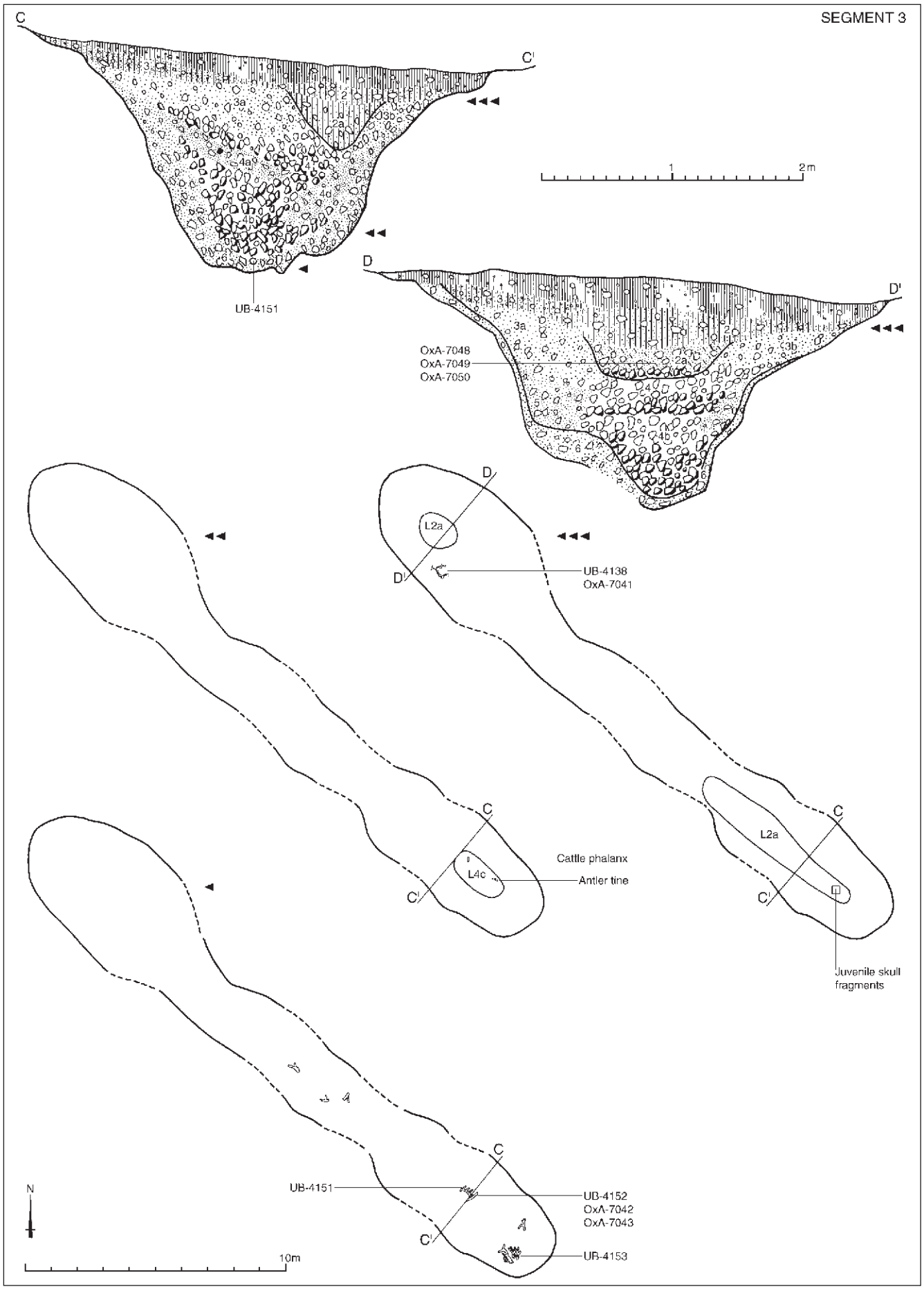

Fig 3.85 Stepleton enclosure. Segment 3.

Fig 3.86 Stepleton enclosure. Segment 3. Antler implements in south-east butt.

Phase IV. Recut in SE butt, >6.0 m × 1.30 m × 0.40 m deep, filled with loose brown-grey silty loam with chalk lumps and redeposited calcium carbonate (L2A in U13 and U12). Pit cut in NW butt, 1.60 m × 1.15 m × 0.30 m deep, filled with silt and vacuous rubble with much burnt material (L2A in U9). The top of L3A+L3B probably formed a stable, almost flat, surface, from which pits containing L2A may have been dug.

Human remains

L2A in SE butt: over 70 immature parietal fragments and 1 ?mandible fragment, in 2 clusters *c* 0.07 m apart in top of layer (ST80 1310)

Animal bone and/or antler

L3B/L2 interface in NW butt: articulated dog skeleton with a few bones missing (ST80 1156)

L2A in SE butt: *dog* maxilla; *pig* femur, teeth; *red deer* metacarpal; *cattle* radius, 2 femora, tibia; metatarsal, teeth, 2 mandibles, skull fragment; *caprine* tooth; *small bird* longbone

L2A in NW butt: *red deer* antler fragments; *cattle* radius

Pottery

L2A in SE butt: 23 sherds/74 g Neolithic Bowl pottery

Lithics

L2A in SE butt: 24 flakes

L2A in NW butt: flake

Charcoal

L2A in NW butt: Maloideae, *Quercus* sp, *Corylus avellana*, *Fraxinus excelsior* (ST80 C32, C41)

^{14}C

L3B/L2 interface in NW butt: *3500–3430 cal BC*, mean of 4648±21 BP (UB-4138) and 4485±60 BP (OxA-7041), both on articulated dog skeleton ST80 1156

L2A in NW butt: *3580–3490 cal BC (46%) or 3470–3380 cal BC (49%)* (4730±40 BP; OxA-7050) on single fragment of Maloideae charcoal from ST80 C32; *3580–3490 cal BC (50%) or 3470–3380 cal BC (45%)* (4740±45 BP; OxA-7049) and *3530–3390 cal BC* (4670±40 BP; OxA-7048), on single fragments of Maloideae charcoal from ST80 C41

Phase V. Thin, discontinuous brown humic silt with chalk pebbles and peagrit in both butts, derived from interior (L3 in U9, U12, U13). Relation to L2A not ascertainable.

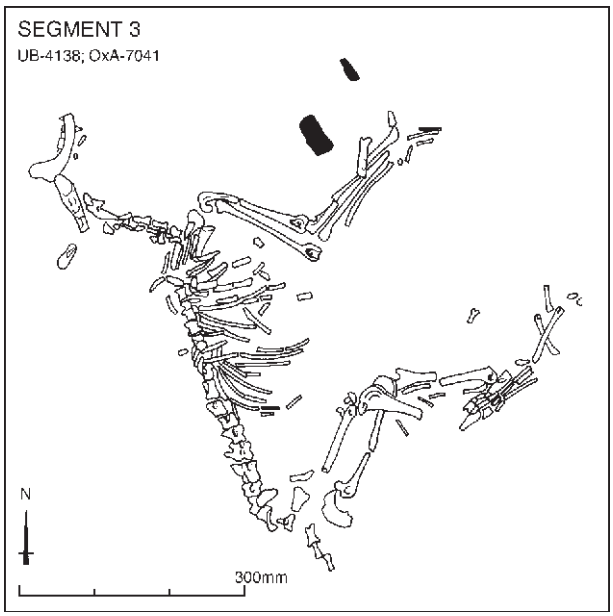

Fig 3.87 Stepleton enclosure. Segment 3. Articulated dog skeleton at interface of L3B and L2 in north-west butt.

Animal bone and/or antler
L3 in SE butt: *cattle* tooth; *pig* radius; *caprine* metatarsal

Pottery
L3 in SE butt: 1 sherd/5 g Neolithic Bowl pottery

Lithics
L3 in SE butt: 8 flakes, 3 edge-trimmed flakes
L3 in NW butt: 2 flakes, 1 misc retouched

Phase VI. Grey/brown silty loam with chalk lumps and redeposited calcium carbonate (L2). Finds fairly evenly distributed through segment

Animal bone and/or antler
L2: *dog* tibia, patella, ilium, ischium, maxilla (all close together in NW butt, and almost certainly derived from underlying skeleton ST80 1156); *pig* scapula, 4 humeri, ulna, 2 femora, tibia, ilium; teeth, mandible, maxilla; *roe deer* antler; *red deer* femur, antler fragments; *cattle* 2 scapulae, 2 humeri, radius-ulna, radius, 2 femora, 2 tibiae, calcaneum, teeth, 3 mandible fragments phalanx, 2 vertebrae, horncore; *caprine* 2 humeri, 3 radii, teeth

Pottery
L2: 85 sherds/264 g Neolithic Bowl pottery

Lithics
L2: 111 flakes, 2 cores, 2 serrated flakes, 3 edge-trimmed flakes, 2 scrapers, 2 misc retouched

Unworked burnt flint
L2: 87 g

Charcoal
L2: *Corylus avellana*

Phase VIII/a. Dark brown humic loam with peagrit, small, rounded chalk lumps and pebbles (L1), sometimes underlain in centre of segment by thin brown humic silt with chalk pebbles and peagrit (L3 in U11). Late Bronze/early Iron Age pottery in L1 suggests that some of the animal bone may also be of this date.

Human remains
L1: subadult incisor (ST80 301), adult skull fragment (ST80 2134)

Animal bone and/or antler
L1: *pig* scapula, radius, femur, tibia, ilium, metacarpal, 2 tarsals, teeth; mandible; *roe deer* radius; *red deer* antler pick (ST80 1351), fragments probably from a second (ST80 2250), all in NW butt; *cattle* 2 scapulae, 4 humeri, acetabulum, femur, 4 tibiae, pubis, 2 metacarpals, 3 metatarsals, astragalus, teeth, mandible fragment, 3 phalanges, vertebra, skull fragment, 3 ribs; *caprine* humerus, 3 radii, ulna, acetabulum, femur, tibia, ischium, metacarpal, teeth
L1A: *cattle* tooth; *caprine* tooth

Pottery
L1: 38 sherds/108 g Neolithic Bowl pottery, 2 sherds/22 g early Bronze Age, 5 sherds/48 g middle Bronze Age, 53 sherds/427 g late Bronze/early Iron Age including P177 and P179, 5 sherds/5 g Roman, 2 sherds/2 g indeterminate

Lithics
L3: flake (U11)
L1: 219 flakes (5 burnt), 2 cores, serrated flake, 4 edge-trimmed flakes, 4 scrapers, 4 misc retouched, heathstone quern or rubber fragment

Other artefacts
L1: 2 fragments/ 5 g amorphous fired clay

Charcoal
L1: Maloideae

Charred seeds and/or nutshell
L1: charred hazelnut shell

Upper levels and unstratified

Animal bone and/or antler
U/S: *pig* humerus, teeth; *cattle* tibia, 4 phalanges

Pottery
U/S: 1 sherd/4 g Roman

Lithics
U/S: 2 flakes

Segment 4 (Figs 3.88–3.89)

Original notation. ST80 ditch 1 (or D1) segment 3.
Form. Two sub-segments, separated by ridge; deeper and wider to S. Base flat in S, rounded to V-sectioned elsewhere.
Length 13 m, *width* 2.8 m, *depth* 1.2 m.
Excavation. *c* 70%. Topsoil machine-stripped. Segment excavated in 3 transverse sections: U8 in S butt, U7 in centre, U6 in N butt. Each removed in successive longitudinal halves. Sides and base angular and blocky. Baulks left unexcavated.

Phase I. Fine medium to light tan silt with chalk lumps (L6).

Animal bone and/or antler
L6: *red deer* antler pick on base of N butt of S sub-segment, with antler rake on top of it (both ST80 799)

Lithics
L6: 3 flakes (1 burnt)

Phase II. Fine silt with chalk pebbles (L5).

Lithics
L5: flake

Phase III. Chalk rubble with some silt, vacuous towards base (L4), interleaved with and grading upwards into clayey silts with chalk lumps and pebbles (L3A, L3B). L4 absent in shallow area of ridge between two sub-segments.

Animal bone and/or antler
L4: *red deer* antler tine and beam fragments (ST80 1164), antler base with cut-marked skull fragment attached (ST80 1459); *cattle* tibia

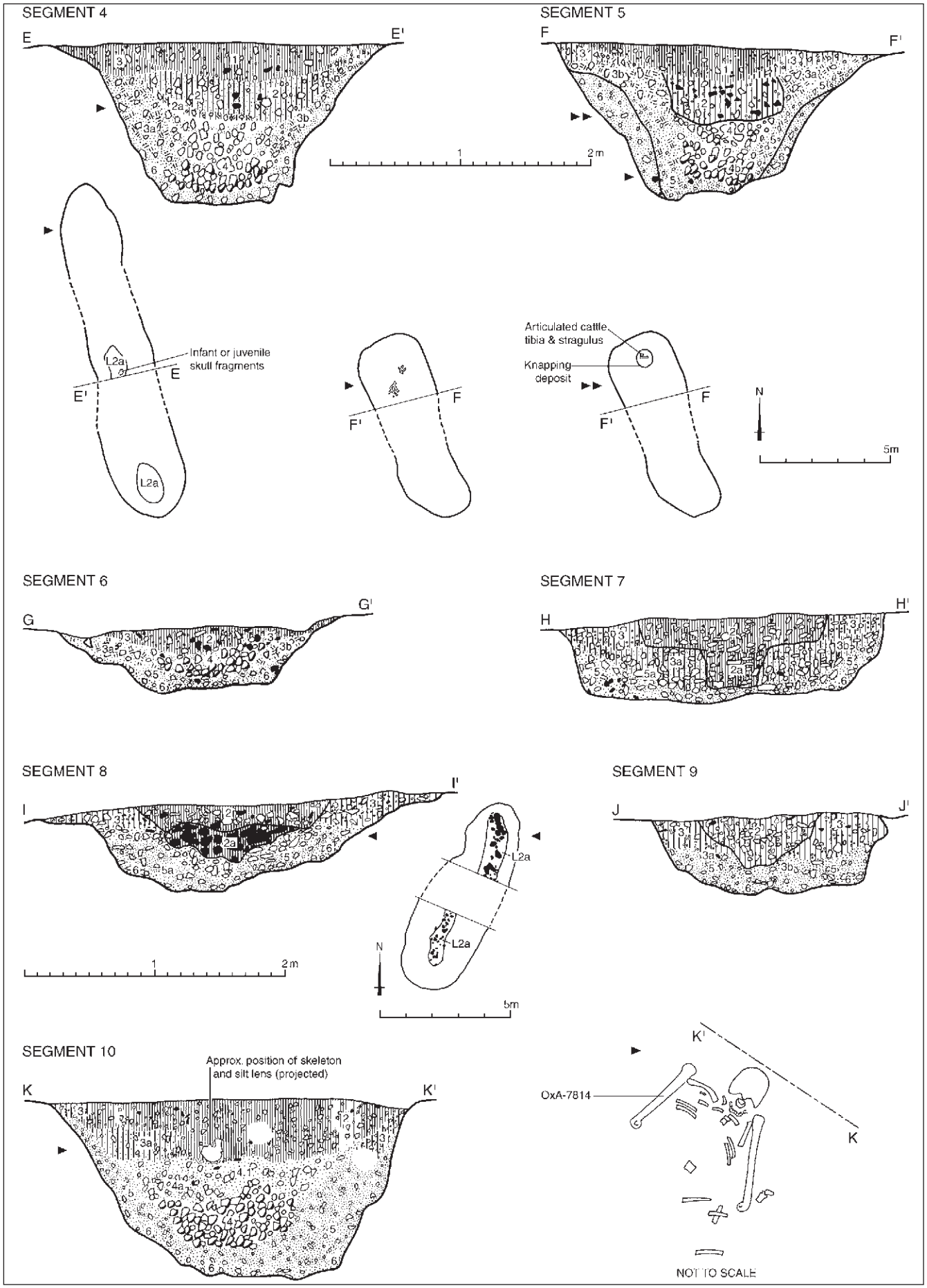

Fig 3.88 Stepleton enclosure. Segments 4 to 10. The voids are rabbit burrows.

Fig 3.89 Stepleton enclosure. Segment 4. Antler implements on base, near centre.

L3B: *cattle* 2 tibiae, mandible, rib
L3A: *pig* humerus, calcaneum; *red deer* humerus; *cattle* tibia, skull fragment; *rodent* mandible

Pottery
L3B: 12 sherds/18 g Neolithic Bowl pottery
L3A: 10 sherds/53 g Neolithic Bowl pottery

Lithics
L4: 11 flakes, 2 sarsen quern or rubber fragments
L3B: 8 flakes, scraper
L3A: flake

Charcoal
L4: *
L3A: *

Phase IV. (1) recut or localised deposit in S butt (U8), 1.50 m × 1.00 m, filled with or comprising dark brown/black humic loam with charcoal flecks and some chalk (L2A); not extending into section, depth not recorded, although site notebook reads '2A is going down very deep and is possibly a postpipe'. (2) lens of slightly clayey medium brown loam with chalk lumps, >1.20 m × 0.70 m × 0.06 m deep (L2A), derived from interior, between L4 and L2 in centre of segment (U7).

Human remains
L2A in centre of segment: older infant/young juvenile cranial vault fragments and long bone fragment found in compact area 0.15 m × 0.12 m, as if skull deposited intact and subsequently crushed (ST80 647–8)

Animal bone and/or antler
L2A in S butt: *roe deer* tibia; *red deer* tibia, tarsal, antler beam fragment with part of skull attached (ST80 1459); chopped and worn antler tine; *cattle* scapula, phalanx, 2 vertebrae; *caprine* tibia, fibula, astragalus, tooth, phalanx
L2A in centre of segment: *pig* tooth, 2 phalanges

Pottery
L2A in S butt: 36 sherds/153 g Neolithic Bowl pottery, including P21 and P147. Most of remainder from single vessel in fabric group 6

Lithics
L2Ain S butt: flake
L2A in centre of segment: 3 flakes, core

Unworked burnt flint
L2A in S butt: *
L2A in centre of segment: 38 g

Charcoal
L2A in S butt: *cf Prunus* sp

Phase IV/phase VI interface. In S butt, very slight lens of fine medium brown loam between L2A and L2, not extending into section.

Phase VI. Grey/brown silty loam with chalk lumps and redeposited calcium carbonate, along centre of segment, possibly in recut (L2).

Human remains
L2: Adult R femur shaft fragments (ST80 852, in S butt)

Animal bone and/or antler
L2, heavily concentrated in S butt: *dog* scapula, tibia; *pig* 2 scapulae, 3 humeri, acetabulum, femur, 2 ilia, 3 metacarpals, 2 metatarsals, teeth, 2 mandibles, maxilla, 3 phalanges, vertebra, skull fragment; *roe deer* metatarsal; *red deer* 2 tibiae, phalanx; 2 antler tines, antler pick, grooved and splintered (ST80 1132); *cattle* 3 scapulae, humerus, 6 radii, acetabulum, 2 femora, tibia, ilium, ischium, pubis, metacarpal, 2 astragali, calcaneum, teeth, at least 5 mandibles (1 dog-gnawed), 6 phalanges, 15 vertebrae, skull fragment, 2 horncores, rib; *caprine* tibia, metatarsal, teeth, mandible, 2 phalanges; *beaver* ulna

Pottery
L2: 82 sherds/188 g Neolithic Bowl pottery

Lithics
L2: 28 flakes (1 edge-glossed), 3 edge-trimmed flakes, scraper, 1 misc retouched

Unworked burnt flint
L2: 87 g

Other artefacts
L2: bone point

Charcoal
L2: *

Phase VIII/a. Dark brown humic loam with peagrit and chalk pebbles (L3), entering ditch from both edges, overlain by very dark humic loam with peagrit and chalk pebbles (L1).

Human remains
L1: Older infant/young juvenile incisor (ST80 258)

Animal bone and/or antler
L3, all in centre of segment: *pig* humerus, 2 ilia, teeth, phalanx, vertebra; *red deer* antler tine, worn; *cattle* 2 scapulae, ilium, metacarpal, metatarsal, teeth, 2 phalanges
L1: *dog* tooth; *pig* scapula, humerus, radius, metacarpal, tooth; *red deer* radius, 4 metatarsals, *cattle* scapula, 3 humeri, 5 radii, pubis, 2 metacarpals, metatarsal, 2 calcanea, teeth, 3 vertebrae, horncore; *caprine* 3 tibiae, astragalus

Pottery
L3: 13 sherds/57 g Neolithic Bowl pottery
L1: 82 sherds/231 g Neolithic Bowl pottery including P50, 1 sherd/3 g indeterminate sand-tempered

Lithics
L3: 9 flakes
L1: 121 flakes (1 burnt), 2 edge-trimmed flakes, 3 scrapers, 1 misc retouched

Unworked burnt flint
L3: 5 g

Charcoal
L1: *

Segment 5 (Fig 3.88)

Original notation. ST80 ditch 1 (or D1) segment 2.
Form. Slightly expanded ends, flat base, shelving sides.
Length 7.25 m, *width* 2.7 m, *depth* 1.15 m.
Excavation. *c* 70%. Topsoil machine-stripped. Segment excavated in 2 transverse sections: U5 in S butt, U4 in N, each removed in successive longitudinal halves. Central baulk left unexcavated.

Phase I. Fine light grey silt with chalk pebbles and lumps (L6)

Animal bone and/or antler
L6: *

Pottery
L6: 5 sherds/3 g Neolithic Bowl pottery

Lithics
L6: 23 flakes, core fragment

Phase II. Grey clayey silt with chalk pebbles (L5)

Animal bone and/or antler
L5, all in N butt: *red deer* 3 antler picks (ST80 1082–3 lying together identically aligned, 1081 closer to butt)

Lithics
L5: 24 flakes

Phase III. Vacuous chalk rubble with some silt (L4B, L4), overlain by grey silty clay with chalk lumps (L3A, L3B).

Animal bone and/or antler
L4B, also in N butt: *red deer* antler pick (ST80 800)
L4: *pig* tibia, *red deer* tibia, vertebra, antler tine, modified; *caprine* ilium
Surface of L4 in N butt: *cattle* articulated tibia and astragalus (ST80 811) within flake concentration ST80 653
L3A: *

Pottery
L3A: 2 sherds/4 g Neolithic Bowl pottery

Lithics
L4, almost all in N butt: 106 flakes, edge-trimmed flake
Surface of L4 in N butt: 79 flakes (ST80 653) in area 0.60 m in diameter, with articulated cattle tibia and astragalus
L3B: 9 flakes
L3A: 11 flakes

Phase V. Grey-brown clayey loam with peagrit and chalk pebbles (L3 from interior in U5).

Phase VI. Medium brown humic loam chalk pebbles, peagrit, redeposited calcium carbonate and flint nodules, the last especially in N (L2), possibly in recut.

Animal bone and/or antler
L2: *pig* humerus, tooth, mandible; *cattle* tibia, teeth, phalanx

Pottery
L2: 6 sherds/46 g Neolithic Bowl pottery

Lithics
L2: 33 flakes

Phase VIII/a. Grey-brown clayey loam with peagrit and chalk pebbles (L3 except at inner edge of U5) overlain by dark brown/black humic loam with peagrit and small chalk pebbles (L1)

Animal bone and/or antler
L3: *pig* tibia; *red deer* tibia
L1: *pig* 2 radii; *red deer* 2 metacarpals; *cattle* 5 humeri, tibia, ilium, metacarpal, teeth, at least one mandible; *caprine* tibia; *rabbit* humerus, tibia; *hare* acetabulum

Pottery
L3: 3 sherds/14 g Neolithic Bowl pottery
L1: 114 sherds/551 g Neolithic Bowl pottery including P78, P102, 1 sherd/1 g Roman, 4 sherds/1 g indeterminate

Lithics
L3: 36 flakes
L1: 175 flakes, serrated flake, edge-trimmed flake, 2 scrapers, 2 misc retouched

Segment 6 (Fig 3.88)

Original notation. ST80 ditch 1 (or D1) segment 1 U3, U2, UB.
Form. Two sub-segments separated by ridge near NE butt. NE sub-segment shallow, 1.80 m 'tail' to SW even shallower.
Length 9.05 m, *width* 2 m, *depth* 0.6 m.
Excavation. *c* 70%. Topsoil machine-stripped. SW butt (U3) and area of ridge between 2 sub-segments (U2) excavated in successive longitudinal halves; NE butt (UB) excavated in one operation. Central baulk left unexcavated.

Phase I. Fine tan silt with chalk lumps (L6).

Lithics
L6: 12 flakes

Phase II. Tan/brown silt with chalk lumps (L5).

Animal bone and/or antler
L5: *

Lithics

L5: 10 flakes

Phase III. Vacuous chalk rubble with some silt and redeposited calcium carbonate (L4), grading into slightly clayey grey-tan silt with chalk lumps (L3A, L3B)

Animal bone and/or antler
L4: *
L3B: *
L3A: *

Pottery
L4: 1 sherd/8 g Neolithic Bowl pottery (P32)

Lithics
L4: 29 flakes, core, edge-trimmed flake
L3B: 8 flakes
L3A: 8 flakes

Phase V. dark brown humic loam with dense peagrit and some chalk lumps (L3).

Animal bone and/or antler
L3: *cattle* metacarpal

Pottery
L3: 2 sherds/2 g Neolithic Bowl pottery

Lithics
L3: 9 flakes

Phase VI. Dark brown/black humic loam with chalk lumps, some peagrit and redeposited calcium carbonate (L2).

Animal bone and/or antler
L2: *red deer* metacarpal; *cattle* 2 ribs

Pottery
L2: 8 sherds/ 51 g Neolithic Bowl pottery

Lithics
L2: 110 flakes, core, 2 scrapers, piercer

Phase VIII/a. Dark brown humic loam with chalk lumps and peagrit (L1).

Animal bone and/or antler
L1: *cattle* tooth, *caprine* tooth

Pottery
L1: 33 sherds/63 g Neolithic Bowl pottery, 4 sherds/4 g late Bronze/early Iron Age

Some finds from L1 may have come from segment 6 or the SW butt of segment 7. They are:

Pottery
L1: 3 crumbs/1 g indeterminate

Lithics
L1: 145 flakes, 2 serrated flakes, edge-trimmed flake, piercer, leaf arrowhead, 1 misc retouched

Unworked burnt flint
L1: 222 g

Charcoal
L1: *

Upper levels and unstratified

Animal bone and/or antler
U/S: *cattle* ilium

***Segment** 7* (Fig 3.88)

Original notation. ST80 ditch 1 (or D1) segment 1 U1, UA; ST81 4A ditch 1 (or D1) segment 1.
Form. Two sub-segments on different alignments, meeting at an angle.
Length 8.8 m, *width* 2.6 m, *depth* 0.65 m.
Excavation. *c* 80%. Topsoil machine-stripped. In 1980, SW butt (U1) excavated in successive longitudinal halves; exposed length of ditch between U1 and edge of excavated area removed as single transverse section (UA). In 1981 NE butt (U2) and centre of segment (U1) removed as transverse sections, leaving central baulk and wedge-shaped area between areas 3C and 4A unexcavated.

Phase I. Fine silt with chalk lumps (L6), where abrupt edge at outer side of NE sub-segment suggests recutting, as may absence from at least some of SW sub-segment.

Animal bone and/or antler
L6: *caprine* mandible

Lithics
L6: 5 flakes

Unworked burnt flint
L6: 11 g

Phase II. Brown silt with chalk lumps (L5), greyer at inner edge (L5A).

Animal bone and/or antler
L5A: *
L5: *cattle* tooth

Lithics
L5A: 7 flakes
L5: 30 flakes, scraper

Phase III. Vacuous chalk rubble (L4, absent in NE butt), grading into grey-brown silts with chalk lumps, clayey in SW, loose and more humic in NE (L3A, L3B).

Human remains
L3A: 3 joining adult fibula fragments, in NE butt (ST81 1288)

Animal bone and/or antler
L4: *pig* humerus
L3B: *
L3A: *cattle* tooth (in centre); *caprine* radius-ulna, tibia, lateral malledus, tarsal, vertebra (all in NE butt)

Pottery
L3B: 3 sherds/19 g Neolithic Bowl pottery
L3A: 3 sherds/9 g Neolithic Bowl pottery

Lithics
L4, all in SW butt: 69 flakes, 3 cores
L3B: 26 flakes, scraper
L3A: 24 flakes, edge-trimmed flake, hammerstone

Phase IV

Phase IV/1: brown loam with peagrit and small chalk lumps (L3 in NE sub-segment).

Pottery
L3 in NE sub-segment: 28 sherds/107 g Neolithic Bowl pottery

Lithics
L3 in NE sub-segment: 19 flakes, crumb of heathstone

Phase IV: steep-sided recut in N sub-segment only, extending into unexcavated strip between areas 3C and 4A, up to 0.80 m wide and 0.25 m deep, narrower, deeper and steeper-sided towards NE butt, filled with dark brown/black humic loam with angular chalk lumps and, especially towards base, broken flint (L2A).

Animal bone and/or antler
L2A: *pig* radius, teeth; *cattle* 2 calcanea, metatarsal, carpal, teeth; *caprine* tibia

Pottery
L2A: 91 sherds/470 g Neolithic Bowl pottery, some with internal sooty residue

Lithics
L2A: 90 flakes (1 edge-glossed), 3 serrated flakes, 2 edge-trimmed flakes, scraper, crumbs of heathstone

Charcoal
L2A: Maloideae

Phase VI. Dark brown/black humic loam with dense angular chalk lumps and broken flint (L2), apparently filling a steep-sided recut in NE butt, but not in most of segment. Inclusions rather smaller than in L2A, but no sharp distinction between the two. Finds concentrated in NE sub-segment, especially in NE butt (4A U2).

Human remains
L2: 7 adult ?male skull fragments, most joining, charred (ST81 875, found together in NE butt)

Animal bone and/or antler
L2: *pig* metacarpal, teeth; *cattle* radius, ulna, ischium, metatarsal, calcaneum, teeth, phalanx, carpal, vertebra; *caprine* radius, ulna, tibia, tooth

Pottery
L2: 318 sherds/1286 g Neolithic Bowl pottery, including P36 (at least 7 sherds/59 g, scattered in area 1.50 m × 1 m in N butt) P100, P109, and some with internal sooty deposits, especially 2 groups of sherds from the same flint-tempered vessel, found 0.40 m apart, near the S limit of area 4A (ST81 1228, 1233); 1 rim sherd/14 g Fengate Ware in fresh condition (P159), 1 body sherd/43 g late Bronze/early Iron age, abraded

Lithics
L2: 174 flakes (3 burnt, 4 edge-glossed), 2 serrated flakes, edge-trimmed flake, scraper, piercer, 4 fragments and several crumbs of heathstone

Charcoal
L2: Maloideae, *cf Betula* sp

^{14}C
3430–3370 cal BC , mean of 4685±35 BP (OxA-7844) on sooty residue from sherds ST81 1228 and 4845±50 BP (OxA-7926) on sooty residue from sherds ST81 1233

Phase VIII/a. Dark-brown humic loam with chalk lumps and peagrit (L1).

Human remains
L1: fragments of adult, ?male L tibia (ST80 383), in SW butt

Animal bone and/or antler
L1: *cattle* metacarpal, astragalus, teeth

Pottery
L1: 151 sherds/534 g Neolithic Bowl pottery including part of P109, 10 sherds/21 g late Bronze/early Iron Age

Lithics
L1: 11 flakes, serrated flake, edge-trimmed flake, 1 misc retouched, heathstone fragments and crumbs

Segment 8 (Figs 3.88, 3.109)

Original notation. ST81 4A Ditch 1 (or D1) segment 2.
Form. Rounded, fairly deep SW end, constricted, shallower NE end. Shelving sides, undulating base.
Length 7.7 m, *width* 2.9 m, *depth* 0.75 m.
Excavation. *c* 75%. Each butt excavated in plan, central baulk left unexcavated.

Phase I. Cream silt with some chalk lumps (L6).

Phase II. Light grey silt with chalk lumps from interior (L5A), grey-tan silt with chalk lumps from exterior (L5).

Animal bone and/or antler
L5: *cattle* metacarpal

Pottery
L5: 3 sherds/15 g Neolithic Bowl pottery

Lithics
L5: 24 flakes
L5A: 2 flakes

Phase III. Vacuous chalk rubble (L4, in SW only) grading into grey-brown silts with chalk lumps (L3A, L3B). Concentration of struck flint and other finds in L3A in SW (U3), >2.40 m × 0.50 m, with 2 main clusters.

Animal bone and/or antler
L3B: *pig* calcaneum; *cattle* radius, metacarpal
L3A: *pig* tooth; *cattle* metacarpal, rib

Pottery
L3B: 5 sherds/19 g Neolithic Bowl pottery, almost all in SW (U3)
L3A: 36 sherds/89 g Neolithic Bowl pottery, including 2 sherds probably from P48, most of which came from L2A

Lithics
L4: 7 flakes
L3B: 34 flakes
L3A In NE (U4): 26 flakes
L3A in SW (U3): 646 flakes, 3 cores, 2 flaked lumps, edge-trimmed flake, piercer, flake from ground implement

Unworked burnt flint
L3B: 11 g

Molluscs
L3A, either from area of flint concentration or from L3A in U3 of segment 11: predominantly shade-loving

Phase IV. Recut of irregular V-profile and sinuous plan, 6.30 m × 0.80 m, stopping slightly short of butts, filled with dark brown-black humic soil with some chalk and abundant, dense, large flint nodules (L2A). Finds of all kinds heavily concentrated in SW (U3), probably derived from underlying L3A.

Human remains
L2A: adult parietal fragment (ST81 2399)

Animal bone and/or antler
L2A: *pig* femur, astragalus, teeth; *cattle* acetabulum, 2 metacarpals, tooth, 3 phalanges

Pottery
L2A: 223 sherds/822 g Neolithic Bowl pottery, including most of P48, P103, and some sherds with internal sooty residue

Lithics
L2A: 180 flakes, core, core fragment, serrated flake, 3 edge-trimmed flakes, 2 scrapers

Unworked burnt flint
L2A: 20 g

Phase V. Mid brown loam with peagrit and chalk lumps (L3).

Pottery
L3: 1 sherds/13 g Neolithic Bowl pottery

Lithics
L3: 2 flakes

Phase VI. Recut up to 1.80 m wide, truncating L2A, filled with dark brown/black humic loam with chalk lumps and flint (L2), finds of all kinds heavily concentrated in SW (U3).

Human remains
L2: adult skull fragment (ST81 874), mature adult proximal fragments of R ulna and radius, R metacarpal, thoracic vertebra, (ST81 434), possibly from same individual as articulated upper skeleton ST81 3188 in segment 10

Animal bone and/or antler
L2: *pig* ulna, 2 femora, tibia, ischium, 2 metacarpals, calcaneum, teeth, 2 mandibles; *roe deer* radius; *cattle* scapula, 2 tibia, ilium, metacarpal, tarsal, teeth, mandible, horncore; *caprine* mandible, phalanx

Pottery
L2: 633 sherds/2533 g Neolithic Bowl pottery, including, P107, P154, 1 sherd of P36, most of which was found in L2 in segment 7, and 18 sherds/72 g from a single vessel with a simple rounded rim and solid oval lug in a flint-tempered fabric, found together (ST81 627)

Lithics
L2: 123 flakes (3 burnt), 6 serrated flakes, 2 edge-trimmed flakes, scraper, piercer, 1 misc retouched

Unworked burnt flint
L2: 57 g

Charcoal
L2: *

Phase VIII/a. Mid to dark brown loam with chalk lumps and peagrit (L1).

Human remains
L1: adult skull fragment (ST81 442)

Animal bone and/or antler
L1: *pig* scapula, 2 humeri, radius, ulna, 2 femora, 2 ilia, ischium, astragalus, teeth, 3 maxillae, skull fragment; *cattle* 3 humeri, femur, ischium, metacarpal, astragalus, teeth, 2 mandibles, 2 phalanges, carpal, skull fragment, rib; *caprine* femur, tibia, teeth, maxilla, 4 phalanges

Pottery
L1: 589 sherds/1999 g Neolithic Bowl pottery including P107 and some sherds with sooty internal deposit, 5 sherds/8g in grog-tempered early Bronze Age fabric

Lithics
L1: 90 flakes (1 edge-glossed), 2 edge-trimmed flakes, 2 misc retouched, 2 fragments and a crumb of heathstone

Charcoal
L1: *

Charred seeds and/or nutshell
L1: charred hazelnut shell

Segment 9 (Fig 3.88, 3.109)

Original notation. ST81 4A Ditch1 (or D1) segment 3, U25, U27; 4B U26.
Form. Central constriction, rounded to undulating base, shelving sides, very shallow NE butt (*c* 0.30 m).
Length 5.6 m, *width* 2 m, depth 0.60 m.
Excavation. c 55%. SW butt (4A U27) and centre (4A (U25) excavated in plan leaving central baulk unexcavated. NE butt (4B U26) excavated in plan, leaving area under hedge unexcavated.

Phase I. Cream silt with chalk lumps (L6).

Phase II. Light grey-brown silt with a few chalk pebbles (L5).

Animal bone and/or antler
L5: *red deer* antler tine (U27); *cattle* phalanx

Lithics
L5: 19 flakes (all in U25)

Phase III. Grey-brown silt with chalk lumps and some flint (L3B, L3A).

Animal bone and/or antler
L3B: *cattle* radius
L3A: *pig* humerus

Pottery
L3B: 8 sherds/2 g Neolithic Bowl pottery

Lithics
L3B: 3 flakes
L3A: 2 flakes

Phase V. Medium-brown loam with chalk pebbles and some peagrit (L3). It was realised during section drawing that a large part of L3 in U27 and U25 had been removed by a later recut, filled with L2. Finds recorded from L3 may thus have come from it or from L2. The Beaker pottery is likely to have come from L2. L3 and L2 directly underlay current ploughsoil.

Animal bone and/or antler
L3 or L2, all in U27: *pig* scapula, humerus, radius, ulna, phalanx (scapula and longbones all L); *cattle* ulna, metacarpal, metatarsal, tooth, horncore

Pottery
L3 or L2: 45 sherds/183 g Neolithic Bowl pottery (mainly from U27); 41 sherds/125 g Beaker (mainly from U25) including fragments of at least 1 rusticated and cordoned vessel, with an inturned rim, and one incised vessel; 5 sherds/14 g indeterminate

Lithics
L3 or L2: 23 flakes

Charcoal
L3 or L2: *

Phase VII/a. Recut in U27 and U25, filled with brown loam with subangular chalk pebbles (L2), recognised only in section. See phase V for finds.

Segment 10 (Fig 3.88, 3.109)

Original notation. ST81 4B Ditch 1 (or D1) segment 1.
Form. Shelving sides and undulating base in SW, deeper, with steep sides and flat base in NE. Cut 4B F764.
Length 8.4 m, *width* 2.6 m, *depth* 1.35 m.
Excavation. c 75%. SW butt (U1) and NE butt (U2 both excavated in plan. Central baulk left unexcavated. Its partial collapse following heavy rain at end of excavation revealed articulated human upper skeleton ST81 3188.

Phase I. Cream silt with some chalk fragments (L6).

Animal bone and/or antler
L6: *red deer* antler tine (U2)

Phase II. Cream-beige silt with small chalk fragments (L5). Abrupt edge to L6 in U1 suggests that it may have been cut away.

Pottery
L5: 1 sherd/3 g Neolithic Bowl pottery

Phase III. Vacuous chalk rubble (L4) overlain by more compact, smaller chalk rubble in a cream silt matrix, incorporating one or two lenses of cream silt (L4A), overlain by thin skin of grey-brown silt with chalk fragments and redeposited calcium carbonate (L4.1), overlain at inner edge by further grey-brown silt loam with chalk fragments (L3A).

Phase IV. In 1.90 m-wide central baulk, revealed by its partial collapse, thin lens of silt and crushed chalk at interface of L4.1 and L2, possibly result of rabbit-burrowing above. Salvage conditions make it uncertain whether finds recovered together were associated.

Human remains
L4.1/L2 interface: articulated but disturbed (by rabbits?) upper body of mature adult female (ST81 3187, 3188), dry, sooted, and rodent-gnawed. Skull and humeri apparently lying on silt lens, other bones covered by it. Supine, head to NE.

Animal bone and/or antler
L4.1/L2 interface: *pig* scapula, humerus, metacarpal, mandible; *cattle* ilium

Pottery
L4.1/L2 interface: 25 sherds/189 g Neolithic Bowl pottery

Lithics
L4.1/L2 interface: *c* 50 flakes observed but not collected, 7 flakes Old Red Sandstone, sarsen quern fragment, heathstone fragment

^{14}C
3530–3390 cal BC (4680±30 BP; OxA-7814) on R humerus of articulated upper body ST81 3188

Phase V. Brown loam with chalk fragments and peagrit (L3), entering ditch at various stages during accumulation of L4.1–L2.

Animal bone and/or antler
L3: *

Phase VI. Dark brown-black humic loam with chalk fragments and a little flint, rabbit-disturbed (L2).

Human remains
L2: maxilla fragment from same mature adult female as articulated bones in central baulk (ST81 766, U1)

Animal bone and/or antler
L2: *pig* 4 humeri, radius, ulna, metacarpal, teeth, at least 2 mandibles, maxilla, 2 vertebrae; *cattle* 4 humeri, 4 radii, 2 femora, tibia, ilium, metatarsal, astragalus, carpal, teeth, mandible, 3 vertebrae; *caprine* scapula, radius, tibia, 2 metatarsals, astragalus, teeth, phalanx

Pottery
L2: 120 sherds/425 g Neolithic Bowl pottery, 7 sherds/5 g in grogged Beaker or early Bronze Age fabric, all in U1

Lithics
L2: 19 flakes, Old Red Sandstone quern or rubber fragment and 2 other fragments, Greensand flake

Other artefacts
L2: ground and polished point made on roe deer metacarpal (ST81 395)

Charcoal
L2: *

Phase VIII/a. Dark brown humic loam with peagrit, small, rounded chalk lumps and pebbles (L1), recorded as absent, with L2 directly underlying ploughsoil, although sherds are recorded from L1 in U1.

Pottery
L1: 11 sherds/4 g in grogged Beaker or early Bronze Age fabric

Segment 11 (Fig 3.90, 3.109)

Original notation. ST 81 4B Ditch 1 (or D1) segment 2 U3, U4A.
Form. Shelving sides, undulating to flat base.
Length 6.4 m, *width* 2.5 m, *depth* 0.68 m.
Excavation. *c* 85%. SW butt (U3) and NE butt (U4A) both excavated in plan. Central baulk left unexcavated. Originally seen as part of segment 12. U4 subdivided when causeway discovered.

Phase I. Cream silt with some chalk lumps (L6).

Animal bone and/or antler
L6: *red deer* antler tine and part of broken beam (U3)

Lithics
L6: 1 flake

Phase II. Cream-brown silt with small chalk fragments (L5).

Lithics
L5: flake

Phase III. Small amount of vacuous chalk rubble (L4 in U3), overlain by thin skin of grey-brown silt loam with chalk fragments and redeposited calcium carbonate (L4.1), overlain by further grey-brown silt loam with chalk fragments (L3A, L3B).

Animal bone and/or antler
L3B: *red deer* antler tine and beam fragments; *cattle* tibia, 2 vertebrae, skull fragments

Pottery
L3B: 34 sherds/203 g Neolithic Bowl pottery including P81
L3A: 6 sherds/11 g Neolithic Bowl pottery

Lithics
L3B: 4 flakes
L3A: 21 flakes

Phase V. Dark orange-brown loam with chalk fragments and peagrit (L3).

Phase VI. Dark brown-black humic loam with chalk fragments and a little flint (L2), in a recut in NE butt (U4A), not obviously so in SW.

Animal bone and/or antler
L2: *pig* humerus, acetabulum, ilium, femur; *red deer* 2 fragmentary antler picks (ST81 3189), *cattle* humerus, tibia, vertebra

Pottery
L2: 58 sherds/250 g Neolithic Bowl pottery, almost all in U3, including P107

Lithics
L2: 2 flakes, core, edge-trimmed flake

Phase VIII/a. Dark brown humic loam with peagrit, small, rounded chalk lumps and pebbles (L1).

Animal bone and/or antler
L1: *pig* tooth

Pottery
L1: 4 sherds/13 g Neolithic Bowl pottery

Lithics
L1: 5 flakes

Segment 12 (Fig 3.90)

Original notation. ST81 4B Ditch 1 (or D1) segment 2 U4, U5.
Form. Two sub-segments with central constriction, deepest in NE butt
Length 9.6 m, *width* 3.2 m, *depth* 0.75m.
Excavation. *c* 75%. SW butt (U4) and NE butt (U5) each excavated in plan. Central baulk left unexcavated.

Phase I. Slight hollow in deepest part of NE butt (U5), filled with dark brown-black silt loam with chalk fragments (L6A), 1.80 m × 1.00 m × 0.20 m deep. Otherwise cream silt with small chalk fragments (L6), with abrupt profile perhaps suggesting recutting.

Animal bone and/or antler
L6A: *red deer* antler base fragment
L6*: red deer* antler tine (in NE butt)

Charcoal
L6A: *

Charred seeds and/or nutshell
L6A: *Triticum dicoccum*, *Hordeum* sp

Molluscs
L6A: Predominantly shade-loving

Phase II. Cream-brown silt with small chalk fragments (L5).

Animal bone and/or antler
L5: *red deer* 2 antler picks, both worn, 1 subsequently used for groove-and-splinter, found together towards SW butt (ST81 1259, 1261), 3rd probable pick, also worn (ST81 1342), close to NE side of central baulk

Lithics
L5: 6 flakes

Phases III and IV. Chalk rubble in chalky silt near centre of segment (L4A), overlain by small amount of vacuous chalk rubble (L4), overlain in turn by dark grey-brown silt loam with chalk rubble and redeposited calcium carbonate (L4.1), overlain by similar but browner, more humic material (L3B, L3A). Pit 1.85 m × 1.30 m × 0.55 m deep, cut into L4 in NE butt, filled with dark grey-brown to black loam with some chalk fragments, redeposited calcium carbonate, and abundant small charcoal fragments (L2A), overlain by L3B and L3A. Bulk samples taken for flotation.

Human remains
L4: 22 young infant skull fragments, found together in NE butt, possibly cut-marked (ST81 1296)
L3A: adult ?male R femur shaft (ST81 1107)

Animal bone and/or antler
L4: *red deer* antler pick in SW butt (ST81 1095); *cattle* teeth
L2A: *pig* teeth and many fragments, some probably from same mandible; *cattle* tooth; *caprine* tooth
L3B: *pig* tooth; *red deer* antler fragments; *cattle* tooth, phalanx, vertebra; *caprine* radius, teeth

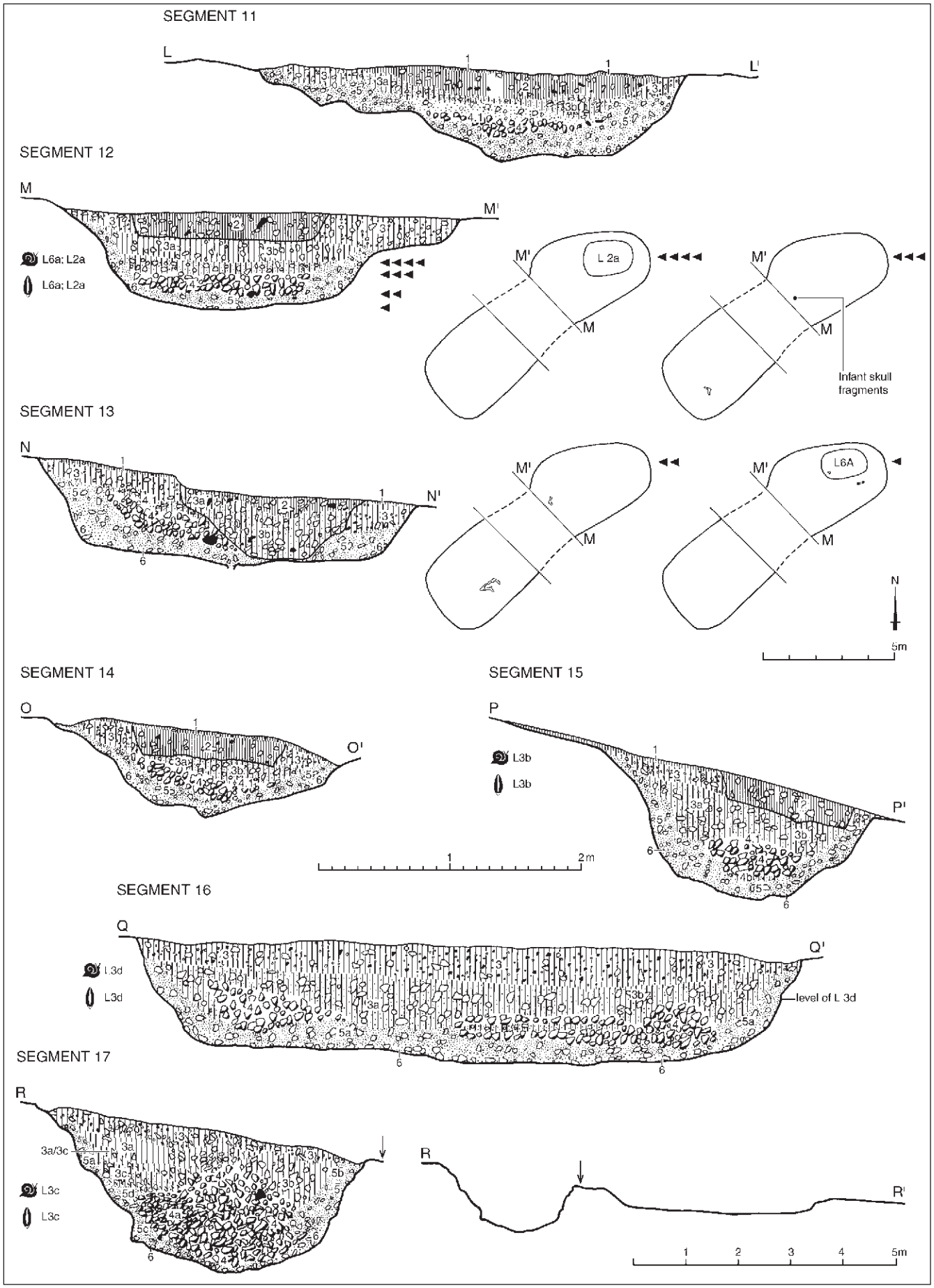

Fig 3.90 Stepleton enclosure. Segments 11 to 17.

L3A, all in NE butt: *pig* teeth, L and R mandibles, maxilla; *cattle* mandible

Pottery
L4: 2 sherds/9 g Neolithic Bowl pottery
L2A: 225 sherds/1111 g Neolithic Bowl pottery, including P69, P132
L3B: 80 sherds/303 g Neolithic Bowl pottery
L3A: 266 sherds/1175 g Neolithic Bowl pottery, including 102 sherds/384 g (all in SW butt) from a single vessel in fabric group 6 with inturned rim and solid oval lug, also part of P69

Lithics
L2A: 240 flakes (134 burnt), 16 serrated flakes, 9 edge-trimmed flakes, scraper
L3B: 14 flakes, serrated flake, edge-trimmed flake, scraper, single crumbs of Greensand and heathstone
L3A: 14 flakes, 2 serrated flakes, 4 edge-trimmed flakes

Unworked burnt flint
L2A: 1 g

Charcoal
L2A: *Corylus avellana*, *Quercus* sp, Maloideae, *Betula* sp, *Fraxinus excelsior*

Charred seeds and/or nutshell
L2A: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, cf *Hordeum* sp, indeterminate cereal, *Galium aparine*, <50 g charred hazelnut shell

Molluscs
L2A: predominantly shade-loving, but slightly less so than in L6A

Phase V. Brown loam with chalk fragments and peagrit (L3).

Animal bone and/or antler
L3: *

Pottery
L3: 3 sherds/19 g Neolithic Bowl pottery

Lithics
L3: 3 flakes

Phase VI. Recut up to 1.60 m wide and 0.20 m deep removing central strip of L3, scarcely penetrating into underlying layers, filled with dark brown-black humic loam with chalk fragments and a little flint (L2).

Animal bone and/or antler
L2: *roe deer* humerus; *cattle* teeth, mandible, premaxilla; *caprine* teeth

Pottery
L2: 163 sherds/618 g Neolithic Bowl pottery, including P76, P135, and at least 41 sherds/131 g from single vessel in fabric group 6, with inturned rim, all mainly in U4

Lithics
L2: 201 flakes (4 burnt, 2 edge-glossed), 8 serrated flakes, edge-trimmed flake, 2 scrapers, 10 heathstone quern fragments found together against NE side of central baulk (more possibly remaining within it)

Unworked burnt flint
L2: 69 g

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Animal bone and/or antler
L1: *

Pottery
L1: 7 sherds/38 g Neolithic Bowl pottery

Lithics
L1: 5 flakes, 2 serrated flakes, edge-trimmed flake

Segment 13 (Fig 3.90)

Original notation. ST81 4B ditch 1 (or D1) segment 3, U6, U7A.
Form. Ovoid plan, shelving sides, flat base, fissures in floor.
Length 3.6 m, *width* 2.35 m, *depth* 0.85 m.
Excavation. *c* 70%. E butt (U7A) and W butt (U6) excavated in plan. Central baulk left unexcavated. Finds concentrated in E (U7A) throughout sequence.

Phase I. Cream chalky silt with some chalk fragments (L6), abrupt inner edge may suggest recutting.

Animal bone and/or antler
L6: *red deer* antler crown 'rake' (ST81 1260) in W butt

Phase II. Cream-brown silt with chalk fragments (L5), abrupt inner edge may suggest recutting.

Phase III. Vacuous chalk rubble (L4) grading into grey-brown silt loam with dense smaller chalk rubble (L4.1).

Animal bone and/or antler
L4: * (U7A)

Pottery
L4: 1 sherd/1 g Neolithic Bowl pottery (U7A)

Phase V. Brown loam with chalk fragments and peagrit (L3).

Animal bone and/or antler
L3: * (U7A)

Lithics
L3: 5 flakes (U7A)

Phase VI. Recut at least 1.50 m wide and up to 0.50 m deep, reaching almost to segment floor in E. Lower fill of dark grey-brown silt loam with chalk fragments and redeposited calcium carbonate (L3B, L3A), upper fill of dark brown-black humic loam with chalk fragments and a little flint (L2).

Animal bone and/or antler
L3B: *pig* tooth; *cattle* radius, mandible
L2: *cattle* metacarpal

Pottery
L3B: 21 sherds/144 g Neolithic Bowl pottery
L2: 1 sherd/9 g Neolithic Bowl pottery

Lithics
L3B: 1 flake (burnt), Old Red sandstone quern or rubber fragment, heathstone quern or rubber fragment
L2: 4 flakes

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Segment 14 (Fig 3.90)

Original notation. ST81 4B ditch 1 (or D1) segment 4, U7, U8.
Form. Sinuous plan, at least 2 sub-segments. Floor of W half stepped down to deepest central area, fissure in its floor.
Length 8.8 m, *width* 2.2 m, *depth* 1.05 m.
Excavation. *c* 75%. E butt (U8) and W butt (U7) excavated in plan. Central baulk left unexcavated, finds concentrated in E butt throughout sequence.

Phase I. Cream chalky silt with small chalk fragments (L6), abrupt inner edge may suggest recutting.

Phase II. Cream-brown silt with small chalk fragments (L5).

Animal bone and/or antler
L5: *red deer* antler pick (ST81 1258), worn, skull fragment still attached, in W butt

Phase III. Vacuous chalk rubble (L4), grading upwards into grey-brown silt loams with dense chalk fragments and redeposited calcium carbonate (L4.1, L3B, L3A), 2 large flint nodules in base of L3B in U7.

Animal bone and/or antler
L3B: *red deer* antler tine; *cattle* teeth

Pottery
L3B: 97 sherds/432 g Neolithic Bowl pottery, including 70 sherds/301g from a vessel in fabric group 6 with an expanded rim and a solid oval lug and 18 sherds/70 g from a flint-tempered vessel with a beaded rim 160 mm in diameter (both ST81 938)

Lithics
L3B: 2 flakes

Unworked burnt flint
L3B: 2g

^{14}C
L3B: Experimental measurements made on $C_{16:0}$ and $C_{18:0}$ fatty acids extracted from sherd from find ST81 938 (see Evershed *et al*, 7.3)

Phase V. Brown loam with chalk fragments and peagrit (L3).

Animal bone and/or antler
L3: *pig* humerus, *red deer* antler tine, *cattle* mandible

Pottery
L3: 58 sherds/280 g Neolithic Bowl pottery, including P86

Lithics
L3: 9 flakes

Phase VI. Dark brown-black humic loam with chalk fragments and a little flint (L2, in recut).

Animal bone and/or antler
L2: *pig* humerus; *cattle* tooth

Pottery
L2: 435 sherds/1480 g Neolithic Bowl pottery, almost all from U8, including P42 (13 sherds/27 g from 4 separate finds), P70, P144 (perhaps as much as 164 sherds/757 g from 3 separate finds)

Lithics
L2: 11 flakes, edge-trimmed flake, 2 scrapers, 5 crumbs of Greensand (burnt)

Other artefacts
L2: 1 fragment/24 g daub with 2 wattle impressions

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Animal bone and/or antler
L1: *pig* tooth; *red deer* antler tine; *cattle* tibia; *caprine* metatarsal

Pottery
L1: 10 sherds/50 g Neolithic Bowl pottery

Lithics
L1: flake, hammerstone

Segment 15 (Fig 3.90)

Original notation. ST81 4B ditch 1 (or D1) segment 5, U9, U10.
Form. At least 2 sub-segments. Ridge or possibly causeway under central baulk, U9 rising towards it at section. Shelving sides, rounded base.
Length 10.35 m, *width* 2.2 m, *depth* 1.1 m.
Excavation. *c* 80%. E end (U10) and W end (U9) excavated in plan. Central baulk left unexcavated.

Phase I. Cream chalky silt with chalk fragments (L6).

Phase II. Cream-brown silt with small chalk fragments (L5).

Phase III. Thin lens of light brown clay loam with chalk fragments (L4B) underlying vacuous chalk rubble (L4), interleaved with brown silt loam with chalk rubble and redeposited calcium carbonate (L4.1), overlain by further, similar material (L3B, L3A). Charcoal in L3B prompted sampling for flotation and dry-sieving of remainder.

Animal bone and/or antler
L4: *pig* tarsal; *caprine* ilium; *red deer* antler pick fragment (ST81 1428) joining second fragment (ST81 1318) from L3B
L4/L3B interface: *red deer* worn, fragmentary antler pick (ST81 367
L3B: *pig* radius, 3 tibiae, metacarpal, 2 metatarsals, teeth, 3 mandibles, maxilla; *red deer* antler fragments including pick fragment (ST81 1318) joining fragment (ST81 1428) from L4, scapula with projectile damage to blade, tibia, metatarsal, tarsal; *cattle* radius, ulna, femur, tibia, metatarsal, calcaneum, teeth, 2 mandibles, skull fragment, phalanx, rib; *caprine* humerus, 2 radii, ischium, vertebra
L3A: *cattle* tibia, metacarpal, phalanx; *red deer* base of antler pick; *caprine* humerus

Pottery
L3B: 76 sherds/610 g Neolithic Bowl pottery, including 15 joining sherds/305 g from an open uncarinated bowl in a flint-tempered fabric with a simple rounded rim 320 mm in diameter, in fresher condition than much of assemblage, found close together in U10 (ST81 96, 257, 735), as well as 22 sherds/78 g from a vessel in a Jurassic fabric with a simple rounded rim 180 mm in diameter (ST81 1087)
L3A: 39 sherds/173 g Neolithic Bowl pottery

Lithics
L4: flake
L3B: 8 flakes
L3A: 3 flakes, core, serrated flake, edge-trimmed flake, 2 Greensand fragments (1 burnt)

Charcoal
L3B: *Fraxinus excelsior*, *Corylus avellana*, *Prunus* sp, *Quercus* sp, Maloideae
L3A: *

Charred seeds and/or nutshell
L3B: *Triticum* sp, *Hordeum* sp

Molluscs
L3B: predominantly shade-loving

^{14}C
L3B: Experimental measurements made on $C_{16:0}$ and $C_{18:0}$ fatty acids extracted from sherd from find ST81 96, part of flint-tempered vessel noted above (see Evershed *et al*, 7.3)

Phase V. Brown loam with chalk fragments and peagrit (L3).

Pottery
L3: 11 sherds/106 g Neolithic Bowl pottery

Lithics
L3: flake from ground implement

Phase VI. Recut in W end (U9) extending into central baulk, filled with dark brown-black humic loam with chalk fragments and peagrit (L2); separate deposit in E end (U10), not extending into section.

Animal bone and/or antler
U9 L2: *pig* humerus, mandible; *red deer* antler beam fragments (burnt); *cattle* tooth, mandible, skull fragment
U10 L2: *

Pottery
U9 L2: 79 sherds/273 g Neolithic Bowl pottery
U10 L2: 10 sherds/74 g Neolithic Bowl pottery

Lithics
U9 L2: 8 flakes, 2 serrated flakes

Other artefacts
U9 L2: 1 fragment/2 g amorphous fired clay

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Animal bone and/or antler
L1: *pig* scapula, ulna, tibia, femur, mandible, tooth; *red deer* antler tine, metatarsal; *cattle* humerus, mandible, 2 phalanges

Pottery
L1: 84 sherds/367 g Neolithic Bowl pottery, including P153

Lithics
L1: 5 flakes, serrated flake, edge-trimmed flake, 1 misc retouched

Segment 16 (Fig 3.90)

Original notation. ST81 4B ditch 1 (or D1) segment 6, U11, U12.
Form. Steep inner edge, shelving outer, slightly rounded base.
Length 5.1 m, *width* 2.4 m, *depth* 1 m.
Excavation. *c* 50%. E quadrant (U12) and W quadrant (U11) excavated in plan. N and S quadrants left unexcavated. Finds concentrated in U12 (E quadrant, at outer edge) throughout sequence.

Phase I. Chalky silt with chalk lumps (L6), unevenly present

Phase II. Light brown silt with chalk lumps (L5, 5A, L5B), darker and more humic at inner edge

Animal bone and/or antler
L5: *

Lithics
L5: 5 flakes

Phase III. Vacuous chalk rubble (L4), interleaved rubble in earthy silt; overlain at outer edge in E quadrant by localised deposit of dark brown/black humic material which was sampled for flotation (L3D, not on section); grading upwards into loose grey-brown silty loam with much chalk rubble, and redeposited calcium carbonate (L3B, L3A).

Animal bone and/or antler
L4: *red deer* antler fragment; *cattle* femur, mandible, 2 vertebrae; *caprine* femur
L3D: *pig* teeth; *red deer* phalanx; *cattle* mandible, skull fragment; *cattle* tooth; *caprine* ilium, tooth; *small bird (blackbird-sized)* several bones; *rabbit* radius
L3B: *pig* scapula, tooth, phalanx; *cattle* humerus, metatarsal, horncore; *caprine* tibia, teeth, phalanx, vertebra
L3A: *pig* metacarpal; *cattle* tooth; *caprine* tooth

Pottery
L4: 16 sherds/98 g 3 g Neolithic Bowl pottery
L3D: 49 sherds/230 g Neolithic Bowl pottery, including part of P33
L3B: 138 sherds/401 g Neolithic Bowl pottery, including part of P33 and at least 54 sherds/99 g from an open uncarinated bowl in a flint-tempered fabric, with simple rounded rim 180 mm in diameter and internal surface-wiping

Lithics
L4: 4 flakes
L3D: 58 flakes (5 burnt), 2 serrated flakes, scraper
L3B: 15 flakes, flaked lump, edge-trimmed flake
L3A: 3 flakes

Unworked burnt flint
L4: 3 g
L3D: 11 g

Charcoal
L3D: *Corylus avellana*, Maloideae, *Quercus* sp, *Fraxinus excelsior*, *Betula* sp
L3B: Maloideae, *Quercus* sp, *Fraxinus excelsior*

Charred seeds and/or nutshell
L3D: *Triticum dicoccum*, *Hordeum* sp

Molluscs
L3D: Predominantly shade-loving but less so than samples from other Neolithic contexts in this enclosure

Phase V. Mid-brown humic loam with chalk fragments, peagrit and flint (L3). L2 and L3 not distinguished during excavation. Equivalent of L2 (phase VI) in other segments tentatively noted in section as darker, more compact central area; finds from it rarely distinguished.

Animal bone and/or antler
L3+L2: *pig* 3 scapulae, femur, 2 metatarsals, calcaneum, teeth, phalanx, skull fragment; *red deer* calcaneum; *cattle* 2 scapulae, 2 humeri, metatarsal, calcaneum, teeth sacrum; *caprine* radius, teeth, vertebra

Pottery
L3+L2: 145 sherds/390 g Neolithic Bowl pottery, including P35

Lithics
L3+L2: 77 flakes (2 burnt), edge-trimmed flake, fragmentary ground axe

Charcoal
L3+L2: *Corylus avellana*

Charred seeds and/or nutshell
L3+L2: <10 g hazelnut shell

Phase VI. See phase V above.

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Pottery
L1: 7 sherds/24 g Neolithic Bowl pottery

Segment 17 (Fig 3.90)

Original notation. ST81 4B Ditch 1 (or D1) segment 7, U13, U14.
Form. Shallow shelf at NW end, deeper, expanded SE end. Shelving inner edge, steep outer, flat base to NW, rounded to SE.
Length 7 m, *width* 3 m, *depth* 1.37 m.
Excavation. *c* 70%. NW end (U13) and SE end (U14) excavated in plan, central baulk left unexcavated. Finds concentrated in SE end throughout sequence.

Phase I. Cream silt with chalk lumps (L6).

Phase II. Light brown silt with chalk lumps (L5, L5C, L5A).

Pottery
L5: 1 sherd/2 g Neolithic Bowl pottery

Lithics
L5: serrated flake
L5A: flake

Phase III. Vacuous chalk rubble (L4), denser and smaller at inner edge, larger and looser at centre, interleaved with silts with chalk lumps (L5B, L5D); localised deposit of dark brown silt loam with chalk rubble in U14 (L3C from interior, L2A=L3D from exterior, less compact and silty than L3C, both with charcoal concentrated towards base) percolating down into L4, overlain by grey-brown earthy deposit with chalk lumps (L3B, L3A). L3C coloured grey by charcoal, bulk sampled for flotation.

Human remains
L4: 2 joining adult R femur shaft fragments (U14, ST81 2107)

Animal bone and/or antler
L4: *red deer* antler pick, heavily worn, found in at least 2 fragments, side-by-side near SE butt (ST81 2324); *cattle* mandible
L2A=L3D: *pig* phalanx; *caprine* calcaneum
L3B: *red deer* antler tine; *cattle* lateral malledus, calcaneum, teeth, phalanx
L3A: *red deer* antler tine; *cattle* mandible; *caprine* tibia

Pottery
L3C: 15 sherds/133 g Neolithic Bowl pottery, all from P53
L2A=L3D: 26 sherds/174 g Neolithic Bowl pottery
L3B: 27 sherds/205 g Neolithic Bowl pottery, including 9 sherds/124 g in fresh condition from open uncarinated bowl in fabric group 6 with simple rounded rim 220 mm in diameter, found together
L3A: 5 sherds/80 g Neolithic Bowl pottery

Lithics
L4: flake
L2A=L3D: 24 flakes (10 burnt)
L3B: flake, serrated flake
L3A: 5 flakes, 1 misc retouched

Unworked burnt flint
L3C: 1500 g

Charcoal
L3C: *
L2A=L3D: *Taxus baccata*, *Corylus avellana*, Maloideae
L3A: *

Charred seeds and/or nutshell
L3C: *Triticum dicoccum*, *Triticum* sp

Molluscs
L3C: predominantly shade-loving

Phase V. Mid brown humic loam with chalk lumps, peagrit, flint (L3). Equivalent of L2 (phase VI) in other segments tentatively noted in section as darker, more compact central area; finds not distinguished.

Animal bone and/or antler 1718
L3: *pig* femur, 2 ischia; tooth, red *deer* antler tine, scapula; *cattle* radius, teeth, vertebra

Pottery
L3: 50 sherds/232 g Neolithic Bowl pottery

Lithics
L3: 23 flakes, core fragment, edge-trimmed flake

Unworked burnt flint
L3: 1 g

Charcoal
L3*: Betula* sp

Phase VI. See phase V above.

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Segment 18 (Fig 3.91)

Original notation. ST81 4B ditch 1 (or D1) segment 8, U15, U16.
Form. Ovoid plan, steep inner edge, shelving outer.
Length 4 m, *width* 2.1 m, *depth* 0.8 m.
Excavation. *c* 50%. E quadrant (U16) and W quadrant (U15) excavated in plan, N and S quadrants left unexcavated.

Phase I. Cream silt with some chalk lumps (L6, in SE end only).

Phase II. Pale brown silt with some chalk blocks (L5), slightly more humic at inner edge (L5A).

Phase III. Vacuous, angular chalk rubble (L4), overlain by mid grey silty loam with chalk rubble (L3B) and light tan/grey silt with chalk rubble, looser towards base, more compact towards top, far more extensive than L3B (which was slight), filling irregularities in surface of L4, with level upper surface, possibly deliberate backfilling (L3A).

Animal bone and/or antler
L3B: *pig* ilium; *caprine* vertebra
L3A: *cattle* astragalus

Pottery
L3B: 2 sherds/7 g Neolithic Bowl pottery
L3A: 26 sherds/45 g Neolithic Bowl pottery

Lithics
L3B: 1 misc retouched

Backfill. Possibly L3A. See phase III above.

Phase V. Mid-brown humic loam with angular chalk fragments and some flint (L3).

Animal bone and/or antler
L3: *

Pottery
L3: 8 sherds/5 g Neolithic Bowl pottery

Lithics
L3: 13 flakes (1 burnt), 2 edge-trimmed flakes, scraper, 1 misc retouched

Unworked burnt flint
L3: 11g

Phase VIII/a. Dark orange-brown loam with chalk fragments and peagrit (L1).

Segment 19 (Fig 3.91)

Original notation. ST81 4B ditch 1 (or D1) segment 9, U17, U18.
Form. Ovoid plan, flat base, shelving sides.
Length 2.85 m, *width* 1.75 m, *depth* 0.55 m.
Excavation. *c* 50%. E quadrant (U18) and W quadrant (U17) excavated in plan, N and S quadrants left unexcavated.
L6, L5, L3B, L3A tentatively distinguished during excavation, but little differentiated. All could form single backfill of quite densely packed chalk rubble in silty matrix, with level surface

Phases I–II? Light grey-brown silt with 20–30% chalk fragments in silty matrix (L6 (recorded only against outer edge), L5).

Phase III? Light grey to white silt with 60–70% chalk fragments, some redeposited calcium carbonate (L3B, L3A).

Backfill. See above.

Phase V. Thin skin (up to 0.05 m) of medium brown loam with small chalk pebbles and peagrit, directly underlying current ploughsoil (L3).

Segment 20 (Fig 3.91)

Original notation. ST81 4B ditch 1 (or D1), U19, U20.
Form. Flat base, steep, slightly stepped, inner edge, more shelving outer.
Length 4.7 m, *width* 2.6 m, *depth* 1 m.
Excavation. *c* 80%. NW end (U19) and SE end (U20) excavated in plan; central baulk left unexcavated.

Phase I. Creamy-white silt with subrounded chalk pebbles, especially towards centre (L6).

Lithics
L6: 4 flakes

Phase II. Light grey-brown silt with some small chalk pebbles (L5).

Pottery
L5: 2 sherds/6g Neolithic Bowl pottery

Phase III. Semi-vacuous chalk rubble with some earthy silt (L4A, L4), interleaved with light-grey-brown silts with chalk pebbles, scarce in L5A, more abundant in L3A. Much darker, earthier matrix with dense, rounded chalk fragments (L3B) filling hollow at outer edge.

Animal bone and/or antler
L4: *cattle* femur
L3B: *pig* ilium

Pottery
L3B: 2 sherds/7 g Neolithic Bowl pottery

Lithics
L4: 2 flakes, scraper
L3A: 3 flakes
L3B: 5 flakes

Phase V. Medium-brown loam with small, rounded chalk pebbles and some redeposited calcium carbonate (L3), directly underlying ploughsoil.

Animal bone and/or antler
L3: *red deer* antler fragment

Pottery
L3: 24 sherds/38 g Neolithic Bowl pottery

Lithics
L3: 14 flakes, core

Segment 21 (Fig 3.91)

Original notation. ST81 4B ditch 1 (or D1), U21, U22
Form. Ovoid with slight central constriction, shelving sides, undulating base.
Length 4.2 m, *width* 1.7 m, *depth* 0.5 m.
Excavation. *c* 75%. NW end (U21) and SE end (U22) excavated in plan, central baulk left unexcavated.

Phase I. Creamy-white silt with chalk pebbles (L6).

Lithics
L6: flake

Phase II. Light grey-brown silt with a few subrounded chalk pebbles, larger towards centre (L5).

Lithics
L5: 4 flakes

Phase III. Light grey-brown silt with subangular chalk fragments and redeposited calcium carbonate from interior (L3A), darker and with less chalk from exterior (L3B), possibly backfill.

Lithics
L3B: flake

Backfill. See phase III above.

Phase V. Red-brown loam with chalk pebbles and peagrit (L3), directly underlying ploughsoil.

Pottery
L3: 6 sherds/28 g Neolithic Bowl pottery

Lithics
L3: 64 flakes, all in SE end (U22)

Segment 22 (Fig 3.91)

Original notation. ST81 4B ditch 1 (or D1), U23, U24.
Form. Slightly inturned at NW end, shelving sides rounded base.
Length >5.3 m, *width* 1.4 m, *depth* 0.4 m.
Excavation. 2 transverse sections (U23, U24) excavated in plan, NW butt and central baulk left unexcavated, SE end remained unexcavated under hedge.

Phases I–II. Light creamy grey-brown silt with some small rounded chalk pebbles (L5).

Lithics
L5: 46 flakes, core, 2 flaked lumps (almost all in U24)

Phase III. Light grey-brown silt with chalk fragments denser and larger at inner edge (L3A) than at outer (L3B). Not easily distinguished, could both form part of backfill.

Animal bone and/or antler
L3A: *cattle* calcaneum

Pottery
L3B: 4 sherds/8 g Neolithic Bowl pottery
L3A: 1 sherd/6 g Neolithic Bowl pottery

Lithics
L3A: 130 flakes, 10 cores, core fragment, 3 flaked lumps, scraper (almost all in U24)

Unworked burnt flint
L3A: 8 g

Backfill? See phase III above.

Phase V. Thin skin of red-brown loam with chalk pebbles and peagrit (L3), directly underlying ploughsoil (L3).

Lithics
L3: 31 flakes (all in U24)

Segment 23 (Fig 3.92)

Original notation. ST78 ditch 1 (or D1), segment D, STX1, STX2, STX3.
Form. Two sub-segments separated by transverse ridge, deeper and wider to S; shelving sides, rounded base. Truncated by segment 9 of inner outwork, separated from it by surviving longitudinal ridge to N, cut by it in S. Shallower, narrower N sub-segment could be continuation of segment 22.
Length > 6.60 m, *width c* 2.40 m, *depth* 1.20 m.
Excavation. >50%. Together with segment 9 of inner outwork, in 5 transverse sections (2 in S butt, and STX1–3). S butt and central section (STX2) removed first, then remainder. N end left unexcavated beneath hedge.

Phase I. Grey-beige silts with chalk lumps, scarcer in lower (L7) than in upper (L6).

Phase II. Grey silt with chalk lumps (L5).

Phase III. Vacuous chalk rubble (L4), discoloured to N; chalk rubble in silty matrix (L4A), both grading upwards into angular chalk blocks tightly packed in chalky silt (L3). All could have been backfill; especially given contrast between near-absence of tip or silting lines here and their very obvious presence in adjacent rubble fills of inner outwork.

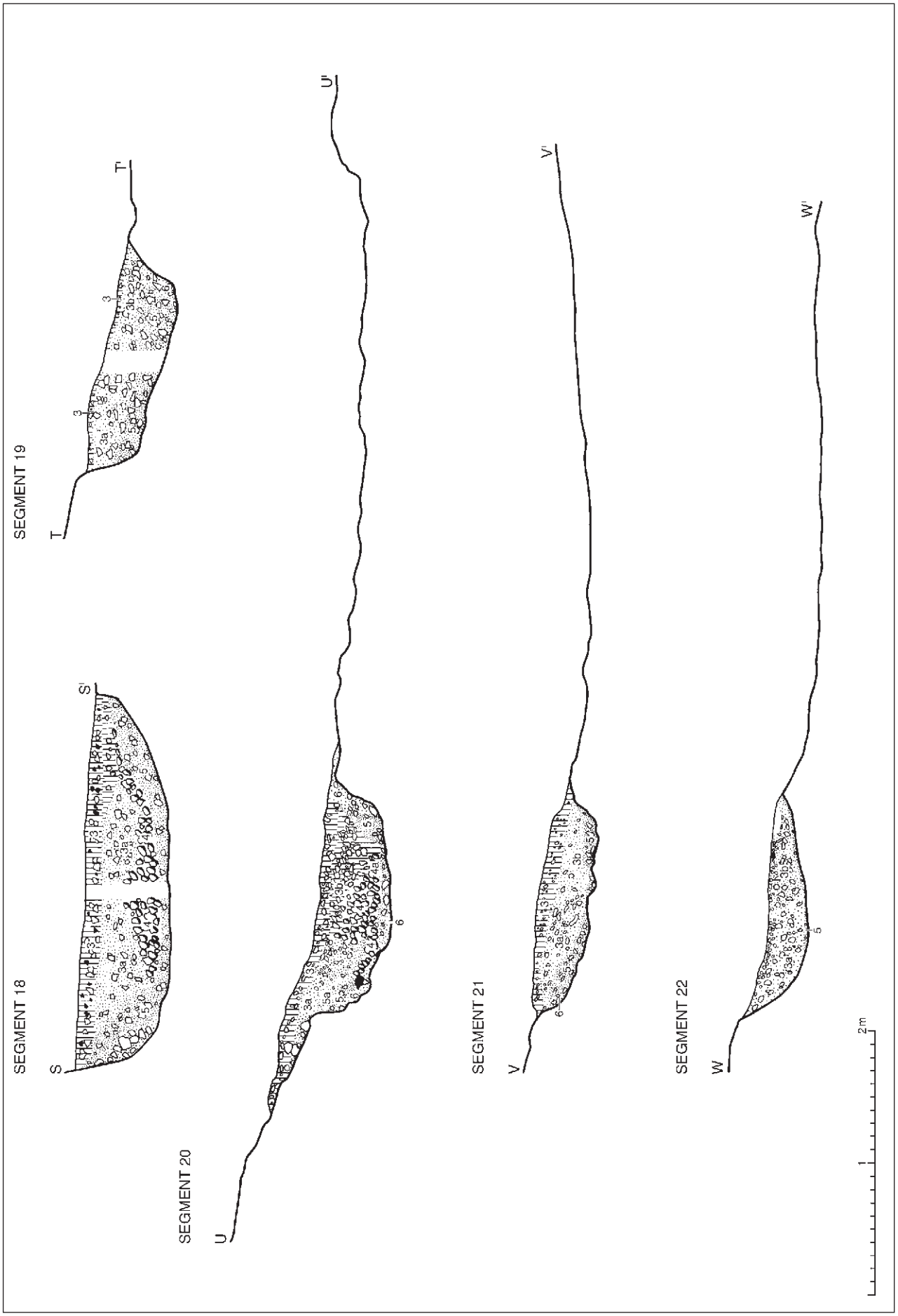

Fig 3.91 Stepleton enclosure. Segments 18 to 22, with hollow to exterior.

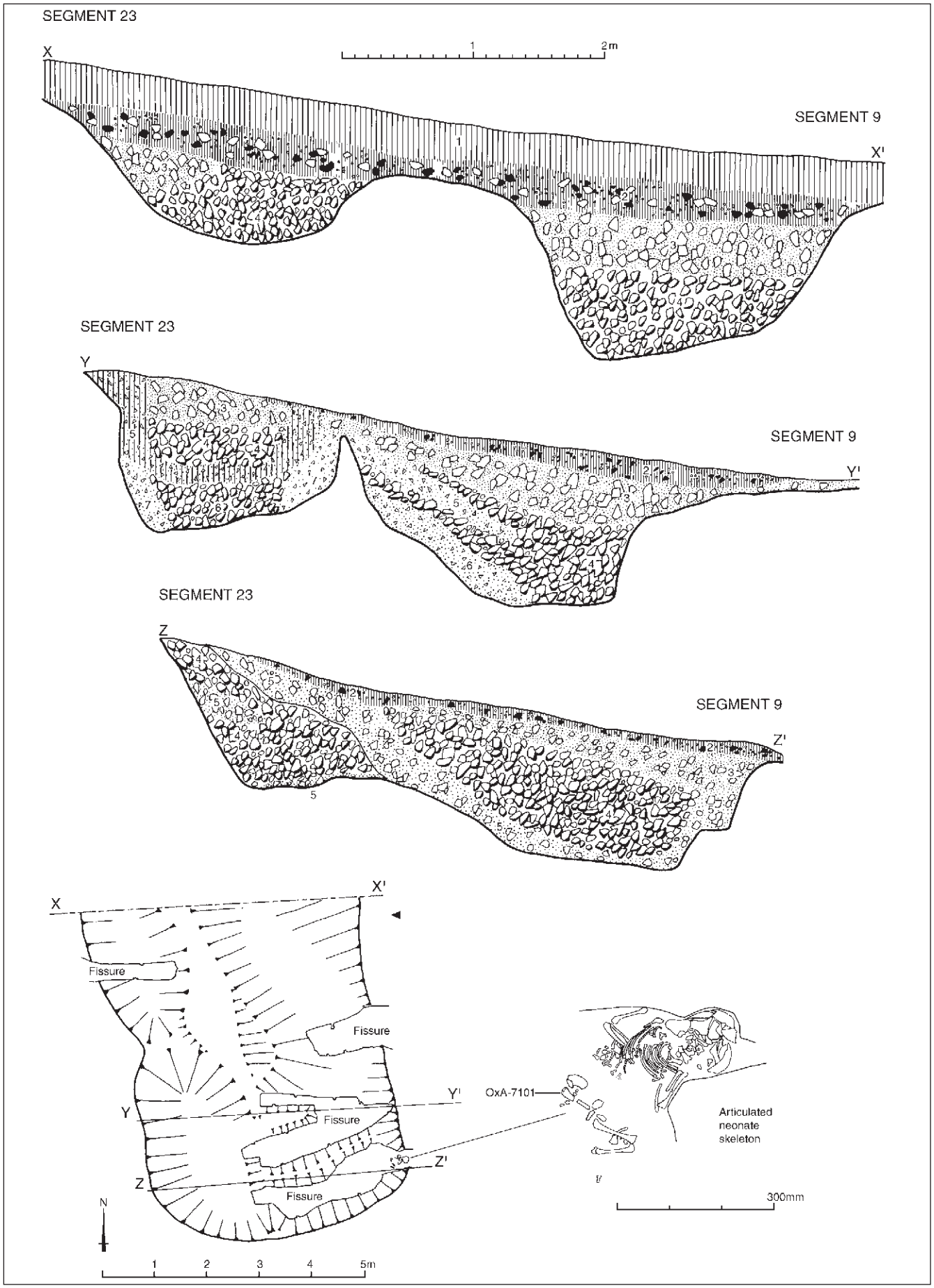

Fig 3.92 Stepleton enclosure and inner outwork. Segment 23 of enclosure (left) succeeded by segment 9 of outwork (right).

Animal bone an/or antler
L4: *red deer* antler tine, beam fragments, crown, pick with some skull attached; *caprine* scapula
L3: *red deer* antler crown, antler base fragment with a little piece of skull attached; *cattle* femur, rib fragments

Pottery
L4: 10 sherds/31 g Neolithic Bowl pottery

Lithics
L4: 34 flakes, 4 cores, edge-trimmed flake, leaf arrowhead
L3: 16 flakes, core, flaked lump
L3/L2 interface, 'hard onto chalk at ditch edge': greenstone axehead, near Group XVII (S19)

Backfill? See phase III above.

Phase VIII/a. Dark humic soil with chalk fragments, peagrit and much flint (L2), continuous across this segment and adjacent to segment 9 of inner outwork, most finds recorded simply as from L2, listed with those from larger ditch.

Animal bone and/or antler
L2: *

Pottery
L2: 1 sherd/3g Bronze Age

Upper levels and unstratified. Current ploughsoil (L1), some disturbance of upper fills by roots of hedge at N side of excavation.

Animal bone and/or antler
L3/L4/L5 (STX3): *

Pottery
L3/L4/L5 (STX3): 3 sherds/9 g Neolithic Bowl pottery

Lithics
L3/L4/L5 (STX3): 72 flakes, 3 cores, scraper

Unworked burnt flint
L3/L4/L5 (STX3): 4 g

3.5.3 The middle Stepleton outwork

Some 50 m of the middle outwork were excavated, segment 10 almost completely, segments 3 to 6, 8, 10 and 11 to varying extents (Fig 3.81). This is a small sample of a ditch likely to run for hundreds of metres (3.5.1). The results are, however, sufficiently consistent to suggest that they may be representative.

The bank

The protected chalk was discontinuous and fragmented (Fig 3.81), and appeared more crushed and broken than that of the more substantial inner outwork bank. At its widest it extended across the whole of the 6 m to 10 m interval between the middle and inner outwork ditches. Where it survived at all it was continuous across causeways. Features in the bank area were scarce, even near segments 4 and 5, where the postholes of the adjacent inner outwork bank were well preserved (Fig 3.111). Since the inner outwork bank here was protected by a positive lynchet, the middle bank, down-slope from it, may have been eroded by negative lynchetting, especially as the few postholes that survived in the middle outwork bank were no smaller in diameter than those of the inner outwork, but were reduced to almost no depth. There were two pits, one containing flint flakes, near the inner edge of segment 8 (2B F59, F62) and another pit near segment 10 (1B F24). All the other features were postholes or possible postholes, some of which formed localised patterns. The best preserved was a row of four or five closely spaced, undated postholes roughly 5 m away from the inner edge of segment 6, but not parallel to it (Figs 3.111–12: 2B F1, F4, F6, F8 and perhaps F50). There were three possible postholes on the causeway between segments 7 and 8 (2B F55, F56, F57), and a possible posthole between segments 4 and 5 (Figs 3.111–12: 3B F204). North of segment 5, within a break in the protected chalk, was a group of flint nodule clusters which may have been the bases of packing in almost ploughed-out postholes (Figs 3.111–12: 3B F205, F207, F210, F211, F212). If these were postholes, they may have related to the middle outwork, to the entrance between segments 4 and 5 of the inner outwork, on the midline of which they lay, or to a Romano-British track which ran through the same gateway. It is impossible to tell whether the other postholes in the bank area were the remnants of a continuous substructure or of smaller structures in entrances or causeways.

The postholes were virtually devoid of finds. Burnt material occurred infrequently and unevenly in the bank area features. There was some charcoal in all three pits, and in four of the twenty-three postholes or possible postholes. The fills of 1B F21 and F22, next to each other beside segment 10, were recorded as ashy.

The ditch

The segments were generally longer, more regular, and deeper than those of the Stepleton enclosure. Determinable lengths ranged from 16 m to 35 m, maximum depths clustered between 1 m and 1.5 m, the north butt of segment 11 reaching 1.60 m. Causeways were between 1.40 m and 4.60 m wide. The segments are distinguished by regular, almost parallel-sided plans, the only exceptions being segment 8, where a bulge in the inner edge corresponds to the fissure filled with Clay-with-Flints through which the segment was cut, and segment 10, where a dumbbell-shaped plan resulted from construction in sub-segments. The regular plans of the other segments reflect relatively consistent depths and profiles, suggesting that at least some were dug as single entities. Segments 3, 4 and 6 were steep-sided and flat-bottomed, suggesting rapid silting, with little time for weathering. Segments 5, 8, 10 and 11 had shelving sides and smoother profiles. There was no corresponding difference in fill patterns. Apart from some possible cleaning out at an early stage in segments 3 and 4, all the segments seem to have silted naturally and without intervention, with a gradual progression from coarser to finer fills which precludes a distinction between phases III and V.

Possible entrance

At the widest causeway, which aligns with a possible entrance between segments 1 and 2 of the enclosure (3.5.2), the west end of segment 6 curves inward towards the enclosure ditch. Segment 5, on the other side of the causeway, was not curved, but was slightly out of line with the other segments, with its east end opposite the west end of segment 6. The causeway may originally have been even wider. The contrast between the flat-bottomed, steep-sided profiles of segments 4 and 6 and the more rounded, irregular profile of segment 5 (Fig 3.93) would be compatible with construction at different times, segment 5 perhaps being constructed as a reinforcement of the gateway in the inner outwork, across which it provides a barrier (Fig 3.81).

Burnt material

Deposits incorporating charcoal and ash occurred discontinuously along the ditch and intermittently and irregularly through the sequence. All were localised, none extending through a whole segment; they varied in composition and source; and there was no evidence for burning *in situ* (Table 3.10). They seem unlikely to have had a single or consistent origin, especially as they derived from both sides of the ditch, like the relatively few finds. Derived from the interior or of uncertain origin are two deposits near the top of the sequence in segment 10, and three near the base in segments 5 and 6, where the phase I–III fills were sometimes grey (Fig 3.93). Charcoal and ash deposits in segments 5 and 6 have been related to the burning of the nearby inner outwork gateway and bank (Mercer 1988, 104). If this was the case, the interval between the construction of the middle and inner outworks would have been very short, as the radiocarbon chronology indeed suggests (Ch 4).

Phases I and II

Two silting episodes can normally be distinguished. Primary silts lying directly on the segment bases (generally L6) were chalky and light-coloured, except where they incorporated localised patches of burnt material in segments 4, 5 and 6 (Table 3.10). In segments 3 and 4, abrupt, almost vertical edges to L6 combine with its uneven presence to suggest that it had been cleaned out before the accumulation of a thicker and more extensive earthier silt (generally L5). In the west-centre of segment 8, where the ditch was cut through Clay-with-Flints, the initial silts, like all the subsequent fills, were predominantly of clay. A cluster of knapping debris on

Table 3.10 Stepleton spur, middle outwork. Incidence of burnt material (excluding stray charcoal fragments) by segment and phase

→ from interior, ← from exterior, ? source uncertain

Segment	*I*	*II*	*III (lower)*	*III (upper)*
3	–	–	–	–
4	← Grey silt with chalk pebbles and some charcoal, on floor of ditch in W face of central cutting (U8 L4A)	← Dark silts with charcoal overlying primary silt in centre and E butt, not in intervening areas (L5A in centre, L4A in E butt)	–	–
5	→ Patch of charcoal flecks in primary silt (L6) in W butt	→ Grey ashy silt with charcoal overlying L6 and L5 silts in E butt (L4A)	–	–
6	? Powdery, ashy silt with charcoal on floor of W butt (U7 L4)	– –	← Patch of soft dark brown earth with charcoal (C2 L3D)	–
8	–	-	← ? Layer with fired clay and charcoal in W of cutting only (L1D? L1C?)	–
10	–	–	–	→ Patch of humic chalky silt with ash and charcoal towards top of phase III fills in centre (Q3+Q7 L3A), perhaps another in SW butt (Q1+Q2 L3A)
11	–	–	–	–

the surface of them was associated with two antler picks, one crossed over the other. There was also knapping debris in segment 10, concentrated near the southwest butt. Finds were otherwise scarce, and often concentrated in segment butts. They comprise struck flint, sherds, antler (some modified and utilised) and animal bone, including two articulated caprine phalanges from the north butt of segment 11.

Phase II/Phase III interface

On the surface of an ashy silt which overlay L5 in the east butt of segment 5 was a compact group of animal bone.

Phase III

Large, vacuous chalk rubble (generally L4) often occurred only in small quantities, and sometimes not at all. At the base of L4 in segment 6 was a compact deposit of weathered and root-marked disarticulated bones making up roughly half the skeleton of a young human juvenile. Two vertebrae and part of a scapula were found inside the skull. Further long bones of the same individual lay higher up the sequence in the same segment. The restricted distribution of the bones, almost all of which were in a 1 m-wide baulk originally left between two sections, indicates that the whole deposit was recovered and that the missing bones, which included all the small hand and foot bones and the mandible, although there were two loose mandibular teeth, did not remain unexcavated to either side of the section. It seems likely that some of the child's bones were placed in the ditch after excarnation. This was the only find of human bone from the inner outwork, apart from a single tooth probably redeposited in the phase VIII/a fills of segment 10. Animal bone from L4 in segment 6 included a set of articulated cattle vertebrae and an antler pick. Finds of all kinds were scarce elsewhere.

The vacuous rubble fills interleaved with and graded into a proliferation of silts and silt-rubble combinations. Finds continued to include antler picks and used antler fragments. A substantial part of a Mortlake-style bowl (Fig 9.10: P156), in L3A towards the top of these silts in segment 6, was stratified above articulated cattle vertebrae in L4, the mid- to late fourth millennium date of which, *3500–3465 cal BC (26%) or 3380–3340 cal BC (69%)* (4598±22 BP; UB-4136) provides a *terminus post quem* for the vessel in accord with a likely *floruit* for Peterborough Ware of *c* 3500–2500 cal BC (Gibson and Kinnes 1997, fig 1).

Phase VIII/a

The relict ploughsoils in the segment tops were similar to the same deposits in the other ditches. Beaker and/or early Bronze Age pottery occurred in segments 8 and 10

Middle Stepleton outwork segment catalogue

Notes (see also p 58)

The current ploughsoil was almost entirely removed by machine, and is included in the catalogue entries only if there are finds from it.

Segment 1

Original notation. ST81 area 4F ditch 3 (or D3).
Width 2.6 m.
Excavation. Exposed but not excavated.

Segment 2

Original notation. ST81 area 4E ditch 3 (or D3).
Width 2.2 m.
Excavation. Exposed but not excavated in W of area.

Segment 3

Original notation. ST81 area 4E ditch 3 (or D3) and area 4C ditch 3 (or D3), U4.
Form. Fairly steep sides, shelving base, narrower and more shelving at W end of cutting, possibly just short of a butt or the junction of 2 sub-segments. Absence of vacuous chalk rubble from W section suggests former.
Length >14 m, unless there was a causeway just W of area 4C, *width* 2.2 m, *depth* 0.8 m.
Excavation. Exposed but not excavated in E of area 4E, single 2 m wide transverse section in area 4C.

Phases I–II. Fine cream silt with chalk rubble, confined to lower part of inner edge (L6). This and steep face in E section suggest that it may have been cleaned out before accumulation of much thicker, more pervasive silt with chalk rubble, very light brown at inner edge (L5), grading into darker, more humic silt from outer edge (L5A).

Lithics
L5: 4 flakes

Phase III. Limited amount of loose, vacuous chalk rubble in E section only (L4), overlain by mid-brown loam with chalk rubble (L3B) grading laterally into light brown/cream silt with chalk rubble (L3A).

Animal bone and/or antler
L4: *
L3B: *

Lithics
L3B: 2 flakes
L3A: flake

Phase VIII/a. Loose, mid-brown humic loam with jumbled angular chalk blocks and comminuted chalk (L3).

Lithics
L3: 11 flakes, 1 miscellaneous retouched

Segment 4 (Figs 3.93, 3.111)

Original notation. ST80 area 3B ditch 2 (or D2), U1, U2, U8.
Form. Fairly steep sides, flat base, junction of base and sides angular at ends, more rounded in centre, where segment shallower.
Length >10 m, *width* 1.80 m, *depth* 1.10 m.
Excavation. ?60%. Three 2 m wide transverse sections (U1, U8, U2 from W to E), intervening baulks left standing.

Phases I–II. Fine, pale silt with rare chalk lumps and pebbles (L6), present only at inner side of E butt, where steep interface with L5 suggests segment may have been cleaned out. In W face of central cutting only, grey silt with some chalk pebbles and some charcoal (U8 L4A), derived from exterior and lying directly on ditch floor, grading upwards into darker silt with charcoal (L5A). Ubiquitous thick layer of grey to light brown silt with some chalk pebbles and chalk lumps (L5), overlain in E face of central cutting by thin lens of dark silt with charcoal, derived from both sides (also L5A); overlain in E butt by dark grey silt with charcoal and chalk pebbles (U2 L4A), derived from exterior.

Animal bone and/or antler
L5: *
L4A: *pig* teeth

Pottery
L4A on ditch bottom in central cutting: 1 sherd/1 g Neolithic Bowl pottery

Lithics
L5, concentrated in E butt: 18 flakes, 1 misc retouched
L4A in E butt: 78 flakes

Charcoal
L5A: *
L4A: *

Phase III. Vacuous chalk rubble with some flint nodules, silty towards base (L4), directly on L5 in E butt and centre, higher up in W, forming part throughout of sequence of interleaved deposits, in all of which larger chalk lumps concentrated towards centre. Ubiquitous light silty matrix with chalk pebbles derived from interior (L3A), grading into similar deposit in more humic matrix derived from exterior (L3B), underlain in W by similar deposits with varying densities of inclusion (L3D, L3C), overlain in centre by another which was particularly compact (L3F).

Animal bone and/or antler
L4: *
L3B: *red deer* antler fragments
L3A: *

Lithics
L4, concentrated in centre: 38 flakes, edge-trimmed flake, 1 misc retouched
L3B: flake
L3A: 4 flakes

Phase VIII/a. Loose light brown humic matrix with chalk pebbles and peagrit (L3, absent in butts), grading into darker brown humic matrix with chalk pebbles and denser peagrit (variously called L2 or L1).

Animal bone and/or antler
L2: *
L1: *

Lithics
L2: 13 flakes

Segment 5 (Figs 3.93, 3.111)

Original notation. ST80 area 3B ditch 2 (or D2), U3, U4, U5, U6.
Form. Fairly steep sides, rounded to irregular base, shelving, sometimes stepped, inner edge. Steep outer edge.
Length 15.8 m, *width* 2.2 m, *depth* 1.12 m.
Excavation. *c* 60%. Four 2.00 m to 2.50 m wide transverse sections (U3 to U6 from W to E), intervening baulks left standing.

Phases I–II. Fine silt with some chalk pebbles, grey rather than white in W end (U3), in W side of U5 and in E butt (U6), absent near centre (U4). Overlain by ubiquitous light grey silt with some chalk pebbles (L5), darker and more humic where derived from exterior.

Animal bone and/or antler
L5: *pig* ulna, tooth; *red deer* tibia; *cattle* tarsal

Lithics
L6: leaf arrowhead
L5: 30 flakes

Charcoal
L6 in W (U3): localised charcoal flecks against inner side of base

Phase II/III interface. Surface of earlier silts and ditch side covered in E butt and for 4–6 m W from it by grey ashy silt with chalk pebbles derived from interior (L4A), grading towards centre into silt with less burnt material (also L4A).

Animal bone and/or antler
Compact bone deposit on surface of L4A in E butt: *pig* mandible with teeth, loose teeth; *cattle* articulating astragalus and calcaneum (ST80 2224), tibia, ilium, tarsal; *caprine* radius-ulna, teeth, phalanx
L4A elsewhere: *pig* humerus, skull fragment

Pottery
L4A: 1 sherd/2 g Neolithic Bowl pottery

Lithics
L4A: 5 flakes

Charcoal
L4A: *

^{14}C
Surface of L4A: *3580–3490 cal BC (69%) or 3430–3370 cal BC (26%)*, mean of 4685±75 BP (OxA-7025) and 4855±60 BP (OxA-7024), both on articulating cattle astragalus and calcaneum ST80 2224

Phase III. Small quantities of vacuous chalk rubble (L4), derived from interior, not always present. Most of fill made up of compact, pale silty matrix with rounded chalk pebbles (L3A), derived from interior, looser and more pebbly towards centre, sometimes grading into L4 and always grading into more humic brown/grey matrix with angular chalk pebbles and some flint (L3B), derived from exterior.

Animal bone and/or antler
L4: *pig* tooth; *caprine* tibia, teeth
L3B:*pig* mandible, tooth*; red deer* metatarsal; *cattle* femur; *caprine* humerus
L3A: *pig* 2 humeri, teeth; *cattle* acetabulum, phalanx; *caprine* scapula, radius, femur probably from single immature individual

Pottery
L3B: 1 sherd/12 g Neolithic Bowl pottery
L3A: 1 sherd/7 g Neolithic Bowl pottery

Lithics
L4: 64 flakes, edge-trimmed flake, 1 misc retouched
L3B: 9 flakes
L3A: 13 flakes

Phase VIII/a. Dark brown soil with chalk pebbles and lumps and angular peagrit (L3 or L1). Also L2, L2A.

Animal bone and/or antler
L3, in E butt: *roe deer* humerus
L2: *

Pottery
L3, all in E butt: 6 sherds/17 g Neolithic Bowl pottery
L2A*:* 3 sherds/14 g Neolithic Bowl pottery
L2: 2 sherds/8 g Neolithic Bowl pottery
L1: 4 sherds/22g Neolithic Bowl pottery

Lithics
L3: 5 flakes, scraper, Greensand fragment
L2: 3 flakes
L1: 24 flakes (1 edge-glossed), heathstone fragment

Upper levels and unstratified

Pottery
U/S (in E butt): 6 sherds/7 g Neolithic Bowl pottery

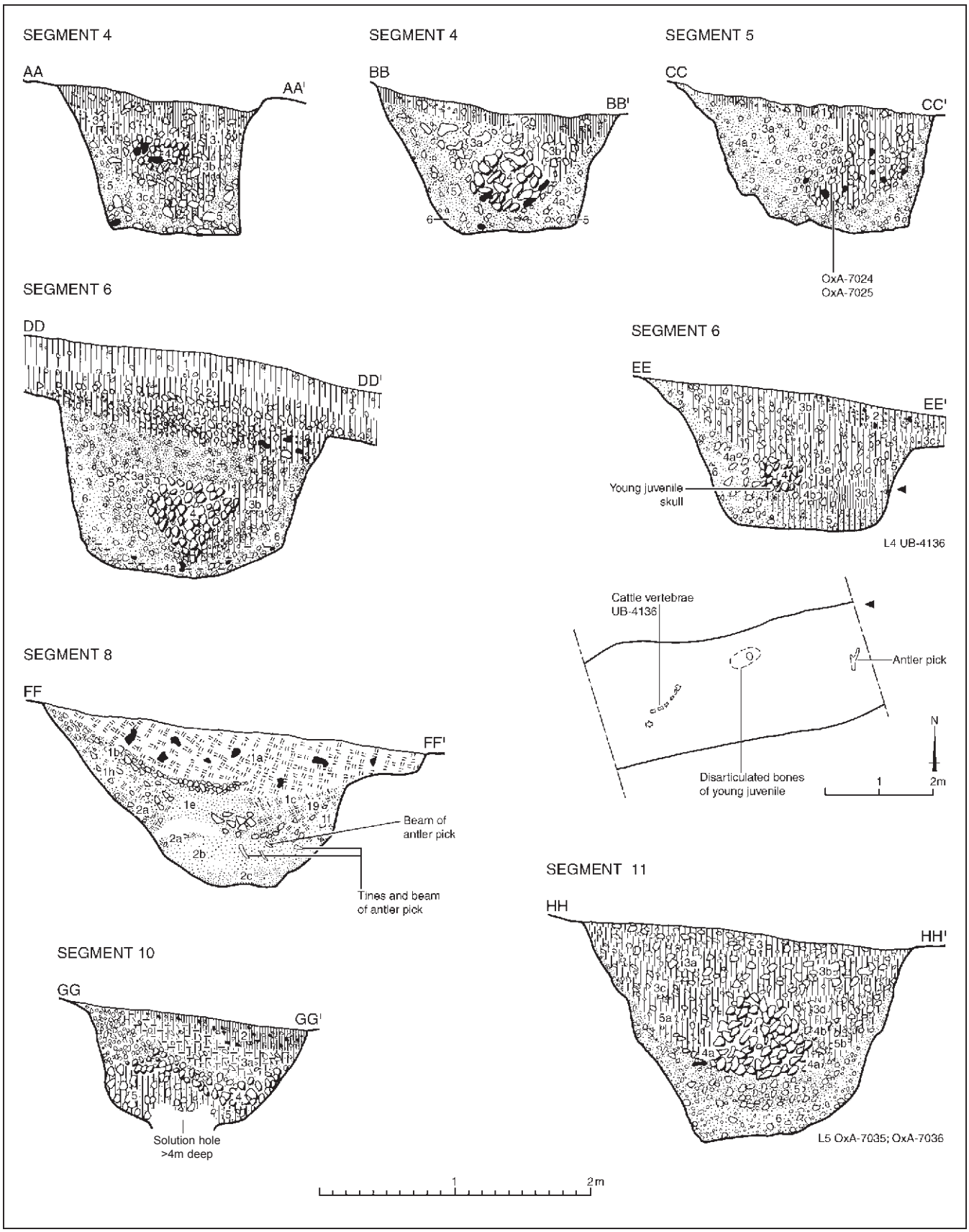

Fig 3.93 Middle Stepleton outwork. Sections and detail.

Segment 6 (Figs 3.93, 3.111)

Original notation. ST79 area 2B ditch 2 (or D2), C1, C2A, C2. ST80 area 3B ditch 2 (or D2) U7.
Form. Steep sides, flat to slightly rounded base. Constriction at W edge of 1979 excavated area suggests that junction of two sub-segments may lie under 3.50 m baulk occupied by hedge between areas 2B and 3B. Butt to W of baulk (U7) was deeper and had a rather different fill pattern from the rest.
Length 16.4 m, *width* 2.4 m, *depth* 1.12 m.
Excavation. *c* 40%. 1979: two 2 m-wide transverse sections (C1, C2) cut near centre of segment, 1 m-wide baulk between them (C2A) removed when it proved to contain human remains. 1980: W butt excavated in plan (U7).

Phases I–II. Floor of W butt covered by grey ashy silt with charcoal, chalk lumps and a little flint (U7 L4A), of such soft, powdery consistency as to collapse out of the section, underlying fine white silt with a few chalk pebbles (U7 L6) and light grey silt with more abundant chalk pebbles (U7 L5).

In centre solid chalk directly overlain by grey chalky silt with occasional chalk lumps (C1–2 L6), L6 overlain by darker grey chalky silt, darker and more humic where derived from exterior (C1–2 L5, L5A).

Animal bone and/or antler
C1–2 L5: *cattle* radius, metacarpal; *caprine* humerus
U7 L4A: *

Pottery
C1–2 L5: 9 sherds/20 g Neolithic Bowl pottery
U7 L4A: 9 sherds/25 g Neolithic Bowl pottery

Lithics
C1–2 L5: flake
U7 L4A: 25 flakes

Charcoal
U7 L4A: *Quercus* sp, Maloideae (ST80 C53)

^{14}C
U7 L4A: *3640–3550 cal BC (89%) or 3510–3430 cal BC (6%)* (4660±45 BP; OxA-7030), *3640–3540 cal BC (92%) or 3530–3490 cal BC (2%) or 3460–3430 cal BC (1%)* (4690±45 BP; OxA-7031), *3650–3520 cal BC* (4725±50 BP; OxA-7927), all on single fragments of Maloideae charcoal from ST80 C53

Phase III. In W butt, vacuous chalk rubble (U7 L4), grading upwards and outwards into light silty matrix with chalk pebbles, loose towards centre, derived from interior (U7 L3A) and brown, humic matrix with chalk pebbles, derived from exterior (U7 L3B).

In centre vacuous chalk rubble (C1–2 L4) interleaved with loose chalk rubble in dark humic matrix (C1–2 L4B) and lighter silty matrix (C1–2 L4A). 'L4A'originally applied to what appeared to be a small feature in L5. This may be the source of the sherds listed below. Localised patch of soft dark brown earth with charred material and little chalk, derived from exterior, near base of phase III deposits (C2 L3D). Light grey-brown matrix with chalk pebbles and lumps, derived from interior (C1–2 L3A), grading into similar, more humic deposit from exterior (C1–2 L3B), with various slight colour changes (C2 L3C, L3E) distinguished in C2, and none at the W side of C1 (C1 L3).

Human remains
C1–2 L4, all but one tooth (ST79 2187) in C2A (baulk between C1 and C2), within area *c* 0.60 m × 0.0.30 m: disarticulated bone from one young juvenile, including skull without mandible – inside which were 2 thoracic vertebrae and part of L scapula (ST79 2497) – teeth, other cervical and thoracic vertebrae, sacrum, rib fragments, R and L clavicles, longbone shafts from both arms and at least one leg, pelvis fragments. Approximately 50% of skeleton present. No small hand or foot bones (ST79 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2520, 2522, 2523, 2524, 2525, 2526, 2527, 2673, 2674, 2675, 2677, 2678, 2679, 2680, 2681, 2682, 2683, 2684, 2685, 2686, 2687, 2689, 2691, 2693)
C1–2 L3B: Ulna shaft fragment and L femur shaft fragment from same young juvenile as bone in L4, found away from concentration in lower layer, almost in W face of excavation (ST79 2202, in C2)

Animal bone and/or antler
C2 L3D: *caprine* astragalus
C1–2 L4: *red deer* fragmentary antler pick; *cattle* several cervical and thoracic vertebrae, found in articulation (ST79 2152), metacarpal, further thoracic vertebra
C1–2 L3B: *cattle* femur
C1–2 L3A: *; 'Cockle shell(?)' beneath Mortlake bowl sherds mentioned in site notebook, but not otherwise documented
C1–C2 L3: *roe deer* metatarsal; *cattle* metapodial

Pottery
U7 L3B: 5 sherds/17 g Neolithic Bowl pottery
C2 L3D: 3 sherds/2 g Neolithic Bowl pottery, 28 sherds/17 g indeterminate sand-tempered
C1–2 L4A: 4 sherds/1 g Neolithic Bowl pottery
C1–2 L4: 8 sherds/17 g Neolithic Bowl pottery
C1–2 L3B: 12 sherds/13g Neolithic Bowl pottery
C1–2 L3A: 41 sherds/159 g from Mortlake style bowl (P156), 20% of rim present, found together, in relatively fresh condition

Lithics
U7 L4 flake
U7 L3B: flake
C1–2 L4: 5 flakes
L4/L3B interface: 8 flakes
C1–2 L3A: 3 flakes
C1–2 L3: 2 flakes

Charcoal
C2 L3D: *

Charred seeds and/or nutshell
C2 L3D: <10 g charred hazelnut

^{14}C
C1–2 L4: *3500–3465 cal BC (26%) or 3380–3340 cal BC (69%)* (4598±22 BP; UB-4136) on articulated cattle vertebrae ST79 2152

Phase V. In W butt, phase III deposits overlain by light silty matrix with smaller chalk pebbles than in underlying layers, described as 'compressed?' (U7 L3F).

Phase VIII/a. In W butt, mid-brown humic matrix with dense chalk pebbles and peagrit, and a little flint (U7 L3).

In centre, similar deposit (C1–2 L2), sometimes underlain by similar, greyer deposit with less chalk (C1–2 L2A).

Animal bone and/or antler
C1–2 L2: *

Lithics
C1–2 L2: 37 flakes, scraper

Segment 7

Original notation. ST79 area 2B ditch 2 (or D2).
Form. Slightly sinuous plan, apparently bifurcated W butt.
Length 35 m, *width* 2.8 m.
Excavation. Exposed but not excavated.

Segment 8 (Fig 3.93)

Original notation. ST79 area 2B ditch 2 (or D2), C3.
Form. Slightly sinuous plan, expanding where cut across fissure filled with Clay-with-Flints. Shelving sides, rounded to almost pointed base, shallowest in centre of cutting.
Length 28.2 m, *width* 3 m, *depth* 1 m.
Excavation. *c* 15%. Transverse section *c* 5 m wide (C3) cut near centre, covering junction of Clay-with-Flints and chalk, E half removed first, W half extended to extract 2 antler picks, tines of which protruded from section. Layer numbering devised to describe different deposits from those in other segments. Layers in each of 3 drawn sections (E, centre and W) numbered independently.

Phases I–II. In E, light brown silt with a few chalk lumps and clay patches from interior (H=L5A), similar grey-buff silt from exterior (J=L5B). In W, light orange-brown silt (L2C), overlain by grey-beige silt (L2B). Primary silts absent from centre.

Animal bone and/or antler
L2B: *red deer* 2 antler picks, lying one over the other

Lithics
L2C: 13 flakes. Core
L2B, concentrated in same area as antler picks, extending 1 m from W side of cutting: 102 flakes, core fragment

Phase III. Substantial deposit of vacuous chalk rubble in a little fine light brown silt (G=L4 in E) grading from E to W into vacuous chalk rubble in fine beige silt (L2A in centre) and grey silt with chalk lumps in (L1G in W). Rubble succeeded in E by earthy silts with various admixtures of progressively smaller chalk fragments, and occasionally some clay (B=L3A, C=L3B, F=L3E, D=L3C). Elsewhere, clayey silts with higher chalk content in centre (L4B, L4A, L1E), lower chalk content in W (L2A, L1F, L1H, L1E).

Within upper phase III fills in W, site notebook describes 'a layer of burnt clay, flint flakes, bone & charcoal was found beneath a layer of rubble ... Within the burnt layer fragments of friable red daub were found – possibly related to those in Cutting 1 ditch 1', ie cutting 1 in segment 6 of the inner outwork, 8 m to N. No layer number given, no burnt clay retained. Plan and photograph suggest that this was L1D, a clay layer derived from the exterior, but it is impossible to be certain of this. All evidence concurs that it was confined to W part of cutting. L1C, a clayey silt overlying L1D and also derived from exterior, contained charcoal. Animal burrow in L2A.

Animal bone and/or antler
L1D: *
L1E: *

Lithics
L1E: 14 flakes, 1 misc retouched
L1D: 42 flakes, core, core fragment
L1C: 4 flakes, edge-trimmed flake

Unworked burnt flint
L1D: 30 g

Charcoal
L1C: *

Phase V. In E, medium brown loam with small chalk fragments (E=L3D). In centre and W, brown clayey silt with chalk pebbles and lumps, denser in centre than in W (L1B).

Animal bone and/or antler
L1B: *

Pottery
L1B: 1 sherd/3 g Neolithic Bowl pottery

Lithics
L1B: 16 flakes, 2 cores

Phase VIII/a. In E brown soil with chalk fragments, larger ones gravitated to base (L2). In centre and W, dark brown clay with some flint (L1A).

Animal bone and/or antler
L2: *red deer* antler beam and tine fragments

Pottery
L1A: 1 sherd/6 g Neolithic Bowl pottery, rim sherd from comb-impressed Beaker, perhaps with upper part of geometric motif (P167), 2 rusticated Beaker body sherds, 25 further sherds/22 g in Beaker or early Bronze Age fabrics, 1 with stabbed decoration

Lithics
L2: piercer
L1A: 33 flakes, scraper:

Unworked burnt flint
L1A: 245 g

Charcoal
L1A: *Fraxinus excelsior,* *

Upper levels and unstratified. Current ploughsoil (L1).

Animal bone and/or antler
U/S: *

Lithics
'Top of clay': 35 flakes
U/S: flake

Unworked burnt flint
'Top of clay': 30 g

Other artefacts
L1: bronze ring fragment

Segment 9

Original notation. ST79 area 2B ditch 2 (or D2).
Form. Widening towards centre.
Length > 8.2 m, *width* 2.6 m.
Excavation. Exposed but not excavated.

Segment 10 (Fig 3.93)

Original notation. ST78 area 1B ditch 2 (or D2) segment A.
Form. Dumbbell-shaped plan, possibly 3 sub-segments, deepest and widest in SW butt. Shelving sides, rounded profile. Solution hole >4 m deep near centre. Rabbit burrows in NE butt.
Length 23.2 m, *width* 3.4 m, *depth* 1.15 m.
Excavation. *c* 85%. Butts and two parts of body of segment excavated in successive longitudinal halves (Q1 and Q5 in SW butt, Q2 and Q6 SW of centre, Q3 and Q7 NE of centre, Q4 and Q8 in NE butt) 3 intervening transverse baulks (sectors 1–3) unexcavated.

Phases I–II. Chalky, slightly humic silts with chalk rubble (L5, L6).

Animal bone and/or antler
L6, in SW butt: *red deer* modified antler beam fragment with stump of tine (anciently) above it (ST78 1066); *cattle* horncore
L5: *cattle* radius

Pottery
L5+L6: 33 sherds/48 g Neolithic Bowl pottery, including P49

Lithics
L6, all in inner side of SW butt (Q1): 43 flakes, 6 cores, 2 core fragments, edge-trimmed flake, hammerstone
L6+L5: 577 flakes, 6 cores, scraper

Phase III. Vacuous chalk rubble (L4), grading laterally into chalky silt with smaller chalk fragments and upwards into slightly humic chalky silts with small chalk fragments (L3). Two separate deposits incorporating burnt material near top of phase III fills, both L3A. Near centre (SW ends of Q3+Q7), deposit full of ash and charcoal (L3A), 1.30 m × >1.15 m and up to 0.30 m deep, described as L3 with ash and charcoal, grey in photographs, derived from interior. In SW butt (Q1+Q2), deposit 2.50 × >1.50 m and up to 0.20 m deep, described in same terms as L3A in centre, but earthy and without obvious burnt material in photographs.

Animal bone and/or antler
L4: *red deer* tarsal, antler pick with charring on broken distal end of beam , battering on back, wear on brow tine, also tine fragment with worn tip; *cattle* vertebra; *caprine* humerus, tooth, vertebra
L3: *pig* metatarsal, mandible, teeth, phalanx; *red deer* 2 antler tine tips, fragmentary, eroded antler, ?pick, also beam and tine fragments; *cattle* scapula, femur, metacarpal, teeth, horncore; *caprine* skull fragment
Q1+Q2 L3A: *pig* femur, tooth

Pottery
L4: *
L3: 4 sherds/7 g Neolithic Bowl pottery, 2 sherds/8 g indeterminate sand-tempered, 2 sherds/6 g indeterminate flint-tempered

Lithics
L3: 147 flakes, 7 cores, core fragment, 2 flaked lumps, edge-trimmed flake

Charcoal
L3: *
Q3+Q7 L3A: *
Q1+Q2 L3A: ?

Phase VIII/a. Dark humic soil with comminuted chalk and flint (2).

Human remains
L2: Older adult/young subadult L mandibular premolar in SW butt (ST78 1166)

Animal bone and/or antler
L2: *pig* tooth; *cattle* teeth

Pottery
L2: 52 sherds/ 70 g Beaker, including part of a comb-impressed handled vessel in relatively fresh condition (P160), in SW butt, further decorated Beaker or early Bronze Age sherd, 5 sherds, 6 g indeterminate flint-tempered

Lithics
L2: 84 flakes, core, edge-trimmed flake

Upper levels and unstratified. Current ploughsoil (L1).

Animal bone and/or antler
U/S: *

Lithics
L1: 19 flakes

Segment 11 (Fig 3.93)

Original notation. ST78 area 1B ditch 2 (or D2) segment B; ST81 area 4B ditch 3 (or D3).

Form. Regular, parallel-sided plan. Shelving sides and flat to slightly rounded base, except in N butt (U3), where sides steep, base inclined to interior, and ditch deepest. Fissures in base, scattered flint nodules *in situ* in chalk.
Length 29.6 m, *width* 2.8 m, *depth* 1.6 m.
Excavation. *c* 25%. In 1978, S butt exposed but not excavated. In 1981, 3 transverse sections cut (U1, U2, U3 from S to N), with intervening baulks left unexcavated.

Phases I–II. White chalky silt with occasional chalk pebbles (L6), overlain by creamy brown silt (L5) with denser chalk pebbles, especially towards centre.

Animal bone and/or antler
L6: *red deer* antler tine, worn, with part of beam attached, in N butt; *cattle* metatarsal
L5: *caprine* 2 phalanges found in articulation in N butt (ST81 379)

Pottery
L6: 1 sherd/7 g Neolithic Bowl pottery

Lithics
L5: flake

^{14}C
L5: *3600–3520 cal BC (86%) or 3420–3380 cal BC (9%)*, mean of 4845±60 BP (OxA-7036) and 4820±55 BP (OxA-7035), both on articulated caprine phalanges ST81 379

Phase III. Vacuous chalk rubble (L4) grading into semi-vacuous rubble (L4A, L4B, L4C, L4D) and interleaved with loamy layers with varying admixtures of chalk lumps (L5A, L5B, L3D, L3C), grading upwards into loams with larger chalk blocks (L3A, L3B).

Animal bone and/or antler
L4: *pig* 2 radii, ulna, tooth
L3D: *cattle* tooth
L3B: *pig* tibia; *red deer* antler base, burr, brow time and beam fragments, recently broken, burr and base heavily battered, found together in N butt, apparently from same pick, beam fragment with stump of trez tine, broken in antiquity, also in N butt, further antler fragments, broken in antiquity, in body of segment; *cattle* femur, tibia, mandible fragment; *caprine* 2 vertebrae
L3A: *pig* radius, metacarpal; *red deer* antler beam fragment; *cattle* phalanx

Pottery
L4: 1 sherd/3 g Neolithic Bowl pottery
L3D: 1 sherd/19 g Neolithic Bowl pottery
L3B: 2 sherds/1 g Neolithic Bowl pottery

Lithics
L3B: 4 flakes

Phase VIII/a

Animal bone and/or antler
L3: *red deer* shed antler base, antler tine with worn tip; *cattle* vertebra; *caprine* phalanx

Lithics
L3: 2 flakes

Upper levels and unstratified. Current ploughsoil (L1).

Animal bone and/or antler
L1: *pig* humerus; *cattle* tooth

Lithics
L1: 3 flakes
U/S: flake

3.5.4 The inner Stepleton outwork

The inner outwork ditch was located by excavation for a distance of *c* 150 m west of the Stepleton enclosure. Its full westward extent beyond the excavated area is, however, uncertain (see 3.5.1). Its eastern end was within the excavated area, where the outwork followed the line of the pre-existing Stepleton enclosure. This end was almost certainly incomplete. South of the hedge which marks the boundary between Hanford and Shroton parishes, segment 9 of the inner outwork ditch was 1.2 m deep (Fig 3.92). North of the same hedge, the ditch was no more than a shallow, topsoil-filled hollow (Fig 3.91), in which a vestigial causeway could be distinguished, corresponding to that between segments 17 and 18 of the enclosure. The transition from one to the other lies in the unexcavated 4.60 m-wide band beneath the hedge, and it is interesting how the line of this ancient parish boundary coincides with the end of the most pronounced earthwork on the spur. It can only be inferred that the north-east end of the earthwork was dug to a little below the surface of the natural chalk and then abandoned.

Some 205 linear metres of bank area and some 115 of ditch were excavated, respectively *c* 90% and 60% of the totals available within the excavated area, disregarding the shallow, probably incomplete, ditch in the north-east. Segment 8 was excavated completely; the others to varying extents, 60%–80% in the case of segments 5 to 7, less for segments 3, 4, and 9. Short lengths of segments 1 and 2 were exposed in the west of the excavated area.

The bank

No bank or underlying ancient soil survived, as with the other earthworks on the spur, although the profile of the ploughsoil surface reflected the protected chalk hump which lay beneath. Protected chalk was continuous across causeways along the inner edge of segments 6 to 9 and most of segment 5, breaking only at the Clay-with-Flints-filled fissure through which segment 6 was cut. At the west end of segment 5 the protected chalk broke off on either side of segment 1 of the pre-existing Stepleton enclosure. A 5.6 m break was occupied by an entrance, described below, between segments 4 and 5, and, insofar as the size and shape of areas 4E and 4G make it possible to judge, a 36 m break corresponded to a wide causeway between segments 3 and 4.1 and to the shallowness of their two butts, which would have produced little spoil (Fig 3.94: sections KK–KK', LL–LL'). Inside the enclosure, the band of protected chalk signifying the extent of the eroded and perhaps spread bank was crushed, plough-scored, and ragged in plan. It ranged from 4 m to 10 m in breadth and lay up to 2 m inside the ditch edge at the time of excavation. A maximum width inside segment 8 may reflect the spreading of the bank during the insertion of a number of Saxon inhumations (see 3.5.7). Irregularities elsewhere were almost certainly the effects of plough damage, since inside segment 4.2, where the bank area was protected from relatively recent ploughing by a positive lynchet, the better-preserved protected chalk was parallel-sided and its width varied only between 5.50 m and 6.50 m (Fig 3.111).

Features within the bank area

The bank areas were lightly machine-stripped in 1978–80, the final skin of overburden being hoed off the protected chalk. In 1981 areas 4C and 4E were hand-stripped so that features in area 4C were identified at a slightly higher level than in previous years. They were nonetheless shallower and worse-preserved than those excavated in area 3B in 1980, which had been protected by a positive lynchet.

Pits

Pits were most frequent in the part of the bank area that lay within the Stepleton enclosure. Their restriction to the inner part of the band of protected chalk here suggests that were cut inside the original enclosure bank, before the outwork was built (see 3.5.2). There were at least six (2A F17, F48, F182, F200, F374, F409), five of them with assemblages of early Neolithic artefacts. Predominantly shade-loving molluscs were recovered from one of these (Table 5.3: 2A F17). Charcoal was almost ubiquitous and was abundant in 2A F48 and F182, the first of which contained a fragment of burnt clay and the second a small amount of burnt flint. Burnt clay also occurred in F47 just beyond the surviving inner edge of the bank area. These pits were comparable to others elsewhere in the enclosure. 2A F200, was exceptional. It survived as a shallow scoop, almost completely occupied by the skeleton of an older adult, possibly male, so tightly contracted as to suggest that the body had been bound (Fig 3.113). Most of the skull had been ploughed away. There were charcoal flecks in the fill and one metacarpal was slightly scorched. The skeleton is dated to *3780–3630 cal BC* (4855±45 BP; OxA-7835). West of the enclosure, the one feature in the bank area which may have been a Neolithic pit, 3B F435, contained only a hammerstone, burnt flint and charcoal, a far smaller assemblage than those within the enclosure. Further west again, a naturally silted hollow, 4C F500, larger than most of the Neolithic pits, without artefacts but with abundant charcoal, invites comparison with features containing charcoal of Boreal age elsewhere on the hill (see 3.2, Fig 3.116).

Postholes

Where preservation was best, inside segment 4.2 where a lynchet had, until the relatively recent past, protected the site of the bank, there were two outer rows of postholes, one along each edge of the protected chalk, a clear inner row some 0.60 m from the interior edge, and perhaps a badly preserved inner row at approximately the same distance from the exterior edge.

The internal rows were made up of rather smaller sockets, spaced at the same interval of approximately 0.80 m as those of the outer rows (Fig 3.111). Some 11 m from the east butt of the segment preservation deteriorated, although the same pattern could be still be discerned as far west as the bank was excavated. It was certainly present to the east, on the other side of the gateway inside the west end of segment 5 (Fig 3.111). The postholes of the external rows survived to between 0.35 m and 0.70 m wide and 0.10 m and 0.55 m deep. Those of the internal rows were between 0.25 m and 0.45 m wide and 0.10 m and 0.50 m deep. Where postpipes were identified they suggest posts of between 0.10 m and 0.20 m in diameter at their lowest extent in the external rows and *c* 0.15 m in the internal rows.

A possible posthole in the edge of segment 1 of the Stepleton enclosure, perhaps aligning with the outer row to the west (Fig 3.111) suggests, as does possible backfill in the upper part of that segment (see 3.5.2), that the timber-laced rampart was continuous along the inner edge of segment 5 of the outwork, burying segment 1 of the enclosure along with pits to the east. Within the Stepleton enclosure, where the lynchet no longer offered its protection, there were no parallel rows of postholes in the protected chalk. There were far fewer postholes here, and almost all of them lay, like pits, in the inner part of the bank, those with any sign of alignment forming a single row 5–6 m from the ditch edge as it survived at the time of excavation (Fig 3.81). Since this more-or-less corresponds to the interval between the inner row and the ditch edge outside the enclosure, it is likely that here the outer postholes were cut less deeply into the chalk because they were set in the pre-existing Stepleton enclosure bank. It may be significant that the relatively few postholes in the outer part of the bank here include particularly large examples, such as 1A F316 or 1B F11, which may reflect the survival of the deepest. The absence of postholes from the protected chalk inside segments 8 and 9 may be due, like its exceptional width, to disturbance of the bank by the insertion of the Saxon cemetery.

Predominantly shade-loving molluscs were recovered from one posthole inside the enclosure (Table 5.3: 2A F177). Animal bone and earlier Neolithic artefacts occurred in several (eg 1B F11, 1B F12+F13, 2A F168, 2A F202), but were virtually absent from the far more numerous postholes to the west. Like the pits in the protected chalk, this cultural material may date from the early use of the enclosure and have been already present in the immediate area when the bank was built. Burnt material, on the other hand, shows no distinction between the postholes inside and outside the enclosure. From segment 4 to segment 7, a distance of some 160 m, postholes in the bank area contained varying combinations of dark, burnt-looking fills, charcoal, burnt flint, burnt chalk and burnt clay, suggesting that the posts in them had burnt *in situ*. Where the charcoal has been identified it is of oak, with the single exception of Maloideae in 3B F524, a posthole in the outer row inside the west end of segment 5. Pine charcoal from a nearby feature of nebulous form and uncertain date may not relate to the rampart (see Austin *et al*, 6.1).

The gateway

The stump of a charred oak post survived intact in one of a row of postholes of varying sizes bordering the west side of the causeway between segments 4 and 5. These were closer spaced than the main post rows, and are most readily seen as the revetment of an entranceway through the bank (Fig 3.111: 3B F603, F604, F605, F602, F601, F609, F608, F610). Mature oak charcoal from two of them was of early fourth millennium date, *3980–3660 cal BC* for the post stump in F601 (5040±80 BP; HAR-4437), and *3720–3520 cal BC* (4770±80 BP; HAR-4438) for fragments from F603. In F601 the burnt post had been replaced with a second one, which had not been burnt, and the same seems, though less certainly, to have happened in F603. The abutment of F602, in which a post had burnt, and F604, in which none had, also suggests replacement, as does the contrast between the absence of burnt material from F608 and F610 and its presence in nearby F609. The varying sizes and irregular alignment of the posts would be compatible with more than one episode of construction. The corresponding area on the east side of the causeway was badly eroded by a later hollow way, which ran obliquely through it. Only the northern post of the lateral revetment (3B F613) survived. The rest were tentatively detected as clusters of nodule packing within the hollow way. These indicate a width of *c* 2.25 m, within which 3B F612 could have held a central post (Fig 3.111).

It was only in the gateway that there were both postholes where posts had clearly burnt *in situ* and definite or probable postholes without burnt material. Within the area of the rampart, burnt material was virtually ubiquitous and *in situ* burning was difficult to distinguish. The plan suggests that the inner and outer rows of postholes may have belonged to two successive box frame ramparts. If so, some may have burnt *in situ* and already present burnt material may have entered others both at the time of construction and as the posts in them rotted. The only hint of sequence is provided by the apparent alignment of the inner rows with F608 and F604 in the gateway, both of them unburnt. The reconstruction of the gate may have been accompanied by the building of a slighter rampart, the postholes of which, cut through earlier rampart debris, were thereby shallower.

The hollow way was itself plough-damaged, surviving as a depression up to 0.25 m deep, containing a mass of flint nodules, often crushed (see Saville 10.2), flanked by rows of nodules set 1.5 m apart. A streak of protected chalk along its south-west side is likely to represent a former bank. Its use in Romano-British times, although not necessarily an origin in that period, is evidenced by an iron cleat of Romano-British

type (cf Manning 1985, 131, R54–R64), which may have been a boot-fitting, and by three Romano-British iron hobnails similar to Manning's type 10 (1985), with a fourth from the top of the adjacent east butt of segment 5. Other finds from the hollow way included a few sherds of Roman and Neolithic pottery, small quantities of animal bone and struck flint, and almost a kilogram of burnt flint, which was ubiquitous in this area.

The ditch

This was the largest of all the Neolithic ditches on the hill. The overwhelming impression is one of irregularity, with the segments highly variable in size and form, especially in the west of the excavated area. Here widths ranged through 1.8 m in the exposed butt of segment 1, 4 m in segment 2, 3.6 m and 1.6 m in the widest and narrowest parts of segment 3, and 2 m in the west butt of segment 4.1. Depth was equally variable, the shallowest part of segment 4.1 being only 0.70 m deep, while segments 4.2 to 7 to the east were close to or over 2 m deep. Such disparities in size within and between segments may suggest that construction ceased abruptly here as well as in the north-east.

The gateway was marked by particularly wide and deep butts on either side and was flanked to the east by the longest segment, segment 5, at 65.5 m. It is unclear whether segment 4, to the west of the gateway, was one segment or two. If there was no causeway between segments 4.1 and 4.2, then segment 4 was the next longest, at 43.5 m. Other determinable segment lengths ranged from 15 m to 25.5 m. Among those segments exposed to the west, the alignment of segments 2 and 3 would be compatible with their forming a single segment 59 m long; and segment 1 could not have been more than 14 m long because it did not extend into area 4G (Fig 3.81). The widest determinable causeway, at 6 m, corresponded to the gateway. Others ranged from only 0.5 m between segments 8 and 9 to 4 m between segments 6 and 7. There is likely to have been an exceptionally wide 22 m causeway between segments 3 and 4, since the disposition of the excavated areas was such that any intervening segment could have been at most 10 m long, shorter than any of those whose dimensions are known (Fig 3.81). Both narrow ditch butts turn inwards towards this space.

Profiles were diverse and irregular, even within a single segment (Figs 3.94–100, 3.102). This was due in part to the presence of natural fissures in the chalk, into which ditch fills subsided, and which gave rise to many irregularities like those in segments 4.1 and 5 (Figs 3.94, 3.96–97). The fissures would have made the excavation of the ditch substantially easier by providing ready-made clefts and starting points from which to lever out the chalk. The pre-existing Stepleton ditch would also have lessened the labour of excavation. Where fissures did not determine the profile, the segments were generally cut with flat bases and steep sides, the latter surviving to varying heights below the weathered-back upper walls. In segment 4.1, shallowing and constriction at the east end of the excavated length on site 4C (Fig 3.94: section NN–NN') could suggest that there was a butt or a ridge between sub-segments in the unexcavated 11 m between sites 4C and 3B. The westernmost part of segment 4.2 was only slightly wider and deeper (Fig 3.94: section OO–OO'). Whether these were one segment or two, there was an expansion from a narrow, shallow west end to a massive east butt at the entrance. The correspondingly wide and deep west butt of segment 5 gave way to a ditch of more consistent proportions, the expanded east butt probably being the result of a later recut (see *Phase III* below). The erratic plan of segment 6 is attributable only in part to the Clay-with-Flints-filled fissure through which it was cut, and contrasts with the symmetry of segment 7. Segment 8 was cut in marked sub-segments.

Phases I and II

Various deposits were made on the ditch floor or in the fissures which divided it. A neonate, dated to *3590–3510 cal BC (90%) or 3420–3380 cal BC (5%)* (4815±35 BP; OxA-7101), was buried in a fissure in the angle of the south-west butt of segment 9 (Fig 3.92); and an older mature adult male, dated to *3600–3490 cal BC (80%) or 3440–3380 cal BC (15%)* (4738±28 BP; UB-4242), was placed on a ledge to one side of the ditch base near the south-east butt of segment 7 (Figs 3.100, 3.101). Possible cut-marks on both skeletons suggest that, although articulated, they may have been the subject of manipulation before burial (see McKinley, 7.1). It is uncertain whether the displacement of some bones of the adult was the result of human intervention or of animal disturbance. On the ditch floor near the centre of the same segment were fragments of an infant skull, without a mandible. Near the centre of segment 5, an immature fibula shaft and a cluster of 143 flakes and a core fragment were placed in a fissure. An antler tine on the ditch floor beside the fissure may have been a knapping hammer. An adult mandible fragment lay on the ditch floor nearby. There was an antler pick in a fissure in the west butt. In the south-west butt of segment 6, another fissure contained the head and shaft of a left adult femur with fragments of a cattle pelvis, including the left acetabulum. Immediately above these was a substantial part of a pottery cup (Fig 9.5: P60), and sherds in the same fabric were crushed on the ditch floor. A further 28 sherds/57 g of the same cup, making up roughly half the circumference in total, were found at the same spot in the base of the overlying chalk rubble layer, with 121 sherds/391 g of a lugged bowl (Fig 9.6: P68). The fragmentary vessels (perhaps originally all of them?) seem to have been standing on the ditch floor to be covered by successive layers.

Primary silts in the western segments were discontinuous and of uneven, but sometimes substantial, thickness, varying, for example, within the length of

segment 3, from a thin skin to up to 0.40 m (Fig 3.94: sections II–II', JJ–JJ'). This suggests that parts of the segment may have been cleaned out, as do particularly steep faces to the primary silts in the centre of segment 4.1 (Fig 3.94: section OO–OO'). Further east there was less sign of cleaning out at this stage. Finds in the primary silts were minimal in segments 3–4 and 8, and, apart from the neonate burial, absent from segment 9. In segments 5 and 6 a thin scatter of artefacts and animal bone formed the background to localised concentrations of knapping debris, 330 flakes in an area 0.65 m across in segment 5, and clusters of 217 and 38 flakes in segment 6.

The deposits described so far all lay beyond the limits of or beneath extensive silts containing charcoal with varying combinations of ash, burnt flint and burnt chalk. These had all entered the ditch from the interior and lay variously on the ditch bottom, which was sometimes discoloured, above the primary silts, or interstratified with successive silts (Figs 3.94–100, 3.102; Pls V–IX; Table 3.11). They extended discontinuously for 210 m, from the east of segment 3 to the north-east butt of segment 7. Even where there was no charcoal, the lower silts were often grey, suggesting that degraded burnt material was present. Signs of burning were completely absent in the west of segment 3, the east of segment 4.1, the north butt of segment 6 and the centre of segment 7, and any that may have been present in the east butt of segment 5 would have been removed by the phase III/a recut described below. Where charcoal from the burnt deposits has been identified it is predominantly of mature oak and of hazel, with small quantities of other species (see Austin *et al*, 6.1). A bulked sample from segment 7 has been dated to *3650–3390 cal BC* (4700±90 BP; HAR-3058), and mature oak from near the base of the east butt of segment 4.2 to *3940–3850 cal BC (7%) or 3820–3500 cal BC (88%)* (4880±90 BP; HAR-4435). Small quantities of burnt flint were frequent.

In the centre and north-east of cutting 1 of segment 6, where the ditch was cut into a deep fissure filled with Clay-with-Flints, the burnt deposits retained spectacularly high resolution. Fired clay fragments, some burnt to a bright red, and charred timbers covered the clay floor of the ditch, which was itself burnt where there was not a thin skin of primary silt. Some of the timbers formed a lattice pattern, as if from a collapsed structure (Fig 3.99; Pl VIII). The charcoal was particularly badly preserved, as if it had been raised to exceptional temperatures, and consisted overwhelmingly of hazel, with some oak and small quantities of other species (see Austin *et al*, 6.1). Two hazel fragments were dated to *3710–3540 and 3700–3530 cal BC* (4825±45 BP and 4810±45 BP; OxA-8859, -8860). A number of fired clay fragments had regular surfaces and two preserved impressions of split timbers, one a radially split piece of oak (see Barclay 9.4, Fig 9.17). The burnt clay itself was very similar in thin section to the Clay-with-Flints of the fissure through which the ditch here was cut (see Darvill, 9.2). Where the bank would have been of clay, parts of its structure seem to have been fired in proximity to timbers. The evidence is consistent with a box rampart, contained within hurdles, planks, or panels attached to uprights set in the postholes surviving in the bank area. The oak from postholes in the bank would have formed the uprights, the hazel lattice at the base of segment 6 would have been part of the screening. The extent of burnt material in the ditch and of charcoal in postholes in the bank indicates that, soon after the outwork was built, the rampart burned, unevenly, over a distance of more than 200 m, parts of it collapsing into the ditch, other parts silting into it more slowly.

It is often difficult to judge whether finds from these deposits were integral to them or already present on the ditch base. This is true, for example, of infant skull vault fragments found together in a charcoal and ash layer in the north-east butt of segment 7, where other human remains were present on the ditch base beyond the limits of this layer. The burnt layer in cutting 1 of segment 6 was rich in largely unburnt artefacts: 86 sherds/305 g of Neolithic Bowl pottery, more than half of them from P85 (Fig 9.7), which was divided between three separate findspots, and 107 flakes, 4 cores and a miscellaneous retouched piece. There were an antler pick, a worn tine and beam fragments in the west butt of segment 5, beside the gateway, where another pick had already been placed in a fissure before any deposit had accumulated. Scattered through the same butt were 13 sherds/118 g of Neolithic Bowl pottery, probably all from the same vessel. The other side of the gateway, in the east butt of segment 4.2, a setting of pottery and animal bone was unambiguously placed on the surface of L4A, after it had accumulated. Here 177 sherds/1017 g of Neolithic Bowl pottery were clustered together, most in relatively fresh condition and making up parts of four vessels, including P47 (Fig 9.4). The sherds of each vessel were grouped together within the cluster, beside which were animal bone fragments (Fig 3.95). In the next section to the west, still close to the butt, were a further 26 sherds/179 g, most of them from a fifth vessel.

Phase III

On the east side of the gateway, the sheer quantity of chalk rubble in the ditch butt suggests that a substantial part of the bank may have collapsed into the ditch (Fig 3.96: section RR–RR'). Elsewhere, varying, often slight, amounts of chalk rubble became progressively smaller, less angular and more concreted from bottom to top and were frequently interleaved with finer silts. In general, the sides and bank seem to have weathered gradually into the ditch. In cutting 1 of segment 6 a deep, undifferentiated clay layer derived from both sides (Fig 99: L1D) may represent the sustained washing-in of clay from the walls and bank. The remains of the burnt rampart inside the ditch continued to silt in, seen in burnt chalk, silts with charcoal in segments 5

Table 3.11 Stepleton spur, inner outwork. Incidence of burnt material (excluding stray charcoal fragments)

→ from interior, ← from exterior

Segment	*I*	*II*	*III*	*III/a*	*V*
3	–	→ Silt with charcoal, ash chalk pebbles and flint fragments. Flint and chalk burnt in E butt (L5C)	–	–	–
4.1	–	→ Grey, ashy silts with charcoal, in W only (U1–U3 L3D, L3C)	–	–	← Humic silt with chalk rubble and charcoal, in one central cutting only (U4 L3B)
4.2	→ Grey, ashy silt with charcoal and chalk lumps in centre and E butt (U2–U3 L4A)	–	–	–	–
5	→ Grey silts with charcoal and chalk lumps in W butt and centre (U1–U3 L4A, C13–C14 L4A)	–	→ Localised patches of charcoal-rich rubble (U1 L4B, C18 L4A, C11 L4A)	← Patch of ashy black silt with chalk lumps and charcoal (C7 L5C)	→ Localised charcoaly silts (C11 and C14 L3C, U1 L3E) immediately overlying rubble fills
6	→ Grey/brown silt with charcoal and chalk lumps in SW butt (C3 L4A) Silt with burnt clay and charred timbers in centre (C1 L4A)	– –	→ Chalk rubble with charcoal near centre (C2 L4A)	–	–
7	→ Silts with ash, charcoal and chalk lumps in centre and NE butt (L5A)	→ Grey silts with chalk lumps, ash and charcoal in SW butt (L4A)	–	–	→ Silt with ash, fragmented charcoal and angular chalk blocks in NE butt (L3A)
8	–	–	–	–	–
9	–	–	–	–	–

and 6, and grey fills in segments 5, 6 and 7. Where charcoal from these levels has been identified it is predominantly of oak and hazel, perhaps reflecting the progressive fragmentation of oak uprights, during which charcoal from them would have silted into the ditch together with more charcoal from the mainly hazel breastwork which dominated L4A in segment 6 (see Austin *et al*, 6.1). Dates on charcoal from all levels in the ditch are consistent with a common origin in material used to build the rampart (Ch 4).

Towards the top of the chalk rubble fills near the outer edge of the north-east butt of segment 7 was the prone, articulated skeleton of an older subadult or young adult male, with one arm to the side and the other raised to the head (Figs 3.102–104). Among his ribs was a finely worked leaf arrowhead (Fig 3.104), probably the cause of his death. There were cut-marks on his left radius and three of his ribs, and some bones had been gnawed by rodents and canids. Under his left shoulder were some bones from an infant: skull, vertebra and rib fragments, possibly a phalanx fragment, and loose mandibular teeth. It was initially thought that the infant was articulated and contemporary with the young man, even that he had been shot dead while carrying it. The incomplete and weathered condition of the infant bones, however, contrasts with the good preservation of the young male skeleton (see McKinley, 7.1), and their radiocarbon date of *3640–3510 cal BC*

(4770±30 BP; OxA-7100) is older than the mean of the two dates for the young man, *3500–3420 cal BC (31%) or 3390–3320 cal BC (64%)* (the mean of 4560±55 BP and 4645±60 BP; OxA-7044, -7045). Accidental juxtaposition of the infant bones and the young man's skeleton is plausible because infant remains were repeatedly placed in this segment, where two fragmented infant skulls had been deposited in phase I. The layer in which the young male and infant remains lay also contained fragments from two other infant skulls, one with long-bone fragments. In the same layer, a fragmented adult, possibly male, skull without mandible was found with animal bone.

In segment 9, where the neonate burial had already been made, the chalk rubble fills contained the remains of at least three individuals, each represented by a range of bones which suggest that the skeletons had not long ceased to be articulated. This is especially true of the skull, scapula, and vertebrae of a single infant, found with subadult or female adult tibia shaft fragments close to the north-east limit of the excavation, where more of the infant may remain unexcavated. Further human remains occurred in the same layer throughout the length of the segment. These were, working north-east from the butt, an adult scapula fragment with an infant skull fragment; the inverted, fragmented skull of a young or younger mature adult female with mandible, cervical vertebrae and right ribs, accompanied by an older infant occipital fragment and four teeth; and skull, mandible, rib and long bone fragments from an infant accompanied by two adult vertebrae. It may be that the groups of bone from the same individuals derived from bodies originally placed in or on the bank. Both here and in segment 7, human remains in primary contexts seems to have provided a precedent for the deposition of further human remains higher up the sequence.

Animal bone was more widely dispersed, occurring in all segments. Noteworthy deposits include a cluster of cattle, pig, deer and caprine bone with three sherds from a single pot in and on the surface of L4 in the east butt of segment 4.2 by the gateway, overlying a similar, earlier, deposit on the surface of L4A (Fig 3.95). Articulated cattle vertebrae in the centre of segment 6 (Fig 3.98) are dated to *3530–3500 cal BC (6%) or 3435–3375 cal BC (89%)* (4732±21 BP; UB-4137). Occasional antler picks and fragments continued to occur, as did several small clusters of knapping debris, in a pattern reminiscent of the Stepleton enclosure. An antler fragment next to a group of 54 flakes in L7 in cutting 7 of segment 5 may have been another hammer. Large quantities of struck flint in segment 6 reflect the value of the Clay-with-Flints as a flint source (see Saville, 10.2).

Phase IIIa (recut)

After chalk rubble had begun to accumulate, the east butt of segment 5 was expanded by a recut, which removed most of the pre-existing fills over a length of 20 m. At the west end, in cutting 7, the primary silt and some of the phase III chalk rubble were left in place. Towards the butt, the recut extended into the chalk floor of the ditch, which was slightly deepened, and very little of the original fills remained (Fig 3.97). This is probably why there was no burnt material derived from the interior and very little chalk rubble here. Almost as soon as the recut was made, a localised charcoaly silt entered the ditch from the exterior (Fig 3.97, section WW–WW': L5C) followed along the whole length of the recut by a brown humic silt, also derived from the exterior, which contained more pottery, lithics, animal bone and burnt flint than all of the phase III fills in the rest of the segment (Fig 3.97: L5A). At the same time chalky silts with less cultural material entered the ditch from the interior. Struck flint was abundant and was mainly knapping debris. Pottery, concentrated in the north-east butt, included P20 (Fig 9.2) and sherds of at least seven other vessels. Animal bone, also concentrated in the butt, included a right femur, a left femur and a humerus of red deer, as well as an articulating cattle acetabulum and femur, found together, which were dated to *3505–3425 cal BC (52%) or 3420–3410 cal BC (1%) or 3385–3355 cal BC (42%)* (4644±21 BP; UB-4135). This is one of the latest dates from phase III (Fig 4.6) and places the recut in a similar horizon to that of the young man killed by arrowshot, whose skeleton was found in segment 7.

Phase V

Localised charcoaly silts derived from the interior overlay the rubble fills, derived from the exterior in segment 4.1, from the interior in segments 5 and 7. The finer, earthier silts which accumulated above the chalk rubble in segments 3, 4.1, and 8 were almost devoid of artefacts and food remains. Elsewhere, while pottery was scarce, there were substantial quantities of animal bone and struck flint, both of which tended to be at least as abundant in fills derived from the exterior as in those derived from the interior. This may reflect activity outside the ditch during the construction and use of the outer outwork. The disposition of the animal bone and lithics often suggests human action rather than the natural weathering-in of material from the adjacent surface. A dump of bone in L3B in cutting 11 of segment 5 was largely made up of post-cranial bones from two sheep, including articulating R and L forelimbs, and the articulating hind limb of a beaver (see Legge, 8.1). A right sheep humerus articulating with a radius and ulna in the same deposit was dated to *3760–3730 cal BC (1%) or 3720–3620 cal BC (68%) or 3600–3520 cal BC (26%)* (4855±45 BP; OxA-8858), and a sheep femur to *3640–3490 cal BC (68%) or 3460–3370 cal BC (27%)* (mean of 4820±60 BP and 4660±60 BP; OxA-7026, -7059).

Small, compact clusters of knapping debris continued to occur, as in cuttings 8 and 16 of segment 5. There was something of a concentration of animal

Table 3.12 Stepleton spur, Inner outwork, phases V–VIII/a. Pottery identifiable to tradition, excluding one medieval sherd

Totals here may not tally with those that can be derived from the segment catalogues because they include material which cannot be attributed to segment, especially in phase VIII/a, where causeways were not always defined until some of the deposit was removed

Tradition		*V*	*VII/a matrix*	*VII/a 'midden'*	*VIII/a*
Neolithic Bowl	Sherds	42	6	27	141
	Wt (g)	264	33	86	800
	msw	6.3	5.5	3.2	5.7
	% by weight	75	38	11	18
Peterborough Ware	Sherds				1
	Wt (g)				8
	msw				8
	% by weight				1
Beaker	Sherds			7	55
	Wt (g)			14	123
	msw			2	2.2
	% by weight			2	3
Early Bronze Age	Sherds		7	33	168
	Wt (g)		28	477	872
	msw		4	14.5	5.2
	% by weight		32	64	20
Middle and indet Bronze Age	Sherds	4			28
	Wt (g)	9			153
	msw	2.3			5
	% by weight	3			3
Late Bronze Age/early Iron Age	Sherds	18	1	29	4
	Wt (g)	75	19	66	15
	msw	4.2	19	2.3	3.8
	% by weight	21	22	9	1
Other Iron Age	Sherds				13
	Wt (g)				44
	msw				3.4
	% by weight				1
Roman	Sherds	1	3	24	726
	Wt (g)	2	7	106	2365
	msw	2	2	4.4	3.3
	% by weight	1	8	14	54

bone in the west butt of segment 5, at one side of the gateway. There were more marked concentrations of both bone and lithics, however, in the opposed east butt of segment 5 and south-west butt of segment 6 and in the south-west butt of segment 7, where there were two of the three laurel leaves found on the Stepleton spur. These causeways may perhaps have succeeded the gateway between segments 4 and 5 as the main routes onto the spur. Artefacts were overwhelmingly early Neolithic, consistent with the dates for the sheep remains (Table 3.12). A few small, plain flint- or sand-tempered body sherds in what may be Bronze Age or late Bronze Age/early Iron Age fabrics were confined to cuttings 12–14 of segment 5, where they may have been the result of disturbance or intrusion, and to the central part of segment 8, where all the finer silts were excavated as a single layer.

Phase VII/a

The larger segments of the inner outwork were so deep that more substantial post-Neolithic deposits were preserved in them than elsewhere. In segments 5 to 7, a horizon survived between the phase V silts and the ploughsoils which filled the ditch tops. Close to the surface, the earthy upper fills were often difficult to distinguish one from another and were severely disturbed by rabbits, roots and cultivation. It is also, inevitably, difficult to determine what material was redeposited and what was intrusive. The commonest fills of this phase were clayey silts with chalk lumps and pebbles and some peagrit (generally L3), in which animal bone and lithics were frequent, as in the phase V fills. Compact clusters of knapping debris still occurred, notably on the Clay-with-Flints in cutting 1 of segment 6. Concentrations of material persisted in

the east butt of segment 5 and the opposed south-west butt of segment 6. Less than half of the scant pottery was earlier Neolithic, most of the rest being Bronze Age or early Iron Age (Table 3.12). There is no perceptible late Neolithic component among the struck flint. A sequence in which the third millennium is scarcely represented is likely to reflect stability and very gradual accumulation, such as would occur if the ditch were grassed over, or truncated. The first option seems more likely, since the surfaces of the phase V silts do not appear planed-off, in contrast to the upper surface of the phase VII/a deposits at their interface with the phase VIII/a ploughsoils (compare, for example, the surfaces of L3A and L3B with those of L3 and L2B in the sections shown in Figure 3.97). If this were the case, the poor definition of L2B might have been the result of earthworm activity extending into the ditch from an overlying grassland soil, and L2A, the lens of dark brown/black humic clay with chalk pebbles which sometimes overlay L2B, may have been the occasionally surviving base of that soil. This replicates the land-use history argued for the central area on the, admittedly equally tenuous, evidence of the upper fills of the main enclosure (see 3.3.3).

Within this matrix near the outer edge of the ditch in most of segment 5 and in the south-west butt of segment 6 was a midden-like band of dark brown/black loamy clay with chalk and flint lumps, charcoal, and burnt flint (generally L2B), up to 1.8 m wide and 0.6 m deep and extending, perhaps with short breaks, for some 27 m, from cutting 16 of segment 5 to the south-west butt of segment 6. Artefacts and animal bone were far denser here than in the surrounding fill. The deposit was difficult to define, sometimes seen in plan and invisible in section, sometimes tentatively identified by the density of finds alone. In places it seemed heaped into the ditch, in others it may have been the fill of a recut. Its edges were almost always drawn with a broken line, and the attribution to it of some finds was correspondingly tentative. The animal bone was badly preserved, and lacked articulating groups or clear clusters (see Legge, 8.1). The abundant lithics may largely have been derived from earlier activity (see Saville, 10.2), especially as this part of the ditch was downslope from the Stepleton enclosure. The concentration of material, however, still calls for an explanation.

The pottery ranged from Neolithic to Roman (Table 3.12). The most abundant category by weight consisted of plain grog- and grog- and flint-tempered sherds in fabrics matched in local early or possibly middle Bronze Age wares, with which the rare simple rim and base fragments are compatible. Despite their coarseness and friability, these were relatively fresh and unabraded and had a mean weight of over 14 g, substantially higher than those of the later pottery styles from the same context and than similar Bronze Age pottery in the overlying phase VIII/a deposits (Table 3.12). This strongly suggests that the Bronze Age pottery was *in situ* here, a conclusion reinforced by its distribution. A concentration of Bronze Age sherds in cutting 11 near the centre of segment 5, together with a copper alloy awl, does not look like the product of random infilling, especially when accompanied by larger quantities of animal bone and lithics than in the adjoining cuttings. A mollusc sample from the same layer in the same cutting contained higher proportions of catholic and open country species than any from Neolithic levels (see Bell *et al*, 5.2). A continuation of this deposit in the south-west butt, and only the south-west butt, of segment 6 suggests continued significance for the causeway between segments 5 and 6. An exceptional find on this side of the causeway was a bone or antler bead of similar form and decoration to early Bronze Age jet or amber spacer plates (Fig 8.33: ST79 860). Pottery was scarce in this butt, although there were quantities of animal bone, struck flint and burnt flint

Sherds from a red early Iron Age furrowed bowl in L2B on the segment 5 side of the causeway, and more in the overlying phase VIII/a layers, may point to a continued use of the entrance here, and serve to emphasise how mixed and how difficult to define the upper fills were. Roman pottery in this layer and in the surrounding matrix makes it impossible to be confident of the date of, for example, a perforated copper alloy disc and a shell from L3 in the south-west butt of segment 6.

Phase VIII/a

The relict ploughsoils in the segment tops differed from those in the other ditches only in their volume. Where the segments were deepest, successive horizons could be distinguished, as in segment 4.2 (Fig 3.94: section PP–PP'). All consisted of dark matrices with comminuted chalk and peagrit, except for parts of segment 6, where the ditch top was filled with weathered Clay-with-Flints (Fig 3.99). Cultural material was relatively scarce in the west, and abundant, although degraded, in the east and north-east, consistent with much of it having been ploughed-out from the Neolithic enclosure and related features. The Bronze Age and Romano-British periods are particularly well represented among the pottery, and there is an early Roman trumpet brooch from segment 6. There is a small amount of structural daub, with true wattle impressions, and some of the amorphous fired clay is deliberately tempered, unlike the burnt clay of the Neolithic rampart (see Barclay, 9.4). The nature and date of the structures from which it came remain conjectural. A crucible fragment from segment 5 is considered by Dr Peter Northover probably to be no earlier than the late Iron Age (see Barclay, 9.4). An iron knife from L2 in segment 8 or 9 is likely to have derived from the adjacent Saxon cemetery (3.5.7). One among a few oyster shells from the area of segments 5 and 6 was deliberately perforated (see Somerville, 8.6).

Inner Stepleton outwork segment catalogue

Notes (see also p 58)

The current ploughsoil was almost entirely removed by machine, and is included in the catalogue entries only if there were finds from it.

Segment 1

Original notation. ST81 area 4G.
Length >5.2 m, *width* 1.8 m.
Excavation. Exposed and planned, but not excavated.
Less than 14 m long, because not identified in area 4F.

Animal bone and/or antler
L1: *cattle* phalanx

Segment 2

Original notation. ST81 area 4G.
Length >5.6 m, *width* 2 m.
Excavation. Exposed and planned, but not excavated.
Conceivably part of segment 3, in which case the complete segment would be 59 m long.

Segment 3 (Fig 3.94)

Original notation. ST81 area 4E ditch 2 (or D2).
Form. Widest in W (U1), with steep lower sides surviving only at base, most of sides weathered and shelving. Flat base and steep sides in centre (U3). Rounded profile in E butt (U4). Fissures and solution holes in natural chalk. Unexcavated 8 m between U1 and U3 could conceal causeway or junction of two sub-segments.
Length >22 m, *width* 4 m, *depth* 1.65 m.
Excavation. 1.60 m wide section (U1) excavated in W cutting of area 4E, 2.00 m wide section (U3) in central cutting, 2.20 m of butt (U4) in E cutting, some of remainder exposed and planned, but not excavated.

Phase I. White-grey silt with a few chalk pebbles in U3 and U4, thin skin of yellow-brown clayey silt on ditch base only in U1 (L6). So uneven in thickness as to suggest cleaning out in places.

Phase II. Silt with charcoal, ash, chalk pebbles and rare flint fragments; chalk and flint burnt in E butt. Extended from E side of U1 into E butt, derived from interior (L5C). Sometimes graded into other silts with chalk pebbles (L5B in U1; L5A in U4).

Animal bone and/or antler
L5C: *cattle* ilium

Pottery
L5C: 14 sherds/68 g Neolithic Bowl pottery

Lithics
L5C: flake

Charcoal
L5C: *

Phase III. Chalk rubble, vacuous or in little matrix, progressively earthier and more discoloured from bottom to top (L4E, L4D, L4C, L4B, L4A, L4), interleaved with silts with chalk pebbles (L5B in U2 and U4, L5A in U1 and U3, L5, L3E, L3D, L3C).

Animal bone and/or antler
L5B: *
L5E: *
L4B: *
L4D: *

Pottery, all in E butt
L5: 1 sherd/6 g Neolithic Bowl pottery
L4D: 19 sherds/24 g Neolithic Bowl pottery
L4C: 10 sherds/92 g Neolithic Bowl pottery
L4B: 1 sherd/17 g Neolithic Bowl pottery
L4A: 3 sherds7 g Neolithic Bowl pottery

Lithics
L5B: flake
L5A: 3 flakes
L5: 4 flakes, 2 cores
L4B: flake
L4A: flake

Charcoal
L4D: * (U3 – much less than in L5C)
L4C: *

Charred seeds and/or nutshell
L4C: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal

Phase V. Silty loams with chalk pebbles, less humic when derived from interior (L3A), more humic when derived from exterior (L3B).

Animal bone and/or antler
L3B: *cattle* vertebra; *caprine* tooth, mandible
L3A: *red deer* antler tine tip, probably damaged in antiquity; *cattle* carpal, ilium, ulna

Pottery
L3A: 1 sherd/3 g Neolithic Bowl pottery

Lithics
L3B: 11 flakes
L3A: 47 flakes, core, serrated flake

Phase VIII/a. Mid-brown loam with peagrit and small chalk pebbles (L3), inclusions less dense towards top. 'L1' sometimes used to denote recently plough-damaged top of L3, although meant to be applied to modern ploughsoil.

Animal bone and/or antler, almost all in central cutting
L3: *pig* scapula, humerus, 2 ilia, metacarpal, 3 metatarsals, teeth, 2 phalanges; *red deer* antler tine fragment, tooth; *cattle* 2 scapulae, ilium, metacarpal, teeth, 2 mandible fragments, 2 phalanges, vertebra; *caprine* 3 scapulae, 3 radii, femur, 3 tibiae, ilium, ischium, tarsal, teeth

Pottery
L3: 7 sherds/7 g Neolithic Bowl pottery, 1 sherd/1 g Roman

Lithics, almost all in central cutting
L3: 381 flakes (2 burnt), 8 cores, scraper, 4 misc retouched

Unworked burnt flint
L3: 15 g

Upper levels and unstratified.

Animal bone and/or antler
U/S: *

Lithics
U/S: 13 flakes

Segment 4.1 (Fig 3.94)

Original notation. ST81 area 4C, ditch 5 (or D5).
Form. Irregular inner edge, base sometimes flat, sometimes irregular, stepped down to deeper slot at outer edge of W end. Lower sides steep, upper sometimes more weathered and shelving. At E end of excavated area, constriction in plan combined with shallowness (the ditch is as little as 0.70 m deep in this area) may suggest nearby causeway or segment junction just beyond excavated area in unexcavated 11 m between 4.1 and 4.2. Alternatively, 4.1 could be part of same segment as 4.2, with a total length of 43.5 m.

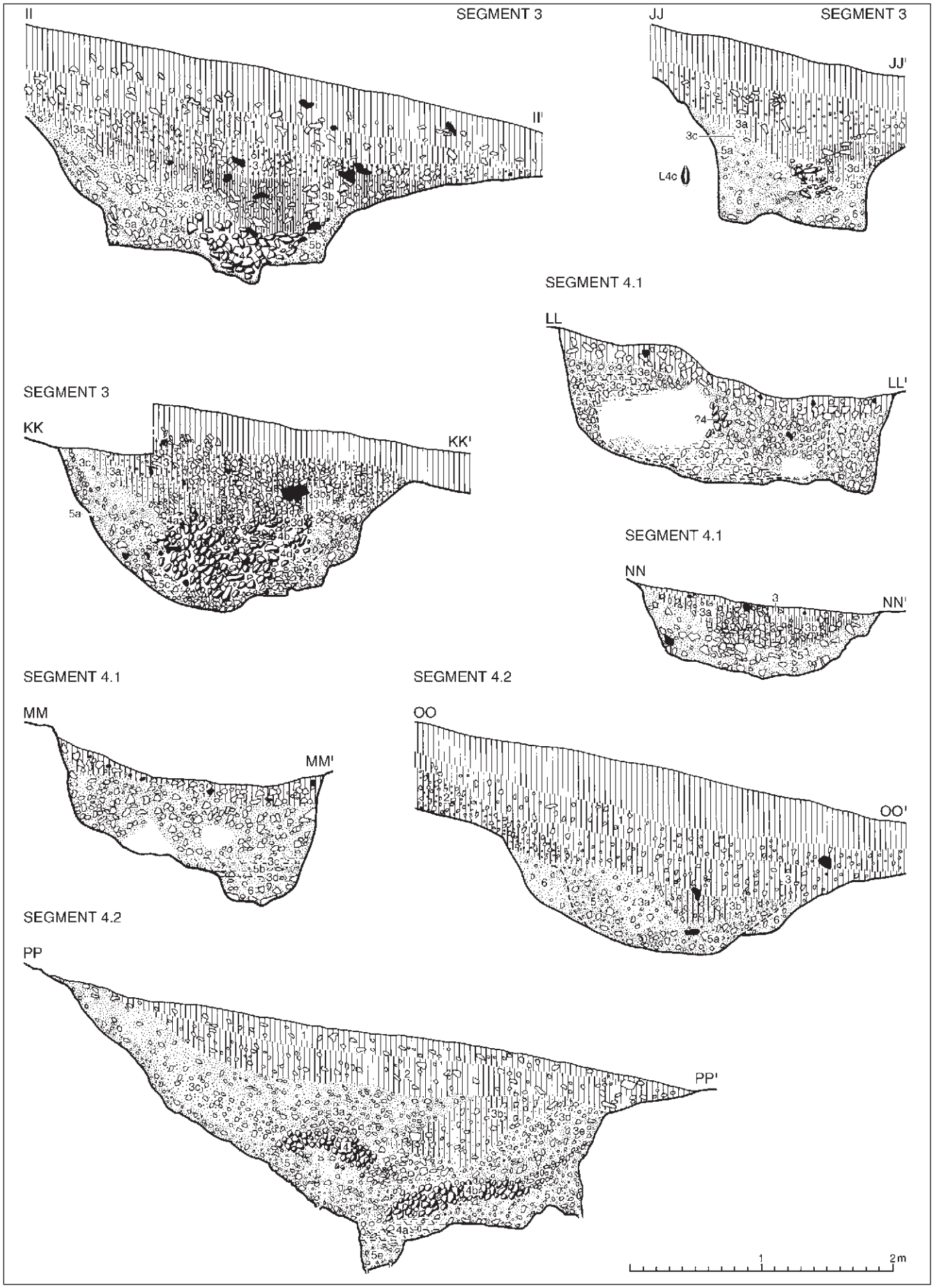

Fig 3.94 Inner Stepleton outwork. Segments 3 to 4.2. The voids are rabbit burrows.

Length >11.6 m, *width* 2.2 m, *depth* 1.4 m.
Excavation. 2.4 m of W butt excavated in quadrants (U1–U2), 3 transverse sections *c* 1.5 m wide (U3–U5 from W to E) excavated in centre of area 4C, leaving intervening baulks standing.
Many rabbit burrows, some reaching to base of ditch.

Phase I. Fine cream silt with chalk blocks (L6), discontinuous.

Lithics
L6: flake

Phase II. Up to 0.50 m of interleaved silts. Some grey, ashy silts with charcoal (L3D, L3C), in W, derived from interior where source apparent, sometimes on or close to ditch base, but separated from it by up to 0.40 m of ash-free silts in W butt. Other silts light grey/brown with chalk rubble and grit but without ash or charcoal (L5B, L5A, L5) derived from both sides and extending throughout excavated sections. Thickest at outer edge in W, where vertical face to L5 and L5A U3 suggests cleaning out.

Pottery
L5: 5 sherds/9 g Neolithic Bowl pottery
L3C: 1 sherd/11 g Neolithic Bowl pottery

Lithics
L3C: flake

Unworked burnt flint
L5: 140 g

Charcoal
L3D: *
L3C: *

Phase III. Small, discontinuous amounts of chalk rubble (L4), embedded in deeper, W end in more substantial mass of fine white silt with dense, relatively small chalk rubble (L3E). Phase III deposits very white, with no sign of incorporation of charred material.

Animal bone and/or antler
L4: *pig* humerus
L3E: *

Lithics
L3E: 5 flakes

Phase V. Loamy silt with chalk rubble, derived from interior (L3A), ashy in W butt, grading into more humic silt with chalk rubble derived from exterior (L3B). Charcoal present in one central cutting (U4).

Animal bone and/or antler
L3B: *red deer* femur
L3A: *

Lithics
L3B: 1 misc retouched, hammerstone
L3A: 5 flakes, scraper

Charcoal
L3B in U4: *

Phase VIII/a. Humic loam with chalk rubble and a little flint (L3). 'L1' sometimes used to denote recently plough-damaged top of L3, although meant to be applied to modern ploughsoil.

Animal bone and/or antler
L3: *pig* scapula; *cattle* tooth, maxilla; *caprine* teeth; *rabbit* acetabulum, tibia, 2 tarsals; *hare* femur
L1: *cattle* tarsal, teeth, vertebra; *rabbit* 2 tibiae, metatarsal, phalanx

Pottery
L3: 43 sherds/276 g Neolithic Bowl pottery
L1: 9 sherds/78 g Neolithic Bowl pottery

Lithics
L3: 30 flakes, heathstone quern or rubber fragment, 2 other heathstone fragments
L1: 2 flakes

Upper levels and unstratified. Localised recent disturbance near centre.

Pottery
U/S: *

Lithics
U/S: 23 flakes

Other finds
U/S: 2 brick fragments

Segment 4.2 (Figs 3.94–3.95, 3.111, Pl V)

Original notation. ST80 area 3B, ditch 4 (or D4)
Form. Relatively narrow and shallow at W side of excavated area (U1), where it was little larger than segment 4.1, expanding to massive E butt (U4), with constriction *c* 3 m behind it. Flat base, steep lower sides, especially at outer edge, weathered, shelving upper sides. Fissures in chalk. Appears in plan to be part of same segment as 4.1, making a segment 43.5 m long, but there could be a causeway or a segment junction in intervening unexcavated 11 m.
Length >21.6 m, *width* 4 m, depth 1.98 m.
Excavation. 3 transverse sections *c* 2 m wide (U1, U2, U3 from W to E) and 4.4 m of E butt (U4) excavated, leaving intervening baulks standing. In 1981, part of segment exposed but not excavated in E of area 4C.

From phase II to phase V all fills had a grey, ashy tinge.

Phase I. Fine white silt with few chalk fragments (L6), confined to sides and angles without extending over ditch bottom, laterally discontinuous, thickest in W and absent from E butt; discontinuity and abrupt faces in W suggest cleaning out. White chalk silt with fine chalk rubble (L5B) in natural fissure in U3. Grey, ashy silt with charcoal and chalk lumps (L4A) in centre and E, generally covering centre of ditch floor, but covering entire ditch base in E butt.

Animal bone and/or antler
L6 in U1: *
L4A, mainly in E butt, clustered beside sherds listed below: *pig* ilium, tooth; *red deer* antler beam fragment; *cattle* ulna, tooth, mandible, vertebra; *caprine* phalanx, horncore

Pottery
L5B: 5 sherds/12 g Neolithic Bowl pottery
Surface of L4A in E butt (U4): 177 sherds/1017 g Neolithic Bowl pottery clustered together, most in relatively fresh condition and attributable to 4 vessels (21 sherds/134 g of cup P47, 81 sherds/413 g from a flint-tempered closed uncarinated bowl with a beaded rim 210 mm in diameter and an imperforate trumpet lug, 24 body sherds/143 g from third vessel, 17 body sherds/143 g from fourth, both flint-tempered). Sherds of each vessel separate within cluster
L4A in section next to E butt (U3): 26 sherds/216 g Neolithic Bowl pottery, including 20 body sherds/179 g from single flint-tempered vessel with wiped finish

Lithics
L6 in U1 and U3: 8 flakes
L4A: 29 flakes (1 in U4, 28 in U3)

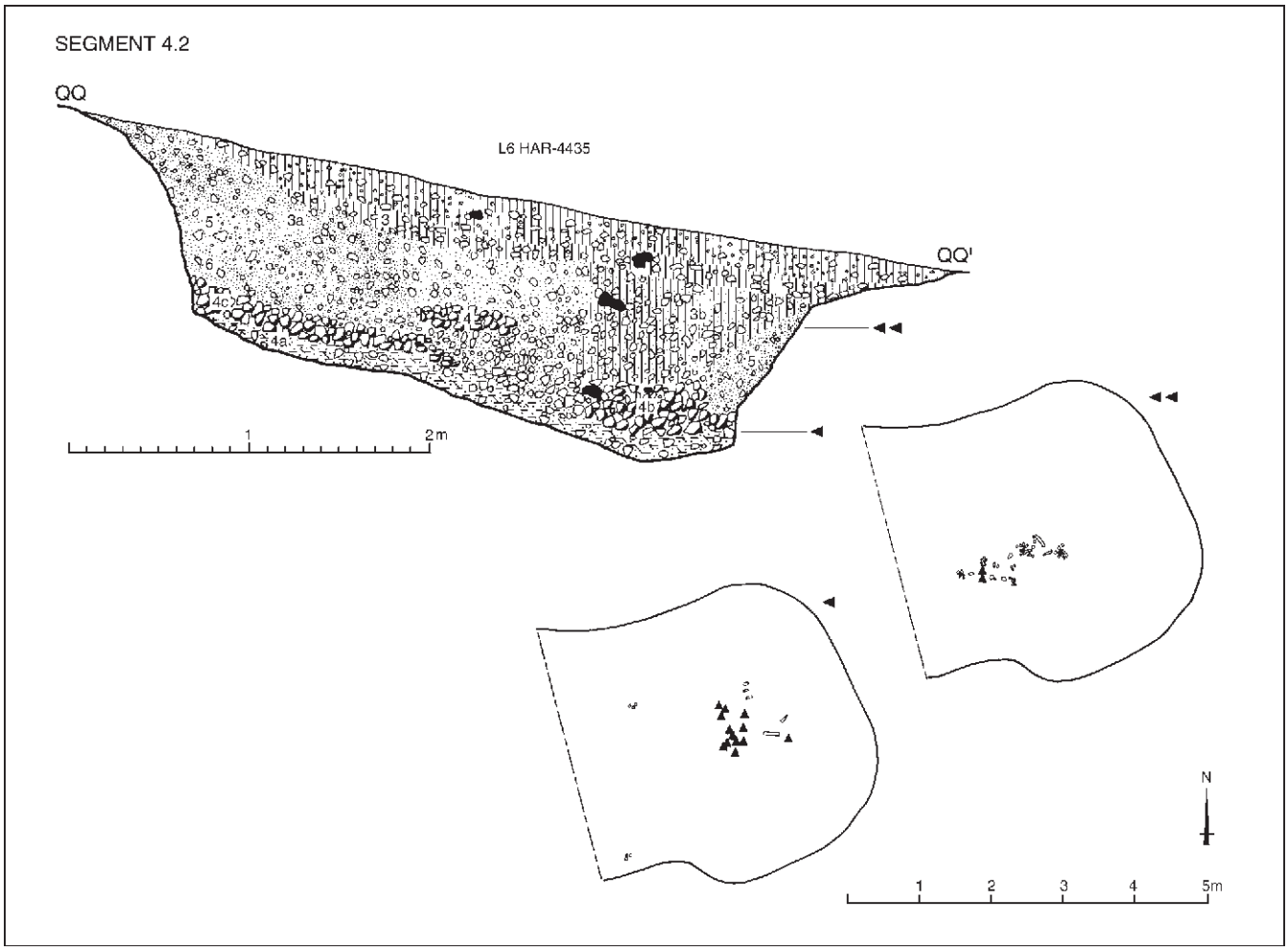

Fig 3.95 Inner Stepleton outwork. East butt of segment 4.2.

Charcoal
L6B: *
L4A: *

Phase II. Fine silt, markedly greyer than L6, with small chalk pebbles and grit (L5), darker equivalent with coarser inclusions from exterior in W (L5A; both thickest in W, where abrupt faces may suggest cleaning out. In E butt (U4) and the next section W from it (U3) L4A overlain by vacuous chalk rubble at each side (L4C, L4B) before or during accumulation of grey silts (L6, L5). Numerous charcoal lumps and flecks in L4C and L4B in U4.

Animal bone and/or antler
L6 in U4: *cattle* tooth, vertebra

Pottery
L6 in U4: 1 sherd/52 g Neolithic Bowl pottery
L5A: 3 sherds/33 g Neolithic Bowl pottery
L5: 2 sherds/7 g Neolithic Bowl pottery

Lithics
L5, almost all in U2: 85 flakes, 1 misc retouched

Unworked burnt flint
L5: 71 g

Charcoal
L6 in U4: *Quercus* sp from mature timbers
L5: *
L4C: *
L4B: *

^{14}C
L6 in U4: *3940–3850 cal BC (7%) or 3820–3500 cal BC (88%)* (4880±90 BP; HAR-4435) on mature oak charcoal listed above

Phase III. Small quantities of vacuous chalk rubble (L4), in E and centre only. Predominant brown-grey silts with chalk pebbles of varying sizes and densities (L3E, L3C, L3D).

Animal bone and/or antler
L4, almost all in E butt (U4): *pig* 2 humeri, scapula, vertebra; *red deer* fragmentary ?pick, further crown and beam fragments, tarsal; *cattle* 2 femora, teeth, vertebra, rib; *caprine* humerus, ulna
L3E: *pig* humerus
L3C: *cattle* ilium, femur; *caprine* scapula
L4/L3B interface in E butt: cluster of animal bone including *fallow deer* tarsal; *cattle* radius-ulna, 2 radii, ulna, femur, tarsal, tooth, mandible, vertebra

Pottery
L4: 5 sherds/31 g Neolithic Bowl pottery
L4/L3B interface in E butt: 3 body sherds/17 g from single vessel found together in animal bone cluster

Lithics
L4: 48 flakes (1 burnt), 2 misc retouched
L3E: flake
L3D: 2 flakes
L3C: flake

Charcoal
L4: *Quercus* sp in U2, *

Phase V. Silts with chalk pebbles, light grey from interior (L3A), looser and more humic from exterior (L3B).

Animal bone and/or antler
L3B: *dog* tibia; *cat* mandible; *pig* metatarsal, tooth; *red deer* metatarsal; *cattle* radius, rib, 2 phalanges, vertebra; *caprine* humerus
L3A: *pig* tooth; *red deer* antler base snapped through pedicle (ancient damage to burr, brow tine chopped or broken off, stump of beam heavily battered), tibia; *cattle* teeth, mandible, maxilla; *caprine* phalanx

Lithics
L3B: 15 flakes
L3A: 15 flakes, 1 misc retouched

Unworked burnt flint
L3A in U3: 148 g

Phase VIII/a. Loose brown matrix with chalk pebbles (L3) succeeded by similar but darker deposit from upslope, with chalk pebbles and peagrit (L2). 'L1' sometimes used to denote recently plough-damaged top of L2.

Human remains
L1: subadult/adult humerus fragment (ST80 2115)

Animal bone and/or antler
L3: *cattle* tibia, teeth
L2: *pig* scapula, tooth; *red deer* tibia; *cattle* scapula, metacarpal, metatarsal, tarsal, tooth, 3 vertebrae; *caprine* tibia, tooth
L1: *horse* tooth; *pig* 2 tibiae, ilium, teeth, maxilla; *red deer* metatarsal; *cattle* tibia, 2 metacarpals, metatarsal, tarsal, teeth, vertebra; *caprine* radius, tibia, teeth; *rabbit* 2 tibiae, metatarsal, phalanx

Pottery
L3: 1 sherd/2 g from simple rim in grog-tempered early Bronze Age fabric
L2: 1 sherd/2 g Neolithic Bowl pottery, 2 sherds/1 g indeterminate

Lithics
L3: 51 flakes, core, piercer
L2: 138 flakes, 2 cores, 1 misc retouched
L1: 201 flakes, 4 cores, flaked lump, 2 scrapers, 4 piercers, 7 misc retouched

Unworked burnt flint
L2: 156 g
L1: 1426 g

Other finds
L1: 2 fragments/12 g fired clay

Upper levels and unstratified. Localised recent disturbance near centre.

Animal bone and/or antler
U/S: *rabbit* metatarsal

Charcoal
U/S: *

Segment 5 (Figs 3.96–3.97, 3.111, Pls VI–VII)

Original notation. ST79 area 2B, ditch 1 (or D1), segment 2; ST80 area 3B, ditch 5 (or D5).
Form. Deepest and widest in W butt. E butt expanded by recut. Original excavation followed pronounced natural fissures in chalk, giving rise to diverse, often irregular profiles. Profile of preceding Stepleton enclosure ditch possibly visible as step in inner edge of C6, C11, C13. Base often flat, sides often shelving, with steps marking natural clefts in chalk.
Length 65.5 m, *width* 6 m, *depth* 1.98 m.
Excavation. *c* 60%. In 1979, 6 m of E butt (C4) excavated in plan, 12 transverse sections *c* 2 m wide (C5–C8, C10–C14, C16–C18 from E to W) excavated, leaving intervening baulks *c* 2 m wide standing. In 1980, 6 m of W butt excavated in 3 successive transverse sections (U1, U1B, U2 from W to E), further 1.8 m transverse section (U3) cut to E, 2 baulks left standing. 3.5 m wide gap between 1979 and 1980 areas occupied by hedge.

Phase I. Chalky silt with some chalk lumps, varying from grey to off-white (L5B in U1–U2, L6 in most cuttings, L7 in C14), sometimes on ditch floor and sides, sometimes overlying grey silts with charcoal and chalk lumps derived from interior (L4A except in C11and C18, L5 in C10, C11). Ditch base stained grey in C10, C11, C13, C14. No burnt material or discolouration in E butt (C4–C7).

Human remains
L5 in C10: subadult/adult patella (ST79 1354)
L6 in C10: immature fibula shaft (ST79 1296) in natural fissure in ditch base, 1 m from older adult mandible fragments (ST79 1428), both within <1 m of cluster of knapping debris (ST79 1729) with worn antler tine (ST79 1658) lying beside it, all in on ditch base beyond limits of L5

Animal bone and/or antler
L6 in C5: *carrion crow or rook* proximal R coracoid; *great crested grebe?* Proximal L humerus shaft fragment
L6 in C10: *red deer* antler tine listed above
L6 in C17: *pig* tooth
L5 in C10: *
L4A in C14: antler tine (gnawed)
L4A in U1–U2: *red deer* antler pick with frontal and pedicle (in fissure), second pick, heavily worn tine, beam fragments; *cattle* scapula, radius, mandible

Pottery
L6: 8 sherds/35 g Neolithic Bowl pottery
L4A in U1–U2: 12 sherds/118 g Neolithic Bowl pottery body sherds, almost all probably from same flint-tempered vessel

Lithics
L6 in C10: 143 flakes, core fragment (ST79 1729) in cluster 0.75 m × 0.50 m in fissure next to antler tine ST79 1658. Also 7 further flakes
L6 in C17: 330 flakes (ST79 890) in cluster 0.65 m wide, running into E baulk, 18 further flakes
L6 in C4–C8, C18: 45 flakes, flaked lump, scraper
L5 in C10: 9 flakes
L4A in C14: 2 flakes
L4A: in U1–U2 11 flakes

Unworked burnt flint
L6 in C5: 15 g
L5 in C10: 6 g
L4A in C14: 33 g
L4A in U1–2: 32 g

Charcoal
L6 in C17: *
L4A in C14: *Quercus* sp, cf *Carpinus betulus*, *Corylus avellana*, Maloideae, indeterminate, further, unidentified sample
L4A in U1: mainly *Corylus avellana*, with single fragments cf *Betula* sp and *Quercus* sp, and a few indeterminate, further, unidentified sample

Charred seeds and/or nutshell
L5 in C10: 1 grain *Hordeum* sp

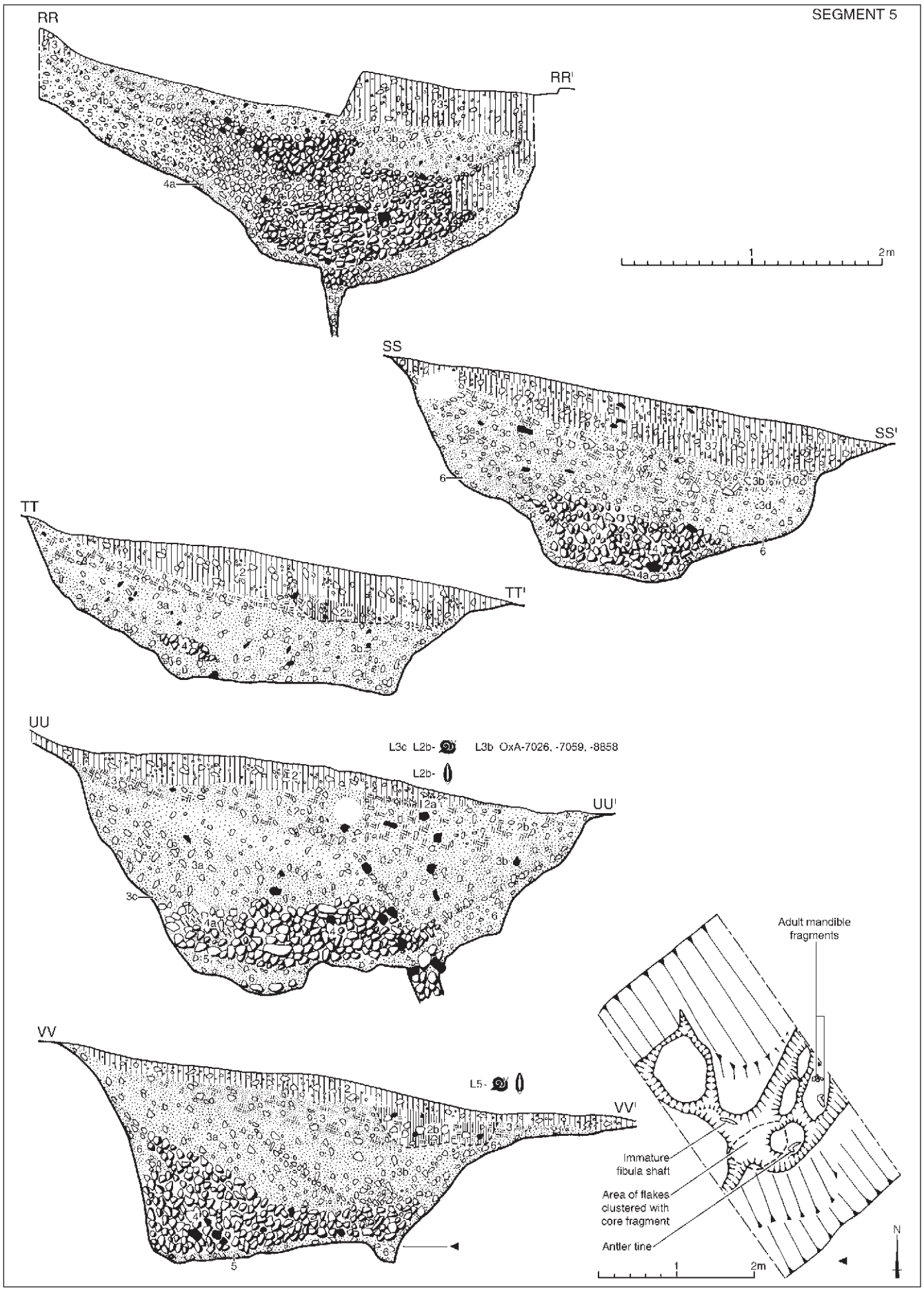

Fig 3.96 Inner Stepleton outwork. Segment 5. Sections and detail. The voids are rabbit burrows.

Molluscs
L5 in C10: predominantly shade-loving

Phase II. Fine silt with chalk lumps, often grey (L6 in U1–U3, L5B in C6, L5 in C17, C19).

Animal bone and/or antler
L6 in U3: *cattle* radius
L5 in C18: *cattle* vertebra

Pottery
L5B in C6: 4 sherds/22 g Neolithic Bowl pottery, all of fabric group 2B

Lithics
L5 in C8, C17, C18: 24 flakes, core
L5B in C6: 4 flakes
L6 in U1: flake

Charcoal
L5 in C17: *

Molluscs
L5B in C6: predominantly shade-loving

Phase III. Vacuous chalk rubble, often grey, with a little flint (L7 in C7, L4 in C8–C14, C16–C18, U1–U3), often containing charcoal, interleaved with patches of particularly charcoal-rich rubble and silt, derived from interior (L4A in C18 and C11, L4B and L4C in U1–U2), and with finer silts (L5 in U1–U3, L5A in C11).

Animal bone and/or antler
L4 in C8, C11–C14, C16–C18, U1–U3: *pig* tibia, teeth; *red deer* antler ?pick, 2 tine tips; *cattle* tibia, 2 vertebrae; *frog* pelvis

Pottery
L7: 6 sherds/23 g Neolithic Bowl pottery
L4 in C8–C14, C16–C18, U1–U3: 22 sherds/143 g Neolithic Bowl pottery, including P15 and 7 sherds/71 g, all in C13, from single flint-tempered neutral vessel with a T-shaped rim 200 mm in diameter

Lithics
L7 in C7: 54 flakes (ST79 2709) in cluster 0.80 m × 0.60 m next to antler fragment (ST79 2562)
L5A in C14: 25 flakes
L5 in U1–U3: 7 flakes
L4 in C10: 210 flakes, 2 cores, 2 flaked lumps, some in cluster 1 m × 0.30 m
L4 in C8, C11–C14, C16–C18, U1–U3: 170 flakes, 2 cores, 2 edge-trimmed flakes, scraper, 1 misc retouched
L4A in C18: 5 flakes, flaked lump

Unworked burnt flint
L5 in U1–U3: 21 g
L4, concentrated in C11, C14, U1: 567 g

Charcoal
L7 in C7: *Corylus avellana*, *Corylus/Alnus*
L5A in C14: *Quercus* sp from mature timbers (ST79 C66)
L4: in C18, *Ilex aquifolium*, Salicaceae, indeterminate; further, unidentified samples from C10, C12, C14, C17, C18, U2
L4A in C18 *Corylus avellana, Quercus* sp, Maloideae, indeterminate, all in very poor condition

^{14}C
L5A in C14: *3800–3490 cal BC (92%) or 3470–3400 cal BC (3%)* (4840±90 BP; HAR-4433) on bulked mature *Quercus* sp charcoal ST79 C66

III/a. Recut approximately 12.50 m long in C4–C7 in E butt, its W edge apparently in baulk between C7 and C8, cutting into ditch base in centre of C4–C5, leaving some of phase III fills intact in C7. Localised patch of ashy black silt with chalk lumps, derived from exterior, on base of recut in C7 (L5C). Throughout, also derived from exterior, brown humic silt with chalk lumps (L5A), particularly rich in artefacts and food remains, which were concentrated in a band along ditch base, although layer extended up outer edge. Cleaner, chalkier silts (L5) derived from inner edge. L5A and L5 not clearly distinguished during excavation of C7. Overlain by vacuous rubble (L4), very slight in comparison with rest of segment.

Animal bone and/or antler
L5A in C4–C7, concentrated in C4 and C5: *red deer* humerus, R and L femora (all found together in C5), tarsal, antler tine tip; *cattle* 2 scapulae, articulating acetabulum and femur (found together in C4, ST79 2578), tooth, premaxilla, 2 vertebrae, rib; *caprine* scapula, phalanx; *scallop* 3 shell fragments in C5
L5 in C4–C7: *pig* vertebra; *cattle* femur, tarsal, 2 metapodials, teeth, vertebra, skull fragment; *caprine* tooth
L4 in C4–C7: *caprine* tooth

Pottery
L5A in C4–C7: 129 sherds/500 g Neolithic Bowl pottery, mainly in E butt, including P20 and sherds of at least 7 other vessels
L5 in C4–C7: 32 sherds/196 g Neolithic Bowl pottery, all in fabric group 6, from C6, 3 sherds/9 g Neolithic Bowl pottery in other fabrics from C7
L4: in C4: 4 sherds/164 g Neolithic Bowl pottery

Lithics
L5A in C4–C7: 245 flakes, 9 cores, flaked lump, edge-trimmed flake, ground axe fragment
L5/L5A in C6: 31 flakes, edge-trimmed flake
L5 in C7: 148 flakes, core, in band up to 0.45 m wide, near centre of ditch
L5 in C4–C6: 111 flakes, core

Unworked burnt flint
L5A in C4–C7: 344 g
L5 in C7: 292 g
L5 in C6: 6 g

Charcoal
L5C in C7: *

^{14}C
L5A in C4: *3505–3425 cal BC (52%) or 3420–3410 cal BC (1%) or 3385–3355 cal BC (42%)* (4644±21 BP; UB-4135) on articulating cattle acetabulum and femur ST79 2578 listed above

Phase V. Silts with chalk pebbles and a little flint derived from interior (L3C and L3E in U1–U3, L3A throughout), grading into similar silts derived from exterior (L3D, L3B in C4–C8, C10–C14, C16–C18, L3D in U1–U3), localised charcoaly silts, derived from interior (L3C immediately overlying phase III fills in C11and C14, L3E in similar position in U1).

Animal bone from L3B in C11 is listed separately because it was an exceptional deposit. Finds from L3B and L3A in C4–C7 in the E end of the segment are listed separately, since these layers overlay a substantial recut, and are likely to postdate equivalent layers to the W. Those from L3A and L3B in U1–U3 are also listed separately because layers there may not equate exactly with those excavated in the bulk of the segment in the previous season.

Human remains
L3A in C10: adult frontal/parietal vault fragment (ST79 1112)

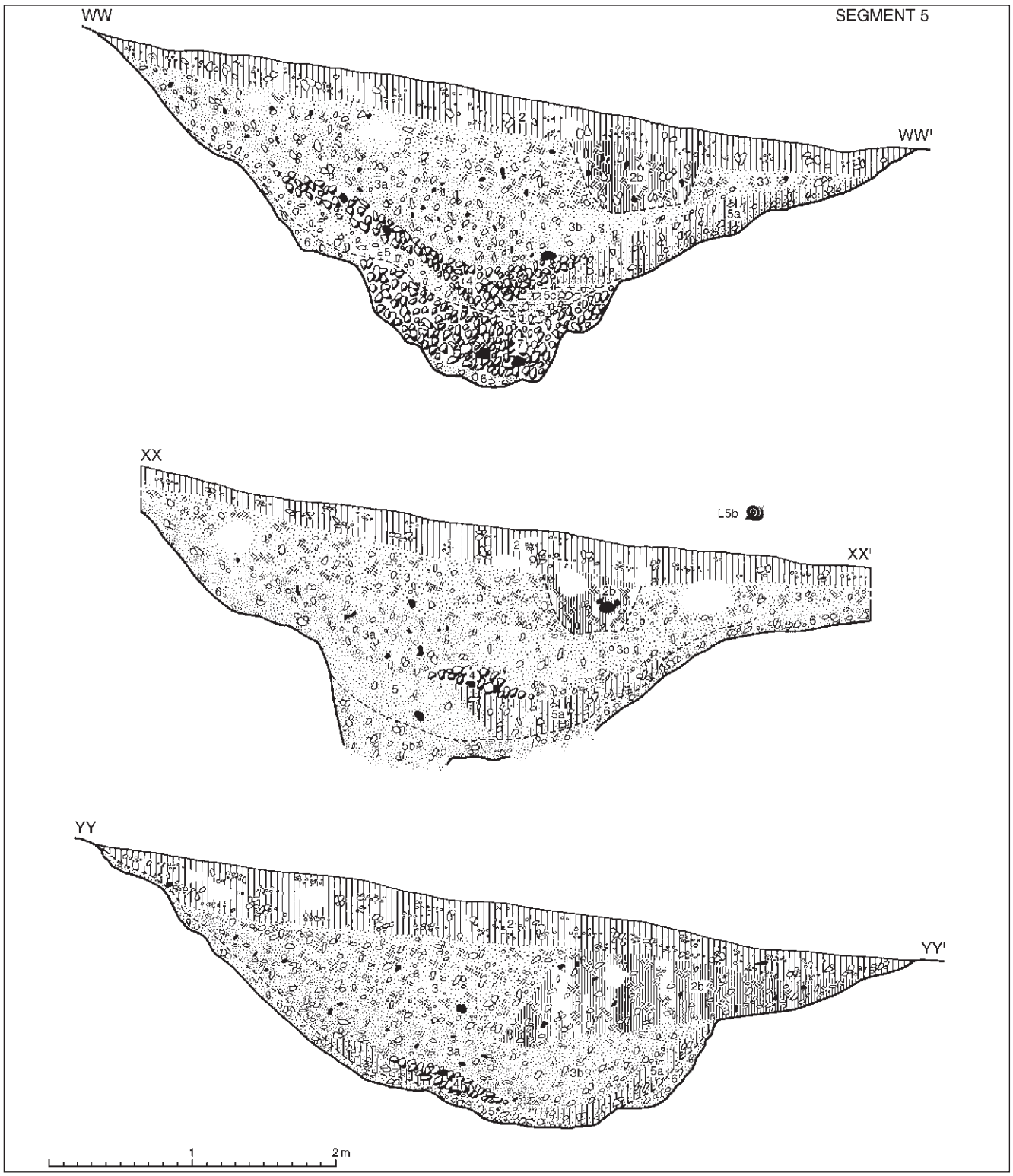

Fig 3.97 Inner Stepleton outwork. Segment 5. Sections and detail. The voids are rabbit burrows.

Animal bone and/or antler

L3C in U2–3: *cattle* scapula, phalanx, rib; *caprine* tooth

L3B in C11: *roe deer* acetabulum; *cattle* tooth, phalanx; *sheep* post-cranial bones from two individuals including articulating R and L forelimbs, as well as scapula, femora, patella, metacarpal, tooth, vertebrae, ribs; *beaver* articulating hind limb. Most of sheep and beaver bone found together (ST79 1098)

L3B in C8, C10, C12–C14, C16–C18: *pig* 2 scapulae, humerus; metatarsal, acetabulum, tooth; *roe deer* maxilla; *cattle* 2 femora, teeth, phalanx, vertebra; *caprine* humerus, teeth

L3B in C4–C7: *pig* 2 ribs; *cattle* humerus, tibia, teeth, maxilla, phalanx, vertebra; *caprine* metapodial, phalanx

L3B in U1–U3, concentrated in W butt (U1): *pig* scapula, 2 humeri, radius-ulna; *red deer* antler pick, beam; *cattle* 2 radii, ulna, tibia, ischium, metapodial, 3 vertebrae, rib

L3A in C8, C10–C14, C16–C18: *pig* skull fragment, teeth;

roe deer femur; *cattle* patella; tarsal, tooth, 2 mandibles; *caprine* metapodial; *beaver* tarsal (in C11)
L3A in C4–C7, almost all in E butt (C4): *pig* scapula, humerus, tooth, maxilla, 2 vertebrae, femur, tarsal, 2 acetabula, ilium, vertebra; *roe deer* antler fragment, phalanx; *red deer* humerus, tarsal, phalanx; *cattle* humerus, acetabulum, ilium, tarsal, metapodial, tooth, mandible, 3 phalanges, 2 carpals, tooth, vertebra, rib, skull fragment; *caprine* tibia; *rabbit* femur
L3A in U1–U3: *pig* radius, metatarsal; *cattle* teeth, mandible

Pottery
L3C in U1–U3: 4 sherds/4 g Neolithic Bowl pottery
L3B in C8–C14, C16–C18: 1 sherd/7 g Neolithic Bowl pottery, 4 sherds/27 g late Bronze Age or early Iron Age
L3B in C4–C7: 3 sherds/21 g Neolithic Bowl pottery
L3B in U1–U3: 1 sherd/1 g indeterminate
L3A in C8–C14, C16–C18: 1 sherd/1 g Neolithic Bowl pottery; 5 sherds/9 g late Bronze Age or early Iron Age
L3A in C4–C7: 12 sherds/26 g Neolithic Bowl pottery, 9 sherds/39 g Late Bronze Age or early Iron Age, 3 sherds/3 g indeterminate

Lithics
L3C in C11, C18: 4 flakes
L3B in C16: 151 flakes, 5 cores (ST79 2528, 2605) in band up to 1.45 m wide, spanning cutting but not extending into adjacent ones
L3B in C8–C14, C17–C18: 343 flakes, 8 cores, flaked lump, 2 serrated flakes, 2 edge-trimmed flakes, 2 scrapers, 2 misc retouched
L3B in C4–C7: 148 flakes, scraper
L3B in U1–U3: 38 flakes, edge-trimmed flake
L3A in C8: 48 flakes, 1 flaked lump (ST79 1998) in cluster 0.40 m × 0.20 m; 92 flakes (ST79 2036) in cluster 0.75 m × 0.50 m, both near base of layer
L3A in C8–C14, C16–C17: 171 flakes, 2 cores
L3A in C4–7: 119 flakes (1 burnt), scraper, backed piece, 1 misc retouched
L3A in U1–U3: 4 flakes
L3C in U1–U3: 6 flakes

Unworked burnt flint
L3C in C11, C14: 629 g
L3B in C16:175 g
L3B in C8–C14, C17–C18: 206 g
L3B in C4–C7: 19 g
L3A in C8, C13: 71 g
L3A in C4–7: 156 g
L3F in U1: 470 g

Charcoal
L3C: in C11, *Corylus avellana*; further, unidentified, samples from C11, C14, U3:*
L3A in C14, *Corylus avellana*, *Quercus* sp, indeterminate, all in very poor condition; further, unidentified samples from C14: *
L3A in C4: *

Molluscs
L3C in C11: predominantly shade-loving

^{14}C
L3B in C11: *3640–3490 cal BC (68%) or 3460–3370 cal BC (27%)*, mean of 4820±60 BP (OxA-7026) and 4660±60 BP (OxA-7059) both on sheep femur from ST79 1098, described above; *3760–3730 cal BC (1%) or 3720–3620 cal BC (68%) or 3600–3520 cal BC (26%)* (4855±45 BP; OxA-8858) on sheep humerus articulating with radius and ulna from ST79 1098, described above

Phase VII/a. Brown clayey silts with chalk lumps and pebbles (L3 in C4–C14, C16–C18), darker areas abutting L2B in C11 and C12 (L2C). Band of dark brown/black loamy clay with chalk lumps and flint within L3, towards outer edge of ditch, sometimes apparently in a recut (L2B), but with ill-defined edges. Recorded in C4–C7, C10–C16. 0.5 m–1.8 m wide, 0.20 m–0.60 m deep, stopping 2.5 m short of E butt. Sometimes overlain by lens of dark brown/black humic clay with chalk pebbles (L2A).

Animal bone and/or antler
L3 in C4–C8, C10–C14, C16–C18, concentrated in C4 (E butt): *pig* 3 humeri, ulna, femur, tarsal, teeth, mandible, phalanx, vertebra; *red deer* antler base with pedicle and part of frontal (charred, brow and bez tines broken in antiquity), metacarpal; *cattle* scapula, radius, ulna, femur, tarsal, 4 metapodials, teeth, phalanx, skull fragment, 2 ribs; *caprine* humerus, radius, tarsal, tooth, metapodial; *rabbit* pelvis, vertebrae, skull fragment, numerous other bones, all in C5–C6
L2B: *pig* scapula, 2 humeri, 2 ulnae, tibia, tarsal, 2 metapodials, teeth, L and R mandibles found together, phalanx, vertebra; *red deer* humerus, metapodial, vertebra; *cattle* 2 scapulae, femur, 6 metapodials, tarsal, carpal, teeth, 2 vertebrae; *caprine* scapula, 2 humeri, 2 radii, 2 tibiae, teeth, maxilla, phalanx, vertebra, rib; *oyster* 1 shell fragment, in C8
L2A: *pig* tooth

Pottery
L3: 4 sherds/24 g Neolithic Bowl pottery, 3 sherds/14 g early Bronze Age, 1 sherd/19 g late Bronze Age, 3 sherds/7 g Roman
L2C: 4 sherds/13 g indeterminate
L2B: 15 sherds/54 g Neolithic Bowl pottery, including P125; 1 sherd/8 g Beaker (P166), 23 sherds/413 g Bronze Age, most frequent in C11 (16 sherds/384 g grog- and flint-tempered, some possibly Collared Urn, some possibly middle Bronze Age; 7 sherds/29 g grog-tempered), 1 sherd/2 g late Bronze Age, 17 sherds/51g from an early Iron Age red-finished furrowed bowl (all in C4), 2 sherds/99 g Roman, 9 sherds/39 g indeterminate

Lithics
L3 in C4–C8, C10–C14, C16–C18: 373 flakes (2 burnt), 6 cores, 3 serrated flakes, 1 misc retouched, 2 Greensand fragments, burnt
L2C in C12: 8 flakes
L2B: 623 flakes, 8 cores, core fragment, 2 flaked lumps, 2 scrapers, 2 misc retouched, heathstone quern or rubber fragment, greenstone flake (S35), ?limestone pebble fragment
L2A: 20 flakes, core

Unworked burnt flint
L3 in C4–C14, C16–C18, concentrated in C4: 343 g
L2B: 824 g

Other finds
L3 in C14: 1fragment/1 g fired clay
L2B: Copper alloy awl (ST79 861), in C11.

Charcoal
L3 in C11: *Fraxinus excelsior, Corylus avellana*, *Acer campestre*, Maloideae, indeterminate
L2B: in C11 *Fraxinus excelsior*, *Quercus* sp, *Acer campestre* , Maloideae, indeterminate; further, unidentified samples from C5, C11

Charred seeds and/or nutshell
L2B in C11: 1 grain *Triticum dicoccum*

Molluscs
L2B in C11: over 50% shade-loving, with significant proportions of catholic or open-country varieties

Phase VIII/a. Brown humic loam with chalk pebbles and peagrit (L2 throughout, L3 and lower part of L1 in U1–U3).

Human remains
L2 in U2: adult femur shaft fragments (ST80 1095)

Animal bone and/or antler
L3 in U1–U3: *pig* scapula; *red deer* antler pick, base and beam fragments; *cattle* radius, tibia, tarsal, tooth, vertebra; *caprine* humerus, 2 tibiae
L2: *pig* scapula, 2 phalanges, teeth, maxilla, metapodial; *roe deer* femur, tarsal, skull fragments; *red deer* antler fragments, 3 metapodials, tarsal, tooth; *cattle* scapula, 2 radii, ulna, substantial part of pelvis (ST79 667, in C18), 3 metapodials, tarsal, teeth, mandible, 2 vertebrae; *caprine* 2 humeri, 2 radii, tibia, metapodial, teeth, rib; *rabbit*: various bones in C4, C5; *oyster* 10 finds in C4, C5, C7, C14, C16/C17, C18, concentrated in C4

Pottery
L2: 10 sherds/58 g Neolithic Bowl pottery, 1sherd/5 g Beaker, 20 sherds/139 g early Bronze Age, almost all in C10, 4 sherds/15 g from early Iron Age red-finished furrowed bowl (all from C4), 10 sherds/34 g late Iron Age, 188 sherds/700 g Roman, 4 sherds/13 g indeterminate
L3 in U1–U3: 2 sherds/4 g early Bronze Age
L1 in U1–U3: 2 sherds/24 g Neolithic Bowl pottery, 9 sherds/29 g Roman, 1 sherd/1 g indeterminate

Lithics
L2 or L2B: leaf arrowhead
L2: 1315 flakes (1 burnt, 2 of chert), 24 cores, 2 core fragments, 8 flaked lumps, 2 serrated flakes, edge-trimmed flake, 15 scrapers, 4 piercers, fragment of ground implement, 13 misc retouched, hammerstone, Upper Greensand quern or rubber fragment, 6 Greensand fragments, sarsen fragment, heathstone fragment, Kentish Rag hone (S28), probably Romano-British
L3 in U1–U3: 91 flakes, scraper, 4 misc retouched
L1 in U1–U3: 71 flakes, 2 scrapers, 2 misc retouched

Unworked burnt flint
L2, concentrated in C4: 5930 g
L3 in U1–U3: 458 g
L1 in U1–U3: L1: 1222 g

Other finds
L2: crucible fragment (ST79 500, in C5), 2 fragments/3 g fired clay (1 with fragmentary wattle impression or perforation)
L1 in U1–U3: Romano-British iron hobnail

Charcoal
L2 in C6, C13: *

Upper levels and unstratified.

Animal bone and/or antler
L1: *pig* radius; *cattle* tooth; *rabbit* tarsal, vertebra

Pottery
U/S: 1 sherd/34 g Roman

Segment 6 (Figs 3.98–3.99, Pls VIII–IX)

Original notation. ST78 ditch 1 (or D1) segment SX; ST79 area 2B, ditch 1 (or D1), segment 1.
Form. Deepest in C1, widest in SW butt, sinuous plan, outward bow in outer edge corresponding to Clay-with-Flints in running through NW corner of C9 and all but NW corner of C1, some small natural fissures in base, especially in SW. Flat base, sides generally shelving, steep in NE. Profile of preceding Stepleton enclosure ditch perhaps visible as step in inner edge in C2 and C3.
Length 22 m, *width* 6 m, *depth* 2.1 m.
Excavation. *c* 70%. In 1978 tip of NE butt excavated only to base of L2 (segment SX). In 1979 4.4 m of SW butt (C3), 2 transverse sections *c* 4 m wide (C2, C1) and 2.2 m of NE butt (C9) excavated, leaving three baulks standing.

Phase I. Grey/tan silt with chalk lumps and pebbles (L6), clayey in C9, dark sandy clay with small chalk lumps and pebbles (L1F) on clay at NE side of C1. Area of burnt material in L6 at NE corner of C2. L6 overlain at inner edge of C3 by fine dark grey/brown burnt silt with charcoal and a few chalk lumps (L4A). L1F and ditch base in C1 overlain by similar silt extending over base of cutting and incorporating fragments of clay burnt to a bright red and charred timbers, on two main alignments at right-angles to each other (L4A).

Human remains
L6 in C3 (W butt): Adult L femur (ST79 1477), in shallow natural fissure in ditch base with L cattle acetabulum and 3 further cattle pelvis fragments (ST79 1436), and 4 plain body sherds/12 g in fabric group 6 (ST79 1478)

Animal bone and/or antler
L6: *cattle* pelvis fragments mentioned above, also further acetabulum, rib (both C3), tibia, phalanx (both C2)
L4A in C1: *
L1F: *

Pottery
L6: 52 sherds/134 g Neolithic Bowl pottery, all but 2 sherds in SW butt (C3), including sherds mentioned in text, further rim sherds in fabric group 6 crushed on ditch floor and 22 sherds/68 g of cup P60 (also in fabric group 6), found together immediately above human femur and cattle pelvis fragments
L4A in C1: 86 sherds/305 g Neolithic Bowl pottery, including 48 sherds/181 g of P85, from 3 findspots
L1F: 3 sherds/>38 g Neolithic Bowl pottery

Lithics
L6 in C3: 16 flakes, 1 misc retouched
L6 in C2: 217 flakes in cluster 0.50 m across (ST79 521); 38 flakes in cluster 0.90 m × 0.60 m (ST79 448), further 276 flakes, core, edge-trimmed flake
L6 in C1: 4 flakes, 1 misc retouched
L4A, almost all in C1: 107 flakes (3 burnt), 4 cores, 2 misc retouched
L1F: 5 flakes

Unworked burnt flint
L4A in C1: 2267 g

Other finds
L6 in C2: 1 fragment/1 g fired clay
L4A in C1: 143 fragments/3.336 kg fired clay, 1 with split oak impression

Charcoal
L6 in C2: *
L4A in C1: overwhelmingly *Corylus avellana*, some *Quercus* sp, small quantities of *Acer campestre*, cf *Carpinus betulus*, Maloideae. Charcoal in very poor condition. Further unidentified samples
L1F: *

Charred seeds and/or nutshell
L4A in C1: 2 grains *Triticum* sp

Molluscs
L4A in C1: predominantly shade-loving

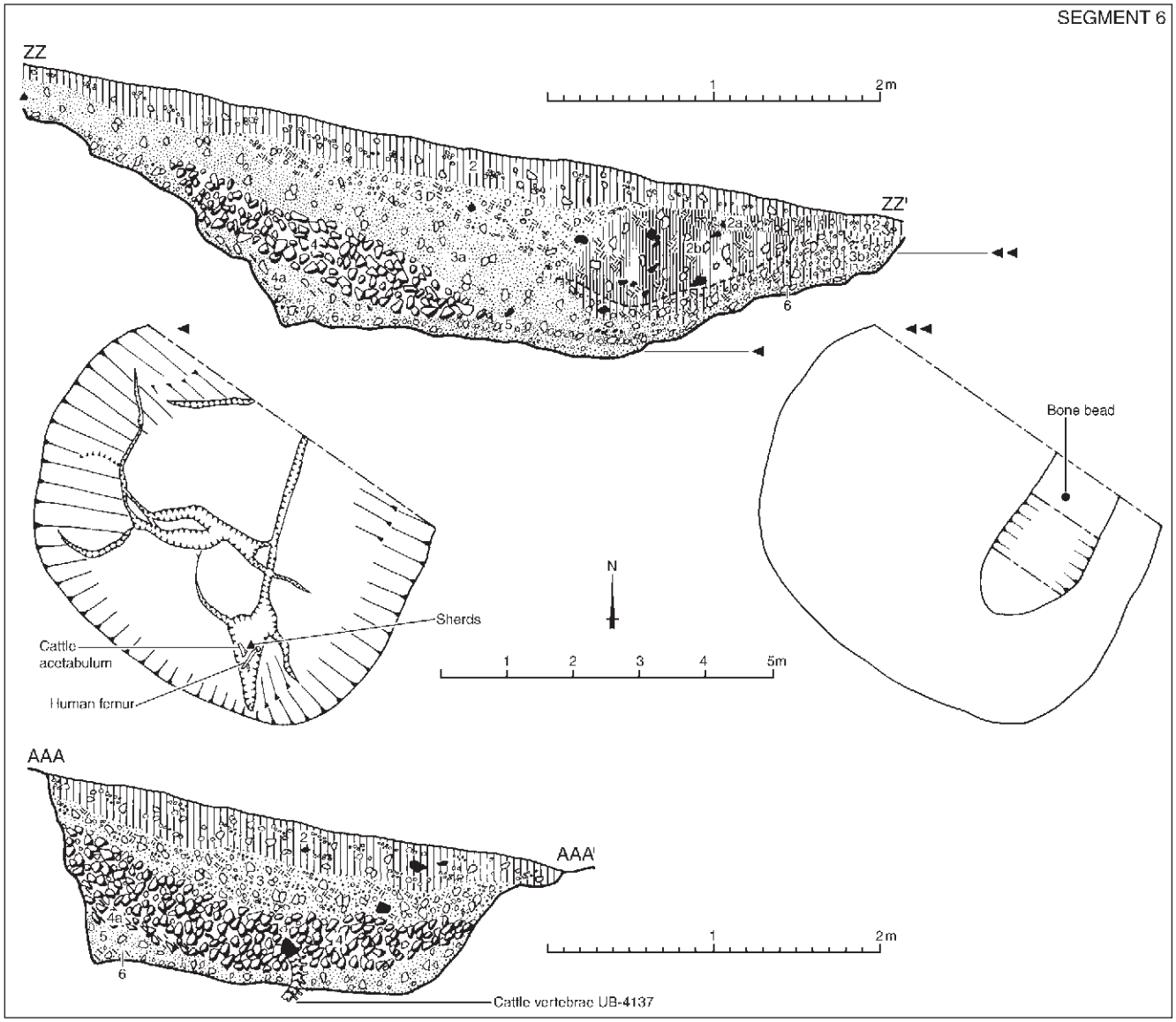

Fig 3.98 Inner Stepleton outwork. Segment 6, south-west butt (cutting 3).

^{14}C

L4A in C1: *3710–3540 cal BC* (4825±45 BP; OxA-8859) and *3700–3530 cal BC* (4810±28 BP; OxA-8860), both on *Corylus avellana* charcoal ST79 C34

Phase II. In C1, sandy clay with small chalk lumps and pebbles (L1E), elsewhere silt with chalk lumps (L5), orange/tan in C3, grey in C2, brown in C9.

Animal bone and/or antler

L5: *
L1E: *

Pottery

L5: 4 sherds/46 g Neolithic Bowl pottery in C3, 12 sherds/53 g Neolithic Bowl pottery in C9

Lithics

L5: 15 flakes, scraper
L1E: 73 flakes

Unworked burnt flint

L1E: 3 g

Charcoal

L5: *
L1E: *

Phase III. Vacuous chalk rubble of varying size and density, with some silt (L4), including burnt chalk in C1, particularly compact and substantial in C2, where its lowest part contained charcoal (L4A). In C1, tan clay almost without inclusions (L1D).

Animal bone and/or antler

L4: *fox* vertebra, *pig* femur, *red deer* calcaneum, *cattle* metatarsal, phalanx, articulated vertebrae (in NE side of C2, ST79 601), single vertebra, rib; *caprine* femur, tibia

L1D: *pig* femur*; red deer* antler beam and tine fragments (found as single, badly preserved piece, possibly a pick), humerus; *cattle* tooth

Pottery

Base of L4 in C3: 28 sherds/57 g of cup P60, with 121 sherds/391 g of lugged bowl P68, immediately above sherds of P60 in L6, in turn immediately above human femur and cattle bone

Remainder of L4: 3 sherds/11 g Neolithic Bowl pottery in C3, 4 sherds/17 g Neolithic Bowl pottery in C11

L1D: 12 sherds/18 g Neolithic Bowl pottery, 1 body sherd/7g grog- and flint-tempered, ?Bronze Age

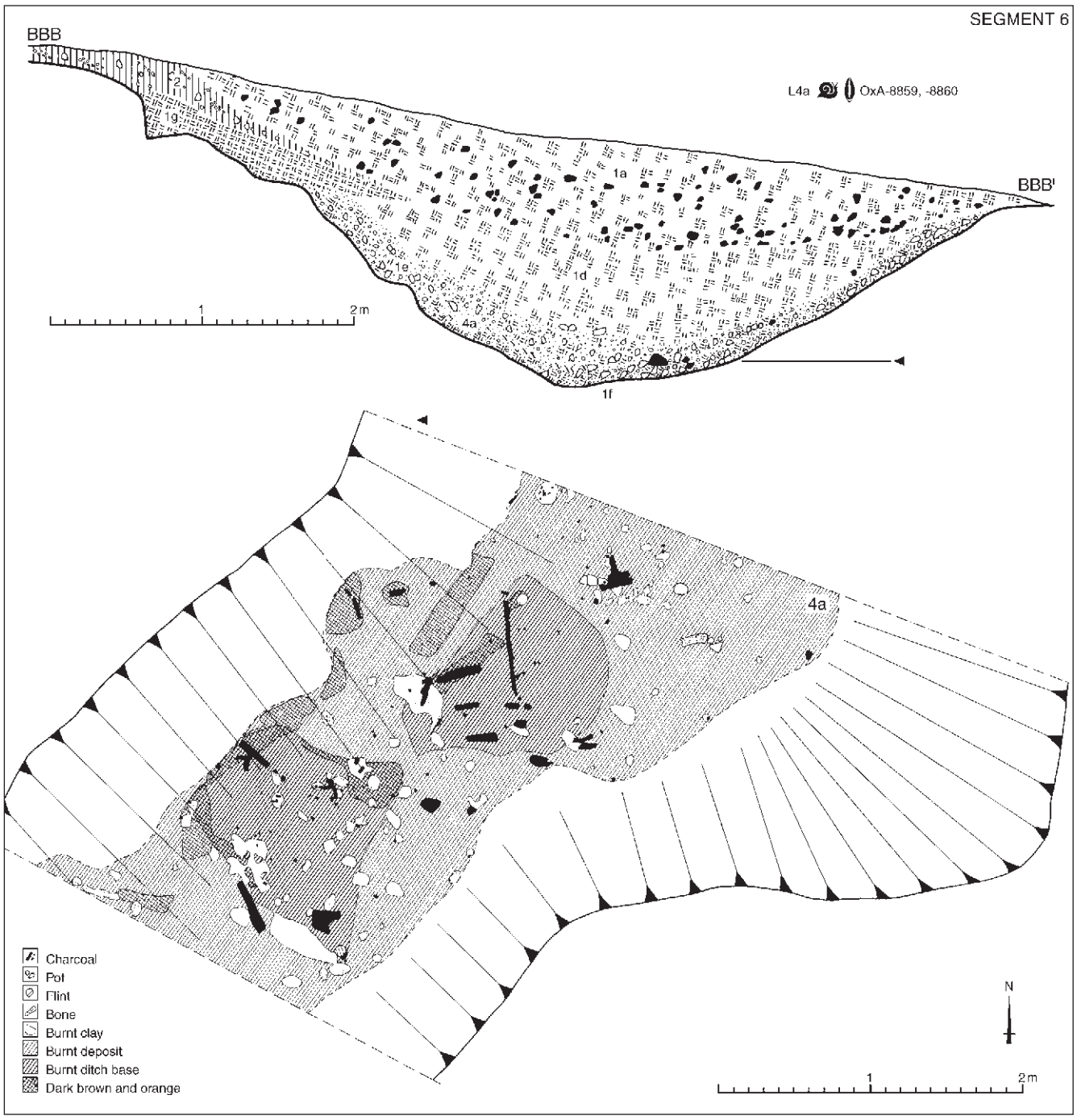

Fig 3.99 Inner Stepleton outwork. Segment 6, north-centre (cutting 1).

Lithics

L4, very little in C1: 119 flakes, core, scraper, 3 misc retouched

L1D: 157 flakes, 7 cores, core fragment, flaked lump, 2 scrapers, including 52 flakes and core (ST79 571, 572, 596), in cluster 0.90 m across on surface of layer at NE side of C1

Unworked burnt flint

L1D: 614 g, including 164 g in cluster with flakes

Other finds

L4 in C1: 24 fragments/72 g fired clay

L1D: 20 fragments/25 g fired clay

Charcoal

L4: *

L1D: *

^{14}C

L4 in C2: *3530–3500 cal BC (6%) or 3435–3375 cal BC (89%)* (4732±21 BP; UB-4137) on articulated cattle vertebrae ST79 601

Phase V. Localised deposit of dark grey silt with chalk pebbles and lumps, in W side of C2, not extending into C3. In E side of C1, orange/red clay (L1G) derived from interior. In C9, orange/brown silty clay with chalk lumps and peagrit, derived from both sides (L3A). In most of segment, light orange-tan to grey tan silt with chalk lumps, (L3A), derived from interior, brown loamy to clayey silt with chalk lumps and some peagrit (L3B) derived from exterior.

Animal bone and/or antler

L3C: *pig* humerus; *cattle* teeth; *caprine* humerus, radius

L3B: *pig* 2 humeri, scapula; *roe deer* metatarsal, 2 antlers (1 L, 1 probably R); *cattle* 2 humeri, 2 femurs, acetabulum, 2 metatarsals, mandible, 3 ribs (all but roe deer metatarsal in C3 (W butt))
L3A: *pig* ulna, astragalus; *roe deer* acetabulum; *red deer* long bone; *cattle* radius, ulna; *caprine* humerus, long bone, calcaneum, tooth

Pottery
L3C: 1 sherd/8 g Neolithic Bowl pottery
L3B: 3 sherds/74 g Neolithic Bowl pottery, 1 sherd/2 g Roman, all in C3
L3A: 1 sherds/1 g Neolithic Bowl pottery, 6 sherds/6 g Neolithic Bowl pottery

Lithics
L3C: 16 flakes, core
L3B: 239 flakes, core, scraper, 1 misc retouched (almost all in C3)
L3A: 71 flakes

Unworked burnt flint
L3B: 297 g
L3A: 10 g

Other finds
L3B: 3 fragments/8 g fired clay

Charcoal
L3C: *
L3B: *

Phase VII/a. Light brown clayey silt with chalk lumps and pebbles and some peagrit, clayey in C9 (L3). In butts only, band of dark brown/black loamy clay with chalk lumps and flint within L3, towards outer edge of ditch (L2B), piled up, up to 0.60m deep, perhaps in a recut up to 1.30 m wide, rich in finds in SW butt, almost devoid of them in NE. Overlain by lens of dark brown/black humic clay with chalk pebbles (L2A).

Human remains
L3: incomplete infant or juvenile humerus shaft (ST79 1751)

Animal bone and/or antler
L3: *dog* right and left ulna, right femur, atlas, 4 vertebra fragments, 1 metacarpal, and 2 phalanges (found together, ST79 1806); *pig* 2 humeri, ulna, acetabulum, tibia, calcaneum, astragalus, teeth; *roe deer* antler, tibia, tooth; *red deer* scapula, vertebra; *cattle* scapula, radius, tibia, medial metapodial, metacarpal, calcaneum, teeth, phalanx, skull fragment, rib; *caprine* radius, 2 tibiae, metacarpal, teeth, *oyster* 1 shell fragment
L2B: *pig* patella, teeth; *cattle* humerus, radius, femur, metacarpal, tooth, phalanx; *caprine* humerus, tibia, teeth; *rabbit* sacrum
L2A: *cattle* 2 metacarpals, tooth; *caprine* vertebra

Pottery
L3: 2 sherds/9 g Neolithic Bowl pottery, 7 sherds/2 g indeterminate
L2B: 12 sherds/32 g Neolithic Bowl pottery, 8 plain body sherds/11 g Beaker or early Bronze Age, 11 sherds/13 g late Bronze Age or early Iron Age, 3 sherds/7 g Roman, 1 sherd/5 g indeterminate
L2A: 1 sherd/6 g Roman, 1 sherd/5 g indeterminate sand-tempered

Lithics
L3 in C1: 95 flakes, core, Old Red Sandstone quern fragment, in cluster 0.80 m × 0.75 m (ST79 598, 981), also 35 further flakes, 1 misc retouched
L3 elsewhere, concentrated in C3: 540 flakes (2 of chert), 17 cores, 5 flaked lumps, scraper, piercer, knife, 4 misc retouched, Old Red Sandstone quern or rubber fragment, burnt Greensand fragment
L2B: 275 flakes, 6 cores, core fragment, 3 flaked lumps, 2 misc retouched, Upper Greensand quern fragment, burnt
L2A: 26 flakes, core, Old Red Sandstone quern fragment

Unworked burnt flint
L3: 611 g (concentrated in C3)
L2B: 414 g

Other finds
L3, almost all in C1: 18 fragments/21 g fired clay; shell; Copper alloy disc
L2B: decorated bone or antler bead (ST79 860; Fig 8.33), 1 fragment/1g fired clay

Charcoal
L2B: *Fraxinus excelsior*, Maloideae

Phase VIII/a. Medium brown humic loam with chalk pebbles and peagrit, clayey in C9 (L2), overlain in C1 and C9 and patchily elsewhere by dark brown clay with flint nodules (= weathered Clay-with-Flints, mainly L1A, also L1B, L1C)

Human remains
L1A: juvenile or subadult R humerus fragment, ?femur shaft fragments (ST79 531)

Animal bone and/or antler
L2: *horse* tooth; *pig* teeth, vertebra; *red deer* calcaneum; *cattle* humerus, tibia, metatarsal, teeth; *caprine* teeth; *mussel* 13 shell fragments (all C3)
L1A: *pig* teeth; *cattle* humerus, metacarpal, teeth; *caprine* tooth

Pottery
L2: 10 sherds/55 g Neolithic Bowl pottery, 4 sherds/18 g early Bronze Age, 1 sherd/3 g ?middle Bronze Age, 73 sherds/222 g Roman, 2 sherds/7g indeterminate flint-tempered
L1B: 5 sherds/5 g Roman, 4 sherds/2 g indeterminate
L1A: 23 sherds/118 g Neolithic Bowl pottery, 1 sherd/8 g Fengate Ware (P158), 44 sherds/158 g early Bronze Age, 1 sherd/16 g ?middle Bronze Age, 84 sherds/238 g Roman, 2 sherds/3 g indeterminate flint-tempered

Lithics
L2: 1402 flakes (1 burnt), 18 cores, core fragment, 8 flaked lumps, edge-trimmed flake, 20 scrapers, 1 piercer, fabricator, 21 misc retouched, heathstone fragment
L1C: 22 flakes
L1B: 40 flakes, core
L1A: 777 flakes, 19 cores, 2 core fragments, 13 flaked lumps, 10 scrapers, 1 piercer, 11 misc retouched, 16 Old Red Sandstone fragments, most of them with grinding surfaces (all in C1 and possibly from the same object)

Unworked burnt flint
L2: 1916 g (mainly from C1 and C2)
L1B: 24 g
L1A: 2019 g

Other finds
L2: Copper alloy Roman trumpet brooch (ST79 858), likely to date from *c* AD 75 into early part of second century, similar to an example from Catsgore, Somerset (Butcher 1982, fig 77: 18), 26 fragments/31 g fired clay, almost all from C1
L1A: 28 fragments/62 g fired clay, including fragment with ?wattle impression

Charcoal
L2: *
L1B: *

***Segment** 7* (Figs 3.100–104)

Original notation. ST78 ditch 1 (or D1) segment A; ST79 ditch 1 (or D1) segment Ø.
Form. Regular plan. Flat base in SW, U-profiled in NE, shelving sides, deepest in NE butt. Natural fissures in ditch base. Profile of preceding Stepleton enclosure ditch perhaps visible as step in inner edge of C15, C19, Q2. Numerous rabbit burrows extending to top of phase III fills.
Length 24.5 m, *width* 6.5 m, *depth* 1.90 m.
Excavation. *c* 80%. In 1978 4.40 m of NE butt excavated in successive longitudinal halves (Q2, Q4), leaving transverse baulk (sector 1) between butt and body of segment, which was also excavated in longitudinal halves (Q1, Q3). In 1979 SW butt (C15) and single transverse section (C19) excavated, leaving intervening baulk standing; except where its outer side removed to recover burial visible in section. Wedge-shaped baulk up to 3.4 m wide between C19, excavated in 1979, and Q1+Q3, excavated in 1978 left unexcavated.

Phase I. In SW butt, localised light tan silt with loose chalk pebbles and peagrit (L6). Finds also recorded from L6 in Q2 and Q4, although it does not appear on sections. L6 in SW butt overlain by more extensive hard-packed tan silt with chalk lumps (L5) which extended through centre, giving way in NE butt to thicker silts with much ash and charcoal as well as chalk lumps, derived from interior (L5A), extending along segment from butt for *c* 5.8 m. Finds from L5A recorded as from L5, distinguished by quadrant (Q2 or Q4).

Human remains
On ledge towards outer edge of ditch base, near SE butt: skeleton of older mature adult male (ST79 2726). Flexed on R side, head to SW, facing SE. 95% present, almost completely articulated, but with some bones displaced, perhaps by burrowing. Two possible cut-marks on R lesser trochanter
On base of ditch near centre, covered by L5: more than 28 fragments from single infant skull (ST78 2842), found together, no mandible
L5A in NE butt: *c* 17 fragments from single infant skull (ST78 2944) found together with *Quercus* and *Corylus avellana* charcoal and with ash (ST78 Sa 124)

Animal bone and/or antler
L6: *pig* articulating astragalus and calcaneum found together near centre, pelvis
L5:*
L5A: *red deer* antler tine (Q4, ST78 2946)

Pottery
L6: 2 sherds/37 g Neolithic Bowl pottery
L5: 7 sherds/59 g Neolithic Bowl pottery
L5A: 3 sherds/2 g Neolithic Bowl pottery

Lithics
L6: 33 flakes (1 burnt)
L5: 41 flakes
L5A: 2 flakes

Unworked burnt flint
L5: 19 g

Charcoal
L5: *Quercus* sp (66 fragments), *Corylus avellana* (6 fragments)
L5A: *Quercus* sp (63 fragments), *Corylus avellana* (32 fragments), *Corylus*/*Alnus* (12 fragments), Maloideae (11 fragments). One sample (ST78 Sa 124) found with infant skull fragments ST78 2944)

^{14}C
Ditch base: *3600–3490 cal BC (80%) or 3440–3380 cal BC (15%)* (4738±28 BP; UB-4242) on L femur of articulated skeleton ST79 2726
L5A: *3650–3390 cal BC* (4700±90 BP; HAR-3058) on bulked *Quercus*, *Corylus* and Maloideae charcoal from mature timbers (ST78 Sa 83).

Phase II. In SW butt, primary silts overlain by grey silt with chalk lumps, ash and charcoal, derived from interior (L4A), much thinner than L5A in NE butt and ending within baulk between C19 and Q1+Q3, ie extending along segment from butt for more than 3 m and less than 6.4 m.

Charcoal
L4A: *

Phase III. Vacuous chalk rubble with some tan silt and peagrit (L4), becoming smaller and less vacuous from bottom to top, sometimes interleaved with silts containing loose-packed chalk pebbles and peagrit (L3C in C15, C19, un-numbered in Q1–Q4). Grey-coloured, especially in and near NE butt

Human remains
L4 in outer side of NE butt: skeleton of older subadult/young adult male (ST78 2755), articulated, *c* 98% present, prone in upper part of layer, with leaf arrowhead among ribs, cut-marks on L radius and three ribs, some rodent- and canid-gnawing, but in generally fresh condition, L shoulder overlying more weathered infant bones: skull fragments, teeth, cervical vertebra fragment, 6 rib fragments, ?phalanx fragment (also ST78 2755)
L4 in inner side of NE butt, at top of layer: 29 fragments from single infant skull (ST78 1101)
L4 near centre: 28 fragments from adult, ?male, skull found together, no mandible (ST78 2795),with animal bone (ST78 2786), infant skull and longbone fragments at separate findspot (ST78 2845)

Animal bone and/or antler
L4: *pig* radius, acetabulum, metacarpal, R and L mandibles, teeth; *red deer* antler tine; *cattle* 2 scapulae, 2 tibiae, ischium, metatarsal, vertebra, rib fragments; *caprine* scapula, radius, femur, carpal
L3C: *pig* mandible fragments, maxilla, tooth; *red deer* antler base and beam fragments

Pottery
L4: 24 sherds/104 g Neolithic Bowl pottery
L3C: 6 sherds/14 g Neolithic Bowl pottery, 2 sherds/3 g late Bronze Age/early Iron Age

Lithics
L4: 233 flakes (1 burnt), 6 cores, core fragment, edge-trimmed flake, scraper, leaf arrowhead among ribs of skeleton ST78 2755 (Fig 10.15: 139), 1 misc retouched, hammerstone

Unworked burnt flint
L4: 440 g, almost all in Q4 (outer side of NE butt)

Other finds
L4: 1 find of shell

Charcoal
L4 in NE butt: *Corylus avellana* (53 fragments), *Quercus* sp (43 fragments), Maloideae (4 fragments)

^{14}C
L4 in NE butt: *3500–3420 cal BC (31%) or 3390–3320 cal BC (64%)*, mean of 4560±55 BP (OxA-7044) and 4645±60

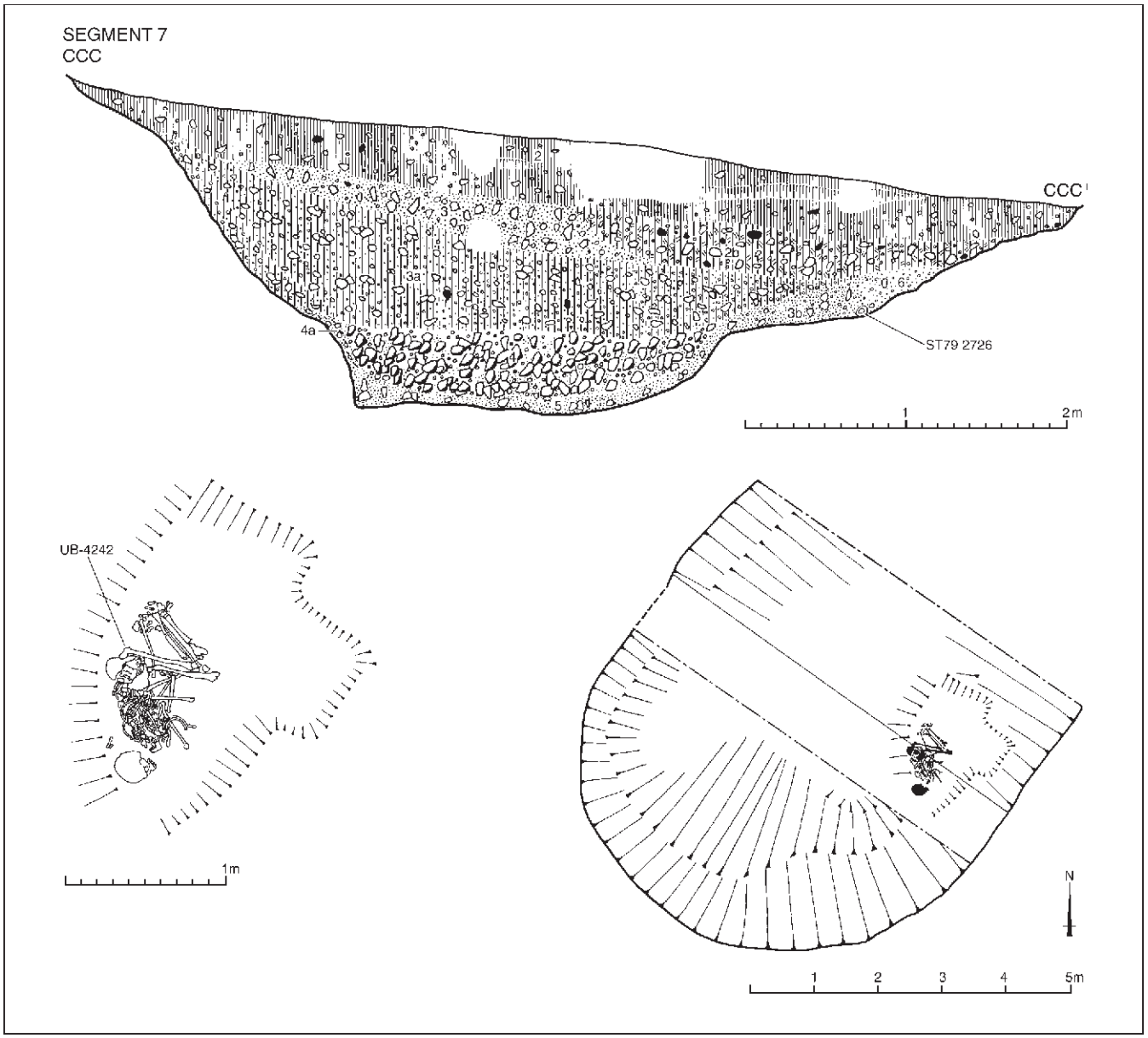

Fig 3.100 Inner Stepleton outwork. Segment 7. The south butt with skeleton ST79 2726. A long bone of the skeleton is shown in the section. The voids are rabbit burrows.

BP (OxA-7054) on L femur of articulated male skeleton ST78 2755; *3640–3510 cal BC* (4770±30 BP; OxA-7100) on skull fragment from among infant remains found under L shoulder of skeleton; *3640–3550 cal BC (25%) or 3540–3400 cal BC (70%)* (4579±90 BP; HAR-3060) on bulked *Quercus* and *Corylus* charcoal from mature timbers (ST78 Sa 121).

Phase V. In NE butt, silt with ash, fragmented charcoal and angular chalk blocks, derived (tipped?) from inner edge of causeway (ST78 L3A), no *in situ* burning. In centre of segment, grey silt with angular chalk blocks (ST78 L3B), overlain in NE and centre by grey silt with dense chalk lumps and pebbles (ST78 L3). In SW butt, light brown sandy loam with peagrit and medium-packed chalk lumps and pebbles, derived from exterior (ST 79 L3B), light grey/brown sandy loam with similar inclusions, derived from interior (ST79 L3A).

Animal bone and/or antler

L3A in NE butt: *pig* ilium; *caprine* teeth

L3A in SW butt: *pig* femur, metacarpal, astragalus, teeth, phalanx

Fig 3.101 Inner Stepleton outwork. Segment 7. Skeleton ST79 2726.

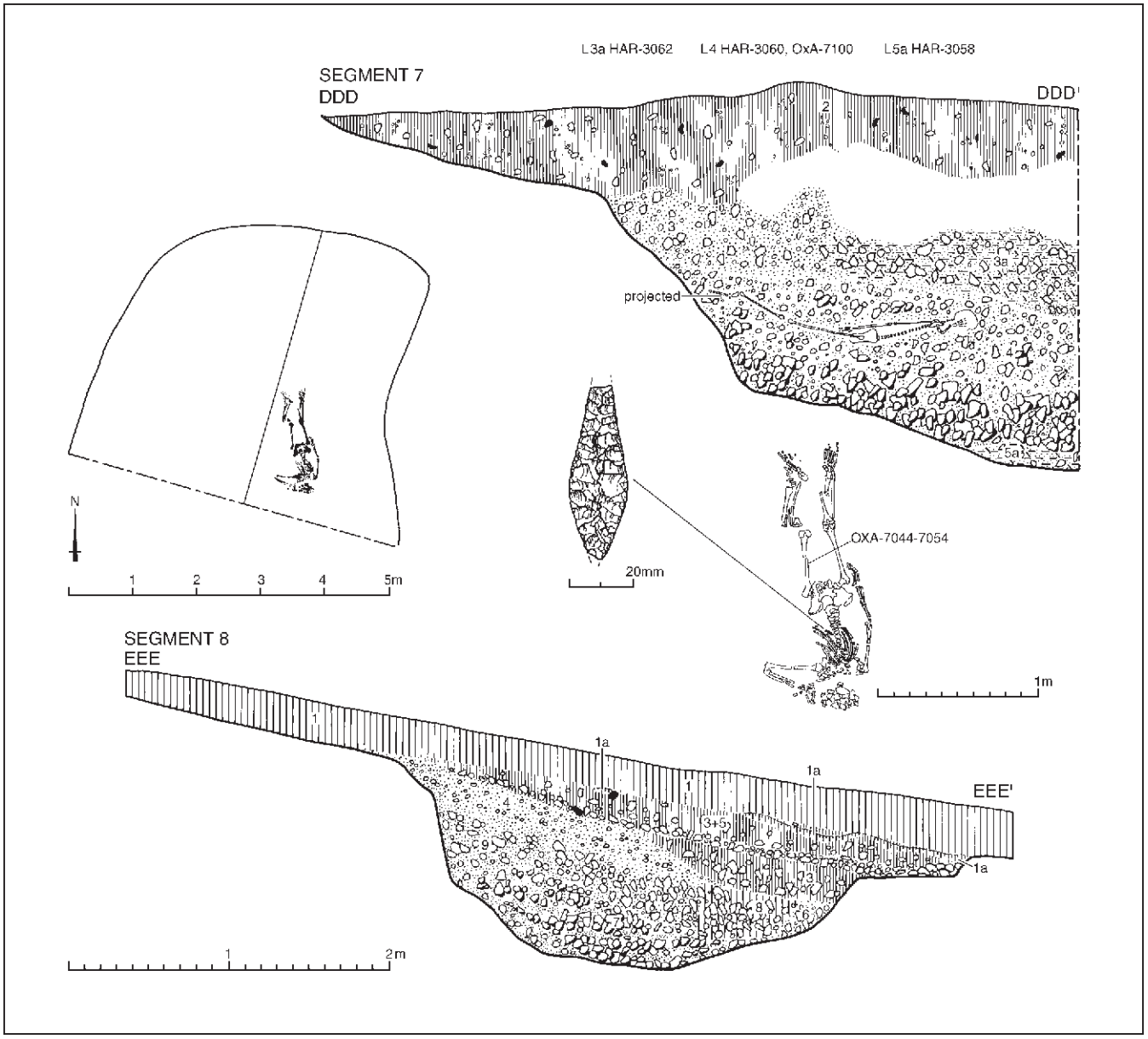

Fig 3.102 Inner Stepleton outwork. Segments 7 and 8. Sections, with detail of skeleton ST78 2755 in the north butt of segment 7. The void is a large rabbit burrow.

L3B: *pig* acetabulum, mandible, tooth, skull fragment
L3 in NE and centre: *fox* ulna; *pig* humerus, ulna, tibia, femur, metacarpal, metapodial, astragalus, teeth, 2 phalanges, red *deer* antler pick (ST78 1104, in butt), antler tine tip; *cattle* scapula humerus, tibia, 2 metacarpals, astragalus mandible, horncore; *caprine* scapula, humerus, femur, tibia, acetabulum, teeth, phalanx; *rabbit* tibia, tarsal, mandible
L2B: *cattle* teeth

Pottery

L3A in SW butt: 4 sherds/19 g Neolithic Bowl pottery
L3 in centre: 2 sherds/8g indeterminate calcite-tempered

Lithics

L3A in NE butt: 11 flakes
L3A in SW butt: 99 flakes (1 burnt, 2 chert), 4 cores, 2 laurel leaves
L3B (all in SW butt): 150 flakes, 2 cores
L3: in NE and centre: 100 flakes (1 burnt), 2 cores, core fragment, flaked lump, 2 scrapers, piercer, 4 misc retouched

Fig 3.103 Inner Stepleton outwork. Segment 7. View from the north-east of skeleton ST78 2755 exposed during removal of second half of axial section in north butt.

Fig 3.104 Inner Stepleton outwork. Segment 7. Detail of arrowhead in chest area of skeleton ST78 2755.

Unworked burnt flint
L3A in NE butt: 122 g
L3A in SW butt: 94 g

Charcoal
L3A in NE butt: *Quercus* sp. (27 fragments), *Corylus/Alnus* (21 fragments), Maloideae (2 fragments)

^{14}C
L3A in NE butt: *3790–3500 cal BC (91%) or 3430–3380 cal BC (4%)* (4850±70 BP; HAR-3062) on bulked *Quercus Corylus/Alnus* and Maloideae charcoal ST78 Sa 118

Phase VII/a. In SW butt, brown silt with chalk lumps and pebbles and some peagrit in SW (ST78 L3), grading into dark brown clayey loam with dense chalk lumps and pebbles, peagrit and flint nodules (L2B). Probably not distinguished from L2 in most of segment in 1978, when L2 was drawn extending deeper into the ditch than in 1979.

Animal bone and/or antler
L3 in SW: *pig* humerus, mandible, teeth; *cattle* metatarsal

Pottery
L3 in SW: 2 sherds/10 g grog-tempered early Bronze Age including simple rim fragment
L2B: 7 sherds/59 g grog- or grog- and flint-tempered Beaker or early Bronze Age, including flat base fragments

Lithics
L3 in SW 104 flakes (2 burnt), leaf arrowhead, 2 misc retouched
L2B: 57 flakes, 1 misc retouched

Unworked burnt flint
L3 in SW: 21 g
L2B: 202 g

Phase VIII/a. Dark loam with peagrit, chalk pebbles and flint (L2). Discontinuous band of stone-free brown clay loam in SW, probably a turfline between older and younger ploughsoils.

Human remains
L2: L femur shaft fragment, ?immature (ST78 1185) near centre, R femur shaft fragment, ?subadult (ST79 1281) in SW butt

Animal bone and/or antler
L2: *pig* radius, ulna, teeth; *cattle* 3 tibiae, metatarsal, 2 astragali, teeth; *caprine* teeth; *rabbit* tibia, vertebra

Pottery
L2: 3 sherds/39 g Neolithic Bowl pottery, 68 sherds/180 g grog- or grog-and flint-tempered Beaker or Bronze Age (all undecorated), 17 sherds/102 g Roman, 11 sherds/21 g indeterminate flint-tempered

Lithics
L2: 2593 flakes (2 burnt), 57 cores, 6 core fragments, 18 flakes lumps, serrated flake, 3 edge-trimmed flakes, 10 scrapers, 4 piercers, 3 knives, unclassified biface, 50 misc retouched, hammerstone, heathstone quern or rubber fragment

Unworked burnt flint
L2: 1129 g

Other finds
L2: brick fragment, 4 iron fragments, bullet

Upper levels and unstratified. Undated features cut into L2 in SW butt. Rabbit burrows extending to top of phase III fills.

Charcoal
U/S: *

Segment 8

Original notation. ST77 ditch A; ST78 ditch 1 (or D1) segment B.
Form. Two sub-segments, divided by ridge near shallower SW end. Profile of earlier enclosure ditch possibly visible as step in SCT 9–7 and 5.
Length 15.5 m, *width* 5.2 m, *depth* 1.3 m.
Excavation. 100%. Sectioned by 4 m wide trial trench in 1977. In 1978 excavated in 9 transverse sections *c* 1.2 m wide (sector 1 to sector 9 from SW to NE); alternate sectors excavated, sections drawn, then remaining sections removed.

Phase I. Tan silts with rounded chalk lumps (ST77 L9 (lower); ST78 L6, L5), not extending over whole ditch floor. Steep face in NE butt suggests possible cleaning out and truncation.

Animal bone and/or antler
ST77 L9: *
ST78 L5: *

Pottery
ST77 L9: 28 fragments/13 g Neolithic Bowl pottery
ST78 L5: 5 sherds/24 g Neolithic Bowl pottery

Lithics
ST78 L5: 3 flakes

Phase III. Chalk lumps, vacuous towards base, smaller and less vacuous towards top, sometimes interleaved with silt bands (ST77 L7, ST78 L4). Patch of greyish silt with some chalk lumps, flint and burnt flint *c* 0.30 m diameter (ST77 F2) within base of L7 on ditch floor immediately NE of ridge between sub-segments.

Animal bone and/or antler
ST77 L7: *red deer* fragmentary antler pick; *cattle* radius, vertebra
L4: *pig* humerus, femur, tibia, metacarpal; *roe deer* mandible; *red deer* astragalus, antler tine, beam fragments, fragmentary antler pick (last 2 finds on ditch base, at a point where there was no primary silt); *cattle* 2 scapulae, tarsal, 2 vertebrae; *caprine* astragalus

Pottery
ST77 L7: 9 sherds/52 g Neolithic Bowl pottery
ST78 L4: 16 sherds/57 g Neolithic Bowl pottery

Lithics
ST77 L7: 22 flakes
ST78 L4: 41 flakes

Burnt flint
ST77 F2: *

Phase V. Silts, sometimes concreted, with dense chalk blocks (ST77 L9 (upper), L6, L4; ST78 L3B, L3), grading outwards into earthy matrix with equally dense chalk blocks (ST77 L8; L3C)

Animal bone and/or antler
ST77 L8: *red deer* calcaneum
ST77 L6: *pig* astragalus
ST77 L4: *
ST78 L3: *pig* radius, teeth; *roe deer* scapula, 2 humeri (?pair), radius, metatarsal, teeth; *red deer* femur, phalanx, 2 modified antlers, one (ST78 2649) subsequently used for groove and splinter; *cattle* 2 humeri, radius-ulna, 2 radii, femur, 3 tibiae, ischium, 2 metacarpals, metatarsal, calcaneum, teeth, phalanx, vertebra; *caprine* scapula, radius, acetabulum, 2 femora, phalanx, 2 vertebrae

Pottery
ST78 L3: 4 sherds/9 g Bronze Age

Lithics
ST77 L8: 5 flakes
ST77 L6: 3 flakes
ST78 L3: 66 flakes, 5 cores, scraper

Phase VIII/a. Dark loam with angular chalk blocks (ST77 L5), overlain by dark soil with chalk lumps (ST77 L3, L2; ST78 L2). All of L2 was sieved in 1978, which is likely to have affected the composition and quantity of finds

Animal bone and/or antler
ST77 L3: *cattle* tooth
ST7 L2: *cattle* teeth
ST78 L2: *pig* radius, teeth; *red deer* calcaneum, navicular-cuboid, antler base; *cattle* tibia, 2 astragali, 2 calcanea, teeth; *caprine* radius, teeth

Pottery
ST77 L3: 7 sherds/43 g Neolithic Bowl pottery
ST77 L2: 1 sherd/10 g Beaker, 3 sherds/21 g Bronze Age, 4 sherds/5 g Roman, 7 sherds/26 g indeterminate
ST78 L2: 4 sherds/25 g Neolithic Bowl pottery, 8 sherds/14 g Beaker, 78 sherds/516 g in grogged Beaker or Bronze Age fabrics, Middle Bronze Age where identifiable (including P172, P173, P174, P175), 5 sherds/18 g indeterminate Bronze Age, 16 sherds/66 g Roman

Lithics
ST77 L3: 66 flakes, 5 cores, scraper
ST77 L2: 2322 flakes, 23 cores, 5 core fragments, 6 flaked lumps, 3 scrapers, 2 piercers, flaked axe, 5 misc retouched
ST78 L2: 1945 flakes, 39 cores, 4 core fragments, 14 flaked lumps, 3 edge-trimmed flakes, 21 scrapers, 2 piercers, unclassified biface, 16 misc retouched, hammerstone, 2 heathstone quern or rubber fragments

Unworked burnt flint
ST78 L2: 193 g

Other finds
L2: 4 fragments/14 g fired clay

Upper levels and unstratified. Ploughsoil (L1) overlying fragmented turf (ST77 L1A).

Animal bone and/or antler
U/S: *dog* tibia

Pottery
U/S: 1 sherd/14 g Bronze Age

Lithics
ST77 L1: 106 flakes, 2 misc retouched
U/S: 3 flakes, 1 misc retouched

Segment 9

Original notation. ST78 ditch 1 (or D1) segment C.
Form. Rounded to flat base, inner edge shelving where cut through unstable fills of Stepleton enclosure ditch, outer edge steep. Deep fissures in S butt.
Length >6.6 m, *width* 5 m, *depth* 1.2 m.
Excavation. ?60%. In 5 transverse sections 1.2 to 1 m wide (sector 1 to sector 5 from S to N).

Phase I. Chalky silt with chalk lumps (L6, L5), thickest at inner edge where outwork ditch cut enclosure ditch, the fill of which would have eroded more readily than solid chalk.

Human remains
In cleft in natural chalk at outer angle of ditch butt: articulated neonate skeleton, 85% present, possible cut-marks on 1 femur (ST78 2756)

^{14}C
3590–3510 cal BC (90%) or 3420–3380 cal BC (5%) (4815±35 BP; OxA-7101) on R femur of ST78 2756

Phase III. Chalk rubble, some vacuous, some cemented (L4), with lenses of chalky silt (L5).

Human remains
L4: *SCT1* adult scapula fragment and infant skull fragment in S butt (ST78 2584, not identified 1997); *SCT2* inverted, fragmented skull of young/younger mature adult female, with mandible, axis vertebra and 2 other cervical vertebrae, R rib shaft fragments, found with older infant occipital fragment and 4 teeth (all ST78 1100), incisor fitting maxilla of adult skull (ST78 2047); *SCT4* infant skull fragments, incomplete mandible, rib fragments and long bone shaft found with 2 adult vertebrae (all ST78 2248), 1 vault fragment (ST78 1625, possibly from same infant); *SCT5*, ie all in N-most 1.5 m of excavated part of segment, fragments of infant skull, scapula, cervical and thoracic vertebrae from same individual (ST78 2870, 2919, 2932), also subadult or adult female L tibia shaft fragments found with infant skull and scapula fragments ST78 2919

Animal bone and/or antler
L4: *pig* scapula, humerus, radius, tibia, metacarpal; *roe deer* calcaneum, phalanx; *red deer* carpal; *cattle* radius, tibia, 2 metacarpals, 2 astragali, 2 phalanges, 2 vertebrae, mandible, skull fragments, rib fragments; *caprine* scapula, tibia

Pottery
L4, concentrated in SCT2: 43 sherds/169 g Neolithic Bowl pottery, 2 sherds/1 g indeterminate

Lithics
L4, concentrated in SCT2: 273 flakes, 14 cores, flaked lump, 3 edge-trimmed flakes, scraper, 1 misc retouched, heathstone quern or rubber fragment. Both stone fragments from 'immediate vicinity' of skull ST78 1100

Unworked burnt flint
L4: 230 g

Charcoal
L4: *Fraxinus excelsior*, *Corylus avellana*, Maloideae

Phase V. Chalky silt with dense, small angular chalk blocks (L3).

Human remains
L3: *SCT5* older subadult/adult ?female fibula fragment and L femur shaft

Animal bone and/or antler
L3: *dog* tibia; *pig* femur, teeth; *red deer* metatarsal; *cattle* radius-ulna, femur, ilium, ischium, metacarpal, vertebra; *caprine* radius, tibia, vertebra

Pottery
L3: 8 sherds/37 g Neolithic Bowl pottery

Lithics
L3: 43 flakes, core, edge-trimmed flake

Charcoal
L3: *Pinus sylvestris*

Phase VIII/a. Dark humic soil with peagrit and some flint (L2).

Animal bone and/or antler
L2: *cattle* humerus, 2 ribs

Pottery
L2: 4 sherds/10 g Neolithic Bowl pottery

Lithics
L2: 128 flakes, 2 cores, edge-trimmed flake

Unworked burnt flint
L2: 68 g

Upper levels and unstratified

Animal bone
U/S: *caprine* femur

Pottery
'Between chalk and humic material': 2 sherds/7g indeterminate sand-tempered

3.5.5 The outer Stepleton outwork

This was the latest of the ditches on the Stepleton spur. Some 38 linear metres were excavated in six or seven different segments, among which segments 4 and 9 were less incompletely investigated than the others (Fig 3.81). The earthwork itself is likely to run for hundreds of metres (see 3.5.1). Finds were generally few, and give the impression of being made up of a few purposeful deposits against a background of scant redeposited material, with little recutting, if any.

The bank

The protected chalk was badly preserved but, at its fullest extent, reached across the entire 6 m interval between the outer and middle outworks at the inner edge of segment 9, and the entire 9 m interval behind the two ditches at the inner edge of segments 4 and 5, where it was continuous across the causeway. Features in the bank area were scarce. The most conspicuous were a definite posthole (4B F775) with two possible ones (4B F785, F796) in the area of segment 9 and a group of possible postholes inside the causeway between segments 4 and 5 (Fig 3.111) with a further single one inside the causeway between segments 5 and 6 (3B F365). The postholes were devoid of finds, apart from a bone fragment in 4B F775, and contained no burnt material.

The ditch

The lengths of only two segments could be determined – segment 5 (12.8 m) and segment 4 (16.2 m). Segment 9 was more than 13.4 m long. The expanded butts and constricted centre of segment 4 contrast with the parallel sides of segment 9. The others were insufficiently exposed for their plans to be determined with confidence, although segment 5 may also have been parallel-sided. The seven excavated segments were between 2.6 and 4.2 m wide and 0.70 and 1.5 m deep; and the three exposed causeways were between 2.4 and 4.4 m wide. Most segments tended to have wide, shallow, flat-based profiles, with shelving walls, sometimes at both sides, sometimes at the inner edge alone, with an almost vertical edge surviving in the lower part of the outer wall, except in segment 9 where profiles more resembled those of the other ditches (Figs 3.105, 3.107). This suggests that the ditch walls were originally steeper and that the shelving sides are a product of weathering. The profiles contrast with those of the narrower, steeper-sided middle outwork (Fig 3.93). Since the fills of both are closely similar and indicative of gradual, natural silting, which precludes a distinction between phases III and V, the final difference in profile is likely to reflect an original one.

Possible entrance

The possible postholes inside the causeway between segments 3 and 4 may represent the last remnants of a gateway, offset from that between segments 4.2 and 5 of the inner outwork, which may have been functioning when the outer outwork was built because posts there were replaced after the destruction by fire of the original ones (see 3.5.4).

Phases I–II

In the inner angle of the butt of segment 3 the fissured, badly preserved chalk had collapsed, forming a cavity at the level of the ditch floor. In this was the body of a young man (Figs 3.105–6). A leaf arrowhead among his ribs is likely to have been the cause of his death. There were possible cut-marks on one tibia shaft and the skeleton had been gnawed by rodents (see McKinley, 7.1). This and slight displacement of some of the smaller bones indicate that the body may have been left uncovered in the ditch base. A rodent skull was recorded among the lower leg bones at the time of excavation, but has not subsequently been identified. The body would have been placed in the ditch very soon after it was cut, before any silt had accumulated. Its date *3620–3600 cal BC (3%) or 3530–3360 cal BC (92%)* (4679±27 BP; UB-4311) is taken as that of the construction of the earthwork (Ch 4). The thick, laminated phase I and phase II silts which accumulated at the inner edge of the butt (Fig 3.105, section GGG–GGG': L6, L5) would have eventually covered the skeleton, and kept it undisturbed by a possible later recut suggested by an abrupt inner face to L5. Like comparable silts in the other segments, these consisted of a thin, sometimes localised, light, almost white chalky silt apparently derived from the sides of the ditch (generally L6) overlain by thicker, more extensive silts the darker colour of which indicates derivation from the surface as well as the sides (generally L5). These were grey when derived from the interior, often humic when derived from the exterior.

In the west butt of segment 5 there was a subadult or adult radius shaft fragment in the phase II silt. On the base of segment 7 was the skull of an older subadult, possibly female, without mandible but with the atlas vertebra and a pelvis fragment, accompanied by mainly caprine animal bone, including right and left tibiae, two articulating right tarsals, a carpal and a phalanx. All were in the same transverse section against the north side of the excavation, so that the deposit may be more extensive. Twenty-five flakes and a core in the same section, the only lithics from this phase in the segment, may have formed part of the same larger deposit. Artefacts and animal bone were generally scarce in these levels. Apart from the core and flakes in segment 7, the only notable assemblage was of 64 flakes and two cores concentrated in the east butt of segment 4, where larger quantities of knapping debris were subsequently deposited.

Phase III

Vacuous chalk rubble (generally L4) was absent or present in even lower quantities than in the middle outwork. It was perhaps least infrequent in segment 9. Here and elsewhere the main fills were silt-bound chalk pebbles and rubble (generally L3A and L3B).

In the north-east butt of segment 8 a large cattle horncore with some skull attached, pointing to the inner angle of the butt, was surrounded by a rough setting of large flint nodules. Most of the 53 sherds/142g of pottery in the east butt of segment 4 were possibly from a single flint-tempered bowl with a simple pointed rim. In the same segment knapping debris, already present in the initial silts, became significant. As well as some quantity in L4 and L3A, there was a discrete cluster in L3B in each of the four excavated sections. These may have extended beyond the excavated sections, but the plan does suggest breaks (Fig 3.105). The largest, in the west butt (U2), included 21 separate sequences of refits, which strongly suggested an immediate source (see Saville, 10.2.6). Possible knapping hammers formed part of the deposit. Close to the cluster in the west butt were two antler tines, broken off in antiquity and with their tips missing. In the next section to the east was a further tine, charred and chopped at both ends. In the east butt there were antler fragments in L3B and a further tine and two splinters in L3A. There is the impression that the results of the reduction of twenty-odd nodules and the tools used in its final stages were deposited together.

Phase VIIIa

In the west butt of segment 5 was a possible recut containing Beaker pottery. The pottery formed a single assemblage with further sherds from the overlying phase VIII/a deposits in which at least eight stylistically late, mainly incised, vessels are represented (see Smith, 9.1). Further west, in segment 2, the contents of another recut (L2A or F511) included almost 400 pieces of struck flint, which are unlikely to have been derived from the underlying fills because they were concentrated in a spread across the top of the feature, and because the underlying fills contained almost no flint artefacts. The pottery was made up of two complete Beaker bases, one of them found upright, fragments of a third, and a single Beaker rim, all from stylistically late vessels (see Smith, 9.1).

The stratigraphic position of this recut differed from that of others containing Beaker or early Bronze Age pottery on this spur and in the central area, where they were consistently made into the topmost silts and were, like them, planed-off at the interface with the phase VIII/a ploughsoils. In segment 2, the recut was made into ploughsoils (L3) identical to those of phase VIII/a elsewhere (Fig 3.105: section FFF–FFF'). This suggests that here, west of the enclosure, ploughing may have started earlier than close to or within it, a possibility that recurs on the Hanford spur (see 3.6).

Phase VIIIa

The relict ploughsoils in the segment tops were similar to the same deposits in the other ditches. Relatively large quantities of struck flint here and/or in superficial contexts in segments 3, 4 and 5 may reflect proximity to the source of the knapping deposit in segment 4.

Outer Stepleton outwork segment catalogue

Notes (see also p 58)

The current ploughsoil was almost entirely removed by machine, and is included in the catalogue entries only if there are finds from it.

Segment 1

Original notation. ST81 area 4E ditch 4 (or D4).
Width 2.20m.
Excavation. Exposed but not excavated.

Segment 2 (Fig 3.105)

Original notation. ST81 area 4C ditch 4 (or D4).
Form. Shelving inner edge, steeper, shallow outer edge, base shelving with natural slope, irregularities owing to poorly preserved chalk.
Length >4.2 m, *width* 2.6 m, *depth* 1.2 m.
Excavation. Single transverse section (U5), expanded to *c* 4 m wide (U5X) because of abundant material in recut (L2A=F511).

Phase I. Firm cream silt with some chalk lumps (L6).

Phase II. Compact grey silt with chalk lumps and grit, lighter at outer edge (L5) than at inner edge (L5A).

Phase III. Minimal amount of vacuous chalk rubble, derived from interior (L4), overlain by loose light brown to grey silt/loam with chalk rubble; rubble rather larger and more abundant at outer edge (L3B) than at inner (L3A).

Animal bone and/or antler
L4: *cattle* phalanx
L3B: *
L3A: *

Lithics
L4: 3 flakes
L3B: flake
L3A: edge-trimmed flake

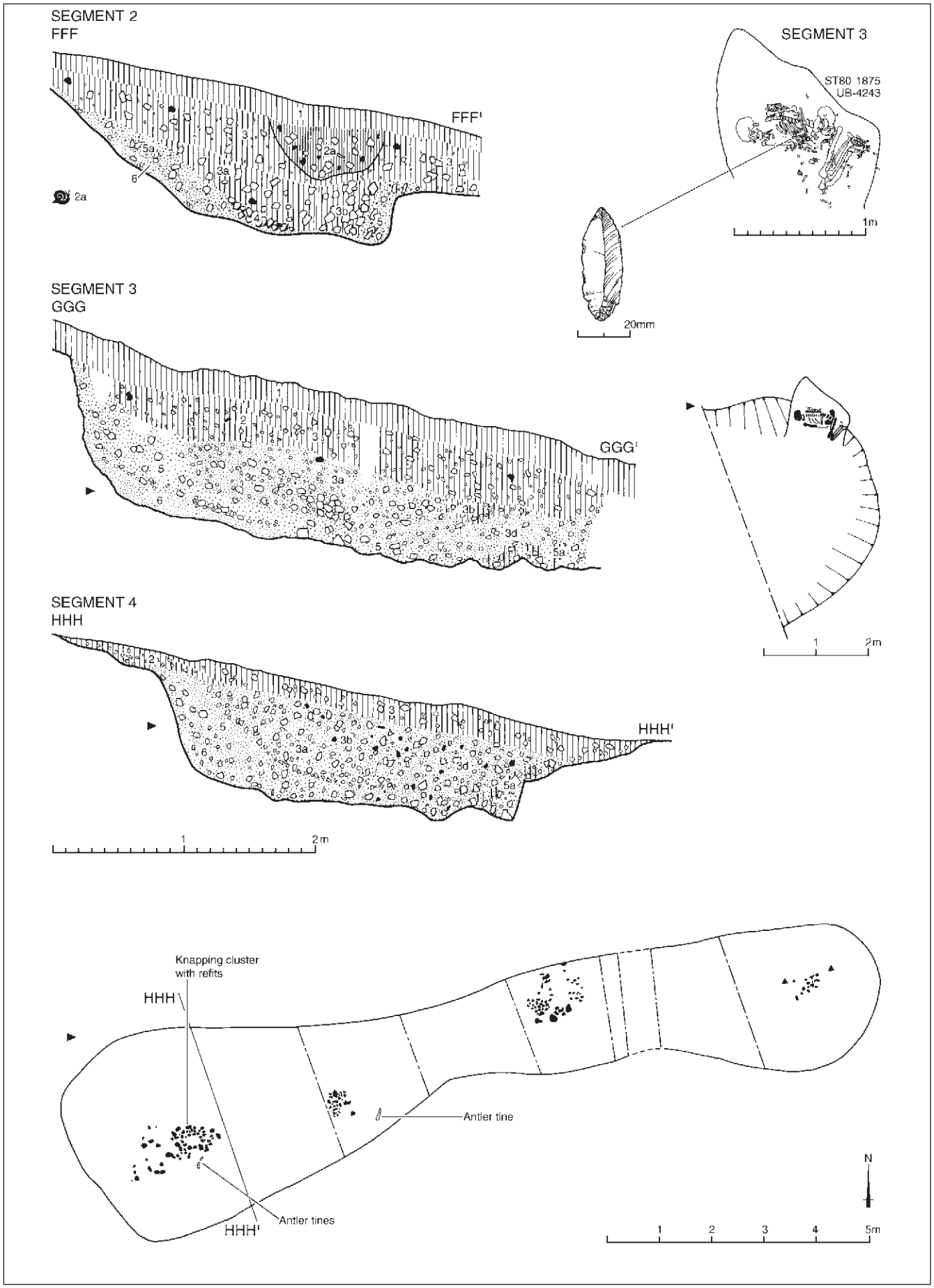

Fig 3.105 Outer Stepleton outwork. Segments 2 to 4. Sections and details. The voids are rabbit burrows.

Phase VII/a. Loose mid- to dark brown humic loam with jumbled, angular chalk rubble and some peagrit (L3), cut in west and centre by pit or recut 0.90 m wide and 0.40 m deep (F511), filled with loose dark brown/black very humic loam with jumbled angular chalk blocks and flint (L2A)

Human remains

L2A=F511: small, indeterminate fragment of ?human bone (ST81 2739)

Animal bone and/or antler

L3: *

L2A=F511: *cattle* radius

Pottery

L3: 4 shreds/13 g Neolithic Bowl, 1 sherd/1 g in grogged ?Beaker fabric, 4 sherds/40 g in grog- and flint-tempered early Bronze Age fabric, 1 sherd/3 g indeterminate

L2A=F511: 3 sherds/22 g Neolithic Bowl including 1 sherd/2 g in gabbroic fabric, 15 sherds/332 g Beaker, 1 sherd/5 g early Bronze Age. Beaker consists of 2 complete bases, one found upright, joining fragments of a third base and an undecorated outbent rim fragment without other sherds.

Lithics

L3: 11 flakes, edge-trimmed flake

L2A=F511: 395 flakes (1 burnt), 2 cores, edge-trimmed flake. Mainly in scatter at top of feature

Unworked burnt flint

L2A=F511: 10 g

Molluscs

L2A=F511: Predominantly shade-loving with a substantial proportion of open country and catholic varieties

Upper levels and unstratified. Ploughsoil (L1).

Lithics

L1: 39 flakes

Segment 3 (Figs 3.105–3.106, 3.111)

Original notation. ST80 area 3B ditch 3 (or D3), U1.
Form. Rounded butt. Steep sides, especially at outer edge, flat base shelving with natural slope, made irregular by fissures in chalk.
Length >2.6 m, *width* 4.2 m, *depth* 1.5 m.
Excavation. E butt (U1) excavated in plan, remainder outside excavated area.

Phase I. Fine light silt, at inner edge only (L6).

Human remains

Ditch base, in natural hollow in inner edge of butt: crouched, articulated skeleton of young adult male (ST80 1875), rodent-gnawed, especially on skull, right tibia shaft possibly cut-marked, some smaller bones slightly displaced. Extending up into L5

Animal bone and/or antler

Ditch base, in natural hollow in inner edge of butt: rodent skull (ST80 1876) recorded in field among lower leg bones of skeleton. Not subsequently identified

Lithics

Ditch base, in natural hollow in inner edge of butt: leaf arrowhead Fig 10.15: 132) among ribs of skeleton

^{14}C

Ditch base: *3620–3600 cal BC (3%) or 3530–3360 cal BC (92%)* (4710±23 BP; UB-4311) on articulated skeleton ST81 1875

Phase II. Localised thin band of chalk lumps (L4B) separating L6 from fine light grey-tan silt with chalk lumps (L5),

Fig 3.106 Outer Stepleton outwork. Segment 3. Skeleton ST80 1875 in east butt, viewed from the south.

thick and laminated at inner edge, where abrupt face suggests recut, grading into light grey-brown silt with chalk pebbles and some humic content (L5A) at outer edge.

Lithics

L5: 9 flakes

Phase III. Minimal amount of vacuous chalk rubble (L4), grading into loose distinctly grey silt with some chalk rubble near base and chalk pebbles throughout from interior (L3C) and firm grey-tan silt with chalk pebbles from exterior (L3D). These in turn grading upwards into grey silt with chalk pebbles, especially towards base (L3A) derived from interior and a brown-grey humic fill with chalk pebbles (L3B) derived from exterior. All 5 layers appeared a continuum.

Animal bone and/or antler

L3B: *rabbit* pelvis

L3A: *

Lithics

L4: 2 flakes

L3B: 32 flakes

L3A: 159 flakes, 1 misc retouched

Phase VIII/a. Brown humic matrix with loose grit and pebbles (L2) from interior, underlying loose brown humic matrix with chalk pebbles (L3).

Upper levels and unstratified. Ploughsoil (L1).

Pottery

L1: 1 sherd/1 g Roman

Segment 4 (Figs 3.105, 3.111)

Original notation. ST80 area 3B ditch 3 (or D3), U2 to U5.
Form. Steep to shelving edges, flat base shelving with natural slope, made irregular by fissures, deepest and widest in butts, constricted in centre.
Length 16.2 m, *width* 3.8 m, *depth* 0.95 m.
Excavation. *c* 60%. 4 transverse sections (U2, U3, U4, and U5 from W to E), intervening baulks left standing.

Phase I. Fine white silt with occasional pebbles (L6), sometimes deep.

Lithics

L6: 4 flakes, edge-trimmed flake

Phase II. Fine light grey silt with some chalk pebbles (L5), grading into light grey-brown silt with chalk pebbles and some humic content (L5A) at outer edge.

Animal bone and/or antler

L5: *cattle* tibia

Pottery
L5: 5 sherds/18 g Neolithic Bowl, 1 sherd/1 g Beaker

Lithics
L5: 64 flakes, 2 cores, almost all in E butt (U5)

Charcoal
L5: *

Phase III. Minimal amount of vacuous rubble (L4, L4A) immediately above phase II silts, generally not registering on sections. Various grey-brown silts with varying admixtures of chalk rubble and pebbles. Rubble, pebbles and flint rather more frequent in those derived from the exterior (L3D, L3B) than those derived from interior (L3C, L3A). Grey discolouration on ditch wall in E butt (U5).

Animal bone and/or antler
L4A in E butt (U5): *
L3B: *pig* humerus; *red deer* 2 segments of antler tine, both broken off beam in antiquity and with tips broken in antiquity (ST80 1817, 1851, both in U2), further tine, chopped at distal and proximal ends and charred (ST80 1853, in U3), antler fragment (ST80 1355, in U5); *cattle* humerus, phalanx, rib
L3A: *red deer* antler tine, broken off in antiquity (ST80 1674, in U5), 2 antler splinters (ST80 1707, in U5); *cattle* 2 humeri, phalanx, vertebra

Pottery
L4A in E butt (U5): 53 sherds/142 g Neolithic Bowl, most of them possibly from a single flint-tempered vessel with a simple pointed rim
L3B: 3 sherds/7 g Neolithic Bowl
L3A: 37 sherds/162 g Neolithic Bowl, including part of P95

Lithics
Clusters of knapping debris may have formed part of continuous deposit
L4A in E butt (U5): 34 flakes
L4: 116 flakes
L4/L3B interface in E butt (U5): 48 flakes
L3B in U2, mainly in cluster of knapping debris 1.80 m × 1 m: 823 flakes, 16 cores, 7 flaked lumps – 21 separate sequences of refits identified (see Saville, 10.2)
L3B in U3, mainly in cluster of knapping debris >0.30 m × 0.50 m: 47 flakes, flaked lump
L3B in U4, mainly in cluster of knapping debris 1.10 m × 0.80 m, 456 flakes, core, flaked lump, 2 misc retouched
L3B in U5, mainly in cluster of knapping debris 0.60 m × 0.50 m: 178 flakes
L3A: 118 flakes, 1 misc retouched

Unworked burnt flint
L4A in E butt (U5): 365 g

Phase VII/a? Loose dark brown/grey humic matrix with chalk pebbles (L2A).

Animal bone and/or antler
L2A: *

Pottery
L2A: 7 sherds/24 g Neolithic Bowl, including a fragment of P95

Phase VIII/a. Loose brown humic matrix with chalk pebbles (L3).

Pottery
L3: 8 sherds/5 g Neolithic Bowl

Upper levels and unstratified. Ploughsoil (L1), cut by water pipeline.

Animal bone and/or antler
L1: *caprine* tooth
U/S: *pig* tooth; *cattle* radius, phalanx, 2 vertebrae

Pottery
L1: 19 sherds/43 g Neolithic Bowl
U/S: 2 sherds/6 g Neolithic Bowl

Lithics
L1: 232 flakes, core, 2 scrapers, 2 misc retouched, quartzitic sandstone fragment

Unworked burnt flint
L1: 145 g

Other artefacts
L1: plaster fragment, halfpenny of George V

Segment 5 (Fig 3.107, 3.111)

Original notation. ST79 area 2B ditch 3 (or D3), C1; ST80 area 3B, ditch 3 (or D3), U6.
Form. Slightly expanded butts. Shelving sides, base shelving with natural slope, depression at outer edge corresponding to fissure in chalk.
Length 12.8 m, *width* 3.8 m, *depth* 1.3 m.
Excavation. In 1979, E butt (C1) excavated in plan. In 1980, W butt (U7) excavated in plan. Remainder of segment under hedge and track.

Phase I. Fine, pale silt with few chalk lumps (C1 L5; L4; U6 L6).

Phase II. Silt with few chalk pebbles, greyer at inner edge (U6 L5), browner at outer (C1 L3A U6 L5A).

Human remains
U6 L5: subadult or adult radius shaft fragment

Animal bone and/or antler
U6 L5: *

Pottery
U6 L5: 1 sherd/6 g Neolithic Bowl

Lithics
U6 L5: 2 flakes

Unworked burnt flint
U6 L5: 1 g

Phase III. Minimal amount of vacuous chalk rubble (U6 L4A), overlain by grey silt with chalk pebbles at inner edge (C1 L3C; U6 L3A), more humic silts with chalk pebbles at outer edge (L3B).

Animal bone and/or antler
U6 L4A: *
C1 L3B: *cattle* mandible
U6 L3A: *cattle* vertebra; *caprine* tibia

Pottery
U6 L4A: 7 sherds/35 g Neolithic Bowl
C1 L3B: 15 sherds/30 g Neolithic Bowl
U6 L3B: 1 sherd/8 g Neolithic Bowl
U6 L3A: 4 sherds/43 g Neolithic Bowl

Lithics
C1 L3B: 4 flakes, 3 flaked lumps, scraper, piercer
U6 L3A: 4 flakes

Phase VII/a. Loose, dark brown/black humic matrix with chalk pebbles and redeposited calcium carbonate, possibly in recut, in W butt only (U6 L2A).

Animal bone and/or antler
U6 L2A: *cattle* femur, teeth; *caprine* tooth

Pottery
U6 L2A: 2 sherds/6 g Neolithic Bowl, 12 sherds/37 g Beaker (mainly incised, some combed)

Lithics
U6 L2A: 9 flakes, burnt Greensand fragment

Phase VIII/a. Dark to mid brown humic matrix with peagrit at inner edge and chalk pebbles throughout (C1 L2, U6 L3), inclusions less dense in lower part in E (C1 L2A).

Animal bone and/or antler
C1 L2: *cattle* tooth; *red deer* tooth
U6 L3: *pig* tooth; *red deer* metacarpal; *cattle* tooth; *caprine* radius, phalanx

Pottery
C1 L2: 14 sherds/33 g Neolithic Bowl; 4 sherds/25 g early Bronze Age; 7 sherds/33 g Roman; 2 sherds/2 g indeterminate
U6 L3: 1 sherd/20 g Neolithic Bowl; 38 sherds/106 g Beaker (some joining sherds from L2A; comb-impressed, incised and rusticated)

Lithics
C1 L2: 198 flakes, 3 cores, 2 piercers, rod, 1 misc retouched
U6 L3: 4 flakes, 2 scrapers, Greensand fragment

Unworked burnt flint
C1 L2: 87 g

Charcoal
U6 L3: *Corylus avellana*

Upper levels and unstratified. Ploughsoil (L1)

Animal bone and/or antler
L1: *pig* humerus, tooth, mandible; *red deer* metacarpal; *cattle* metatarsal, tooth

Pottery
L1: 15 sherds/33 g Beaker; 1 sherd/5 g Roman (all from U6, Beaker mainly incised)

Lithics
L1: 74 flakes, 2 flaked lumps, scraper, 1 misc retouched

The total collection of Beaker from U6 includes parts of at least eight pots. Six display geometric motifs of Clarke's S2–S3 groupings. One is finger-pinched, and one may have been decorated with an all-over herringbone motif impressed with a plain spatula (see Smith, Ch 6).

Segment 6

Original notation. ST79 area 2B ditch 3 (or D3).
Length >12 m, *width* >2 m.
Excavation. SW end exposed but not excavated.

Segment 7 (Fig 3.107)

Original notation. ST78 area 2B ditch 3 (or D3).
Form. Shelving inner edge, steeper outer edge, flat base, inner edge stepped at SW side of cutting. Possibly part of segment 8. A machine trench approximately mid-way between the two exposed the ditch, but did not demonstrate that it was continuous.
Length >4.4 m, *width* 3.4 m, *depth* 0.8 m.
Excavation. In 3 contiguous transverse sections *c* 1.5 m wide (sector 1 to sector 3 from SW to NE).
Rabbit burrows extended to base.

Phase I. Chalky silt with chalk lumps and some angular chalk (L5) at inner edge, similar silt without angular chalk (L4) at outer edge. Human and animal bone listed here all from single section (sector 3) against N side of excavation. May be part of more extensive deposit.

Human remains
Ditch base: fragmented skull of older subadult ?female, without mandible but with atlas vertebra and pelvis fragment. Skull and atlas recorded as separate find (ST78 967), remaining bone (ST78 968) recorded as 'from area and level of skull'. Animal bone subsequently distinguished among fragments (see below).

Animal bone and/or antler
L4, found with human bone and with same find numbers (ST78 967, 968): *pig* tooth; *cattle* vertebra; *caprine* L and R tibiae, articulating R navicular-cuboid and astragalus, phalanx, carpal. Further animal bone (ST78 1102) also recorded as with human remains, not subsequently identified.

Lithics
L4: 25 flakes, core

Phase III. Chalky silt cementing angular chalk blocks (L3)

Animal bone and/or antler
L3: *red deer* calcaneum; *cattle* 2 humeri, 2 femora, metacarpal, tooth, mandible fragments, vertebra

Pottery
L3: 2 sherds/9 g indeterminate flint-tempered

Lithics
L3: 53 flakes

Unworked burnt flint
L3: 2 g

Phase VIII/a. Dark humic soil with comminuted chalk and flint (L2)

Animal bone and/or antler
L2: *tortoise* femur, pelvis, metatarsal or metacarpal; *rabbit* whole skeleton, vertebra

Lithics
L2: 80 flakes, core, 2 flaked lumps

Upper levels and unstratified. Ploughsoil (L1).

Segment 8 (Fig 3.107)

Original notation. ST77 ditch B.
Form. Rounded butt with gently shelving profile. Shelving inner edge, steeper outer edge. Flat base apart from slight hollow closest to butt. Possibly part of segment 7.
Length >3.2 m, *width* 3.2 m, *depth* 0.70 m.
Excavation. NE butt sectioned axially then completely excavated.

Phase I. Fine silt with small chalk lumps (L5), thin and discontinuous at centre, thick and laminated at outer edge.

Phase III. Chalky matrix with large chalk blocks and rare flint nodules, almost vacuous near base, grading into more tightly packed thin band above (L4 – equivalents of L3A and L3B were subsumed in this and not given separate numbers).

Animal bone and/or antler
L4: *cattle* ilium, vertebra, horncore with some skull attached. Horncore pointing towards inner angle of butt, roughly surrounded by large flint nodules

Lithics
L4: 72 flakes, core, 1 misc retouched

Charcoal
L4: *

Phase VIII/a. Brown soil with smaller chalk blocks and some flint nodules. Less chalk in lower part (L3), which graded indistinguishably into upper (L2).

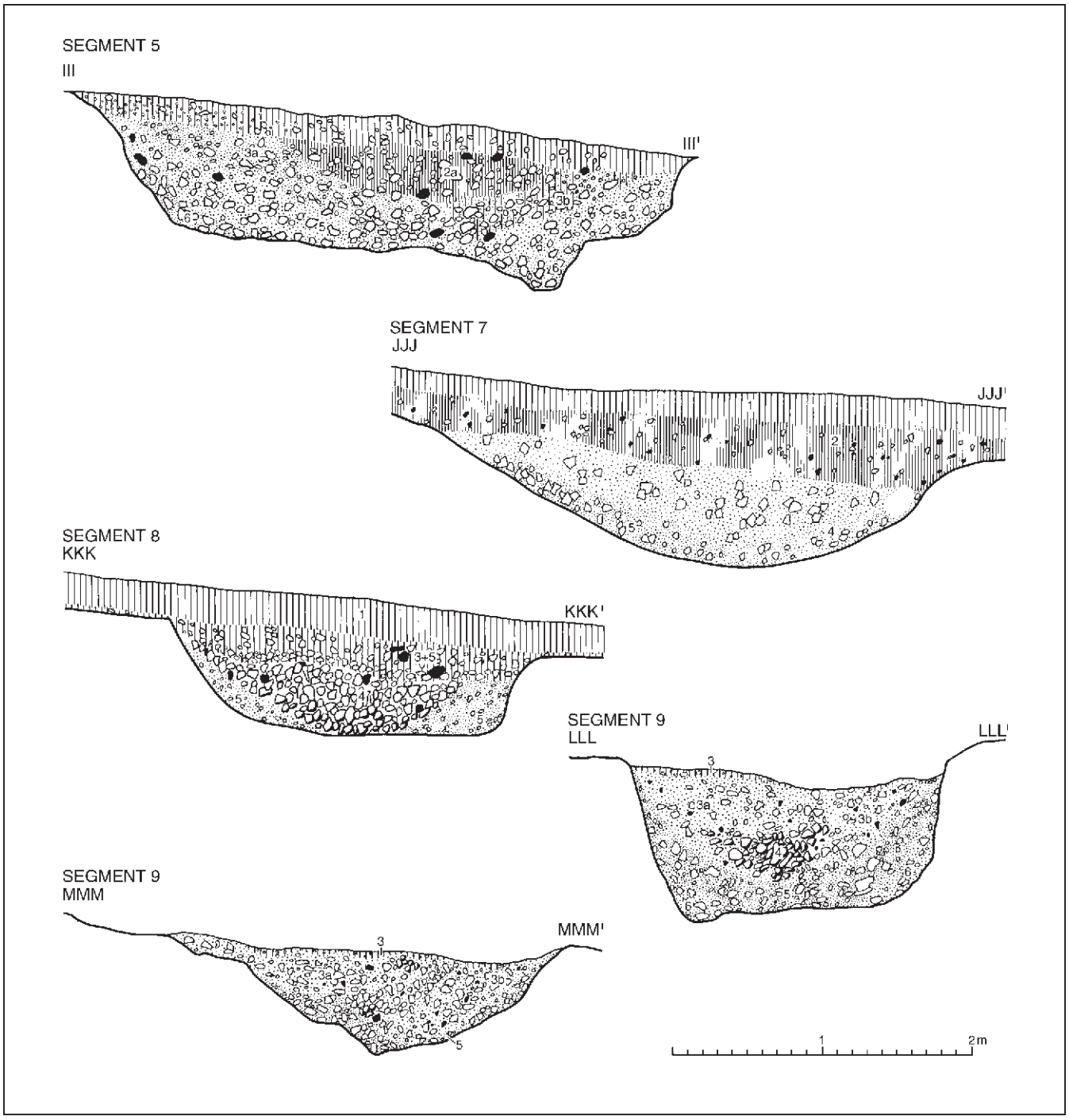

Fig 3.107 Outer Stepleton outwork. Segments 5 to 9. Sections. The voids are rabbit burrows.

Lithics
L3: 3 flakes
L2+L3: 2 flakes

Upper levels and unstratified. Ploughsoil (L1).

Pottery
L1: 1 sherd/10 g Roman

Segment 9 (Fig 3.107)

Original notation. ST81 area 4B ditch 4 (or D4)
Form. Widest in N, where excavation seemed to stop just short of a butt. Flat-bottomed and relatively steep-sided in S and N, almost V-profiled and shallower in centre. Natural fissures in ditch base.

Length >13.4 m, *width* 2.6 m, *depth* 1 m.
Excavation. 4 transverse sections (U1 to U4 from S to N) with intervening baulks left standing.

Phase I. White silt with occasional chalk pebbles, especially near base (L6).

Phase II. Grey-brown silt with some chalk pebbles, lighter at inner edge (L5).

Animal bone and/or antler
L5: *pig* maxilla

Lithics
L5: 10 flakes

Phase III. Minimal amount of semi-vacuous chalk rubble (L4), overlain by grey-brown silt with subangular chalk pebbles and some flint, browner at outer edge (L3B) than at inner (L3A).

Animal bone and/or antler
L4: *cattle* radius
L3B: *pig* radius; *caprine* metatarsal
L3A: *cattle* radius, phalanx; *caprine* tibia

Lithics
L4: flake
L3B: 5 flakes
L3A: 3 flakes

Phase VIII/a. Brown loam with small chalk pebbles and some peagrit (L3).

Animal bone and/or antler
L3: *rabbit* ulna, femur

Pottery
L3: 1 sherd/3 g Neolithic Bowl

Lithics
L3: 9 flakes, 1 misc retouched

Upper levels and unstratified. Ploughsoil (L1).

3.5.6 Discrete features on the Stepleton spur

Some 1.80 ha of the Stepleton spur were excavated, including almost all of the interior of the enclosure (Fig 3.81). Within this area were over 300 definite and probable features, as well as many more possible ones. These features differed from those in the central area in two obvious respects: there were many postholes or possible postholes which did not form part of the earthwork banks; and there was a handful of Bronze Age features, one Iron Age one, and a small Saxon cemetery.

Survival and distribution

Erosion of soil and other deposits from the surface of the hill (see 1.3) has been such that many shallow features will have vanished completely, or been reduced to exiguous hollows. The extent of chalk and soil loss here is even harder to define than in the central area, but it is surely significant that pits on the spur were generally even shallower (Fig 3.52; Tables 3.7, 3.13). In these circumstances the distribution of excavated features may be misleading. A concentration of pits around the south-east edge of the Stepleton enclosure (Fig 3.108) may, for example, reflect the protective effect of the originally massive inner outwork bank which, in a spread, partly ploughed-down state, could have shielded those just outside its inner edge as well as those sealed beneath it. A concentration of postholes and possible postholes in the north-east of the excavated area (Fig 3.108) could reflect a gentler gradient and hence less erosion there than on the steeper slope to the south-west. Differential erosion is not, however confirmed by the surviving depths of pits in the two areas, the means for both being indistinguishable at 0.22 m.

Differential survival is unlikely to account for a cluster of both pits and postholes outside the north-west side of the enclosure, or for its sharp lateral limits (Fig 3.81). The extent of relatively empty stripped chalk either side of this cluster emphasises its exceptional character, which may well relate to its location at a probable entrance, giving onto the route between the spur and the central area. An empty area outside the west side of the enclosure (area 3C, stripped and hoed, although not trowelled, in 1980) reinforces the point.

Neolithic pits

Pits containing undiagnostic prehistoric material have been taken to be Neolithic, on the grounds that only two confidently dated pits were later. The probability of a Neolithic date is reinforced where such features lay in the bank areas of Neolithic earthworks or where they were grouped with demonstrably earlier Neolithic features.

More than eighty certain or probable earlier Neolithic pits (catalogued at the end of this section; Table 3.14) were located on the site. Most were subcircular to ovoid in plan and generally measured between 0.50 m and 1.50 m across and between 0.10 m and 0.50 m deep, generally rather smaller than those of the central area (Fig 3.52). The smaller, shallower, pits tended to be round-based, the deeper, larger, ones flat-based. Groups of intercutting pits, such as occurred in parts of the central area, were absent. Pairs of pits were frequent, sometimes made up of two pits with substantial assemblages of artefacts and food remains, like 2A F159 and F321, more often of one pit with a substantial assemblage and another with very few finds, like 3A F94 and F95. Groups of features stood out far less than in the central area. There is an apparent exception in the north of the Stepleton enclosure, where four pits (4B F153, F154, F155, F205) were clustered with a possible pit (4B F383) and four possible postholes (4B F162, F163, F327, F387). These features are, however, unlikely all to have been open together, since there was a higher proportion of open country mollusc taxa in F155 than in F153, although they were only 1.2 m apart (see Bell *et al*, 5.2). Other distinctions between these pits and those of the central area are brought out in Figure 3.115 and by a comparison of Tables 3.7 and 3.13, which summarise the incidence of the same traits in the two groups of pits.

Fills

While the soil component of the fills in both areas was consistently darker and more humic than the overlying modern ploughsoil, there were substantial differences in fill patterns. The densely packed flint fragments and nodules which characterised more than half the pits in the central area were absent here. A higher proportion of pits (60% rather than 23%) had only one fill, with connotations of immediate backfilling. Fine silts on the base of a pit, indicative of its having been left open for

Table 3.13 Summary characteristics of 83 pits on the Stepleton spur

Totals in bold 30–50% of pits >50% of pits

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Size & shape	1	< 1m max. horizontal dimension	**33**																						
	2	1–1.99 m max. horizontal dimension		**39**																					
	3	2 m or more max. horizontal dimension			**11**																				
	4	<0.25 m deep	24	19	6	**50**																			
	5	0.25–0.49 m deep	9	12	5		**25**																		
	6	0.50 m or more deep	1	6				**7**																	
	7	Flat base	13	21	3	20	13	4	**38**																
	8	Rounded base	16	11	4	22	7	2		**31**															
Fill patterns	9	Dense flint nodules or fragments																							
	10	>1 fill, no recut	5	17	5	7	16	4	15	7		**27**													
	11	Finds concentrated in recut(s) or upper fill(s)	2	5		2	3	2	5	2		5	**7**												
	12	Recut(s)		2?				2?	1?	1?			2?	**2?**											
	13	Single fill	26	17	6	40	7	18	20	21					**50**										
Contents	14	Pottery	24	28	8	35	18	5	32	18		21	7	2?	37	**60**									
	15	Struck flint	27	35	8	43	21	5	35	23		22	7	2?	45	56	**71**								
	16	Charcoal	23	33	7	38	19	5	28	23		21	7	2?	36	47	55	**63**							
	17	Burnt flint	13	20	3	18	16	3	23	10		17	7	2?	16	31	36	27	**37**						
	18	Animal bone	25	25	8	34	18	4	30	18		19	7	2?	36	51	54	46	30	**59**					
	19	Stone	2	6	1	4	4	1	6	1		5	3	1?	3	8	8	9	5	8	**9**				
	20	Antler	2	3	1	1	4	1	3	3		4	3	1?	1	6	6	5	5	6	2	**6**			
	21	Substantial part(s) of 1 pot or more	4	7	2	5	6	2	7	5		6	5	1?	4	13	13	5	11	13	2	1	**13**		
	22	Hazelnut shell	11	16	5	22	7	4	16	9		9	5	2?	21	30	32	28	18	30	8	4	11	**33**	
	23	Human remains	2	3		2	2		4	1		2	2		2	4	4	3	3	4	2	1	1	2	**5**

a while, as in 2A F269 and 4B F153, were correspondingly rarer. There were only two possibly recut pits (4B F129 and 4B F178), in contrast to 26 in the central area. The concentration of finds in the upper surviving part of a pit, whether it was a recut or not, occurred only seven times (1A F57, F231; 2A F268, F269; 4B F129, F178, F712), as opposed to 32 times in the centre. The difference in pit depth between the two areas is not so great as to make these distinctions explicable in terms of greater truncation on the Stepleton spur (Fig 3.52). Almost all are likely to have resulted from deliberate choice. A possible exception is the absence of densely-packed flint, since flint was scarcer in the Middle Chalk of the spur than in the Upper Chalk and Clay-with-Flints of the centre. This too, however, seems deliberate, since flint was used to pack postholes on the spur, and substantial amounts of knapping debris were generated there, at least some from nodules brought from elsewhere, so that it would have been possible to pack the pit-tops with flint if it were thought appropriate. Low levels of flint nodules and fragments in the pits seem to have been as elective as their other features.

Contents

The artefacts and food remains in the pits exhibited varying degrees of pattern or the lack of it, from a furnished burial in 4B F712 (Fig 3.113) to the apparently accidental inclusion of a few sherds, flakes and cores in 1A F8.

Human remains

Three pits contained articulated inhumations, each different in character, and each in a potentially significant location.

2A F200, in the protected chalk of the inner outwork bank, contained the skeleton of an older adult, possibly male, so tightly crouched as to appear to have been bound (Fig 3.113**).** This was the oldest articulated skeleton on the hill, with an estimated date of *3780–3630 cal BC* (4855±45 BP; OxA-7835) and may have been in place before any of the earthworks on the spur were built (Fig 4.6). Charcoal flecks and a slightly scorched metacarpal may reflect the subsequent burning of the timber framework of the bank.

1A F70, near the centre of the Stepleton enclosure, contained the loosely flexed skeleton of an older infant or young juvenile, with the incisor of a younger infant against the mandible. There was slight black staining on right tibia and fibula shafts. A small, abraded sherd and three flint flakes may all have been accidental inclusions, and one flake seemed to have been drawn inside the crushed skull by the plough. A date of *3630–3570 cal BC (17%) or 3540–3360 (78%)* (4695±40 BP; OxA-7836) places the burial within the use-life of the enclosure. It may have been marked by axial posts, if circular hollows at the head and feet (Fig 3.113) were the bases of ploughed-down postholes. Photographs taken before the floor of the pit was fully clean show chalk lumps, suggestive of packing, around the depression at the feet.

4B F712 was outside the enclosure, and in an area with only one other definite pit (4B F590). The crouched burial of a young adult male lay on an ashy grey silt layer over the base of the pit, with an arc of flint nodules and an Old Red Sandstone quern fragment around his hips and feet. Artefacts were almost all in the topmost fill and included sherds amounting to substantial parts of at least two pots, the better-preserved sherds of both divided between two clusters, in which some were vertical. There were also nine flint flakes, a flint rod (Fig 10.19: 162) and a naturally perforated flint nodule. Charred hazelnuts were scattered over the burial. Burnt chalk, burnt clay and charcoal match the debris of the burnt inner outwork rampart, 80 m to the south-west (see 3.5.4) and estimated dates for the burial of *3630–3580 cal BC (22%) or 3535–3495 cal BC (20%) or 3460–3375 cal BC (53%)* for the mean of two dates on one femur (4710±23 BP and 4715±40 BP; OxA-7818, -7843) and *3640–3550 cal BC (23%) or 3540–3360 cal BC (72%)* (4700±45 BP; OxA-7843) for one of the hazelnuts scattered over it, are consistent with the young man having been a victim of this violent event, which occurred soon after the construction of the outwork in *3630–3500 cal BC* (Ch 4).

Disarticulated human remains were found in only two pits, both containing infant or child skull fragments without mandibles, and both among those richest in cultural material. In 1A F57 infant skull fragments formed part of a large assemblage including burnt bone, burnt clay, burnt flint, charcoal and charred grain. In 4B F137 skull fragments from two separate infants or juveniles were found with another substantial assemblage, again including burnt material.

Animal bone

Animal bone occurred in a higher proportion of pits than in the central area (Fig 3.115). As there, however, it generally took the form of scant, poorly preserved, often unidentifiable fragments. The least insubstantial assemblages came from 4B F137 and F178, pig foot bones predominating in the latter. Pig bones were the most numerous among the 118 identified specimens, in contrast to a predominance of cattle in the central area (see Legge, 8.1).

Antler

Antler was scarcer in the pits on the spur than in those in the central area (Fig 3.114), while it was much more abundant in the ditches.

Pottery

By far the largest single assemblage, 290 sherds/1221 g, came from 1A F350, most of it from layer 3. The sherds were, however, generally small and abraded, like

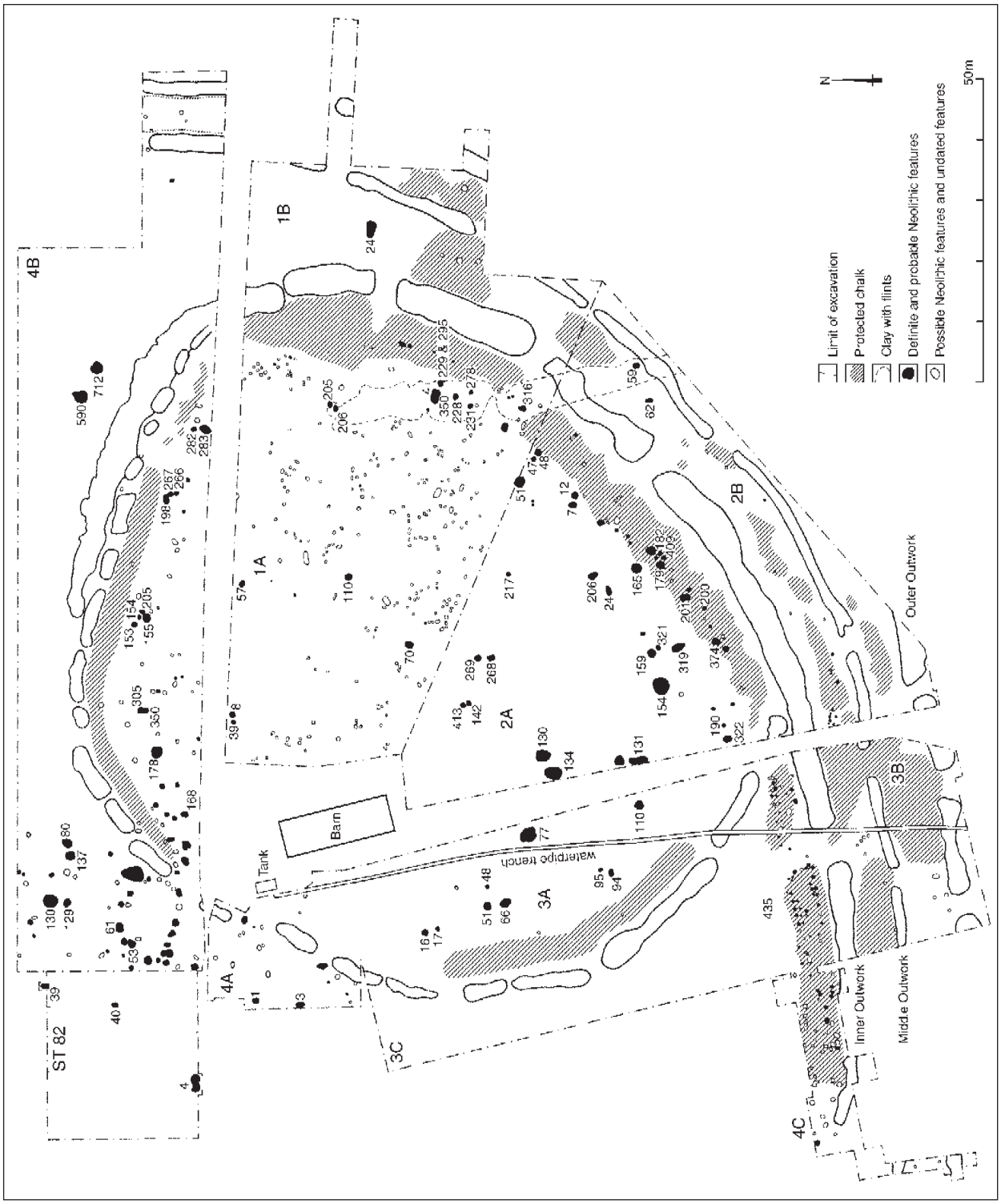

Fig 3.108 Stepleton spur. Neolithic and probably Neolithic pits (numbered) and Neolithic and undated postholes (un-numbered). Possible postholes are shown in outline.

those of the smaller assemblages in most of the other pits, the condition of which is exemplified by an overall mean sherd weight of 3 g. 1A F57 stands out in that the pottery is nearly all in fresh condition and includes fairly large parts of five vessels (see Smith, 9.1). The pottery in a minority of the other pits had also been freshly broken when deposited; but in these the sherds represent only one or two vessels (see Smith, 9.1). Examples include the burial in 4B F712, described above, as well as 2A F134, F201, F268 and F269, 4B F129 and F130. In 2A F268, the rim sherds of P77 (Fig 9.6) seem to have been smashed against the wall of the pit, and further sherds of the same vessel were in 2A F269. In 1A F110 and ST82 F39 small cups, probably complete when deposited (P62 and P59 respectively – Fig 9.4) were associated with charred grain. Substantial parts of single vessels were sometimes also present in small, abraded assemblages, as in 1A F350 and 2A F134. Features 1A F228, F229, and F350 were linked by of sherds from two distinctive vessels among other fresh and weathered pottery. Sherds of P74 (Fig 9.6) occurred in 2A F7 and 2A F159, which were 28 m apart.

As in other contexts on the spur, gabbroic and Jurassic fabrics were far scarcer than in the central area and fabrics of group 6, characterised by red pellets and often occurring in roughly made vessels, were more frequent. Scarce fabrics tended to be attributable to one or two vessels only. Fabric group 2A (Jurassic inclusions with ooliths) was almost entirely confined to 1A F57, where there were 125 sherds/230 g. Since all the rim sherds in the pit are from P17, the body sherds are almost certainly from the same vessel. Fabric 2B (Jurassic inclusions with fossil shell) was thinly scattered apart from 18 sherds/32 g making up P34 in 3A F94 and 13 sherds/55 g from two vessels in 4B F178. Organic-tempered sherds of fabric group 4 included 7 sherds/39 g from a neutral uncarinated bowl with a simple pointed rim 120 mm in diameter in 4B F198 and 13 sherds/21 g from a pot with a simple rounded rim and a lug in ST82 F4. Almost half the sand-tempered sherds of fabric group 8 came from 4B F129, where almost all were fragments of a single neutral uncarinated pot with an internally bevelled rim 80 mm in diameter. The 13 body sherds/32 g in sandstone-tempered fabric group 11 were confined to 4B F129. The only gabbroic ware from a discrete feature on the spur consisted of three small body sherds from probable posthole 2A F181.

Lithics

Most pits contained little worked flint or stone, and the assemblages are characterised by repetitious waste material more than anything else. Cores are twice as common and serrated-edge flakes only half as common as in the pits of the central area, but otherwise the main differences are the absence of any leaf-shaped arrowheads or chert from the Stepleton pits. Scrapers form *c* 1% of the total (or 13–14 % of the retouched forms) in both. Noteworthy artefacts are a laurel leaf from 2A F154 (Fig 10.16: 150), a polished flint axehead from 1A F228 (Fig 10.18: 156), a fragmentary one from 2A F321, flakes from others in 4B F129 and F130, and the rod-type implement from burial ST81 F712 mentioned above (Fig 10.19: 162) (see Saville, 10.2). The assemblage from 1A F350 was twice the size of that from any other feature, and may reflect its location on the Clay-with-Flints fissure, where other, neighbouring pits also contained fairly substantial assemblages (eg 1A F228, F229+F295, F231, F278). Three of these were probably filled at the same time, on the evidence of sherds from the same vessels (above). Outside this area, the only assemblages of over 100 pieces were from 2A F154 and F159, both in the south of the enclosure, and 4B F130 and ST82 F4, both outside the enclosure to the north-west. Retouched forms were more frequent in the pits (*c* 7% of artefacts, excluding unclassified burnt flint), than in Neolithic levels of the Stepleton enclosure ditch (*c* 3%) and, especially, the outworks (*c* 1% or less). Given clusters of knapping debris in the ditches, this suggests that the pits may have contained a higher proportion of used, rather than waste, material.

There was considerable unevenness among the pits. In those with relatively large flint assemblages, listed above, there is a mean of only 2 g of pottery to each piece of struck flint. At the other extreme are pits from which flint seems almost to have been excluded in favour of pottery, which reaches up to 83 g per piece of struck flint. The most striking cases are 1A F57 (187 sherds/538 g of pottery, 9 flakes and an edge-trimmed flake); 2A F268 (109 sherds/465 g and 6 flakes), 2A F269 (103 sherds/321 g and 14 flakes), 4B F80 (74 sherds/111 g and 4 flakes), burial 4B F712 (111 sherds/664 g, 9 flakes and a rod); and ST82 F39 (96 sherds/333 g and 4 flakes). Most of these show other indications of deliberate placement: skull fragments and well-preserved sherds of five vessels in 1A F57, the same pot divided between 2A F268 and F269, the burial in 4B F712, and an exceptional grain deposit with a pottery cup in ST82 F39. The lack of flint is likely to have been purposeful. The particularly flint-rich and the particularly pottery-rich pits form the ends of a continuum in the proportions of different materials.

All hammerstones were of flint, and stone artefacts were scarce (see Smith, 10.1.1; Roe, 10.1.2). The few recovered were all almost all fragmented querns and rubbers, some burnt, as in 4B F80 and F178, with none of the wide range of artefacts present in the central area. Most were of Heathstone, with a little Sarsen and Greensand. The only Old Red Sandstone artefact formed part of the burial in 4B F712. An unworked limestone fragments from undated pit 4B F61 must have been brought to the site. Stone tended to be less infrequent in pits in the north and north-west of the enclosure.

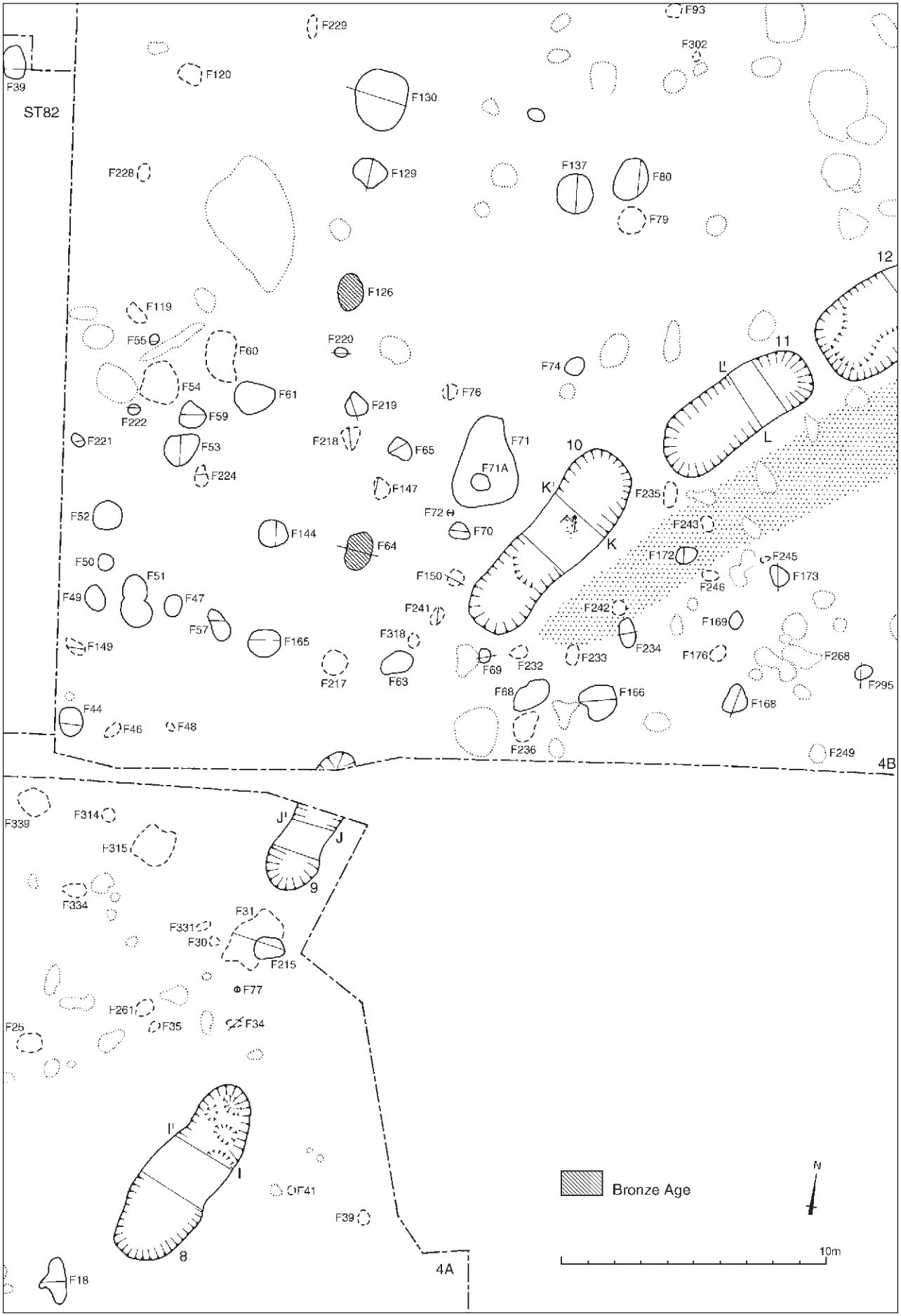

Fig 3.109 Stepleton spur. North-west part of Stepleton enclosure, with adjoining features.

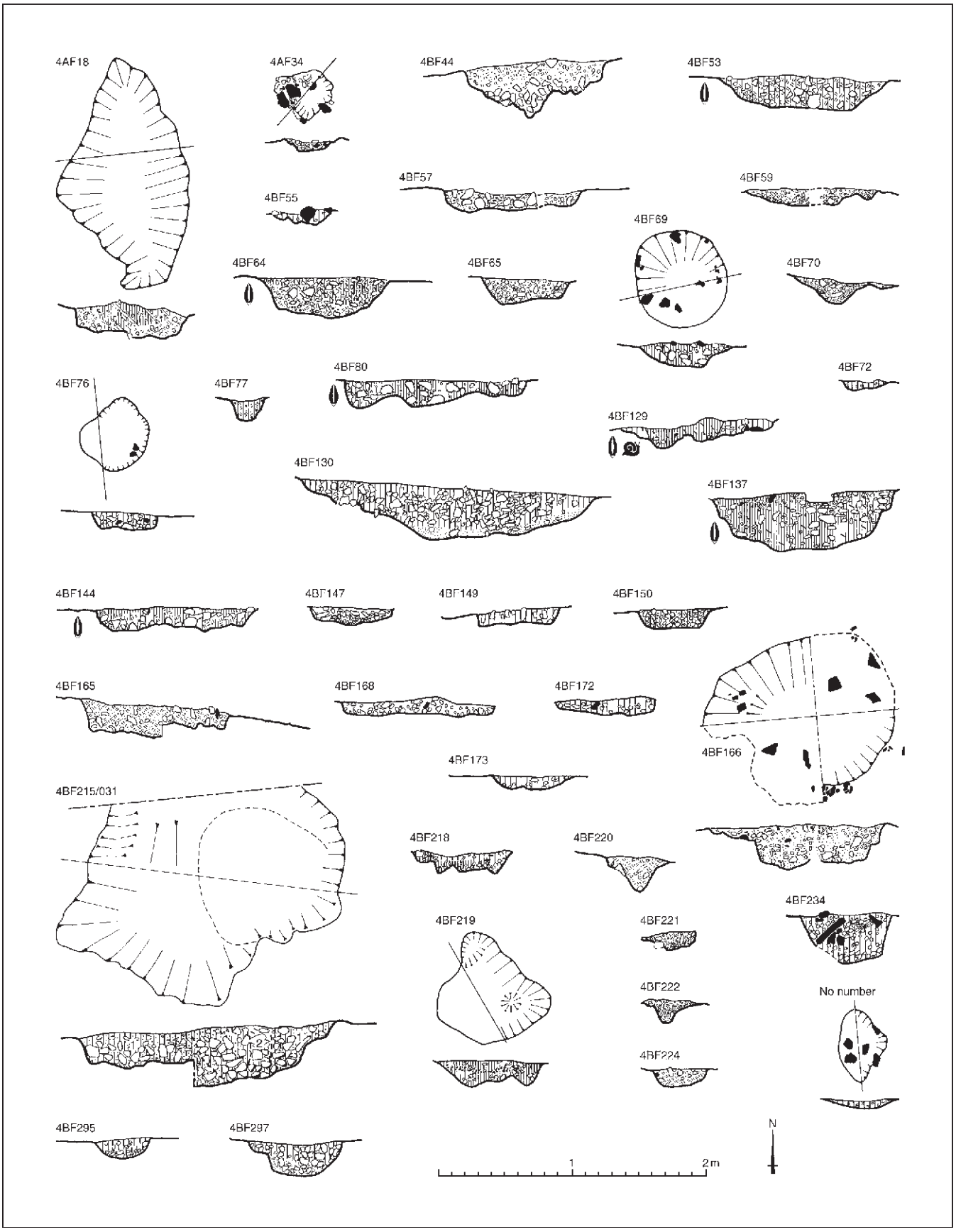

Fig 3.110 Stepleton spur. Features in area of Fig 3.109.

Burnt material

Burnt flint and charcoal were more frequent than in the central area, and burnt clay occurred exclusively on the Stepleton spur (Fig 3.115). Burnt material of all kinds was widespread, but generally occurred in low quantities. The incidence of charred cereals and, to a less extent, hazelnut shell, is not comparable between the two areas, because flotation, wet sieving, or both were practised in every season on the Stepleton spur, but in only one season in the central area (see Jones and Legge, 6.2). Several kinds of burnt material occurred in some pits, in all possible combinations. None showed signs of burning *in situ*. Some were particularly rich in burnt material, like 1A F57 with burnt bone, antler, cereals, hazelnut, chalk, flint and clay and some charcoal. Others include 1A F110, F228, and F350; 2A F48, F142, F159, F268, F321, F409, and F413; 4A F3; 4B F53, F137, F178 and burial F712; and, quite exceptionally, ST82 F39.

Burnt flint was most abundant in L3 of 1A F350, burial 4B F712 and 2A F159.

Burnt clay was most frequent in features in the Clay-with-Flints-filled fissure (1A F206, F228, F229, F350, F278), and could be the result of the fortuitous burning of clay brought to the surface by pit-digging, were it not for some possible daub fragments, one with a concave edge, in 1A F228 (see Barclay, 9.4), which may have been debris from the burnt inner outwork rampart or from a structure such as a hearth or oven. Elsewhere, finds from 2A F47 and F48 may relate to the burning of the overlying and adjacent inner outwork bank. 1A F57 is the only feature well-removed from both Clay-with-Flints and conflagration from which burnt clay has been examined; the 10 fragments/29 g were featureless and of natural clay without added temper, a mixture of Barclay's fabrics 1 and 2 (see 9.4). Further finds from 4B F129, outside the enclosure to the north-west, 4B F198 in the north-east of the enclosure, and grave F712 outside the enclosure to the north-east could not be traced in the late 1990s, but provide additional instances of this material occurring beyond the clay with flints and the inner outwork bank where it was most likely to have been formed accidentally. In the case of the burial, the association of the burnt clay with burnt chalk and burnt flint suggests an incorporation of material from the burnt inner outwork rampart.

Charcoal was more frequent than in the central area (Fig 3.115). Particularly charcoal-rich fills or layers occurred in 2A F142, 2A F159, 2A F268, 2A F321, 2A F409, 2A F413, 4A F1, 4A F3, 4B F53 and burial 4B F712, all, except the burial, in the west half of the enclosure or outside it to the north-west. Taxa identified from the pits excavated in 1981 were, in descending order of frequency, oak, ash, hazel, Maloideae, hornbeam, blackthorn or cherry, willow or poplar, yew, Cornish Heath, lime, holly and maple. The charcoals were more diverse than those from any other context group. Cornish Heath was found only in 4B F178, where it formed part of three separate samples. In Britain this species is now confined to the Lizard peninsula and north-western Ireland. While its fourth millennium range may have been wider, the case for it having been brought to Hambledon from the south-west with gabbroic wares or axeheads, perhaps even as packing or protection for the pottery, is a strong one (see Austin *et al*, 6.1).

Charred hazelnut shells, cereals and seeds. Charred hazelnut shell was widespread, but the largest assemblages, of over 50 g, were in the north and north-west, in 4B F129 and F198 and in ST82 F4 (Fig 3.133). Cereals were predominantly emmer wheat, with smaller quantities of barley or none at all (Fig 3.132), and were generally cleaned, with little chaff and few weeds. Two pits were exceptional. In 1A F110, near the centre of the enclosure, a collection of nearly 400 grains was dominated by barley. The fact that almost all the grain was in one sample out of the 15 taken strongly suggests that the grain was in a compact mass in one part of the feature. Two of the barley grains are dated: *3640–3490 cal BC (58%) or 3470–3370 cal BC (37%)* (4725±40 BP; OxA-7837) and *3630–3590 cal BC (7%) or 3530–3360 cal BC (88%)* (4670±40 BP; OxA-7838).

In ST82 F39, outside the enclosure to the north-west, was a deposit estimated at *c* 50,000 spikelets of emmer, accompanied by hazelnut shells and a few seeds of brome grass. It had been charred in spikelet form, before the food preparation stage, unlike the rest of the grain from the site, but it is not possible to determine whether this was deliberate or had occurred accidentally, for example in storage or in parching prior to dehusking (see Jones and Legge, 6.2). The grain and other burnt material seems to have been tipped into one side of the pit, with a small cup (Fig 9.4: P59) placed on top of it, and burnt antler placed above the grain and cup (Fig 3.114). Other sherds, almost all from a lugged bowl (Fig 9.2: P16) were more scattered. Flint was confined to four flakes, three of them burnt, and 1 g of unclassified burnt flint. Single emmer grains from the deposit are dated to *3650–3500 cal BC (75%) or 3440–3370 cal BC (20%)* (4750±40 BP; OxA-7839) and *3640–3490 cal BC (61%) or 3470–3370 cal BC (34%)* (4730±45 BP; OxA-7840). The deposit is reminiscent of that in pit Q at Hembury, where 'A black layer of ash and charcoal sloping from the north-east edge towards the centre of the pit showed an original occupation surface and on the east margin a pot of wheat had been upset, the grain lying thick upon the edge and spraying out over the slope where it was embedded in the clay. With it was a large piece of pottery with grains embedded in its inner surface.' (Lidell 1932, 171).

Only 15 m away from ST82 F39, in 4B F53, 61 grains of emmer wheat, barley and indeterminate cereal were accompanied by a charred grape pip (see Jones

and Legge, 6.25). The pip is dated to *3640–3340 cal BC* (4660±80 BP; OxA-931); and two emmer grains from the same pit are dated to *3640–3360 cal BC* (4690±70; OxA-932) and *3640–3350 cal BC* (4680±80 BP; OxA-933). The remaining contents of the pit were unexceptional other than in including much burnt material. Alongside burnt chalk, burnt flint, burnt grain and charcoal there were two small abraded body sherds, four flint flakes, and unidentifiably fragmented animal bone.

The diverse composition of the burnt and other material in the Stepleton pits gives the impression that each pit or pair of pits may have contained the residue of a particular episode of activity, whether of simply staying at the enclosure or of performing more specific tasks, and that the debris of fires, and whatever had been burnt on them, was buried with other material. Higher frequencies of burnt material than in the central area may point to more emphasis on day-to-day living here. At both enclosures, pit contents formed an unbroken continuum from the apparently scant and haphazard to rich, deliberately constructed deposits, including, on the Stepleton spur, burials. Varying patterns in the forms and contents of the two groups of pits must reflect differing practices.

Exceptional plant remains, in the form of the grape pip, the remarkably large emmer spikelet deposit, and the Cornish Heath, may have been preferentially deposited in and beyond the west and, especially, the north-west of the enclosure, rather as exceptional charcoal (box, and, again, vine) seem to have been concentrated in the north-west of the main enclosure ditch, on site G (3.3.8). It may be, however, that their distribution on Stepleton simply results from a clustering of substantial deposits of burnt material. The impression may also be biased by the fact that only the charcoal from those pits excavated in 1981 (ie from areas 4A and 4B) has been examined systematically.

Catalogue of definite and probable Neolithic and undated pits on the Stepleton spur, including possible features in bank areas. Postholes are summarised in Table 3.14

Notes

Layers are described from the bottom up. In many cases layers were identified only after features were half-sectioned, hence the number of finds not attributed to layer.

In areas 1A and 1B in 1978 the current ploughsoil was generally called L1 so that the fills of most features were numbered from L2 downwards. In 1979–82 feature fills were numbered from L1 downwards.

Finds not attributed to layer are listed first.

* = recorded but unidentified, missing or not retained.

Lithics are of flint unless otherwise stated.

The only animal bones listed are specimens identified to species and anatomical part, almost all, even of these, are highly fragmentary.

Feature dimensions are maxima.

1A F4. Pit. Probable. Earlier Neolithic. *Length* 1 m, *width* 0.85 m, *depth* 0.30 m
Form. Subcircular, steep sides, undulating base
Comment. On fissure filled with Clay-with-Flints, intersecting with 1A F350
Fill(s). Both layers dark grey-brown clay
Pottery: 2 sherds/6 g Neolithic Bowl
L2: 1 sherd/3 g Neolithic Bowl
L1: 1 sherd/13 g Neolithic Bowl
Topsoil: 12 sherds/22 g Neolithic Bowl
Lithics: 44 flakes, core
Charcoal: *

1A F7. Pit. Definite. Earlier Neolithic. *Length* 1.30 m, *width* 0.85 m, *depth* 0.15 m
Form. Subovoid, saucer-shaped profile
Fill(s). Dark fill with angular chalk lumps
Pottery: L2: 52 sherds/94 g Neolithic Bowl
Topsoil: 11 sherds/55 g Neolithic Bowl, all but 2 sherds from single closed uncarinated bowl with simple flat rim 200 mm in diameter, in a flint-tempered fabric
Lithics: L2: 9 flakes, piercer
L1: flake, serrated flake
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, >10 g charred hazelnut
Other: Shell

1A F8. Pit. Definite. Earlier Neolithic. *Length* 0.90 m, *width* 0.70 m, *depth* 0.30 m
Form. Subcircular, steep sides, flat base
Comment. Under superficial hollow 1A F39
Fill(s). L2 dark brown soil with chalk blocks, increasing in size with depth. L1 topsoil
Animal bone: *cattle* tooth
Pottery: 3 sherds/4 g Neolithic Bowl
L1: 1 sherd/21 g Neolithic Bowl
Lithics: L2: 6 flakes, 2 cores, serrated flake
L1: flake
Charred plant remains: *Hordeum*, hulled, *Hordeum* sp, indet cereal
Charcoal: *

1A F39.Hollow. Probable. Earlier Neolithic?
Comment. Over Neolithic pit 1A F8
Animal bone: L2: *pig* metatarsal

1A F57. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.90 m, *width* 0.80 m, *depth* 0.25 m
Form. Subcircular plan, flat base, 1 side shelving, 1 side steep
Comment. Much burnt bone
Fill(s). L3 dark silt with much grey material (redeposited calcium carbonate?). L2 Dark soil with chalk lumps, burnt chalk. L1 Root-disturbed topsoil
Human remains: 21 infant occipital and parietal fragments
Animal bone: L2: *pig* calcaneum, tooth; *red deer* antler fragment (burnt); *cattle* vertebra; *rabbit* phalanx. At least some of bone burnt
Pottery: 9 sherds/24 g Neolithic Bowl
L3: 1 sherd/25 g Neolithic Bowl
L2: 177 sherds/489 g Neolithic Bowl
At least 5 pots represented: P17 by 5 sherds/76 g from L3 and L2; P23 by 19 sherds/61 g from L2; P24 by what was originally 1sherd/22 g found at the interface of L2 and L3, P118 by 5 sherds/108 g from L2, less abraded than rest of pottery from feature; calcite-tempered pot by single simple pointed rim sherd from L2. No clustering between sherds of single vessels

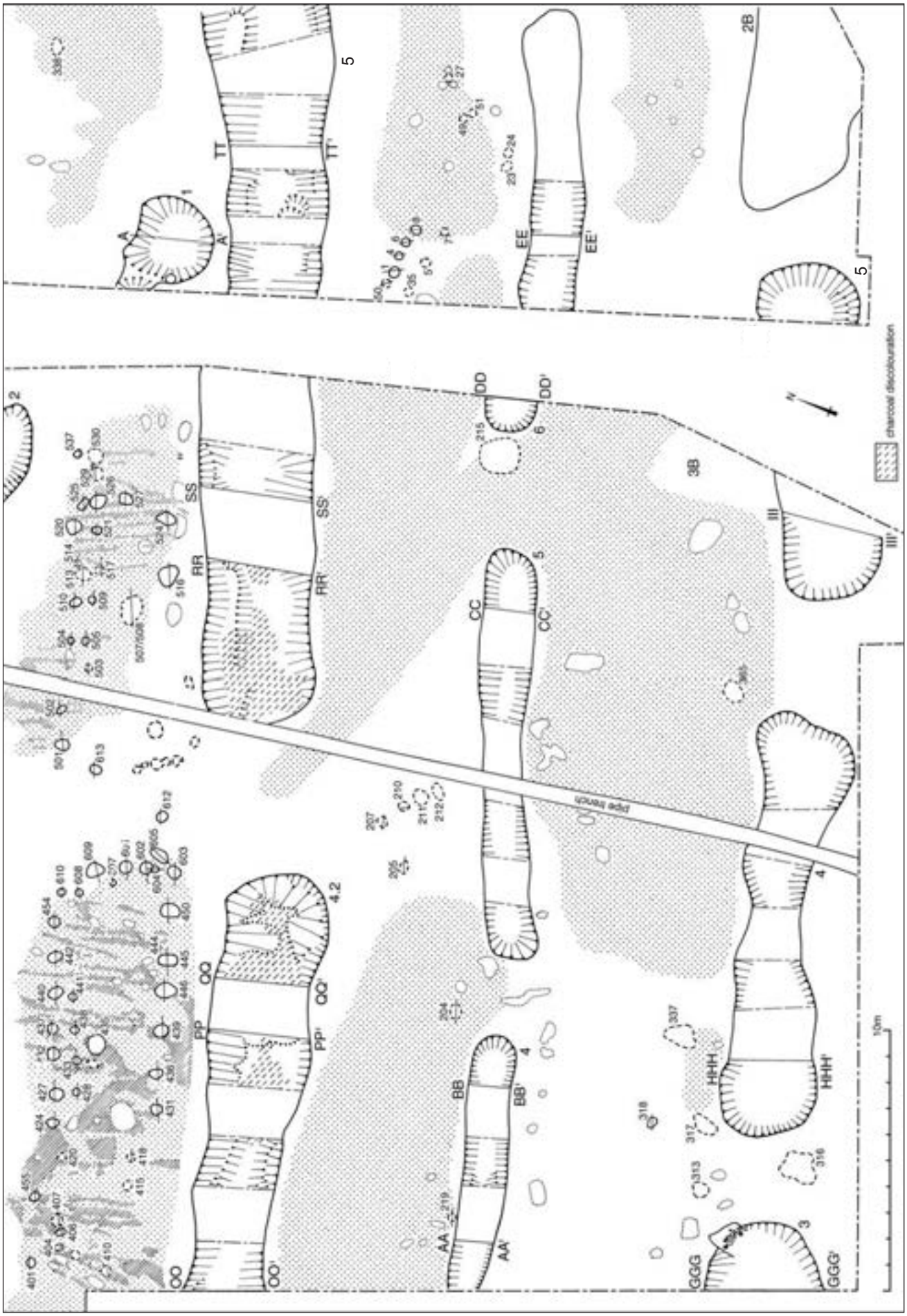

Fig 3.111 Stepleton spur. Area of gateway in inner Stepleton outwork.

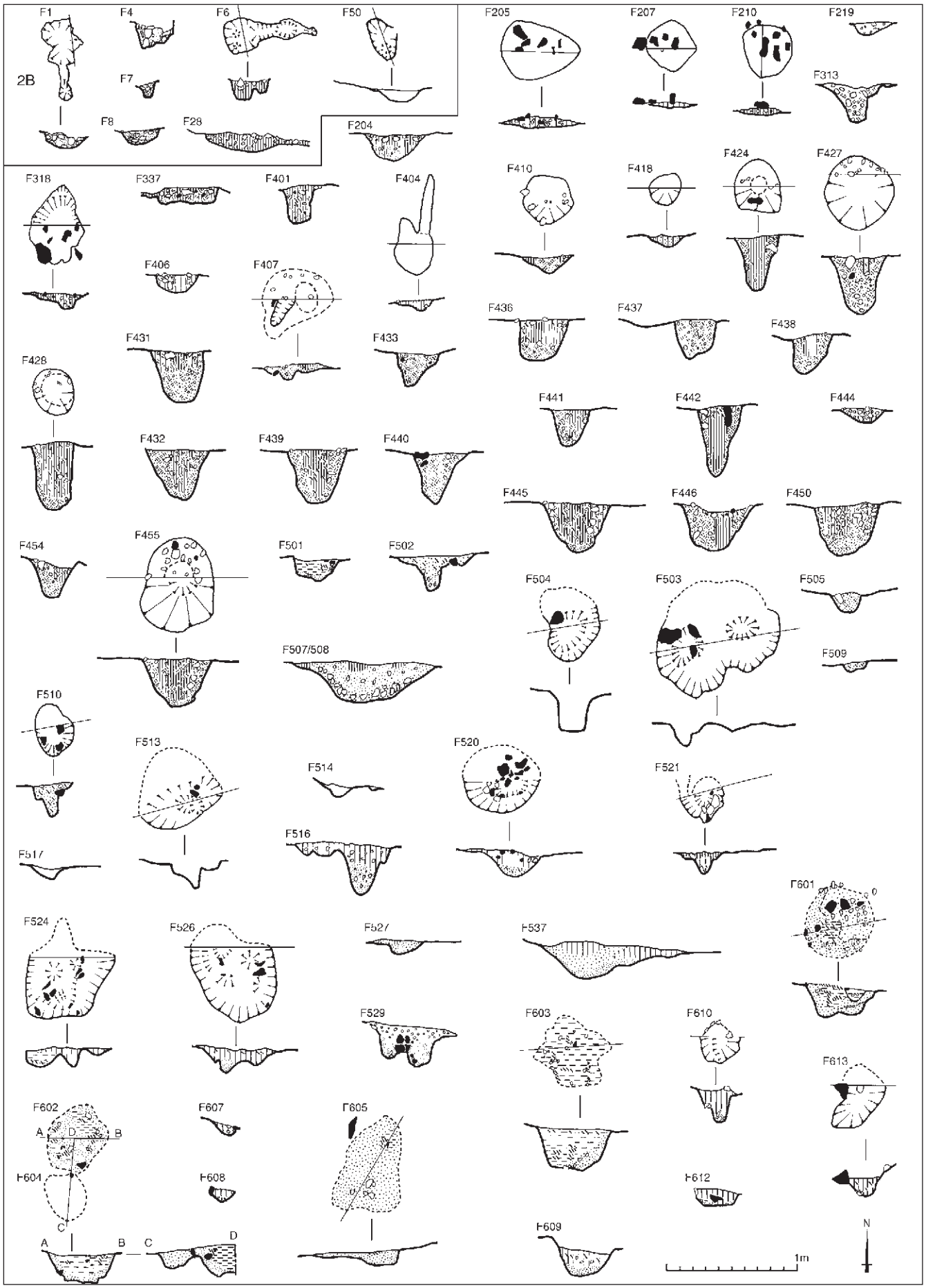

Fig 3.112 Stepleton spur. Features in area of Fig 3.111. Those on site 2B are top-left, within a line, the remainder were on site 3B.

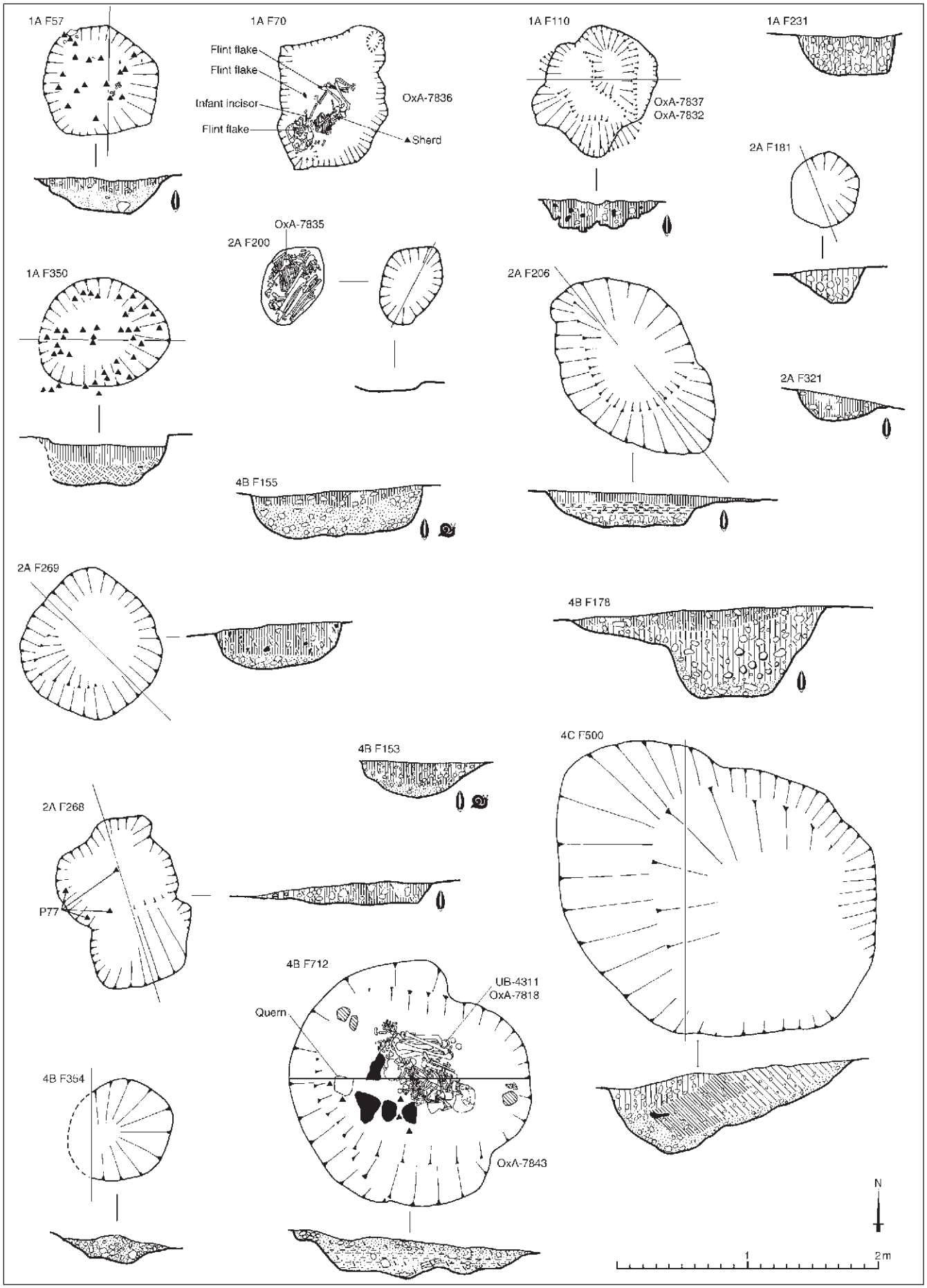

Fig 3.113 Stepleton spur. Plans and sections of miscellaneous Neolithic features and of possibly Mesolithic feature 4C F500.

Lithics: L2: 9 flakes (5 burnt), edge-trimmed flake
L1: 4 heathstone fragments, 1 of them from a quern or rubber
Burnt flint: L2: 16 g
Other finds: 24 fragments/23g amorphous fired clay
L3: 4 fragments/12 g amorphous fired clay
L2: 6 fragments/17 g amorphous fired clay
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, cf *Hordeum* sp, indet cereal, <10 g charred hazelnut shell
Charcoal: *

1A ***F70***. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.22 m, *width* 0.95 m
Form. Irregularly quadrangular. Plan shows 2 depressions at opposite ends of feature's long axis, not mentioned in written record or drawn in section or profile: 1 behind and slightly under skull approx 0.15 m in diameter; 1 beyond feet, *c* 0.12 m across. Possibly the bases of postholes. Photographs taken when skeleton was cleaned but while some soil remained on pit base suggest setting of chalk lumps around the rim of the latter
Comment. Near centre of Stepleton enclosure. Depth not recorded. Photographs show very shallow pit with ploughdamaged skull at level of stripped chalk surface.
Fill(s). L2 Medium brown soil with flint and chalk lumps, little different from overlying L1. L1 ploughsoil.
Human remains: L2: Flexed, articulated skeleton of older infant/young juvenile (ST78 964), loose incisor of younger infant (ST 78 710) against mandible. ?Sooting
Animal bone: L1: *
Pottery: 1 plain body sherd/2 g Neolithic Bowl, in chest area
Lithics: L2: 3 flakes (1 inside crushed skull)
^{14}C: 3630–3570 cal BC (17%) or 3540–3360 cal BC (78%) (4695±40 BP; OxA-7836) on L femur of articulated skeleton ST78 964

1A F110. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.95 m, *width* 0.87 m, *depth* 0.25 m
Form. Raggedly subcircular, irregular base
Fill(s). Very dark brown soil with chalk lumps and burnt flint
Comment. Recovery of 299 out of 433 cereal grains from 1 flotation sample out of 19 suggests grain concentrated at one point in pit. Fe objects intrusive
Animal bone: L2: Burnt bone, unidentified
Pottery: L2: 11 sherds/40g from a lugged cup (P62) scattered through central area of fill
Lithics: L2: 4 flakes (2 burnt)
Burnt flint: L2: 7 g
Other finds: 2 indeterminate iron objects (now discarded, 1 described as 'nail?') in W part of pit, respectively *c* 0.10 m and 0.14 m below the surviving top of the fill
Charred plant remains: 291 barley grains, 65 wheat grains, 77 indeterminate cereal grains, 10–50 g charred hazelnut shell
Charcoal: *
Molluscs: *
^{14}C: 3640–3490 cal BC (58%) or 3470–3370 cal BC (37%) (4725±40 BP; OxA-7837) and *3630–3590 cal BC (7%) or 3530–3360 cal BC (88%)* (4670±40 BP; OxA-7838) on single barley grains

1A F205. Pit. Definite. Earlier Neolithic. *Length* 1 m, *width* 0.75 m, *depth* 0.15 m
Form. Subcircular, jagged edges, flat base, shelving sides
Fill(s). Dark soil with chalk lumps
Comment. On fissure filled with Clay-with-Flints. Paired with 1A F206, upper *c* 0.10 m of both features merging
Animal bone: *
Pottery: 5 sherds/6 g Neolithic Bowl
L2: 8 sherds/15 g Neolithic Bowl
Lithics: L2: 7 flakes, edge-trimmed flake
Charred plant remains: *Triticum* sp, hazelnut shell
Charcoal: *

1A ***F206***. Pit. Definite. Earlier Neolithic. *Length* 2.10 m, *width* 0.80 m, *depth* 0.15 m
Form. Subrectangular, jagged edges, rounded base, shelving sides
Fill(s). Dark soil with chalk lumps
Comment. On fissure filled with Clay-with-Flints. Paired with 1A F205, upper *c* 0.10 m of both features merging
Animal bone: L2: *pig* teeth; *red deer* antler pedicle with attached skull fragment, broken above burr (ST78 1106), antler fragment; *cattle* scapula
Pottery: L2: 5 sherds/3 g Neolithic Bowl
Lithics: L2: 3 flakes, flaked lump
Other finds: L2: 2 fragments/32 g fired clay
Charred plant remains: <10 g charred hazelnut shell

1A ***F228***. Pit. Definite. Earlier Neolithic. *Length* 0.75 m, *width* 0.75 m, *depth* 0.17 m
Form. Subcircular, rounded base, 1 stepped side, 1 shelving side
Comment. On fissure filled with Clay-with-Flints
Fill(s). L2 black clay. L1 brown clay
Animal bone: *
Pottery: L2: 115 sherds/672 g Neolithic Bowl including 6 joining sherds/37 g from neutral vessel with simple flat rim in flint-tempered fabric, more of which was found in 1A F350, 2 sherds/3 g Roman
Lithics: L2: 181 flakes (7 burnt), 2 cores, 10 serrated flakes, edge-trimmed flake class A, 7 edge-trimmed flakes, 2 scrapers, fragmentary ground axe (reflaked), 1 misc retouched
Burnt flint: L2: 76 g
Other finds: L2: 15 fragments/29 g fired clay, including possible daub fragments, 1 with concave edge
Charred plant remains: *Triticum dicoccum*, *Triticum* sp
Charcoal: *

1A F229+F295. Pit. Definite. Earlier Neolithic. *Length* 1 m, *width* 0.80 m, *depth* 0.20 m
Form. Subtrapezoid plan, shelving sides, undulating base
Fill(s). L2: Dark sandy clay
Comment. On fissure filled with Clay-with-Flints
Animal bone: F295: *
Pottery: F229: 1 sherd/3 g indeterminate sand-tempered
F229 L2: 45 sherds/170 g Neolithic Bowl, including 8 sherds/42 g making up P152, 6 sherds/40 g from a flint-tempered T-rimmed vessel more of which was found in 1A F350
F295: 11 sherds/13 g Neolithic Bowl
F295 L2: 62 sherds/228 g Neolithic Bowl including 28 body sherds/93 g from single pot in fabric group 6, 1 sherd/3 g late Iron Age/early Roman
Lithics: F229 89 flakes, scraper L2: 44 flakes (1 burnt), 6 cores, core fragment, serrated flake, edge-trimmed flake, scraper, 1 misc retouched
F295: 97 flakes (2 burnt), core, 2 serrated flakes, 2 edge-trimmed flakes class A, scraper
Burnt flint: F295: 1 g
Other finds: F229 L2: 5 fragments/13 g amorphous fired clay

Charred plant remains: F229: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, cf *Hordeum* sp, indet cereal, <10 g charred hazelnut shell
F295: *Charred plant remains*: *Triticum dicoccum*, cf *Hordeum* sp, <10 g charred hazelnut shell
Charcoal: F229: *

1A F231. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.95 m, *width* 0.80 m, *depth* 0.30 m
Form. Sub-triangular, flat base, 1 steep side, 1 shelving side
Comment. On fissure filled with Clay-with-Flints
Fill(s). L3 brown matrix with loose chalk rubble. L2 black matrix with dense chalk rubble
Animal bone: *
Pottery: 7 sherds/22 g Neolithic Bowl
L3: 12 sherds/26 g Neolithic Bowl
L2: 114 sherds/130 g Neolithic Bowl, most of them (99 fragments/99 g) possibly from a single flint-tempered vessel
Lithics: 12 flakes (1 burnt)
L3: 12 flakes (1 burnt), 2 serrated flakes, edge-trimmed flake (burnt), 1 misc retouched
L2: 29 flakes (2 burnt), core, core fragment
Burnt flint: 11 g
L2: 6 g
Charcoal: *

1A ***F278.*** Pit. Definite. Earlier Neolithic. *Length* 0.65 m, *width* 0.55 m, *depth* 0.15 m
Form. Subcircular, flat, sloping base, steep sides
Comment. Cut by Saxon grave 12. Intersection difficult to define. Iron finds and Roman sherd likely to have derived from grave. One section shows 'black soil' truncated by a recut labelled 'redug (iron deposit)'. On fissure filled with Clay-with-Flints. Finds from grave likely to have derived from pit are 3 pig teeth, a caprine tooth; 72 sherds/140 g Neolithic Bowl; 113 flakes (2 burnt), 3 cores, flaked lump, 5 edge-trimmed flakes, 2 misc retouched, Old Red Sandstone quern or rubber fragment, heathstone fragment, ?iron ore fragment, 56 g burnt flint, poorly preserved tip of bone point, 1 fragment/2 g fired clay
Fill(s). Sandy clay
Animal bone: *cattle* metatarsal, tooth
L2: *pig* tooth
Pottery: 5 sherds/9 g indeterminate flint-tempered, 1 sherd/49 g Roman
L2: 8 sherds/31 g Neolithic Bowl
Lithics: 26 flakes, edge-trimmed flake
L2: 8 flakes
Other finds: 'Iron fragments' (ST78 1208) and 'Iron fragment (rivet)' (ST78 2213). Both discarded. 16 fragments/22 g fired clay
Charred plant remains: *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, <10 g charred hazelnut shell
Charcoal: *

1A F350. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.95 m, *width* 0.85 m, *depth* 0.30 m
Form. Subcircular, flat base, 1 steep side, 1 stepped side
Comment. Cut mainly into Clay-with-Flints, one edge in chalk. Not recognised until *c* 0.10 m of Clay-with-Flints removed. Dimensions approx. Edges never satisfactorily defined. Intersecting with 1A F4
Fill(s). L3 fine, black, relatively stone-free. L2 similar texture and red-brown colour to surrounding Clay-with-Flints
Animal bone: L3: * (burnt)
Pottery: L4: 1 sherd/9 g Neolithic Bowl
L3: 230 sherds/1067 g Neolithic Bowl including 26 sherds/170 g from neutral pot with simple flat rim in flint-tempered fabric more of which was found in 1A F228, 44 sherds/289 g from a T-rimmed flint-tempered vessel and 11 sherds/44 g from neutral pot with simple rounded rim in fabric group 6
L2: 59 sherds/145 g Neolithic Bowl
Lithics: L3: 281 flakes (30 burnt), 3 cores, flaked lump, 5 serrated flakes, 2 edge-trimmed flakes class A, 12 edge-trimmed flakes, 16 scrapers, 3 misc retouched (1 burnt)
Surface of L3: 3 flakes
L2: 92 flakes (2 burnt), 2 cores, 7 serrated flakes, 2 edge-trimmed flakes, piercer, 2 misc retouched
Burnt flint: L3: 313 g
L2: 226 g
Other finds: L3: 42 fragments/52 g amorphous fired clay
L2/L3 interface: 2 fragments/15 g amorphous fired clay
Charcoal: L3: *

1B F24. Pit. Probable. Earlier Neolithic? *Length* 2.60 m, *width* 1.65 m, *depth* 0.20 m
Form. Subrectangular, deeper in E than W
Comment. In middle outwork bank area
Fill(s). L2 chalky silt. L1 dark soil
Animal bone: *
Charcoal: *

2A F7. Pit. Definite. Earlier Neolithic. *Length* 0.55 m, *width* 0.50 m, *depth* 0.30 m
Form. Subcircular, shelving sides, flat base
Comment. Paired with 2A F12
Fill(s). Brown loam
Animal bone: *
Pottery: 54 body sherds/190 g Neolithic Bowl, all probably from same flint-tempered vessel, perhaps identical with P74 from 2A F159, 28 m away
Lithics: 26 flakes (2 burnt), serrated flake, 2 misc retouched
Burnt flint: 1 g
Charred plant remains: cf *Hordeum* sp, <10 g charred hazelnut shell

2A F12. Pit. Probable. Earlier Neolithic? *Length* 0.95 m, *width* 0.90 m, *depth* 0.15 m
Form. Multilobate plan, shelving sides, undulating rounded base
Comment. Paired with 2A F7
Animal bone: *Pig* tooth
Pottery: 9 sherds/4 g Neolithic Bowl
Lithics: 10 flakes

2A F17. Pit. Definite. Earlier Neolithic. *Length* 1.30 m, *width* 0.09 m, *depth* 0.55 m
Form. Ovoid plan, shelving sides, rounded base
Comment. In inner outwork bank area, and hence probably pre- or post-dating it. Finds concentrated in one half
Fill(s). L2 light chalky silt. L1 brown humic fill
Pottery: 3 sherds/4 g Neolithic Bowl
Lithics: 13 flakes (1 with edge-gloss), core, scraper
Charcoal: L2: * more than in L1
L1: *
Molluscs: Predominantly shade-loving

2A F24. Pit. Definite. Earlier Neolithic. *Length* 1.75 m, *width* 1 m, *depth* 0.20 m
Form. Pear-shaped, shelving sides, flat base

Fill(s). L2 fine brown/grey silt with angular chalk at base and chalk pebbles, merging upwards into L1, brown humic fill with grit and angular chalk pebbles
Pottery: 1 sherd/1 g Neolithic Bowl
Upper: 1 sherd/5 g Neolithic Bowl (P129)
Lithics: Serrated flake
Burnt flint: 33 g

2A F47. Pit. Definite. Earlier Neolithic. *Length* 0.85 m, *width* 0.75 m, *depth* 0.17 m
Form. Subcircular plan, 1 steep side, otherwise shelving, rounded base
Comment. Paired with 2A F48
Fill(s). Brown loam
Animal bone: *pig* humerus
Pottery: 7 sherds/16 g Neolithic Bowl
Lithics: 9 flakes, serrated flake
Other finds: 2 fragments/2 g amorphous fired clay
Charred plant remains: *Triticum dicoccum*, indet cereal, hazelnut shell
Charcoal: *

2A F48. Pit. Definite. Earlier Neolithic. *Length* 1.10 m, *width* 1.0 m
Form. Subcircular plan, steep sides, flat base
Comment. In inner outwork bank area, paired with 2A F47
Fill(s). Brown loam
Animal bone: *
Pottery: 1 sherd/5 g Neolithic Bowl
Lithics: 6 flakes, piercer, 1 misc retouched
Other finds: 8 fragments/6 g amorphous fired clay
Charred plant remains: *Triticum dicoccum*, indet cereal
Charcoal: 'much charcoal'

2A ***F51***. Pit. Definite. Earlier Neolithic? *Length* 1.60 m, *width* 1.20 m, *depth* 0.15 m
Form. Subrectangular plan, steep-sided at N end, shelving elsewhere
Fill(s). Brown-black humic soil, chalkier at base, darker and gravelly at top
Lithics: 5 flakes
Burnt flint: 48 g
Charcoal: *

2A F130. Pit. Probable. Earlier Neolithic? *Length* 2.50 m, *width* 0.85 m, *depth* 0.30 m
Form. Subrectangular plan, straight sides, flat base, stepped to one side
Comment. Pairing with 2A F134 suggests Neolithic date
Fill(s). Light brown soil with chalk lumps and peagrit
Lithics: 6 flakes
Burnt flint: 3 g

2A F131. Pit. Probable. Earlier Neolithic? *Length* 2.2 m, *width* >0.90 m, *depth* 0.35 m
Form. Subrectangular plan, shelving sides, rounded base
Comment. Partly covered by baulk. Burnt flint clustered in centre
Fill(s). Layer of chalk lumps at base, overlain by dark soil with chalk lumps and comminuted flint
Burnt flint: 113 g

2A F134. Pit. Definite. Earlier Neolithic. *Length* 2.50 m, *width* 2.20 m, *depth* 0.20 m
Form. Subcircular plan, saucer-like profile
Comment. Finds clustered in E centre and NE. Paired with 2A F130
Fill(s). Brown humic loam
Animal bone: *pig* 3 metacarpals, teeth; *cattle* tibia
Pottery: 126 sherds/622 g Neolithic Bowl, all but 4 sherds from 3 vessels: 3 sherds/149 g making up P13, 93 body sherds/390 g from a single pot in fabric group 6, and 25 body sherds/172 g from a single flint-tempered vessel
Lithics: 73 flakes (6 burnt), 2 misc retouched
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *

2A F142. Pit. Definite. Earlier Neolithic? *Length* 1.25 m, *width* 0.85 m, *depth* 0.40 m
Form. Pear-shaped plan, flat base, 1 side steep, 1 shelving
Comment. Paired with 2A F413
Fill(s). L2 grey silt with much charcoal. L1 very dark soil with large chalk lumps and comminuted flint and chalk
Animal bone: *
Lithics: Lower: core, almost certainly Mesolithic (ST79 2120; see Saville, 10.2)
Upper: 4 flakes
Charred plant remains: *Triticum dicoccum*
Charcoal: L2: * ('much charcoal')

2A F154. Pit. Definite. Earlier Neolithic. *Length* 2.70 m, *width* 2.40 m, *depth* 0.45 m
Form. Subcircular plan, shelving sides, flat base, step to 1 side of base ?corresponding to fault line in chalk
Comment. Finds clustered to one side
Fill(s). L2 fine grey, 'ashy', chalky fill with rounded chalk pebbles, rotted chalk towards base, merging upwards into L1, dark brown humic material layer with gritty texture and fewer rounded chalk pebbles
Animal bone: *Pig* tibia, tooth
Pottery: 12 sherds/54 g Neolithic Bowl, 1 sherd/1 g Roman
Lithics: 104 flakes (2 burnt), 2 edge-trimmed flakes, laurel leaf
Burnt flint: 2 g
Charcoal: *

2A F159. Pit. Definite. Earlier Neolithic. *Length* 1.30 m, *width* 1.25 m, *depth* 0.57 m
Form. Subcircular plan, steep sides, flat base
Comment. Paired with 2A F321
Fill(s). L3 fine grey chalky fill with large, rounded chalk pebbles and some angular cobbles. L2 very dark charcoaly layer with some gravel and small rounded pebbles, larger pebbles concentrated near bottom. L1 dark brown humic layer with medium and small rounded chalk pebbles and some gravelly areas
Animal bone: *
Pottery: 13 sherds/306 g Neolithic Bowl, most from P74
L2: 23 sherds/117 g Neolithic Bowl, most from P74
L1: 12 sherds/87 g Neolithic Bowl, all from P74
There may be more of P74 from 2A F7, 28 m away
Lithics: 176 flakes (10 burnt), 9 serrated flakes, 1 edge-trimmed flake, 3 misc retouched
Burnt flint: 150 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, hazelnut shell
Charcoal: 'Much charcoal and organic material throughout'

2A F165. Pit. Probable. *Length* 1.65 m, *width* 1.65 m, *depth* 0.18 m
Form. Subcircular plan, shelving sides, flat base
Fill(s). L2 humus/chalk matrix with angular chalk pebbles. L1 dark brown/grey humic material
Pottery: 1 sherd/6 g Neolithic Bowl

Lithics: 13 flakes (1 burnt)
Burnt flint: 4 g

2A F179. Pit. Probable. Earlier Neolithic? *Length* 1.25 m, *width* 1.20 m, *depth* 0.55 m
Form. Subcircular plan, shelving sides, flat base
Comment. In inner outwork bank area. Grouping with 2A F182 and F409 may reinforce anthropogenic origin and Neolithic date
Fill(s). L2 grey chalky silt with rounded chalk pebbles. L1 brown loam with much gravel, some small angular chalk pebbles, a few rounded chalk lumps
Charred plant remains: *Triticum dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal

2A F182. Pit. Definite. Earlier Neolithic. *Length* 0.80 m, *width* 0.75 m, *depth* 0.20 m
Form. Subcircular plan, 1 steep side, 1 shelving side, flat base
Comment. Paired with and in same slight hollow as 2A F409, 2 features distinguished as excavation proceeded
Fill(s). Very dark humic soil with some angular chalk and rounded pebbles, latter concentrated towards bottom
Animal bone: *Pig* radius, ilium; *red deer* metacarpal
Pottery: 62 sherds/103 g Neolithic Bowl
Lithics: 45 flakes, core, 2 edge-trimmed flakes
Burnt flint: 9 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal
Charcoal: 'many charcoal fragments'
Molluscs: *

2A F190. Pit. Probable. Earlier Neolithic? *Length* 0.65 m, *width* 0.65 m, *depth* 0.12 m
Form. Subcircular plan, bowl-like profile
Comment. Proximity to 2A F322 may suggest Neolithic date
Fill(s). Very dark brown material with chalk lumps
Lithics: Flake (burnt)
Charcoal: *

2A F200. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.65 m, *width* 0.45 m, *depth* 0.080 m
Form. Ovoid, shelving sides, flat base
Comment. In protected chalk of inner outwork bank. Badly ploughed-down
Fill(s). Almost completely filled by tightly bundled skeleton
Human remains: Articulated skeleton of older adult human, possibly male, very tightly crouched. Approx 40% survival, feet and most of cranium lost. Base of L 3rd metacarpal slightly scorched
Charcoal: Ovoid 'charcoal patch' 0.08 m × 0.05 m planned under dorsal ends of lower L ribs
^{14}C: *3780–3630 cal BC* (4855±45 BP; OxA-7835) on R femur

2A F201. Pit. Definite. Earlier Neolithic. *Length* 1.25 m, *width* 1 m, *depth* 0.20 m
Form. Ovoid plan, bowl-shaped profile, ledge to 1 side
Fill(s). Very dark brown humic material, slightly lighter towards bottom, with small chalk pebbles and a few angular cobbles. Crushed chalk and angular fragments with little humic material in ledge
Animal bone: *
Pottery: 48 sherds/295 g Neolithic Bowl, all but 2 sherds certainly or probably from P61
Lithics: 39 flakes (7 burnt), serrated flake, edge-trimmed flake
Burnt flint: 28 g
Charred plant remains: *Triticum* cf *dicoccum*, cf *Hordeum* sp, indet cereal, hazelnut shell, cf *Vicia/Lathyrus*
Charcoal: *

2A F206. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.10 m, *width* 0.90 m, *depth* 0.25 m
Form. Ovoid plan, 1 steep side, 1 shelving side, flat base, shallow ledge at steep side
Fill(s). L3 fine chalky fill with some angular and round pebbles, merging into L2. L2 fine grey, almost ashy layer with very small pebbles. L1 dark, gritty humic layer with small pebbles
Animal bone: *
Pottery: 1 sherd/5 g Neolithic Bowl
Lithics: 18 flakes, 2 serrated flakes, edge-glossed flake, edge-trimmed flake
Burnt flint: 4 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, indet cereal, hazelnut shell

2A F217. Pit. Definite. Earlier Neolithic. *Length* 0.60 m, *width* 0.60 m, *depth* 0.20 m
Form. Subcircular plan, 1 shelving side, 1 steep side, flat base
Fill(s). Brown, organic humic material with gravel and small round chalk pebbles and some angular chalk; top 0.05–0.07 m slightly darker
Animal bone: *
Pottery: 1 sherd/3 g Neolithic Bowl
Lithics: 26 flakes
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, indet cereal

2A F268. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.25 m, *width* 0.85 m, *depth* 0.16 m
Form. Subrectangular plan, 1 steep side, 1 shelving side, flat base
Comment. Finds concentrated just below cleaned surface in area 0.60 m × 0.35 m in NW of pit. Rim sherds seemed to have been smashed against wall. Paired with 2A F269
Animal bone: *
Pottery: 109 sherds/445 g Neolithic Bowl, all from P77, of which there was more in 2A F269
Lithics: 6 flakes
Burnt flint: 6 g
Charred plant remains: Indet cereal, 10 g charred hazelnut shell
Charcoal: 'Much charcoal'

2A F269. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.05 m, *width* 1 m, *depth* 0.35 m
Form. Subcircular plan, steep sides, rounded base
Comment. L2 accumulated while pit open? Paired with 2A F268
Fill(s). L2 light brown silt with large chalk lumps. L1 dark brown soil with comminuted chalk and flint
Animal bone: *
Pottery: 8 sherds/51 g Neolithic Bowl
L2: 4 sherds/11 g Neolithic Bowl
L1: 66 sherds/191 g Neolithic Bowl, most of them possibly from P77
Surface: 33 sherds/68 g Neolithic Bowl, including a rim sherd of P77, more of which was found in 2A F268
Lithics: 14 flakes

Burnt flint: 10 g
Charred plant remains: L2: *
L1: *
Charcoal: L2: *
L1: *

2A F319. Pit. Definite. Earlier Neolithic. *Length* 2.20 m, *width* 1.30 m, *depth* 0.20 m
Form. Pear-shaped plan, bowl-shaped profile
Fill(s). Dark brown fill with chalk lumps
Animal bone: *
Pottery: 8 sherds/20 g Neolithic Bowl
Lithics: 35 flakes, edge-trimmed flake

2A F321. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.65 m, *width* 0.65 m, *depth* 0.20 m
Form. Subcircular plan, rounded base, bowl-shaped profile
Comment. Paired with 2A F159
Fill(s). Very dark brown humic material with angular chalk lumps and burnt chalk, angular chalk concentrated towards base
Animal bone: *
Pottery: 18 sherds/36 g Neolithic Bowl
Lithics: 27 flakes (3 burnt), serrated flake, ground axe fragment (burnt)
Burnt flint: 21 g
Charred plant remains: *Triticum dicoccum*, *Hordeum vulgare*, *Hordeum* (naked), *Hordeum* sp, indet cereal, <10 g charred hazelnut shell
Charcoal: 'Abundant'

2A F322. Pit. Definite. Earlier Neolithic. *Length* 1.20 m, *width* 0.90 m, *depth* 0.15 m
Form. Subrectangular plan, shelving sides, flat base, rendered uneven by angular chalk lumps in natural
Fill(s). Uniform dark brown humic fill with angular chalk and some crushed chalk concentrated near base, gravel concentrated to N.
Animal bone: *
Pottery: 69 sherds/260 g Neolithic Bowl
Lithics: 28 flakes (6 burnt), core fragment, flaked lump, serrated flake, edge-glossed flake, edge-trimmed flake
Charcoal: *

2A F328. Pit. Probable. Earlier Neolithic? *Length* 0.55 m, *width* 0.35 m, *depth* 0.10 m
Form. Dumbbell-shaped plan, 2 pits with bowl-shaped profiles, connected by groove, one 0.35 m diameter, 0.10 m deep, the other 0.20m × 0.15 m and 0.04 m deep
Fill(s). Very dark humic brown material with angular chalk lumps
Lithics: 2 flakes

2A F374. Pit. Probable. Earlier Neolithic? *Length* 1.40 m, *width* 1.40 m, *depth* 0.20 m
Form. Pear-shaped plan, shelving sides, rounded base
Comment. In inner outwork bank area
Lithics: 41 flakes, edge-trimmed flake
Burnt flint: 2 g
Charred plant remains: *Triticum* sp, indet cereal
Charcoal: *

2A F409. Pit. Definite. Earlier Neolithic. *Length* 0.85 m, *width* 0.70 m, *depth* 0.15 m
Form. Subcircular plan with lateral ledge, 1 steep side, 1 shelving side, flat base
Comment. Paired with and in same slight hollow as 2A F182, 2 features distinguished as excavation proceeded. In inner outwork bank area
Fill(s). Very dark brown humic fill with angular chalk pebbles
Animal bone: *
Pottery: 5 sherds/8 g Neolithic Bowl
Lithics: 43 flakes, serrated flake
Burnt flint: 8 g
Charred plant remains: *Triticum dicoccum*, *Triticum* sp, hazelnut shell, *Galium aparine*
Charcoal: 'much charcoal'
Molluscs: *

2A F413. Pit. Definite. Earlier Neolithic? *Length* 0.80 m, *width* 0.74 m, *depth* 0.18 m
Form. Subcircular plan, bowl-shaped profile
Comment. Paired with 2A F142
Fill(s). Very dark soil with chalk lumps, flint chips and nodules
Lithics: 4 flakes, serrated flake
Charred plant remains: *Triticum* cf *dicoccum*, cf *Hordeum* sp
Charcoal: 'much charcoal'

2B F59. Pit. Probable. Earlier Neolithic? *Length* 1.28 m, *width* 0.95 m, *depth* 0.35 m
Form. Subcircular, bowl-shaped profile
Fill(s). Homogeneous brown clay with flints
Comment. In middle outwork bank area. On Clay-with-Flints fissure
Lithics: 12 flakes
Charcoal: *

2B F62. Pit. Probable. Earlier Neolithic? *Length* 1.40m, *width* 2.20 m, *depth* 0.40 m
Form. Subovoid, bowl-shaped profile
Comment. In middle outwork bank area
Fill(s). L2 Grey silty fill with some charcoal flecks. L1 brown humic fill
Charcoal: L2: *

3A F16. Pit. Definite. Earlier Neolithic? *Length* 1.30 m, *width* 1.20 m, *depth* 0.10 m
Form. Subcircular, shelving sides, fairly flat base
Comment. Paired with 3A F17
Fill(s). Dark humic silty material with chalk pebbles, angular chalk lumps at base
Animal bone: *pig* 2 ulnae
Lithics: 4 flakes
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *

3A F17. Pit. Definite. Earlier Neolithic? *Length* 1.10 m, *width* 1 m, *depth* 0.06 m
Form. Kidney-shaped plan, saucer-shaped section
Comment. F17 and possible feature 3A F17A distinguished only after excavation had begun. Paired with 3A F16
Fill(s). Dark humic silty material with chalk pebbles, angular chalk lumps at base in gravelly humic soil
Animal bone: *pig* phalanx; *cattle* 2 radii, tibia, tarsal, teeth
Lithics: 8 flakes, serrated flake, edge-trimmed flake
Burnt flint: 54 g
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *

3A F48. Pit. Probable. Earlier Neolithic. *Length* 0.45 m, *width* 0.35 m, *depth* 0.05 m
Form. Subcircular, saucer-like profile, base indistinct

Fill(s). Humic loam with brown peagrit, chalk lumps, flint
Animal bone: L1: *pig* ulna
Pottery: 6 body sherds/56 g Neolithic Bowl, all from single flint-tempered vessel

3A F51. Pit. Probable. Earlier Neolithic? *Length* 1.10 m, *width* 1.20 m, *depth* 0.10 m
Form. Subcircular, saucer-like profile, steep sides, flat base
Fill(s). Humic, with chalk lumps. 0.02 sq m patch of charcoal to a depth of 0.05 m on surface
Lithics: Flake
Charcoal: *

3A F66. Pit. Definite. Earlier Neolithic. *Length* 1.90 m, *width* 1.30 m, *depth* 0.20 m
Form. Kidney-shaped plan, undulating base
Fill(s). L2 grey chalky silt with chalk pebbles. L1 dark humic soil with a few chalk lumps and some pebbles
Animal bone: *
Pottery: 58 sherds/125 g Neolithic Bowl, 4 sherds/14 g late Bronze Age, 1 sherd/1 g indeterminate flint-tempered
Lithics: 19 flakes (1 burnt), 2 edge-trimmed flakes, 1 edge-glossed flake, hammerstone
Burnt flint: 62 g
Charcoal: *

3A F77. Pit. Definite. Earlier Neolithic. *Length* 2.40 m, *width* 2.04 *depth* 0.10 m
Form. Mushroom-shaped plan, shelving sides, flat base
Comment. Sherds concentrated in centre. Flint nodules *in situ* in chalk.
Fill(s). Grey silt with chalk lumps, root-disturbed
Pottery: 2 sherds/3 g Neolithic Bowl
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *

3A F94. Pit. Definite. Earlier Neolithic. *Length* 0.90 m, *width* 0.70 m, *depth* 0.12 m
Form. Jagged subcircular plan, undulating saucer-like profile
Comment. Merged into area of disturbed chalk. Paired with 3A F95
Fill(s). Dark brown fill with angular chalk and some flint
Animal bone: *pig* radius-ulna, ilium
Pottery: 115 sherds/168 g Neolithic Bowl, including 15 sherds/29 g making up P34
Lithics: 56 flakes, core, 2 serrated flakes, edge-trimmed flake
Burnt flint: 41 g
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *

3A F95. Pit. Probable. Earlier Neolithic. *Length* 0.50 m, *width* 0.40 m, *depth* 0.10 m
Form. Subcircular plan, saucer-like profile
Comment. Paired with 3A F94
Fill(s). Mid brown fill with angular chalk lumps, charcoal, burnt nuts
Animal bone: *
Pottery: 5 sherds/2 g Neolithic Bowl
Charred plant remains: *
Charcoal: *

3B F435. Pit? Probable. Earlier Neolithic? *Length* 0.66 m, *width* 0.65 m, *depth* 0.20 m
Form. Subcircular, 1 steep side, 1 shelving side
Comment. In inner outwork bank area. Cut into ?natural feature F459
Fill(s). Medium brown gritty loam and peagrit with burnt chalk and charcoal
Lithics: hammerstone
Burnt flint: *
Charcoal: *

4A F1. Pit. Definite. Earlier Neolithic. *Length* 0.85 m, *width* 0.75 m, *depth* 0.12 m
Form. Subcircular, shelving sides, rounded base
Fill(s). Brown/black clayey loam with chalk lumps. 'Very dark pit with much burnt material – charcoal etc.+ bone and flint also burnt'
Animal bone: *
Pottery: 5 sherds/33 g Neolithic Bowl
Lithics: 7 flakes
Charred plant remains: <10 g charred hazelnut shell
Charcoal: *Corylus avellana*

4A F3+ F3B. Pit. Definite. Earlier Neolithic. *Length* 1.20 m, *width* 1.10 m, *depth* 0.30 m
Form. Subcircular, shelving sides, flat base
Comment. Lower fill called F3B (=L2)
Fill(s). F3B (=lower layer, = L2) light grey silt, much charcoal and burnt material. F3 (=upper layer) dark friable, brown clayey loam with chalk lumps, 'large quantities of burnt material'
Animal bone: *
Pottery: 45 sherds/121 g Neolithic Bowl, including 4 sherds/14 g making up P67
F3B = L2: 13 sherds/43 g Neolithic Bowl
Lithics: 2 flakes (2 burnt), edge-trimmed flake, 2 fragments heathstone
F3B = L2: 5 flakes, edge-trimmed flake, 5 fragments heathstone
Burnt flint: 26 g
F3B = L2: 25 g
Other finds: F3B = L2: 'shell'
Charred plant remains: *Triticum* cf *dicoccum*, *Triticum* sp, indet. cereal, <10 g charred hazelnut shell
F3B = L2: *Triticum* cf *dicoccum*, indet cereal, <10 g charred hazelnut shell
Charcoal: Salicaceae, Maloideae, *Tilia cordata*, *Fraxinus excelsior*
Molluscs: Predominantly shade-loving, but with 36% open country taxa

4B F53. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 1.50 m, *width* 1.30 m, *depth* 0.24 m
Form. Irregular plan, shelving sides, flat base
Fill(s). Very dark clay loam with chalk lumps and much burnt material, including burnt chalk
Animal bone: *
Pottery: 2 sherds/7 g Neolithic Bowl
Lithics: 4 flakes
Burnt flint: 27 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, cf *Hordeum* sp, indet cereal, charred grape pip
Charcoal: *
^{14}C: *3640–3340 cal BC* (4660±80 BP; OxA-931) on grape pip, *3640–3360 cal BC* (4690±70 BP; OxA-932) and *3640–3350 cal BC* (4680±80 BP; OxA-933) on single emmer grains

4B F61. Pit. Definite. Earlier Neolithic? *Length* 1.39 m, *width* 1.49 m, *depth* 0.17 m

Form. Pear-shaped plan, rounded base
Comment: Date suggested only by location
Fill(s). Dark grey-brown slightly humic fill, slightly burnt, with chalk lumps. 'Fill has a slightly burnt look to it'
Lithics: Unworked fragment of calcareous rock
Charcoal: *

4B F80. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 1.55 m, *width* 1.26 m, *depth* 0.20 m
Form. Subcircular plan, undulating base
Comment. In weathered chalk patch. Paired with 4B F137
Fill(s). Dark brown loam with chalk fragments and peagrit
Animal bone: Surface: *cattle* scapula, tibia; *caprine* tooth
Pottery: 74 sherds/111 g Neolithic Bowl, including 9 sherds/47 g making up P54
Lithics: 4 flakes, 2 fragments and 2 crumbs Greensand, some burnt; 2 crumbs sarsen, 1 burnt; heathstone quern or rubber fragment
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, <10 g charred hazelnut shell
Charcoal: Mainly *Quercus* sp, with Maloideae, *Ilex aquifolium*, *Corylus avellana*, Salicaceae, *Prunus* sp

4B F129. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 1.40 m, *width* 0.95 m, depth 0.18 m
Form. Subcircular plan, shelving sides, rounded base, lateral ledges
Comment. Either recut or over-excavated. Finds and dark fill confined to deeper central area 1.10 m × 0.50 m. Concentrations of sherds near centre in NE and NW quadrants. Paired with 4B F130
Fill(s). Dark brown-black loam with charcoal fragments and flecks and a few chalk fragments in deeper central area, more chalk and flint fragments on ledges
Animal bone: *pig* radius; *cattle* humerus; *caprine* humerus
Pottery: 460 sherds/693 g Neolithic Bowl, most of them from a neutral uncarinated bowl in fabric group 6, with a simple rounded rim 200 mm in diameter and a solid oval lug, also including 31 sherds/66 g from a neutral uncarinated bowl in a sand-tempered fabric with a simple internally bevelled rim 80 mm in diameter; 2 plain body sherds/2 g in grogged early Bronze Age fabrics
Lithics: 73 flakes (19 burnt), edge-trimmed flake (burnt), 2 flakes from ground implement(s)
Burnt flint: 88 g
Other finds: 2 finds of 'daub' (missing)
Charred plant remains: *Triticum dicoccum*, Titicum cf *dicoccum*, *Triticum* sp, *Hordeum* sp, cf *Hordeum* sp, indet cereal, >50 g charred hazelnut shell
Charcoal: *Corylus avellana*
Molluscs: Predominantly shade-loving, but with 25% open country taxa

4B F130. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 2.20 m, *width* 2.20 m, *depth* 0.38 m
Form. Subcircular plan, shelving sides, undulating base
Comment. Paired with 4B F129
Fill(s). L2 cream silt with chalk fragments. L1 dark brown loam with chalk fragments
Animal bone: L2: roe deer metatarsal
Pottery: 94 sherds/289 g Neolithic Bowl, most of them from open uncarinated bowl with T-shaped rim in fabric group 6
L1: 9 sherds/10 g Neolithic Bowl
Lithics: 145 flakes (7 burnt), serrated flake, edge-glossed flake, flake from ground implement, hammerstone, 6 crumbs unidentified stone
L1: 5 flakes
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, <10 g charred hazelnut shell
Charcoal: *Corylus avellana*, *Quercus* sp, Maloideae, *Fraxinus excelsior*

4B F137. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 1.30 m, *width* 1.10 m, *depth* 0.42 m
Form. Subcircular plan, shelving, slightly stepped sides, flat base
Comment. Paired with 4B F80
Fill(s). Dark brown-black humic loam with chalk fragments and a few flints
Human remains: 12 infant/juvenile skull fragments (ST81 2036, 2053); 38 older infant/young juvenile frontal, parietal and occipital fragments, with possible sooting (ST81 2172, 2173)
Animal bone: *Pig* metacarpal, skull fragment; *cattle* ulna, vertebra, skull fragment; *caprine* humerus, radius, tibia, astragalus
L1: *pig* tibia, phalanx; *cattle* humerus, acetabulum, tibia, phalanx, vertebra, skull fragment; *caprine* humerus, ulna, 2 tarsals,
Pottery: 129 sherds/536 g Neolithic Bowl
Lithics: 50 flakes (24 burnt), 2 edge-glossed flakes
Burnt flint: 35 g
L1: 29 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, indet cereal, 10–50 g charred hazelnut shell
Charcoal: mainly *Quercus* sp, Maloideae, *Corylus avellana*

4B F144. Pit. Definite. Earlier Neolithic (Figs 3.109–3.110). *Length* 1.20 m, *width* 0.90 m, *depth* 0.17 m
Form. Subcircular, shelving sides, flat base
Fill(s). Dark brown sandy clay loam with chalk lumps
Animal bone: *
Pottery: 5 sherds/22 g Neolithic Bowl
Lithics: Flake
Burnt flint: 1 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, indet cereal, <10 g charred hazelnut shell
Charcoal: Maloideae, *Corylus avellana*

4B F153. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 0.94 m, *width* 0.90 m, *depth* 0.27 m
Form. Subcircular plan, shelving sides, rounded base
Comment. Left open after being dug? Grouped with 4B F154, F155, F205
Fill(s). L2 cream silt with chalk fragments. L1 Dark brown loam with chalk fragments
Animal bone: *pig* radius; *caprine* tibia, phalanx
Pottery: 13 sherds/28 g Neolithic Bowl
Lithics: 24 flakes (1 burnt), edge-trimmed flake, 2 scrapers, hammerstone
L1: flake
Burnt flint: 58 g
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Hordeum* sp, cf *Hordeum* sp, indet cereal
Charcoal: *Quercus* sp, *Corylus avellana*, Maloideae
Molluscs: Predominantly shade-loving

4B F154. Pit. Definite. Earlier Neolithic? *Length* 0.71 m, *width* 0.71 m, *depth* 0.16 m
Form. Subcircular plan

Fill(s). Dark brown loam with chalk fragments
Comment. Grouped with 4B F153, F155, F205
Animal bone: *pig* humerus
Lithics: 2 flakes, serrated flake
Charcoal: *

4B F155. Pit. Definite. Earlier Neolithic. *Length* 1.38 m, *width* 1.36 m, *depth* 0.35 m
Form. Subcircular plan, shelving sides, flat base
Comment. Left to weather before infilling? Grouped with 4B F153, F154, F205
Fill(s). L2 Cream silt with chalk fragments. L1 dark brown loam with chalk fragments
Animal bone: *cattle* phalanx
L2: *red deer* antler with brow, bez and trez tines broken off in antiquity
L1: *
Pottery: 10 sherds/18 g Neolithic Bowl
Lithics: 24 flakes
L2: 2 flakes
L1: flake
Burnt flint: 27 g
L1: 2 g
Other finds: Shell
Charred plant remains: *Triticum dicoccum*, *Triticum* sp, indet cereal, 10–50 g charred hazelnut shell
Charcoal: *Quercus* sp, Maloideae, *Corylus avellana*, *Fraxinus excelsior*, *Carpinus betulus*, Salicaceae
Molluscs: Predominantly shade-loving, but with 27% open country taxa

4B F168. Pit. Probable. Earlier Neolithic? (Figs 3.109–3.110). *Length* 1.10 m, *width* 0.80 m, *depth* 0.12 m
Form. Subovoid plan, steep sides, flat base
Comment. Root-disturbed
Fill(s). Dark brown loam with chalk
Pottery: 1 sherd/2 g Neolithic Bowl
Lithics: 3 flakes, serrated flake
Charcoal: *

4B F178. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.87 m, *width* 0.93 m, *depth* 0.67 m
Form. Subcircular plan, steep-sided central area *c* 1.60 m in diameter, with flat base, surrounded by ledge on 3 sides
Comment. Most finds in L1. Profile may suggest recutting, fills do not
Fill(s). L3 cream silt with chalk fragments. L2 grey-brown loam with chalk fragments. L1 dark brown loam with chalk fragments
Animal bone: *pig* scapula, radius-ulna, ulna, fibula, ilium, metatarsal, tarsal, 2 phalanges; *red deer* modified unshed antler, brow tine very worn, bez tine cut and snapped off at beam (ST81 1998); *cattle* ulna, tibia; *caprine* humerus, tarsal, 2 phalanges, mandible, vertebra
L3: *pig* ilium
L2: *pig* metacarpal; *cattle* ischium, mandible
L1: *pig* radius, ulna, fibula, ischium, pubis, metapodial, 3 tarsals, mandible, 2 phalanges, vertebra; *cattle* mandible, vertebra; *caprine* scapula, tibia, 2 tarsals, tooth, mandible, skull fragment, rib
Surface: *caprine* tooth
Pottery: 95 sherds/201 g Neolithic Bowl
L3: 12 sherds/40 g Neolithic Bowl
L2: 12 sherds/97 g Neolithic Bowl
L1: 52 sherds/224 g Neolithic Bowl
Surface: 8 sherds/8 g Neolithic Bowl
Lithics: 61 flakes (2 burnt), 3 serrated flakes, scraper, 2 misc retouched, 11 crumbs Greensand (some burnt), heathstone quern or rubber fragment
L2: flake (burnt)
L1: 19 flakes (1 burnt), 3 serrated flakes, 1 misc retouched
Burnt flint: 4 g
Charred plant remains: L2: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, 10–50 g charred hazelnut shell
L1: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal
Charcoal: Mainly *Corylus avellana* and Maloideae, with *Fraxinus excelsior*, *Erica vagans* (in C257, C259, C264), Salicaceae, *Prunus avium*, *Prunus spinosa*, *Carpinus betulus*

4B F198. Pit. Definite. Earlier Neolithic. *Length* 1.3 m, *width* 1 m, *depth* 0.3 m
Form. Ovoid, shelving sides, flat base
Fill(s). L3 cream-brown silt with chalk fragments. L2 Grey-brown loam with chalk fragments. L1 dark brown loam with chalk fragments
Animal bone: *pig* metatarsal
L1: *caprine* maxilla
Pottery: 166 sherds/224 g Neolithic Bowl
Lithics: 16 flakes (6 burnt), edge-glossed flake, hammerstone, Greensand ?rubber fragment
Burnt flint: 1 g
Other finds: 'Daub' (missing)
Charred plant remains: *Triticum dicoccum*, *Triticum* cf *dicoccum*, *Triticum* sp, *Hordeum* sp, indet cereal, >50 g charred hazelnut shell
Charcoal: mainly *Quercus* sp, with *Corylus avellana*, Maloideae, *Tilia cordata*, *Prunus* sp, *Taxus baccata*

4B F205. Pit. Definite. Earlier Neolithic? *Length* 0.80 m, *width* 0.80 m, *depth* 0.12 m
Form. Subcircular, saucer-like profile
Comment. Grouped with 4B F153, F154, F155
Fill(s). Dark brown loam with chalk fragments
Animal bone: *
Lithics: 3 flakes
L1: 2 flakes, 1 misc retouched
Charcoal: *

4B F266. Pit. Definite. Earlier Neolithic? *Length* 0.87 m, *width* 0.78 m, *depth* 0.18 m
Form. Subcircular plan, bowl-shaped profile
Fill(s). Dark brown loam with chalk fragments
Pottery: 1 sherd/4 g Neolithic Bowl
Lithics: 2 flakes
L1: 4 flakes
Charcoal: *Quercus* sp, Maloideae

4B F267. Pit. Probable. Earlier Neolithic? *Length* 0.90 m, *width* 0.84 m, *depth* 0.10 m
Form. Kidney-shaped plan, saucer-like profile
Fill(s). Dark brown loam with chalk fragments
Pottery: 1 sherd/2 g Neolithic Bowl
Charcoal: *Corylus avellana*

4B F282. Pit. Probable. Earlier Neolithic. *Length* 0.91 m, *width* 0.67 m, *depth* 0.20 m
Form. Ovoid plan, 1 shelving side, 1 stepped side, flat base
Fill(s). Brown loam with chalk fragments
Comment. Root-disturbed. Paired with 4B F283

Animal bone: *
Pottery: 16 sherds/11 g Neolithic Bowl
Lithics: 3 flakes
Burnt flint: 10 g
Charred plant remains: <10 g charred hazelnut shell

4B F283. Pit. Definite. Earlier Neolithic. *Length* 2.12 m, *width* 1.30 m, *depth* 0.32 m
Form. Ovoid
Comment. Root-disturbed. Paired with 4B F282
Fill(s). Dark brown loam with chalk fragments
Animal bone: *pig* teeth; *caprine* tooth
Pottery: 5 sherds/12 g Neolithic Bowl
Lithics: 9 flakes
Charcoal: Maloideae, *Corylus avellana*

4B F305. Pit. Probable. *Length* 0.73 m, *width* 0.84 m, *depth* 0.09 m
Form. Subcircular plan, saucer-like profile
Comment. Root-disturbed, uncertain relation to contiguous pit 4B F350
Fill(s). Brown loam with chalk fragments
Animal bone: *

4B F350. Pit. Probable. *Length* 0.66 m, *width* 0.38 m, *depth* 0.10 m
Form. Subcircular plan, saucer-like profile
Comment. Root-disturbed, uncertain relation to contiguous pit 4B F305
Fill(s). Brown loam with chalk fragments
Lithics: 2 flakes

4B F590. Pit. Definite. Earlier Neolithic? *Length* 2 m, *width* 1.90 m, *depth* 0.20 m
Form. Subcircular
Fill(s). L3 cream silt with chalk fragments. L2 dark orange-brown loam with chalk fragments. L1 dark brown-black humic loam with chalk fragments
Comment. Possibly a Neolithic pit with Beaker in top layer
Animal bone: L1: *pig* tooth; *caprine* teeth
Pottery: L2: 6 sherds/15 g Neolithic Bowl
L1: 2 sherds/6 g Neolithic Bowl, 1 rim sherd/1 g Beaker
Lithics: 4 flakes
L1: 5 flakes, 1 misc retouched
Charred plant remains: <10 g charred hazelnut shell
Charcoal: Mainly *Fraxinus excelsior*, with *Carpinus betulus*, *Corylus avellana*, Maloideae, Salicaceae, *Prunus* sp

4B F712. Pit. Definite. Earlier Neolithic (Fig 3.113). *Length* 1.90 m, *width* 1.80 m, *depth* 0.20 m
Form. Subcircular, constricted at E (head) side, shelving sides, flat base
Comment. Charred hazelnuts scattered over skeleton
Fill(s). L3 ashy-grey silt. L2 grey-white silt with chalk fragments. L1 brown loam with chalk fragments and burnt chalk
Human remains: Articulated young adult male skeleton (ST81 3181), crouched on R side, on L3, in L2, skull projecting into L1
Animal bone: L2: *. L1/2: *cattle* ilium
L1: * (burnt).
Pottery: L2: 3 sherds/78 g Neolithic Bowl, all from flint-tempered vessel represented more fully in L1
L1: 108 sherds/586 g Neolithic Bowl, including (a) up to 56 sherds/311 g, from flint-tempered, open, uncarinated bowl with simple rounded rim, many scattered, but larger, better preserved, joining sherds, some of them vertical in the fill, clustered in 2 groups *c* 0.40 m apart in SW quadrant; (b) up to 26 sherds/254 g, from 1 or 2 vessels of fabric group 6, 1 of them a closed, uncarinated bowl with simple rounded rim 180 mm diameter, scattered, but with 10 joining sherds, some vertical, clustered in SW quadrant, and large, well-preserved sherds in each of same 2 clusters as flint-tempered sherds
Lithics: L2: flake, Old Red Sandstone quern fragment (S22), behind heels, in arc of flint nodules around hips and feet
L1: 8 flakes, rod (burnt)
Burnt flint: L3: 28 g
L2: 2 g
Other finds: L1: 2 finds of fired clay recorded, missing 1997.
L2: Burnt chalk in front of feet and near head of skeleton
Charred plant remains: L2: 10–50 g charred hazelnut shell
L1: at least 13 scattered finds of hazelnut shell, each very small, mainly in SW quadrant
Charcoal: L3: *
L2: *
L1*, scattered through layer
^{14}C: *3630–3580 cal BC (22%) or 3535–3495 cal BC (20%) or 3460–3375 cal BC (53%)*, mean of 4710±23 BP (UB-4311) and 4715±40 BP (OxA-7818), both on R femur of skeleton ST81 3181; *3640–3550 cal BC (23%) or 3540–3360 cal BC (72%)* (4700±45 BP; OxA-7843) on single hazelnut shell from among those scattered over skeleton

4E F609. Pit? Probable. Earlier Neolithic? *Length* 1.40 m, *width* 0.85 m, *depth* 0.28 m
Form. Subcircular, bowl-shaped profile
Comment. In inner outwork bank area
Fill(s). Light grey-brown silt with occasional small chalk pebbles
Charcoal: *

ST82 F4. Pit. Definite. Earlier Neolithic. *Length* 1.15 m, *width* 1.05 m, *depth* 0.50 m
Form. Ovoid plan, steep sides, slightly stepped flat base
Comment. Root-disturbance from adjacent treehole (ST82 F6)
Fill(s). L2: grey-brown clay silt with much subangular chalk and flint and redeposited calcium carbonate. L1 (continuous with fill of F6) dark brown clay silt with chalk and flint
Animal bone: *pig* radius; *cattle* vertebra; *caprine* metatarsal, phalanx, vertebra
Pottery: 50 sherds/210 g Neolithic Bowl, including parts of at least 4 vessels
Lithics: 2 flakes, edge-trimmed flake, 1 misc retouched, unworked quartzite pebble
Charred plant remains: >50 g charred hazelnut shell
Charcoal: *

ST82 F39. Pit. Definite. Earlier Neolithic (Figs 3.109, 3.114). *Length* 1.30 m, *width* 0.95 m, *depth* 0.25 m
Form. Ovoid plan, smooth profile
Comment. Burnt chalk present. No sign of *in situ* burning. Grain probably tipped in from N side. P59 probably intact when deposited. Burnt antler at higher level than pot and grain. Superficial root disturbance
Fill(s). L2 thin skin of very dark brown clay silt with 20% small chalk fragments. L1 dark orange-brown clay-silt with *c* 60% small, subangular chalk fragments.
Animal bone: Bone and antler fragments, some burnt, clustered with grain deposit, inc *cattle* tibia; *caprine* metacarpal; red deer *c* 50 burnt antler fragments, some joining
Pottery: 96 sherds/333 g Neolithic Bowl, inc 69 sherds/185 g from a small cup (P59) apparently placed whole on top of

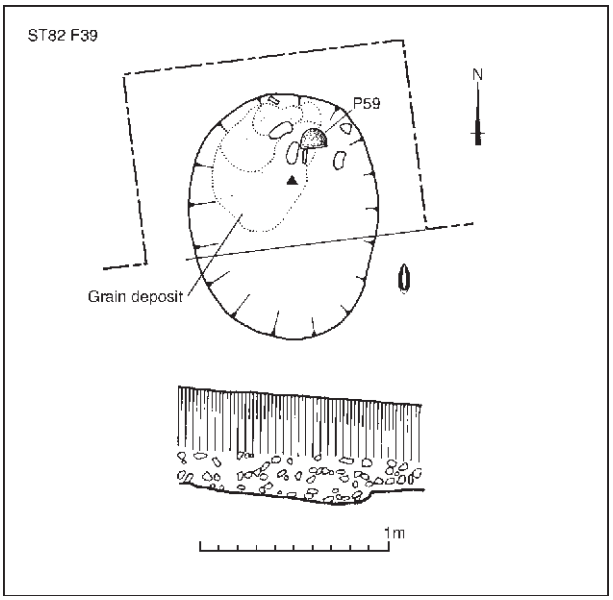

Fig 3.114 Stepleton spur. Pit ST82 F39. The varying densities of stipple show the approximate profile of the charred grain in the north of the pit: highest at the north edge of the pit, lowest and most extensive towards the centre.

charred grain, and 23 scattered sherds/132 g from a lugged bowl (P16), some with sooty internal residue, one with calcareous external concretion
Lithics: 4 flakes (3 burnt)
Burnt flint: 1 g
Charred plant remains: Charred grain deposit (*c* 0.20 cu m) against N side of pit, in heap *c* 60 mm high, as if tipped from N onto surface of L2. Grain made up of not yet dehusked emmer; 1/64 subsample indicates total of *c* 50,000 spikelets. 10–50 g charred hazelnut shell. Small quantities of charcoal, *Bromus* sp
Charcoal: *
^{14}C: 3650–3500 cal BC (75%) or 3440–3370 cal BC (20%) (4750±40 BP; OxA-7839) and *3640–3490 cal BC (61%) or 3470–3370 cal BC (34%)* (4730±45 BP; OxA-7840), on single emmer grains

ST82 F40. Pit. Definite. Earlier Neolithic. *Length* 0.90 m, *width* 0.70 m, *depth* 0.15 m
Form. Subquadrangular plan, steep sides, flat base
Comment. Edged by *in situ* flint
Fill(s). Dark orange-brown silt with subangular chalk and some flint
Animal bone: dog tooth
Pottery: 59 sherds/73 g Neolithic Bowl
Lithics: 2 serrated flakes
Charred plant remains: <10 g charred hazelnut shell

Postholes

There were more than 550 postholes or possible postholes on the Stepleton spur (Table 3.14), vastly more than the 23 in the central area. Only some 250 of the Stepleton postholes formed part of timber-framed earthwork banks, or the gates through them. The remainder would have posts which either stood alone or were components of freestanding structures. They were concentrated in the north-east half of the excavated area, within which there were clusters, some even suggestive of circular structures (Fig 3.81). This distribution may owe something to less destructive erosion here, where the gradient was gentler than to the south-west, as outlined above. Some postholes survived to depths of as little as 0.03 m below the surface of the chalk, suggesting that many others may have disappeared altogether. Most were classed as postholes on form and size alone. Occasional double postholes and pairs of postholes were almost all in the east of the area. One possible posthole (1A F345) was surrounded by a small quadrangular gully (1A F268). Postpipes and packing rarely survived and were least infrequent in and around an apparent entrance structure between and outside segments 9 and 10 of the Stepleton enclosure (Figs 3.109–110). Even here, where preservation was relatively good, it is difficult to resolve the full plan of the structure, or to determine which postholes formed part of it and which did not (3.5.2). This makes it likely that the surviving pattern of postholes on the spur was a palimpsest, resulting from the erection of a series of structures and markers during, and perhaps beyond, the life of the enclosure.

The dating evidence is exiguous. The vast majority of these features are undated and finds from the remainder were generally scant and undiagnostic, and in almost all cases were so few and small that they could have been redeposited or intrusive (Table 3.14). 2A F181, an isolated posthole in the south-west of the enclosure, was exceptional, containing three small sherds in a gabbroic fabric that was far rarer on the Stepleton spur than in the central area (see Smith, 9.1). Otherwise, finds indicate an early Bronze Age date for 4B F64 inside the north-west entrance structure and F126 just outside it, and a late Iron Age or early Romano-British date for 1A F296, an isolated posthole in the south-east of the enclosure (see 3.5.7). These features raise the possibility that some, or indeed many, of the undated examples may have postdated the Neolithic use of the spur.

3.5.7 Post-Neolithic features and activity

There was evidence for activity of many periods on the spur, the second millennium cal BC and the pagan Saxon period being represented by cut features (Fig. 3.116). Beaker pottery was less abundant than in the central area, Bronze Age, Iron Age and Roman pottery far more so (Table 3.15).

Beaker and early Bronze Age

There were no postholes or pits with Beaker pottery, although stylistically late Beaker occurred in three widely spaced ditch recuts, in segment 9 of the Stepleton enclosure (see 3.5.2) and segments 2 and 5 of the outer outwork (see 3.5.5). Two postholes in the north-west of the area (Figs 3.109–110: 4B F64 and F126) are likely to be of early Bronze Age date.

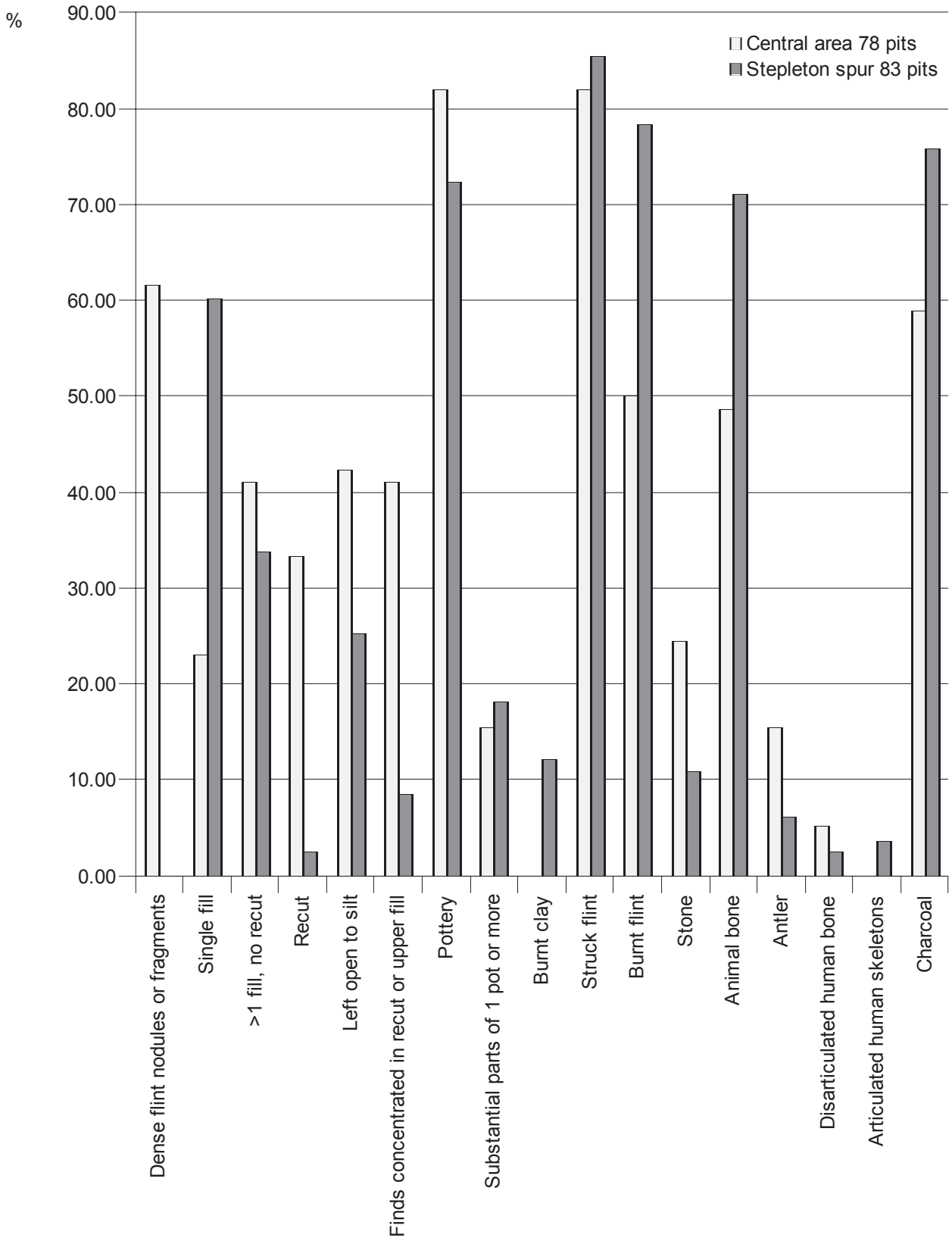

Fig 3.115 Central area and Stepleton spur. Comparison of pits.

Table 3.14 Postholes on the Stepleton spur. Definite, probable and possible postholes in banks and other structures, definite and probable postholes from elsewhere

In the first column 'Stepleton enclosure, segments 7 & 9' and 'Stepleton enclosure, segments 9 & 10' refer to possible entrance structures between these segments. In the penultimate column, * = recorded, but unidentified or missing

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Inner outwork bank?	1A F221	Possible	1.30	0.70	0.10				
Inner outwork bank	1A F237	Possible	0.50	0.45	0.13	Dark soil fill	Cut in Clay-with-Flints		
	1A F254	Probable	0.40	0.30	0.09			*Pottery* L2: 1 sherd/1 g indeterminate flint-tempered *Charcoal* *	
	1A F256	Probable	0.50	0.45	0.07			*Pottery* L2: 2 sherds/1 g indeterminate flint-tempered *Charcoal* *	
	1AF257	Probable	0.50	0.40	0.10			*Pottery* 4 sherds/2 g indeterminate flint-tempered *Charcoal* *	
Inner outwork bank?	1A F286	Possible	0.97	0.59	0.20		Approx 1.60 m away from inner edge of protected chalk		
Inner outwork bank	1A F293	Probable	0.25	0.22	0.11	No postpipe			
	1A F296	Probable	2	1.4		'Flinty patch in Clay-with-Flints'	On fissure filled with Clay-with-Flints	*Pottery* 6 sherds/14 g late Iron Age/early Roman *Lithics* 7 flakes L2: 9 flakes, core	
Inner outwork bank	1A F304	Definite	0.30	0.30	0.10	L4 sand. L3 concreted chalk. L2 clay. L1 postpipe with brown fill	On fissure filled with Clay-with-Flints		
Inner outwork bank	1A F306	Definite	0.30	0.25	0.18	L2 sand. L1 postpipe with brown soil fill	On fissure filled with Clay-with-Flints		
Inner outwork bank	1A F314	Possible	0.50	0.25	0.05				
Inner outwork bank	1A F315	Possible	0.25	0.18	0.05				
Inner outwork bank	1A F316	Definite	1.1	0.70	0.24	L3 rotted chalk. L2 grey-black soil with charcoal and chalk rubble in most of postpipe. L1 clay in upper postpipe	On fissure filled with Clay-with-Flints	*Charcoal* Under L3: * L3: * L2: *	
Inner outwork bank	1A F317	Possible	0.50	0.48	0.15	L3 chalk blocks in N, rotten chalk with chalk pieces in S. L2 brown soil	N half cut in chalk, S half in Clay-with-Flints		
Inner outwork bank	1A F349	Definite	0.35	0.30	0.15	L2 rotted chalk and silt. L1 brown soil in postpipe		*Charcoal* Burnt timber	
Inner outwork bank	1A F633	Possible	0.38	0.18	0.13				

Inner outwork bank	1B F11	Definite	0.80	0.75	0.30	Black ashy soil		*Animal bone* caprine tooth *Pottery* 6 sherds/25 g Neolithic Bowl *Lithics* 20 flakes, hammerstone *Fired clay* 1 fragment/1g *Charcoal* Burnt timber
Inner outwork bank	1B F12 +F13	Definite	1.2	1.2	0.27	Black ashy soil	?Posthole	*Animal bone* F12: pig tooth *Pottery* F12 4 sherds/14 g Neolithic Bowl F13: 3 sherds/2 g Neolithic Bowl *Lithics* F12: 197 flakes (3 burnt), core, 5 serrated flakes, 3 edge-trimmed flakes, scraper F12/F13: 32 flakes, serrated flake, edge-trimmed flake *Burnt flint* 83 g *Charcoal* *
Inner outwork bank	1B F14	Possible	0.30	0.25	0.25	Red-brown soil with chalk lumps, denser near base		
Outer outwork bank	1B F19	Possible	1.4	1.2	0.35	L2 light brown chalky matrix with chalk lumps. L1 light brown chalky matrix with gravel and fewer chalk lumps		
Middle outwork bank	1B F21	Possible	1	0.80		Dark ashy soil		*Charcoal* *
Middle outwork bank	1B F22	Possible	0.75	0.45	0.10	Ashy fill	Charcoal and grain noted in fill. Location and burnt material in fill are strongest arguments for this having been a posthole. Surviving morphology not posthole-like	*Charcoal* *
Middle outwork bank	1B F23	Possible	0.65	0.30		L2 chalk rubble. L1 dark brown ashy soil with chalk rubble		*Charcoal* *
Inner outwork bank	2A F1	Probable	0.45	0.40	0.20	Clay with grit and chalk lumps, relatively stoneless towards centre		*Charcoal* *
Inner outwork bank	2A F2	Probable	0.35	0.30	0.20	Clay with grit, chalk lumps and gravel at edges, relatively stoneless in centre		*Charred plant remains* <10 g hazelnut shell *Charcoal* *
Inner outwork bank	2A F8	Possible	0.35	0.20	0.10	Light brown to greyish silt with chalk pebbles, also chalk lumps to 1 side (packing or rotted natural?). Overlain by dark brown humic layer with some grit		
	2A F132	Probable	1.60	1.50	0.23	L2 very dark brown humic material with angular chalk lumps. L1, in postpipe, dark brown humic material with rounded chalk lumps	Tapering ?postpipe 0.35 m diameter, 0.15 m deep	*Lithics* 2 flakes *Charcoal* *

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Inner outwork bank?	2A F168	Probable	0.84	0.48	0.20	L2 dark grey silt with small chalk lumps and pebbles. L1 dark grey silt with small chalk lumps and pebbles	In break at inner edge of protected chalk	*Pottery* 5 sherds/1 g Neolithic Bowl *Lithics* 2 flakes	
Inner outwork bank	2A F169	Possible	0.30	0.50	0.12	Brown humic gravelly fill, angular chalk lumps at shelving side			
Inner outwork bank	2A F170	Possible	0.45	0.35	0.15	Angular chalk lumps, evenly distributed, overlain by thin skin of brown humic loam with gravel			
Inner outwork bank	2A F172	Possible	1.3	1.1	0.12	Angular chalk lumps with some brown infill merging upwards into brown humic fill with grit and gravel			
Inner outwork bank	2A F174	Possible	0.20	0.10	0.10	Dark brown humic soil with grit and a few small chalk pebbles			
Inner outwork bank	2A F175	Probable	0.20	0.30	0.15	Fine greyish-brown chalky fill with a few chalk pebbles. Compacted chalk lumps round outside. Possible postpipe		*Charcoal* *	
Inner outwork bank	2A F177	Definite	1.7	1.7	0.55	L3 light brown soil with chalk lumps, filling ledge and side of socket. L2 grey/brown soil with a few chalk lumps in postpipe. L1 dark brown soil with comminuted chalk and flint, forming thin skin over surface		*Molluscs* Predominantly shade-loving	
	2A F181	Probable	0.55	0.55		Brown fill with large chalk lumps		*Charcoal* * *Pottery* 3 sherds/>15 g in gabbroic fabric (1 removed for petrological analysis) *Lithics* flake	
Inner outwork bank	2A F202	Probable	0.55	?	0.15	L2 dark humic material with angular chalk and pebbles. L1 dark brown humic material	?Posthole	*Pottery* 13 sherds/41 g Neolithic Bowl *Lithics* 15 flakes *Burnt flint* 12 g	
Inner outwork bank	2A F203	Definite	0.45	0.43	0.25	L2 fine chalky fill with rounded chalk pebbles, angular chalk at 1 side (?packing). L1 Brown humic material with grit and small rounded chalk pebbles		*Lithics* flake *Charcoal* L2: * *Molluscs* *	
Inner outwork bank	2A F237	Definite	0.17	0.15	0.12	L2 fine grey silt with a few rounded chalk pebbles, chalk lumps down shelving sides, absent from possible postpipe. L1 brown loam			

Inner outwork bank	2A F238	Possible	0.50	0.35	0.12	Fill with evenly distributed rounded chalk pebbles, darker towards top		*Lithics* 2 flakes
Inner outwork bank	2A F240	Probable	0.35	0.30	0.14	L2 grey chalky fill with evenly distributed rounded pebbles. L1 brown humic fill with gravel		
	2A F334	Probable	0.30	0.30	0.10	Grey chalky fill with angular chalk lumps	Double posthole with 2A F405	
Inner outwork bank	2A F347	Definite	0.55	0.45	0.35	L3 dark brown clay/silt with small chalk lumps. L2 light brown soil with large chalk lumps in postpipe. L1 dark soil with comminuted chalk and flint	In edge of ?natural feature 2A F410	*Animal bone* * *Pottery* 7 sherds/38 g Neolithic Bowl *Lithics* 7 flakes *Burnt flint* 27 g *Charcoal* *
Inner outwork bank	2A F351	Possible	0.25	0.20	0.11			
Inner outwork bank	2A F353	Possible	0.26	0.25	0.05	Dark brown humic material with angular chalk		
Inner outwork bank	2A F358	Probable	0.37	0.40	0.15	L2 dark soil with large chalk lumps. L1 soft dark brown fill with very small chalk lumps in postpipe		
Inner outwork bank	2A F373	Possible	0.15	0.15	0.10	Stoneless brown-grey clayey fill		
Inner outwork bank	2A F375	Possible	0.65	0.55	0.15	Dark brown humic material with angular chalk lumps and pebbles		
Inner outwork bank	2A F378	Probable	1.05	1.05	0.20	Dark humic material with rounded chalk pebbles	Finds concentrated in W half	*Pottery* 4 sherds/11 g Neolithic Bowl *Lithics* 58 flakes, edge-trimmed flake *Molluscs* *
Inner outwork bank	2A F388	Possible	0.60	0.40	0.05	Dark, fine chalky silt with single flint nodule and angular chalk lumps. Overlain by brown humic fill with gravel		
Inner outwork bank?	2A F390	Definite	0.45	0.45	0.15	L2 fine chalky grey fill, vertical interface with L1 (?remains of postpipe). L1 Brown humic fill with gravel and small rounded chalk pebbles and a few angular chalk lumps		
	2A F405	Probable	0.30	0.25	0.20	Dark brown humic fill with closely packed angular chalk lumps at side, gravelly fill and small chalk lumps towards base	Double posthole with 2A F334	
Inner outwork bank	2A F420	Definite	0.40	0.30	0.45	Dark black-grey soil with chalk lumps		*Animal bone* Pig ulna *Pottery*23 sherds/56 g Neolithic Bowl *Lithics* 6 flakes *Charcoal* 'much'

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Inner outwork bank	2A F421	Possible	0.30	0.30	0.12				
Middle outwork bank	2B F1	Probable	0.20	0.35	0.10	Fine light brown chalky silt with large chalk lumps			3.111, 3.112
Middle outwork bank	2B F4	Probable	0.40	0.40	0.15	Fine, light grey-brown fill with chalk lumps (packing?) at edges			3.111, 3.112
Middle outwork bank	2B F6	Probable	0.25	0.25	0.13	Dark grey-brown soil with chalk lumps			3.111, 3.112
Middle outwork bank	2B F7	Possible	0.19	0.12	0.10	Dark brown clayey fill with chalk lumps			3.111, 3.112
Middle outwork bank	2B F8	Probable	0.26	0.30	0.10	Fine dark grey fill with chalk lumps, 2 flint nodules			3.111, 3.112
Middle outwork bank	2B F15	Possible	0.40	0.35	0.06	Orange-brown fill with chalk lumps			
Middle outwork bank	2B F19	Probable	0.20	0.22	0.12	Fine brown loam with chalk blocks at edges, stone-free central area			
Middle outwork bank	2B F27	Possible	0.30	0.25	0.10	Fine dark grey fill with chalk lumps			
Middle outwork bank	2B F28	Definite	0.50	0.30	0.12	Dark gravelly loam with comminuted chalk and chalk lumps		*Lithics* flake *Charcoal* *	3.112
Middle outwork bank	2B F43	Probable	0.20	0.15	0.17		Off protected chalk close to ditch lip		
Middle outwork bank	2B F48	Probable	0.40	0.25	0.20	Orange-brown loam with chalk lumps. Flint packing to one side			
Middle outwork bank	2B F49	Possible	0.50	0.15	0.16	Orange-brown loam with chalk lumps	Double posthole?		
Middle outwork bank	2B F50	Possible	0.32	0.20	0.10	Orange-brown loam with comminuted chalk	Ovoid plan, bowl-shaped profile		3.111, 3.112
Middle outwork bank	2B F55	Possible	0.55	0.55	0.13	Fine, loamy light brown fill with chalk lumps	In line with F56 and F57 at inner edge of protected chalk		
Middle outwork bank	2B F56	Possible	0.35	0.32	0.10	Orange-brown loam with chalk lumps	In line with F55 and F57 at inner edge of protected chalk	*Charcoal* *	
Middle outwork bank	2B F57	Possible	0.30	0.25	0.09	Orange-brown loam with comminuted chalk	In line with F55 and F56 at inner edge of protected chalk	*Charcoal* *	
Inner outwork bank	2B Un-numbered	Definite	0.38	0.35	0.15	Compact fine grey silt, possible chalk block packing	Cut partly in W edge of segment 1 of Stepleton enclosure, partly into its fill		3.111
	3A F62	Definite	0.32	0.20	0.05	Possible flint packing. Charcoal fragment *c* 0.04 m square near centre on surface	Posthole?	*Charcoal* *	
	3A F63	Definite	0.30	0.25	0.35	Fine chalky grey silt with some gravel, especially towards base, few chalk lumps and pebbles. Seeds visible in fill		*Charcoal* * *Lithics* flake	

Middle outwork bank	3B F204	Possible	0.45	0.42	0.10	Mid-brown soil. Grey silt patches in lower fill, chalk lumps and pebbles in upper			3.111, 3.112
Middle outwork bank	3B F205	Possible	0.60	0.45	0.07	Light/mid brown soil with possible flint packing			3.111, 3.112
Middle outwork bank	3B F207	Possible	0.40	0.40	0.03	Loamy fill with chalk pebbles and possible flint packing			3.111, 3.112
Middle outwork bank	3B F210	Possible	0.35	0.35	0.04	Loamy fill with chalk pebbles and possible flint packing			3.111, 3.112
Middle outwork bank	3B F211	Possible	0.70	0.55	0.05	Loamy fill with chalk pebbles and a couple of flint fragments			3.111
Middle outwork bank	3B F212	Possible	0.70	0.70	0.08	Loamy fill with chalk lumps, chalk pebbles and possible flint packing			3.111
Middle outwork bank	3B F219	Possible	0.30	0.30	0.10				3.111, 3.112
Outer outwork bank	3B F313	Possible	0.45	0.45	0.205	Mid brown clayey soil with chalk pebbles			3.111, 3.112
Outer outwork bank	3B F318	Possible	0.40	0.40	0.10	Nodule cluster			3.111, 3.112
Outer outwork bank	3B F337	Possible	1.1	0.80	0.10	Some grey silt at base, under mid/dark brown clay soil with flint and chalk			3.111, 3.112
Inner outwork bank, interior outer row	3B F401	Definite	0.35	0.30	0.28	Medium grey/brown silty loam with charcoal flecks, burnt chalk, Burnt flint. Chalk packing	Plan and section suggest post = <0.10 m in diameter	*Burnt flint* ⋆ *Charcoal Quercus* sp, second sample unidentified	3.111, 3.112
Inner outwork bank, interior inner row	3B F404	Possible	0.33	0.29	0.09	Dark brown humic loam with burnt chalk			3.111, 3.112
Inner outwork bank, interior inner row	3B F406	Definite	0.34	0.28	0.14	Medium brown-grey silty loam, dark brown patches at edges of postpipe, burnt chalk. Chalk packing		*Burnt flint* ⋆ *Charcoal* ⋆	3.111, 3.112
Inner outwork bank ?interior inner row	3B F407	Possible	0.53	0.50	0.06	Medium grey silt. Burnt chalk. Dark brown loam in ?postpipe			3.111, 3.112
Inner outwork bank, ?exterior inner row	3B F410	Possible	0.38	0.38	0.12	Mottled dark brown silty loam around ?postpipe of medium grey clay silt. Burnt chalk		*Burnt flint* ⋆	3.111, 3.112
Inner outwork bank, ?exterior inner row	3B F415	Possible	0.30	0.23	0.10	Silty medium brown/grey loam with burnt chalk and possible chalk packing			3.111
Inner outwork bank, ?exterior inner row	3B F418	Possible	0.25	0.25	0.10	Very mottled grey/brown silty loam, with burnt chalk			3.111, 3.112
Inner outwork bank, interior inner row	3B F420	Possible	0.40	0.30	0.19	Medium-light grey silt, charcoal flecks at top		*Charcoal* ⋆	3.111
Inner outwork bank, interior outer row	3B F424	Definite	0.40	0.35	0.41	Light grey-brown loamy silt packing, mid grey-brown silty loam postpipe. Burnt chalk, possible chalk packing		*Pottery* 'Very small pot crumbs (not saved)' *Burnt flint* ⋆ *Charcoal* ⋆	3.111, 3.112

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Inner outwork bank, interior outer row	3B F427	Definite	0.55	0.55	0.43	Medium-light grey clayey silt. Burnt chalk and charcoal flecks. Chalk packing		*Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F428	Definite	0.35	0.30	0.52	Medium-light grey clay silt packing, medium grey/brown silty loam with burnt chalk and charcoal in postpipe		*Burnt flint* 20 g *Charcoal* *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F431	Definite	0.40	0.40	0.38	L3 light grey/tan clayey silt in base. L2 mottled brown/grey clayey loam in postpipe. L1 medium brown clay loam around postpipe. Burnt chalk		*Burnt flint* 2 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior outer row	3B F432	Definite	0.47	0.45	0.38	Medium grey/tan clayey silt packing, medium brown/grey clayey loam postpipe. Burnt chalk	Postpipe 0.15 cm diameter	*Burnt flint* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F433	Definite	0.32	0.28	0.26	Packing light grey/brown clayey silt with charcoal flecks, burnt chalk, Burnt flint. Postpipe humic grey-brown clayey silt	Postpipe 0.13 m diameter	*Lithics* flake *Burnt flint* 11 g *Charcoal* *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F436	Definite	0.41	0.36	0.31	L3 medium grey/tan clay silt in base. L2 dark brown/black humic loam, burnt, in postpipe. L1 dark brown humic loam. Burnt chalk and charcoal		*Burnt flint* 36 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F437	Definite	0.40	0.35	0.30	Medium grey-brown clayey silt, slightly darker in postpipe. Charcoal flecks and burnt chalk		*Burnt flint* * *Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F438	Definite	0.29	0.26	0.30	Packing medium grey/brown clayey silt with charcoal flecks and burnt chalk. Postpipe dark brown humic loam		*Burnt flint* * *Charcoal* *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F439	Definite	0.55	0.44	0.41	Packing medium grey/brown clayey silt. Postpipe dark brown/black humic loam with charcoal. Burnt chalk present		*Lithics* flake *Burnt flint* 6 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior outer row	3B F440	Definite	0.47	0.41	0.37	Medium grey/brown clayey silt with burnt chalk and some charcoal flecks. Faint postpipe *c* 0.09 m diameter		*Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F441	Definite	0.40	0.29	0.27	Packing light grey/tan clayey silt with chalk lumps. Postpipe dark grey clayey loam		Charcoal *	3.111, 3.112
Inner outwork bank, interior outer row	3B F442	Definite	0.46	0.35	0.53	Packing of medium grey/brown clayey silt. Postpipe of dark brown clayey humic loam, charcoal and burnt chalk at top	Postpipe 0.13 m in diameter	*Charcoal Quercus* sp	3.111, 3.112
Inner outwork bank, exterior inner row	3B F444	Unlikely							3.111, 3.112

Inner outwork bank, exterior outer row	3B F445	Probable	0.71	0.51	0.36	L3 light grey/tan clayey silt in base. L2 dark grey/brown clayey humic loam in postpipe. L1 Medium brown clayey loam around postpipe. Charcoal flecks. Some burnt chalk on surface. Chalk packing	*Burnt flint* 13 g *Charcoal* *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F446	Definite	0.71	0.58	0.29	L3 light grey/tan clayey silt around postpipe. L2 dark grey/brown clayey crazed flint and charcoal flecks humic loam in postpipe. L1 medium brown clayey loam. Burnt chalk, fire-	*Burnt flint* * Charcoal *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F450	Definite	0.70	0.5	0.38	L3 light grey/tan clayey silt in bottom. L2 medium brown clayey loam around postpipe. L1 dark brown/black clayey humic loam in postpipe with charcoal near top. Burnt chalk near surface	*Burnt flint* 37 g *Charcoal Quercus* sp and indeterminate	3.111, 3.112
Inner outwork bank, interior outer row	3B F454	Probable	0.40	0.35	0.25	L2 medium grey clayey silt. L1 dark grey/brown clayey loam. Burnt chalk		3.111, 3.112
Inner outwork bank, ?interior outer row	3B F455	Probable	0.33	0.25	0.09	L2 light grey/tan clay silt. L1 dark brown humic loam in postpipe, possible chalk packing		3.111, 3.112
Inner outwork bank, interior outer row	3B F501	Definite	0.50	0.40	0.28	L2 light, silty material in base. L1 dark brown ashy material grading downwards into L2. Burnt chalk on surface, charcoal in fill. Possible flint and chalk packing	*Burnt flint* 35 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior outer row	3B F502	Definite	0.35	0.26	0.25	Decomposed chalk at base. L2 silt with charcoal near top. Possible flint and chalk packing	*Charcoal Quercus* sp	3.111, 3.112
Inner outwork bank, interior inner row	3B F503	Possible	0.25	0.30	0.17	Fine chalky silt with possible flint packing		3.111, 3.112
Inner outwork bank, interior outer row	3B F504	Definite	0.46	0.37	0.28	Fine grey silt with some chalk pebbles. Charcoal and burnt chalk, possible flint packing	*Lithics* 2 flakes *Burnt flint* 5 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F505	Definite	0.25	0.22	0.15	Light grey/brown silt with burnt chalk and possible chalk packing		3.111, 3.112
Inner outwork bank	3B F507/ 508	Possible	1.15	0.90	0.27	L3 chalky silt with large chalk lumps. L2 greyish silt with small chalk lumps. L1 brown loam with fine chalk particles. A little possible flint packing		3.111
Inner outwork bank, interior inner row	3B F509	Possible	0.24	0.17	0.06	Fine silty fill with a few charcoal flecks	*Charcoal* *	3.111, 3.112
Inner outwork bank, interior outer row	3B F510	Definite	0.40	0.29	0.24	Light grey/brown silt with chalk lumps and charcoal flecks. Flint packing	*Charcoal* *	3.111, 3.112
Inner outwork bank, ?interior outer row	3B F513	Possible	0.30	0.30	0.20	Possible flint packing		3.111, 3.112

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Inner outwork bank, ?interior outer row	3B F514	Possible	0.47	0.45	0.05				3.111, 3.112
Inner outwork bank, exterior outer row	3B F516	Definite	0.70	0.65	0.37	L2 light grey silt and chalk lumps. L1 brown loam with small chalk lumps and burnt chalk		*Burnt flint* 39 g	3.111, 3.112
Inner outwork bank, interior inner row	3B F517	Possible	0.35	0.35	0.08				3.111, 3.112
Inner outwork bank, interior inner row	3B F520	Definite	0.58	0.54	0.20	L2 grey silt. L1 brown loam with flint. Charcoal flecks. Flint and chalk packing		*Burnt flint* 14 g *Charcoal* *	3.111, 3.112
Inner outwork bank, interior inner row	3B F521	Probable	0.35	0.32	0.11	L2 grey loam, with charcoal flecks near base. L1 brown loam. Possible chalk and flint packing at one side		*Charcoal* L2: *	3.111, 3.112
Inner outwork bank, exterior outer row	3B F524	Definite	0.71	0.63	0.16	L2 Grey ashy material with charcoal patch at base. L1 Brown loam with chalk lumps. Burnt chalk	Plan and section suggest post = <0.10 m	*Burnt flint* * *Charcoal* Maloideae with some indeterminate	3.111, 3.112
Inner outwork bank, interior inner row	3B F526	Probable	0.71	0.63	0.16	L2: grey silt. L1 brown loam with chalk lumps. Burnt chalk in fill, charcoal flecks on surface		*Burnt flint* 4 g *Charcoal* *	3.111, 3.112
Inner outwork bank	3B F527	Probable	0.48	0.37	0.09	L3 whitish silt. L2 light brown silt in postpipe. L1 brown loam	?Posthole		3.111, 3.112
Inner outwork bank	3B F529 +F529A	Possible	0.70	0.65	0.205	L2 grey silt. L1 rotted chalk and chalk pebbles. Row of flints, possibly packing, along central ridge	Root-disturbed		3.111, 3.112
Inner outwork bank, ?interior inner row	3B F530	Possible	0.60	0.50	0.20	L2 grey silt. L1 brown loam			3.111
Inner outwork bank, interior outer row	3B F537A	Definite	0.41	0.25	0.80	L3 Grey silt. L2 Loose grey fill. L1 Brown loam	Possibly the base of a posthole, overlain/truncated by F537. If planned flints were packing, they might suggest post = <0.10 m in diameter	*Pottery* Surface: 4 sherds/6 g indeterminate flint-tempered	3.111, 3.112
Inner outwork bank, gateway	3B F601	Definite	0.55	0.55	0.20	L3 Light grey compacted silt incorporating lens of coarse chalk gravel. L2 Dark grey ashy soil with charcoal concentrations and substantial fragments of charred wood in 1st postpipe. L1 Light to medium brown soil, loose, with small, angular chalk lumps in second posthole. Flint and chalk packing in both postholes	Section and written record document smaller, unburnt socket filled by L1 cutting larger, burnt socket filled by L2. Plan could suggest reverse, but division there is tentative; section seems more reliable	*Charcoal* L2: *Quercus* sp from mature timbers L2: 5040±80 BP (HAR-4437) on charred oak fragment ST 80 C81	3.111, 3.112

Inner outwork bank, gateway	3B F602	Definite	0.52	0.45	0.20	L2 light-medium grey compacted silt and chalk lumps. L1 medium-dark grey ashy soil with charcoal flecks and at least 1 substantial fragment of charred timber in postpipe. Flint and chalk packing. Red clay noted	Abutted F604, relationship unknown	*Charcoal* *	3.111, 3.112
Inner outwork bank, gateway	3B F603	Definite	0.52	0.50	0.30	L5 grey-brown silt. L4 lens of light grey/ brown silt and chalk lumps. L3 dark grey ashy soil with charcoal concentrations and flecks throughout. L2 compacted medium-dark grey ashy soil, chalk, flint lumps and Charcoal fragments throughout. L1 as L2 but less compacted. Distinct charcoal concentrations visible on surface of L1 and L2	L2 could be seen as a first postpipe and L1 as a second	*Charcoal* L3: *Quercus* sp from mature timbers L2: * L1: * L3: 4770±80 BP (HAR-4438) on mature oak *Charcoal* ST80 C80	3.111, 3.112
Inner outwork bank, gateway	3B F604	Definite	0.36	0.30	0.13	Light grey-brown silt with more chalk lumps towards base	Abutted 3B F602. Relationship unknown		3.111, 3.112
Inner outwork bank, gateway	3B F605	Definite	0.73	0.50	0.10	Main fill of light-medium grey-brown compacted silty soil with chalk gravel. Dark greyish soil with charcoal in posthole. Flint packing. Burnt flint		*Burnt flint* * *Charcoal* Postpipe: *	3.111, 3.112
Inner outwork bank	3B F607	Possible	0.35	0.26	0.07	Fine light brown soil, with possible chalk and flint packing			3.111, 3.112
Inner outwork bank, gateway	3B F608	Definite	0.25	0.21	0.08	L2 peagrit. L1 light brown soil with very few small chalk lumps, possible flint packing			3.111, 3.112
Inner outwork bank, gateway	3B F609	Definite	0.64	0.49	0.25	L2 grey silt and decomposed chalk. L1 mid brown soil with chalk lumps. Charcoal flecks. Much burnt chalk		*Burnt flint* 32 g *Charcoal* *	3.111, 3.112
Inner outwork bank, gateway	3B F610	Definite	0.30	0.30	0.25	Brown soil with chalk lumps, clay patch towards bottom, possible chalk packing		*Lithics* flake	3.111, 3.112
Inner outwork bank, gateway	3B F612	Probable	0.37	0.35	0.13	L3 fine grey silt on sides and base. L2 peagrit. L1 fine light brown soil without chalk lumps. Burnt chalk and charcoal, possible flint packing		*Burnt flint* 18 g *Charcoal* *	3.111, 3.112
Inner outwork bank, gateway	3B F613	Definite	0.50	0.35		Mid brown soil with chalk lumps, charcoal and burnt chalk		*Lithics* 2 flakes *Burnt flint* 40 g *Charcoal* *	3.111, 3.112
	4A F12	Definite	0.28	0.25	0.33	L2 light grey silty clay with chalk lumps in base and at edge. L1 friable darker grey clay with larger chalk lumps in ?postpipe		*Burnt flint* 102 g *Charcoal* *	
Stepleton enclosure, segments 7 & 9	4A F18	Probable	1.7	1	0.21	L2 Fairly compacted mid to light grey clayey material with much decayed chalk. L1 (fill of possible postpipe) very dark grey sandy clay loam with burnt material		*Charcoal* *	3.109, 3.110

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
Stepleton enclosure, segments 7 & 9	4A F34	Possible	0.38	0.35	0.06	Grey-brown clayey fill with chalk lumps and fairly large flints, ?packing, to 1 side		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 7 & 9	4A F77	Definite	0.72	0.55	0.22	Loose to friable medium brown sandy clay with a little chalk and possible flint packing		*Lithics* flake	
Stepleton enclosure, segments 7 & 9	4A F215	Definite	1.1	1.1	0.30	L2 (fill of postpipe) loose, vacuous chalk rubble with little matrix. L1 pale brown to off-white silty loam with angular chalk rubble	Underlay 4A F31. Natural chalk very degraded here	*Charcoal* *	3.109
Stepleton enclosure, segments 9 and 10	4B F44	Definite	1.31	1.1	0.20	L3 dirty whitish degraded chalk (probably over-excavated). L2 light grey/brown compacted sandy clay with chalk lumps. L1 (fill of postpipe) dark brown sandy clay		*Lithics* flake *Charcoal* *	
Stepleton enclosure, segments 9 and 10	4B F46	Possible	0.66	0.60	0.06	Loose grey sandy clay with chalk lumps			
Stepleton enclosure, segments 9 and 10	4B F47	Definite	0.90	0.72	0.12	Dark grey/brown slightly humic sandy clay with chalk, possible postpipe	Overhung edge could suggest inclined post, or have been produced by weathering of chalk	*Lithics* 2 flakes *Burnt flint* * *Charred plant remains* 1 grain indet cereal	3.109
Stepleton enclosure, segments 9 and 10	4B F49	Definite	1	0.78	0.18	Loose to friable grey/brown sandy clay		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F50	Definite	0.58	0.60	0.16	Grey/brown sandy clay with chalk, possible postpipe observed at time of excavation		*Animal bone* * *Lithics* 4 flakes *Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F51	Definite	1.24	1.96	0.22	L2, fill of (earlier?) N pit, mid to dark grey/brown slightly humic sandy clay, 50% chalk. L1, fill of (later?) S pit, light grey-brown lose sandy clay with 80% chalk L1: Grey/brown slightly humic sandy clay, 50% chalk		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F52	Definite	1.25	1.2	0.16	Grey-brown sandy soil with chalk lumps		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F55	Definite	0.70	0.50	0.07	Brown loam with chalk fragments, flint nodule packing near top	*In situ* tabular flint exposed at one side of base	*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F57	Definite	1.27	0.90	0.14	Grey-brown sandy clay with dense chalk lumps		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10?	4B F59	Probable	1.06	0.96	0.18	Dark, compact brown sandy clay with chalk lumps	Posthole?	*Charcoal* *	3.109

Stepleton enclosure, segments 9 & 10	4B F63	Probable	1.35	0.74	0.14	Brownish-grey sandy soil with possible flint packing	Likely to be a posthole because of its place in alignment	*Charred plant remains* 1 grain *Triticum dicoccum,* 2 grains *Triticum* sp	3.109
Stepleton enclosure, segments 9 & 10	4B F64	Definite	1.34	1.05	0.29	L2: mid-grey sandy clay with chalk lumps. L1: dark grey granular clayey loam with charcoal and chalk lumps	Finds clustered in centre in lower fill, and in halo around postpipe in upper fill. Burnt flint and bone present. Bronze Age	*Animal bone* caprine scapula *Pottery* 1 plain body sherd/4 g in grog- and flint-tempered early Bronze Age fabric, 1 sherd/1 g in indeterminate sand-tempered fabric *Lithics* 15 flakes (3 burnt) *Burnt flint* 1 g *Charred plant remains* 1 grain *Triticum dicoccum,* 5 grains *Triticum* cf *dicoccum*, 3 grains *Triticum* sp, 1 grain *Hordeum* sp, 2 grains indet cereal, <10 g hazelnut shell *Charcoal Corylus avellana*, *Fraxinus excelsior*	3.109 3.110
Stepleton enclosure, segments 9 & 10	4B F65	Definite	0.82	0.75	0.18	Dark brown sandy clay with chalk lumps and possible chalk and flint packing to one side. Far smaller chalk fragments in postpipe		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F68	Definite	1.45	0.80	0.20	Dark grey/brown silty clay		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10?	4B F69	Probable	0.70	0.70	0.15	Dark brown loam with chalk fragments and apparent ring of flint packing, visible in plan on surface but not in section		*Charcoal* *	3.109, 3.110
	4B F69	Probable	0.68	0.71	0.16	Dark brown loam with chalk fragments and flint packing			3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F70	Definite	0.38	0.85	0.17	Dark brown sandy clay, slightly humic, with chalk lumps		*Charcoal* *	3.109, 3.110
	4B F71	Probable	0.50	0.50	0.45	Dark brown sandy clay soil	Posthole? Cut through hollow F71	*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F72	Possible	0.32	0.34	0.06	Brown loam with chalk fragments		*Charcoal* *	3.109, 3.110
	4B F74	Definite	0.72	0.55	0.22	Brown loam with chalk fragments and some flint		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10?	4B F76	Possible	0.51	0.53	0.13	Brown loam with chalk fragments and possible flint packing			3.109
	4B F124	Probable	0.75	0.75	0.27	Brown loam with chalk fragments and peagrit			

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
	4B F126	Probable	1.2	0.95	0.24	Brown loam with chalk fragments and a little flint	Pit or posthole Bronze Age	*Animal bone* * *Pottery* 3 plain body sherds/7 g from same vessel, in grog- and flint-tempered early Bronze Age fabric, flat base sherd and plain body sherd (total 4 g) from single vessel in indeterminate sand-tempered fabric *Lithics* 17 flakes, piercer *Charcoal* *	3.109
	4B F132	Probable	0.38	0.26	0.15	Brown loam with chalk fragments		*Charcoal* *	
	4B F134	Probable	0.40	0.31	0.13	Brown loam with chalk fragments, possible flint packing, but flint also *in situ* in side		*Charcoal* *	
	4B F138	Probable	0.53	0.53	0.16	Brown loam with chalk fragments, possible flint packing		*Charcoal* *	
Stepleton enclosure, segments 9 & 10	4B F149	Possible	0.72	0.58	0.12	Brown loam with chalk fragments		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F150	Possible	0.66	0.76	0.12	Dark brown sandy clayey loam with chalk lumps		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F165	Definite	0.57	0.50	0.23	Grey-brown sandy clay with chalk lumps and ?flint packing		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F166	Probable	1.44	1.22	0.33	Lower layer silt with chalk lumps. Upper layer dark brown sandy clay with fewer chalk lumps		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10	4B F169	Probable	1.2	0.70	0.06	Dark brown loam with chalk fragments	Root-disturbed		3.109
Stepleton enclosure, segments 9 & 10	4B F172	Probable	0.90	0.72	0.06	Brown loam with chalk fragments and a little flint		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F173	Probable	1.42	1.28	0.18	Brown loam with chalk fragments		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10?	4B F176	Possible	0.50	0.40	0.05	Loam with chalk lumps across base. Almost inclusion-free central postpipe, with darker fill, surrounded by pale brown soil with chalk lumps, some possibly packing		*Charred plant remains* <10 g hazelnut shell	3.109
Bank area of Stepleton enclosure away from entrances	4B F208	Possible	1.6	1	0.06	Brown loam with chalk fragments			

Stepleton enclosure, segments 9 & 10	4B F217	Possible	1	1	0.08	Dark brown loam with chalk fragments		*Charcoal* *	3.109
Stepleton enclosure, segments 9 & 10?	4B F218	Possible	1.71	1.65	0.18	Lower fill dark brown crumbly loam with chalk lumps and a little flint, upper fill with fewer inclusions		*Lithics* flake *Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F219	Definite	0.70	0.82	0.17	Dark brown loam with chalk fragments, possible postpipe in upper fill marked by peagrit		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F220	Definite	0.57	0.30	0.25	Dark brown sandy clay with a few chalk lumps		*Lithics* flake *Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10?	4B F221	Probable	0.51	0.40	0.13	Loose brown sandy clay with chalk lumps including large fragments of ?packing, one of them on end. Base of central ?postpipe in upper part of fill with far less chalk		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F222	Definite	0.45	0.45	0.16	Mid brown sandy clay with chalk lumps (?packing)		*Charcoal* *	3.109, 3.110
Stepleton enclosure, segments 9 & 10?	4B F224	Possible	0.90	0.55	0.13	Mid brown sandy clay with chalk lumps and some flint		*Charcoal* *	
	4B F225	Probable	0.45	0.35	0.20	Brown loam with chalk fragments and a few flints		*Charcoal* *	
	4B F234	Definite	1.1	0.73	0.36	Grey-brown loam with chalk fragments and flint packing		*Animal bone* *	3.110
Stepleton enclosure, segments 9 & 10	4B F241	Possible	0.50	0.40	0.10	Light brown loam with chalk fragments and some flint	Large flint lumps recorded in plan, ??packing		3.109
Stepleton enclosure, segments 9 & 10?	4B F242	Possible	0.45	0.55	0.11	Brown loam with chalk fragments and a little flint	Could be root disturbance		3.109
Stepleton enclosure, segments 9 & 10	4B F243	Possible	0.30	0.60	0.21	Brown loam with chalk fragments			3.109
Stepleton enclosure, segments 9 & 10?	4B F246	Possible	0.35	0.56	0.15	Brown loam with chalk fragments			3.109
	4B F279	Probable	0.58	0.72	0.17				
Stepleton enclosure, segments 9 & 10?	4B F284	Possible	0.75	0.68	0.15	Brown loam with chalk fragments			
	4B F287	Probable	0.53	0.45	0.08	Brown loam with chalk fragments, possible chalk packing			
Stepleton enclosure, segments 9 & 10?	4B F295	Probable	0.60	0.35	0.13	L2 brown loam with large chalk fragments. L1: brown loam with smaller chalk fragments			3.109, 3.110
Stepleton enclosure, segments 9 & 10	4B F297	Probable	0.83	0.70	0.22	L2 cream silt with chalk fragments. L1 Brown loam with chalk fragments	Weathered chalk interface between L2 and natural		3.110

Table 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
	4B F299	Definite	1.1	1.3	0.22	Dark brown humic loam with chalk fragments	Extended beyond limit of excavation. Could be associated with C20 fence		
	4B F317	Probable	0.46	0.38	0.10	Brown loam with chalk fragments			
Stepleton enclosure, segments 9 & 10	4B F318	Possible	0.65	0.55	0.12	Brown loam with dense chalk fragments and a few flints			3.109
	4B F343	Probable	0.42	0.38	0.11	Brown loam with chalk fragments			
	4B F344	Probable	0.38	0.43	0.08	Brown loam with chalk fragments			
Bank area of Stepleton enclosure away from entrances	4B F354	Possible	0.83	0.75	0.20	L2 cream silt with chalk fragments. L1 Brown loam with chalk fragments			
	4B F359	Probable	0.35	0.35	0.90	Brown loam with chalk fragments			
	4B F362	Probable	0.36	0.40	0.08	Dark brown loam with chalk fragments			
Outer outwork bank	4B F775	Definite	0.23	0.20	0.24	Brown loam with chalk fragments		*Animal bone* L1: pig radius	
Outer outwork bank	4B F785	Possible	0.53	0.40	0.13	Brown loam with chalk fragments			
Outer outwork bank	4B F796	Possible	0.30	0.40	0.12	Brown loam with chalk fragments	Root-disturbed		
Middle outwork bank	4B F799	Possible	0.60	0.50	0.12	Brown loam with chalk fragments	Root-disturbed		
Middle outwork bank	4B F808	Probable	0.40	0.36	0.13	Brown loam with chalk fragments		*Charcoal* *	
Inner outwork bank	4C F414	Possible	0.38	0.35	0.07			*Burnt flint* 15 g	
Inner outwork bank	4C F415	Definite	0.66	0.38	0.10	Fine mid-brown loam with some burnt chalk		*Animal bone* * *Burnt flint* 15 g *Lithics* flake	
Inner outwork bank	4C F425	Definite	0.54	0.40	0.30	Central fill of mid to dark grey silt with a few chalk blocks and some Charcoal. Lighter, more compact, and with more rubble towards base and sides		*Charcoal* *	
Inner outwork bank	4C F427	Probable	0.46	0.55	0.16	Brown loam		*Lithics* 2 flakes	
Inner outwork bank	4C F428	Definite	0.44	0.40	0.10	Fine grey-brown loam with burnt chalk and flint nodules (?=packing) at N edge		*Animal bone* 'tooth fragment' *Burnt flint* 55 g *Lithics* flake	
Inner outwork bank	4C F436	Possible	0.60	0.48	0.19	Loose, fine light brown grey loam			
Inner outwork bank	4C F437	Probable	0.60	0.40	0.12	Loose light brown loam			
Inner outwork bank	4C F438	Possible	0.50	0.35	0.22	Light brown powdery chalk loam with burnt chalk			
Inner outwork bank	4C F441	Possible	0.40	0.20	0.07	Gritty loam			

Inner outwork bank	4C F442	Possible	0.50	0.48	0.14	Loose, fine dark brown loam. Possible flint packing		
Inner outwork bank	4C F444	Possible	0.45	0.50	0.10	Mid-brown gritty loam		
Inner outwork bank	4C F446	Possible	0.35	0.48	0.09	Fine grey loam		
Inner outwork bank	4C F447	Probable	0.50	0.50	0.08	Grey loam with burnt material, 'one great flintstone'		*Charcoal* *
Inner outwork bank	4C F454	Definite	1.03	0.60	0.12	Very light loose loam		*Burnt flint* *
Inner outwork bank	4C F456	Possible	1.06	0.60	0.17	Light brown loam	Double posthole?	
Inner outwork bank	4C F458	Probable	0.42	0.53	0.07	Light brown/grey loam		
Inner outwork bank	4C F461	Possible	1.00	0.85	0.14	Light brown loam		
Inner outwork bank	4C F464	Possible	0.23	0.25	0.08	Soft light brown grey loam		
Inner outwork bank	4C F475	Possible	0.33	0.24	0.06	Fine light brown loam		
Inner outwork bank	4C F476	Possible	0.75	0.65	0.08	Hard grey silt		
Inner outwork bank	4C F480	Possible	0.60	0.50	0.15	Light brown loam		
Inner outwork bank	4C F481	Possible	0.80	0.70	0.12	Light brown loam		
Inner outwork bank	4C F482	Probable	0.70	0.60	0.20	Loose light brown loam		
Inner outwork bank	4C F484	Possible	0.50	0.35	0.11	Soft brown-light grey loam		
Inner outwork bank	4C F486	Possible	0.35	0.25	0.07	Dark brown loam with Charcoal flecks		*Charcoal* *
Inner outwork bank	4C F491	Possible	1.1	0.50	0.18	Light brown loam, some flint nodules	Double posthole?	
Inner outwork bank	4C F494	Possible	0.76	0.60	0.05	Light brown loam		
Inner outwork bank	4C F495	Possible	1.04	0.95	0.17	Light brown loam		
Inner outwork bank	4C F502	Possible	0.65	0.60	0.12	Soft dark brown loam		
Inner outwork bank	4C F503	Possible	0.70	0.77	0.15	Light brown loam		
Inner outwork bank	4C F507	Possible	0.56	0.50	0.15	Brown loam		
Inner outwork bank	4C F508	Possible	0.50	0.50	0.14	Light brown loam with grey chalk		
Inner outwork bank	4C F512	Possible	0.70	0.70	0.20	Light brown loam	Part of a large spread, with 4C F513, 514, 515, 517	*Lithics* 9 flakes
Outer outwork bank	4C F521	Possible	0.45	0.45	0.10	Light brown loam		
Inner outwork bank	4C F525	Definite	0.65	0.65	0.40	Dark to medium brown-grey loam and silt with flint packing		*Lithics* flake
Inner outwork bank	4C F526	Possible	0.26	0.40	0.22	Dark brown loam		
Inner outwork bank	4C F535	Possible	0.60	0.45	0.30	Fine silt, overlain by mid-dark brown granular loam with chalk lumps and some flint	Extended beyond limit of excavation	
Inner outwork bank	4C F538	Definite	0.30	0.25	0.30	Light grey silt		*Charcoal* *
Inner outwork bank	4C F539	Possible	0.60	0.60	0.12	Mid-brown loam		
Inner outwork bank	4C F540	Probable	0.50	0.46	0.18	Firm cream silt, mid-grey ash and silt, with chalk pebbles		

ITable 3.14 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
nner outwork bank	4C F541	Probable	0.25	0.35	0.20	Fine cream silt, nodule packing			
Inner outwork bank	4E F610	Possible	0.40	0.50	0.14	Light grey-brown silt with occasional small chalk pebbles			
Inner outwork bank	4E F612	Possible							
Inner outwork bank	4E F614	Probable	0.37	0.45	0.15	Light to medium grey-brown silt with a few chalk pebbles			
Inner outwork bank	4E F615	Definite	0.45	0.35	0.22	Chalk packing		*Charcoal* *	
Inner outwork bank	4E F617	Possible	0.72	0.70	0.10	Light grey-brown silt with occasional small chalk pebbles			
Inner outwork bank	4E F630	Possible	0.23	0.32	0.08	Light grey-brown silt with occasional small chalk pebbles. Possible packing			
Inner outwork bank	4E F634	Probable	0.51	0.51	0.19	Light grey-brown silt with some chalk pebbles and flint nodules (?=packing)			
Inner outwork bank	4E F635	Possible	0.42	0.47	0.07	Light grey-white silt with chalk pebbles			
Inner outwork bank	4E F636	Possible	0.40	0.15	0.12	Medium grey-brown silt with very few small chalk pebbles. Nodule packing			
Inner outwork bank	4E F637	Possible	0.32	0.30	0.07	Light grey silt with medium-sized chalk pebbles			
Inner outwork bank	4E F638	Possible	0.32	0.30	0.05	Light grey-brown silt with small–medium chalk pebbles			
Inner outwork bank	4E F639	Possible	0.45	0.40	0.07				
Inner outwork bank	4E F640	Possible	0.42	0.52	0.13	White-grey silt with medium-sized chalk pebbles			
Inner outwork bank	4E F641	Probable	0.42	0.42	0.10	Medium brown-grey silt with small and medium-sized pebbles			
Inner outwork bank	4E F646	Possible	0.35	0.10	0.15	Medium brown loam with peagrit and some medium-sized chalk pebbles			
Inner outwork bank	4E F648	Possible	0.10	0.38	0.10	Medium brown loam with chalk lumps			
Inner outwork bank	4E F649	Possible	0.39	0.37	0.08				
Inner outwork bank	4E F651	Possible	0.36	0.45	0.13	Medium brown loam with peagrit and small chalk pebbles			
Inner outwork bank	4E F652	Definite	0.44	0.42	0.10	Light grey-brown silt with small/medium chalk pebbles		*Charred plant remains* <10 g hazelnut shell	
Inner outwork bank	4E F655	Possible	0.27	0.20	0.05	Medium-brown loam with peagrit and small chalk pebbles			

Inner outwork bank	4E F656	Probable	0.44	0.50	0.13	Medium grey-brown silty loam with few small chalk pebbles. 1 packing nodule		*Lithics* flake
Inner outwork bank	4E F660	Possible	0.50	0.52	0.15	Light brown-grey silt, large/medium chalk pebbles		
Inner outwork bank	4E F663	Possible	0.60	0.50	0.14	Medium brown loam with subangular pebbles		
Inner outwork bank	4E F673	Probable	0.35	0.44	0.15	Light grey brown silt with occasional medium-sized chalk pebbles		
Inner outwork bank	4E F674	Possible	0.65	0.50	0.11	Possible flint and chalk packing		
Inner outwork bank	4E F675	Possible	0.50	0.45	0.10	Medium grey silt with some medium chalk pebbles		
Inner outwork bank	4E F678	Probable	0.32	0.32	0.10	Grey-white silt with small, rounded chalk pebbles, possible flint packing		
Inner outwork bank	4E F683	Probable	0.23	0.38	0.12	Light grey silt with few chalk pebbles, possible flint packing		
Inner outwork bank	4E F687	Probable	0.16	0.22	0.07	Ashy grey silt with occasional medium chalk pebbles		
Inner outwork bank	4E F688	Possible	0.28	0.34	0.12	Medium grey silt with small chalk pebbles	Extended beyond limit of excavation	
	4F F537	Definite	0.92	0.86	0.50	Mid dark yellow sand with chalk and flint. Creamy sand/silt. Postpipe of mid to dark yellow sandy soil without inclusions	Recent?	

Finds from F64 included a plain body sherd/4 g in a grog- and flint-tempered early Bronze Age fabric and a fragment/1 g in an indeterminate sand-tempered fabric, as well as burnt animal bone, 15 flint flakes (three burnt), burnt flint, and charred emmer wheat, barley and hazelnut shell. Finds were clustered in the lower fill, while those in the upper fill formed a halo around the postpipe in which the post seemed to have burnt. In F126 three plain body sherds/7 g in the same grog- and flint-tempered fabric were accompanied by two sherds/4 g from a flat-based pot in an indeterminate sand-tempered fabric, 17 flakes, a piercer, and some charcoal. Two crumbs in early Bronze Age fabrics among the large Neolithic assemblage in nearby pit 4B F129 are likely to derive from the same source. Despite the minute size of the sherds, the case for a post-Neolithic date for 4B F64 is strong because the way in which the finds were disposed suggests original incorporation rather than subsequent intrusion. If this post-hole was part of a structure to which it was axial (Fig. 3.109), then the structure itself was of second millennium date (see 3.5.2). There was more than 1 kg of early Bronze Age pottery, including P174 and P175 (Fig 9.10), in the upper fills (phases VII/a and VIII/a) of segments 5–8 of the inner outwork and the adjacent segment 8 of the middle outwork, with animal bone, struck flint, the largest concentration of burnt flint on the hill (more than 20 kg, exceptionally including 'pot-boiler'-like material as well as flint fortuitously burnt), a fragmentary decorated bone bead, and a copper alloy awl (see 3.5.3–4). The molluscs from this deposit and from the Beaker recut in segment 2 of the outer outwork reflect a far more open environment than during the Neolithic use of the site (see Bell *et al*, 5.2).

Middle Bronze Age

Although diagnostically middle Bronze Age pottery was scarce (Table 3.15), two features, originally thought to be Neolithic, date to this period.

A kiln or oven

In the south-east of the enclosure, a subrectangular pit (1A F227) was joined to a smaller pit (1A F239) by a gully, the chalk base of which was smoothed, rounded and burnt. There was also a burnt patch on the base of F227 (Fig 3.117**;** Mercer 1980, 56, fig 32; Mercer 1988, 100). The plan, combined with the wear and burning on the central gully, suggests that this was the base of a kiln or oven, not dissimilar in plan to a Roman corn-dryer, in which fuel would have been pushed along the gully towards the base of the oven (F227) from a stokehole (F239). There was charred grain in both pits. Samples from F227 contained 85 grains of emmer or emmer-like wheat, 54 grains of indeterminate wheat, one grain of barley, 25 grains of indeterminate cereal, and a little hazelnut shell and *Galium aparine*. Samples from F239 contained 83 grains of emmer or emmer-like wheat, 15 grains of barley or barley-like cereal, 49 grains of indeterminate cereal, and a little hazelnut shell (see Jones and Legge, 6.2). Single emmer grains from F227 were dated to 1740–1490 cal BC (3315±45 BP; OxA-7841) and 1680–1430 cal BC (3255±40 BP; OxA-7842). Other finds were a small, abraded sherd of probably Neolithic flint-tempered pottery, 30 flint flakes, 3 g of amorphous burnt clay, and animal bone including a cattle radius. The feature was small, with overall dimensions of 3 m × 2.80 m. If the grain is an index of function, rather than having been burnt fortuitously with less durable fuel such as straw, then the feature may have served for domestic-scale grain-drying or malting. Whatever the case, the charred grain shows that cereals were being harvested on or brought onto the hill in the mid-second millennium.

A middle Bronze Age inhumation

A little apart from the cluster of features outside the north-west of the enclosure was a badly ploughed-out grave of irregular plan, surviving to no more than 0.20 m in depth (Figs 3.116, 3.117: ST82 F16). In it was the tightly flexed skeleton of an older mature or older adult, possibly female, with some dark staining on the mandible and acromion (see McKinley, 7.1). Up to 0.25 m of clayey silt (L3) had formed on the pit floor, surrounding the lowest bones of the skeleton and underlying the others, suggesting that the grave may have been left open with the body in it. A bowl-shaped pit approximately 0.50 m in diameter was cut through the silt into the natural chalk near the knees of the skeleton. The pit contained dense, large angular chalk blocks and more flint than the silt (L2). Both layers were truncated and directly overlain by modern ploughsoil. The right femur of the skeleton was dated to 1430–1130 cal BC (3050±45 BP; OxA-7849). The only artefact was a small, abraded sherd of probably Neolithic flint-tempered pottery.

Late Bronze Age and early Iron Age

No discrete features are attributable to this period, although the quantity of pottery (more than 1 kg) approaches that for the early Bronze Age (Table 3.15). It was concentrated in segments 2 and 3 at the west side of the Stepleton enclosure, where P177, P178, and P179 (Fig 9.10) were found in association with relatively well-preserved animal bone (3.5.2), and in segment 5 of the inner outwork, where there were sherds from a furrowed bowl (3.5.4).

Late Iron Age and early Roman

A probable posthole in the east of the enclosure (1A F296) contained six sherds from a Black Burnished Ware bowl. A single sherd in the same fabric intrusive among the substantial Neolithic assemblage from nearby pit 1A F229+F295 is likely to be related. Black Burnished Ware dominates the Roman pottery from

Table 3.15 Central area and Stepleton spur. Total post-Neolithic pottery

Tradition	*Central area*		*Stepleton spur*	
	Sherds	*g*	*Sherds*	*g*
Beaker	1305	2602	273	913
Early Bronze Age	18	108	275	1583
Middle and indeterminate Bronze Age	6	128	41	246
Late Bronze Age/early Iron Age	12	112	195	1111
Other Iron Age			20	61
Roman	23	40	828	2884

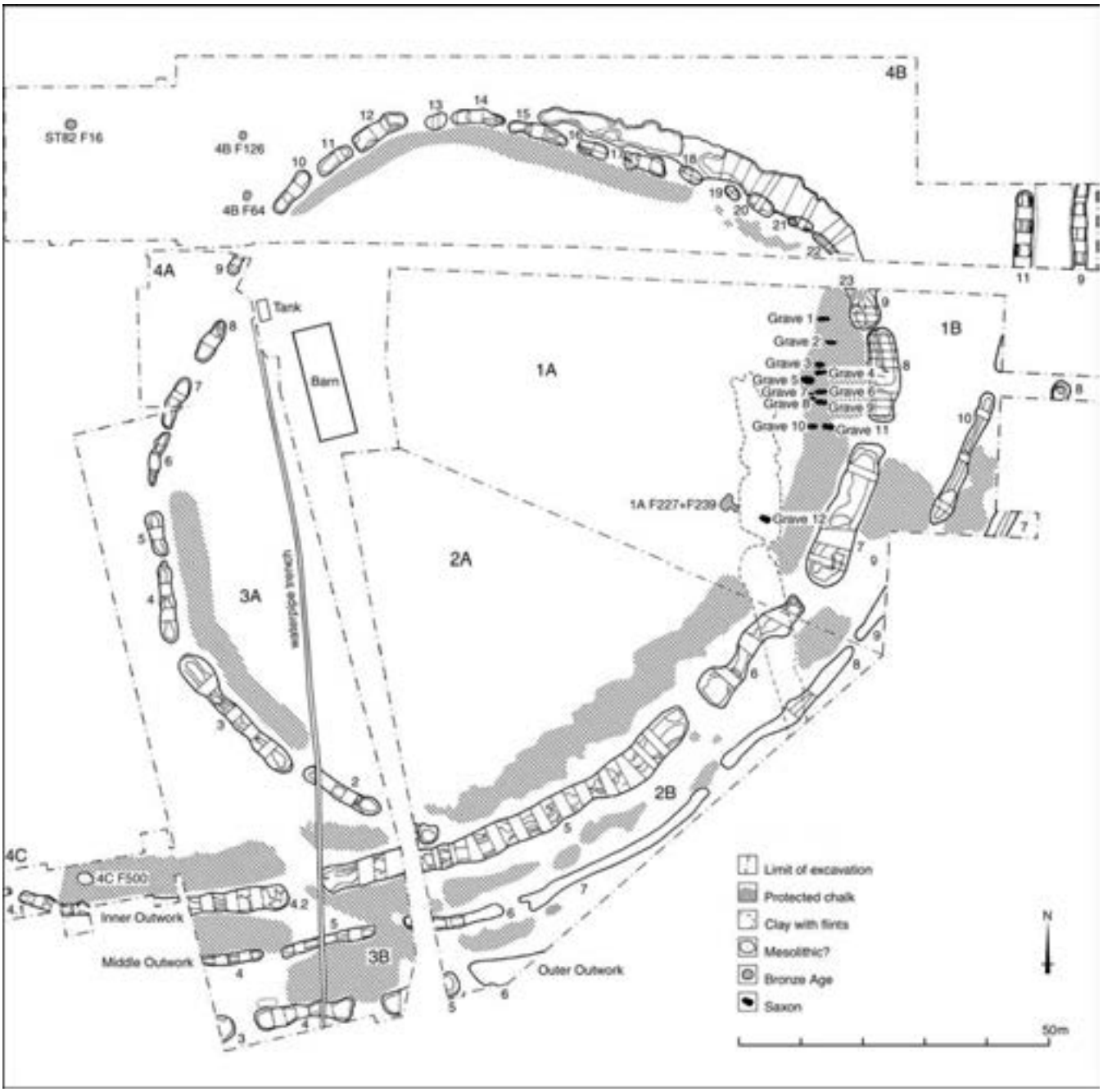

Fig 3.116 Stepleton spur. Possibly Mesolithic feature, Bronze Age features and Saxon graves.

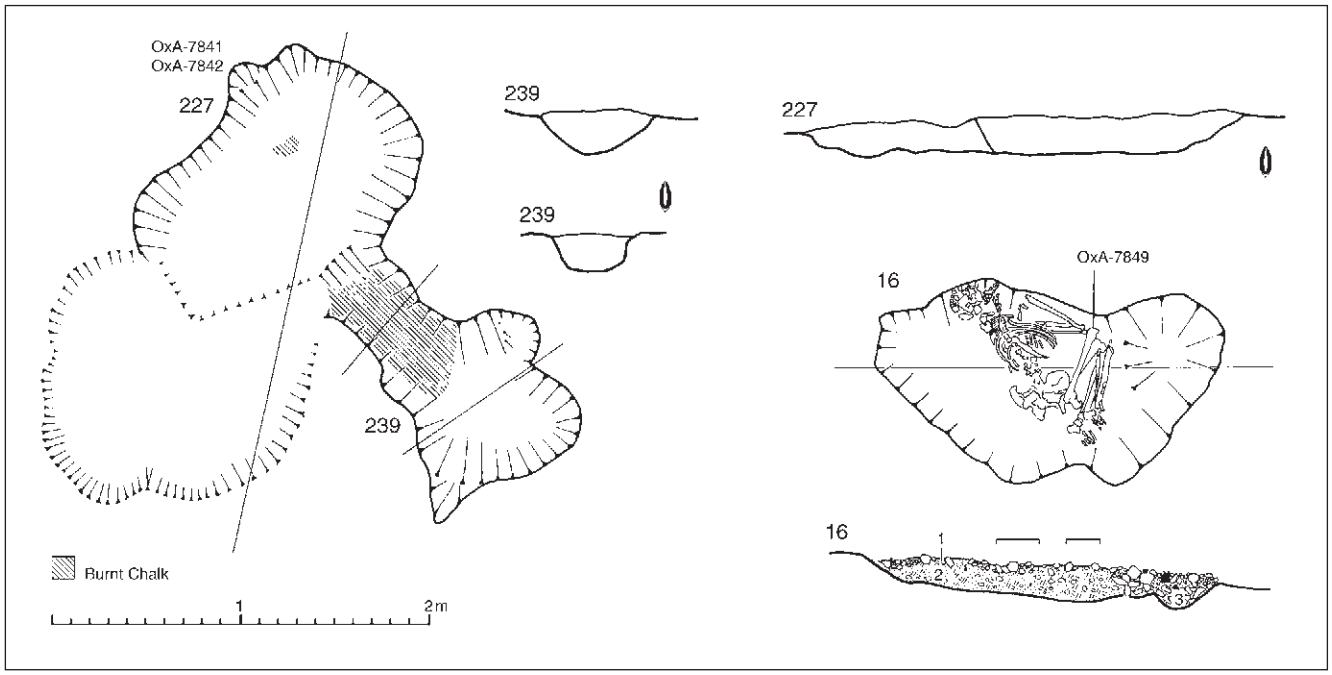

Fig 3.117 Stepleton spur. Bronze Age features.

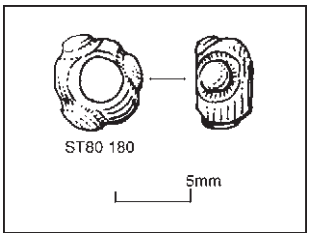

Fig 3.118 Stepleton spur. Late Iron Age/early Roman glass bead ST80 180.

the spur, accounting for more than 2 kg of the total of nearly 3 kg (Table 3.15), and indicating a predominantly early Roman presence, also reflected in a trumpet brooch from the inner outwork (see 3.5.4), and a stray find of a blue glass bead, with three bosses encircled by grooves perhaps originally filled with white glass. The bead corresponds to Guido's class 3 (1978, 49–50), dated to the late Iron Age and early Roman periods (Fig 3.118; identified by Moira Laidlaw). A crucible fragment from the inner outwork is likely to be Roman or later (see Barclay, 9.4).

The nature of post-Neolithic activity

Other, even less closely dated, traces of post-Neolithic activity include a small amount of structural daub in the top of the inner outwork (see 3.5.4), a vestigial 'Celtic' field system on the spur between the Stepleton enclosure and the Hanford outworks (Fig 2.7), a hollow way running obliquely through the inner outwork gateway, eroding part of the bank to the east, and ploughsoils (phase VIII/a) overlying truncated Beaker and early Bronze Age deposits in the ditch tops. Segment 2 of the outer outwork, away from the Neolithic enclosure in the west of the excavated area, proved an exception, since, as on the Hanford spur, ploughsoil had accumulated before a recut that included Beaker pottery was made, so that ploughing here must have begun in the third millennium (Fig 3.105: section FFF–FFF'; 3.5.5). Ploughing in the area of the enclosure could have begun at any time from the late third or early second millennium BC onwards. It continued into the Romano-British period on the evidence of the pottery from the phase VIII/a fills, exemplified by the collection from the inner outwork (Table 3.12). The hollow way through the former inner outwork gate was established by then, on the evidence of boot-fittings and pottery (3.5.4), although its origins may have been earlier.

There was thus activity on the spur in the late third, second, and first millennia BC and in the first millennium AD. The degraded state of the evidence renders any conclusions tentative. The post-Neolithic dates of three postholes may extend to at least some of the many undated ones. Local second and first millennium settlements are characterised by numerous postholes in addition to those resolvable into structures, as at the middle Bronze Age sites of South Lodge Camp and Down Farm in Cranborne Chase (Barrett *et al* 1991, figs 5.12–13, 5.27). The same is true of late Bronze Age settlements, as at Reading Business Park, Berkshire (Moore and Jennings 1992, figs 9, 31) and both early and late Iron Age ones, like phases 1 and 3 at Gussage All Saints in Cranborne Chase (Wainwright 1979b, figs 16, 19). The surviving postholes could well represent a series of structures of more than one phase with some postholes lost to ploughing and erosion. Most of the data could be

accommodated by postulating a second to early first millennium settlement, with structures in the north-east of the former Neolithic enclosure, a burial a little way outside it to the north-west, and cultivation on the spur between the settlement and the former Hanford outworks, the area of the enclosure coming fully under the plough in the late first millennium, when lynchets began to form downslope (see Bell *et al*, 5.3). One argument against this is some uncertainty regarding whether there is a significant post-Neolithic flint industry (see Saville, 10.2). Yet, while it is incontestable that the abundant and all-pervasive earlier Neolithic industry dominates the lithics from post-Neolithic and superficial contexts, there are some indications that other elements are also present. Of the seven piercers described as of classic late Neolithic/early Bronze Age forms, with elongated, thick points (see Saville, 10.2), the six from the Stepleton spur are all from post-Neolithic contexts, four of them associated with Bronze Age pottery. Furthermore, when the retouched forms from Neolithic and post-Neolithic contexts are compared (Table 3.16), piercers, scrapers, fabricators or rods, and miscellaneous forms are all more frequent outside Neolithic contexts than in them, while serrated flakes, edge-trimmed flakes, edge-glossed flakes, polished axe fragments and leaf arrowheads are all less frequent, corresponding to Saville's description of the implements from the phase VIII/a fills of segment 5 of the inner outwork. There was also an increase in multi-platform (classes B and C) cores over single-platform (class A) ones in the phase VIII/a fills of the same ditch (Table 10.35: groups 64 and 68). These differences in composition between the lithics from Neolithic and post-Neolithic contexts show that the post-Neolithic contexts included an element absent from the Neolithic ones, some of the characteristics of which would be compatible with local Bronze Age industries, like those of the Dorchester area (Bellamy 1997).

One possibly quite recent feature was a pit (2A F39) containing an articulated sheep skeleton in far better condition than any of the bone from dated contexts. The last clearly defined episode on the spur was the development of a small pagan Saxon cemetery.

The Anglo-Saxon burials

Alison M Cook and Frances Healy

Description

The cemetery was discovered in 1977, when three graves were found in an exploratory trench. A further eight graves and one possible grave were excavated the following year, making a total of eleven or twelve. Excavation of adjacent areas in subsequent seasons revealed no further burials, so that the limits of the cemetery were defined on all sides.

Graves 1 to 11 lay in a row 18 m long on the plough-scored protected chalk of the inner outwork bank inside segments 8 and 9, overlooking the Iwerne valley (Figs 3.116, 3.119–3.122). Grave 12 was 16 m south-west of the main group, immediately behind the outwork bank, on the Clay-with-Flints which filled a fissure running through the site. Since the bank was visible as an earthwork into the twentieth century, and would almost certainly have been far better preserved in the first millennium AD, the graves must have been cut through it into the natural chalk in which their bases survived. The plough had actually cut into some skeletons, smashing and displacing bones and in some cases removing the feet.

Graves 1–9 and 11 each contained one body, Grave 12, the outlier, was a double burial, and grave 10 was empty. Given the extent of plough damage and the generally poor preservation of the Anglo-Saxon skeletal material, especially the infants (see McKinley, 7.1.5), this feature may originally have held an infant or juvenile burial. It has been interpreted as a grave because it is aligned with the other burials and is of similar size and shape to the two infant burials, Graves 7 and 8.

The graves were orientated roughly east–west, at right-angles to the bank, with the heads to the west and the feet to the east. Grave 5, the burial of the oldest male, was the largest and deepest, and may have been the focal point around which the cemetery grew, although its alignment and that of grave 12 differ slightly from the rest of the group (Fig 3.116). North of grave 5, graves 1–4 were all occupied by adult males. South of grave 5, graves 6, 9 and 12 were occupied by adult females; graves 11 by a subadult; and graves 7, 8, and perhaps 10, by infants (McKinley, 7.1.5).

Table 3.16 Stepleton spur. Summary of retouched forms from Neolithic and other contexts

	Serrated flakes	*Edge-trimmed flakes*	*Scrapers*	*Miscellaneous retouched*	*Edge-glossed*	*Piercers*	*Polished axeheads, fragments and flakes*	*Leaf arrowheads*	*Fabricators and rods*	*Other*	*Totals*
Neolithic contexts	116	118	72	67	16	9	9	5	1	5	418
	27.8%	28.2%	17.2%	16%	3.8%	2.2%	2.2%	1.2%	0.2%	1.2%	
Other contexts	28	60	170	229	8	40	3	4	5	16	563
	5%	10.7%	30.2%	40.8%	1.4%	7.1%	0.5%	0.7%	0.9%	2.8%	

The grave profiles were generally sharp and unweathered, at least in their surviving lower parts. This and their earth and chalk rubble fills, sometimes tightly packed, suggest that little time elapsed between grave-digging and burial.

Iron knives were found at the left side of the male in grave 5 and between the two females in grave 12 (Figs 3.120, 3.122, 3.123). Both knives are of Böhner's (1958) Type C, with straight cutting edges and curved or angled backs. This is the predominant knife type of the seventh century in Anglo-Saxon England. The knife from grave 5 (Fig 3.123: ST77 140) exhibits clear remains of a leather sheath covering the blade.

In grave 12 there was also an iron pin on the chest of the left-hand burial, a female aged about 18–25 years (Figs 3.122, 3.123). The pin is poorly preserved, and little can be said about its typology. It appears to be of a simple, undecorated form, and of a simple, functional nature characteristic of many seventh-century finds elsewhere. The position of the pin on the chest indicates that it may have secured a head veil or mantle.

The context sheet for grave 12 records 'several iron objects from upper level ... close to where F6 [ie grave 12] cuts into F278'. These must equate to four finds, each described as an iron fragment or iron fragments, which have not survived. F278 was a Neolithic pit cut by the north-east corner of grave 12, so that the iron was near the feet of the northerly skeleton, away from the two surviving finds, and is likely to have come from a further object or objects. Since the intersection between grave and pit was difficult to distinguish, two iron objects and a Roman sherd from the pit may also have come from grave 12. One of the iron finds was described as a rivet, which may suggest a sheet metal object. The high level at which these objects were found (they were recovered before the feature was recognised as a grave) and the fact that they were discarded as recent and inconsequential leave it impossible to judge whether or not they formed part of the burial. Dark staining on both skeletons in grave 12, with the exclusion of the right arms, may indicate that bodies were wrapped or covered in organic material with which the right arms were not in contact (see McKinley, 7.1.5).

These may not have been the only grave goods, given the ploughed-down state of the burials. Slight green staining on the left scapula of the male in grave 1 may reflect the former presence of copper alloy object (see McKinley, 7.1.5). A further tanged iron knife (Fig 3.123: ST78 297, identified by Moira Laidlaw) was found 10 m downslope from grave 2, in the phase VIII/a fills of the inner outwork ditch, and may have derived from a grave. It is badly preserved, however, and, while it too may be of Böhner's type C, it may also be a Romano-British form of Manning's type 10, like an example illustrated by him from Hod Hill (Manning 1985, 113, pl 54: Q30). The remaining finds from the graves derive from other periods of activity on the site, especially in the case of grave 12.

Catalogue

Notes

Layers are described from the bottom up. Finds not attributed to layer are listed first.

* = recorded but unidentified, missing, or not retained. Lithics are of flint unless otherwise stated. Dimensions are maxima.

Grave 1 *(1B F2;* Fig 3.119*)*

Length 2.10 m, *width* 0.55 m, *depth* 0.10 m

Form. Subrectangular plan, expanded near centre, tapering to E, undulating profile

Fill(s). Humic soil with chalk rubble

Only 0.02 m deep at E end. Plough-damage probably accounts for absence of feet, damage to skull and displacement of R arm and leg. Slight green staining on lateral border of L scapula may suggest former presence of copper alloy object

Human remains: Younger mature adult male (*c* 20–30 years), *c* 85% recovered. Extended, supine, head turned to L, arms straight with hands between femurs

Other finds

Pottery: 1 sherd/3 g post medieval

Lithics: Flake, core

Grave 2 *(1B F1,* Fig 3.119*)*

Length 2.3 m, *width* 0.70 m, *depth* 0.15 m

Form. Subrectangular plan, expanded to SE, E end so ploughed-down as to be indistinct, undulating profile

Fill(s). Earth and chalk rubble

Much plough damage: feet missing, R femur shattered and displaced

Human remains: Mature adult male (>25 years), *c* 93% recovered. Extended, supine, head to R. R arm straight and below pelvic girdle, L arm slightly flexed with hand on pelvis

Other finds

Lithics: 21 flakes

Grave 3 *(A F3,* Fig 3.119*)*

Length 1.94 m, *width* 0.58 m, *depth* 0.20 m

Form. Subrectangular plan, expanded and rounded at W end. Shelving sides, slightly concave base with longitudinal central step at W end. Deepest at W end, only 0.02 m deep in E

Fill(s). Dark soil with small chalk lumps and flint

Feet almost destroyed by ploughing

Human remains: Mature adult male (>25 years), *c* 88% recovered. Extended, supine, head to R. R arm straight, L arm bent. Healed fractures of R radius and L tibia and fibula

Other finds

Animal bone: L1: pig radius

Pottery: L1: 1 sherd/4 g Neolithic Bowl pottery

Lithics: L1: 17 flakes

Grave 4 *(A F4,* Fig 3.120*)*

Length 2.30 m, *width* 0.65 m, *depth* 0.25 m

Form. Subrectangular plan, steep sides, slightly concave base, especially longitudinally, surviving to only 0.12 m deep at E end

Fill(s). L2 grey-brown chalky fill with much chalk rubble, fairly tightly packed around skeleton. L1 dark ploughsoil with small chalk lumps and flint

Human remains: L2: Older mature or older adult male (>30 years), *c* 96% recovered. Extended, supine, head to L. Arms straight

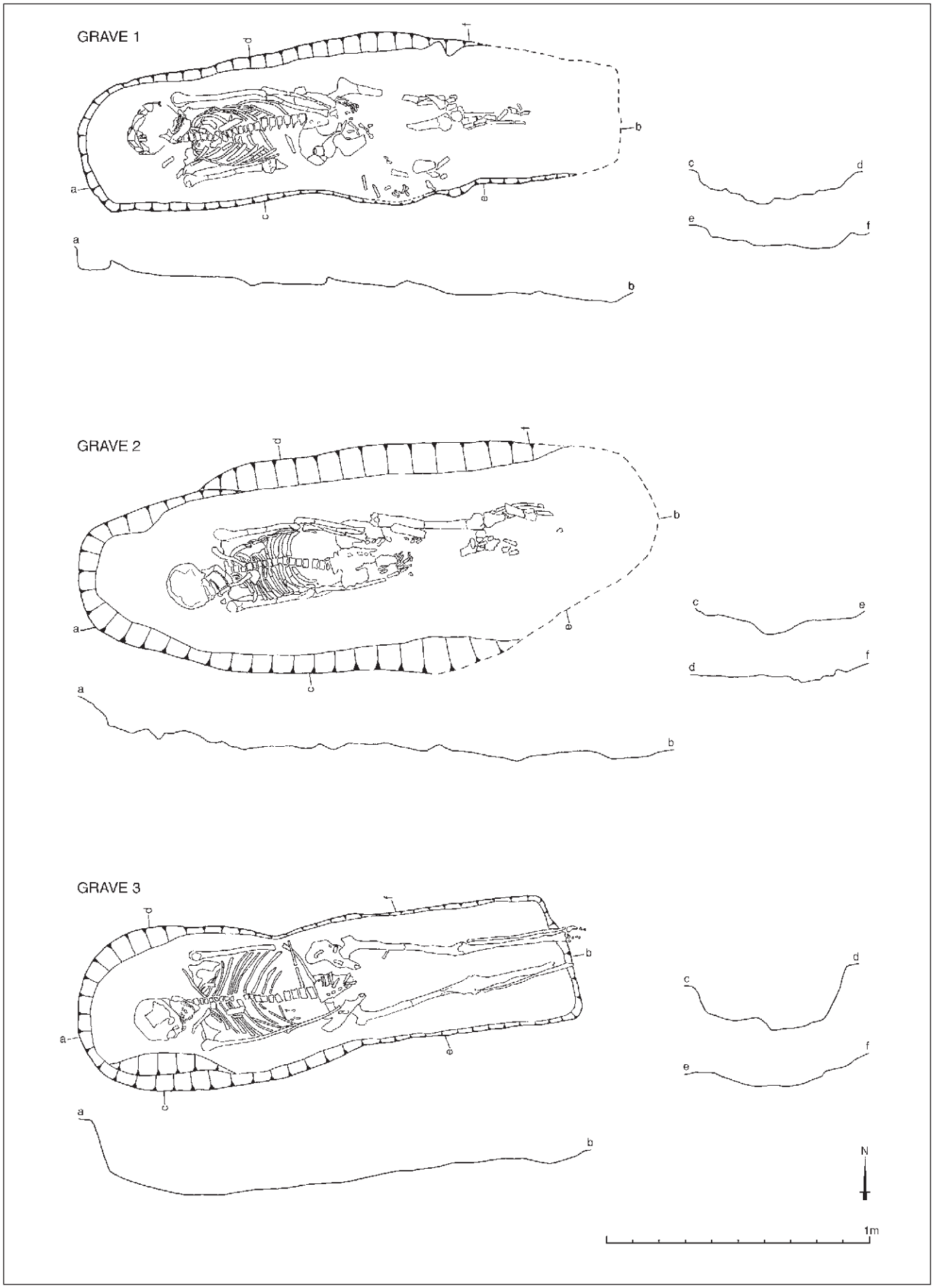

Fig 3.119 Stepleton spur. Saxon cemetery: graves 1–3.

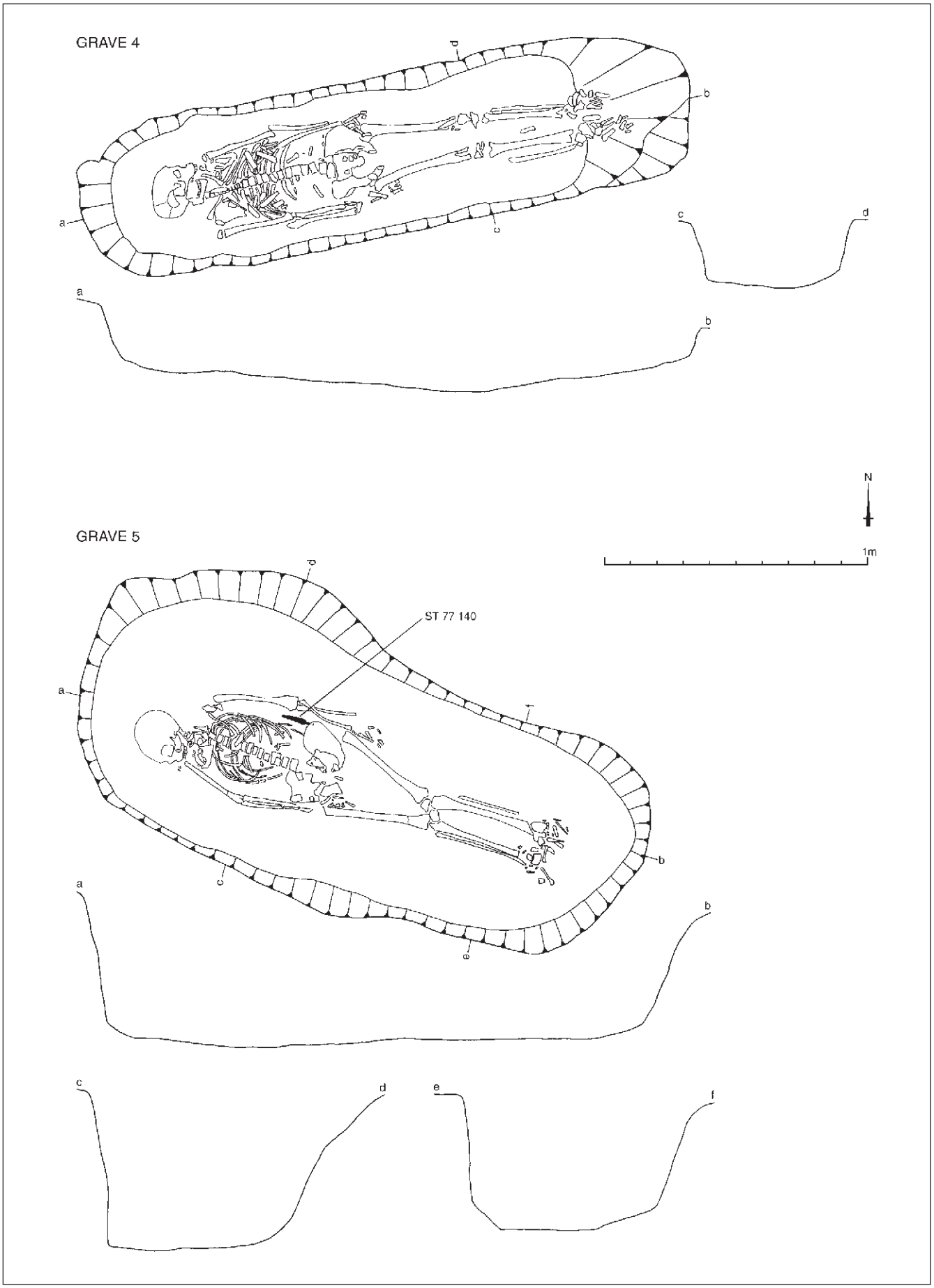

Fig 3.120 Stepleton spur. Saxon cemetery: graves 4–5.

Other finds
Pottery: L2: 2 sherds/1 g grog-tempered, ?Beaker
L1: 1 sherd/1g Roman
Lithics: 2 flakes
L2: 12 flakes, unworked fragment of fine-grained sandstone
L1: 15 flakes, flaked lump
Burnt flint: L1: 25 g

Grave 5 *(A F1,* Figs 3.120, 3.123*)*
Length 2.20 m, *width* 1.10 m, *depth* 0.60 m
Form. Subrectangular plan, slightly expanded at N side of W end, steep S and W sides, shelving N and E, flat base. E end surviving to 0.50 m deep
Fill(s). L4 grey-brown silt with compacted chalk lumps
L3 dark brown soil with chalk blocks, separated from L2 by band of peagrit
L2 medium brown soil with chalk lumps, like phase VIII/a fills in innermost outwork
L1A dark brown, almost stone-free recent turfline over W part of grave only
L1 topsoil

Human remains: L4: Older adult male (>45 years), *c* 97% recovered. Extended, supine, facing R. Arms straight, R arm resting on pelvis
Grave good: L4: Iron knife (Fig 3.123: ST77 140), total extant length 155 mm; tip of blade missing. Length of tang 56 mm; maximum width of blade 19 mm. Blade has straight cutting edge and markedly curved back. Blade covered in a mass of organic material consisting of remains of leather sheath covered in larvae impressions. Clear junction between organic-covered blade, ie sheath, and tang. Mineral-replaced horn or wood grain visible on the tang. Separate find number (ST77 122) given to iron fragments lifted before knife itself

Other finds
Lithics: Flake, chalk marl fragment
L3: 4 flakes
L2: 37 flakes, 1 misc retouched
L1: flake
Burnt flint: L1: 16 g

Grave 6 *(1B F16,* Fig 3.121*)*
Length 2.20 m, *width* 0.63 m, *depth* 0.26 m
Form. Subrectangular plan with rounded, expanded , deeper W end, shelving sides, slightly stepped flat base. E end surviving to only 0.02 m
Fill(s). Brown soil with a few chalk lumps

Human remains: Younger mature adult female (*c* 25–30 years), *c* 98% recovered. Supine, extended, arms bent with hands over pelvis

Other finds
Pottery: 4 sherds/5 g Roman, found between lower legs
Lithics: 27 flakes, scraper, piercer

Grave 7 *(1B F15,* Fig 3.121*)*
Length 0.67 m, *width* 0.37 m, *depth* 0.05 m
Form. Subovoid, scooped rather than regularly cut, shelving sides, undulating profile, deepest towards E end
Fill(s). Brown soil with small chalk rubble

Human remains: Neonate (0–4 months), *c* 1% recovered. Skull fragments and teeth in SW corner

Grave 8 *(1B F5,* Fig 3.121*)*
Length 1.00 m, *width* 0.40 m, *depth* 0.10 m
Form. Subrectangular plan, undulating profile, deepest towards E
Fill(s). Brown soil and chalk rubble

Human remains: Neonate/young infant (*c* 4–8 months), *c* 2% recovered. Skull fragments, teeth, a few ribs and vertebrae
Animal bone: Rodent bones on S side of grave near ribs

Grave 9 *(1B F4,* Fig 3.121*)*
Length 2 m, *width* 0.60 m, *depth* 0.30 m
Form. Subrectangular plan steep sides, fairly flat base, deepest at W end
Fill(s). Brown soil with chalk rubble, especially towards base
Animal disturbance

Human remains: Older adult female (>45 years), *c* 85% recovered. Extended, supine. Upper body turned slightly to R. R arm straight with hand resting on R side of pelvis, L arm bent with hand on R side of pelvis. L foot over R
Also two vault fragments and rib fragments from immature, ?juvenile, individual

Other finds
Pottery: 2 sherds recorded, 1 on L femur, 1 S of R knee. 1 sherd/3 g indeterminate flint-tempered now survives
Lithics: 4 flakes

Grave 11 *(1B F8,* Fig 3.122*)*
Length 1.90 m, *width* 0.55 m, *depth* 0.07 m
Form. Subrectangular plan, expanded in E, shelving sides, undulating base
Fill(s). Brown soil with chalk lumps

Human remains: Older subadult, ?male (*c* 15–18 years), *c* 70% recovered. Extended, supine. Arms bent with L arm lying above R. L scapula and humerus ?supported on chalk blocks. Skull crushed, feet fragmentary and disturbed

Grave 12 *(1A F6,* Figs 3.122, 3.123*)*
Length 1.84 m, *width* 0.68 m, *depth* 0.30 m
Form. Subrectangular plan, sides generally steep, shelving at W end, flat base
Fill(s). Mid-brown clayey soil
On fissure filled with Clay-with-Flints. Some animal disturbance. NE corner cut Neolithic pit 1A F278

Human remains: Two skeletons: ST76 2617 (to S) young adult female (*c* 18–25 years). Extended, supine, with R side of back supported by S wall of grave. Head to L. L side of body lying partly over ST78 2618
ST78 2618 (to N) older mature adult female (*c* 30–40 years). Extended, supine, head to R. R arm straight and below L side of ST78 2618
Dark staining on both skeletons, except for R arms, may indicate that bodies were wrapped or covered in organic material with which R arms were not in contact

Grave goods: Between the two skeletons: Small iron knife (Fig 3.123: ST78 2499), total length 118 mm. Length of tang 38 mm. Maximum width of blade 11 mm. Knife has straight cutting edge and tapering back. Possible traces of replaced horn or wood grain visible on tang.
On L side of chest of ST78 2617: Small iron pin (Fig 3.123: ST78 2532) now in three pieces. Maximum extant length of combined fragments is 35 mm. Apparently round-sectioned tapering shaft 2 mm in diameter. No evidence of pin head.
'Upper level ... close to where F6 cuts into F278': 'several iron objects', equating to four now-missing finds of iron fragments (ST78 1269 1288, 1466, 1556). Iron fragment and iron rivet (both also missing) from 1A F278 like to derive from same object.

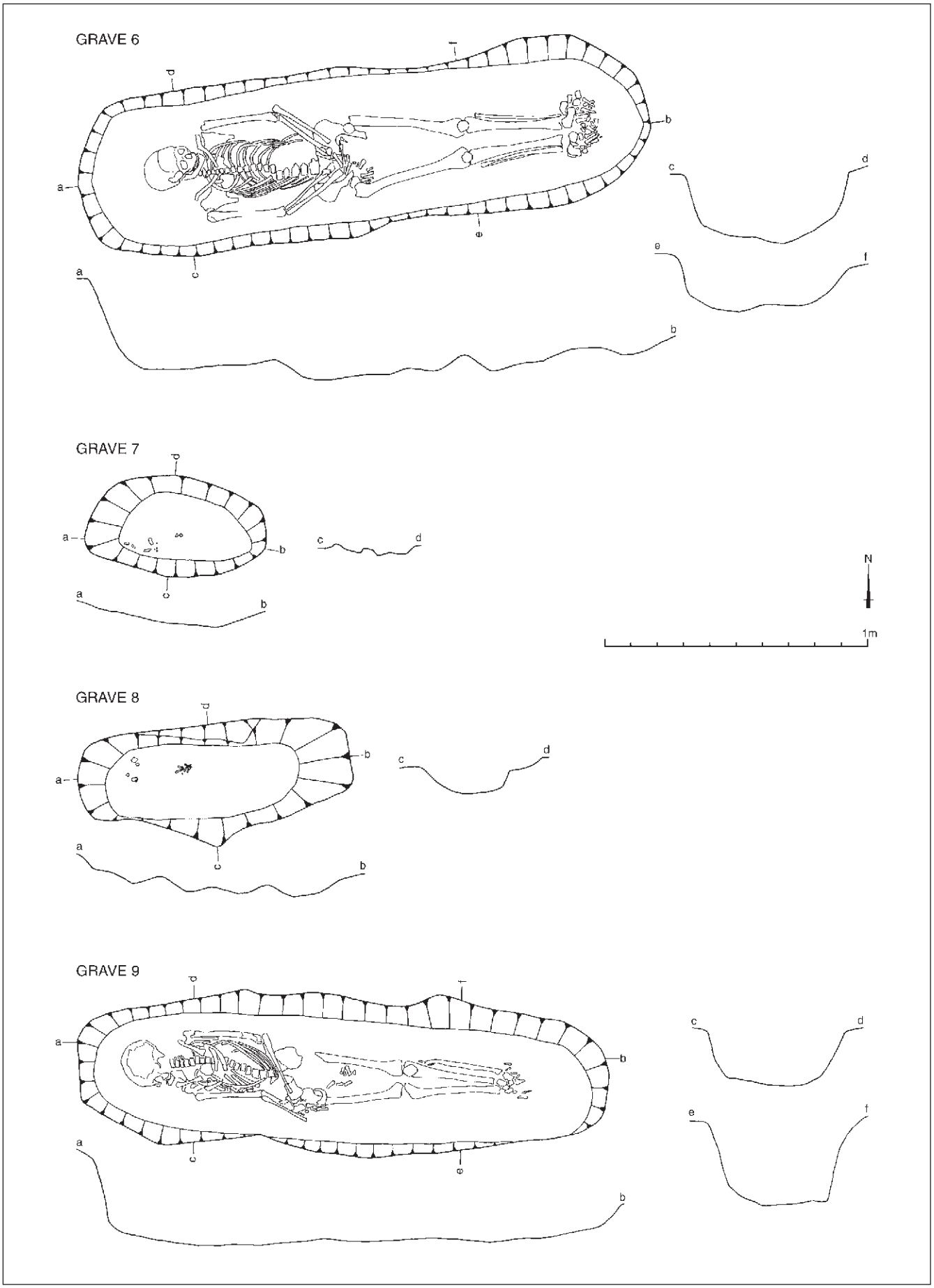

Fig 3.121 Stepleton spur. Saxon cemetery: graves 6–9.

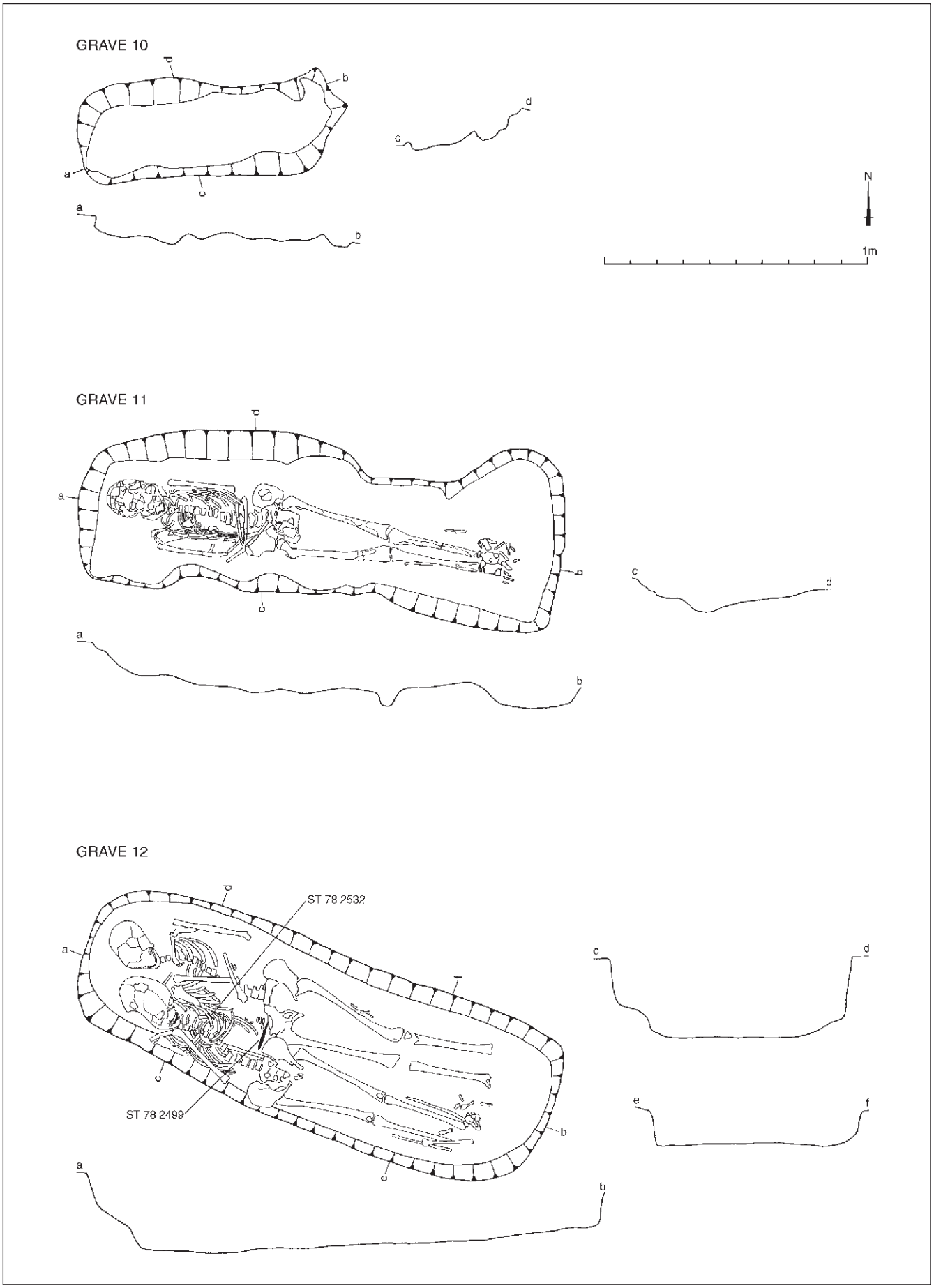

Fig 3.122 Stepleton spur. Saxon cemetery: graves 10–12.

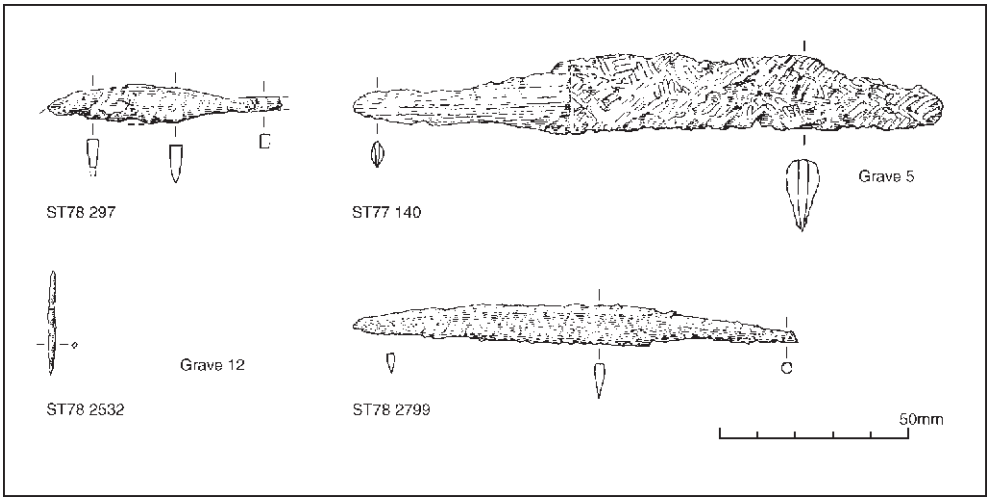

Fig 3.123 Stepleton spur. Ironwork from Saxon burials and their immediate area. ST77 140 from grave 5, ST78 2532 and 2799 from grave 12, ST78 297 from the topmost fill of the inner outwork ditch downslope from grave 2. ST77 140 is oriented to show the face on which mineral-replaced organics are best preserved.

Other finds
Animal bone: Pig teeth
L1: caprine tooth
Pottery: 72 sherds/140 g Neolithic Bowl pottery, 2 sherds/1g Roman
Lithics: 106 flakes (2 burnt), core, flaked lump, 2 edge-trimmed flakes, piercer, 1 misc retouched, Old Red Sandstone quern or rubber fragment, heathstone fragment, ?iron ore fragment
L2: 17 flakes, 2 cores, 3 edge-trimmed flakes, 1 misc retouched
*Burnt flint :*56 g
Other finds: poorly-preserved tip of bone point
Topsoil over grave: 1 fragment/2 g fired clay
Charcoal: *

Discussion

The cemetery lay immediately to the south of the parish boundary between Shroton or Iwerne Courtney and Iwerne Stepleton (marked by the hedge and track that occupy the strip of unexcavated land shown north of the burials in Figure 3.116). Saxon burials are often found close to parish or other land boundaries; the topic of Saxon burial on land boundaries in Wiltshire and their early origins is discussed by Bonney (1966). The location of the Stepleton burials is therefore unlikely to be fortuitous. The use of pre-existing monuments for burial purposes in the Saxon period is paralleled elsewhere in north-east Dorset at Long Crichel barrow 7 (Green *et al* 1982) and Oakley Down (references in Meaney 1964).

Only two burials were certainly accompanied by grave goods. This paucity of objects associated with the burials is a clear indicator of a seventh-century or possibly even later date for the graves. Anglo-Saxon burials of the seventh century exhibit a number of contrasts to those of the sixth century, and one of the most obvious differences is in the frequency of grave goods. The objects which are found are frequently of a simple, utilitarian nature. The possibly primary status of Grave 5, by far the largest and deepest and occupied by the oldest male accompanied by the only definite grave good among the burials in the bank, is enhanced by the disposition of the other burials in relation to it. It was surely not fortuitous that the remaining adult males were all buried to the north of this grave, with the females, infants and subadult to the south.

The Hambledon cemetery seems to be an outlier of a distinct cluster of Anglo-Saxon burial sites in north-east Dorset. It has been suggested (Evison 1968) that these sites mark the western border of the group of Saxons settled in the Avon Valley and Salisbury area. At Woodyates, two barrows contained Saxon burials, identified on the basis of accompanying grave goods. These burials appear to have been in primary contexts. At Oakley Down, an Anglo-Saxon female burial was found in a secondary context in a Bronze Age barrow (references in Meaney 1964). At Long Crichel barrow 7, three Anglo-Saxon inhumations were found (Green *et al* 1982). A few unfurnished inhumations in Dorset (RCHME 1972, xxviii; RCHME 1977) are probably of Saxon date. There are various similarities between the Hambledon burials and these other sites. All the cemeteries contained small numbers of individuals, perhaps suggesting family groups; the eleven or twelve burials at Hambledon form the largest such group.

Table 3.17 Stepleton spur. Summary of the sequence

	Stepleton enclosure	*Middle Stepleton outwork*	*Inner Stepleton outwork*	*Outer Stepleton outwork*	*Beyond the earthworks*
3780–3630 cal BC			Burial of older adult in 2A F200?		Pits?
3650–3570 cal BC	Construction Primary deposits and silts Cleaning out, further silts Rubble fills, localised pits with burnt material				Pits Pits Pits Pits
3650–3580 cal BC		Construction			Pits
3630–3500 cal BC	Backfill in segments 1, 19–23	Primary silts	Construction		Pits
	Slower silts	Partial cleaning-out?	Primary deposits and silts, including infant burial ST78 2756		Pits
			Burning and partial collapse of rampart, covering articulated male skeleton ST79 2726		Pits Burial of young adult male in 4B F712, with material probably from burnt rampart
3530–3360 cal BC		Rubble fills, disarticulated remains of child ST 79 2497+	Continued accumulation of rubble and related fills Rebuilding of gateway?	Construction	Pits
3530–3320 cal BC	Stable surface, localised pits with burnt material Articulated upper body of mature female ST81 3188, articulated dog ST80 1156	Rubble fills grading into slower silts	Articulated older subadult/young male ST78 2755 near top of rubble fills, with arrowhead in chest area	Articulated young adult male ST81 1875 on base of ditch, with arrowhead among ribs	Pits
Within mid fourth millennium cal BC	Slower silts			Rubble and related fills	Pits
Within mid fourth millennium cal BC	Phase VI 'midden' deposit		Slower silts	Slower silts	Pits
				Ploughing outside enclosure	
Later third to early second millennium cal BC	Recut with Beaker pottery in segment 9		Recut with early Bronze Age and some Beaker pottery in segment 5 and adjacent butt of segment 6	Recuts with Beaker pottery in segments 2 and 5 and 5	Post-built structures in north-east of enclosure?
Mid second millennium to early first millennium cal BC	Ploughing	Ploughing	Ploughing	Ploughing	Post-built structures in north-east and north-west of enclosure? Kiln or oven 1A F7+F239 Inhumation in pit ST82 F16 Fields outside enclosure? Use of Everley Water Meadow burnt mound
End of first millennium BC/beginning of first millennium AD	Ploughing	Ploughing	Ploughing Hollow way though entrance	Ploughing	Ploughing
7th century AD			Saxon cemetery Establishment of parish boundary		

3.5.8 Distributions on the Stepleton spur *vis-à-vis* those of the central area

Figures 3.124–33 follow the conventions employed for distributions in the central area (see 3.3.8).

Biases

Differential preservation of bone and antler

Surface exposures of Clay-with-Flints were more restricted here than in the central area, the only major occurrence being in a fissure running south from the east-centre of the enclosure (Fig 3.81). This was cut by pits and by parts of segment 6 of the inner outwork and segment 8 of the middle outwork. The small quantity of identifiable animal bone from these contexts may reflect greater degradation than elsewhere, especially in pits 1A F228, F229+F295, F231, F278 and F350, which were poor in animal bone but particularly rich in flint and pottery.

The sealing-off of the north-eastern arc of the enclosure

Segments 18–22 of the enclosure were much smaller than those in the rest of the circuit, and seem to have been truncated during the early stages of the construction of the inner outwork, which remained unfinished in this area (Fig 3.91). They were back-filled before being sealed by the upcast from this operation and were hence inaccessible by the time the finds-rich phase VI deposits accumulated in the rest of the circuit (see 3.5.2).

Recovery of charred plant remains

The incidences of charred plant remains on the Stepleton spur and in the central area are not comparable, because flotation, wet sieving, or both were practised in every season on the spur, but in only one season in the central area (see Jones and Legge, 6.2).

Individual categories of material in Neolithic contexts

Human remains

Many of the human remains from the Stepleton spur were treated and deposited in the same ways as those from the central area. There were also, however, practices unmatched in and around the main enclosure. The most significant of these were a greater frequency of articulated skeletons, especially adult ones, pit burials, and the absence of human remains from primary levels in the Stepleton enclosure, where they were placed only from phase III onwards, although they were placed in the inner and outer outworks from construction onwards. Given that the Stepleton enclosure was already substantially silted when the inner outwork was built (Fig 3.92), human bone may have begun to be deposited in both ditches at the same time. A significant primary deposit in the inner outwork consists of the head and shaft of a left adult femur with fragments of a cattle pelvis, including the left acetabulum, placed in a fissure in the base of the south-west butt of segment 6 in association with two at least semi-complete pots (Fig 3.98).

The earliest of the pit burials, an older adult who died in *3780–3630 cal BC* (Fig 3.113: F200; Fig 4.6: *OxA-7835)* may have been buried in the area of the inner outwork bank before any of the earthworks was built (4.8.1). A rather later date of *3630–3570 cal BC (17%) or 3540–3360 cal BC (78%)* for a child inhumation in a pit which may have been between two posts, one set at each end of the grave, suggests that it was centred within the already built enclosure (Fig 3.113; Fig 4.7: *OxA-7836)*. An infant placed in a crevice at the base of a butt of segment 9 of the inner outwork (Fig 3.92) recalls the child burials of the main enclosure. All of these may relate to the ceremonial use of the spur, but a young man buried in a pit outside the enclosure (Fig 3.113: F712) may be linked by burnt chalk, burnt clay and charcoal to the burning of the inner outwork soon after it was built, and the complete skeleton of an older man must have been placed on the base of the same ditch very close to that event, whether or not he was a victim of it (Figs 3.100–1). Two later articulated young male skeletons, both with arrowheads among their ribs, one in the rubble fills of segment 7 of the inner outwork (Figs 3.102–4) and one in a crevice at the base of a butt of segment 3 of the outer outwork (Fig 3.105–6), could be coeval with each other, and may relate to a second violent incident, the threat of which had perhaps prompted the construction of the outer outwork.

These articulated skeletons must all have been covered or buried fairly soon after death, otherwise they would not have survived so completely, although exposed long enough to have undergone limited excarnation, evidenced by cut-marks, and limited rodent and/or carnivore gnawing (see McKinley, 7.1). Different practice is reflected by the articulated upper skeleton of a woman, without pelvis or legs, lying on a stabilised surface in segment 10 of the Stepleton enclosure (Fig 3.88). She seems, like the lower male skeleton in segment 6.1 of the main enclosure, to represent an early stage of the excarnation process. The same may be true of disarticulated bones forming roughly half the skeleton of a young juvenile, found in a confined area of the rubble fills of segment 6 of the middle outwork, recalling concentrations of disarticulated bone from single individuals in segments 6.2, 17, and 19 of the main enclosure. As in the central area, completely disarticulated human remains were dominated by skulls and limbs, especially lower limbs, and were generally already fragmented when buried (see McKinley, 7.1). Infant and juvenile remains were more frequent in the primary and rubble fills than in subsequent deposits. As in the central area, this may reflect greater exposure to scavengers and poorer conditions of preservation in the less well-buried and less calcareous upper fills.

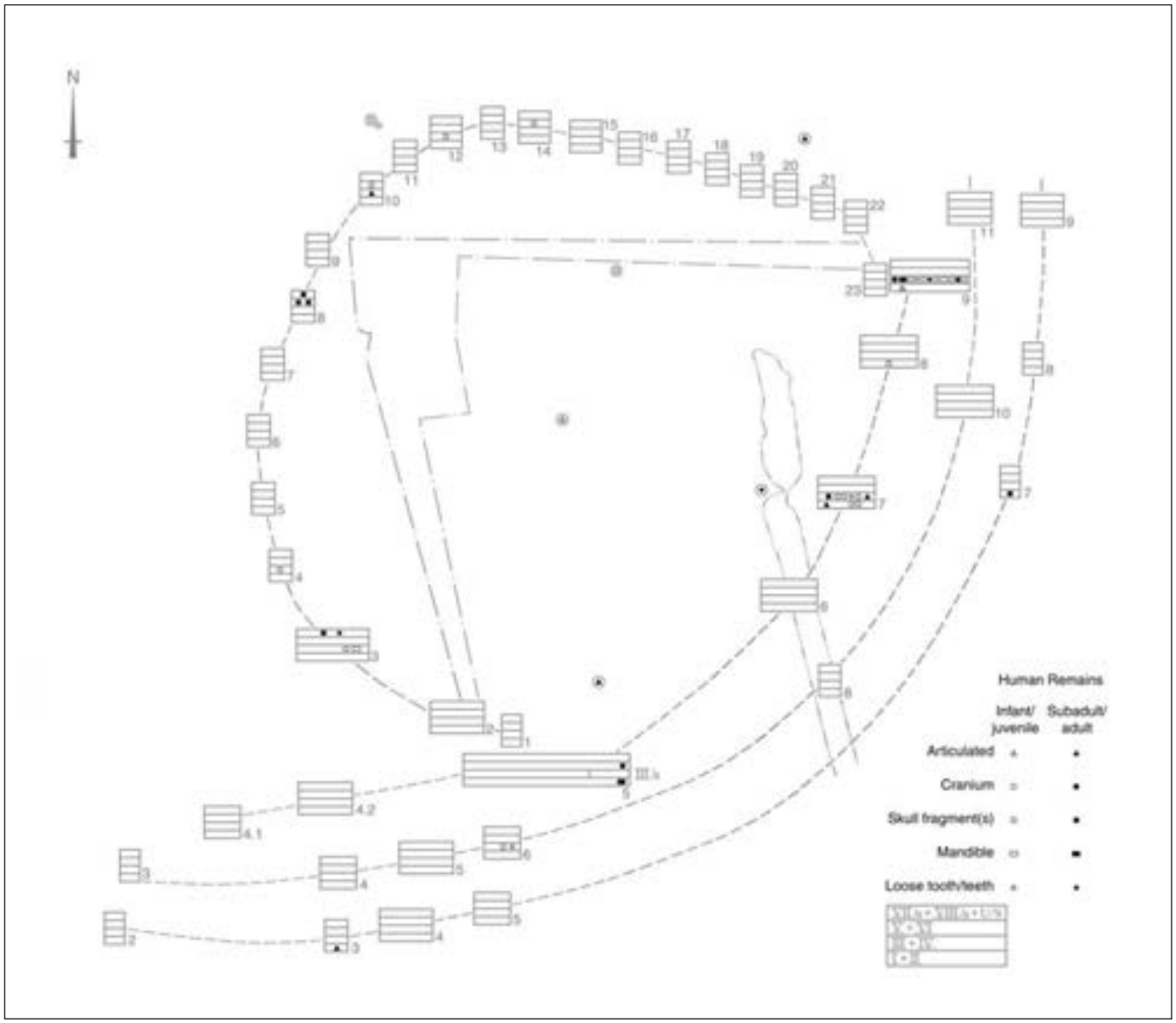

Fig 3.124 Stepleton spur. Distribution of articulated human remains, crania, skull fragments and loose teeth.

Cut marks, most frequent on disarticulated bone in the central area, were here confined to four articulated skeletons (ST78 2755, ST78 2756; ST79 2726, ST80 1875) and one disarticulated infant vault fragment (Table 7.4).

The overall distribution of human remains was uneven. There were very few in pits, and concentrations in some ditch segments contrasted with few or none in neighbouring segments (Figs 3.124–5). There were exceptional accumulations of both articulated and disarticulated human bone in segments 7 and 9 of the inner outwork. In segment 9, the deposition of an articulated infant in a cleft near the base of one butt was followed by the inclusion in the chalk rubble fills of disarticulated and dispersed bones from the upper bodies of at least one adult female and two infants, exceptional in the frequency of ribs and vertebrae and in the association of mandibles with the female skull and a group of infant skull fragments. In segment 7 the articulated mature male mentioned above and an infant cranium were placed on different parts of the ditch base, and fragments of another infant skull were deposited as the primary silts accumulated. In the rubble fills these were succeeded by an articulated young male with an arrowhead among his ribs, also mentioned above, overlying the more weathered and probably earlier (see 4.7.4) skull fragments, mandibular teeth, rib and vertebra fragments of an infant. There were fragments of another infant skull in the same ditch butt and an adult skull and an infant skull with longbone fragments at other findspots.

In both segments, a primary articulated burial was followed by the deposition of other human remains and, in segment 7, by another articulated burial. The location of the two successive articulated males in segment 7 may not have been accidental; and the articulated and disarticulated human remains were involved in the same mortuary process, consistent with the presence of cut-marks on both. The articulated state of apparent victims of conflict may reflect deliberately

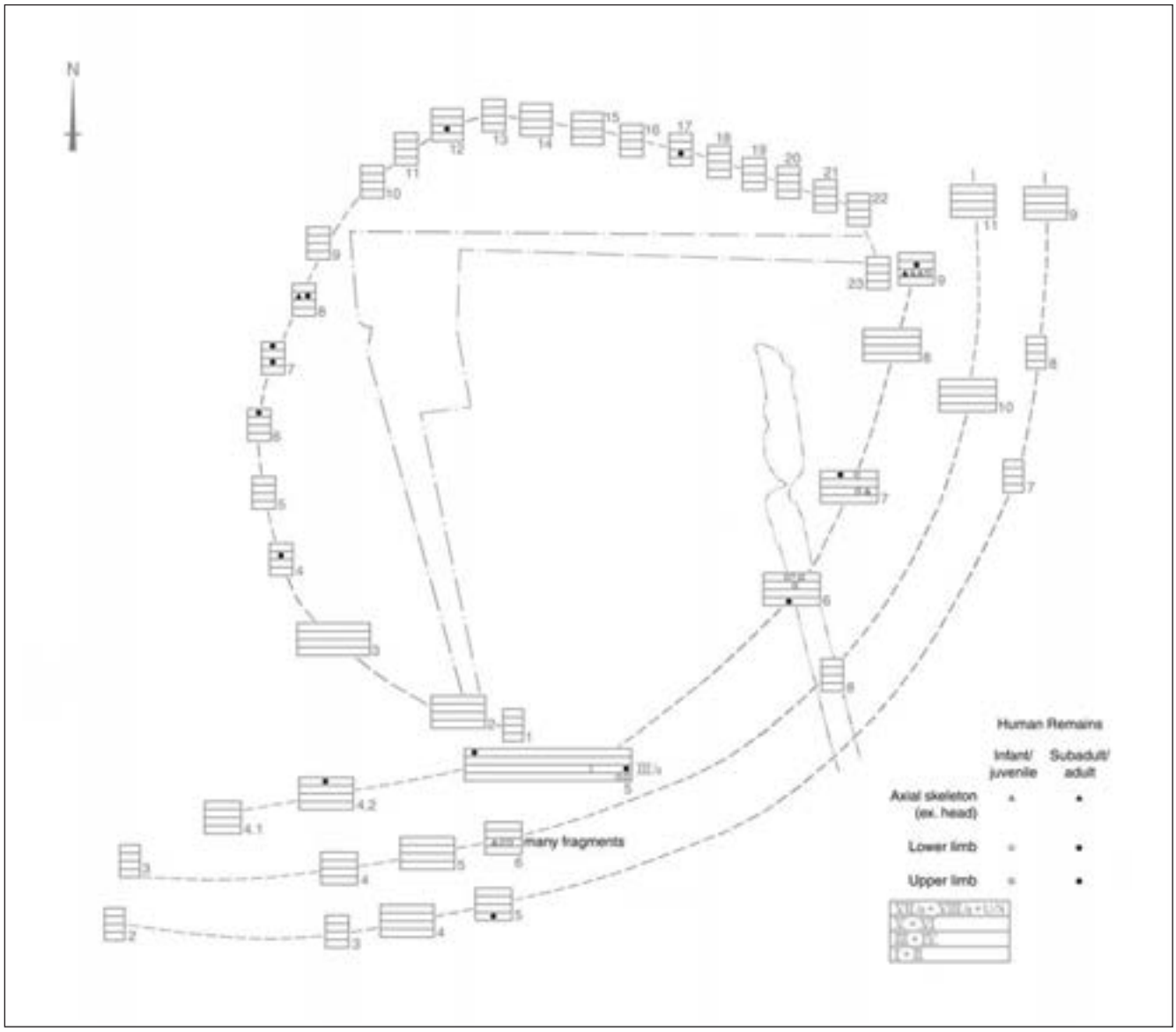

Fig 3.125 Stepleton spur. Distribution of disarticulated human bone from the axial skeleton and limbs.

different treatment of them, or possibly the rapid, temporary abandonment of the complex following these events.

Animal bone

Animal bone was generally scarce or absent in primary contexts, and the exceptions seem to have been carefully placed deposits, like the cattle acetabulum and human femur mentioned above. Examples include pig, cattle, and articulating caprine bones mingled with disarticulated human remains in a compact deposit at the base of segment 7 of the outer outwork, and a smaller quantity of fragmented pig, deer, cattle and caprine clustered beside a substantial pottery deposit on the surface of the charcoaly primary silt in the east butt of segment 4.2 of the inner outwork (Fig 3.95). In subsequent Neolithic ditch fills, bone was heavily concentrated in segments 2, 3, and 4 of the enclosure and segments 5 to 8 of the inner outwork. In segments 2–4 of the enclosure, the highest concentrations were in phase VI deposits, as they were to a lesser extent elsewhere. In the inner outwork, the highest concentrations were in the phase V silts in segments 5 to 8.

Articulations in general were scarcer and more evenly distributed than in the central area. They were also different in character: limb extremities accounted for little more than half the total. Noteworthy finds included an articulating beaver hind limb and two articulating sheep forelimbs in a dump of bone in the phase V silts of segment 5 of the inner outwork, and two rows of articulated cattle vertebrae in the phase III fills of the inner and middle outworks (Figs 3.93, 3.98). Like these, most articulations suggestive of butchery tended to occur in the outwork ditches on the south and east sides of the spur. The condition of an almost complete articulated dog, on a stable surface in the largely silted enclosure ditch (Fig 3.87), suggests that it may have been deliberately covered up, rather

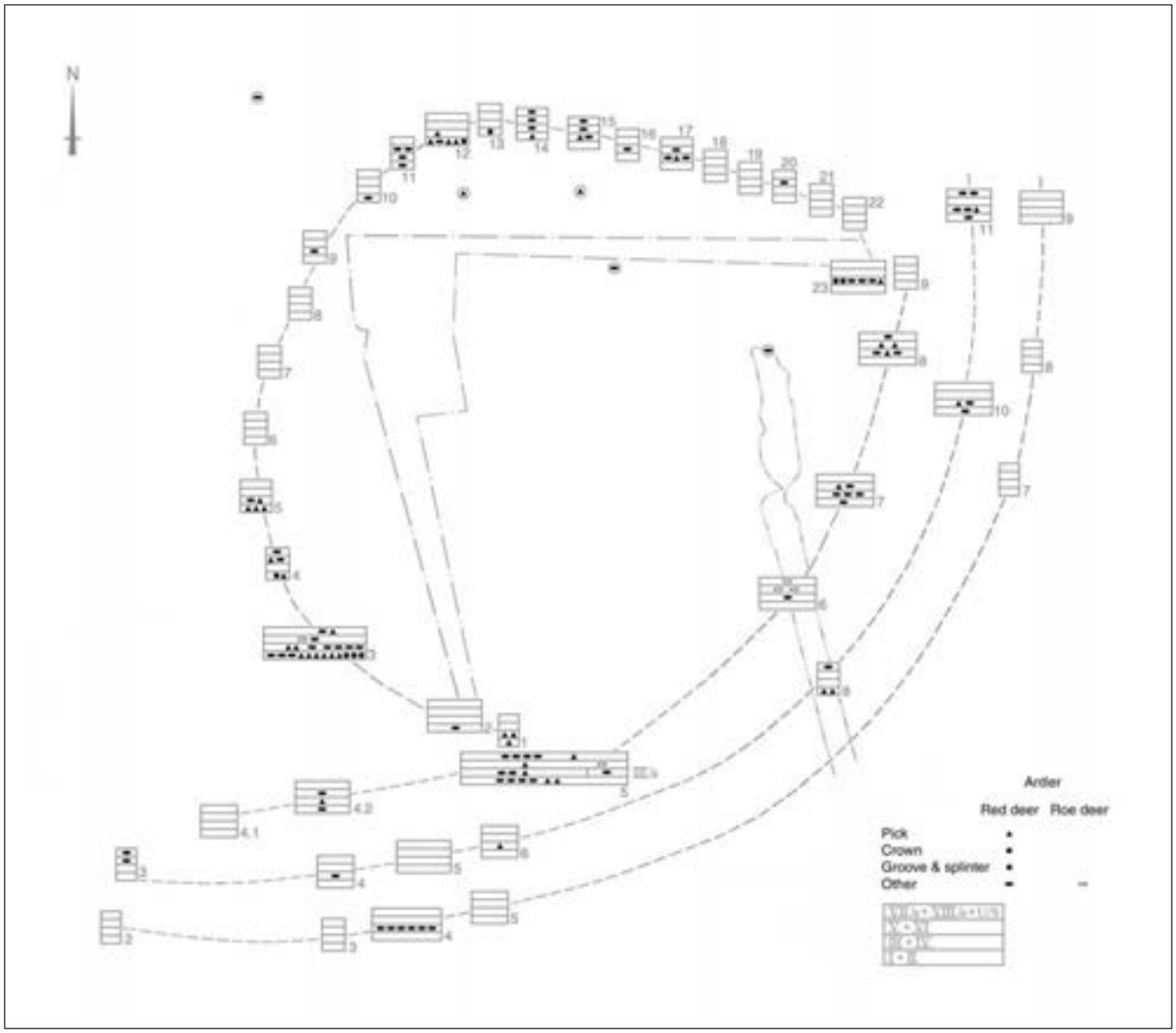

Fig 3.126 Stepleton spur. Distribution of antler.

than left to weather and be scavenged, a treatment paralleled by that of some of the human corpses. There were no substantially complete animal skulls like those of the central area. A large cattle horncore with some skull attached was, however, placed, in the north-east butt of segment 8 of the outer outwork, surrounded by a rough setting of large flint nodules.

Antler

Antler was more frequent than in the central area. In the Stepleton enclosure it was concentrated in the same segments as animal bone, as well as in the north of the enclosure circuit, in segments 11–17. Its incidence contrasted with that in the central area in that there was very little in pits and there were numerous finds of antler picks, some on ditch bases (Figs 3.62, 3.126). As in the main enclosure, picks were unevenly distributed and occurred at all stages of the ditch sequences, often unassociated with recuts. In the south-west of the enclosure in particular, picks and other antler implements often seem to have been carefully placed, most spectacularly in a natural cavity in the north butt of segment 3 (Fig 3.86). Other examples include two picks lying side-by-side and parallel in the rubble fills of segment 1, three parallel in the phase II silts in the north butt of segment 5, and an antler crown rake placed on top of an antler pick in the north butt of segment 4 (Fig 3.89). Given that antler picks are likely to have been used to dig all the ditch segments and pits, their uneven distribution in both areas and their sometimes careful placement suggest that their deposition was more than the discard of worn-out implements at the end of an episode of construction.

Another feature of antler distribution on the spur is the recurrent association of antler tines and fragments with compact deposits of knapping debris, sometimes refitting. Given that antler batons make excellent knapping hammers, there is a distinct impression that the

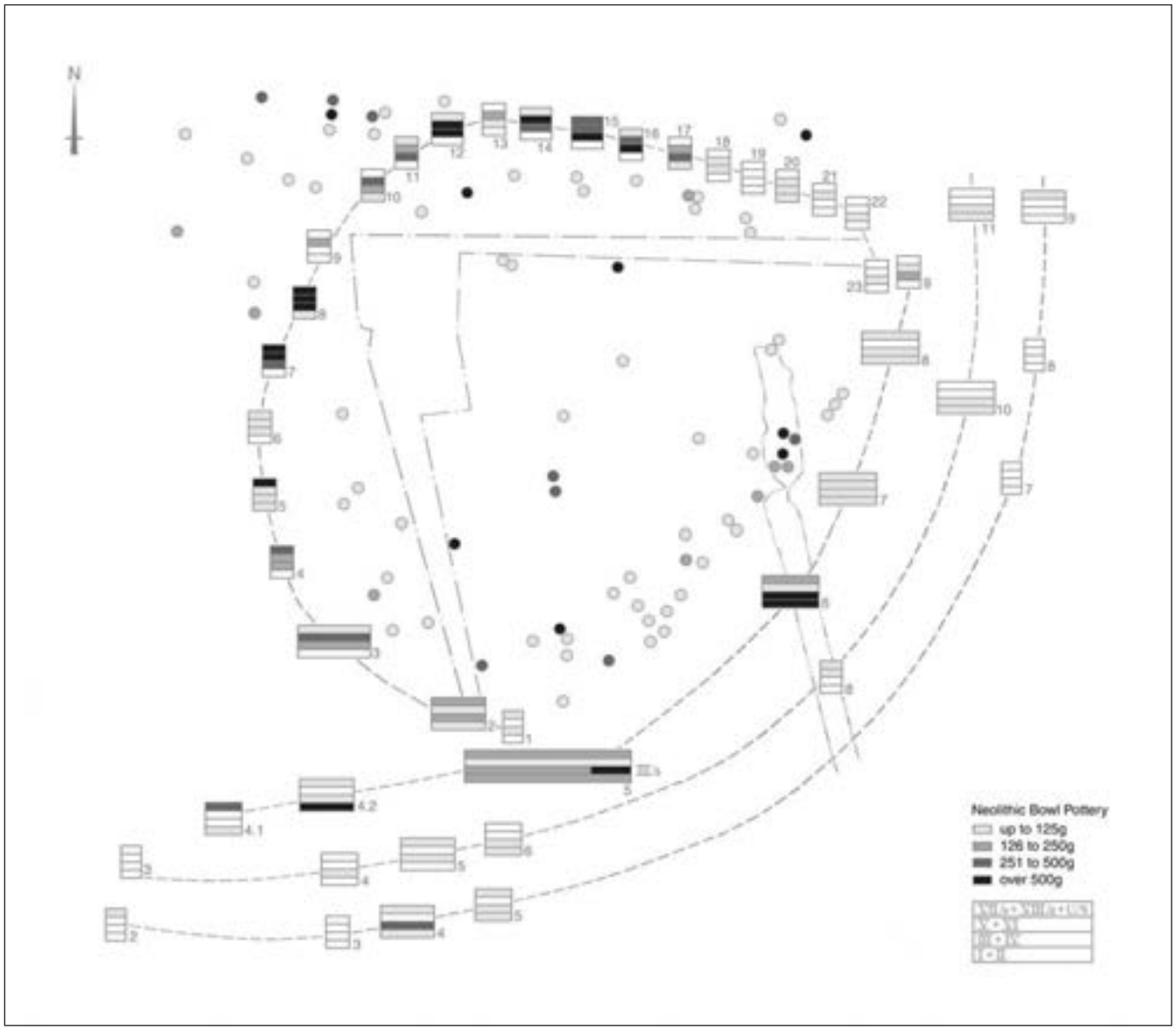

Fig 3.127 Stepleton spur. Distribution of Neolithic Bowl pottery.

debris from single episodes and at least some of the hammers used to generate it were deposited together. None of the antler fragments is sufficiently well preserved for relevant wear to be detectable on the ends. There were four such fragments among abundant knapping debris in the phase III fills of segment 4 of the outer outwork; other examples were found in small clusters in the phase III fills in both butts of segment 3 of the enclosure, and in primary and phase III contexts in segment 5 of the inner outwork.

Pottery

As in the central area, pottery was generally scarce in primary contexts, except in two specific deposits, both in segment butts in the inner outwork. In the east butt of segment 4.2 there were more than 1 kg of well-preserved sherds, most of them in a cluster on the surface of the primary silt. The sherds of each of four incomplete vessels, including cup P47 (Fig 9.4), were separate within the cluster. In the south-west butt of segment 6, more than 600 g of relatively well-preserved sherds, most of them from two vessels (Fig 9.5: P60, P68) were placed over the human femur and cattle pelvis fragments mentioned above, in a setting progressively covered by the phase I and phase III deposits. Pottery was almost ubiquitous, although of varying frequency, in subsequent ditch fills. It was concentrated in the pits and the enclosure ditch (Fig 3.127).

Differences in the balance of Neolithic Bowl fabrics on the Stepleton spur and in the central area have already been highlighted (Fig 3.72). Variations within the spur are summarised in Figure 3.130. As in the central area, flint-tempered fabrics, assumed to be the most immediately local, were dominant but occurred in varying portions. Gabbroic fabrics were almost absent from Stepleton (Table 9.13). Other non-flint fabrics were generally rare in the outworks, less so in the enclosure and in pits. Where they did occur in the

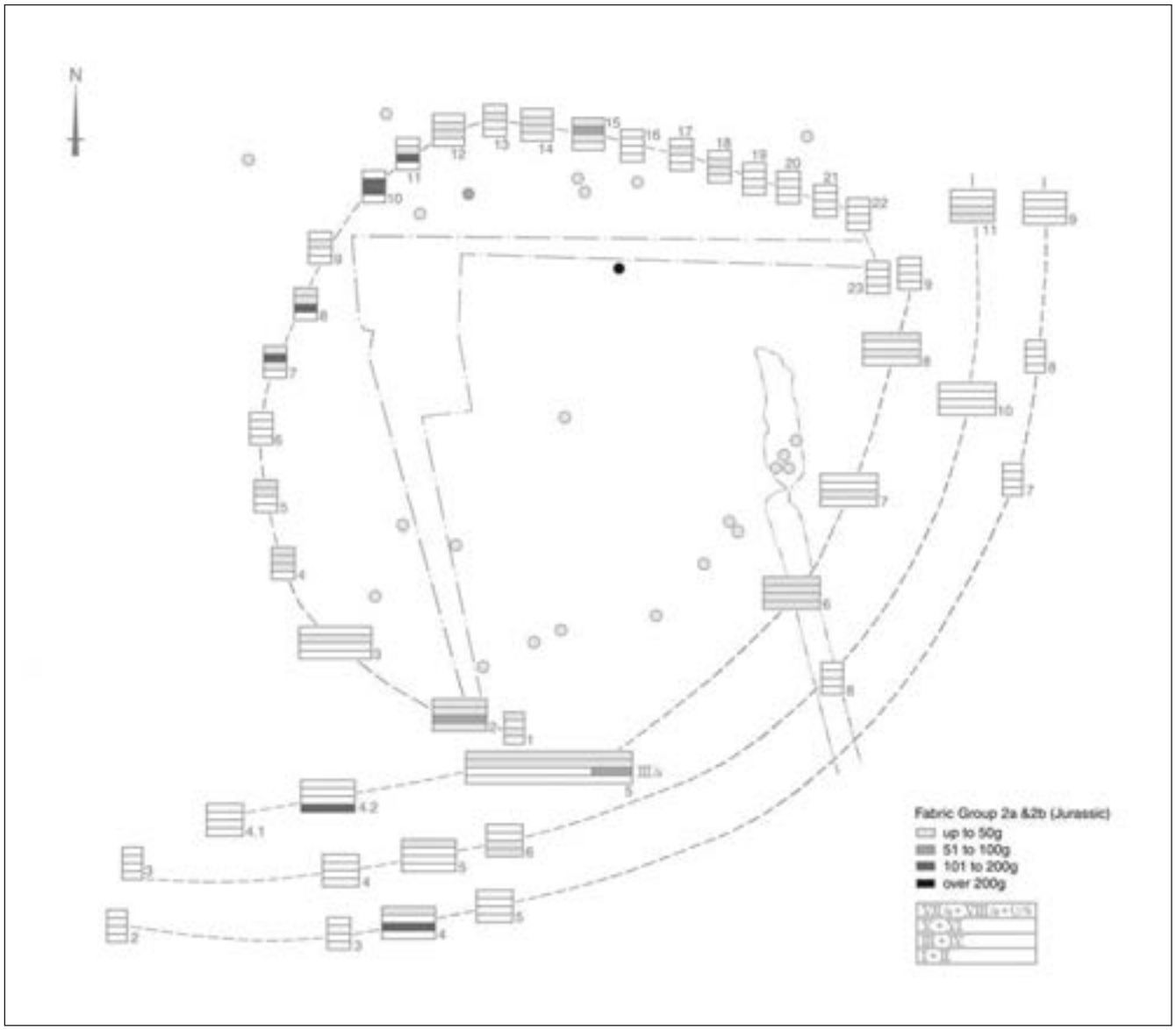

Fig 3.128 Stepleton spur. Distribution of Neolithic Bowl pottery of fabric groups 2A and 2B (Jurassic).

outworks they were localised, most consisting of sherds from Jurassic-tempered vessels and vessels in fabric group 6 in the two deposits mentioned above, in phase III deposits in segment 4 of the outer outwork, and in the phase III/a recut in the east butt of segment 5. Jurassic fabrics, far less abundant than in the central area, were concentrated in segments 7–8 and 10–12 of the enclosure on either side of a probable entrance giving onto the route to and from the central area (Fig 3.128). Sherds of one group 6 vessel (Fig 9.7: P107) were found on both sides of this entrance, in segments 8 and 11, although stratified in a Neolithic context only in the latter. This fabric was more abundant than flint-tempered wares in phase VI contexts in the enclosure, and was also exceptionally frequent in the phase III/a recut in segment 5 of the inner Stepleton outwork (Fig 3.129). The uneven frequency of different fabric groups from segment to segment and from pit to pit (Figs 3.128–9) reflects the presence in some of substantial parts of single pots. The densest concentration of sherds was in the intermittent phase IV deposits, cut into the phase III fills.

There were two finds of Peterborough Ware in Neolithic contexts. A single Fengate Ware rim fragment sherd (Fig 9.10: P159) in the phase VI fills of segment 7 of the enclosure formed part of an assemblage of Neolithic Bowl pottery, including a vessel which gave a mean date of *3430–3370 cal BC* from samples of sooty residue on two sherds (Table 4.1: OxA-7926, OxA-7844). In segment 6 of the middle outwork, a substantial part of a Mortlake Ware bowl, in relatively fresh condition (Fig 9.10: P156) was found in the upper phase III fills, stratified above articulated cattle vertebrae dated to *3500–3340 cal BC* (Fig 4.6: *UB-4136*). The contexts of both vessels accord with a probable *floruit* for Peterborough Ware of *c* 3500–2500 cal BC (Gibson and Kinnes 1997, fig 1).

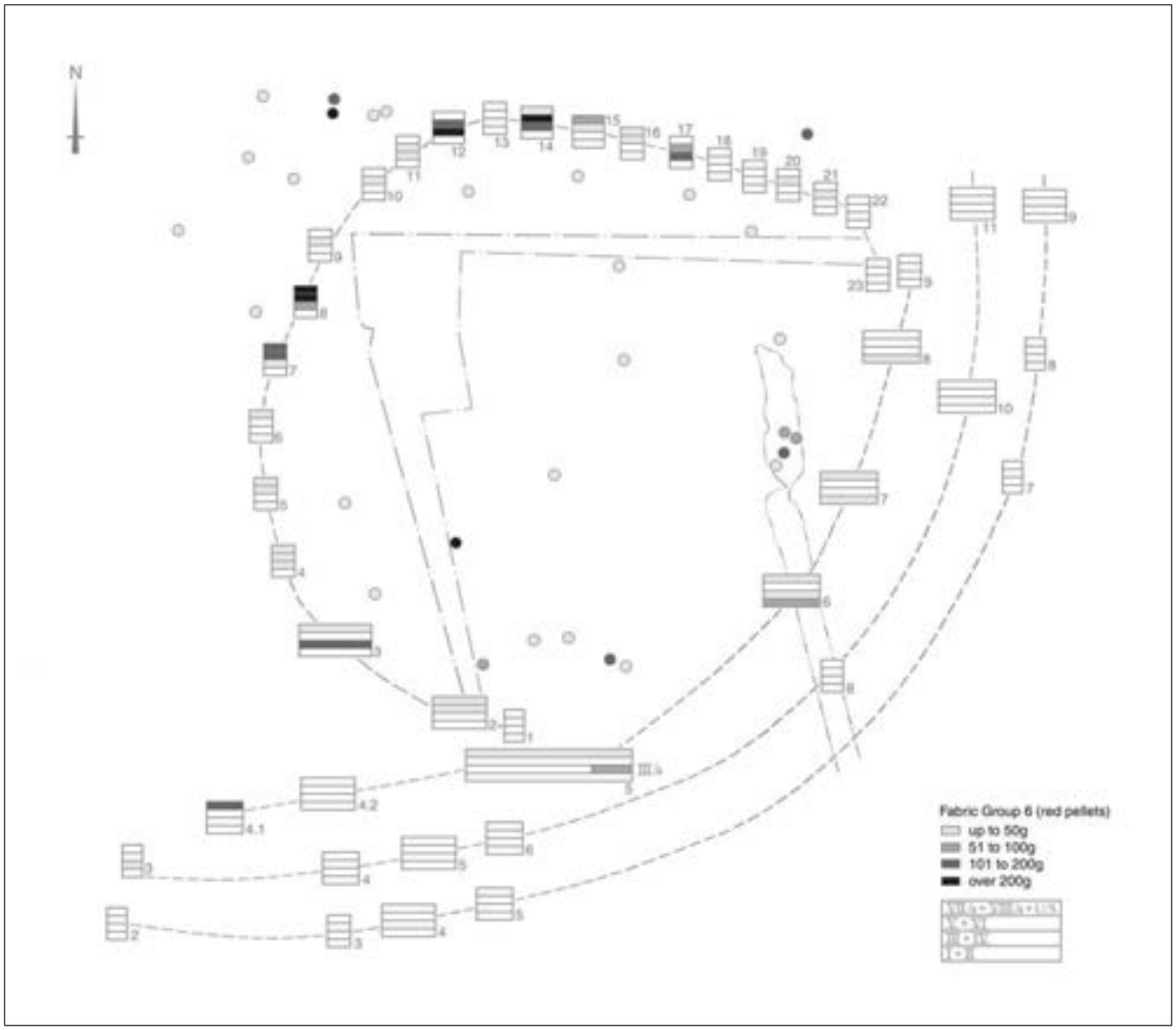

Fig 3.129 Stepleton spur. Distribution of Neolithic Bowl pottery of fabric group 6 (red pellets).

A further Fengate Ware rim sherd (Fig 9.10: P158) came from the phase VIII/a fills of segment 6 of the inner outwork.

Lithics

Struck flint was unevenly distributed (Fig. 3.131), and was most abundant in the upper, post-Neolithic, fills of segments 5–8 of the inner outwork, as was Bronze Age pottery, making it likely that the lithics from these contexts are a mixture of redeposited Neolithic material, perhaps ploughed downslope from the enclosure, and a later industry, a possibility heightened by a different balance of core forms (Table 10.35) and by higher frequencies of scrapers, miscellaneous retouched pieces, piercers and fabricators or rods than in Neolithic contexts on the spur (Table 3.16). In Neolithic contexts, the simple correlation between high densities of struck flint and deposits of Clay-with-Flints observed in the central area was not replicated. Struck flint was indeed plentiful in contexts on the Clay-with-Flints, notably in pit 1A F350 and some of the neighbouring pits and in the primary levels of the central parts of segment 6 of the inner outwork and of segment 8 of the middle outwork (Fig 3.131). These assemblages have something of the industrial aspect of those from Clay-with-Flints contexts in the central area (see Saville, 10.2), and may similarly reflect the opportunistic use of material exposed during ditch digging. They are, however, different in character. Instead of being scattered through the fills, the knapping debris in the Stepleton ditches was in compact clusters comparable with other, often larger, clusters in ditch segments to the east and west, away from the Clay-with-Flints. All were characterised by high frequencies of cortical flakes, cores, flaked lumps and sometimes by the presence of unworked nodules, hammerstones, or antler tines and fragments. Notable examples were in the primary silts of segment 10 of the middle outwork, on the surface of

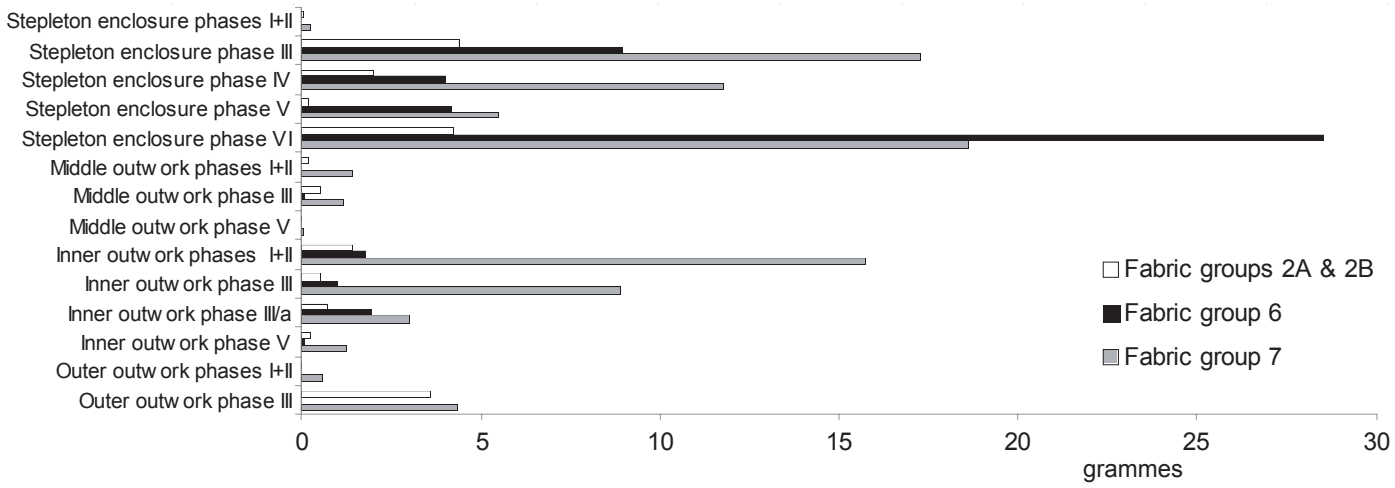

Fig 3.130 Stepleton spur. Principal fabric groups in ditch contexts, by weight per 1 m length of excavated ditch. For the localised phase IV deposits in the Stepleton enclosure, the phase VI deposits in the same ditch, which were present only in segments 2 to 8 and 10 to 17, and for the localised phase III/a deposit in the east butt of segment 5 of the inner outwork, the excavated length of ditch has been reduced to the approximate linear extent of the excavated deposits (24 m, 110 m, and 13 m respectively).

the primary silt in the south-east butt of segment 2 of the enclosure, in an hiatus in the phase III fills in the south-east butt of segment 3 of the enclosure, in the phase III fills in the south-west butt of segment 8 and in segment 2 of the enclosure, and, above all, in the phase III fills of segment 4 of the outer outwork. The small clusters give the impression of a sample of (even possibly all of) the debris of a single episode, placed in the ditch together with the hammer(s) used to produce it. The extent of refits in segment 4 of the outer outwork could be compatible with knapping over the ditch (see Saville, 10.2). Such clusters did not occur after phase III in the enclosure, but continued to be deposited into phase V in the inner outwork.

The nodules from which these deposits originated (see Saville, 10.2; Figs 10.29, 10.32, 10.40, 10.41) could not have been extracted from the Middle Chalk of the spur, and it is questionable whether they could have been obtained anywhere on the hill. Knapping debris was more frequent in the ditches, especially the outworks, than the pits, and this is reflected in the incidence of retouched forms, which made up *c* 7% of artefacts, excluding unclassified burnt flint, in the pits, 3% in Neolithic levels in the enclosure ditch, and 1% or less in the outworks. The relative frequency of lithics and pottery in pits is so variable as to suggest deliberate selection of what was put into particular features (see 3.5.6).

Although hammerstones occurred in some of the knapping deposits, their overall distribution was diffuse, far more so than in the central area. All were of nodular flint, to the exclusion of the quartzite pebbles and flint beach pebbles found in the central area. Axeheads and flakes and fragments from them are almost all of flint, in contrast to the numerous non-local stone examples in the central area. The three exceptions are of greenstones, probably from the south-west (see Smith, 10.1). The distribution of all axeheads, whole or fragmentary, was diffuse, as was that of most types of lithic artefact, including scrapers and leaf arrowheads. The latter were scarce and thinly scattered. Of a total of nine from the spur, the seven that were not among the ribs of two young male skeletons were spatially and stratigraphically remote from them. They also bore no relation to the burning of the inner outwork, since three would have been buried already (in the rubble fills of the enclosure and in the primary silts of the middle outwork) by the time this occurred and the remaining four came from post-Neolithic contexts in the upper fills of the ditches or were unstratified. Two of the three laurel leaves from the spur were in the phase V silts of the south-west butt of segment 7 of the inner outwork, stratified above both the successive articulated burials in the segment.

The two categories whose distributions differed markedly from that of other lithics were serrated flakes and quern and rubber fragments, both of which were also unevenly distributed in the central area. On the Stepleton spur, serrated flakes were concentrated in pits and in the north of the enclosure, with a cluster of 29 in segment 12, more than half of them in a small pit cut into the phase III fills in the north-east butt (Fig 3.90: L2A). Quern and rubber fragments clustered in segments 7–8 and 10–13 of the enclosure and in some of the adjacent pits. The commonest rock was Heathstone from south-east Dorset, in contrast to the frequency of Old Red Sandstone from the Mendips in the central area (see Roe, 10.2).

Burnt flint

Burnt flint was many times more abundant than in the central area (roughly 1 kg to every 1200 pieces of struck flint, in contrast to 1 kg to every 6500 pieces in

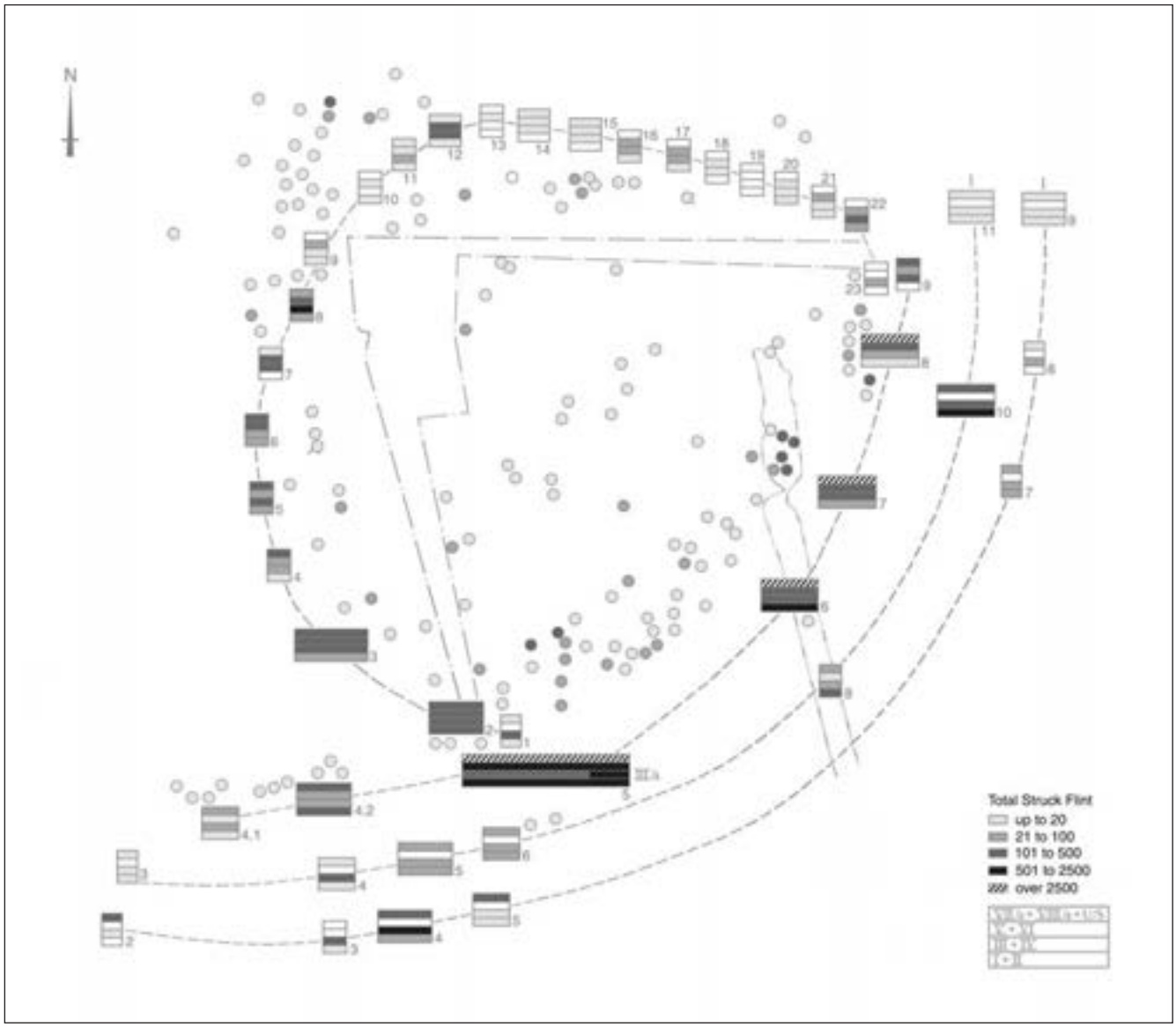

Fig 3.131 Stepleton spur. Distribution of struck flint.

the central area, although not all burnt flint was retained from either). It was absent from the middle outwork and scarce in the enclosure and outer outwork, apart from one localised concentration in each. It was rarely of 'pot-boiler' type, and seemed to have been the product of fortuitous burning. In segments 4–7 of the inner outwork, however, it was consistently present in the primary silts or immediately above them. By far the highest concentration in a Neolithic context was in a deposit of charred timbers and burnt clay in cutting 1 in segment 6, where the earthwork was cut through and built of Clay-with-Flints. Here, the burning of the bank structure would have generated burnt flint and clay, and further burnt flint in the overlying levels could reflect the weathering of the burnt rampart into the ditch, as could burnt flint in phase III and V contexts in the other segments. Burnt clay and burnt flint in features on the Clay-with-Flints fissure may reflect no more than the lighting of fires in proximity to both materials, which would have been exposed and brought to the surface by pit-digging. Beyond the fissure, the rare cases where both occur in pits may suggest that the burnt clay was carried to them (see 3.5.6).

The greatest concentration of burnt flint, far exceeding that in all Neolithic contexts, was in the post-Neolithic upper fills of the inner outwork, especially in segment 5. This material was different from that in fourth millennium contexts, in that much of it was of pale, calcined 'pot-boiler' type. It almost certainly resulted from post-Neolithic activity and may well be contemporary with the Bronze Age pottery from the same levels.

Charcoal and charred plant remains

Charcoal from the inner outwork ditch was dominated by oak and hazel, that from its postholes by oak (see Austin *et al*, 6.1), probably reflecting the main

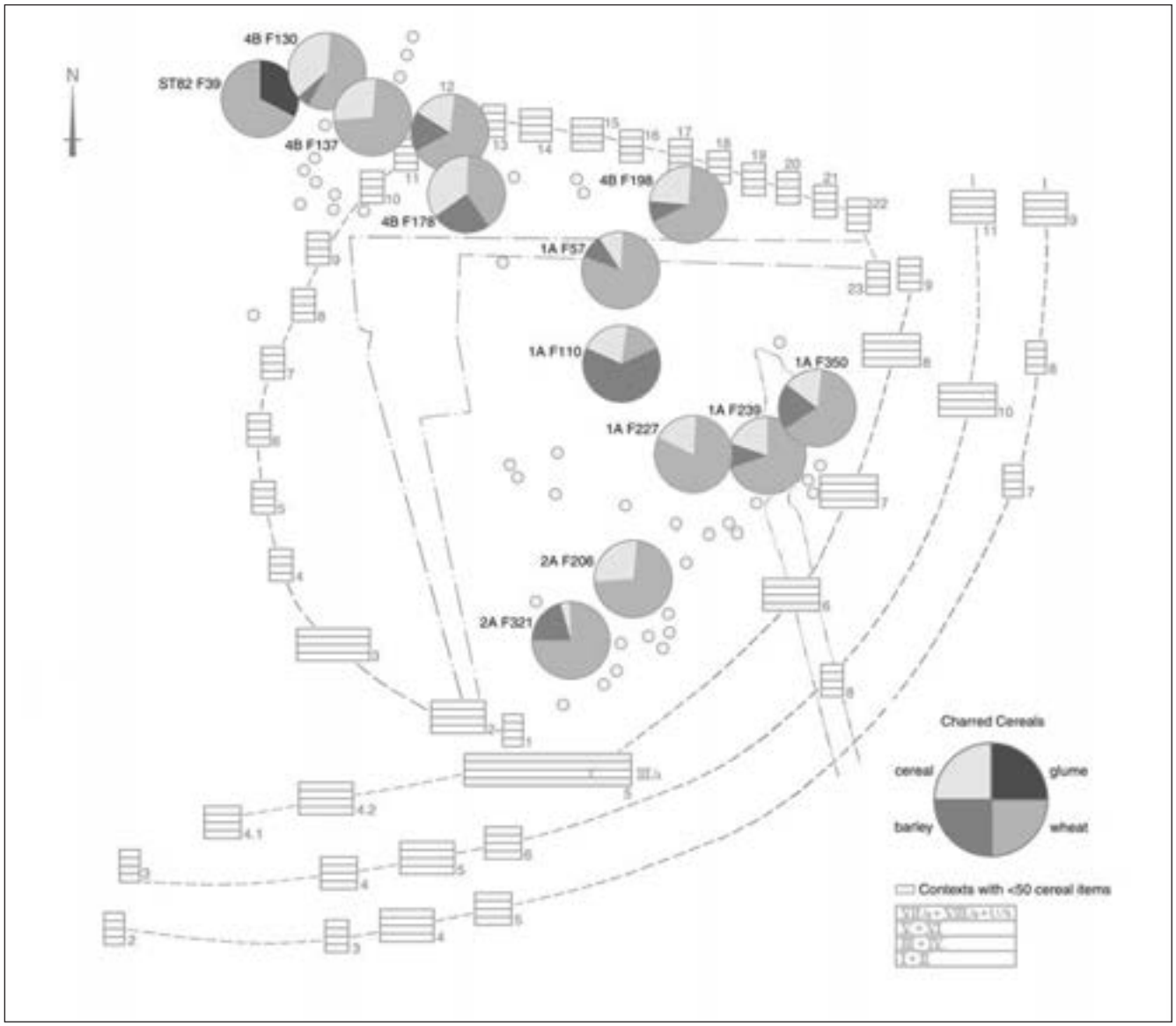

Fig 3.132 Stepleton spur. Distribution of charred cereals. All the pits represented are of early Neolithic date except for 1A F227+F239, which are middle Bronze Age.

materials of the rampart structure. Charcoal from the enclosure ditch and the pits was diverse, including high levels of scrubby species likely to have been used for firewood. In the enclosure charcoal-blackened fills characterised small, pit-like recuts in segments 2, 3, 7 and 12. The last of these also contained the only significant grain deposit from any ditch, grain otherwise occurring predominantly in pits (Fig 3.132; see Jones and Legge, 6.2). Association of charred material with infant skull fragments in segments 3 and 12 may be echoed in pits 1A F57 and 4B F137, in both of which further infant skull fragments were associated with charcoal, charred grain and charred hazelnut shell. Hazelnut shells were concentrated in pits in the north and north-west of the spur (Fig 3.133), as were exceptional plant remains, notably Cornish heath (see Austin *et al*, 6.1), a grape pip, and an exceptionally large emmer spikelet deposit (see Jones and Legge, 6.2).

General patterns

Approaches and entrances

The spur is steepest to the north-east of the enclosure, so that this approach is likely to have been used less often than the remaining, gentler slopes or the spur-ridge route to and from the central area. Even if the enclosure segments here, which would have been sealed at an early stage, are disregarded, cultural material is generally less abundant in this area than elsewhere (Figs 3.124–9, 3.131–3).

The enclosure

A probable entrance in the north-west of the enclosure ditch has been identified on topographic and morphological grounds, perhaps originally flanked by segments 8 and 10, with segment 9 dug at a later stage (see 3.5.2). Cultural material of all kinds was concentrated in pits and ditch segments in this area, with the

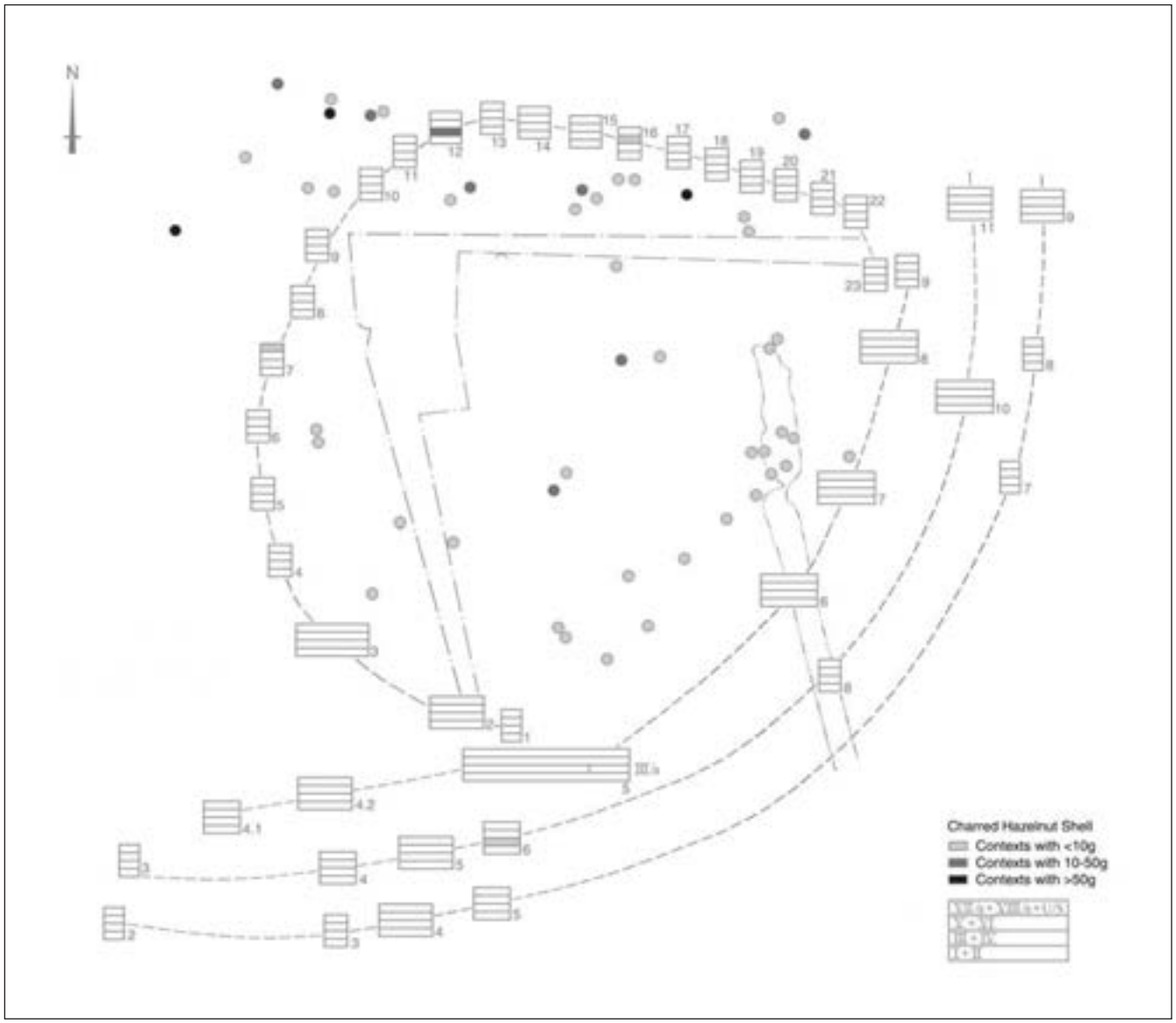

Fig 3.133 Stepleton spur. Distribution of charred hazelnut shell.

exception of segment 9, which was shallower than the rest and out of line with them. Particular features of this concentration included the following:

- Stone artefacts were concentrated in pits in this area and in segments to either side of the entrance, as they were at the eastern and Long Barrow entrances to the central area.
- Hazelnut shell was concentrated in pits in the north and north-west of the spur (Fig 3.133), echoing a dense hazelnut deposit in the Long Barrow ditch butt beside the southern entrance to the central area. Exceptional plant remains were also concentrated in the north-west, mirroring the concentration of rare charcoals (box, and, again, vine) in the north-west of the main enclosure ditch, close to an inferred entrance from the hillfort spur (see 3.3.8).
- Pottery was concentrated to the south-west side of the entrance, in segments 7 and 8, as pottery was concentrated at the south side of the eastern entrance to the main enclosure (Figs 3.127, 3.63). On both sides of the entrance it included the highest frequencies on the spur of pottery from Jurassic sources, which was generally far more frequent in the central area, mirroring the frequency of fabric group 6, far more abundant on the spur than in the central area, in the south long barrow ditches at the southern entrance to the main enclosure, as if pottery used in one enclosure was deposited at the entrance to the other. There is a further echo here of a practice widespread in the central area in the nodule-packed slot cut into segment 8, a feature not replicated elsewhere on the spur (Fig 3.88).

The inner outwork

The timber gateway in the inner outwork, flanked by the expanded butts of segments 4.2 and 5, was marked, like the enclosure entrance, by a unilateral concentration of pottery in the butt of segment 4.2, described above, just above the ditch bottom on the

surface of charcoaly silt probably derived from the burning of the rampart, and overlain by clusters of animal bone at two successive levels in the phase III fills. On the other side of the gateway, in the butt of segment 5, were an antler pick in a fissure in the ditch base and a second one with some animal bone in the overlying charcoal-rich silts. Above this in the phase V silts was a further antler pick in a concentration of animal bone.

The next causeway to the east, between segments 5 and 6, was marked from the first by the deposit of a human femur, cattle pelvis fragments and pottery in the south-west butt of segment 6, as described above. Whatever may have originally lain opposite it in the east butt of segment 5 was removed by a recut made after the phase III fills had accumulated, which deepened and expanded the butt and contained a concentration of cultural material, which was succeeded by a cluster of animal bone in the phase V fills. It is, however, difficult to envisage this causeway as an entrance, because the protected chalk of the bank was continuous across it (Fig 3.81).

Deposition in the ditches and its implications

Many deposits in the outwork ditches reflect similar practices to those in the two enclosures. Obvious examples are the antler picks, disarticulated human remains, animal bone, knapping clusters and semi-complete pots placed on the base of the newly built inner outwork, or in fissures in it (see 3.5.4).

The pottery deposit on the surface of charcoaly primary silts in segment 4.2 beside the inner outwork gateway (Fig 3.95) points to activity soon after the destruction of the rampart, a conclusion reinforced by the replacement of at least one burnt post in the side of the gateway (see 3.5.4). On a longer timescale, the quantities of artefacts and animal bone in the phase III fills of the inner outwork and in the phase V fills of the enclosure (Figs 3.124–9, 3.131–3) must reflect something of the scale of the use of the spur after that event, while the phase III/a recut in segment 5 and the wealth of material in the phase V fills of the same ditch and, above all, in the phase VI fills of the enclosure, evidence substantial use of the spur after the deaths of two young men by arrowshot.

The ditch deposits also provide some inkling of where the activity which generated them took place, and this often seems to have been outside the ditches rather than inside them. In all the ditches, above the coarse chalk rubble, finer fills derived from the interior were generally called L3A, and those derived from the exterior L3B. As the segment catalogues show, artefacts and animal bone were often evenly distributed between the two. Several charcoal-rich fills in the middle and inner outworks derived from the exterior (Tables 3.10–11), as did some particularly rich deposits, notably the fill of the phase III/a recut in the east butt of segment 5 of the inner outwork and the refitting knapping debris in phase III of segment 4 of the outer outwork.

Another hint of the location of different activities is provided by the relative frequency of struck flint and its character. Lithics from pits seem to be a sample of material used and discarded in and around the enclosure, while those from the ditches include a higher proportion of the debris of flint-working (see Saville, 10.2). Indeed, the relative frequency of flint and pottery varies between the pits and the ditches. In the pits there was a mean of 4 g of pottery to every piece of struck flint, in contrast to 3 g for Neolithic levels in the enclosure ditch, 0.8 g for Neolithic levels in the inner outwork, and 0.2 g for Neolithic levels in the middle and outer outworks. These variations suggest that knapping waste may have been preferentially placed in the ditches, especially those of the middle and outer outworks, and hence that knapping may have taken place towards or beyond the periphery of the enclosure.

Neolithic activity on the spur

Some of the distinctions between the two enclosures and their related earthworks are attributable to the defensive character of the Stepleton outworks. Others may reflect complementary ceremonial functions, notably the interment of fully articulated adults, not all of them victims of violence, in pits and subsequently outworks, in contrast to the absence of human bone from the primary levels in the Stepleton enclosure ditches. Others again tend to suggest the more domestic role already proposed for the smaller enclosure (Mercer 1980, 55–6; 1988, 100–1). They include lower frequencies of artefacts from remote sources, less obviously deliberate arrangement of deposits in pits and in the phase VI fills of the enclosure, more frequent primary knapping waste, more frequent exposure of animal bone to canid gnawing (Fig 8.1), and more frequent burnt material of all kinds in pit fills (Fig 3.115). Taken together, these suggest more of an emphasis on day-to-day living on the spur than in the centre.

The third and second millennia BC and beyond

Beaker pottery was concentrated in the south and east of the spur, in the tops of segment 8 of the middle outwork, and segments 2 and 5 of the outer outwork. An isolated occurrence in the north-west, well-removed from these, was in segment 9 of the enclosure, in the middle of what had almost certainly been an entrance. Here and in the outer outwork the material occurred in recuts. Quantities were small, but had a domestic aspect, in the sense of including rusticated sherds as well as comb-impressed or incised examples, and of being associated with animal bone and struck flint. The exception was segment 2 of the outer outwork, where there were three bases and one rim sherd without other fragments.

Early Bronze Age wares were concentrated in the tops of segments 5–8 of the inner outwork. In most of segment 5 and the south-west butt of segment 6 their

focus was a midden-like deposit which seemed sometimes to have been cut into the ditch fills and sometimes dumped onto them. Exceptional finds included a copper alloy awl and a triangular bone or antler bead decorated like an amber or jet spacer plate. In this deposit, and the phase VIII/a fills which overlay it and extended beyond it, the pottery was associated with animal bone and with the greatest concentrations on the spur of struck flint (Fig 3.131) and some of the greatest concentrations of burnt flint. The distinctive composition of the struck flint suggests that a substantial proportion of it may be of Bronze Age date (see 3.5.7). The burnt flint may similarly be composed of long-present Neolithic material and newly generated Bronze Age material. The isolated Beaker recut in segment 9 of the enclosure suggests recognition of a former entrance, as does the extension of the early Bronze Age 'midden' from segment 5 of the inner outwork into the south-west butt of segment 6. By this time the spur had become more open. Molluscs from the 'midden' deposit in segment 5 of the inner outwork and from the Beaker recut in segment 2 of the outer outwork both included significant proportions of catholic or open-country varieties unparalleled in the Neolithic levels (see Bell *et al*, 5.2). By this time too the area west of the enclosure had come into cultivation, since ploughsoil had accumulated in segment 2 of the outer outwork before the Beaker recut was made into it.

Small quantities of middle Bronze Age sherds occurred in the same contexts as the early Bronze Age material, especially in segment 8 of the inner outwork. This may relate to an inhumation and a possible kiln, oven or corn-dryer dated to this period (see 3.5.7), as well as to the Everley Water Meadow burnt mound in the valley below (see Bell *et al*, 5.3.3). Late Bronze/early Iron Age pottery was concentrated in the upper fills of segments 2 and 3 of the Stepleton enclosure, in association with relatively well-preserved animal bone. There were smaller quantities in segment 5 of the inner outwork, including sherds of a furrowed bowl in the east butt.

There was little Iron Age pottery. Romano-British use of the spur is reflected by nearly 3 kg of pottery, mainly Black Burnished Ware, extending from the first to the fourth century and concentrated in the phase VIII/a ploughsoils of segments 5 and 6 of the inner outwork (Table 3.12). Together with hobnails from the hollow way running through the inner outwork gate and an early Roman brooch from segment 6 of the same ditch (see 3.5.4), these point to the cultivation and perhaps other utilisation of the spur in the Roman period.

3.6 The Hanford spur

3.6.1 Introduction

The Hanford spur slopes gently south-westwards towards the Stour valley, providing, like the Shroton and Stepleton spurs, one of the gentler gradients onto the hill (Fig 1.4). By 1977 air photograph interpretation and earthwork survey had shown it to be linked to the Stepleton spur by continuous earthworks (Fig 2.7). These are relatively well preserved in the Yew Wood on the Hanford spur, where the 1996 RCHME survey defined them as two parallel causewayed ditches with apparently uninterrupted banks (Fig 2.8). Parts of both were excavated immediately adjacent to the Yew Wood in an area where they diverge. The outer outwork runs downslope to the west, ending where the gradient increases on the north-west side of the Hanford spur, just as the inner and middle Stepleton outworks end where the north side of the Stepleton spur steepens above Coombe Bottom. The inner outwork turns sharply and follows the contour of the spur northward towards the main enclosure for at least 60 m, although its full extent is unclear (Fig 2.7). The results of a magnetometer survey undertaken in 1982 were unsatisfactory, partly owing to the proximity of iron fences. Only discrete anomalies were recorded in an area laid out across the lines of both earthworks where they were visible in air photographs and (just) on the ground, between the northern and western arms of the excavated area (Fig 3.134). Given this result, the absence of linear anomalies from areas to the north and west of the excavated lengths of earthwork cannot be taken as conclusive (Evans 1983: areas H1, H2, H3). It has yet to be established whether the inner Hanford outwork continues north to join the western outwork.

A significant result of the 1996 RCHME survey was the suggestion that the Stepleton–Hanford earthworks were built in two stages. The fact that the outworks running west from the Stepleton enclosure follow the contours for about 200 m then swing uphill diagonally across them (Fig 2.7) prompted the conclusion that from that point westwards fresh earthworks were built over about 500 m, to link two sets of existing outworks, one extending from the Stepleton spur, the other on the Hanford spur (Ch 2). The excavated area coincides with the proposed junction of the Hanford spurworks and the 'new' outworks. Segments 2, 3, and perhaps 1 of the inner outwork and segments 1 and 2 of the outer correspond to the possibly earlier spurworks; segment 4 of the inner outwork and segment 5 of the outer correspond to the possibly more recent connecting earthworks (Fig 3.134). The finds from both ditches and the radiocarbon dates from that of the outer outwork reinforce this possibility, as is discussed below (3.6.4).

Area excavation in 1982 followed Rog Palmer's definition of the earthworks and of possible quarries in the early years of the project and his excavation of trial trenches in 1978 (Ch 2). An area of 4500 m² was stripped, on the Upper Chalk just east of its boundary with the Middle Chalk (Fig 3.134). The surface of the chalk was degraded, full of weathered patches and stripes, grooves and hollows filled with creamy clay. Some natural fissures were exposed in the walls and floors of the ditches.

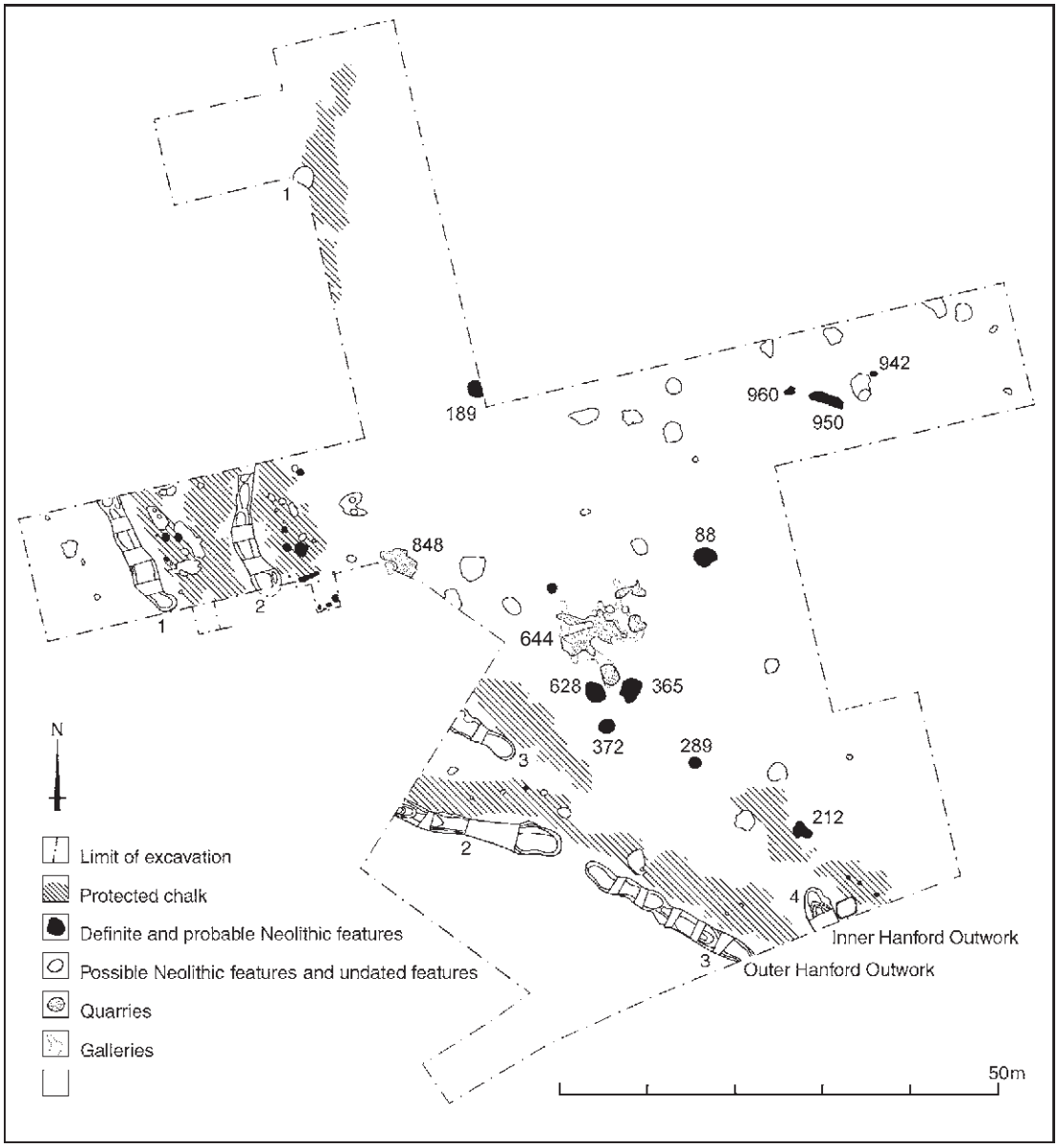

Fig 3.134 Hanford spur. Plan.

3.6.2 The outworks

Each outwork may thus have been built in two stages. It is impossible to tell whether any one stage of one outwork was contemporary with any one stage of the other. If both banks were standing at the same time they may, on the evidence of the protected chalk, have been no more than 3 m apart in the west of the area (Fig 3.134).

Possible gateway

The not-quite-aligned southern butts of segment 2 of the inner outwork and segment 1 of the outer (Fig 3.134) recall the plans of slightly offset entrances in the east and south cross-dykes (Figs 3.37, 3.42). Segment 2 of the inner outwork tapered away from the causeway. The finds concentrated in both butts included human remains, both causeways corresponded to breaks in the protected chalk, and there was evidence for a gateway in the inner causeway (Fig 3.136). The asymmetry of the gateway plan may reflect incomplete recovery. Once F854, a slot on the north side of the entrance, was discovered, late in the excavation, the stripped area was extended to the south-east to recover any other features, although the exercise was restricted by the prior positioning of spoil heaps. A corresponding extension in the bank area of the outer outwork located no second structure. The gateway features were readily identifiable as postholes, unlike many of those in the bank areas (Table 3.18). A groove running from F1054, forming an arc delimiting an area of higher chalk to the east was thought at the time of excavation to be a possible vestige of where the gate had swung. This, however, seems unlikely, in view of extent of erosion from the surface of the hill (see 1.3).

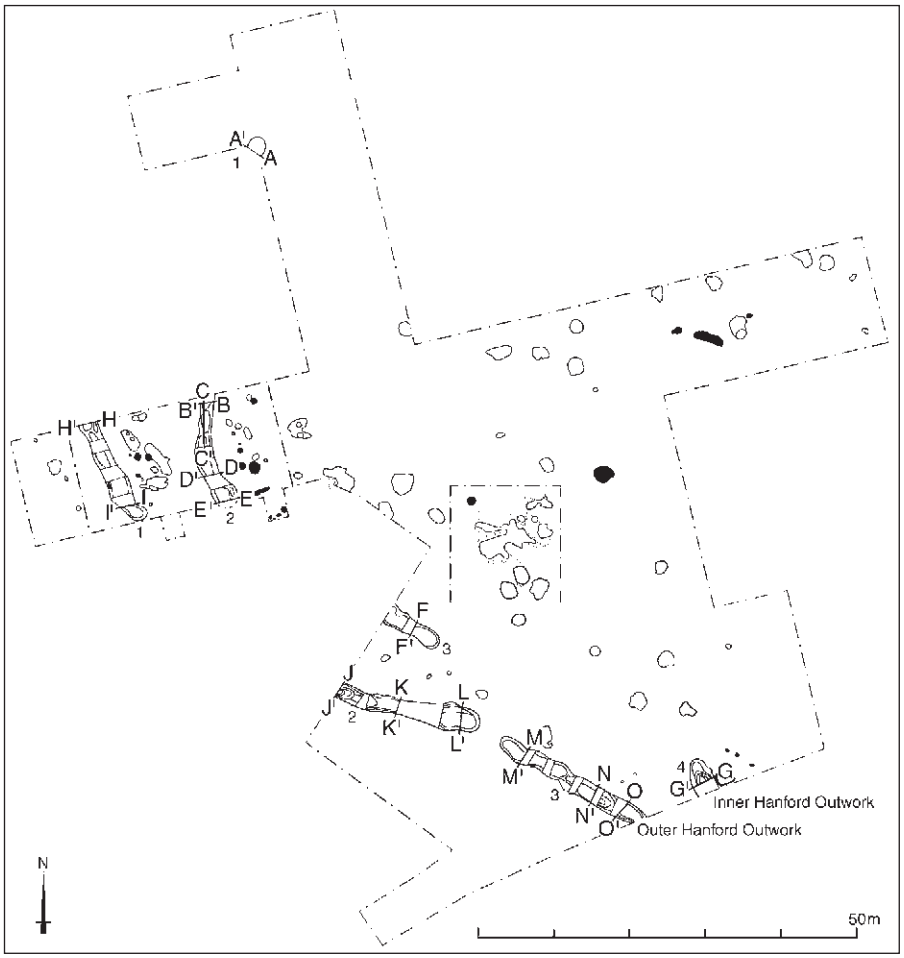

Fig 3.135 Hanford spur. Key to location of ditch sections and larger scale plans.

There are problems in interpreting all of the postholes in the area as parts of a single structure, and they may reflect two phases of buildling. F854 had flint nodules, possibly post packing, in the west end and near the centre. Its main fill, in which there were patches of darker grey material with oak charcoal in a lighter grey matrix (Fig 3.136), gave the impression of mixed, backfilled material, rather than of a post or posts burnt *in situ*. There was no charcoal in the other postholes apparently belonging to the structure and only one of them (Fig 3.136: F1055) had a grey fill. It is difficult to see them all functioning together. The fills of F854 were more comparable with those of postholes in the bank area immediately to the north, the only bank area where postholes had grey fills and contained charcoal. In the gateway area, F1049, F1050, F1054, F1057 and F1058 may have formed part of a structure of different date from F854 and perhaps F1055. The size and definition of these postholes and their location both strongly suggest that they formed a gate or gates.

The inner Hanford outwork

The bank

The protected chalk was discontinuous, ragged, and plough-scored, ranging from 2.60 m to 4 m wide. Its surviving distribution suggests that a bank may have stood where there was no ditch, notably to the north and east of segment 1 and in the 35 m causeway between segments 3 and 4 (Fig 3.134). In the first case, the ditchless bank may have been more extensive than the plan suggests, since 'segment 1' may not have been a ditch butt at all, despite its size and location. Its fills (Fig 3.137: section A–A') were very different from those of all the other segments excavated on the spur, and rather like those of numerous other features which were interpreted as natural solution hollows, although its edges were well defined. Furthermore it contained no artefacts or animal bone, unlike any of the other excavated butts on the spur or elsewhere on the hill. While air photographs show a bank at this point, they do not provide unequivocal evidence for a ditch (eg Fig 2.5).

In the protected chalk behind segment 2 there were silt-filled hollows with irregular plans and undulating bases, sometimes merging into each other. Some were cut by postholes, as were similar features in the bank area in area 2 of the western outwork excavation (see 3.3.5). As there, they are likely to have been natural hollows in the surface of the chalk, better preserved than the large number of other hollows beyond the banks. The only finds were a chalk ball broken in three pieces, which were scattered with two echinoids in F855, close to the gateway and the south butt of the segment. Their deposition may have been connected to the construction of the

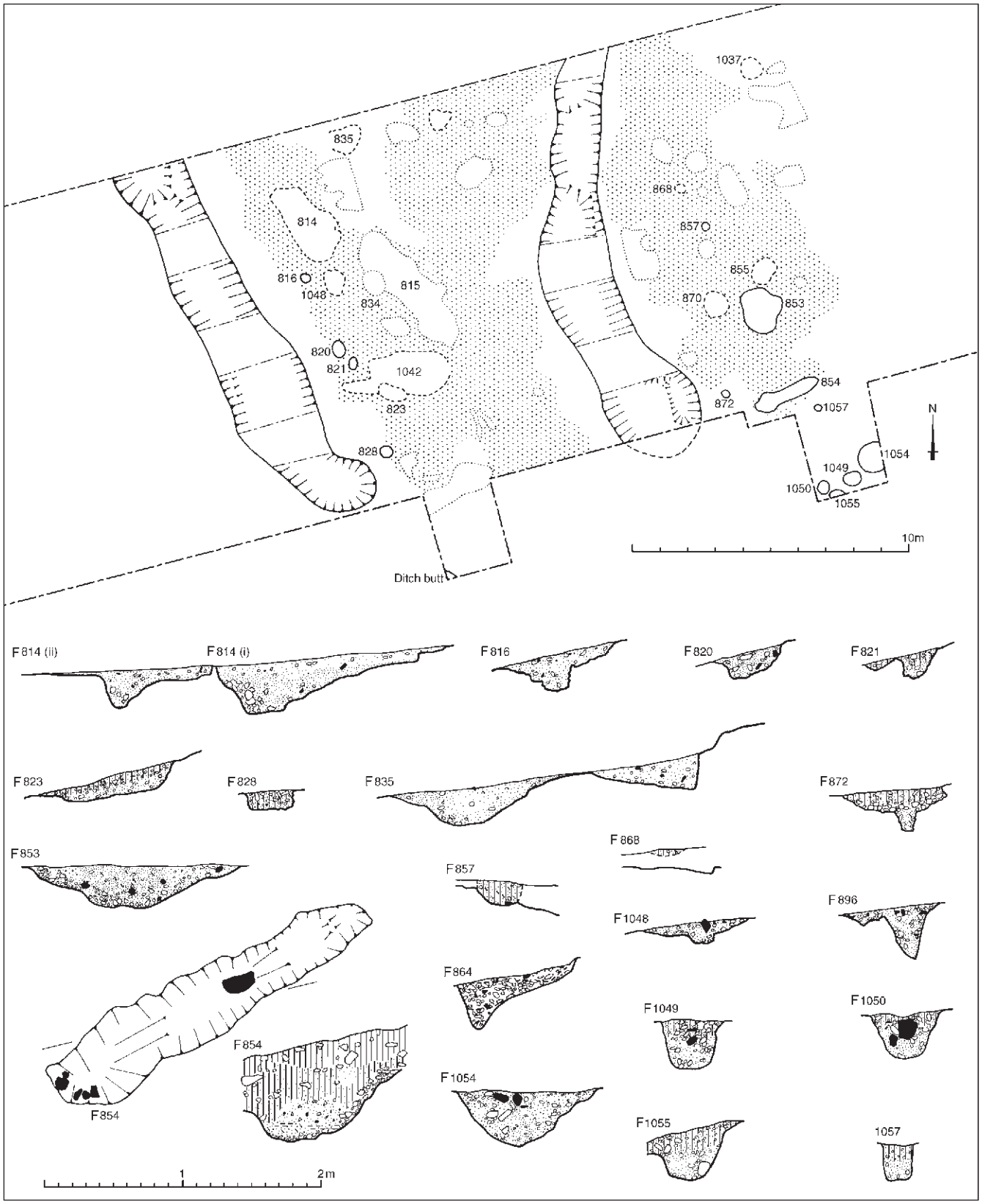

Fig 3.136 Hanford spur. Detailed plan of the entrance area with sections of selected features.

bank. No postholes survived inside 'segment 1' and segment 3. The handful of postholes in the bank area of segment 2 might be resolved into a single, irregular row. The three in the perhaps later bank area of segment 4 formed a regular row (Fig 3.134). If the surviving postholes are any reflection of the original distribution, they may represent a parapet or revetment rather than any more complex structure. Where there is any hint of the size of the original posts they seem to have been in the region of 0.20 m in diameter (Table 3.18).

The ditch

No segment was fully excavated. They may all have been relatively long. Segment 2 was over 14 m long and segment 3 could have been up to 25 m long. These two most extensively excavated segments were both pit-dug, and widest and deepest in their butts. Width and depth were variable, with respective ranges of 1.55–3.60 m and 0.65–1.60 m, on a scale closer to that of the middle and outer Stepleton outworks than that of the inner. Profiles were generally rounded, except for the south butt of segment 2 and the north butt of segment 4, which were flat-based and steep-sided.

Phases I–II

Initial silts were multiple and diverse, sometimes reaching a considerable thickness in segment 2, where the most extensive, L5A, in places derived from the exterior only, was a dark greyish brown deposit with some clay content and some charcoal. Finds were scant, except in the south butt of segment 3, where there was a concentration of pottery and animal bone. Steep interfaces between the phase I silts and the overlying layers in some sections suggest that there may have been recutting, especially in segments 2 and 4 (eg Figs 3.137–9: sections D–D', F–F', G–G'), although this is neither consistent nor certain. In two of the sections across segment 2, one in the south butt and one towards the centre of the excavated length, localised lenses of loose grey silt, with ash, charcoal and burnt chalk lay at the interface between the initial silts and the overlying fills (Fig 3.137: L4A).

Phase III

Chalk rubble with some flint was concentrated near the base of the phase III fills, sometimes interleaved with silts and always grading upwards into silts with varying chalk and flint rubble content, the rubble becoming smaller, less angular, less vacuous and increasingly silt-bound from bottom to top. Human and animal bone were concentrated in the rubble fills (L4) in the south butt of segment 2, the former consisting of adult or subadult tibia fragments and infant or juvenile occipital fragments. There were also fragments of an infant mandible further north along the segment. Near the centre of segment 2 there was a localised lens of grey silt with rubble, ash and charcoal (Fig 3.137, section C–C': L4A). There was a far larger deposit of burnt material in the inner angle of the south butt of segment 3, where the grey silts of L3C, containing charcoal from a wide range of taxa, many of them scrub species, seemed to fill a recut 0.30 m deep, extending from within L4 to the base of the ditch. Here again there was human bone, in this case cut-marked and dog-gnawed infant ilium fragments. A concentration of artefacts and animal bone in this butt did not, however, conform to the limits of the apparent recut, since it extended beyond the ashy layer into both L5 and L4. It included particularly large sherds of pottery, of which at least 95 sherds/343 g, and perhaps as much as 231 sherds/1150g, came from a lugged, neutral, uncarinated, flint-tempered bowl 290 mm in diameter (Fig 9.6: P71). Sherds of this pot occurred in L4 and L3C and at the interface of both over an area of *c* 1.80 × 0.80 m and through a depth range of 0.25 m (Fig 3.138), and were generally fresher and less abraded than the remaining pottery in the deposit. Despite this, only *c* 50% of the rim was present. This and the dispersal of the sherds show that the pot was already fragmented when it was deposited. Since neither the sherds of this pot nor the finds concentration as a whole extended to the baulk, it is unlikely that any remained unexcavated. Dispersed sherds from a single vessel point to a single origin for the deposit, which may perhaps have been placed into a recut made into the surface of L5 and filled in as the lower part of L4 was accumulating. In contrast to the phase III fills of segments 2 and 3, those of segment 4 were almost without finds and completely without pottery.

Phase V

The phase III fills graded upwards into finer silts with chalk rubble, always with very few finds, with the signal exception of human remains in the southern butt of segment 3, where there were an adult mandible, skull, tibia and clavicle fragments, possibly from a male and a female. Further human remains in the lower fill of the phase VII/a recut in the same ditch butt may have been derived from this deposit.

Phase VII/1

The phase V fills were truncated, often planed-off almost flat, and overlain by ploughsoil of mid-brown loam with chalk rubble, comminuted chalk and very few finds, all of them Neolithic where attributable.

Phase VII/a–b

A linear recut up to 1.10 m wide and 0.40 m deep was made towards the outer edge of segments 2, 3 and probably 4, almost entirely confined to the phase VII/1 ploughsoils in segment 2, cutting through them into the phase V silts in segment 3. It was filled with dark brown loam with chalk and flint fragments than in the immediately underlying layers (L2A). In segment 2 this contained animal bone with a small amount of Neolithic Bowl pottery and struck flint. In the southern butt of segment 3 there was a lower fill (L2D) with more chalk and flint than the upper fill (L2A). As well as Neolithic Bowl pottery, the latter contained one sherd of stab-decorated Beaker and a flat base fragment in a probably early Bronze Age grog- and flint-tempered fabric, which, together, may date the recut. In this butt, human remains were concentrated in the lower fill and animal bone in the upper, suggesting that the human bone may have been derived from the phase V fills into which the recut penetrated, while at least some of the animal bone may have been contemporary with the recut. The human bone, all adult and, like the bone from the phase V silts into which the recut

extended, possibly from a male and a female, consisted of a cranium without mandible, a skull fragment, and fragments of radius, metatarsal, rib, left and right tibiae (some rodent-gnawed), and right femur. Nearby was a lower left canid canine, so large (56.5 mm long including the root) as to suggest that it might have come from a wolf rather than a dog (Fig 8.33: HN82 256; see Legge, 8.5). A perforation executed through the root was well-worn, pointing to use as a pendant. Original association with the human remains seems plausible. In this ditch butt only, the linear recut was in turn truncated by a localised ovoid recut, again containing Beaker as well as Neolithic pottery (Fig 3.138: L2C).

Not only was the animal bone in this butt unlikely to have come from the underlying layers, the Neolithic Bowl pottery throughout the recuts also seems to have been introduced, since there was more pottery in the recuts in both segments than there was in the more extensive phase V and phase VII/1 fills (43 sherds/199 g in contrast to 2 sherds/19 g). Furthermore, the chalk and flint lumps which characterised the recut fill were denser and larger than the inclusions in the preceding layers. The recut is thus likely to have been filled, at least in part, with material from a source other than the ditch fills which it truncated. This may have been the eroding bank, or the spoil from the excavation of the 'flint mines' described below.

Inner Hanford outwork segment catalogue

Notes (also applies to Outer Hanford outwork; see also p 58)
The current ploughsoil is included in the catalogue entries only if there were finds from it.
Layers were sometimes subdivided during section drawing, so that finds from, for example, L5, may have come from one or more of what were later distinguished as L5A, L5B and L5C.

'Segment 1' (Fig 3.137)

Original notation. HN82 F149.
Form. Expanded NE segment butt? Rounded plan, slightly stepped flat base. Steep lower sides, shelving, weathered-back upper sides.
Length >2.20 m, *width* 2.20 m, *depth* 0.70 m.
Excavation. 2.20 m of butt excavated. Remainder beyond limit of excavation. Originally thought to be a pit. Location, size and shape suggest ditch butt. Fills and absence of finds could suggest natural feature.

Phase I. Creamy silt and chalk (L5).

Phase III. Weathered chalk with some flint concreted in upper part (L3F) surrounding subcircular dark clay core (L1).

Charcoal
L1: *

Segment 2 (Figs 3.136–37)

Original notation. HN82 ditch 4 (or D4).
Form. Markedly curved, with at least 3 sub-segments. Widest and deepest in expanded S butt, sharply constricted behind it, tapering to N. Generally steep, sometimes even undercut, outer edge and less steep inner edge, base undulating longitudinally. Some natural fissures.
Length >14 m, *width* 3.30 m, *depth* 1.60 m.
Excavation. In three sections (U1, U2 and U3 from S to N) with intervening baulks left standing. Extreme tip of S butt beyond limit of excavation. U1 and U2 excavated in plan. U3 divided in three parts, each removed in successive axial sections (U3/1 and 3/2, U3/3 and 3/4, U3/5 and 3/6 from S to N).

Phase I. In S butt (S side of U1) only, pale grey-brown silt with chalk gravel (L6, L6A), there overlain by localised thin layer of loose, vacuous chalk rubble (L4D), in turn overlain by tan or grey silts with some chalk rubble which extended along the segment floor (L5, L5A, L5B in U2 and U3, L5C in U3). L5A, the most extensive of these, was a dark greyish-brown with some clay content and some charcoal, except in the south butt.

Animal bone and/or antler
L5A in U3: *cattle* mandible; *caprine* vertebra
L5 in U2: *red deer* antler fragments (debris of groove and splinter?); *cattle* metacarpal, horncore, rib; *caprine* scapula

Charcoal
L5A in N of U1 and in U3: *

Phase II. Thin layer of loose grey silt with ash, charcoal and burnt chalk (L4A) in U1 and U3/3, at interface of initial silts and chalk rubble.

Lithics
L4A: Flake

Charcoal
L4A: *

Phase III. Interleaved layers of chalk rubble with some flint (L4, L4B, L4C, L4D in U3) and generally grey-brown silts with varying chalk and flint rubble content (L5B in U1, L5C in U1, L5D, L5E, L3C, L3D, L3E, L3F, L3G, L3H, L3J, L3K), the rubble becoming smaller, less angular, less vacuous and increasingly silt-bound from bottom to top. Localised lens of grey silt with rubble, ash and charcoal at one rubble/silt interface (L4A in U2).

Human remains
L4: adult or subadult L tibia fragments (HN82 344), infant or young juvenile occipital fragments (HN82 342) – both in U1; *c* 3-year-old infant mandible fragments (HN82 365) in U2

Animal bone and/or antler
L4, concentrated in U1: *pig* radius, rib; *red deer* antler tine fragment; *cattle* metacarpal, metatarsal, calcaneum, phalanx, rib; *caprine* radius, tibia, teeth
L4A in U2: *cattle* scapula
L3C: *cattle* femur, 2 ribs
L3D: *cattle* rib
L3F: *cattle* metatarsal, ?butchered

Pottery
L4: 15 sherds/92 g Neolithic Bowl pottery

Lithics
L4: 2 flakes
L3C: 2 flakes

Charcoal
L4: *Corylus avellana* (U3), *Quercus* sp (U2)
L4A in U2: *

Phase V. Phase III fills graded upwards into finer, sometimes firmer, silts with variable rubble, grit and humic content, generally less grey in colour (L3A, L3B, L9, L9A, L8, L8A).

Animal bone and/or antler
L3A: *pig* radius; *cattle* scapula, tibia, phalanx

Pottery
L3B: 1 sherd/9 g Neolithic Bowl pottery

Lithics
L3A: flake

Charcoal
L9: *

Phase VII/1. Surface of previous fills truncated. Overlain by mid-brown loam with comminuted chalk and some rubble (L3, L1 in U3)

Animal bone and/or antler
L3: *cattle* scapula; *caprine* tibia
L1 in U3: *pig* humerus, tibia, calcaneum; *cattle* femur; *caprine* metatarsal

Pottery
L3: 1 sherd/10 g Neolithic Bowl pottery

Lithics
L3: 2 flakes
L1 in U3: flake, 1 misc retouched, sarsen quern or rubber fragment

Phase VII/a. Linear recut surviving to *c* 0.80 m wide and 0.20 m deep through phase VII/1 fills, sometimes just reaching into surface of phase V silts, possibly continuous, possibly with a gap in U3. Filled with dark brown humic loam with chalk rubble and flint nodules (L2A).

Animal bone and/or antler
L2A: *pig* 2 humeri; *roe deer* humerus; *cattle* scapula, 2 humeri, 2 radii, radius-ulna, ulna, femur, 2 metacarpals, tooth, 2 vertebrae

Pottery
L2A: 15 sherds/56 g Neolithic Bowl pottery
'L2' (=L2A?): 1 sherd/8 g Neolithic Bowl pottery

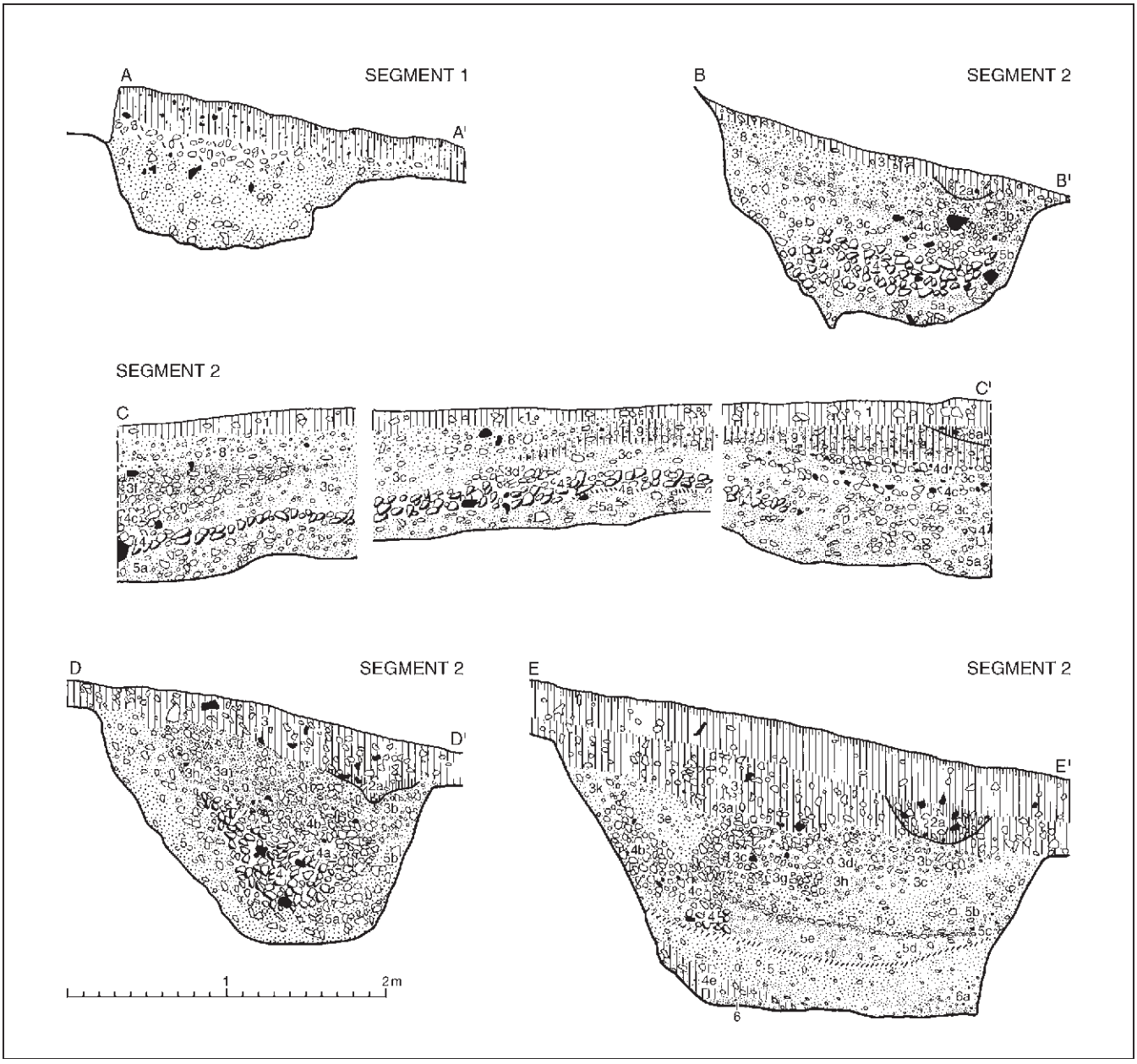

Fig 3.137 Inner Hanford outwork segments 1 and 2. Sections.

Lithics
L2A: 5 flakes

Upper levels and unstratified.

Animal bone and/or antler
L1 in U2: *caprine* humerus
U/S: *cattle* humerus

Pottery
L1 in U2: 1 sherd/2 g Neolithic Bowl pottery

Segment 3 (Fig 3.138)

Original notation. HN82 ditch 2 (or D2).
Form. Rounded S butt, sinuous plan. Deepest and widest in butt. Steep sides. Base rounded in butt, flatter elsewhere.
Length >8 m, *width* 2.75 m, *depth* 0.95 m.
Excavation. Two sections (U1 in butt, U2 to N) excavated in plan. Intervening baulk left standing.

Phase I. Discontinuous compact white silt on lower ditch sides in U2 (L6) overlain by more extensive grey-brown silts (L5, L5A, L5B).

Animal bone and/or antler
L6 in U2: *cattle* phalanx, sternum
L5 in U1 and U2: *pig* femur; *cattle* ulna, radius-ulna, 2 femurs (1 possibly used as hammer), 3 pelvis fragments, metacarpal, 2 maxillae, tooth, 3 vertebrae, horncore, rib

Pottery
L6 in U2: 4 sherds/47 g Neolithic Bowl pottery
L5: in U1 134 sherds/293 g Neolithic Bowl pottery

Lithics
L6 in U2: 56 flakes
L5 in U1: 14 flakes, 3 cores, 1 flake from ground implement

Charcoal
L6: cf *Corylus avellana*

Phase III. Interleaved layers of loose chalk rubble in small amount of silty matrix (L4, L4A, L4B) and grey-brown silts with varying proportions of chalk (L3D, L3E, L3F, L3G).

Exceptional deposit of grey ashy silt at inner side of butt (L3C), up to 0.30 m deep, area decreasing from 2.10 m × 1.30 m at upper surface within L4 to 0.90 m × 1 m on base of ditch. Rich in charcoal, animal bone and artefacts. Did not extend into section. Material planned and lifted at three successive levels within deposit.

Human remains
L3C: infant L ilium fragments (cut-marked and dog-gnawed; HN82 403)

Animal bone and/or antler
L4: *dog* tibia; *pig* humerus, mandible, skull fragment; *red deer* rib; *cattle* 3 scapulae, pelvis fragment, tarsal, carpal, 2 mandibles, rib; *caprine* radius, phalanx, mandible, rib
L3D: *
L3C: *pig* 3 humeri, 2 radii, 2 ulnae, tooth, 2 mandibles, phalanx, vertebra; *red deer* antler pick (HN82 368) ; *cattle* 3 scapulae, 2 radii, ulna, 2 femora, pelvis fragment, 4 R carpals, 4 mandibles, tooth, 3 vertebrae, 3 ribs; *caprine* scapula, tibia, pelvis fragment, 2 vertebrae

Pottery all in U1
L4: 117 sherds/541 g Neolithic Bowl pottery, including 106 sherds/408 g certainly or probably from P71, clustered near the N extremity of L3C
L3D: 100 sherds/138 g Neolithic Bowl pottery
L4/L3C interface: 49 sherds/223 g Neolithic Bowl pottery, probably from P71
L3C: 378 sherds/1177 g Neolithic Bowl pottery, including 76 sherds/519 g from P71 from 3 findspots, clustered near the centre of L3C, 2 sherds/83 g making up P97, 86 sherds/766 g probably from a single flint-tempered neutral uncarinated pot with flat rim 180 mm in diameter
Sherds of P71 in fresher condition than most of assemblage

Lithics
L4: flake, core, 1 misc retouched
L3C: 72 flakes, 2 serrated flakes

Charcoal
L4: *Quercus* sp
L3C: *Corylus avellana*, Maloideae, *Quercus* sp, *Prunus* sp, *Fraxinus excelsior*, *Acer campestre*

Charred seeds and/or nutshell
L3C: hazelnut shell

Phase V. Brown-grey silts with chalk lumps, more humic at outer edge (L3B) than at inner (L3A)

Human remains all in U1
L3B: older adult, ?male, almost complete mandible (HN82 334)
L3A: adult 2 L parietal fragments (HN82 270), older adult ?female 2 joining frontal fragments (HN82 240), proximal end of young/mature adult R tibia (HN82 260), adult R clavicle fragment (HN82 293)

Animal bone and/or antler
L3A: *pig* tooth; *cattle* humerus, femur, phalanx

Lithics
L3A: 19 flakes

Phase VII/1. Surface of underlying layers truncated. Overlain by mid-brown loam with comminuted chalk and chalk rubble (L3).

Animal bone and/or antler
L3: *pig* humerus, astragalus, calcaneum, carpal; *cattle* tarsal, phalanx, vertebra

Phase VII/a. Linear recut *c* 0.50 m wide and 0.25 m deep, cutting through L3 into L3A and L3B and below. Lower fill of mid- to dark brown loam with abundant chalk fragments and flint nodules (L2D) in U1 only. Overall fill of similar material with less chalk and flint (L2A).

Human remains all in U1, possibly derived from L3A and L3B, especially as the human remains in L2D directly overlay those in these layers
L3A/L2D interface: adult ?female L radius fragment, R metatarsal, rib fragments (HN82 258)
L2D: mature/older adult ?male R temporal fragment (HN82 257), mature/older adult ?male cranium without mandible (HN82 236), young/mature adult R tibia fragments (rodent-gnawed), metatarsal fragments (HN82 255), young/mature adult R tibia fragments (rodent-gnawed; HN82 248), young/mature adult L tibia fragments (HN82 278), adult R femur fragments (HN82 339), the last two at right-angles to each other in butt of recut, close to flaked lump, perforated canid tooth, human tibia and metatarsal fragments HN8 255 and cattle femur metatarsal and tarsal fragments HN82 36

Animal bone and/or antler
L2D: *pig* maxilla; *cattle* scapula, femur, metatarsal, tarsal
L2A: *pig* humerus, femur, tibia, maxilla; *cattle* 2 scapulae, humerus, ulna, femur, 2 phalanges, 5 vertebrae; *caprine* tibia

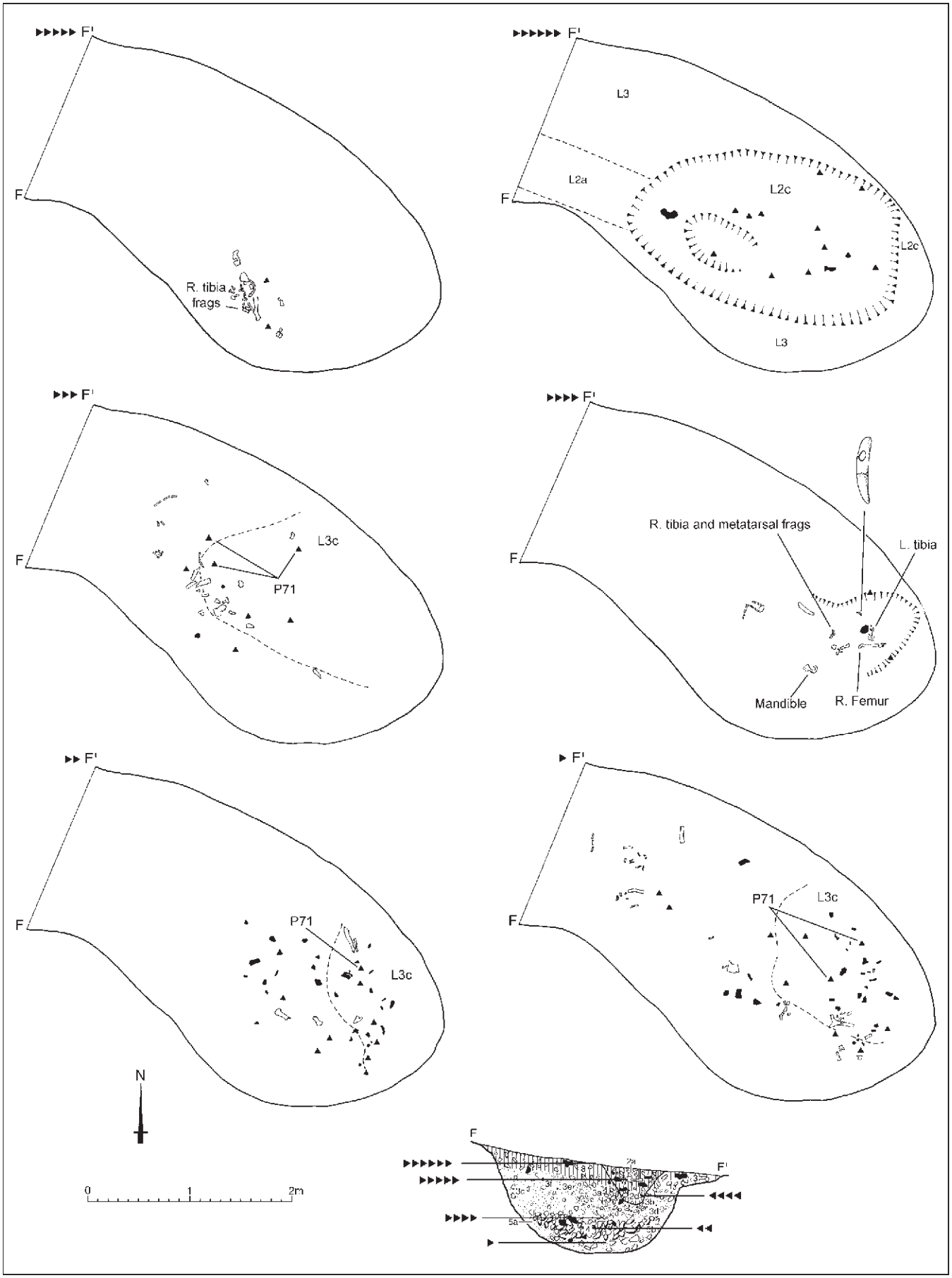

Fig 3.138 Inner Hanford outwork segment 3. Section and details.

Pottery
L2D: 2 sherds/47 g Neolithic Bowl pottery
L2A: 16 sherds/39 g Neolithic Bowl pottery; 1 sherd/5 g stab-decorated Beaker; 1 sherd/3 g from flat base in grog- and flint-tempered fabric, probably EBA

Lithics
L2D: flaked lump
L2A: 7 flakes, 2 cores

Other artefacts
L2D: lower L canid canine 56.5 mm long, with well-polished hourglass perforation through root, 5.5 mm diameter at centre (HN82 256)

Charcoal
L2D: *

Phase VII/b. Ovoid recut *c* 2.60 m × 1.60 m and 0.15 m deep, in butt only, cutting into L2A and surrounding layers. Filled with dark brown humic loam with some small chalk fragments.

Animal bone and/or antler
L2C: *red deer* radius-ulna; *cattle* scapula

Pottery
L2C: 100 sherds/57 g Neolithic Bowl pottery; 5 sherds/9 g comb-impressed and plain Beaker

Lithics
L2C: 6 flakes, serrated flake, flake from ground implement

Upper levels and unstratified.

Animal bone and/or antler
U/S: *

Pottery
U/S: 2 sherds/10 g Neolithic Bowl pottery

Segment 4 (Fig 3.139)

Original notation. HN82 ditch 1 (or D1).
Form. Rounded butt. Stepped, uneven base. Shelving inner edge, steep outer edge.
Length >3.40 m, *width* 3.60 m, *depth* 1.60 m.
Excavation. 3.30 m of butt excavated in plan (U1). Remainder outside limit of excavation.

Phase II. Grey-brown silt with chalk lumps, darker and more humic at outer edge (L5B, L5C).

Animal bone and/or antler
L5: *cattle* vertebra

Phase III. Chalk rubble, progressively smaller and less vacuous from base upwards, in a little grey-brown silt (L4, L4E, L4D, L4C, L4B, L4A) interleaved with silts with some chalk (L5A, L3F, L3E, L3D, L3C).

Animal bone and/or antler
L4: *pig* metatarsal; *cattle* scapula; *caprine* horncore
L3D: *cattle* scapula

Phase V. Brown silty loam with small to medium chalk lumps (L3B, L3A).

Lithics
L3B: 2 flakes

Phase VII/1. Brown loam with small chalk fragments (L3).

Animal bone and/or antler
L3: *cattle* vertebra

Lithics
L3: 2 flakes

Phase VII/a. Finds recorded from L2A, but no description of it.

Lithics
L2A: 15 flakes

Unworked burnt flint
L2A: 23 g

The outer Hanford outwork

The bank

The protected chalk generally ranged from 1 m to 4 m wide, expanding to as much as 12 m between segment 1 of the outer outwork and segment 2 of the inner. It was continuous across the causeway between segments 2 and 3. In the protected chalk behind segment 1 there were silt-filled hollows with irregular plans and undulating bases like those in the bank area of segment 2 of the inner outwork immediately to the east. Postholes survived most frequently in the bank area of segment 1, where several had grey fills. F515, a possible posthole in the protected chalk south of the butt of segment 2, may suggest that the bank indeed spanned the causeway. F507, a possible posthole in the bank area of segment 2, contained charcoal, but, since this was pine, it may well be of Boreal age, like pine charcoal in F279 to the east and perhaps in F773 in the bank area of segment 3 (3.2). Postholes in the bank areas of segments 1 and 2 might be resolved into single, irregular rows (Fig 3.134). As with the inner outwork, the surviving postholes may represent a parapet or revetment rather than any more

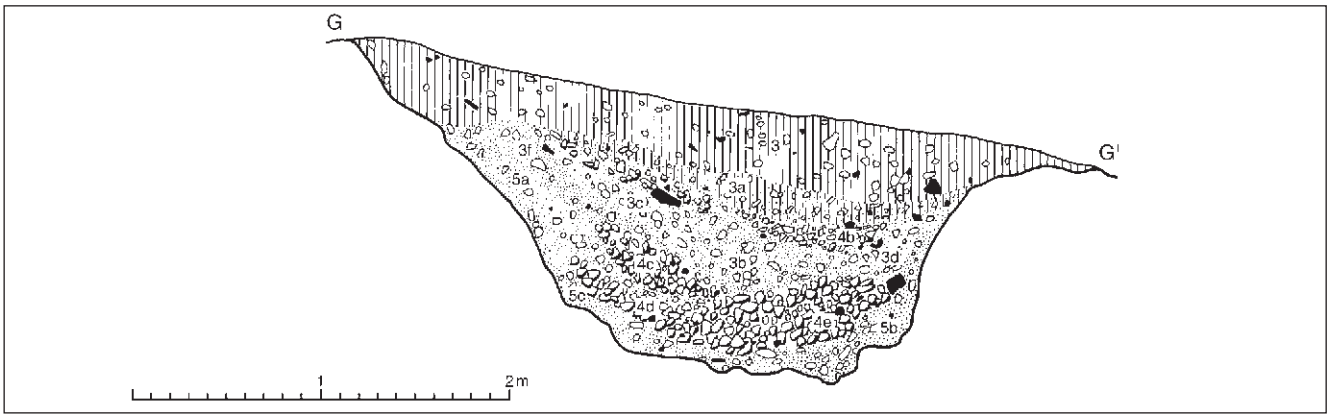

Fig 3.139 Inner Hanford outwork segment 4. Section.

complex structure. Where there is any hint of the size of the original posts they seem to have been 0.20–0.30 m across rather than the 0.20 m of the inner outwork posts (Table 3.18). Three may have been rectangular-sectioned (Table 3.18: F816, F828, F1048), in contrast to only one in the inner outwork bank (Table 3.18: F872).

The ditch

No segment was fully excavated. Like those of the inner outwork they seem to have been relatively long. Segment 1 was over 14 m long; segment 2 was over 19 m long and may have been over 40 m long, if its north butt was represented by a weathered ditch lip found in an area excavated to search for a gateway between segments 1 and 2 (Fig 3.136); segment 3 was over 20 m long. All three were pit-dug. Width and depth were variable, with respective ranges of 1.30–4 m and 0.50–1.50 m. The segments were generally shallower than those of the inner outwork, and profiles were varied. Shelving sides and flat bases were common, the outer edge sometimes running out into the slope with no perceptible surviving wall (eg Fig 3.140: section M–M'). None of the excavated butts was particularly deep, although that of segment 2 was exceptionally wide (Figs 3.140). Indeed, the north part of segment 1, away from the entrance, was appreciably deeper than the south part which gave onto it (Fig 3.137: sections H–H', I–I'), and the westernmost segment excavated in segment 2 was also deeper than the others (Fig 3.140: sections J–J', K–K', L–L').

Phases I–II

Radiocarbon dates on samples from the primary silts indicate different construction dates for segments 2 and 3. The silts themselves were nonetheless comparable. They were multiple and diverse and sometimes reached even greater thicknesses than in the inner outwork, filling most of the surviving depth of the ditch in some of the shallower sections. There was a localised recut in segment 2 (Fig 3.140: section J–J'). Patches of burnt or ashy material occurred in all three segments. As in the inner outwork, they were localised and gave the appearance of having been placed in the ditch rather than burnt *in situ*, sometimes incorporating unburnt artefacts and animal bone. The charcoal from them is from a range of species, some of them scrubby. A small area of ashy silt with charcoal on the floor of segment 2 at the inner side of the south butt (Fig 3.140, section L–L': L5C) contained a concentration of animal bone including three articulating pig tarsals dated to *3640–3500 cal BC (81%) or cal BC 3430–3380 cal BC (14%)* (4755±35 BP; OxA-7850). In the opposed north butt of segment 3 was a similar, even smaller, patch of ashy silt in the same location, on the ditch floor at the inner edge (L5C in U6). Charcoal from it is dated later than the pig tarsals from segment 2, to *3630–3580 cal BC (6%) or 3540–3310 cal BC (89%)* (4530±110 BP; HAR-6038). There were two further isolated patches of similar material elsewhere in the segment.

Finds were generally scarce. Exceptions in segment 2 were the bone cluster in the south butt and, in the northernmost excavated section, two perforated chalk plaques (Fig 10.2: S34a–b) and articulated pig vertebrae and ribs (Fig 3.140). In segment 3, there were fragments of an adult tibia in the north butt, an adult female cranium upright on the ditch bottom in one of the central sections, a knapping cluster in another, and, on the base of the southernmost excavated section, an articulated cattle pelvis, articulated cattle vertebrae, and other disarticulated bones, all probably from the same animal (see Legge, 8.1; Figs 3.141–42). These provide convincing evidence for a late construction date for this segment. High-precision measurements date the pelvis to *3350–3310 cal BC* (4476±26 BP; UB-4272) and the vertebrae to *3360–3310 cal BC* (4492±27 BP; UB-4271). Together with the later fourth millennium date on charcoal from the floor of the north butt, these indicate a construction date of *3360–3320 cal BC* (Ch 4).

Phase III

The phase III fills largely consisted of chalk lumps and flint fragments in earthy silts. Angular or vacuous chalk rubble was scarcer than in the inner outwork and was confined to the larger, deeper sections. In segment 1 the phase III fills occupied a recut approximately 4 m long, which extended through the phase I–II silts to the ditch bottom, between the two published sections. In one of the central sections of segment 3 a trench-like recut of much the same length was filled with grey ashy silt with some charcoal (Fig 3.140: section N–N': L7). Finds included an infant mandible fragment in the south butt of segment 1, where there were also 7 sherds/38 g from a pot, more of which was found in the overlying phase V silts, and adult mandible fragments from the south part of segment 2. In segment 3 the phase III fills were virtually devoid of finds, despite extensive excavation. Even the flint core and flakes which were recovered came from the same section as the phase I knapping scatter, suggesting that they were derived from it.

Phase V

The phase III fills graded into similar, progressively earthier silts, with rather smaller inclusions. Indeed, the presence of sherds of the same pot in the phase III and V fills in the south butt of segment 1 suggests that any distinction in a continuous silting process is arbitrary. This vessel aside, finds were universally scarce.

Phase VII/1

As in the inner outwork the phase V fills were truncated, often planed-off almost flat, and overlain by ploughsoil of mid-brown loam with chalk rubble, comminuted chalk and very few finds, all of them Neolithic where attributable. A concentration of finds in segment 2 probably reflects truncation of finds-rich phase III fills.

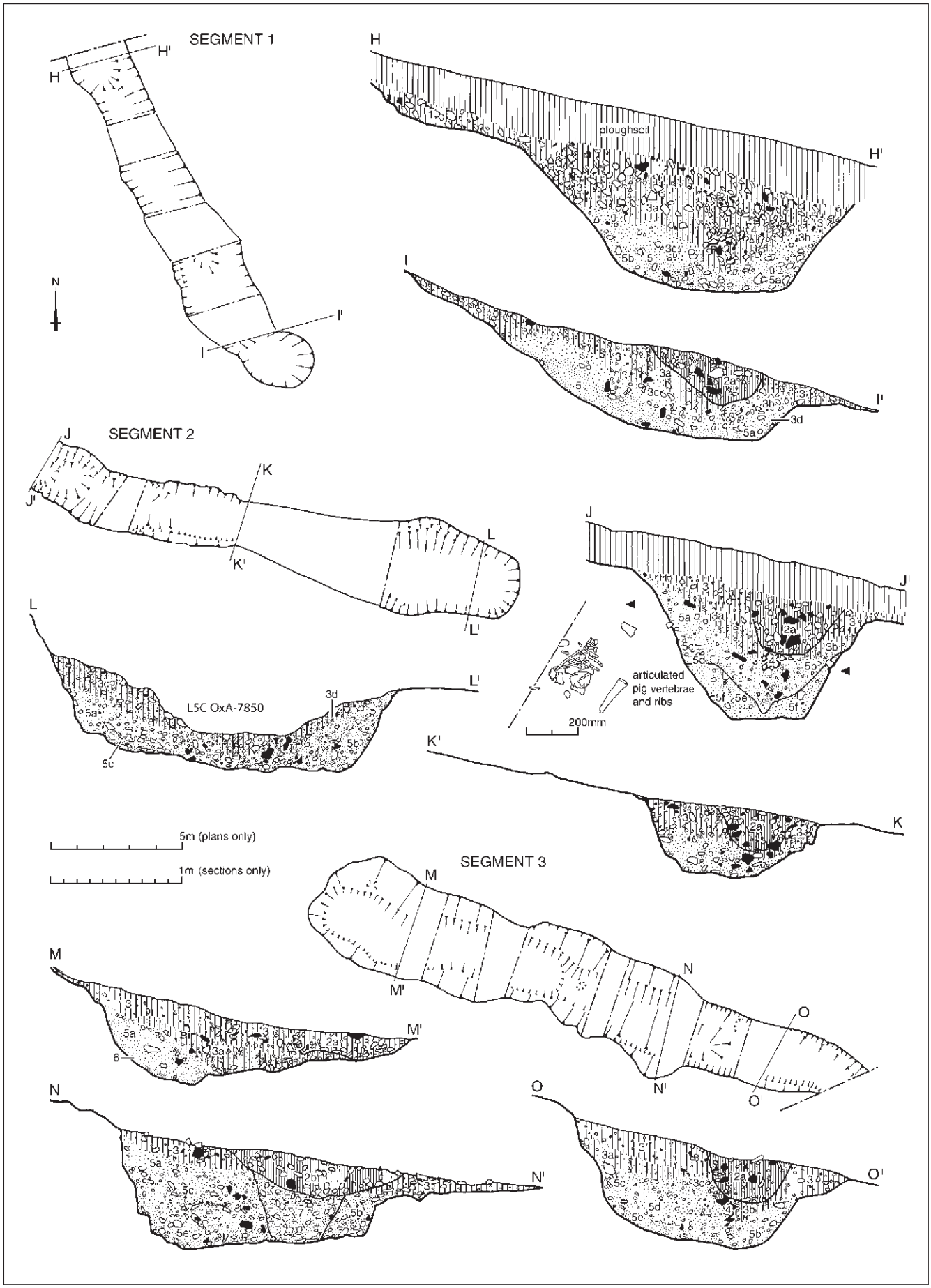

Fig 3.140 Outer Hanford outwork. Sections.

Phase VII/a

A linear recut up to 1.10 m wide and 0.40 m deep was made towards the outer edge of the south part of segment 1 and all of the excavated lengths of segments 2 and 3. It was of the same size as the recut in the inner outwork, and hence often cut down into the phase III and V fills in this shallower ditch. Like the inner outwork recut, it was filled with dark brown loam with chalk and flint fragments than in the underlying layers (Fig 3.140: L2A). Such finds as there were from it were Neolithic, although a Beaker or early Bronze Age date seems likely, given its stratigraphic position and similarity to the inner outwork recut. Unstratified and superficial Beaker and early Bronze Age sherds from segment 1 may relate to it.

Outer Hanford outwork segment catalogue

Segment 1 (Figs 3.136, 3.140)

Original notation. HN82 ditch 5 (or D5).
Form. Multilobate, at least 3 sub-segments. Inturned S butt (U1) narrow and shallow. Depth and width of U4 (northernmost excavated section) suggests butt or end of sub-segment. Shelving inner edge, steeper outer edge, generally flat base.
Length >14.55 m, *width* 2.75 m, *depth* 1.50 m.
Excavation. In 4 sections (U1, U2, U3, U4 from S to N). Intervening baulks left standing.

Phase I–II. Silts up to 0.40 m thick, with varying proportions of chalk (L5B, L5A. L5). Generally brown or brown-grey. Orange-brown in U4, perhaps reflecting nearby Clay-with-Flints deposit beyond limit of excavation. L4A, a discontinuous grey, ashy(?) lens at base of L3C in U3 and U4 (not visible in section) may have been phase I–II silt truncated by phase III recut.

Animal bone and/or antler
L5A in U1: *cattle* 2 fused vertebrae

Pottery
L4A in U4: 1 body sherd/1 g Neolithic Bowl pottery in sand-tempered fabric, probably from same pot as sherds from L3C

Phase III. Loose rubble (L4) scarcer than in inner outwork and absent from some sections. Always in something of a silty matrix where present, and grading into firmer grey to tan silty layers with varying proportions of chalk and flint (L3D, L3C, L3B in U4). Possible recut in U3–U4, filled by L3C, L3B, L3A; visible from S face of U4 to N face of U3, hence *c* 4 m long.

Human remains
L3D in U1: older infant mandible fragment

Animal bone and/or antler
L4: *cattle* scapula, pelvis fragment, femur
L3D: *pig* humerus, pelvis fragment; *cattle* tibia
L3C: *cattle* radius-ulna; *caprine* metatarsal

Pottery
L3D in U1: 4 body sherds/14 g Neolithic Bowl pottery, from same flint-tempered pot as sherds from L3C and L3B
L3C in U1: 3 sherds/24 g Neolithic Bowl pottery, from same pot as sherds in L3D and L3B; L3C in U4: 4 sherds/13 g Neolithic Bowl pottery, from same pot as sherd in L4A

Phase V. Silty loam with rubble (L3B, L3A).

Animal bone and/or antler
L3B: *pig* humerus, femur; *cattle* tibia, horncore

Pottery
L3B in U1: 23 sherds/45 g Neolithic Bowl pottery, from same pot as sherds in L3D and L3C
L3A: 1 sherd/7 g Neolithic Bowl pottery

Lithics
L3B: 2 flakes

Phase VII/1. Underlying layers truncated, overlain by brown loamy silt with peagrit and rubble (L3).

Animal bone and/or antler
L3: *

Pottery
L3 in U1: 1 sherd/12 g Neolithic Bowl pottery, probably from same pot as sherds from L2A
L3 in U2–3: 9 sherds/13 g Neolithic Bowl pottery

Lithics
L3: Flake

Phase VII/a. Recut up to 1 m wide and 0.30 m deep, running for *c* 10 m through U1–U3, not visible in U4. Filled with loose dark brown humic loam with chalk rubble and larger and denser flint nodules and fragments than in immediately underlying layers (L2A).

Animal bone and/or antler
L2A: *cattle* humerus, metacarpal

Pottery
L2A in U1: 39 body sherds/80 g Neolithic Bowl pottery, probably from same pot as sherd in L3

Charcoal
L2A: *Fraxinus excelsior*

Upper levels and unstratified.
Pottery
L1: 1 flat base sherd/10 g in grog- and flint-tempered fabric, probably early Bronze Age
U/S: 3 sherds/7 g Neolithic Bowl pottery; 18 sherds/18 g comb-impressed Beaker

Segment 2 (Fig 3.140)

Original notation. HN82 ditch 3, U7–U9.
Form. Multilobate, at least 3 sub-segments. Inturned S butt (U7) expanded but shallow. Depth very variable. Deepest and steepest in N. Steps near base of shelving sides may reflect lower limit of weathering. Generally flat-based. N section (U9) cut partly into Clay-with-Flints.
Length >19 m, *width* 4 m, *depth* 1.13 m.
Excavation. Cut by trial trench in 1978. Not bottomed. Excavated in 3 sections in 1982 (U7, U8, U9 from S to N), intervening baulks left unexcavated. Butt removed in two successive transverse sections (U7A, U7B), large gap left between U7 and U8 to accommodate 1978 trial trench.

Phase I–II. Dark grey ashy silt with a little chalk, up to 0.15 m deep, covering area *c* 3.60 m × 1 m on ditch floor at inner edge of butt (L5C). Overlain by diverse silts, sometimes successive and sometimes occupying a substantial part of the ditch (*c* 1 m deep in U9), grey to tan with varying proportions of small, subrounded chalk pebbles (L5F, L5E, L5D, L5B, L5A, L5). Recut in U9, truncating L5E and L5F, filled by L5B, L5D and subsequent layers.

Animal bone and/or antler
L5C in U7: *pig* articulating astragalus, calcaneum and navicular-cuboid (HN82 304), also humerus, femur, vertebra; *cattle* femur, vertebra

L5B in U7: *pig* femur, tibia, teeth, vertebra; *cattle* pelvis fragment, metararsal, tarsal
L5A in U7: *pig* tarsal; *cattle* tibia
L5 in U9: *pig* articulated vertebrae and ribs (HN82 145; could not be located for radiocarbon dating, 0.80 m deep); *cattle* femur, metacarpal, vertebra

Pottery
L5C in U7: 1 sherd/6 g Neolithic Bowl pottery, probably from P43
L5A in U7: 3 sherds/14 g Neolithic Bowl pottery
L5 in U9: 5 sherds/2 g Neolithic Bowl pottery

Lithics
L5C in U7: 4 flakes
L5B in U7: 7 flakes
L5A in U8: 4 flakes
L5 in U8: 16 flakes
L5 in U9: 8 flakes, 2 perforated chalk plaques (S34a–b)

Charcoal
L5: *
L5C in U7: *Prunus* sp, Maloideae
L5B: *Quercus* sp

^{14}C
L5C in U7: *3640–3500 cal BC (81%) or 3430–3380 cal BC (14%)* (4755±35 BP; OxA-7850) on articulating pig astragalus, calcaneum, and navicular-cuboid HN82 304

Phase III. Small amount of vacuous chalk rubble (L4), present only in deepest section (L4). Silty loam with chalk pebbles, grey from interior (L3C), brown from exterior (L3D), overlying phase I–II silts in butt only, not extending into section. 'Chalk-filled ditch layer 3' in 1978 trial trench.

Human remains
L3 in 1978 trial trench: older mature or older adult ?male mandible fragments (HN78 2306)

Animal bone and/or antler
L3D in U7: *
L3C in U7: *pig* tarsal; *cattle* 2 phalanges, carpal; *caprine* scapula
L3 in 1978 trial trench: *

Pottery
L3C in U7: 3 sherds/30 g Neolithic Bowl pottery, 2 of them rim fragments of P43 in fresh condition

Lithics
L3D in U7: flake
L3C in U7: flake
L3 in 1978 trial trench: 14 flakes, 1 misc. retouched

Charcoal
L3D in U7: *:

Phase V. Brown silty loam with chalk and flint fragments (L3A, L3B), often directly overlying phase I-II silts.

Animal bone and/or antler
L3A in U7: *pig* humerus; *cattle* metapodial, 2 vertebrae
L3A in U8: *

Pottery
L3A in U7: 12 sherds/15 g
L3A in U9: 2 sherds/15 g Neolithic Bowl pottery

Lithics
L3A in U7: 3 flakes, Old Red Sandstone quern or rubber fragment
L3A in U8: 57 flakes

Phase VII/1. Underlying layers truncated, overlain by brown loam with chalk and flint fragments and peagrit (L3). 'Flint and chalk with soil layer 2' in 1978 trial trench.

Animal bone and/or antler
L3: *red deer* mandible; *pig* mandible; *cattle* femur, 2 tibiae, tarsal; *caprine* tibia, metatarsal
L2 in 1978 trial trench: 7 sherds/13 g Neolithic Bowl pottery

Pottery
L3 in U7: 28 sherds/79 g Neolithic Bowl pottery, including 1 sherd from P43
L3 in U9: 4 sherds/8 g Neolithic Bowl pottery
L2 in 1978 trial trench: *

Lithics
L3 in U7–U8: 12 flakes
L3 in U9: 16 flakes, 5 scrapers, edge-glossed flake, 1 misc retouched,
L2 in 1978 trial trench: 8 flakes, 1 misc retouched

Charcoal
L3 in U7: *

Phase VII/a. Recut up to 1 m wide and 0.40 m deep running through all sections. Filled with dark brown loam with denser and larger chalk and flint fragments than in immediately underlying layers (L2A).

Animal bone and/or antler
L2A in U7: *pig* humerus; *cattle* radius

Pottery
L2A in U7: 3 sherds/3 g Neolithic Bowl pottery

Lithics
L2A in U7: 2 flakes, edge-trimmed flake, Old Red Sandstone fragment
L2A in U8: 9 flakes

Charcoal
L2A in U7: *Fraxinus excelsior*

Segment 3 (Figs 3.140–42)

Original notation. HN82 ditch 3 (or D3), U1 to U6.
Form. Multilobate, at least 4 sub-segments. Inturned N butt (U6). Deepest in S (U1), where narrowing at edge of excavation may suggest second butt or end of sub-segment. Shelving sides, rounded to flat base.
Length >20.80 m, *width* 2.60 m, *depth* 0.95 m.
Excavation. In 6 sections (U1, U2, U3, U4, U5, U6 from SE to NW). Intervening baulks left standing.

Phase I–II. Thin skin of creamy-white silt (L6) on parts of base and sides of U6 and U2 (U6). Patch of grey, ashy silt with some chalk in ditch floor at inner angle of butt, *c* 0.90 m × 0.60 m (L5C in U6). Further patch of grey, ashy silt with little chalk and much charcoal *c* 0.45 m diameter, 0.04 m deep on ditch floor in U4 (L5E). Otherwise, ubiquitous grey-brown silts, darkening upwards, with varying proportions of chalk reaching up to 0.45 m deep (L5E in U1 and U3, L5D in U4, L5C in U3, U4 and U5, L5B, L5A, L5). Interleaved at SE end with further isolated patch of grey, ashy silt with charcoal, *c* 0.20 m across and 0.05 m deep (L5D in U1).

Human remains
L5B in U3: mature adult female cranium without mandible (HN82 200), upright on ditch bottom against outer side, covered by L5B, facing towards N butt; adult L fibula fragments (HN82 119)
L5A in U6: adult R tibia fragments (HN82 221)

Animal bone and/or antler
L5C in U6: *pig* mandible
L5B: *cattle* ulna, femur, metacarpal, metatarsal, rib; *caprine* humerus

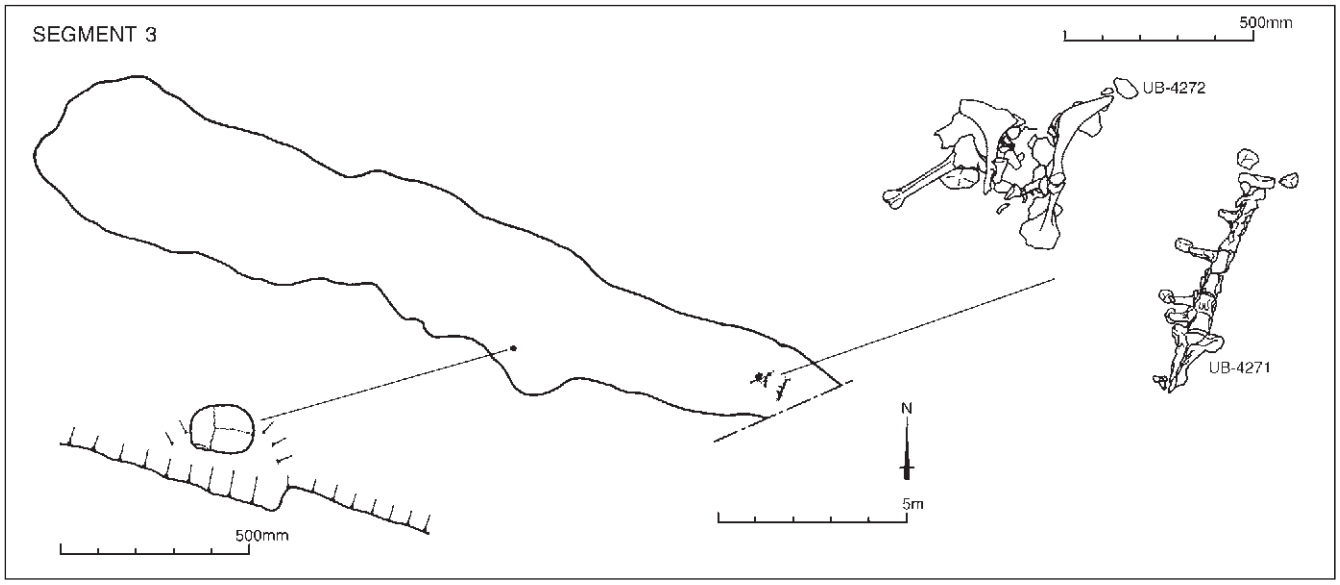

Fig 3.141 Outer Hanford outwork, segment 3. Location of female cranium (HN82 200) and articulated cattle pelvis (HN82 154) and vertebrae (HN82 153) in base of ditch.

Fig 3.142 Hanford spur. Articulated cattle pelvis and vertebrae on floor of segment 3 of outer outwork.

L5A in U1: *cattle* vertebra
L5A in U6: *pig* R and L femora, mandible; *cattle* metatarsal, 3 vertebrae
L5 in U1: *cattle* articulated pelvis in hollow in ditch bottom, overlying cut-marked femur (both HN82 154), articulated vertebrae (HN82 153) probably from same animal, on ditch floor *c* 0.50 m away, both covered by L5, also rib and vertebra fragments probably from HN82 153

Pottery
L5A: 1 sherd/4 g Neolithic Bowl pottery

Lithics
L6 in U3: 4 flakes
L5C in U4: 3 flakes
L5B in U3: 2 flakes
L5A in U2–U3: 7 flakes
L5A in U4: 1016 flakes, 6 cores, flaked lump, derived from inner edge
L5 in U1: flake, chalk fragment with natural ?perforation
L5 in U4: 19 flakes

Other artefacts
L5B in U3: 3 fragments/1 g amorphous fired clay

Charcoal
L5E in U4: *
L5D in U1: *
L5C in U4: *Corylus avellana*, *Corylus/Alnus*, cf Salicacae
L5C in U6: *
L5A in U1: *Prunus* sp, Maloideae, *Cornus sanguinea*
L5A in U4: *Fraxinus excelsior*

^{14}C
Ditch base in U1: *3350–3310 cal BC* (4476±26 BP; UB-4272) on articulated cattle pelvis and femur HN82 154; *3360–3310 cal BC* (4492±27 BP; UB-4271) on articulated cattle lower vertebrae and sacrum HN82 153
L5C in U6: *3630–3580 cal BC (6%) or 3540–3310 cal BC (89%)* (4530±110 BP; HAR-6038) on unidentified charcoal

Phase III. Almost no loose chalk rubble (L4). Phase I–II silts sometimes overlain by insubstantial light grey-brown silts with some chalk lumps (L3D, L3C). Recut in U3, *c* 0.75 m wide and 0.40 m deep, running full width of section, but not visible in adjoining sections, hence not more than 4 m long. Filled with ashy silt with some charcoal, as well as chalk and flint lumps (L7).

Lithics
L3C in U4: 9 flakes, core

Charcoal
L7: *

Phase V. Brown silty loam with chalk and flint fragments (L3A, L3B), often directly overlying phase I–II silts.

Animal bone and/or antler
L3B: *
L3A: *cattle* tooth

Lithics
L3A in U4: flake

Phase VII/1. Underlying layers truncated, overlain by brown loam with chalk and flint fragments and peagrit (L3).

Animal bone and/or antler
L3: *roe deer* tibia; *cattle* radius-ulna, metacarpal, tooth

Pottery
L3: 1 sherd/1g Neolithic Bowl pottery

Lithics
L3: 3 flakes, edge-glossed flake

Phase VII/a. Linear recut up to 1.10 m wide and 0.30 m deep, filled with brown humic loam, generally dark and with chalk rubble and larger and denser flint nodules and fragments than in immediately underlying layers (L2A, L2B).

Lithics
L2A: 3 flakes
L2B: 13 flakes

3.6.3 Discrete features

Pits and postholes

There were scattered pits and postholes within the earthworks, their plans sometimes difficult to define because they were cut into patches of weathered chalk. Mesolithic and possibly Mesolithic features are described in Ch 3.3. The remaining 12 definite and probable pits are catalogued below and the postholes are included in Table 3.18. Finds were often sparse or absent. Six pits (HN82 F576, F646, F864, F942, F950, and F960) contained diagnostic earlier Neolithic artefacts. Among the remainder, a Neolithic date is likely for HN82 F212, which just overlapped the protected chalk of the inner outwork bank, and seemed to have been deliberately backfilled (Fig 3.143: L2), perhaps when the bank was built.

In the east of the excavated area, F942, which contained Neolithic artefacts, was much smaller than the other Neolithic pits, two of which (HN82 F950 and 960) were close to it. At the time of excavation it was thought to be the base of a badly ploughed-down posthole, and its section would be compatible with this attribution (Fig 3.143). Even allowing for a second tentatively identified posthole nearby (HN82 F941), there is no hint of a structure here. The one or two posts would have been freestanding, and conspicuous to those coming through the entrance 60 m downslope to the west.

Burnt material, including burnt bone, was particularly abundant in HN82 F646 and F864, so much so that F864 was thought to be a cremation pit. Flint nodules and fragments were concentrated in probable recuts in HN82 F864 and F960, and in an apparent recut in undated pit F189. There were further possible recuts in undated pits HN82 F365, F372, F628 and F988. A thin skin of silt on the base of HN82 F212 suggests that it stood open for a short while. In undated pits F189, F365, F372, F628 and F988 silts had accumulated to the tops of the features before the apparent recuts were made. These may have been dug and then left to silt. Alternatively, the silted hollows may have been natural features into the relatively soft fills of which cuts were later made. Mesolithic feature HN82 F279 had a similar fill pattern, and HN82 F62, which was adjacent to it, may have been an equivalent silted hollow which was not recut.

Struck flint occurred in only three features; pottery occurred in six. The total artefact collection of 112 sherds/168 g of Neolithic Bowl pottery, seven flakes and one serrated flake seems distinctly skewed in favour of ceramics.

HN82 F365, F372 and F628 were close to quarry complex HN82 F644, which is described below, and were, like it, dug down to the level of the tabular flint. On balance, they seem unlikely to have been part of the complex because in contrast to the components of the quarry, they were left to silt then recut, rather than backfilled.

Catalogue of definite and probable Neolithic and undated pits on the Hanford spur. Postholes are summarised in Table 3.18

Notes
Layers are described from the bottom up. In many cases layers were identified only after features were half-sectioned, hence the number of finds not attributed to layer.
Finds not attributed to layer are listed first.
* = recorded but unidentified, missing or not retained.

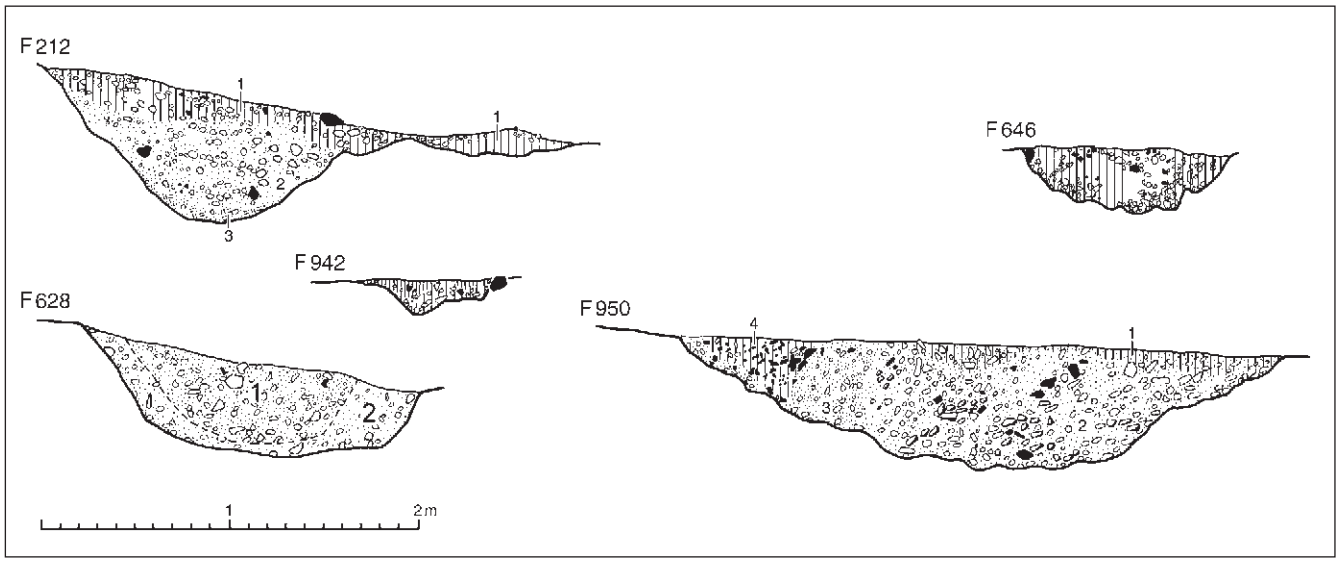

Fig 3.143 Hanford spur. Selected pit and ?posthole sections.

Table 3.18 Postholes on the Hanford spur. Definite, probable and possible postholes in the banks, definite and probable postholes from elsewhere

* = recorded, but unidentified or missing

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
	HN82 F54	Definite	0.60	0.50	0.30	Dark brown humic loam with many chalk lumps and much flint	Cut in end of ?natural hollow in weathered, root-disturbed chalk. 3 charcoal finds and 2 flint fragments formed arc 0.20 m in diameter over deepest part	*Charcoal* *	
Inner Hanford outwork	HN82 F226	Definite	0.55	0.55	0.35	Mid-grey silt with rare small subangular chalk lumps and flint			
Inner Hanford outwork	HN82 F227	Definite	0.40	0.40	0.40	Compact mid grey-brown silt with rare small subangular chalk lumps and flint			
Inner Hanford outwork	HN82 F233	Definite	0.70	0.50	0.40	Compact light brown silt with much flint surrounding central area *c* 0.15 m in diameter corresponding to possible socket in base 0.35 m × 0.20 m	Fill seemed very hard-packed as if post removed and socket backfilled		
Outer Hanford outwork	HN82 F338	Possible	0.30	0.25	0.10	Medium-light brown silty loam with chalk lumps			
Outer Hanford outwork	HN82 F507	Possible	0.50	0.40	0.25	Mid grey-brown silty loam with chalk lumps. Fewer chalk lumps in upper part of E side may suggest postpipe	Pine charcoal may suggest Boreal date (3.3). Within and at edge of natural feature HN82 F788+F790 and possibly part of it	*Charcoal* 11 fragments *Pinus sylvestris*	3.4
Outer Hanford outwork	HN82 F515	Possible	1.10	0.60	0.30	White-grey silt with chalk lumps. More humic soil and silty loam at top	Solution pockets in base?		
Outer Hanford outwork	HN82 F544	Possible	0.35	0.20	0.10	Mid-brown loam with chalk lumps. Pocket of comminuted chalk near centre of upper fill			
Inner Hanford outwork	HN82 F547	Probable	1.10	0.60	0.20	Medium brown silty loam with chalk lumps and possible flint packing	Shallow hollow surrounding ovoid posthole with tapering profile and ovoid plan, 0.35 m × 0.30 m		
Outer Hanford outwork	HN82 F773	Unlikely	2.00	2.00	0.50	L3: creamy white silt with few chalk lumps. L2: light grey-brown silt with few chalk fragments. L1 medium brown silty loam with angular chalk fragments and much flint, not clearly distinguished from L2	Pine charcoal may suggest Boreal date (3.3). Subovoid plan, with shallower lobes extending from periphery. Far larger than other postholes. Bowl-shaped profile. On surface, flint in L1 seemed to surround relatively flint-free area *c* 0.50 m in diameter. This was less clear in section.	*Charcoal* 12 fragments *Pinus sylvestris* (0.36 m deep), 1 fragment indeterminate (0.15 m deep) L2: 1 fragment *Corylus avellana* (0.44 m deep)	3.4
Outer Hanford outwork	HN82 F778	Possible	0.35	0.35	0.15	Light tan silt with a few clustered chalk fragments, ?packing			

Outer Hanford outwork	HN82 F795	Possible	0.60	0.50	0.15	Brown silty loam with chalk lumps			
Outer Hanford outwork	HN82 F814 (i)	Possible	0.90	0.90	0.40	Loose light grey silt with chalk rubble, flint and peagrit, chalk lumps concentrated to 1 side (packing?), overlain by pale brown-grey silt with chalk rubble	Larger of 2 possible postholes cut into ?natural hollow HN82 F814		3.136
Outer Hanford outwork	HN82 F814 (ii)	Possible	0.50	0.40	0.25	Firm light grey silt with some chalk rubble, comminuted chalk and flint fragments	Smaller of 2 possible postholes cut into ?natural hollow HN82 F814		3.136
Outer Hanford outwork	HN82 F816	Definite	0.90	0.70	0.25	Compact cream silt with rounded comminuted chalk and a little flint in upper fill	Subcircular plan, shelving lip, steep-sided subrectangular posthole 0.30 m × 0.30 m		3.136
Outer Hanford outwork	HN82 F820	Probable	0.50	0.40	0.15	Lightish grey-brown silt with chalk and flint			3.136
Outer Hanford outwork	HN82 F821	Probable	0.50	0.40	0.20	L2 pale grey silt with chalk lumps. L1 light grey-brown silty loam with chalk lumps			3.136
Outer Hanford outwork	HN82 F823	Possible	1.00	0.60	0.18	L2 light grey silt with chalk rubble. L1 grey-brown silty loam with peagrit and comminuted chalk	Pit or posthole		3.136
Outer Hanford outwork	HN82 F828	Probable	0.50	0.35	0.10	Dark brown silty loam with chalk lumps and flint. Chalk lumps on end may suggest packing	Subrectangular plan with shallow lip to 1 side. Deeper posthole with straight sides and flat base, 0.35 m × 0.30 m		3.136
Outer Hanford outwork	HN82 F835	Possible	0.70	0.60	0.25	Firm cream silt with chalk and rubble and blocks concentrated to 1 side of possible postpipe 0.60 m across	Possible posthole in W end of ?natural hollow		3.136
Inner Hanford outwork	HN82 F853	Probable	1.40	1.60	0.30	L3 compact cream silt with fine chalk rubble. L2 firm mid grey silt with rounded comminuted chalk. L1 (fill of postpipe) firm mid grey silt with rounded comminuted chalk and some charcoal	Cut into ?natural hollow HN82 F855	*Charcoal* L1: *	3.136
Inner Hanford outwork gateway	HN82 F854	Definite	2.60	0.50	0.65	L2 Firm light grey silt with a little chalk gravel and some flint. Darker patches with ash and charcoal above base of layer. L1 loose mid brown silty loam with rounded chalk rubble	Post-slot or multi-phase posthole with up to 4 possible post sockets. Flint nodules in W end, single large nodule near centre	*Human remains* L1 (ploughsoil above feature): older juvenile/young subadult maxillary tooth *Pottery* L2: 19 sherds/41 g Neolithic Bowl, some and possibly all from lugged vessel represented by P28, clustered between possible post socket in W end and next one *Lithics* Top of fill: crumb of heathstone	3.136

Table 3.18 (*cont'd*)

Structure	*Feature*	*Category*	*Length (m)*	*Breadth (m)*	*Depth (m)*	*Fill(s)*	*Comment*	*Finds*	*Figure(s)*
	HN82 F854							*Charcoal* L2: 143 fragments *Quercus* sp, some mature, concentrated in same area as sherds L1: 3 fragments *Quercus* sp Also 1 unidentified sample	
Inner Hanford outwork	HN82 F857	Probable	0.30	0.30	0.15	Firm mid grey-brown silty loam, with comminuted chalk and some charcoal	Base of possible socket to 1 side, *c* 0.08 m across. Cut into ?natural hollow HN82 F856	*Charcoal* *	3.136
Inner Hanford outwork	HN82 F868	Possible	0.25	0.25	0.05	Loose mid-grey silty loam	Small feature or disturbance in silt-filled ?natural hollow		3.136
Inner Hanford outwork	HN82 F870 (i)	Possible			0.20	L5 loose light brown-grey silt with some peagrit, possible packing	1 of 2 possible postholes cut into ?natural hollow HN82 F870		3.136
Inner Hanford outwork	HN82 F870 (ii)	Possible				L6 firm, very light grey silt, lighter towards base, with small chalk lumps	1 of 2 possible postholes cut into ?natural hollow HN82 F870		3.136
Inner Hanford outwork	HN82 F872	Probable	0.60	>0.75	0.30	L3: Firm light grey silt with some charcoal in socket. L2 Weathered blocky chalk in base of hollow. L1 Loose mid-brown silty loam in top of hollow	Subcircular hollow merging into weathered-back inner edge of segment 2 of inner outwork. Deeper subrectangular central socket with flat base >0.20 m × 0.20 m	*Charcoal* *	3.136
Outer Hanford outwork	HN82 F896	Probable	1	0.45	0.40	Compact white silt with a few chalk and flint lumps. Denser inclusions at sides, including some flint, may have been packing.			3.136
	HN82 F941	Possible	1.50	1.40	0.15	L1: Firm dark brown humic loam with chalk rubble and flint	Adjoined F942. 1 of 2 adjacent hollows making up HN82 F941, the other (filled by L2) probably the result of natural weathering		
	HN82 F942	Definite	0.40	0.40	0.20	Firm dark brown humic loam in all 3 layers, with some chalk rubble and flint fragments, the last probably packing, confined to 1 side. Section cut through edge rather than centre of feature	Adjoined F941	*Pottery* 1 sherd/2 g Neolithic Bowl L3: 1 sherd/1 g Neolithic Bowl *Lithics* 3 flakes L1: flake *Charcoal* * *Charred plant remains* <10 g charred hazelnut shell	3.143

Inner Hanford outwork	HN82 F1037	Possible			0.15	L5 very pale grey silt with small, rounded chalk rubble	Extended beyond excavated area. Cut into larger patch of weathering and solution (F1037 L1–L4)	
Outer Hanford outwork	HN82 1048	Possible	0.35	0.20	0.15	Compact cream silt with rounded chalk.	Dimensions are for rectangular central hollow with steep sides and flat base, 0.35 m × 0.20 m within larger irregular feature	3.136
Inner Hanford outwork gateway	HN82 F1049	Definite	0.80	0.50	0.35	L2 very pale brown silt with some fine chalk gravel. More chalk rubble and flint rubble at top than bottom, ?displaced packing. L1 mid brown silty loam with some flint		3.136
Inner Hanford outwork gateway	HN82 F1050	Definite	0.45	0.45	0.30	L2 firm, fine very pale brown silt with comminuted chalk, some rubble at top. L1 mid brown silty loam with chalk fragments and flint		3.136
Inner Hanford outwork gateway	HN82 F1054	Definite	1	>0.80	0.40	L1 compact cream silt with rounded chalk rubble, surrounding postpipe 0.20 m in diameter filled by L2, pale tan silt with a little chalk rubble. Some chalk and flint ?packing concentrated to 1 side	Groove 3 m × 0.20 m led from F1054, forming arc delimiting area of higher chalk to E. Vestige of gate?	3.136
Inner Hanford outwork gateway	HN82 F1055	Definite	0.55	>0.20	0.40	L2 firm light grey silt with chalk lumps, flint and a little comminuted chalk, flint and chalk ?packing concentrated to 1 side of possible postpipe *c* 0.20 m in diameter. L1 medium brown silty loam with chalk lumps and peagrit		3.136
Inner Hanford outwork gateway	HN82 F1057	Definite	0.20	0.20	0.25	L2 pale tan silt with chalk blocks, root-disturbed. L1 medium brown silty loam with chalk rubble and peagrit.		3.136
Inner Hanford outwork gateway	HN82 F1058	Possible	0.28	>0.13	0.10	Loose mid brown silty loam with chalk lumps		

Lithics are of flint unless otherwise stated.
The only animal bones listed are specimens identified to species and anatomical part, almost all, even of these, are highly fragmentary.
Dimensions are maxima.

HN82 F189. Pit. Probable. *Length* 1.80 m, *width* >1.60 m, *depth* 0.55 m
Form. Subcircular plan, 1 steep side, 1 shelving side, flat base
Comment. Profile of L2 suggests fill of recut
Fill(s). L4 grey silt with chalk fragments. L3 tan silt with a little chalk and flint. L2 looser chalk and flint blocks with some silt. Gritty light brown infiltrate among chalk lumps and flint

HN82 F212. Pit. Definite. *Length* 1.35 m, *width* 1.00 m, *depth* 0.70 m
Form. Subtrapezoid plan with shallow 'tail' extending to W. Bowl-shaped profile
Comment. Just overlapped inner edge of protected chalk of inner outwork bank, which could originally have been more extensive. L2 seemed to be deliberate backfill, perhaps when bank was built
Fill(s). L3 medium orange-brown silty clay with a few chalk lumps, probably derived from clay band on upper edge of pit. L2 fairly compact creamy white silt with frequent subangular chalk lumps and some flint, slightly vacuous. L1 friable medium brown loam with chalk lumps

HN82 F289. Pit. Probable. *Length* 1.35 m, *width* 1.25m, *depth* 0.35 m
Form. Subcircular, shelving walls with ledge to 1 side, flat base
Fill(s). Friable dark brown humic loam with frequent subrounded chalk lumps
Animal bone: *
Charcoal: *

HN82 F365. Pit. Definite. *Length* 1.60m, *width* 1.50m, *depth* 0.40 m
Form. Irregular plan, bowl-shaped profile, downslope edge steep, upslope edge more shelving
Fill(s). L2: compact light grey silt with chalk and flint, extending to top of pit at sides, cut away in centre by recut filled by L1, compact dark grey ashy silt with chalk and flint
Comment. L2 interpreted as natural silting
Charcoal: *
L1: *

HN82 F372=F368. Pit. Definite. *Length* 1.90m, *width* 1.75m, *depth* 1.60m
Form. Subcircular plan, steep sides, flat base
Comment. Flint seam exposed in edge, above bottom, but not extracted. L2 could be fill of recut
Fill(s). L3 very light brown compact silt with a few chalk lumps. L2 creamy white silt with frequent chalk rubble. L1 medium-brown loam with chalk lumps and peagrit

HN82 F576. Pit. Definite. Earlier Neolithic. *Length* 2.40 m, *width* 2.10 m, *depth* 0.35 m
Form. Piriform plan, double bowl-shaped profile with central ridge
Fill(s). Dark brown humic loam with subangular flint and chalk
Pottery: 14 sherds/23 g Neolithic Bowl pottery, 13 of them probably from single vessel in fabric group 6

HN82 F628. Pit. Definite. *Length* 2.80m, *width* 1.90m, *depth* 0.50 m
Form. Piriform plan, shelving sides, fairly flat base
Comment. Thin flint seam at bottom of pit
Fill(s). L2 silt with some chalk, extending up to top of pit at sides. Cut away in centre by recut filled with L1, very compact grey-brown silt with much chalk and some flint
Animal bone: L1: *caprine* humerus
Charcoal: *

HN82 F646. Pit. Definite. Earlier Neolithic *Length* 1.10 m, *width* 1.10 m, *depth* 0.30 m
Form. Subcircular plan, bowl-shaped profile with irregular, undulating base
Comment. Much of bone burnt and unidentifiable
Fill(s). Dark brown humic loam with chalk lumps, flint, and much burnt material
Animal bone: Pig humerus; *red deer* antler fragments (HN82 803); *cattle* radius
L1: cattle skull fragment
Pottery: 6 sherds/11 g Neolithic Bowl pottery
Charcoal: 6 fragments *Corylus avellana* or cf *Corylus avellana*, 2 fragments *Quercus* sp, 1 fragment Maloideae. Also 7 unidentified samples
L2: 1 fragment cf *Corylus avellana*
L1: 3 fragments Maloideae, 3 fragments *Quercus* sp, 2 fragments *Corylus avellana*, 1 fragment *Fraxinus excelsior*. Also 1 unidentified sample
Charred plant remains: <10 g charred hazelnut shell
L1: <10 g charred hazelnut shell

HN82 F864. Pit. Definite. Earlier Neolithic. *Length* 1.30 m, *width* 1.10 m, *depth* 0.35 m
Form. Subtriangular plan, shelving E side, steeper and deeper W side, rounded base. W side cut into earlier ?natural feature, extending to 0.70 m deep
Comment. Much of bone burnt. Finds concentrated to E side. Profile of L1 could suggest recut
Fill(s). L2 silt with dense chalk lumps and a little flint. L1 very dark brown humic loam with flint and a few chalk lumps
Animal bone: *
L2: *
L1: *
Pottery: L1: 46 sherds/78 g Neolithic Bowl pottery
Lithics: Flake
L2: rose quartz pebble and fragment of ?haematite, both very small
L1: flake
Burnt flint: L1: 13 g
Other finds L1: 8 fragments/4 g fired clay
Charcoal: L1: *
Charred plant remains: L1: <10g charred hazelnut shell

HN82 F950. Pit. Definite. Earlier Neolithic. *Length* 3.40 m, *width* 3.40 m, *depth* 0.45 m
Form. Subrectangular larger feature with steep sides and slightly undulating flat base (filled by L2 and L1) cut by smaller feature measuring 0.90 m × 3.40 m (filled by L3 and L4). Flint outcrop in base.
Comment. Larger feature interpreted in field as result of water percolating along a flint seam. There are, however, more finds from it than from the smaller feature. Abrupt junction of L3 and L4 suggests that L4 may be fill of a recut.
Fill(s). L2 loose cream silt with chalk rubble and blocks. L1 mid brown silty loam with loose chalk rubble, weathered. L3

mid grey silt with fine chalk rubble and some flint. L4 loose dark brown humic loam with flint fragments and more chalk than L3
Pottery: 1 sherd/14 g Neolithic Bowl pottery
L2: 9 sherds/9 g Neolithic Bowl pottery
L1: 18 sherds/17 g Neolithic Bowl pottery
L3: 3 sherds/2 g Neolithic Bowl pottery
Charcoal: L4: 6 fragments cf *Corylus avellana*
L2: 11 fragments *Corylus avellana*, also 2 unidentified samples
L1: 1 fragment *Betula*, 7 fragments *Corylus avellana*, also 3 unidentified samples
Charred plant remains: L2: <10 g charred hazelnut shell
L1: <10 g charred hazelnut shell

HN82 F960. Pit. Probable. Earlier Neolithic. *Length* 1.20 m, *width* 1.00, *depth* 0.25 m
Form. Ragged, kidney-shaped plan with undulating base. Irregular plan, 2 conjoined hollows in section, smaller filled by L2, larger by L1
Comment. Probably a patch of weathered chalk with a smaller feature cut into it, filled by L1
Fill(s). L2: mid-brown infiltrate in weathered chalk. L1 firm dark brown humic loam with chalk rubble, peagrit, some charcoal
Animal bone: *
Pottery: 12 sherds/11 g Neolithic Bowl pottery
Lithics Flake, serrated flake
Charcoal 54 fragments *Quercus* sp, 30 fragments Maloideae, 9 fragments *Corylus avellana*. Non-woody material also present
L1: unidentified sample
Charred plant remains: >10 g and <50 g charred hazelnut shell
L1: <10 g charred hazelnut shell

HN82 F988. Pit or posthole. Probable. *Length* 2.60 m, *width* 2.30 m, depth 0.55 m
Form. Ovoid, steep sides, rounded base. Tapering postpipe or recut 0.75 m to 0.20 m in diameter
Fill(s). L3 very pale tan silt with chalk lumps. L2 firm, very pale tan silt with less chalk and flint than L3, filling ?postpipe or recut. L1 loose mid-brown loam infiltration

'Flint mines'

The quarries excavated in 1982 were two among a score of dark marks along both sides of the spur between the central area and the Stepleton enclosure, which tend to follow the contour and to lie on or near the Upper/Middle Chalk boundary (Fig 2.7). While some may have resulted from recent tree removal and others from recent quarrying, half a dozen or so could be of prehistoric date, like the excavated examples (Ch 2). Both of these contained small quantities of Neolithic Bowl pottery, struck flint, and animal bone and were sunk to seams (sometimes successive) of low-quality tabular flint 20 mm to 70 mm thick, which had been extracted. Nodular flint was also present. They were accordingly interpreted as Neolithic flint mines, exploited while the Hanford outworks were being built (Mercer 1987). There was, however, very little of the knapping debris which abounds at other flint mines. It subsequently became clear that the tabular flint from them had not been used in the industries of the hill (see Saville, 10.2) and that they dated from the second half of the third millennium cal BC (Ch 4). Finds from them are summarised in Table 3.19.

HN82 F848 (incorporating F489)

This feature lay at the edge of the excavated area (Fig 3.134) and was only partly investigated. Its excavated part consisted of an irregular pit up to 0.70 m deep, sunk to the level of the tabular flint, most of which was extracted, and undercut at its north-west end, where a lateral gallery 0.68 m high, 1 m wide and 1.80 m long ran south into the chalk. The sections may suggest natural silting rather than backfilling. Whatever the case, the fills were earthy, with relatively little chalk.

HN82 F644 (incorporating F601+F604+F687, F606, F618, F639, F640, F641, F642, F643, F687)

This complex was fully investigated (Figs 3.144–7). It consisted of a large central pit connected to smaller pits by galleries or breakthroughs. These ranged from 0.30 m to 1.10 m high and 0.58 m to 1 m wide, and would only just have permitted extraction of the flint by a person lying on his or her side. Their roofs were often 0.10–0.20 m below the surviving surface of the chalk (Fig 3.146). Other galleries or undercuts of similar character followed the flint a little way into the chalk, both at the level of the tabular flint seam and above it (Fig 3.144). The full length of some of these is not shown on the plan, because they extended beyond arm's length and could not be excavated further for reasons of safety. The depth of the pits varied with that of the flint. At its deepest, the floor of F644 was only 1.30 m below the surviving surface of the chalk. There was very little primary silt in any of the pits. The sections point to their having been backfilled soon after excavation with dark brown soil containing flint and chalk fragments, the latter occurring at a level well below the amount of chalk which must have been extracted and well below the frequency of chalk in most of the phase III ditch fills on the hill. F601 had been backfilled from the north (Fig 3.145), F644 from the west. Both flint and chalk must have been taken elsewhere.

Utilised and modified antler was more common here than anywhere else on the spur (Table 3.19) and the location of an antler 'rake' in the entrance to a breakthrough between two pits (Fig 3.147) strongly suggests that it was used in the work of excavation. A date of 2460–2060 cal BC (3810±45 BP; OxA-7833) for this artefact places the excavation of the complex in the second half of the third millennium, perhaps as much as a thousand years after the construction of even the most recent of the earthworks on the spur and the same interval after the other two dates from the complex, of 3260–2580 cal BC (4270±100 BP; HAR-6037) for charcoal from a breakthrough between F606

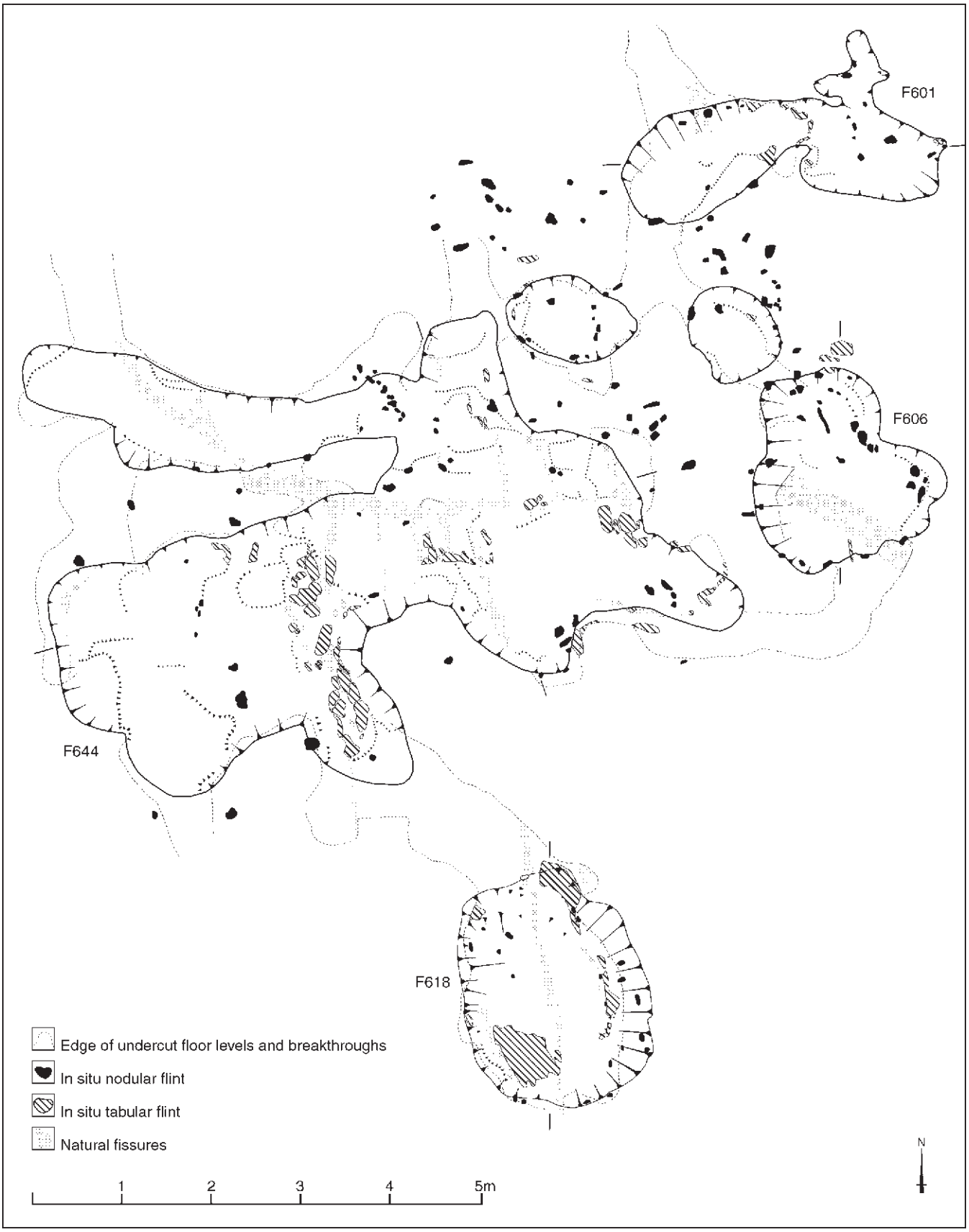

Fig 3.144 Hanford spur. Plan of 'flint mine' complex.

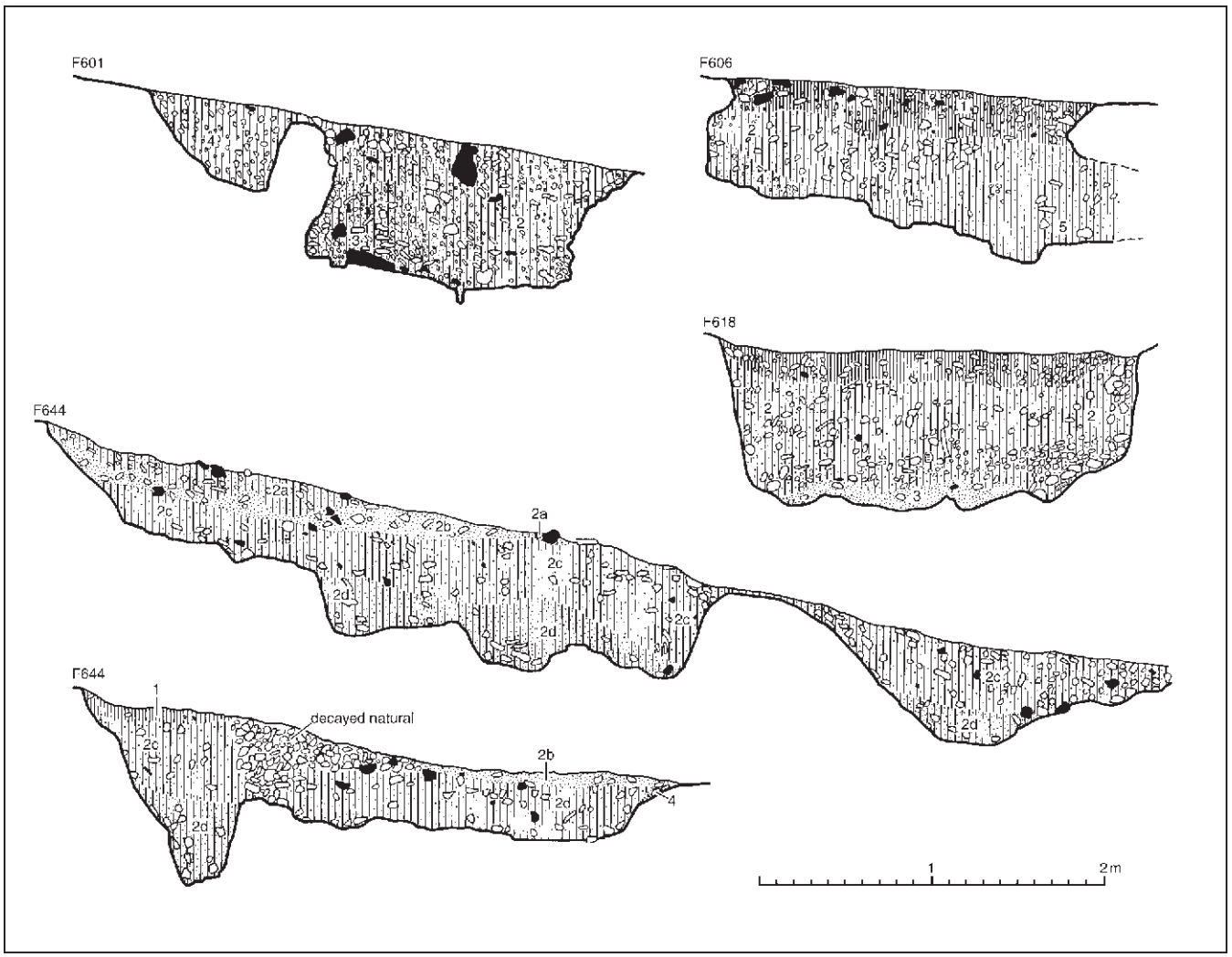

Fig 3.145 Hanford spur. Sections of F644 'flint mine' complex. 2A–2D were distinguished during section drawing. Finds were simply recorded as from L2.

and the next pit and 3340–2910 cal BC (4425±45 BP; OxA-7834) for possibly articulating cattle vertebrae from L3 in F601 (Table 3.19; Ch 4). It is likely that features and/or deposits long-present on the hill were disturbed when the complex was created and some of their contents entered the quarries during backfilling.

This increases the likelihood that any or all of the finds from the complex may have been redeposited. They include two human skull fragments, together with exiguous quantities of struck flint and small, abraded sherds of Neolithic Bowl pottery (Table 3.19). The only exception to this are nine relatively large and fresh sherds, including P52 (Fig 9.4), from L2 in F618.

The composition of the animal bone is exceptional. The species are diverse and, to a larger extent than elsewhere on the hill, wild. They comprise dog, pig, roe deer, red deer, domestic cattle, possibly aurochs, caprines, badger, fox, otter, hare, squirrel, rabbit and mole, as well as numerous amphibians – mainly toads with some frogs (see Legge, 8.1). Rabbit is only represented by one femur, which can be dismissed as intrusive. There was a predominance of juvenile individuals, except among the cattle. Two newborn piglets had been deposited complete and together in L2 of F644 and a further piglet and a juvenile caprine may also have been articulated. Legge sees this fauna as the result of a combination of factors: the toads, whose bones were intact and found in discrete clusters, probably died during hibernation; the foxes, badgers, moles and rabbit may have burrowed into the soft fills and died there; some of the other species may have been killed or scavenged by foxes or killed by badgers; other remains may have been introduced by human agency (see 8.1). There were, however, no obvious burrows, such as were identified in some of the ditch fills on the hill. There is the alternative possibility that much of the mammal bone, as distinct from the amphibians, may already have been present in the immediate area when the pits were excavated and backfilled, like the late fourth/early third millennium cattle vertebrae in L3 of F601 (Table 3.19), while the piglets in L2 of F644, and the other possibly articulated specimens, are particularly likely to have been deliberately incorporated in the backfill.

Table 3.19 Finds from 'flint mines' on the Hanford spur

Lithics are of flint unless otherwise stated. * = recorded, but unidentified or missing.

Quarry and fill stage	*Feature and layer*	*Human remains*	*Animal bone*	*Antler*	*Pottery*	*Lithics*	*Charred material*	*^{14}C*
F848								
Primary silts	F848 L5		*Cattle* femur; *frog* metatarsal		6 sherds/2 g Neolithic Bowl		*?	
Subsequent layers	F848 L4		*Pig* tooth; *caprine* 2 radii, tibia			Flake, 1 misc retouched	*	
	F848 L3				8 sherds/22 g Neolithic Bowl	Flake; striated chalk piece (HN82 800)		
No layer recorded	F489/F848					2 flakes		
F644								
Primary silts	F618 L3		*Cattle* vertebra, skull fragment, rib; *caprine* scapula, humerus; *frog* humerus	*Red deer* antler beam fragments (HN82 608); worn and cut-marked tine (HN82 613)	7 sherds/3g Neolithic Bowl		3 unidentified samples	
	F644 L4		*				8 fragments *Quercus* sp or cf *Quercus* sp, 4 fragments *Corylus avellana*	
	F644 L3A		*Badger* femur					
Backfill	F601 L3		*Dog* tooth, 2 thoracic vertebrae and skull fragments; *fox* phalanx, 2 vertebrae; *pig* scapula, 2 humeri, 3 ulnae, acetabulum, 2 femora, tibia, ischium, metacarpal, metatarsal, 2 astragali, calcaneum, 6 teeth, 2 mandibles, 3 phalanges, 3 vertebrae; *roe deer* 3 teeth, mandible, phalanx; *red deer* metacarpal; *cattle* maxilla, 2 phalanges, 2 possibly articulating caudal vertebrae (HN82 774), skull fragment; *caprine* humerus, ulna, femur, tibia, calcaneum, tooth, 3 mandibles, phalanx, carpal, vertebra; *bird (chicken-sized)* humerus; *frog* 3 humeri, radius-ulna, radius; *rabbit* femur; *hare* vertebra			Flake	11 fragments *Fraxinus excelsior*, 15 fragments *Corylus avellana*, 1 fragment cf *Betula* sp. Also 1 unidentified sample	4425±45 BP (OxA-7834) on 2 possibly articulating cattle caudal vertebrae (HN82 774)
	F601 L2		*		1 sherd/1 g Neolithic Bowl			
	F601 L1		*Badger* humerus, radius, ulna, tibia, 2 vertebrae; otter complete pelvis; *pig* 2 scapulae, 2 humeri, radius, femur, tibia, ischium, 4 metapodials, 11 teeth, 3			Flake	1 fragment *Corylus avellana*	

		mandibles, maxilla, 2 phalanges; *cattle* humerus, 2 femora, metatarsal, tarsal, 2 phalanges, carpal, skull fragment; *caprine* radius, acetabulum, tibia, metacarpal, mandible, phalanx, vertebra; *toad* *					
F604 L1		*Caprine* humerus					
F606 L3		*Dog* humerus, mandible, phalanx; *pig* scapula, humerus, radius, 3 teeth, phalanx; *roe deer* 2 radii, tooth, mandible; *red deer* metatarsal; *cattle* ilium, skull fragment; *caprine* scapula, 2 humeri, ulna, tibia, vertebra; *frog* or *toad* humerus		3 sherds/6 g Neolithic Bowl		In break-through running N from F606: 23 fragments *Corylus avellana* comprising residue from sample HN82 C108, left after measurement of HAR-6037. Also 2 unidentified samples	4270±100 BP (HAR-6037) on bulked charcoal HN82 C108
F606 L2		*Dog* metatarsal; *pig* metatarsal	*Red deer* antler fragment (HN82 806)	1 sherd/6 g Neolithic Bowl	Flake		
F606 L1		*Dog* ulna, metacarpal; *pig* 3 teeth; *cattle* radius-ulna, ilium, metacarpal	*Red deer* lower part of antler beam with brow, bez and part of trez tine anciently removed, burning on distal end of beam near break (HN82 773)	7 sherds/7 g Neolithic Bowl			
F618 L2	Older/mature adult frontal	*Pig* humerus, ulna, tibia, ischium, metatarsal; *red deer* 2 metatarsals, *cattle* 3 humeri, radius-ulna, 2 radii, ulna, metatarsal, 2 teeth, phalanx; *caprine* scapula, humerus, 2 tibiae	*Red deer* worn antler tine (HN82 605); tine and beam fragments (HN82 627); base and part of beam, brow tine recently broken, bez tine removed anciently, but with fragment refitting, beam used for groove-and-splinter (HN82 644); heavily battered base with cut marks on brow tine (HN82 649); tine with ancient wear or damage (HN82 790); beam fragment with heavily worn trez tine, probably part of pick (HN82 797); beam fragment (HN82 804)	31 sherds/124 g Neolithic Bowl, including P52		1 fragment Maloideae. Also 4 unidentified samples	
F639 L2		*Fox* vertebra; *cattle* astragalus, vertebra; *caprine* humerus				*	
F643 L2			*Red deer* tine and beam fragments of shed antler (HN82 532)		Edge-glossed flake	*	

Table 3.19 (*cont'd*)

Quarry and fill stage	*Feature and layer*	*Human remains*	*Animal bone*	*Antler*	*Pottery*	*Lithics*	*Charred material*	*^{14}C*
	F644 L2	Adult vault fragment	*Dog* maxilla, phalanx; *badger* 2 humeri, mandible; *fox* vertebra; *pig* (most if not all from 2 probably articulated juveniles found together; HN82 822) 2 scapulae, 3 humeri, 2 radii-ulnae, 2 radii, 4 ulnae, 2 acetabula, 4 femora, 2 tibiae, 2 ilia, 2 ischia, medial metapodial, 6 metacarpals, 2 metatarsals, astragalus, 2 teeth, 4 mandibles, maxilla, phalanx, 3 vertebrae, skull fragments; *roe deer* 2 femora, 4 metatarsals, mandible, 5 phalanges (2 articulating); *red deer* metacarpal; *cattle* 2 humeri, radius, metacarpal, metatarsal, tooth, rib, skull fragment; *caprine* 2 scapulae, 4 humeri, 2 radii, 2 femora, 3 tibiae, ilium, 4 metacarpals, 6 metatarsals, tooth, 2 maxillae, 3 phalanges (2 articulating), 4 vertebrae, skull fragment; *duck* ulna; *frog* various bones; *hare* humerus, metatarsal; *mole* 2 humeri	*Red deer* antler crown anciently broken from rest of beam, burning on surviving part of beam, heavy wear on tines, rodent-gnawed, in break-through (HN82 744)	4 sherds/14 g Neolithic Bowl	2 flakes	17 fragments *Fraxinus excelsior*, 6 fragments *Corylus avellana*, 2 fragments *Ulmus* sp	3810±45 BP (OxA-7833) on antler r HN82 744
Upper fill	F618 L1		*Pig* humerus				4 fragments *Quercus* sp, 1 fragment Maloideae	
	F644 L1		*Dog* metacarpal; *badger* humerus; *pig* mandible; *roe deer* mandible; *caprine* radius	*Red deer* joining fragments of antler pick — beam and trez tine with cut marks and battering (HN82 607, 611)	1 sherd/8 g Neolithic Bowl			
	F653 L1		*Pig* humerus					
	F687 L1		*Pig* metacarpal					
No layer recorded	F601		*Badger* phalanx; *pig* ulna, femur, tibia, medial metapodial, 2 lateral metapodials, 2 teeth, phalanx; *cattle* phalanx; *caprine* metacarpal; *toad* bones					
	F606		*Pig* radius, ulna, 2 femora, 2 tibiae, 2 mandibles; *caprine* metacarpal		4 sherds/12 g Neolithic Bowl	3 flakes	*	
	F618		*Cattle* scapula, rib	*Red deer* beam fragment (HN82 624)	2 sherds/6 g Neolithic Bowl		4 fragments cf *Corylus avellana*, 1 fragment Maloideae. Also 1 unidentified sample	
	F644		*Badger* scapula, mandible; *pig* mandible	*Red deer* tine, recently broken from beam	4 sherds/16 g Neolithic Bowl			

Fig 3.146 Hanford spur. F618 from the north, showing some tabular flint still in situ *on the floor of the pit and two small tunnels into the side of the pit at a higher level.*

Fig 3.147 Hanford spur. Antler HN82 744 (the sample for OxA-7833) in the west end of the break-through leading from F644 to F618.

3.6.4 The sequence on the Hanford spur

Disparate construction dates for segments 2 and 3 of the outer Hanford outwork prompt three possible conclusions, as discussed in Chapter 4: (1) the whole earthwork was of later fourth millennium date, and the mid-fourth millennium articulating pig tarsals in segment 2 were redeposited; (2) the whole earthwork was of mid-fourth millennium date, but segment 3 underwent a radical cleaning out while segment 2 did not; or (3) segment 3 was built later than segment 2. The first can be neither proved nor disproved, especially as the tarsals formed part of a bulk find so that is impossible to tell if they were articulated when excavated. The cleaning out proposed by the second would have to have affected the entire excavated length of segment 3 (over 20 m) and have been so radical as to have left no trace. An argument against this is that visible recuts extending to the base of the ditch, like that in segment 3 (Fig 3.140: section N–N'), seem to have been localised, and did not coincide with the later fourth millennium samples. The third possibility seems plausible, especially given the inferences from the layout of the earthworks summarised above. It is reinforced by the absence or virtual absence of pottery from segment 4 of the inner outwork and segment 3 of the outer outwork, both arguably later than the other segments, which do contain pottery. A uniformly late date is not out of the question. The human remains from both ditches were slightly less weathered, regardless of segment (see McKinley, 7.1), and the charcoal from both ditches, regardless of segment, has higher proportions of taxa indicative of open conditions than the other ditches, equally regardless of segment (see Austin *et al*, 6.1).

Whatever the interpretation, the dates from the base of segment 3 reflect its excavation or reworking in the third quarter of the fourth millennium, at a time when the other earthworks on the hill were going out of use, with the possible exception of the outer east cross-dyke. Two possible phases of gateway construction, the second perhaps after the burning of the first structure, would accord with renewed activity on the spur, and the dates on redeposited samples from the 'flint mines' show that later fourth millennium activity extended into the interior.

Although the spur was linked to the Stepleton enclosure by outworks, some of the practices evidenced there show more affinity with the central area. In the total collection of Neolithic Bowl pottery, there is almost three times the weight of sherds with Jurassic tempers as there is of those of fabric group 6 – the kind of balance which obtained in the central area and the reverse of that which obtained on the Stepleton spur. Furthermore, the Jurassic fabrics are dominated by group 2B (with fossil shell), as in the central area, rather than group 2A (with ooliths), as on the Stepleton spur. The way in which some of the Hanford pits were left to silt and then recut also echoes practice in the central area (Fig 3.115). It is possible that the Neolithic use of the spur may have related more closely to the central area, to which it provides an easy and proximate approach, than to the Stepleton spur.

Limited ceramic evidence suggests that recuts in the tops of both ditches could have been contemporary with the excavation of the 'flint mines'. The quarries may thus have been the source of the flint fragments which were concentrated in the recuts, whether flint from the quarries was directly placed in the recuts, or both flint and chalk were piled on the banks to weather

down into the recuts. This does nothing to elucidate the original function of the quarries. The recuts alone evidence reworking of the earthworks in the early Bronze Age, after the immediate area had already been in cultivation, represented by the phase VII/a ploughsoils. The reworking may even have extended continuously to comparable recuts in the Stepleton outworks, 750 m to the south-east.

3.7 The hillfort spur

3.7.1 Introduction

The northern spur of the hill is the most dramatically spectacular, even without the great multivallate hillfort which now surrounds it, and which is probably unsurpassed for the beauty of its position and the splendour of its visual impact (Fig 3.148). From the point of view of our understanding of the totality of the Neolithic occupation on the hill the hillfort has acted as a heavy cloak, the folds of which have concealed effectively whatever earlier activity the northern spur might have witnessed. The massive long barrow at its centre showed from an early stage that Neolithic engineers had not ignored this most dramatic and defensible spur, although the extent of their works there remained conjectural. This unknown factor was thrown into sharp relief by the investigation of the western outwork to the west of the main causewayed enclosure in 1982, which clearly showed that the Neolithic defensive outwork system ran right up to and disappeared beneath the later prehistoric multivallation, with the strong suggestion that it continued at least along the west side of the northern spur – thus rendering the whole outwork complex symmetrical around the Main Causewayed Enclosure. Palmer and Oswald (Ch 2) suggest that the very faint traces of an early earthwork, obliterated by the later reinforcement of the south-west Gateway and approaching it from the south-east, is a tiny surviving fragment of the Neolithic outwork, elsewhere totally destroyed, or at least masked, by the later multivallation (The 'relict spur outwork'; Fig 2.10), and that Neolithic north cross-dykes, corresponding to those on the south and east sides of the central dome, survive under the gateway annexe of the fort (Fig 2.9).

The acceptance of the hypothesis that the outwork system had originally skirted at least the west side of the northern spur prompted the question 'Why?' The terrain invited comparison with the situation of Hembury Fort, Devon, and Crickley Hill, Gloucestershire, where highly defensible promontories had been fortified in the Neolithic by bank and ditch to produce an impressive (if in neither instance apparently impregnable) promontory fort, or indeed total enclosure, as is now known at Crickley and suspected at Hembury. Could a similar earthwork exist at Hambledon enclosing the promontory tip – an area of 6 ha? It was a natural consequence that detailed survey should be undertaken of the hillfort interior to reveal, if it were possible, points where undamaged Neolithic works might lie exposed, so that measures might be undertaken to test the degree of Neolithic activity in the area. A highly plausible candidate was the north cross rampart, identified as an early earthwork by Gardner (1928) and interpreted by RCHME as part of the first fortification of the spur (1970, 83). This earthwork lies north of the hillfort long barrow and cuts off the northern third of the spur (Fig 3.148). It was obviously of considerable age: its western end was cut by a quarry for the adjacent Iron Age rampart; its almost fully silted ditch was cut by Iron Age house-platforms; and its bank was reduced to a slight, spread hump 0.40 m high and 6 m wide (Fig 2.12), in contrast to the still massive south cross rampart. This ditch and bank are clearly visible on the ground from the point where they are destroyed by the inner quarry of the multivallation at their south-west extent right up to the ridge of the hill. Thence, however, they become extremely difficult to trace as a result both of house-platform construction and encroachment of the 'tiers' to which Gardner alludes.

3.7.2 The 1986 excavation

An exercise to determine the nature and date of this earthwork and one of the platforms cut into it was undertaken between 23 August and 6 September 1986. The extent of the excavation was rigidly controlled by both English Heritage, through the terms of their Scheduled Monument Consent, and by the predecessor of English Nature, since the hill is a Site of Special Scientific Interest. The excavator is most grateful to these and other organisations for their co-operation and care in the invigilation of their responsibilities on this highly sensitive site. The location selected was one where the ditch, a terminal in the bank, and a house-platform were clearly visible. Excavation was entirely by hand. Initially a trench 5 m wide and 15 m long was opened, bisecting the platform and extending to the bottom of the ditch. An extension to the south-west was then made to complete the excavation of the platform (Fig 3.149–50).

The bank

Beneath the bank was a band of higher, cleaner, harder protected chalk up to 4.50 m wide and 1.70 m to 2.30 m from the ditch edge, its north-west butt corresponding to the terminal of the surviving earthwork (Fig 3.150). Its upper part was fractured and weathered to a depth of *c* 0.15 m, and this eroded material had to be removed before features became visible. In these circumstances it is significant that most of the bones of an adult human right foot (apparently in articulation, since they were recognised and planned as a 'foot'), were found at this level, in what subsequently proved to be the area of F16, a small feature with shelving sides and a flat base which contained two sherds of early Iron Age pottery,

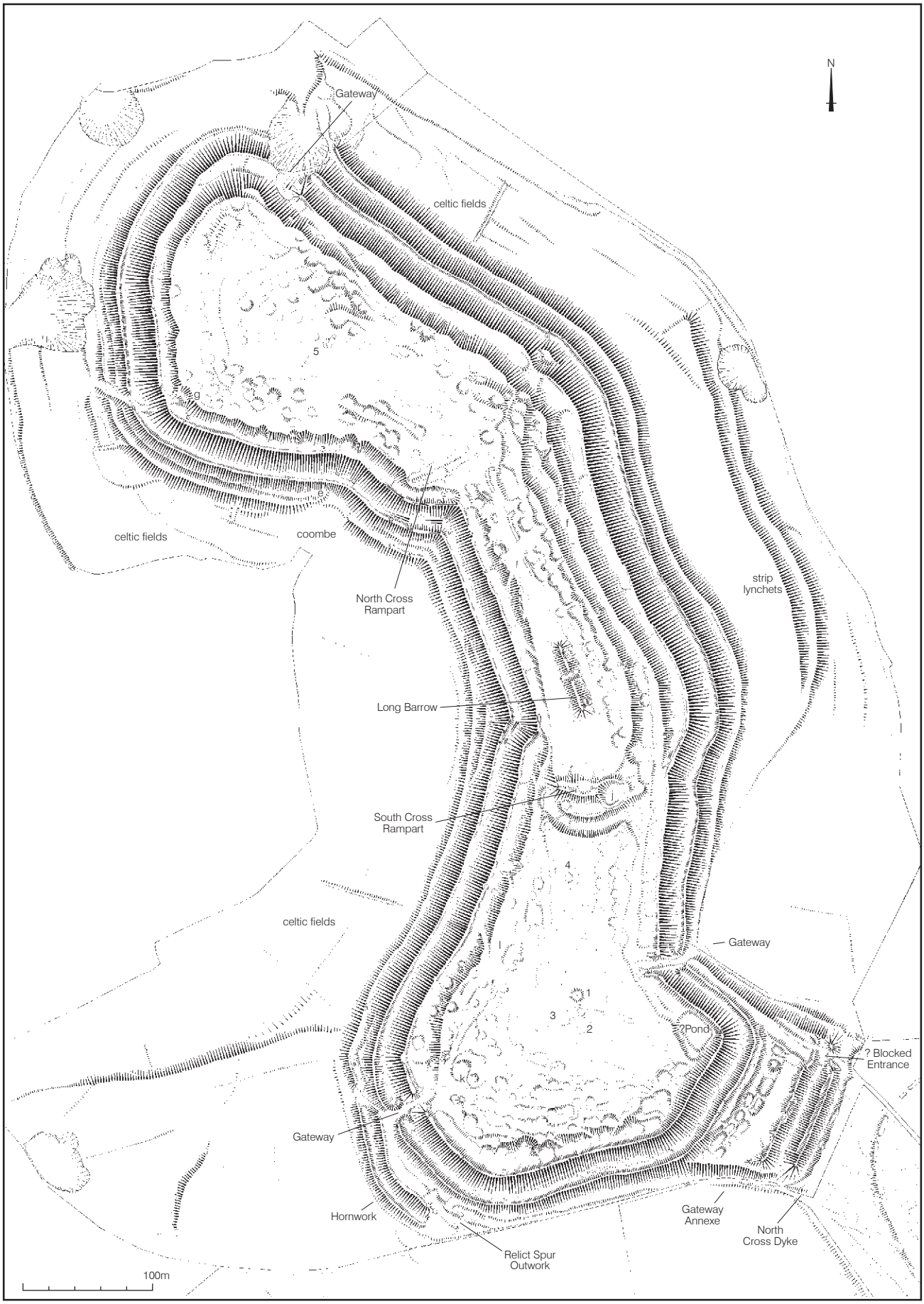

Fig 3.148 Hillfort spur. 1996 survey by RCHME. © English Heritage

a fragment of Greensand and some charcoal. The foot was almost certainly in the upper part of the pit. There were at least nine other small features in the area of the protected chalk, most of which had posthole-like profiles, unlike F16 (Fig 3.150: F11, F13, F14, F15, F20, F21, F22, F24, F25). F13 may have retained some flint packing. Most had maximum dimensions of between 0.20 and 0.35 m. The outliers were F13, at 0.15 m, and F11, which had a ramp, at 0.45 m. They survived to between 0.06 and 0.15 m deep. F11 was particularly rich in finds, containing 70 sherds of early Iron Age pottery, struck flint, animal bone fragments, and charcoal.

Beyond the protected chalk were at least six further features of comparable dimensions (Fig 3.150: F9, F17, F18, F19, F23, F26), of which four (F9, F17, F19, F23) were postholes. F9 was the only one with a clear postpipe and contained 34 sherds of early Iron Age pottery as well as struck flint and animal bone, but the presence of 'burnt/charred wood' as well as charcoal may suggest a recent date. Among the others, there were small quantities of early Iron Age pottery from F18 and F23 and of animal bone from F18, F19 and F23.

The bank itself, although visible as an earthwork, had lost its original structure. Like the Neolithic banks sectioned elsewhere on the hill, it consisted of a greater depth of soil than there was to either side, overlying the protected chalk and spread beyond it (Fig 3.151). This material contained early Iron Age artefacts (Table 3.20). The condition of the bank and the shallowness of the features in the protected chalk beneath it combine to indicate that it had been ploughed. It is the only bank on the hillfort spur to have such a spread profile.

The ditch

The ditch was appreciably deeper in proportion to its width, and much steeper and less rounded in profile, than the Neolithic ditches on the hill. It survived to *c* 3 m wide and 2.40 m deep, and its profile was a blunt 'V', the sides splaying out slightly towards the top, presumably the result of weathering (Figs 3.152–3). It was slightly multilobate in plan and seemed to have been pit-dug, narrowing at the north-east end of the section, as if approaching a constriction. This may mean that there was a ditch butt slightly beyond the limit of excavation, corresponding to the bank terminal and slightly offset from it (cf Fig 2.12).

The lowest 1 m to 1.20 m of the fill consisted of interleaved silts, some of them earthy, and chalk rubble, probably derived from the weathering-back of the upper sides. Although the full 5m length of ditch was completely excavated, finds from these layers – none precisely located but all recorded as 'from primary silt' – are confined to one find of charcoal, an unidentifiable long bone fragment, dated to 770–400 cal BC (2450±35 BP, OxA-7776), and a flint flake. Above these was 0.60 m or more of chalk rubble uninterrupted by finer silts, which gave the impression of having entered the ditch rapidly. Given that there were postholes in the bank area, the most likely source for the rubble would be the collapse of a timber-laced rampart. A single small sherd, possibly Iron Age, from the 'chalk fill' may have come from here or from the underlying layers. The rubble was succeeded by up to 0.60 m of finer earthy silts with varying proportions of chalk which accumulated virtually to the ditch top. The only

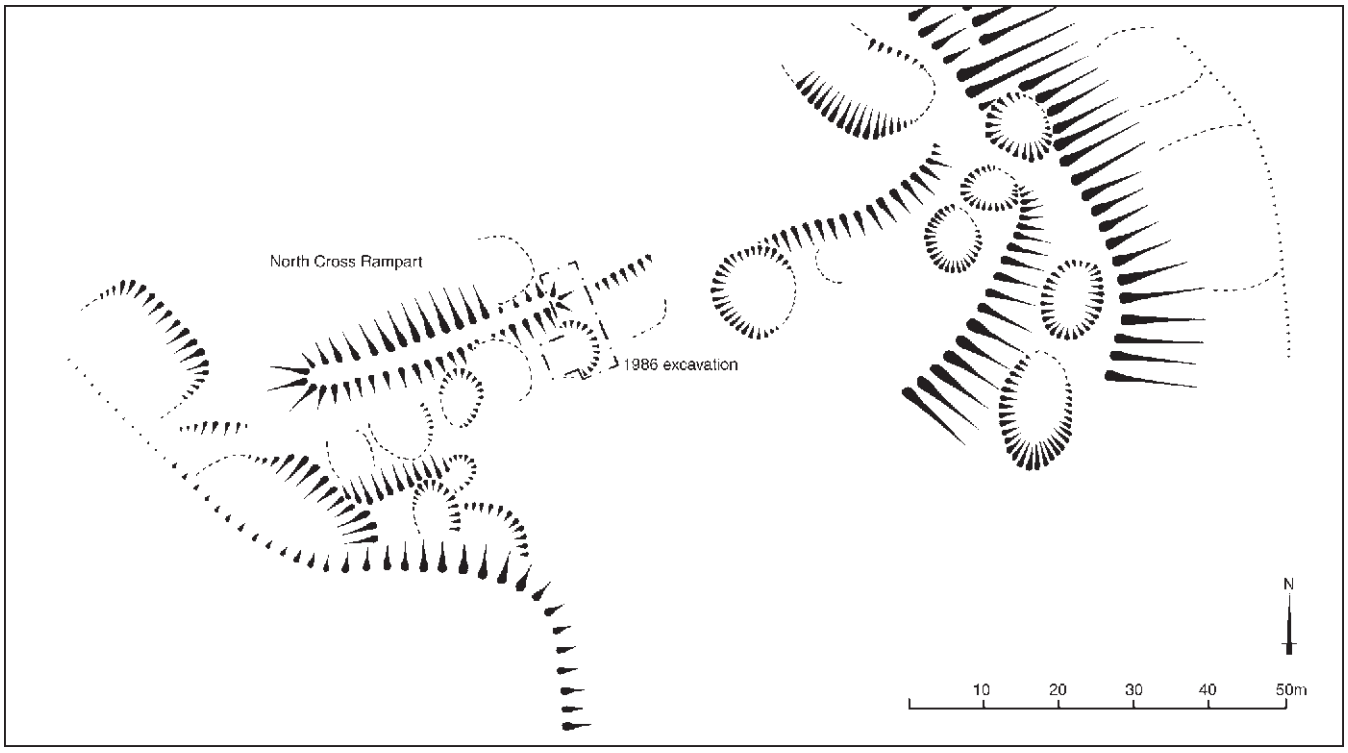

Fig 3.149 Hillfort spur. Earthworks in immediate area of 1986 excavation.

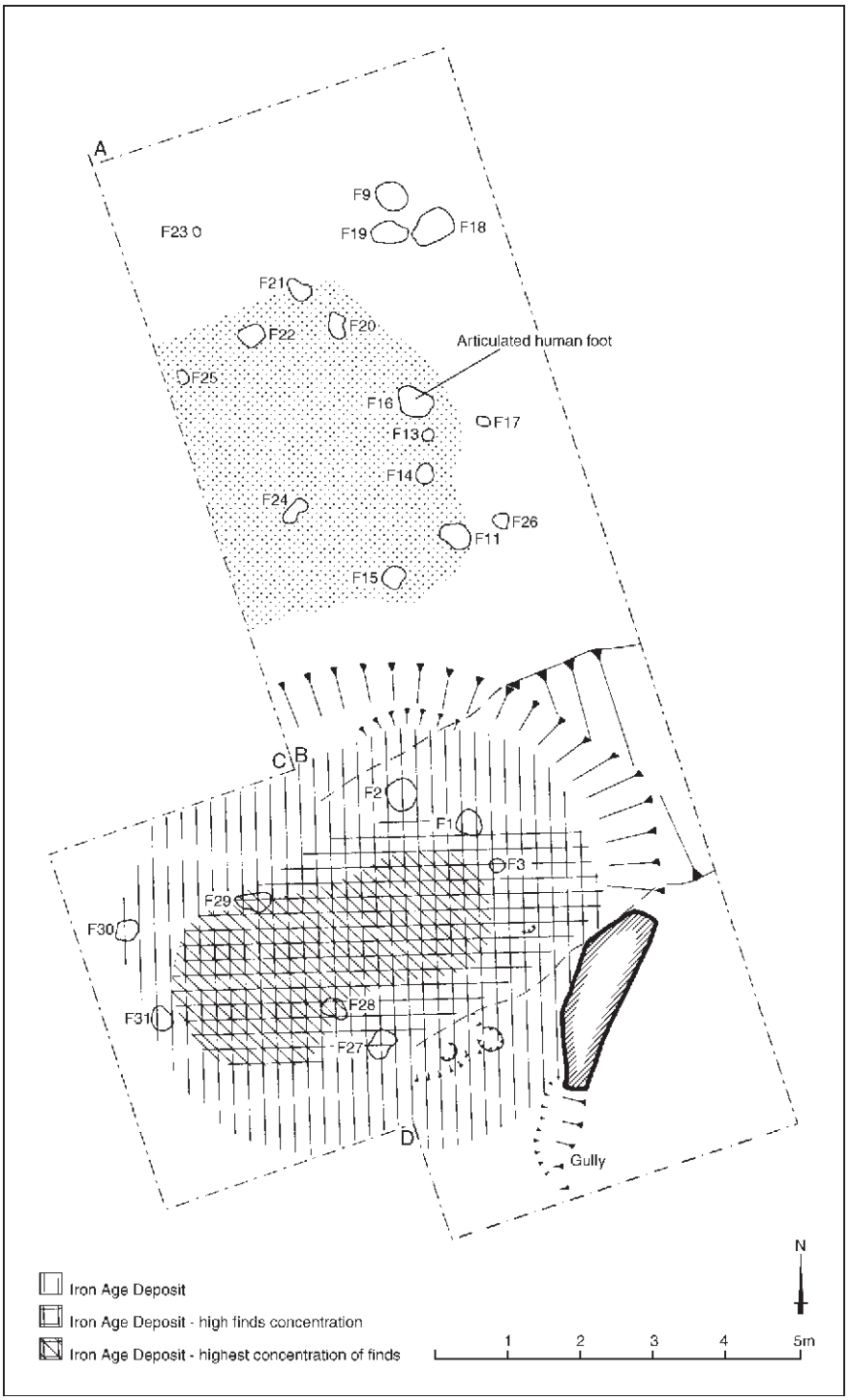

Fig 3.150 Hillfort spur. Plan of 1986 excavation.

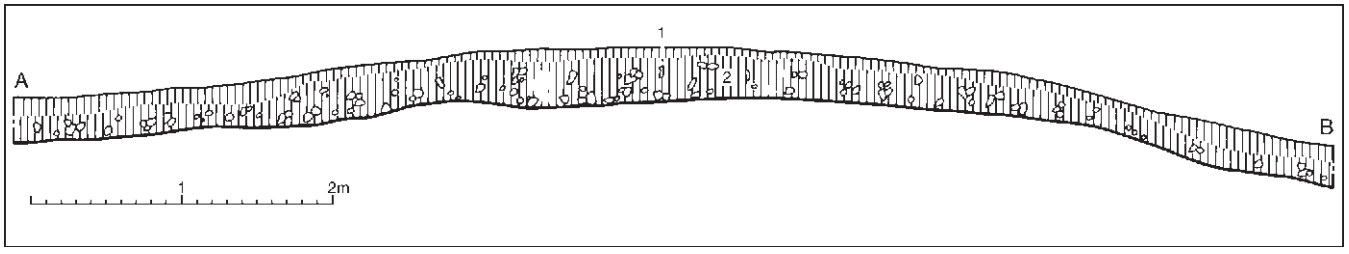

Fig 3.151 Hillfort spur. Section through remnant of bank.

Table 3.20 Finds from the 1986 excavation on the Hillfort spur

* = recorded, but unidentified or missing

Context group	*Metal, glass and amber*	*Sherds of early Iron Age pottery*	*Fired clay*	*Stone*	*Beach pebbles*	*Struck flint*	*Worked bone*	*Human remains*	*Animal bone (nos are of identified bones and teeth)*	*Burnt flint (g)*	*Charcoal*
Features in bank area		116		Greensand fragment	2 flint	10 flakes, 1 misc retouched			20	31.3	* also 'burnt/ charred wood'
Bank	Iron strip or plate fragment, 2 other fragmentary artefacts	347		2 Greensand fragments, Old Red Sandstone saddle quern fragment and quern or rubber fragment	40 flint	Core fragment, 25 flakes, denticulate, 2 misc retouched		Metatarsals and most of phalanges of adult right foot, probably articulated	27	27.2	
Primary ditch silts						Flake			Unidentifiable long bone fragment, dated to 770–400 cal BC (2450±35 BP, OxA-7776)	*	
'Chalk fill' of ditch		1 sherd ?Iron Age (Jurassic temper)									
Secondary ditch silts					L4: 1 flint				L5: 1 fragment burnt bone		
House hollow	Fragments of iron ring-headed or swan's neck pin, 5 other fragmentary artefacts 2 blue glass beads Cylindrical amber bead. Cu alloy ?pin shaft fragment	2612	Spindle whorl, bead, fragments of 2 loomweights, 43 further fragments fired clay	8 Greensand quern or rubber fragments, 63 Greensand fragments, Old Red Sandstone rubber fragment, Old Red Sandstone fragment	61 flint 4 quartzite	21 flakes, 1 misc retouched	Perforated caprine metatarsal and tibia, weaving comb fragment		754 also 1 shell	813.6	*
House postholes		3							2		*
Gully beside house		16			1 flint				13	51.2	*
Misc. and unstratified		137		Greensand quern or rubber fragment, 10 other Greensand fragments, Old Red Sandstone quern or rubber fragment, Old Red Sandstone fragment	16 flint	13 flakes			5	415.3	

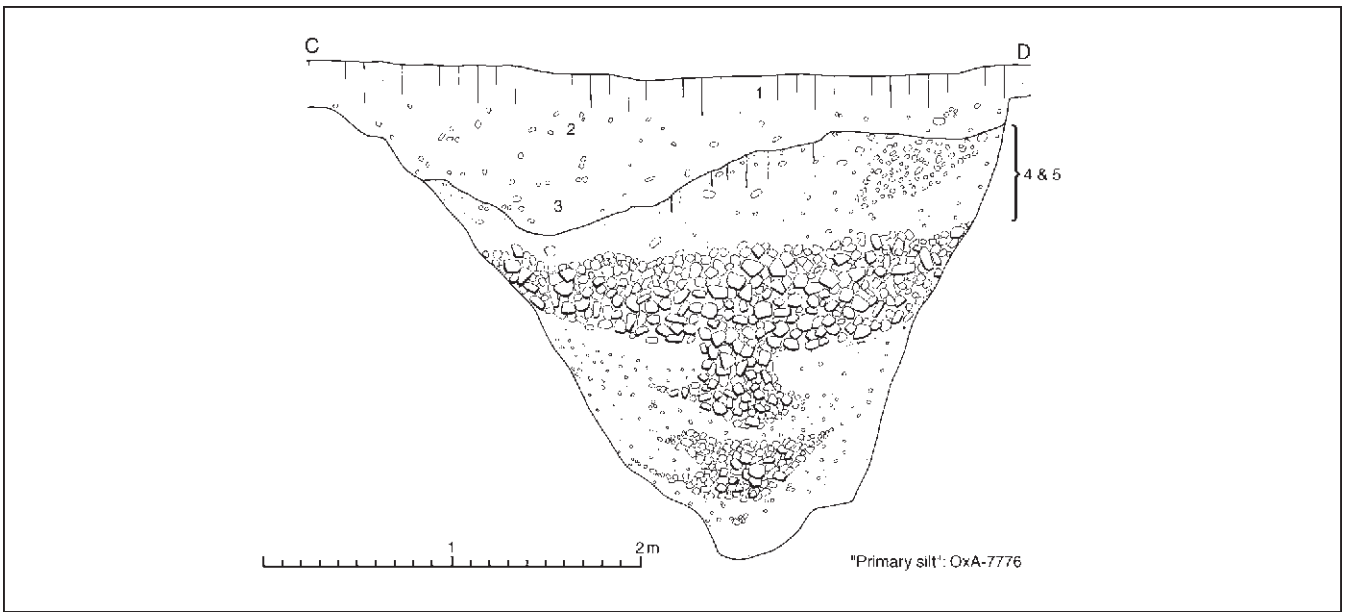

Fig 3.152 Hillfort spur. Section through ditch of North Cross rampart and later house platform.

finds from them were a fragment of burnt bone and a flint beach pebble, possibly from the Chesil Beach (see Roe, 10.1.2).

The house-platform

Cut into the heavily concreted topmost ditch silts and both lips of the ditch was a subcircular hollow *c* 7.50 m in diameter, in the base of which were nine postholes forming a ring *c* 3.50 m in diameter. Two more formed a south-west facing porch at its edge, indicating that the wall had stood close to the edge of the platform (Fig 3.150). On the axis of the porch postholes the otherwise flat floor was broken by a dumbbell-shaped depression up to 0.35 m deep. Concentrated in this depression and extending outwards almost to the edges of the hollow was a loose, fine, black deposit replete with artefacts and animal bone, which was clearly distinguished as soon as the turf was removed. The colour probably reflected an abundance of comminuted charcoal, although macroscopic charcoal was fairly rare. Some of the bone was burnt, and there was more than 1 kg of burnt flint, mainly of 'pot boiler' type (see Saville, 10.2). The animal bone had a history of exposure and attrition, evidenced by fragmentation, dog-gnawing and the preferential survival of the more robust bones. Caprines were the most frequently identified taxon, followed by pig, then cattle. Fragments of dog, fox and horse were also present. Cut-marks attest butchery of the commonest species and decapitation of a dog (see Legge, 8.3). The pottery was in similar condition, characterised by small sherd size and a high degree of abrasion. It is of sixth- to fifth-century BC date, characterised by rounded, slack-shouldered, flared-rim tripartite bowls and situlate jars with upright rims. There is one possible furrowed bowl (Fig 9.15: P190). A small amount of briquetage is present,

Fig 3.153 Hillfort spur. West section and fully excavated ditch, showing irregular, pit-dug character of latter.

and non-local fabrics include Jurassic ones (together over 30% of the sherds) and some sherds from the Wareham/Poole Harbour area, a clay source already in use in the early Iron Age although later exploited on a far larger scale (see Brown, 9.3). Ornaments include a

fragmentary iron ring-headed or swan's neck pin, a fragmentary copper alloy pin, two blue glass beads, an amber bead, and a clay bead. There are also fragments of a few iron fittings, a bone weaving-comb fragment, a clay spindle whorl, fragments from two triangular loomweights, indeterminate fired clay, and fragments from querns or rubbers of Greensand and Old Red Sandstone (see Roe, 10.1.2). The small quantity of struck flint includes a possible denticulate scraper from the bank area and a large flake from the house platform with a bruised, bifacially spalled edge of a type associated with chopping bone or antler. The remainder may be redeposited Neolithic material (see Saville, 10.2). Beach pebbles, probably from the Chesil Beach and probably used as slingstones (see Roe, 10.1.2), were particularly numerous, most coming from the house-platform and some from the bank area (Table 3.20). Others were found on the spur in Cunnington's 1894 excavations and during nineteenth-century quarrying (Cunnington 1895, 157).

The dumbbell-shaped depression is difficult to interpret. It might have been generated by the passage of feet through the doorway and by the sweeping-out of the contents of the floor by the same route, the underlying ditch fills being less resistant than solid chalk would have been. But a building with a hollow more than 0.30 m deep occupying a large part of the central floor space would not have been very usable, unless the hollow was covered with planks. Furthermore, a soft, loose deposit of black earth 0.20 m or more deep and rich in cultural material cannot have been much trampled and is unlikely to have formed a floor. It may have resulted from the burning-down of the house, although it is difficult to see how this would have left not only many of the finds unburnt but extending to the top of the deposit rather than buried underneath it. Alternatively, the hollow may have been cut and midden-like material deposited in it and over the floor during or after the abandonment of the structure. An intermediate source for the deposit would accord with the degraded condition of the animal bone and the pottery. It could also account for the numbers of slingstones. They are unlikely to have related to the original use of the north cross rampart, which was largely silted by the time the first of them was deposited. If the deposit was derived from an earlier context or contexts it could be older than the platform on which it lay.

3.7.3 The earthwork sequence on the hillfort spur

Roger Mercer

The date of 770–400 cal BC (2450±35 BP; OxA-7776) for a bone fragment from a lower fill of the north cross rampart is a *terminus post quem* for the construction of that earthwork, since the bone may have already have been present before its context formed. If the sixth- to fifth-century BC date of the assemblage from the hut platform cut into the silted ditch top is taken at face value, and the upper fills of the ditch are agreed to have accumulated slowly (Fig 3.150), then the north cross rampart may have been built between the late eighth and the late sixth century BC. The cleanliness of its fills may reflect a period of abandonment following its construction. These inferences provide a slight anchor for the sequence of Iron Age earthworks on the spur, which has been refined in the course of four successive surveys and one programme of artefact collection. The successive contributions of each are summarised here.

Gardner 1928

Heywood Sumner's survey provided the first clear view of the hillfort (1913), but he seems to have avoided the subtleties of the hillfort interior – probably retiring daunted before the very scale of the task. An impressionistic picture was, however, given in the sketched detail (based on Heywood Sumner's plan) in *Wessex from the Air* (Crawford and Keiller 1928). An excellent air photograph taken on a midsummer evening (*ibid* pl II, taken from *c* 5200 ft (1600 m) on 14 July 1924 *c* 1900 hrs) revealed a massive complexity of features on the interior of the multivallate hillfort and Gardner, in a beautifully argued piece of field survey analysis, commented upon some of these (1928; Fig 3.148).

1. He referred to a south cross rampart (Crawford and Keiller 1928, fig 5: HK). This rampart he recognised as mutilated, and as forming an early enclosure on the northern summit, which by implication he suggested must pre-date all aspects of the multivallate enclosure. He concluded that the entrance pertaining to this barrier was set at its west end represented by an embanked inturn and suggested that irregularities in the multivallation where it passes the east end of the south cross rampart are created by the incorporation of the latter within the later multivallate construction.
2. He recognised, for the first time, the existence of a north cross rampart (Crawford and Keiller 1928, fig 5: LM). He suggested, wrongly in the writer's view, that this earthwork can be seen to run across the innermost quarry for the multivallation and that it can be traced on the scarp face.
3. He referred to the interior being 'studded with circular depressions' particularly in the northern part – although this limitation is scarcely justified by the aerial photograph to which he is addressing himself, where they appear ubiquitous.
4. He referred to his 'Area Path' or innermost quarry for the multivallation which he suggested to have rectangular depressions 15–19 ft (4.60–5.80 m) in maximum dimensions set out within it. Similar 'rectangular' depressions and circular examples were seen to flank a 'mid-street' thoroughfare running along the ridge from the hillfort long barrow and terminating at the north cross rampart.

5. He went on to discuss the rampart construction on the site, contrasting the outer rampart with the remarkable similarity of conduct of the two inner ramparts.
6. He referred to 'several tiers' on the east side of the central spine of the hillfort, just below the long barrow, two of them *c* 32 ft (9.75 m) across, with two less well-defined examples closer to the summit. Gardner does not proceed to explain these tiers, but they do offer vital information for the interpretation of the hillfort. These tiers are reflected both in the ramparts themselves and in a pair of terraces set outside the defences, which are labelled on the 1928 plan but not commented upon further (Crawford and Keiller 1928, fig 5: A). The writer would argue that these tiers/terraces are the remnant of a prehistoric (and by stratigraphical implication pre-multivallate hillfort) terraced lynchet system. This lynchet system has been destroyed by the inner/middle and outer scarps of the multivallation, and the terraces have been utilised and altered by the construction of platforms on the interior of the site. The terraces would appear to respect the bank of the south cross rampart, whereas on the photograph (although not on the 1928 plan) they would appear to cut into the north cross rampart.
7. In an attempt to fix the site chronologically, Gardner records the existence of a soil exposure cut by local children tobogganing by the northern entrance to such an extent as to cut a deep section through the inner parapet. Immediately beneath the parapet bank a 'thick layer of pottery and charcoal' was revealed producing pottery comparable with that from All Cannings Cross, Wiltshire (Cunnington 1923).

RCHME 1959

Gardners's many acute observations flow so rapidly upon one another as to some extent to obscure the precise nature of his interpretation of the site. Fortunately this deficiency was made good by the surveyors of RCHME, led by Desmond Bonney, in 1959 (RCMHE 1970, 82–83). The Commission's investigators refer to Gardner's account in a relatively brief article, and set out a brief account of the sequence on the site as they perceived it. It may be summarised as follows:

Phase I. The first phase of fortification occupies the most northerly part of the spur – the north cross rampart, comprising a single bank and ditch, although only shallow traces of the ditch survive. 'In addition to crossing the neck of the spur the fortification almost certainly enclosed the whole spur end, about 12 acres [4.85 ha], on the lines of the present inner rampart. In the very beginning, however, it may have been no more than a cross-dyke' (RCHME 1970, 83).

Phase II. The defences were extended southwards 'on a different alignment' as far as the south cross rampart, taking in a further 8 acres (3.25 ha). This rampart consisted of a single bank and ditch separated by a narrow berm of more massive proportions than the north cross rampart. The remaining fragments of this rampart are much altered – the ditch partly filled in and a large house-platform inserted into the bank. An entrance may have existed east (*contra* Gardner) of this feature. The writer suspects this 'east' is in error for 'west'.

Phase III. The hillfort, during this phase 'is extended to occupy the whole spur. The south-east and south-west entrances are constructed' and on the west (*sic* – surely east) side of the central section the second phase ramparts were abandoned and others built further down the slope. (These 'second phase ramparts' are presumably the 'tiers' of Gardner.) The south-west entrance was modified at least once in an attempt to strengthen this weakest point of the hillfort.

The south-east outwork appears to have comprised only the inner bank as far as the marked change in height and direction near its north-east end; the entrance way would then have followed the approximate line of the present path. Subsequently the outwork was strengthened by the extension of the inner bank north-eastward to the shoulder of the slope and by the addition of the outer bank and ditch. Entry was then by means of a narrow ledge, still visible, along the steep slope below the end of the outwork.

Mercer and Palmer 1986

A review of the available plans and aerial photographs of the hillfort prompted the writer to suggest a number of amendments to the interpretation of the monument offered by Gardner and RCHME (Mercer 1986). All the information used in this reassessment was available on the aerial photograph published by Crawford and Keiller and already mentioned above (1928, pl II) and on the survey conducted by RCHME in 1959 (RCHME 1970, facing page 82). Many can also be seen on Figure 2.13. The results are described here with reference to the 1996 RCHME survey, reproduced as Figure 3.148.

Gardner's tiers. Of considerable importance are Gardner's 'tiers', lying to the east of the long barrow and running along the whole central sector of the hillfort. Four are visible *within* the line of the inner rampart quarry. The upper three, beginning immediately east of the long barrow, are much mutilated by house-platforms which have, however, respected their linearity. The fourth, as we enter upon the gradient of the hill-slope, is much more massive. Altogether these four 'tiers' or terraces amount to 50 m in width. The best view of them, without doubt, is to be had from Crawford and Keiller's aerial photograph (1928, pl II). Their 'S' plan is of considerable interest and is, of

course, reflected in the plan of the multivallation at this point (which lies directly below them) and this is again reflected in lynchets visible below the ramparts on the east side of the hillfort (Crawford and Keiller 1928, fig 5: A). The writer suggested that this succession of terraces were just what they appear to be – cultivation terraces created by lynchetting on this steep hill slope, the 'S' plan engendered by the steepening gradient at either end of them. What more natural than that the multivallation engineers, so apparently conscious of every basketful of advantage in their earthwork siting, should utilise these features? The terraces outside the hillfort to the east impinge upon a hanging field system at their northernmost extent. This hanging field system is visible on the north-east, south-west and west slopes of the hill, emerging from beneath the outermost (latest) line of multivallation (Fig 3.148). This relationship between the terraces and the hanging field system is visible on the Crawford and Keiller photograph (1928, pl II).

Within the hillfort, these terraces cut into and damage, to the point of invisibility, the north cross rampart, so that that the early to mid first millennium date of that earthwork furnishes a *terminus post quem* for their construction. One other point of importance flows from a consideration of these terraces. They run southward along the east slope of the ridge and bunch towards a termination just as the hilltop opens out into its flattest and most easily cultivated area – the southern sector. Why do they terminate at this point? A tempting suggestion is that the south cross rampart was already in position to prevent the terraces being led forward on to the flat hill top. Thus the south cross rampart may also provide a *terminus post quem* for their use. An episode of cultivation between the construction of the two earthworks would accord with the uniquely (for the Hillfort spur) spread character of the north cross rampart bank.

The south cross-rampart. Let us now consider the south cross rampart. This is an extremely substantial earthwork quite distinct in form, condition and type from any other on the hill. The rampart is massive – at least 4 m high and 25 m in maximum width, separated by a clear berm from an equally massive ditch which is today 1.50–2 m deep and 16 m wide. The separation of the bank from the ditch by a berm might well suggest that this earthwork was originally vertical-faced and therefore possibly timber-laced. It extends in a broad arc across the narrowest point of the spur enclosing a promontory of some 10 ha. There may be some evidence for an entrance through this rampart at its west end, and there is no doubt that both ends have been curtailed and modified by the multivallation that passes it on either side. Indeed, no longer visible extensions of this earthwork are suggested by irregularities in the layout and height of the multivallation, which once again appears to have made maximum use of a pre-existing feature.

House-platforms. Cut into the forward and rearward face of the south cross rampart are at least two house-platforms. Two-hundred-and-seven of the platforms were plotted by RCHME surveyors in 1959 and it is no reflection upon the excellence of this work to suggest that probably at least double that number of houses stood at one time within the fort. Using the RCHME plan, surveyors in the 1980s were constantly seeing fleetingly, in some particular play of light, further unmarked platforms and, indeed, in the very best conditions of late evening light, even house plans, revealed by their outer ring-grooves on flat areas where platform construction was unnecessary. A sample survey of an area that was in no way untypical doubled the number of platforms known, and the writer would suggest that as a minimum the factor could be applied across the entire site. It was also clear that the inner quarry for the multivallation has been much used as a base for house construction. Two consistent features emerged. Firstly no clear example was encountered in the field, or is visible in the documents, of one house-platform cutting or destroying another. Secondly at no point was a house-platform damaged by the inner quarry for the multivallation.

It was, of course, a major leap to assume that all of these house-platforms were contemporary, although the apparent logic of their layout hinted at a unitary governing force behind their disposition. Similarly they may not have all been occupied for extended periods, although the 'law of least effort' might suggest that they were all occupied at one particular time, for the presence of empty or ruined platforms would surely have inhibited the desire to carry out the considerable expense of labour necessary to create another. Nevertheless, if one were to assume a single broad chronological horizon for their construction, then it would be one that lay posterior to the construction and use of the south cross rampart and one which appeared to respect and be respected by the inner quarry ditch of the multivallation. The fact that the platforms occurred throughout the whole area of the multivallate hillfort tempted the writer to parallel the house-platforms with at least one phase of its construction.

The multivallate hillfort. The multivallate defences comprise an inner and an outer rampart, each with an internal quarry. The inner quarry and rampart are considered first.

The quarry of the inner rampart (Gardner's 'area path') is present at almost all points on the circuit except for two very short stretches on either side of the south-east entrance. It does not, as might be expected, continue across the entrance passages in the south-east and south-west entrances. It does, however, continue across the line of what appeared to be an almost totally wrecked north-east entrance, but which now seems to be of later origin, as noted below.

The inner rampart itself (Gardner's 'parapet') is sited with an infallible eye to the lie of the ground so that a practicable defence is manufactured with the least possible movement of material, and where possible that movement is accomplished from the uphill side. We may commence a circuit of this rampart from the 'north-east Gateway' (the chalk quarry), running initially southwards (Fig 3.148). The rampart makes an appropriate kink inwards by the east end of the north cross rampart to hold the ground and also possibly to use this pre-existing earthwork as a component of its construction. Thence the rampart uses one of the lynchets of the east side of the spur – a line from which it departs steeply as it approaches the south cross rampart where a heightening of the rampart argues convincingly that use again has been made of this remnant feature. From this point the rampart runs for a short distance along the contour (120 m) to the south-east gateway where it turns to form an inturned gateway passage of simple type.

Thence difficult decisions awaited the engineers and a substantial rampart had to be thrown up to cross the neck of the spur – quite a different exercise than had been undertaken so far at any point. It is noteworthy that at this point the internal quarry system seems to have been, to a large extent, abandoned. The need to produce a substantial frontal ditch to enhance the obstacle crossing this point of easy approach provided, of necessity, an adequate external quarry at little elevational disadvantage. Turning westwards once again, the rampart begins to pick up the contour of the hill again and within 100 m has shrunk back to its 'parapet' proportions with the interior quarry as its sole (primary?) material source. Within 75 m of its turning to the north-west we encounter the south-west entrance which appeared to be of somewhat different design from its south-east counterpart, with a sunken trackway furnishing much of the same effect as an inturn of the inner rampart. Thence the inner rampart passes on with a strongly developed internal quarry ditch which clearly impinges upon the south cross rampart as it passes it to the west. Shortly beyond this point the nature of the internal quarry changes where, on this steepest slope of the hill, it has been created to dual effect – to generate also a level platform for house-stances. The rampart continues thus along the neck of the spur to the point of greatest surprise and greatest ingenuity in its design. Just prior to reaching the line of the north cross rampart the rampart swings suddenly to the north-west, dropping downhill nearly 30 m of height in a length of less than 200 m. It seems likely that this daring layout was adopted to maximise the intake of usable hillslope within the *enceinte* – a suggestion borne out by the amazing density of house-platforms over the whole interior.

An interruption in the inner quarry ditch at the point where it and its cognate rampart turn north must be linked to a recent trackway climbing the ramparts on this side from a quarry lower down the hill, and thence the rampart and inner quarry return to the north-east entrance. As stated above the quarry ditch passes directly across this entrance which may suggest the use here of the quarry as an internal approach road (an 'internal barbican'). Any detail of entrance arrangements is now destroyed by quarrying.

The second vallation reflects in such close detail the configuration of the inner rampart just described that it is difficult to conceive of it as a separate phase of building. At all points it shadows its counterpart exactly and matches it precisely and logically at each entrance. Practicality dictates that it was produced by the same process of ditch digging immediately below the inner rampart and the throwing of the consequent material forward and downhill to create what would have been effectively a counterscarp. Practicality also insists that this process would have had to be undertaken when the rampart above, at least at any given point, was complete. In sum the inner two ramparts and their two inner quarries are of one phase which seemed in 1986 to be equated with the occupation of the whole hilltop upon constructed house-platforms. The pottery from the excavated platform suggested that the complex was built during the sixth or perhaps fifth century BC.

Giles 1991–93

Melanie Giles collected artefacts and animal bone from rabbit scrapes on the hillfort over a period of three years, presenting the results in an undergraduate dissertation presented at the University of Sheffield, in which she also reassessed the earthworks and their sequence (Giles 1993). She recorded over a hundred breaks in the turf around the whole perimeter. These lay on the ramparts, just inside them, or outside them, the only one in the interior lying on the south cross-rampart (*ibid*, fig 3.11). Finds of all kinds, however, were concentrated south of the south cross-rampart, especially on the inner rampart in the south-east, behind the 'gateway annexe' (*ibid*, fig 3.12). From this area comes evidence for metal-working, in the form of iron slag attached to a fragment of fired clay, possibly a fragment from the lining of a bowl furnace. Otherwise, the collection conforms to the composition of the assemblage excavated in 1986. A ring-headed iron pin like the excavated example came from the same area as the slag and fired clay. The animal bone was dominated by caprines and pigs (cf Table 8.49). There were beach pebble slingstones and Greensand quern fragments, and the 164 sherds were predominantly of Brown's fabrics C (flint), D (oolite limestone) and A (fine/medium quartz sand; cf Table 9.15). Furthermore, where forms can be reconstructed, they are upright or flaring rims, sometimes with pronounced shoulders, of early Iron Age type, like the vessels from the 1986 excavation and sharing with them a high frequency of red-finished wares, an identification confirmed by Lisa Brown.

Giles interpreted this, together with Gardner's record of All Cannings Cross-like pottery from the north of the circuit, as confirming that the whole development of the hillfort fell within the early Iron Age and that the site was abandoned in favour of Hod Hill.

RCHME 1996

The most recent survey, by a team of RCHME surveyors led by Alastair Oswald, refined and modified the existing picture in several respects (RCHME 1996).

1. The number of certain and possible round barrows within the hillfort was increased. In addition to one first recorded by the Ordnance Survey in the 1880s (Fig 3.148: 1) and another recorded by Grinsell (Fig 3.148: 2; Grinsell 1959), a further two, and possibly three, have been identified (Fig 3.148: 3–5).
2. The north cross rampart is even more likely than before to be part of a complete enclosure, its west end leading into a coombe (Fig 3.148: e), north of which it remains visible as a slight scarp between the later ramparts, extending at least as far as the north end of the spur. Its continuation to the east is indicated by unexcavated causeways across the quarries for the later ramparts, which were first noted by Gardner (Fig 2.12).
3. Two parallel terraces east of and parallel to the central part of the multivallate ramparts are likely to have been largely formed in the medieval period, perhaps on earlier terraces, because they are far more massive than other lynchets on the same side of the hillfort, some of which they post-date (Fig 3.148: 'strip lynchets'). This is without prejudice as to the date of Gardner's tiers and of the scarps within the hillfort, which post-dated the north cross rampart and which provided the basis for the east ramparts of the multivallation (Fig 3.148: f).
4. A crescentic bank around the north side of a house-platform at the east end of the south cross rampart (Fig 3.148: j) is contemporary with the platform rather than part of the rampart, and may mask an original entrance.
5. An apparent north-west entrance to the hillfort (Fig 3.148: g) is a later modification, created by slighting banks into their ditches.
6. A section exposed in a quarry at the north-east tip of the hill shows that material was added to the outer rampart after a turfline had formed over it. The southern rampart also seems to have been heightened, with material incorporating both Iron Age and Neolithic pottery.
7. The south-western and south-eastern gateways were both originally similar simple 'funnels', formed by inturned, expanded rampart terminals. The 'gateway annexe' extending from the south-east angle of the bivallate fort and the hornwork extending from the south-west entrance were both added in the late pre-Roman Iron Age. The particularly broad berm between the ramparts of the 'annexe' may have resulted from the outer rampart's utilising the line of former Neolithic cross-dykes Fig 2.9; Fig 3.148; RCHME 1996, fig 25). The gateway annexe was built in at least two phases, some of its elements remaining unfinished. The blocking of the south-east entrance into the gateway annexe (Figs 2.9, 3.148) may have taken place during the occupation of the hillfort by the Dorset Clubmen in 1645 (Ch 1.5).
8. A possible pond in the south-east corner of the fort (Fig 3.148) may represent the modification of the Iron Age quarry hollow in the medieval period, when the hilltop must have been intensively grazed. An Iron Age origin cannot, however, be ruled out.
9 In the interior of the hillfort, the number of house-platforms is increased to at least 400. Most significantly, their size and layout have been shown to vary, in step with the progressive expansion of the hillfort. In the north and centre of the spur, north of the south cross rampart, they are between 8 and 12 m in diameter, and often isolated, with only two or three pairs. North of the hillfort long barrow, a slightly hollow track, bifurcating towards its south end (Gardner's 'mid-street') is flanked by house-platforms in this large size range and within embanked compounds, the banks most pronounced adjacent to the track (Fig 3.148). House-platforms in the southern third of the hillfort tend to be smaller, *c* 5 m to 8 m in diameter, and closer to each other, laid out in rows on terraces shared by several platforms or along tracks, like one which comes through the south-west entrance (Fig 3.148). Some of those in the quarry scarp are within compounds 14 m to 33 m long, the banks of which post-date the rampart. Two particularly large platforms occupied exceptional positions, one in the east end of the south cross rampart, the other, flanked by two mounds, at the bifurcation of the path coming through the south-west gate (Fig 3.148: j, k). A pair of 5 m diameter platforms fronting an embanked yard and backed by two smaller platforms (Fig 3.148: l), may have been a functioning unit, and a late one, since it lies across a track. Indeed, given the Roman artefacts recovered from the spur, it is tempting to ascribe a sub-Roman date to much of the settlement at the southern end of the hillfort.
10. The original number of house-platforms was almost certainly yet higher, because areas which previously appeared to be without earthworks are occupied by small fields of narrow ridge-and-furrow cultivation, probably of post-medieval date. Some seem to have been laid out on the most prominent of the round barrows, and one may have contributed to the spreading of the north cross rampart bank (Fig 3.148).

3.7.4 Conclusions

Roger Mercer and Frances Healy

Late second or early first millennium activity on the hillfort spur before the construction of the north cross rampart may be reflected by ten sherds of late Bronze Age pottery from superficial contexts on site G, the closest excavated area of the main causewayed enclosure to the hillfort, and another sherd from site E (see 3.3.2). An early Iron Age presence throughout the spur is indicated by pottery described as of All Cannings Cross type, found in rabbit scrapes on the west side of the hill and beneath the inner rampart beside the north entrance (Gardner 1928, 54), and by the pottery collected by Giles (1993) and by RCHME (1996, 42, 95–6) from the south of the perimeter. The location of these last finds on or near the inner rampart strongly suggests that they were already present when it was built, and were probably derived from the quarry scoops behind the rampart, a conclusion reinforced by the extraction of the RCHME finds from a thick layer of dark occupation debris towards the top of the rampart. They would thus have pre-dated the regularly disposed house platforms in the area, some of which were set in the quarry hollows (Fig 3.148). The entire spur, in other words, seems to have been occupied in the early Iron Age, but not necessarily defended.

What are the wider implications of the Iron Age Hambledon evidence? In a sense it furnishes confirmation of points already in evidence. At Chalbury, Dorset, a number of points relating to the Hambledon sequence appear to be replicated. Here a lynchet system would seem to have been utilised in the development of a hillfort, univallate in basic plan but with an outer counterscarp present in parts of the *enceinte*. Within the hillfort a large number of house-platforms are located. An internal quarry ditch for the inner rampart is a prominent feature. Whitley (1943) located early Iron Age material on the site stratified over middle Bronze Age material. Several similar assemblages are also to be seen within Dorset (see Brown, 9.3). Rainsborough, Northamptonshire (Avery *et al* 1967) has produced evidence which is open to the interpretation that bivallation (admittedly of a somewhat distinct kind) was in existence there by the fifth century BC.

The demonstration that the layout of house-platforms varies from one successive enclosed area to the next (Fig 3.148; RCHME 1996, 47–50) reduces the force of the earlier argument that they were all contemporary, although it remains true that none seem to intercut and that, where a house-platform is in any stratigraphic relation to the multivallate ramparts, it post-dates them. It might now be possible to see an alternative development on these lines:

Some large, scattered house-platforms within the north cross rampart or beyond it may have been as early as or earlier than that rampart. Once the south cross rampart was built, and cultivation terraces had developed on the east side of the central spine of the spur, further large house-platforms proliferated on the centre and north of the spur, including the one excavated in 1986 and those in enclosures, lining Gardner's 'mid street' north of the hillfort long barrow. Once the multivallate hillfort was built, smaller house-platforms were built in rows and along tracks on the newly enclosed south part of the spur, echoing a development which took place *c* 250 BC at Maiden Castle, following the main period of rampart building there (Sharples 1994, 93), while others were built in the shelter of the quarries and cut into the south cross rampart.

3.8 Rolph's Wood

Rolph's Wood lies on Clay-with-Flints at ST 8805 1373, 2 km east of Hambledon Hill (Fig 2.2). Air photographs suggested that a vestigial earthwork curving across a field corner in the angle of a shelter belt and a plantation might form part of an enclosure (Ch 2). A trial excavation was consequently undertaken in 1982, when a 15 m × 2 m trench was cut across the apparent bank and ditch. The 'bank' proved to consist of a build-up of soil, perhaps a lynchet, surviving to *c* 0.15 m high and 6.5 m wide. Within it were five fragments/7 g of pottery, three in a possibly early Bronze Age grog- and flint-tempered fabric, two in indeterminate flint-tempered fabrics, together with a flint flake, a possible gunflint and a fragment of burnt flint.

The soil build-up was cut by a V-profiled ditch up to 1.30 m wide and 0.45 m deep, in the lower fill of which were a flint core and two fragments of burnt flint, with a small sherd of Black Burnished Ware in the upper fill. Parallel to this ditch and 7.60 m to 8.10 m away from it was another, with a flattened U-profile up to 0.90 m wide and 0.32 m deep. In its upper fill were six sherds/22g in an oolitic fabric, including a probably Neolithic expanded rim fragment, and four sherds/5 g of Black Burnished Ware, together with a fragment of burnt flint. Unstratified finds comprised one sherd/9 g in a grogged, probably early Bronze Age fabric, a fragment of heathstone, three miscellaneous retouched flint flakes, and 39 fragments of burnt flint.

The curve of the soil build-up in the field corner was the angle of a rectilinear enclosure rather than part of a curvilinear one, since a lynchet-like feature ran from it through the adjoining plantation in a straight line for at least 100 m. If the gunflint is allowed to have been intrusive, the evidence suggests a prehistoric lynchet cut by the flanking ditches of a late Iron Age or early Roman droveway, in an area of Neolithic and Bronze Age activity.

4 Interpeting chronology

Alex Bayliss, Frances Healy, Christopher Bronk Ramsey, F Gerry McCormac and Roger Mercer

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One hundred and fifty-eight radiocarbon age determinations have been obtained on samples from Hambledon Hill and three from Everley Water Meadow. One measurement was made in the early 1960s on a sample from Desmond Bonney's 1958 excavation. Thirty-three were obtained in the 1970s and 1980s. The remainder were processed between 1997 and 1999. The general approach to methodology and sampling strategies is described below in sections 4.1–4. The raw radiocarbon results are presented in sections 4.5–6. The radiocarbon and archaeological evidence are integrated in sections 4.7–9; section 4.7 presents the detailed arguments for the models shown in Figures 4.3–4.20, section 4.8 presents the results of this analysis, and section 4.9 discusses the reliability of our estimates. A chronological summary is presented in Chapter 1.8.

4.1 Approach and objectives

The extended suite of measurements was funded because there had been significant technical and methodological developments since the 1970s, which, for the first time, made it feasible to tackle many of the chronological problems associated with the monument complex, where many structural components lacked any stratigraphic relationship to each other.

The approach to chronology adopted here is unashamedly interpretative. The simple calibrated age ranges of the radiocarbon measurements are accurate estimates of the dates of the samples (and are presented in Table 4.1 and in outline in Figs 4.2–4.20), but it is the dates of the archaeological events represented by those samples that are significant. Methodology is now available which allows the results of the radiocarbon analyses to be combined with other information, such as stratigraphy, to produce realistic estimates of dates of archaeological interest. It should be emphasised that these distributions and ranges are not absolute; they are interpretative *estimates*, which can and will change as further data become available and as other researchers choose to model the existing data from different perspectives.

The technique used is a form of Markov Chain Monte Carlo sampling and has been applied using the program OxCal v3.3 (http://www.rlaha.ox.ac.uk/orau/; Bronk Ramsey 1995; 1998), which uses a mixture of the Metropolis–Hastings algorithm and the more specific Gibbs sampler (Gilks *et al* 1996; Gelfand and Smith 1990). Details of the algorithms employed by this program are available from the on-line manual or in Bronk Ramsey (1995; 1998*)*, and fully worked examples are given in the series of papers by Buck *et al* (1991; 1992), Buck, Litton *et al* (1994), and Buck, Christen *et al* (1994). The algorithms used in the models described below can be derived from the structure shown in Figures 4.3–4.13 and 4.15–4.20.

Replicate radiocarbon measurements on the same sample have been combined before calibration by taking a weighted mean, and the consistency of groups of results which are, or may be, of the same actual age has been tested using methods outlined by Ward and Wilson (1978).

This chapter concentrates on the archaeology – particularly on the reasoning behind the interpretative choices made in producing the models presented. These archaeological decisions fundamentally underpin the choice of statistical model.

Since the late 1970s there have also been major scientific advances which allow more reliance to be placed on the accuracy of samples. Firstly, the advent of Accelerator Mass Spectrometry (AMS) has allowed archaeologists to choose from a far greater range of material (Harris 1987; Mook 1984). This has led to an increased emphasis on taphonomy, minimising the age difference between the sample dated and the context from which it came. It has also made it possible to date single entity, rather than bulked, samples (Ashmore 1999), entailing fewer assumptions about the source of material in a context. The identification of charcoals before submission has made it possible to select short-life samples for dating, thus minimising the 'old wood offset' (Bowman 1990, 15). All these factors combine to increase the reliability of the dated samples and their capacity to answer the chronological questions here posed of them.

Scientific developments have also improved the accuracy and precision of the radiocarbon measurements themselves. More formal approaches to quality assurance have been adopted, including a series of international laboratory inter-comparison exercises with published results (Otlet *et al* 1980; Scott *et al* 1990; Rozanski *et al* 1992; Scott *et al* 1998). There have also been significant improvements in the methods used to process bone and antler samples since the early 1970s (Longin 1971; Gillespie 1989; Hedges and Law 1989; Hedges and van Klinken 1992), although

the dating of burnt bone and antler sometimes remains problematic (Ambers *et al* 1999, 331). Technical developments in sample processing and measurement have also enabled high-precision dating to be developed (Pearson 1984), and considerable reductions in the quoted error of AMS measurements to be achieved over the last decade (Bayliss 1998, fig 11.9).

The advent of internationally agreed high-precision calibration datasets (Stuiver and Pearson 1986; Pearson and Stuiver 1986; Stuiver *et al* 1998), based on independently dated tree-ring samples, has also increased the accuracy and precision of calibrated dates and is fundamental to the applications and analyses presented here.

These methodological and scientific developments have enabled a sounder chronological framework for the Neolithic and Bronze Age in Britain to be created. A number of extensive dating programmes provide the foundations of a chronology within which the Hambledon results can be interpreted (Barclay and Halpin 1999; Barclay and Bayliss 1999; Cleal *et al* 1995; Needham 1996; Needham *et al* 1997; Sharples 1991; Whittle *et al* 1999). The Hambledon programme should be regarded as the latest, and most extensive, contribution to this process.

The principal aims of the 1996–9 dating programme were:

- to determine the date of construction of the major earthworks, establishing their sequence where direct stratigraphic relationships were absent and testing hypotheses formulated from other evidence such as earthwork survey
- to establish the duration of the Neolithic use of the complex
- to establish the date of certain finds, such as isolated burials and assemblages of charred plant remains

New radiocarbon samples were selected to answer these questions, and the existing measurements were reassessed with these objectives in mind, along with identification of any material remaining from dated samples, which was retrieved from the laboratory at AERE Harwell at the time of its demolition in 1995.

4.2 Sample selection

The initial criteria for sample selection were that:

- the context in which the sample was found could be securely identified
- the sample was directly associated with the event or phase to be dated
- the material could be located in the collections
- the material was suitable for reliable scientific analysis, including replicate or repeat measurement if required
- enough similar material would remain in the archive to allow future researchers to repeat the dating programme.

The taphonomic relationship between a sample and its context is the most hazardous link in the process of sample selection, since the route by which a sample came to be in its context is a matter of interpretative decision rather than certain knowledge. Extreme rigour was attempted at this stage. Material was selected only where a sample seemed to have been put fresh into its context or where there was an apparent functional relationship between sample and context. The main categories of material which met these taphonomic criteria were:

- Articulat*ed* bone – this must have been buried with tendons attached or it would not have remained in articulation, and was hence almost certainly less than six months old when buried (Mant 1987, 71). Not all such deposits on Hambledon Hill were immediately covered over, including some articulated human skeletons which had been gnawed by rodents (see McKinley, Ch 5)
- Articulat*ing* bone – groups of animal bone from the same context which were found to articulate during analysis, but which were not recorded as articulated at the point of excavation. These samples were probably articulated in the ground, or only slightly disturbed, and hence likely to be as close in age to their contexts as articulated bone
- Antler picks and related implements – if found on the base of a ditch or pit, a context which strongly indicates that they were used to excavate the feature and placed in it or discarded on completion
- Charcoal from short-lived species – if from contexts in which it seemed to have been freshly deposited, eg in powdery, ashy deposits unlikely to have survived any degree of exposure
- Charred hazelnut shells – where they formed substantial and discrete deposits likely to represent a single event
- Superficial residues on well-preserved joining sherds – where the survival of the residue seemed to indicate that the sherds had not been exposed to weathering and the proximity of a number of sherds from the same vessel suggested that the vessel was not redeposited
- Samples of intrinsic interest – where the context was not the issue, such as single cereal grains to date specific grain assemblages
- Samples which would provide reliable *termini post quos*, such as bone buried beneath a bank.

A provisional list of samples from suitable contexts was made from the paper archive. A few had to be abandoned because they could not be located. Some, once located, proved physically unsuitable for dating. Others proved to be so fragmented or badly weathered as to suggest that they may have pre-dated their contexts. Others again did not live up to their paper descriptions when examined by the relevant specialists, as in the case of articulations recorded in the field that

could not be identified among the bones in the bag. Samples for dating were selected from the remainder. Even after this process, a few contextual uncertainties emerged as analysis of the record progressed.

4.3 Dating strategies

Once a pool of potentially suitable samples had been identified, the initial emphasis was on dating phases of activity within the most extensively excavated earthworks: the Stepleton enclosure, the inner and middle Stepleton outworks, the Shroton spur outwork, and the main enclosure. To this end simulations of the sequences in each earthwork were constructed (eg Fig 4.1). These models included the stratigraphic order of samples and phases, existing radiocarbon determinations, and archaeological estimates of the likely age of the monuments. Likely radiocarbon results were simulated using the R_Simulate function in OxCal, with error terms estimated on the basis of the material available and the type of measurement to be commissioned (eg high-precision, single-run AMS, or multiple-run AMS). The models were largely determined by the availability of articulated or articulating (ie apparently non-redeposited) bone samples in the upper levels of ditches. Once constructed, the models were used to determine how many measurements would be needed from those parts of the sequence where suitable material was relatively abundant. In particular, how many dates were needed from the bottom of ditches? How many repeat single-entity samples should be dated from charred deposits? Which parts of the stratigraphy would benefit sufficiently from high precision measurements to justify the additional destruction required?

Sampling was sequential, so that the results of each round of dating could inform the selection of samples for subsequent submissions. This allowed for ideas about the chronology originally built into the simulations to be revised. It also made possible the construction of a strategy to deal with the irregularities of a particular segment of calibration curve, once that segment had been defined by the first round of dating. Furthermore, more ambitious problems of chronology could be tackled if the initial results looked promising.

It will, perhaps, be helpful at this point to describe one sequence in detail, that from the Stepleton enclosure, to illustrate how this process worked. Samples were initially chosen to provide a sequence from a single segment (3; Fig 4.1), to avoid any possibility of different construction dates for segments in different parts of the circuit. Fortunately, there were several antler implements on the base of the segment and in the primary silt, all apparently discarded or placed there after its construction. The simulation suggested that, since the base of the sequence was not constrained, high-precision measurements would be most effective. Three antler implements were dated in this way (UB-4151–3) with AMS replicates run on one sample (OxA-7042–3). These measurements were not statistically significantly different (Table 4.1) and have been combined before calibration in the final model. At the time of submission, an articulated dog skeleton (ST80 1156) was thought to have lain in the upper part of the interleaved chalk rubble and silts that overlay the antlers. As

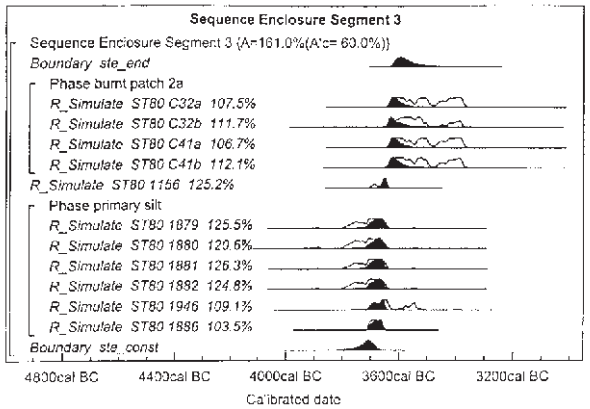

Fig 4.1 Probability distributions of simulated dates from segment 3 of the Stepleton enclosure: each distribution represents the relative probability that an event occurred at some particular time. For each of the simulated radiocarbon measurements two distributions have been plotted; one in outline, which is the result of simple radiocarbon calibration, and a solid one, which is based on the chronological model used; the 'event' associated with, for example, ST80 1886*, is the growth of that antler. The other distributions correspond to aspects of the model. For example, the distribution* ste_const *is the estimated date for the construction of the enclosure, which must have been built at a point shortly before the antlers on the base of the ditch were deposited. In this simulation the sequence is assumed to have accumulated between 3700 BC and 3600 BC. In this and all similar figures the large square brackets down the left-hand side, along with the OxCal keywords, define the overall model exactly. © English Heritage (Ancient Monuments Laboratory)*

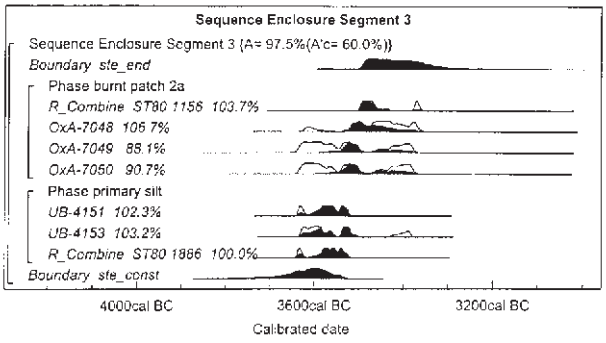

Fig 4.2 Probability distributions of dates from segment 3 of the Stepleton enclosure. Each distribution represents the relative probability that an event occurred at a particular time. For each of the radiocarbon dates two distributions have been plotted, as in Figure 4.1. This graph shows the actual radiocarbon results in the model defined in the simulation shown in Figure 4.1. © English Heritage (Ancient Monuments Laboratory)

this sample would constrain our estimate for construction of the enclosure, a high-precision measurement and one replicate AMS measurement were obtained (UB-4138; OxA-7041). These measurements are not statistically consistent, but were combined before calibration (Table 4.1; see section 4.5 below). Further work on the archive showed that the skeleton had in fact lain on the surface of the rubble fills rather than within them. This meant that the model had to be revised, the stratigraphic position of the dog becoming equivalent to that of single-entity short-life charcoal samples from a deposit of burnt material in a pit cut into the rubble fills from the same surface (OxA-7048–50). Repeat measurements were obtained to confirm the interpretation of the taphonomy of this deposit as the remains of a single fire, particularly in view of the concerns raised by Ashmore (1999). The two replicate measurements are not significantly statistically different ($T'=1.4$; $T'(5\%)=3.8$; $\nu=1$), but have not been combined because it is likely that the charcoal fragments contained tree-rings of different ages and so may not be of exactly the same age. The revised model for segment 3 of the Stepleton enclosure, incorporating the actual radiocarbon measurements, is shown in Figure 4.2. For the final model for the dating of the whole enclosure, which incorporates measurements from other segments of the ditch and relationships with the sequences from other related monuments, see Figure 4.5 and section 4.7.2 below. Comparison of Figures 4.1 and 4.2 illustrates how statistical criteria, as well as archaeological ones, affected sample selection.

4.4 Radiocarbon analysis and quality assurance

The first radiocarbon measurement on material from Hambledon was carried out by the National Physics Laboratory, Teddington, in 1964. The sample, from Bonney's 1958 excavations, consisted of bulked *Quercus*, *Corylus* and possibly *Betula* charcoal from the base of the inner south cross-dyke. No quality assurance measurements survive for this sample, although known-age and absolute standards were available to the laboratory at this period. The measurement was calculated using the Libby half-life (5568 years) and the counting error of ±41 was increased to ±90 to allow for uncertainty introduced by 'the De Vries effect'. The sample was prepared according to methods outlined by Callow *et al* (1963) and measured by gas proportional counting (carbon dioxide). Further details of error calculations are provided by Callow *et al* (1965).

Thirty radiocarbon measurements were completed by the laboratory at AERE Harwell on material from Hambledon Hill and Everley Water Meadow between 1977 and 1989. All were submitted during the course of fieldwork, although the final results from the mini-counter system did not become available until 1989. Apart from one fragment of charred antler and one group of charred hazelnut shells, the samples consisted of charcoal from coherent spreads or from charred structural timbers.

Seven samples (HAR-2369–70, HAR-6038, and HAR-9166–9) were processed using the miniature gas proportional counting system (carbon dioxide): samples were prepared as described by Otlet and Warchal (1978), and were combusted to carbon dioxide, purified, and counted as outlined by Otlet *et al* (1983; 1986). The remaining samples were processed using the standard liquid scintillation procedure at Harwell: samples were again prepared according to methods outlined in Otlet and Warchal (1978), but combusted to carbon dioxide and synthesised to benzene using a method similar to that initially described by Tamers (1965) and a vanadium-based catalyst (Otlet 1977). The radiocarbon content was measured using liquid scintillation counting as described by Otlet (1979).

In the late 1970s the importance of quality assurance for radiocarbon dating was less widely appreciated, although at this time the first steps towards formal inter-laboratory comparison were being taken within the UK. The results of these measurements were published in 1980 (Otlet *et al* 1980) and show that the British laboratories were in good agreement. The first of the Hambledon samples measured at Harwell were processed during this period.

Samples processed at the Oxford Radiocarbon Accelerator Unit were prepared and measured using methods outlined in Hedges *et al* (1989) and Bronk Ramsey and Hedges (1997). The pre-treatment method used for bone samples was a collagen extraction (Law and Hedges 1989; Hedges *et al* 1989) followed by gelatinisation and separation by filtration (Bronk Ramsey *et al* 2000). The three samples dated in the mid-1980s (OxA-931–33) were processed as described by Batten *et al* (1986) and Ward *et al* (1984).

In Belfast samples were processed according to methods outlined in Longin (1971), Pearson (1984), McCormac (1992), and McCormac *et al* (1993) and measured using Liquid Scintillation Counting (Noakes *et al* 1965). All bone samples were processed and measured as described in McCormac and Housley (1995). Samples UB-4267–9, UB-4271–2, UB-4135–8, and UB-4242–3 were processed using the small sample high-precision system described by Wilson *et al* (1996) and Wilson (1997).

Both laboratories maintain continual programmes of quality assurance procedures, in addition to participation in international inter-comparisons (Rozanski *et al* 1992; Scott *et al* 1998). These tests indicate no laboratory offsets and demonstrate the validity of the precision quoted. The results of the two laboratories for the most recent inter-comparison are in good agreement with the mean results and in excellent agreement with each other (http://www.rlaha.ox.ac.uk/ orau/). Research in radiocarbon calibration continues at the Belfast laboratory, resulting in the measurement of large numbers of known-age samples (McCormac *et al* 1998). The Oxford Radiocarbon Accelerator Unit also has an

Table 4.1 Radiocarbon age determinations

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
Boreal and related samples	OxA-7845		HN82 C123. Single fragment of *Pinus sylvestris* charcoal (P Austin). HN82 F279, layer 4A (Fig 3.4)	8400±60	–24.9	–	7580–7200 cal BC	–
	OxA-7846		HN82 C115. Single fragment of *Pinus sylvestris* charcoal (P Austin). HN82 F279, layer 3A (Fig 3.4)	8480±55	–24.4	–	7600–7380 cal BC	–
	OxA-7816		WOWK82 C31. Single fragment of *Pinus sylvestris* charcoal (P Austin) from the first of two successive sockets in a possible posthole within the protected chalk of the inner south cross dyke bank. WOWK area 3 F4 (Fig 3.3)	8725±55	–25.1	–	8160–7590 cal BC	–
	OxA-8861		WOWK82 C4A. *Fraxinus excelsior* charcoal (P Austin) from the second of two successive sockets in a possible posthole within the protected chalk of the inner south cross dyke bank. WOWK area 3 F4 (Fig 3.3)	4780±45	–24.0	–	3650–3380 cal BC	*3650–3510 cal BC*
	OxA-8862		WOWK C4B. As OxA-8861	4690±45	–24.1	–	3640–3380 cal BC	*3640–3550 cal BC (47%)* or *3540–3420 cal BC (48%)*
Main enclosure	OxA-8855	I	HH76 1942. Cattle rib and metatarsal fragments (A J Legge) from primary silt. Segment 5 Q1 layer 8	4805±45	–21.2	–	3660–3380 cal BC	*3660–3500 cal BC*
	OxA-8852	I	HH76 2977. Cattle ilium fragment (A J Legge) from primary silt. Segment 6.2 layer 9	4620±40	–22.0	–	3520–3140 cal BC	*3520–3400 cal BC*
	OxA-8853	I	HH76 2976. Cattle or red deer ilium fragment (A J Legge) from same context as HH76 2977 and 0.10 m from it	4790±45	–21.9	–	3660–3380 cal BC	*3660–3500 cal BC (94%)* or *3420–3400 cal BC (1%)*
	OxA-7775	I	HH76 2897. Articulating cattle radius and ulna (A J Legge) from the primary silt, in bulk find with other animal bone. Segment 7, layer 9	4825±30	–21.6	–	3660–3530 cal BC	*3660–3620 cal BC (39%)* or *3590–3520 (56%)*
	OxA-8906	I	HH76 2900. Pig calcaneum (A J Legge) from same context as OxA-7775	4820±45	–20.2	–	3700–3520 cal BC	*3670–3510 cal BC*
	OxA-8854	I	HH76 2900A. Cattle scapula fragments (A J Legge) from same context as OxA-7775, -8906	4855±45	–20.9	–	3710–3530 cal BC	*3680–3620 cal BC (56%)* or *3600–3520 cal BC (39%)*
	OxA-7772	I	HH75 1067. Cattle horncore (A J Legge) from primary silt. Segment 9, layer 11	4735±40	–20.8	–	3640–3370 cal BC	*3640–3490 cal BC (75%)* or *3460–3380 cal BC (20%)*
	OxA-7771	I	HH75 895. Distal pig femur fragment (A J Legge) from primary silt. Segment 9, layer 10	4820±45	–20.6	-	3700–3520 cal BC	*3670–3520 cal BC*
	OxA-7767	I	HH76 2144. Pig acetabulum and ilium fragments (A J Legge) from primary silt. Segment 16, layer 11	4735±40	–19.7	-	3640–3370 cal BC	*3640–3560 cal BC*
	OxA-7768	I or II	HH76 1948. Femur from articulated burial of human juvenile (J I McKinley) cut into base of shallow subsegment, covered by flint cairn. Segment 18, quadrant 2d (Figs 3.32–34)	4810±45	–21.6	4803±33 (T'=0.0; T' (5%) =3.8; ν=1)	3650–3520 cal BC	*3660–3540 cal BC*
	OxA-7769	I or II	Replicate of OxA-7768	4795±50	–21.2			

Main enclosure	OxA-7027	II	HH75 1214. Single fragment of *Corylus* sp charcoal (P Austin) from localised lens of ashy grey silt directly overlying primary silt. Segment 9, layer 13	4645±40	–25.3	–	3620–3350 cal BC	*3630–3600 cal BC (3%)* or *3530–3390 cal BC (92%)*
	OxA-7824	II	HH75 1214. Single fragment of *Corylus* sp charcoal (P Austin) from the same deposit as OxA-7027	4695±45	–24.7	-	3640–3360 cal BC	*3640–3560 cal BC (25%)* or *3540–3380 cal BC (70%)*
	HAR-1882	II	HH75 2134. Bulked *Crataegus* sp charcoal not twiggy (50% identified; C Keepax) from band of cultural material deposited after primary silt had accumulated. Segment 11, layer 11	4560±90	–24.9	–	3630–2920 cal BC	*3630–3580 cal BC (5%)* or *3530–3310 cal BC (90%)*
	OxA-7773	II/III	HH76 2625. Lowermost lumbar vertebra from articulated lower trunk and femurs of young/younger mature human male (J I McKinley) on surface of phase II silts, cut-marked and dog-gnawed. Segment 6.1, interface of layers 9 and 8 (Figs 3.15–17)	4765±45	–20.4	4742±29 T'=0.4; T' (5%) =3.8; ν=1	3640–3370 cal BC	*3460–3370 cal BC*
	OxA-7774	II/III	Replicate of OxA-7773.	4725±40	–20.5			
	OxA-7028	II/III	HH75 1041. Single fragment of *Corylus* sp charcoal (P Austin) from lens of ashy grey silt overlying layer 13 (context of OxA-7027, -7824) and separated from it by a thin run of chalky silt. Segment 9, layer 12	4735±40	–26.0	–	3640–3370 cal BC	*3640–3490 cal BC (75%)* or *3470–3380 cal BC (20%)*
	OxA-7029	II/III	HH75 1095. Single fragment of *Corylus* sp charcoal (P Austin). From same context as OxA-7028	4900±40	–25.9	–	3770–3640 cal BC	*3770–3630 cal BC*
	HAR-1886	II/III	HH75 846. Bulked sample of *Sorbus* sp and *Corylus* sp, not twiggy (50% identified; C Keepax). From same context as OxA-7028, -7029	4840±150	–26.4	–	3970–3340 cal BC	*3950–3390 cal BC*
	OxA-7770	I or III	HH75 749. Cattle radius (A J Legge) from segment 9, layer 9. Submitted as a sample from the primary silt. This layer number, however, proved to have been applied both to part of the primary silt and to at least one silty lens in the chalk rubble fills. The stage excavation had reached on the day the find was made suggests that the sample came from the latter	4520±40	–22.1	–	3370–3030 cal BC	*3370–3310 cal BC*
	OxA-7765	I or III	HH76 2077A. Cattle radius (A J Legge) from segment 19, layer 10. Submitted as a sample from the primary silt. This layer number, however, proved to have been applied both to part of the primary silt and to the overlying chalk rubble fill. It is unclear from which the sample came	4705±45	–21.9	–	3640–3360 cal BC	*3640–3490 cal BC (94%)* or *3470–3450 cal BC (1%)*
	OxA-7766	I or III	HH76 2077B. Distal end of right pig humerus (A J Legge) from the same context as OxA-7765	4730±40	–20.0	–	3640–3370 cal BC	*3640–3500 cal BC*
	OxA-7015	III	HH75 1585. Articulated cattle radius-ulna, and radial, ulnar, and intermediate carpals (A J Legge). Segment 9, layer 8A	4690±60	–21.0	4712±42 T'=0.3; T' (5%)	3640–3370 cal BC	*3460–3360 cal BC*
	OxA-7016	III	Replicate of OxA-7015	4735±60	–21.0	=3.8; ν=1		
	OxA-7097	III	HH75 932. Articulating dog metacarpals and phalanx (A J Legge), in bulk find with other bones. Segment 9, layer 8	4855±60	–21.5	4865±33 T'=0.0; T' (5%)	3710–3540 cal BC	*3710–3630 cal BC (88%)* or *3560–3530 cal BC (7%)*
	OxA-7098	III	Replicate of OxA-7097	4870±40	–19.9	=3.8; ν=1		
	OxA-7022	III	HH76 2808. Articulating cattle lumbar vertebra and sacrum (A J Legge) in bulk find with other bones. Segment 17, layer 10	4835±55	–21.3	4778±41 T'=2.5; T' (5%)	3650–3380 cal BC	*3620–3510 cal BC*
	OxA-7023	III	Replicate of OxA-7022	4700±65	–21.0	=3.8; ν=1		

Table 4.1 (cont'd)

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
Main enclosure	OxA-7099	III	HH76 2785. Articulating cattle phalanges (A J Legge) in bulk find with other bones. From same context as OxA-7022, 7023.	4830±30	–21.1	–	3660–3530 cal BC	*3590–3530 cal BC*
	HAR-2370	III	HH76 Sa 40. Bulked *Quercus* sp charcoal (AML). From same context as OxA-7022, -7023, -7099	5220±110	–24.9	–	4330–3780 cal BC	*4330–4270 cal BC (4%)* or *4260–3790 cal BC (91%)*
	HAR-1885	IV	HH74 1245. Bulked *Crataegus* sp, and *Prunus* sp charcoal (50% identified; C Keepax). Segment 3 F1	4480±130	–25.0	–	3630–2870 cal BC	*3630–3580 cal BC (6%)* or *3540–3310 cal BC (89%)*
	HAR-2375	IV	HH76 Sa 82. Bulked *Quercus* sp, *Corylus/Alnus* sp, and ?*Crataegus* sp not twiggy (C Keepax) from ashy grey layer overlying chalk rubble fills and stratigraphically later than HH76 2785 and HH76 2808. Segment 17, layer 9A	4670±100	–25.8	–	3650–3090 cal BC	*3650–3390 cal BC*
	HAR-2377	IV	HH76 Sa 79. Bulked *Quercus* sp from large timbers (50% identified; C Keepax) from the same context as HAR-2375	4610±90	–25.4	–	3640–3030 cal BC	*3640–3550 cal BC (21%)* or *3540–3400 cal BC (74%)*
	OxA-7020	IV	HH76 2745. Articulating cattle carpals (A J Legge), in bulk find with other bones. From the same context as HAR-2375, -2377, OxA-7019, -7058	4800±65	–21.1	4800±45 T'=0.0; T' (5%)	3660–3380 cal BC	*3570–3490 cal BC (70%)* or *3460–3380 cal BC (25%)*
	OxA-7021	IV	Replicate of OxA-7020	4800±65	–20.9	=3.8; ν=1		
	OxA-7019	IV	HH76 1354. Articulating red deer phalanges (A J Legge), in bulk find with other bones, from the same context as HAR-2375, -2377, OxA-7020, -7021	4725±60	–21.7	4670±40 T'=1.5; T' (5%)	3630–3360 cal BC	*3530–3390 cal BC*
	OxA-7058	IV	Replicate of OxA-7019	4625±55	–22.2	=3.8; ν=1		
	OxA-8851	VI/a	HH77 358. Distal cattle tibia fragment, astragalus and calcaneum (A J Legge) which appeared articulated when excavated from slot which was first of at least two recuts in top of the silted ditch. Segment 1 F5	4870±45	–21.8	–	3710–3530 cal BC	*3680–3620 cal BC (68%)* or *3590–3520 cal BC (27%)*
	OxA- 8850	VI	HH75 2007. Cattle tibia and astragalus planned in articulation in slot cut through earlier ditch deposits. Segment 10 layer 6B	4810±50	–21.9	–	3700–3380 cal BC	*3670–3510 cal BC (90%)* or *3420–3380 cal BC (5%)*
	HAR-2369	VI	HH76 Sa 31. Charred hazelnut shells (C Keepax). Segment 13, recorded as from layer 3 (phase V), but placed by measurements in layer 5, the fill of a single slot cut into the ditch top, which was not yet recognised at this spot when the sample was excavated	4520±80	–22.6	–	3510–2920 cal BC	*3520–3310 cal BC*
	OxA-8849	VI/a	HH76 2218. Three cattle phalanges found in articulation in lower of two spreads of dark loam rich in cultural material dumped over slow silts in south-east butt of segment, the upper of which was cut by a slot. Segment 14 section k layer 9	4855±45	–21.7	–	3710–3530 cal BC	*3680–3620 cal BC (56%)* or *3600–3520 cal BC (39%)*
	OxA-7017	VI/a	HH76 2861. Articulating cattle phalanges (A J Legge), in bulk find with other bones, from lower of two slots, stratigraphically later than HH76 1354 and 2745 and HH76 Sa 79 and 82. Segment 17, quadrant a, layer 8A	4790±60	–22.1	–	3700–3370 cal BC	*3460–3370 cal BC*

Main enclosure	OxA-7018	VI/a	HH76 2787. Articulating pig metatarsals (third, fourth, and navicular-cuboid in two unfused parts; A J Legge), in bulk find with other bones. From the same context as OxA-7017	4695±60	–20.3	–	3640–3350 cal BC	*3470–3350 cal BC*
	OxA-7039	post-VI?	HH76 3046. R femur from articulated burial of young juvenile (J I McKinley) from grave cut into segment butt, probably when the ditch was already silted. Segment 17, quadrant b (Figs 3.29–30, 3.34)	4550±60	–20.8	4557±42 T'=0.0; T' (5%) =3.8; ν=1	3500–3090 cal BC	*3380–3320 cal BC*
	OxA-7040	post-VI?	Replicate of OxA-7039	4565±60	–20.7			
	UB-4269	post-VI?	HH76 2970. Articulated cattle distal tibia fragment, calcaneum, astragalus, navicular-cuboid, cuneiform, and lateral malleolus (A J Legge), interpreted as having lain in an undetected recut. Segment 18, quadrant 2b, layer 10	4562±27	–22.4 ±0.2	–	3370–3100 cal BC	*3370–3330 cal BC*
	HAR-9169	VII/a	HH75 1498. Bulked *Quercus* sp, *Corylus* sp, and *Crataegus* sp charcoal (C Keepax) from concentration of Late style Beaker pottery above phase VI slot. Segment 8, layer 6	4140±100	–26.4	–	2920–2460 cal BC	–
Inner east cross-dyke	HAR-9168	I	HH75 1535. Bulked charcoal of *Corylus/Alnus* sp not twiggy (50% identified; C Keepax) from a concentration in primary silt. Residue identified as *Corylus avellana* (P Austin). Segment 4, cutting II, layer 11	4660±100	–26.1	–	3650–3120 cal BC	*3640–3330 cal BC*
	OxA-8863	I	HH75 1535A. Single fragment of *Corylus avellana* charcoal from same context as HAR-9168	4875±45	–25.0	–	3760–3540 cal BC	*3680–3620 cal BC (71%)* or *3590–3530 (24%) cal BC*
	OxA-8864		HH75 1535B. Single fragment of *Corylus avellana* charcoal from same context as HAR-9168	4880±45	–25.0	–	3760–3540 cal BC	*3680–3620 cal BC (74%)* or *3590–3530 cal BC (21%)*
	OxA-8856	I	HH75 313. Red deer antler tip with two very worn tines (A J Legge) from primary silt. Segment 4 cutting I layer 11	4780±55	–20.7	–	3660–3370 cal BC	*3660–3500 cal BC (80%)* or *3440–3370 cal BC (15%)*
	OxA-8857	I	HH75 314. Cattle rib fragments (A J Legge) from same context as OxA-8856	4955±45	–21.1	–	3910–3640 cal BC	–
	OxA-8892	I	HH75 2052. Cattle radius fragment (A J Legge) from primary silt. Segment 5 cutting 3 layer 12	4785±60	–21.3	–	3690–3370 cal BC	*3660–3490 cal BC (79%)* or *3460–3370 cal BC (16%)*
	OxA-8893	VII/a	HH76 680. Two cattle vertebrae (A J Legge) found in articulation in compact butchery deposit including parts of two cattle and one caprine in top of silted ditch. Segment 1 quadrant 6 layer 5A	4255±50	–21.9	–	2920–2700 cal BC	–
Outer east cross-dyke	UB-4267	I	HH75 2171.Red deer antler beam and trez tine, worn, perhaps a pick (A J Legge). From slight hollow in the base of segment butt. Segment 4, cutting 2, layer 10	4497±26	–23.3 ±0.2	–	3350–3040 cal BC	*3360–3310 cal BC*
Inner south cross-dyke	UB-4268	pre-bank	HH77 2123. Articulated cattle tibia, astragalus, calcaneum, navicular-cuboid, lateral malleolus, and cuneiform, butchered (A J Legge). Sealed beneath the bank, site P2, layer 2B	4708±26	–22.8 ±0.2	–	3630–3370 cal BC	*3640–3550 cal BC (53%)* or *3540–3490 cal BC (33%)* or *3470–3410 cal BC (9%)*

Table 4.1 (cont'd)

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
Inner south cross-dyke	NPL-76	I	*Quercus*, *Corylus* and possibly *Betula* charcoal (identifications published by Callow *et al* 1965, 158) from ditch bottom. Bonney's trench A, 1958	4740±90	–25.0 ±1	–	3700–3350 cal BC	*3670–3400 cal BC*
	OxA-7825	VI	HH77 1198. 3 articulating cattle cervical and thoracic vertebrae (A J Legge), found together close to HH77 1291, from recut through the phase III rubble fills. Site P2 layer 9	4730±30	–21.5	–	3640–3370 cal BC	*3530–3500 cal BC (3%) or 3460–3370 cal BC (92%)*
	OxA-7826	VI	HH77 1291. 5 articulating cattle lumbar vertebrae (A J Legge), found together close to HH77 1198, from a recut through the phase III rubble fills. Site P2 layer 9	4560±30	–21.8	–	3370–3100 cal BC	*3380–3320 cal BC*
	UB-4273	VI	WOWK82 C33. Charred hazelnut shells (G Jones) from second of three recuts in the tertiary fills of the western butt. WOWK area 4, layer 7	4714±33	–23.92 ±0.2	–	3640-3370 cal BC	*3520–3500 cal BC (2%)* or *3470–3370 cal BC (93%)*
Western outwork	OxA-7815		WOWK82 C22. Single fragment of *Quercus* sp charcoal (P Austin) from posthole in scoop or platform inside western outwork ditch. WOWK area 2 F6	4660±40	–25.0	–	3630–3350 cal BC	*3630–3600 cal BC (4%)* or *3530–3350 cal BC (91%)*
Long Barrow	OxA-7848	I	HH77 1366. Cattle metatarsal (A J Legge) from primary silt of west barrow ditch. LB2 SIV layer 26	4950±55	–21.6	–	3940–3640 cal BC	*3690–3630 cal BC (90%)* or *3560–3530 cal BC (5%)*
	OxA-8846	I	HH77 1367. Cattle scapula fragments (A J Legge) from primary silt of west long barrow ditch. LB2 SIV layer 26	4875±40	–20.3	–	3710–3540 cal BC	*3680–3620 cal BC (78%)* or *3580–3530 cal BC (17%)*
	OxA-8847	I	HH77 1948a. Proximal cattle phalanx (A J Legge) from primary silt of west long barow ditch. LB2 SVII layer 26	4835±45	–21.4	–	3710–3520 cal BC	*3670–3620 cal BC (41%)* or *3610–3520 cal BC (54%)*
	OxA-8848	I	HH77 1948b. Indeterminate animal bone fragment from same context as HH77 1948a	4760±50	–21.6	–	3650–3370 cal BC	*3650–3500 cal BC*
	OxA-8845	I	HH77 1018. Red deer antler crown (A J Legge) found with tip embedded in crumbling natural chalk of base of east long barrow ditch, surrounded and covered by primary silt. LB4 layer 17	4870±35	–21.1	–	3710–3540 cal BC	*3680–3630 cal BC (83%)* or *3560–3530 cal BC (12%)*
	OxA-7827	II	HH77 1256. Cattle scapula (A J Legge) from silt layer overlying primary silts and underlying chalk rubble fills in west barrow ditch. LB3 SI layer 26	4655±40	–21.3	–	3630–3350 cal BC	*3630–3580 cal BC (15%)* or *3540–3450 cal BC (80%)*
	OxA-7813	III	HH77 2241. Articulating cattle astragalus and distal tibia fragment (A J Legge) in bulk find with other bone from soooouth butt of west barrow ditch. LB3 SIV layer 19	4580±30	–21.3	–	3500–3120 cal BC	*3500–3430 cal BC*
	UB-4270	IV	HH77 Sa 167. Charred hazelnut shell (G Jones) from a spread of ashy, charred material directly overlying layer 19 in south butt of west barrow ditch, stratigraphically later than HH77 2241. LB3 SII layer 17	4741±26	–23.69 ±0.2	–	3640–3380 cal BC	*3460–3370 cal BC*

	OxA-7828 V	HH77 1403. 2 ?articulating pig metacarpals (A J Legge) in bulk find with other bone from silts above the chalk rubble fill of east barrow ditch. LB5 layer 15	4795±50	–21.4	4837±39 T'=2.0; T' (5%) =3.8; ν=1	3700–3530 cal BC	*3710–3620 cal BC (55%)* or *3600–3520 cal BC (40%)*
	OxA-7829 V	Replicate of OxA-7828	4910±65	–20.6			
Discrete features in central area	HAR-9167	HH75 559. Bulked *Quercus* sp, *Corylus* sp and *Crataegus* sp charcoal (C Keepax; residue identified as *Corylus avellana*, *Quercus* sp, and Maloideae; P Austin) from pit with group XVI stone axe and 3 Neolithic Bowls, including two vessels in gabbroic fabric. Site B F14 (Figs 3.55–56)	4830±80	–25.9	–	3780–3370 cal BC	*3780–3490 cal BC (84%)* or *3460–3370 cal BC (11%)*
	HAR-9166	HH75 556. Bulked fragment of *Corylus/Alnus* sp and a few fragments of *Quercus* sp charcoal (C Keepax) from pit with large antler deposit and Neolithic Bowl pottery. Site B F57	4920±70	–27.5	–	3940–3540 cal BC	*3940–3850 cal BC (9%)* or *3820–3620 cal BC (82%)* or *3590–3530 cal BC (4%)*
	HAR-2041	HH75 545. Burnt antler fragment from the same context as HAR-9166	4110±80	–23.4	–	2890–2460 cal BC	–
	HAR-3061	HH77 Sa 41. Bulked Pomoideae, *Quercus* sp, and *Corylus* sp, all from large timbers (C Keepax) from pit with large antler deposit and Neolithic Bowl pottery. Site N F6, layer 3	4680±80	–25.4	–	3650–3120 cal BC	*3640–3350 cal BC*
Shroton spur outwork	HAR-2368	HH76 Sa 26. Bulked *Quercus* sp charcoal (AML) from a possible posthole surviving to 0.13 m deep and containing abraded plain body sherds in a Neolithic Bowl fabric. Perhaps part of the Shroton spur outwork bank or gateway. Site M F8	4520±80	-25.2	-	3510–2920 cal BC	*3520–3310 cal BC*
	OxA-7037 I	HH76 2864. Articulated dog skeleton (A J Legge). Site K/L baulk, base of ditch (Fig 3.79)	4710±55	–19.9	4737±40 T'=0.5; T' (5%)	3640–3370 cal BC	*3640–3490 cal BC*
	OxA-7038 I	Replicate of OxA-7037	4770±60	–20.1	=3.8; ν=1		
	UB-4148 I	HH76 2895. Worn red deer antler pick (D Sergeantson). Site L, base of ditch (Fig 3.79)	4753±27	–21.4 ±0.2	–	3640–3380 cal BC	*3640–3510 cal BC*
	UB-4149 I	HH76 2650. Worn red deer antler pick (D Sergeantson) from primary silt. Site K, layer 9 (Fig 3.79)	4756±20	–21.8 ±0.2	–	3640–3380 cal BC	*3640–3550 cal BC (73%)* or *3545–3515 cal BC (22%)*
	UB-4150 I	HH76 1387. Worn red deer antler pick with burning to the base of the beam (D Sergeantson). 'Virtually on ditch bottom' (label) in primary silt, site K, layer 9	4736±21	–22.3 ±0.2	–	3640–3380 cal BC	*3635–3555 cal BC (71%)* or *3540–3505 cal BC (24%)*
	OxA-7830 III	HH76 1608. Articulated dog skeleton (A J Legge) in the secondary silts. Site L, layer 6	4705±35	–19.8	–	3640–3370 cal BC	*3540–3370 cal BC*
	HAR-2371 III	HH76 Sa 47. Bulked unidentifiable charcoal and unidentified burnt matter from a patch of burnt material in chalk rubble of L7. Site L, layer 7	4680±110	–27.5	–	3660–3090 cal BC	*3650–3330 cal BC*
	HAR-2372 III	HH76 Sa 46. Bulked *Quercus* sp and *Corylus/Alnus* sp not twiggy charcoal (C Keepax). The dated residue of this sample was identified as 55 fragments *Corylus/Alnus* sp, one fragment *Quercus* sp, and one unidentifiable (P Austin). From same context as HAR-2371	4630±80	–27.2	–	3640–3090 cal BC	*3640–3570 cal BC (11%)* or *3540–3330 cal BC (84%)*

Table 4.1 (cont'd)

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
Shroton spur outwork	HAR-2379	III	HH76 Sa 48, Sa 49, and Sa 50. Bulked *Quercus* sp (not twiggy) and *Corylus/Alnus* sp (some twiggy) charcoal (C Keepax). From same context as HAR-2371, -2372	4350±80	–26.3	–	3340–2760 cal BC	–
	OxA-7102	III	HH76 1968. Articulating first metatarsal and first phalanx of mature human adult (J I McKinley), found together, apparently in articulation, in localised group of jumbled bones from more than one highly incomplete individual, in same area as source of samples for HAR-22371, -2372, 2379). Site L, layer 7 (Fig 3.79)	4890±35	–20.4	–	3710–3640 cal BC	*3760–3630 cal BC*
	HAR-2378	III	HH76 Sa 62. Bulked *Quercus* sp and *Corylus/Alnus* sp not twiggy charcoal (AML) from a patch of burnt material in the chalk rubble of L7 near N butt, 7 m from source of samples for HAR-2371, -2372, 2379. Site K, layer 7	4820±120	–26.4	–	3940–3350 cal BC	*3920–3870 cal BC (2%)* or *3810–3350 cal BC (93%)*
	OxA-7831	III	HH76 1904. Fitting pig ulna and radius (A J Legge), probably articulating, in bulk find with other bone. Site M, segment B, layer 8	4660±45	–19.7	–	3630–3350 cal BC	*3520–3360 cal BC*
	OxA-7832	III	HH76 2887. Fourth and fifth pig metacarpals from the same individual (A J Legge), in bulk find with other bone from layer overlying HH76 1904. Site M, segment B, layer 7	4625±45	–19.7	–	3520–3140 cal BC	*3520–3340 cal BC*
Stepleton enclosure	UB-4152	I	ST80 1886. Worn red deer antler pick (A J Legge). Segment 3, unit 13A, ditch base (Figs 3.85–6)	4792±20	–22.5 ±0.2	4781±18 T'=1.8; T' (5%)	3640–3520 cal BC	*3645–3620 cal BC (23%)* or *3600–3525 cal BC (72%)*
	OxA-7042	I	Replicate of UB-4152	4735±60	–21.8	=6.0; ν=2		
	OxA-7043	I	Replicate of UB-4152	4720±65	–21.8			
	UB-4153	I	ST80 1881. Worn red deer antler rake (D Sergeantson). Segment 3, unit 13B, layer 6 (Figs 3.85–6)	4740±19	–21.1 ±0.2	–	3640–3380 cal BC	*3635–3560 cal BC (84%)* or *3540–3515 cal BC (11%)*
	UB-4151	I	ST80 1882. Red deer antler pick, possibly worn (A J Legge). Segment 3, unit 13A, layer 6 (Figs 3.85–6)	4772±19	–22.6 ±0.2	–	3640–3520 cal BC	*3640–3620 cal BC (21%)* or *3610–3520 cal BC (74%)*
	OxA-7048	IV	ST80 C41. Single fragment of Maloideae charcoal (P Austin) from a localised patch of burnt silty, vacuous, chalk rubble, possibly cut into underlying layers. Segment 3, unit 9B, layer 2A	4670±40	–24.9	–	3630–3360 cal BC	*3530–3390 cal BC*
	OxA-7049	IV	repeat of OxA-7048	4740±45	–24.7	–	3650–3370 cal BC	*3580–3490 cal BC (50%)* or *3470–3380 cal BC (45%)*
	OxA-7050	IV	ST80 C32. Single fragment of Maloideae charcoal (P Austin) from a localised patch of burnt silty, vacuous, chalk rubble, possibly cut into underlying layers. From same context as OxA-7048, -7049	4730±40	–27.1	–	3640–3370 cal BC	*3580–3490 cal BC (46%)* or *3470–3380 cal BC (49%)*

Stepleton enclosure	UB-4138	IV	ST80 1156. Articulated dog skeleton (A J Legge). Segment 3, unit 9D, interface of layers 3B and 2 (Fig 3.87)	4648±21	–21.0 ±0.2	4630±19 T'=6.6; T' (5%) =3.8; ν=1	3500–3350 cal BC	*3500–3430 cal BC*
	OxA-7041	IV	Replicate of UB-4138	4485±60	–20.4			
	OxA-7814	IV	ST81 3188. R humerus from articulated upper skeleton of mature adult human female (J I McKinley). Segment 10, unit 1/unit 2 baulk, interface of layers 2 and 4.1 (Fig 3.88)	4680±30	–21.1	–	3630–3360 cal BC	*3530–3390 cal BC*
	OxA-7926	VI	ST81 1233. Sooty superficial residue from sherds of a Neolithic Bowl; same vessel as ST81 1228. Segment 7, unit 1, layer 2	4845±50	–29.9	4737±28 T'=6.9; T' (5%) =3.8; ν=1	3640–3370 cal BC	*3430–3370 cal BC*
	OxA-7844	VI	ST81 1228. Replicate of OxA-7926	4685±35	–28.0			
Middle Stepleton outwork	OxA-7030	I	ST80 C53. Single fragment of Maloideae charcoal (P Austin) from grey charcoaly silt on ditch base. Segment 6, unit 7, layer 4A	4660±45	–26.6	–	3630–3350 cal BC	*3640–3550 cal BC (89%)* or *3510–3430 cal BC (6%)*
	OxA-7031	I	ST80 C53. Repeat of OxA-7030	4690±45	–25.9	–	3640–3360 cal BC	*3640–3540 cal BC (92%)* or *3530–3490 cal BC (2%)* or *3460–3430 cal BC (1%)*
	OxA-7927	I	ST80 C53. Repeat of OxA-7030	4725±50	–26.2	–	3640–3360 cal BC	*3650–3520 cal BC*
	OxA-7035	II	ST81 379. Two articulating ovicaprid phalanges (A J Legge) from silt layer overlying primary silt and underlying chalk rubble. Segment 11, unit 3, layer 5	4820±55	–20.5	4831±40 T'=0.1; T' (5%) =3.8; ν=1	3700–3520 cal BC	*3600–3520 cal BC (86%)* or *3420–3380 cal BC (9%)*
	OxA-7036	II	Replicate of OxA-7035	4845±60	–21.0			
	OxA-7024	II	ST80 2224. Articulating cattle astragalus and calcaneum (A J Legge) from surface of ashy silt with charcoal overlying cleaner primary silt, found together, perhaps articulated, in a larger cluster of bone. Segment 5, unit 6, layer 4A/3A interface	4855±60	–21.0	4788±46 T'=3.1; T' (5%) =3.8; ν=1	3660–3380 cal BC	*3580–3490 cal BC (69%)* or *3430–3370 cal BC (26%)*
	OxA-7025	II	Replicate of OxA-7024.	4685±75	–20.8			
	UB-4136	III	ST79 2152. Articulated cattle cervical and thoracic vertebrae (A J Legge) from chalk rubble. Segment 6, cutting 1, layer 4	4598±22	–23.2 ±0.2	–	3500–3340 cal BC	*3500–3465 cal BC (26%)* or *3380–3340 cal BC (69%)*
Inner Stepleton outwork	OxA-7835	pre-bank	ST79 2025. R femur of articulated older adult human, possibly male (J I McKinley), tightly crouched in ploughed-down scoop in protected chalk of inner outwork bank. Area 2A F200 (Fig 3.113)	4855±45	–20.4	–	3710–3530 cal BC	*3780–3630 cal BC*
	HAR-4437	Gate	ST80 C81. *Quercus* sp charcoal from a mature timber (C Keepax), from large timber *in situ* in first of two successive sockets in posthole. Area 3B F601	5040±80	–24.6	–	3990–3650 cal BC	*3980–3660 cal BC*
	HAR-4438	Gate	ST80 C80. *Quercus* sp charcoal from a mature timber (C Keepax), from among charcoal fragments in posthole. Area 3B F603	4770±80	–25.3	–	3710–3360 cal BC	*3720–3520 cal BC*
	OxA-8859	Bank	ST79 C34A. *Corylus avellana* charcoal (P Austin) from what appeared to be the burnt, collapsed breastwork of the rampart on the floor of the ditch. Segment 6 cutting 1N layer 4A	4825±45	–25.9	–	3700–3520 cal BC	*3710–3540 cal BC*
	OxA-8860	Bank	ST79 C34B. As OxA-8859	4810±45	–24.2	–	3660–3380 cal BC	*3700–3530 cal BC*

Table 4.1 (cont'd)

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
Inner Stepleton outwork	UB-4242	I	ST79 2726. L femur of articulated older mature adult human male (J I McKinley) at outer edge of the segment butt. Segment 7, cutting 15/19, ditch base (Figs 3.100–101)	4738±28	–20.8 ±0.2	–	3640–3370 cal BC	*3600–3490 cal BC (80%)* or *3440–3380 cal BC (15%)*
	OxA-7101	I	ST78 2756. R femur of articulated human neonate (J I McKinley) in natural cleft at the outer angle of segment butt. Segment 9, sector 1, ditch base (Fig 3.92)	4815±35	–20.8	–	3660–3520 cal BC	*3590–3510 cal BC (90%)* or *3420–3380 cal BC (5%)*
	HAR-3058	I	ST78 Sa 83. Bulked *Quercus* sp, *Corylus* sp, and Pomoideae charcoal from mature timbers (C Keepax) from chalky primary silts with ash and charcoal. Segment 7, quadrant 2, layer 5	4700±90	–24.9	–	3660–3120 cal BC	*3650–3390 cal BC*
	HAR-4435	II	ST80 C23. *Quercus* sp charcoal from a mature timber (C Keepax) from silt layer within and near base of chalk rubble fills. Segment 4, U4, layer 6	4880±90	–23.5	–	3940–3380 cal BC	*3940–3850 cal BC (7%)* or *3820–3500 cal BC (88%)*
	UB-4135	III/a	ST79 2578. Articulating cattle acetabulum and femur (A J Legge) found together in earthy silt derived from exterior, probably in a recut. Segment 5, cutting 4S, layer 5A	4644±21	–22.5 ±0.2	–	3510–3360 cal BC	*3505–3425 cal BC (52%)* or *3420–3410 cal BC (1%)* or *3385–3355 cal BC (42%)*
	HAR-4433	III	ST79 C66. Bulked *Quercus* sp charcoal from mature timbers (C Keepax). Segment 5, cutting 14, layer 5A	4840±90	–24.5	–	3890–3370 cal BC	*3800–3490 cal BC (92%)* or *3470–3400 cal BC (3%)*
	UB-4137	III	ST79 601. Articulated cattle vertebrae (A J Legge). Segment 6, cutting 2N, layer 4 (Fig 3.98)	4732±21	–22.4 ±0.2	–	3640–3380 cal BC	*3530–3500 cal BC (6%)* or *3435–3375 cal BC (89%)*
	OxA-7044	III	ST78 2755A. L femur of articulated older subadult/young adult human male (J I McKinley), prone in chalk rubble with leaf arrowhead in chest area. Segment 7, quadrant 4, layer 4 (Figs 3.102–103)	4560±55	–20.7	4598±40 T'=1.1; T' (5%) =3.8; ν=1	3500–3120 cal BC	*3500–3420 cal BC (31%)* or *3390–3320 cal BC (64%)*
	OxA-7045	III	Replicate of OxA-7044	4645±60	–20.5			
	OxA-7100	III	ST78 2755B. Occipital vault fragments from among incomplete remains of young human infant (J I McKinley) found at the left shoulder of ST78 2755A. Segment 7, quadrant 4, layer 4	4770±30	–20.4	–	3650–3380 cal BC	*3640–3510 cal BC*
	HAR-3060	III	ST78 Sa 121. Bulked *Quercus* sp and *Corylus* sp charcoal from mature timbers (C Keepax). Segment 7, quadrant 2, layer 4	4570±90	–25.4	–	3630–2930 cal BC	*3640–3550 cal BC (25%)* or *3540–3400 cal BC (70%)*
	OxA-7026	V/1	ST79 1098. Sheep femur shaft from dump of post-cranial bones from two sheep (including articulating R and L forelimbs), with beaver hind limb(A J Legge) from silts above chalk rubble. Segment 5, cutting 11S, layer 3B	4820±60	–21.2	4740±42 T'=3.6; T' (5%) =3.8; ν=1	3640–3370 cal BC	*3640–3490 cal BC (68%)* or *3460–3370 cal BC (27%)*
	OxA-7059	V/1	Replicate of OxA-7026	4660±60	–21.4			

	OxA-8858 V/1	ST79 1098. R sheep humerus (A J Legge) found with articulating radius and ulna in same dump of bones as sample for OxA-7026, 7059	4855±45	–21.1	–	3710–3580 cal BC	*3760–3730 cal BC (1%)* or *3720–3620 cal BC (68%)* or *3600–3520 cal BC (26%)*
	HAR-3062 V/1	ST78 Sa 118. Bulked *Quercus* sp and Pomoideae charcoal from mature timbers (C Keepax) in discrete charcoaly area in silts overlying chalk rubble. Dated residue identified as *Quercus* sp, *Corylus/Alnus* sp, and Maloideae (P Austin). Segment 7, quadrant 2, layer 3A	4850±70	–25.6	–	3780–3380 cal BC	*3790–3500 cal BC (91%)* or *3430–3380 cal BC (4%)*
Outer Stepleton outwork	UB-4243 I	ST80 1875. R femur of articulated young adult human male (J I McKinley), flexed in recess in angle of ditch butt, with arrowhead among ribs. Segment 3, unit 1, ditch base (Figs 3.105–106)	4679±27	–21.4 ±0.2	–	3630–3360 cal BC	*3620–3600 cal BC (3%)* or *3530–3360 cal BC (92%)*
Discrete features on the Stepleton spur	UB-4311	ST81 3181. R femur of articulated young adult human male (J I McKinley), crouched on a layer of ashy grey silt, with burnt flint, charcoal, and charred hazelnuts in pit outside Stepleton enclosure. Area 4B, F712 (Fig 3.113)	4710±23	–21.26 ±0.2	4711±19 T'=0.0; T' (5%) =3.8; ν=1	3630–3370 cal BC	*3630–3580 cal BC (22%)* or *3535–3495 cal BC (20%)* or *3460–3375 cal BC (53%)*
	OxA-7818	Replicate of UB-4311	4715±40	–20.3			
	OxA-7843	ST81 C326. Single hazelnut shell (G Jones) from a group of hazelnut finds which appear to have been deposited with ST81 3181. Area 4B, F712, L1 (Fig 3.113)	4700±45	–26.1	–	3640–3360 cal BC	*3640–3550 cal BC (23%)* or *3540–3360 cal BC (72%)*
	OxA-7836	ST78 964. L femur of articulated older infant/young juvenile human (J I McKinley), crouched in a pit in centre of Stepleton enclosure. Area 1A, F70 (Fig 3.113)	4695±40	–21.2	–	3640–3360 cal BC	*3630–3570 cal BC (17%)* or *3540–3360 cal BC (78%)*
	OxA-7849	ST82 124. R femur from articulated mature/older adult human male (J I McKinley), crouched in a pit outside Stepleton enclosure. ST82 F16 (Fig 3.116)	3050±45	–21.2	–	1430–1130 cal BC	–
	OxA-7837	ST78 Sa 17a. Single grain of barley (G Jones) from pit within Stepleton enclosure. Area 1A F110	4725±40	–23.3	–	3640–3370 cal BC	*3640–3490 cal BC (58%)* or *3470–3370 cal BC (37%)*
	OxA-7838	ST78 Sa 17b. Repeat of OxA-7837	4670±40	–23.1	–	3630–3360 cal BC	*3630–3590 cal BC (7%)* or *3530–3360 cal BC (88%)*
	OxA-7839	ST82 F39a. Single grain of emmer wheat (G Jones) from pit outside Stepleton enclosure. ST82 F39 (Fig 5.71)	4750±40	–20.4	–	3650–3370 cal BC	*3650–3500 cal BC (75%)* or *3440–3370 cal BC (20%)*
	OxA-7840	ST82 F39b. Repeat of OxA-7839	4730±45	–21.0	–	3640–3370 cal BC	*3640–3490 cal BC (61%)* or *3470–3370 cal BC (34%)*
	OxA-7841	ST78 Sa 81a. Single grain of emmer wheat (G Jones) from base of possible corn-dryer within Stepleton enclosure. Area 1A, F227. (Fig 3.117)	3315±45	–23.7	–	1740–1490 cal BC	–
	OxA-7842	ST78 Sa 81b. Repeat of OxA-7841	3255±40	–24.1	–	1680–1430 cal BC	–

Table 4.1 (cont'd)

Context group	*Lab no.*	*Phase*	*Sample*	*Radiocarbon age (BP)*	*$\delta^{13}C$ (‰)*	*Weighted mean (BP)*	*Calibrated date range (95% confidence)*	*Estimated date range (95% probability)*
	OxA-931		ST81 Sa 18. Single grape pip (G Jones) from pit outside Stepleton enclosure (Jones and Legge 1987). Area 4B, F53	4660±80	–25.0 (assumed)	–	3640–3100 cal BC	*3640–3340 cal BC*
	OxA-932		ST81 Sa 18. Single grain of emmer wheat (G Jones) from the same context as OxA-931	4690±70	–25.0 (assumed)	–	3650–3340 cal BC	*3640–3360 cal BC*
	OxA-933		ST81 Sa 18. Repeat of OxA-932	4680±80	–25.0 (assumed)	–	3650–3120 cal BC	*3640–3350 cal BC*
Outer Hanford outwork	UB-4272	I	HN82 154. Articulated cattle pelvis and femur with cut marks (A J Legge). Segment 3, U1, base of ditch (Figs 3.137–138)	4476±26	–22.4 ±26	–	3340–3020 cal BC	*3350–3310 cal BC*
	UB-4271	I	HN82 153. Articulated cattle lower vertebrae and sacrum (A J Legge). From the same context as UB-4272	4492±27	–22.6 ±0.2	–	3350–3030 cal BC	*3360–3310 cal BC*
	HAR-6038	I	HN82 C113. Bulked unidentified charcoal from ashy silt on the base of the N butt. Segment 3, U6, layer 5C	4530±110	–25.7	–	3630–2900 cal BC	*3630–3580 cal BC (6%)* or *3540–3310 cal BC (89%)*
	OxA-7850	I	HN82 304. Articulating pig astragalus, calcaneum, and navicular-cuboid (A J Legge). Segment 2, U7, layer 5C	4755±35	–20.1	–	3640–3380 cal BC	*3640–3500 cal BC (81%)* or *3430–3380 cal BC (14%)*
Hanford 'flint mines'	HAR-6037		HN82 C108. Bulked charcoal, residue identified as *Corylus avellana* (P Austin). HN82 F606, layer 3, from break-through running N from F606	4270±100	–25.8	–	3260–2580 cal BC	–
	OxA-7833		HN82 744. Red deer antler with significant evidence of wear (A J Legge), probably used to excavate the feature in which it was found. HN82 F644, layer 2, from undercut	3810±45	–22.7	–	2460–2060 cal BC	–
	OxA-7834		HN82 774. Two possibly articulating cattle caudal vertebrae (A J Legge). F601, layer 3, 0.55 m deep	4425±45	–22.8	–	3340–2910 cal BC	–
Hillfort spur enclosure	OxA-7776		HH86 118. Unidentified long bone fragment from a lower fill of the earliest earthwork on the northern (hillfort) spur	2450±35	–21.5	–	770–400 cal BC	–
Everley Water Meadow	HAR-6529		EWM83 61. Bulked, unidentified charcoal from burnt mound. Trench 2, layer 1A, section 2	3160±70	–26.0	–	1600–1260 cal BC	–
	HAR-6530		EWM84 292. Bulked charcoal from burnt mound. Residue identified as *Prunus ?spinosa* and Maloideae (P Austin). Trench 3, layer 4, section 6	3090±80	–25.4	–	1520–1120 cal BC	–
	HAR-6531		EWM84 331. Bulked charcoal from burnt mound. Residue identified as Maloideae, *Quercus* sp, *Corylus avellana*, and *Acer campestre* (P Austin). Trench 3, layer 4, section 6	3070±70	–25.7	–	1500–1120 cal BC	–

extensive programme of in-house quality control measures, including the duplicate measurement of random selected unknown samples and regular measurements on known-age material. In 1998, the last annual compilation of results, 102 known-age samples were measured with an offset of 4.11±4.52 BP against the calibration curve of Stuiver *et al* (1998). The results also fell within a normal distribution, suggesting that the quoted errors reflect the measurement uncertainties correctly.

4.5 The results

The results are given in Table 4.1, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages (Stuiver and Polach 1977). Here and in the text the results of χ^2 tests are expressed in the form 'T'=x; T'(5%)=y, ν=z', where T' is the χ^2 value calculated, T'(5%) is the figure above which T' should not rise if the values examined are statistically consistent at 95% confidence, and ν is the degrees of freedom.

Replicate measurements were undertaken on 17 samples; twelve of the replicate chemical treatments were funded by the Oxford University Radiocarbon Accelerator Unit for purposes of internal quality assurance. Three bone or antler samples were measured in both Belfast and Oxford (ST80 1886, ST81 1156, and ST81 3181). The measurements for ST80 1886 and ST81 3181 are statistically consistent (Table 4.1), in addition, a measurement on a charred hazelnut (ST81 C326) from the same grave as ST81 3181 is also indistinguishable (T'=0.1; T'(5%)=6.0, ν=2). The two measurements on ST81 1156 are statistically significantly different (Table 4.1), although their weighted mean is in agreement with the stratigraphic position of the sample (A=101.4%; Fig 4.5). At Oxford this sample was given two identical chemical pretreatments. One of these yielded an anomalously high CN ratio (3.5). The other one, which was dated to give the result OxA-7041, gave a higher yield, a normal CN ratio (3.1), and different stable isotope ratios. This suggests that the collagen was successfully purified for the measurement made, but that collagen preservation was probably not homogeneous and might have included some contaminating components.

Replicate AMS measurements were undertaken on 14 samples; ten animal bones, three human bones, and a superficial residue on sherds of a single pot. Thirteen of these pairs are statistically consistent. The remaining pair, on the residues, are statistically significantly different (OxA-7926, -7844; Table 4.1). The stable isotope measurements on these samples suggest that a mixture of materials was dated, including a lipid component. It is difficult to rule out the possibility of contamination of these samples since they are not well characterised chemically, although the mean of the two results is in good agreement with the stratigraphic sequence (A=81.6%; Fig 4.5).

4.6 Calibration

The calibrations of these results, which relate the radiocarbon measurements directly to the calendrical time scale, are given in Table 4.1 and in outline in Figures 4.2–4.20. All have been calculated using the datasets published by Stuiver *et al* (1998) and the computer program OxCal (v3.3) (Bronk Ramsey 1994; 1995; 1998). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years if the error term is greater than or equal to 25 radiocarbon years, or to 5 years if it is less. The ranges in Table 4.1 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986), all other ranges are derived from the probability method (Stuiver and Reimer 1993; van der Plicht 1993; Dehling and van der Plicht 1993). Those ranges printed in italics in the text and tables are derived from the mathematical modelling of archaeological problems.

4.7 Analysis and interpretation stage 1: individual earthworks and discrete features

The estimated construction dates of individual earthworks are listed in Table 4.2 and shown graphically in Figure 4.21. The overall model for the Neolithic earthworks is shown in Figure 4.4. Component sections of this model are shown in detail in Figures 4.5 to 4.13 and 4.15 to 4.18.

4.7.1 Pre-Neolithic activity (Fig 4.3)

Three measurements on *Pinus sylvestris* charcoal are of Boreal date (3.2). Two (OxA-7845 and OxA-7846) are from a feature without artefacts that also contained single fragments of *Corylus*/*Alnus* sp and ?Betulaceae charcoal, a combination compatible with the age of the pine charcoal. The feature itself (Fig 3.4; HN82 F279) may have been the base of a ploughed-down pit or posthole, or may have been of natural origin.

The third measurement (OxA-7816) is more problematic. WOWK area 3 F4, from which the dated pine charcoal came, appeared to be a posthole with two successive sockets, the second of which contained *Fraxinus* charcoal of fourth-millennium date, which is likely to relate to the bank of the inner south cross-dyke, within the former area of which the feature lay. The likelihood that the Boreal charcoal was *in situ* in the earlier socket is enhanced by its compact, postpipe-like occurrence (Fig 3.3) and by the absence of nearby deposits containing pine charcoal from which it might have been redeposited.

The two radiocarbon results from the HN82 F279 are statistically indistinguishable at 95% confidence (T'=1.0; T'(5%)=3.8; ν=1), so that it is possible that this material represents the remains of a single post.

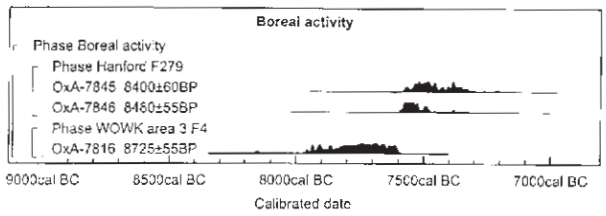

Fig 4.3 Probability distributions of pre-Neolithic dates. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993). © English Heritage (Ancient Monuments Laboratory)

OxA-7816 from WOWK area 3 F4 is significantly earlier, although this difference is sufficiently small that it could reflect the use of older timber rather than disparate ages for the features. The dates fall securely within the eighth millennium cal BC (Fig 4.3). The fourth-millennium dates on *Fraxinus* from the second socket in WOWK area 3 F4 fall within the early Neolithic use of the site (section 4.7.12).

4.7.2 The Stepleton enclosure (Fig 4.5)

Phase I. Five indistinguishable measurements on three antler implements from the base of segment 3 are likely to be close in age to its original excavation (ST80 1881–2, 1886; Figs 3.85–86; OxA-7042–3, UB-4151–3; T'=2.7; T'(5%)=6.0; ν=2).

Phase IV. The accumulation of most of the fill of this segment is bracketed by these measurements and by OxA-7048–50, made on short-life charcoal from a small pit cut into the more compact deposits which had succeeded the main chalk rubble fills. The pit was cut from a surface on which an articulated dog skeleton was found (ST80 1156; Figs 3.85, 3.87; UB-4138, OxA-7041). The articulated upper body of a woman lay on a stratigraphically equivalent surface in segment 10 (Fig 3.88; OxA-7814). The measurements on both bodies are statistically consistent (T'=2.0; T'(5%)=3.8; ν=1).

Phase VI. A midden-like deposit stratigraphically later than the surfaces on which the articulated woman and dog were found contained more animal bone than any other horizon in the ditch, but lacked articulated or articulating specimens, except for a dog pelvis fragment, tibia and patella; bones missing from the underlying articulated dog in segment 3 and almost certainly derived from it. This deficiency prompted the dating of superficial sooty residue on two sherds from segment 7 in an attempt to complete the sequence. Both sherds were thought to derive from the same vessel, and seemed unlikely to have been redeposited, since their interiors retained visible, powdery residue, and since 38 sherds from the same vessel were recovered from the same context. These measurements are, however, statistically significantly different at 95% confidence

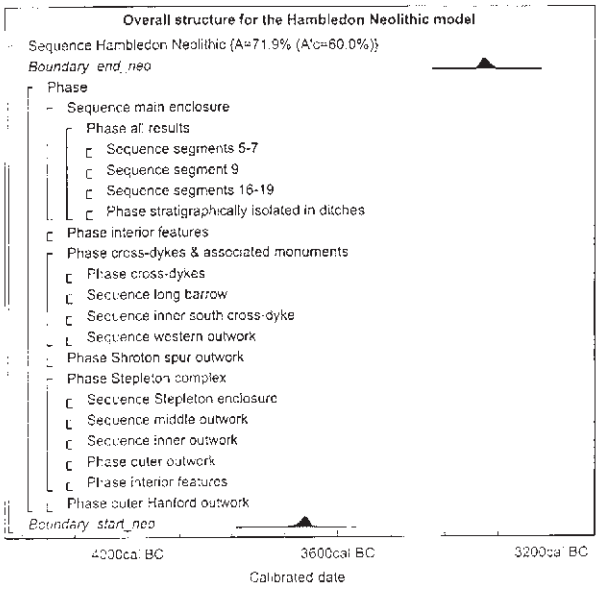

Fig 4.4 Overall structure for the chronological model of Neolithic activity on Hambledon Hill. The component sections of this model are shown in details in Figures 4.5–4.13 and 4.15–4.18. © English Heritage (Ancient Monuments Laboratory)

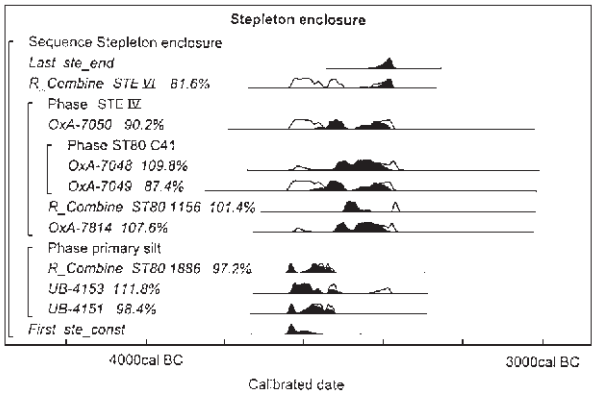

Fig 4.5 Probability distributions of dates from the Stepleton enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

(T'=6.9; T'(5%)=3.8; ν=1; OxA-7844, -7926), although their weighted mean is in good agreement with the stratigraphic sequence (A=81.6%).

Since most of the measurements were made on samples from segment 3 it is impossible to tell if the sequence in every segment was synchronous, although the measurements from segments 10 and 7 are compatible with this.

4.7.3 The middle Stepleton outwork (Fig 4.6)

Phase I. Measurements on single fragments of short-life charcoal from the base of the ditch in segment 6 (ST80 C53; OxA-7030–1, -7927) are not statistically

significantly different (T'=0.9; T'(5%)=6.0; ν=2). This suggests that the material was homogeneous and freshly deposited in the ditch base.

Phase II. Two small articulating samples, probably successive, from overlying horizons in other segments (ST81 379 (OxA-7035–6); ST80 2224 (OxA-7024–5)) stratigraphically post-date this material. Although the index of agreement for OxA-7030 is rather low (A=41.8%), the consistency of the charcoal results and their relationship with the overlying articulating samples suggests that this is an artefact of the statistical scatter of the radiocarbon measurements.

Phase III. Articulated cattle vertebrae from the rubble fills in segment 6 (UB-4136) are later than the two articulating samples.

4.7.4 The inner Stepleton outwork

(Fig 4.6)

The inner Stepleton outwork was cut through the at least partly silted ditch of the Stepleton enclosure (Fig 3.92). Air photographic evidence suggests that it was also cut through the bank of the middle outwork (Ch 2). These two relationships have been included in the model (Fig 4.6). A group of radiocarbon results must also pre-date the construction of the inner Stepleton outwork: (1) the charcoal of *Quercus* sp posts burnt *in situ* in the gateway (Figs 3.111–12; HAR-4437–8), (2) an articulated older adult buried in the bank area, presumably originally under the bank (Fig 3.113: 2A F200; OxA-7835), and (3) *Corylus* charcoal from the surface of the primary silt in cutting 1 of segment 6 (OxA-8859–60), where the chalk and clay of the ditch bottom were burnt and where the charred roundwood retained a vestige of the structure of the burnt, collapsed breastwork of the rampart (Fig 3.99).

Phase I. Articulated burials in segments 7 and 9 lay directly on the ditch bottom (Figs 3.92, 3.100–101) and are not statistically significantly different (T'=3.0; T'(5%)=3.8; ν=1; UB-4242, OxA-7101). They must be close in age to the date of construction or of total cleaning out. They cannot have been placed in the preceding Stepleton enclosure ditch because both were at the *outer* edge of the much wider outwork ditch, clear of the remaining traces of the enclosure ditch (Fig 3.92).

Charcoal from phases I–III. As well as occurring in or immediately above the primary silt, charcoal was also recovered from predominantly rubble fills higher up the sequence, *Quercus* sp and *Corylus avellana* being prevalent throughout the Neolithic levels (see Austin *et al*, Ch 6.1). Taken together with the structural evidence from segment 6, this indicates that much of the inner Stepleton outwork charcoal derived from the bank structure, although it entered the ditch at different times. The results for charcoal samples from

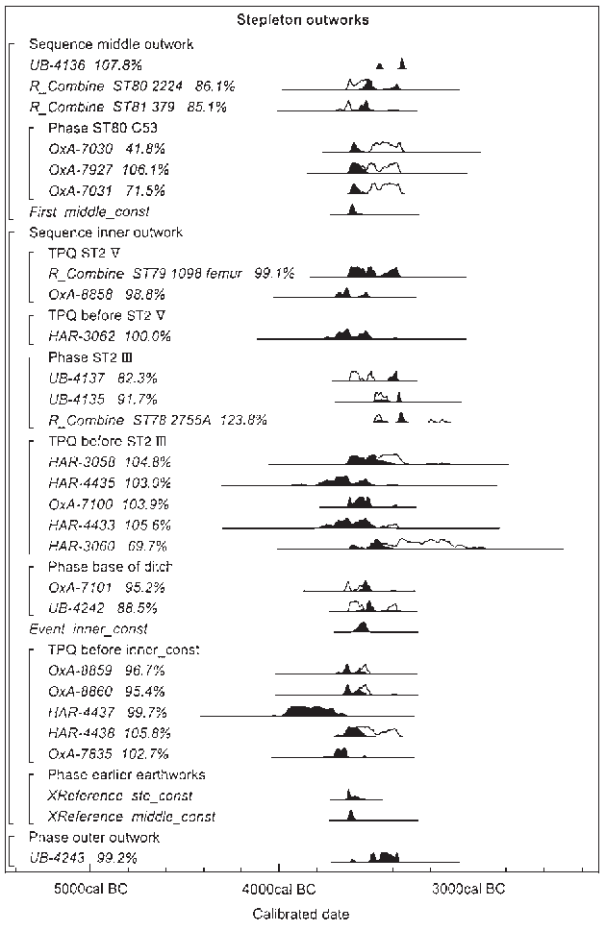

Fig 4.6 Probability distributions of dates from the Stepleton outworks. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

various levels in the ditch sequence (HAR-3058, -3060, -3062, -4433, and -4435) are not statistically significantly different from the results on the apparent fragments of hazel breastwork (OxA-8859–60; T'=9.6; T'(5%)=12; ν=6), even though they contain varying proportions of oak. Because of the presence of oak, and the possibility of derivation from an earlier event, these results have been used as *termini post quos* for the layers in which the charcoal was found.

Phase III. Several cattle vertebrae found articulated in the rubble fills of segment 6 (Fig 3.98) must be close in age to their context (UB-4137), as must an articulating cattle acetabulum and femur from a comparable horizon in segment 5 (UB-4135). The articulated older subadult or young adult male from segment 7 (ST78 2755A; OxA-7044–5) must also be close in date to the rubble fills from which he was recovered. These measurements are statistically significantly different (T'=14.1; T'(5%)=7.8; ν=3), which suggests that the rubble fills took some time to accumulate. The irregularity of this process, reflected in the varying relative quantities of loose rubble and smaller, more cemented

material within and between segments, makes it unwise to divide them more finely, despite the depth of deposit sometimes involved. For this reason we have modelled all the material from the rubble fills as a phase of activity. Within this, the sample for UB-4137 seems to have lain near the base of undisturbed chalk rubble, that for UB-4135 may have lain in a recut within the rubble fills (3.5.4), and the young adult male skeleton lay towards the top of the rubble (Figs 3.102–3). This almost certainly divorces his death from the event during which burnt timbers and charcoal were deposited on the ditch bottom, the age of which must be close to that of the two articulated skeletons from the bases of segments 7 and 9 (OxA-7101; UB-4242), which are statistically significantly different from the dates for ST78 2755A (T'=17.5; T'(5%)=7.8; ν=3). The infant remains apparently accompanying ST 2755A (Mercer 1988, 104) showed no sign of articulation and are statistically significantly different in age from the adult skeleton (OxA-7100; T'=12.6; T'(5%)=6.0; ν=2). Their incompleteness and weathered condition also contrast with the good preservation of the male skeleton (see McKinley, Ch 7.1). Further fragmentary infant remains at two other find spots in the same layer of this segment and two in the primary silts (3.5.4) make coincidental association a distinct possibility. Because OxA-7100 may have been redeposited, it is used as a *terminus post quem* for the layer from which it was recovered.

Phase V. Samples from a dump of sheep remains, some of them articulating, were submitted in order to obtain a date for the silts above the rubble fills in segment 5 (ST79 1098; OxA-7026, -7059, -8858). The sample which definitely articulated with other bones (OxA-8858) proved to be significantly older than articulating cattle bone from the underlying rubble fills of the same segment (UB-4135). If OxA-8858 is placed in its apparent stratigraphic position it is in poor agreement with the other measurements in the sequence (A=1.3%). Since the dump of bone from which the sample came included parts of two sheep and a beaver (see Legge, Ch 5), it seems likely that they were derived from an older context. For this reason, the measurements have been used as *termini post quos* for their context.

Otherwise, agreement between measurements from five segments suggests a common history of construction and infilling up to the top of the rubble fills, compatible with the plan and apparent defensive function of the earthwork and with the simple stratigraphic sequence for the Neolithic levels.

4.7.5 The outer Stepleton outwork (Fig 4.6)

Phase I. The articulated human skeleton on which the one measurement from this ditch (UB-4243) was made lay on the base of a segment butt, surrounded by primary silts, in an undercut apparently formed when loose chalk blocks fell away as the ditch was being dug (Figs 3.105–6). It is thus highly likely to have been placed there very soon after the cutting of the ditch.

4.7.6 Discrete Neolithic features on the Stepleton spur (Fig 4.7)

Five Neolithic features have been dated, all of which appear to be contemporary with the use of the Stepleton enclosure. Three were dated because of the importance of the charred plant remains that they contained: ST82 F39 contained an exceptionally large deposit of emmer wheat (OxA-7839–40; see Jones and Legge, Ch 6.2), 1A F110 contained the only deposit from the hill dominated by barley (OxA-7837–8; see Jones and Legge, Ch 6.2), and 4B F53 contained a grape pip among a number of cereal grains (OxA-931–3; Jones and Legge 1987). Two burials were also dated. 1A F70 (OxA-7836) was an otherwise undated articulated child burial in the centre of the Stepleton enclosure (Fig 3.113). Attention may be drawn to the two measurements for the skeleton of a young adult male and one for a charred hazelnut shell from among many scattered over the skeleton (4B F712; Fig 3.113; UB-4311, OxA-7818, -7843). All three dates are statistically consistent (4.5). The interpretation of this burial, which was accompanied by artefacts, animal bone, burnt chalk, burnt clay, charcoal, and burnt flint as well as the hazelnut shells, is discussed in section 4.8.1.

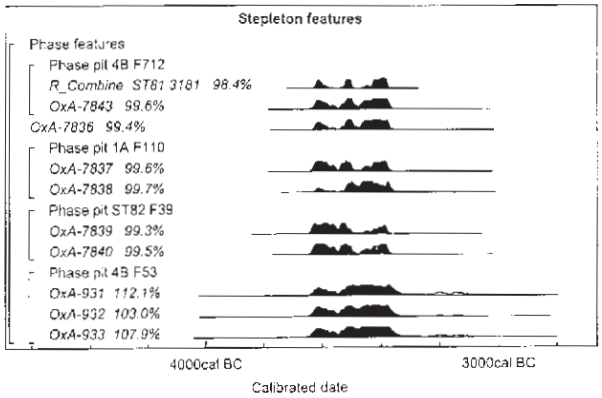

Fig 4.7 Probability distributions of dates from Neolithic features on the Stepleton spur. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

4.7.7 The outer Hanford outwork (Fig 4.8)

Phase I. The three dates from primary contexts in segment 3 are not statistically significantly different (T'=0.4; T'(5%)=6.0; ν=2). However, since the charcoal in the silt on the floor of the north butt was unidentified, it could pre-date construction and has hence been used as a *terminus post quem* (HAR-6038).

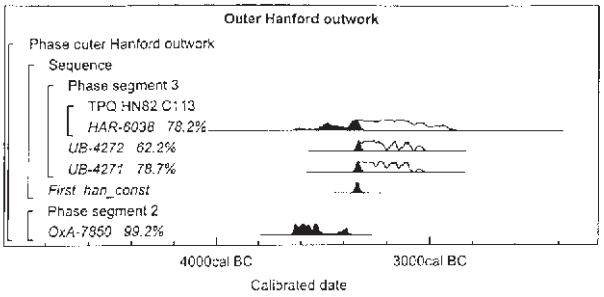

Fig 4.8 Probability distributions of dates from the outer Hanford outwork. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

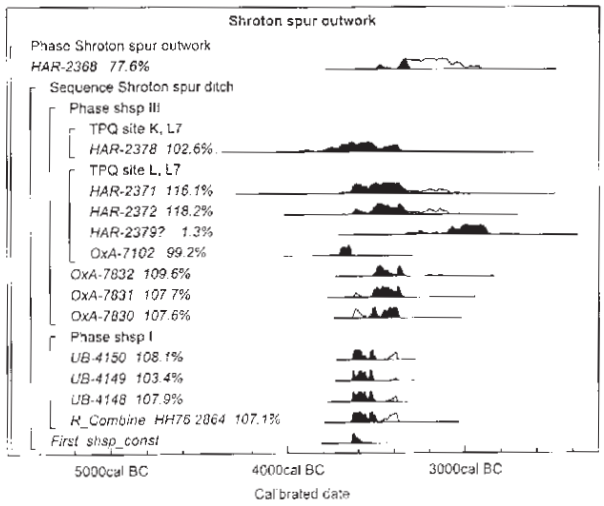

Fig 4.9 Probability distributions of dates from the Shroton spur outwork. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

Two substantial groups of articulated cattle bone on the floor of the south butt (Figs 3.141–2) are likely to be very close to the construction date (UB-4271–2).

In the south butt of the next segment, however, three articulating pig tarsals in a charcoal-rich silt on the ditch floor were significantly earlier (OxA-7850; T'=46.9; T'(5%)=7.8; ν=3). There are at least three possible interpretations.

1. The whole earthwork was of one date, that of the samples from segment 3. The earlier pig tarsals in segment 2 were redeposited.
2. The whole earthwork was of one date, close to that of the pig tarsals in segment 2. Segment 3 underwent a radical cleaning-out and segment 2 did not.
3. Segment 3 was built later than segment 2. This would conform to the argument from earthwork survey that the central segments of the Hanford outworks, including segment 2, were already present when more regular, linear outworks, including segment 3, were built around the south-west side of the hill, cutting across the contours and linking the Hanford and Stepleton earthworks (see Ch 2).

Whatever the interpretation, the dates from the base of segment 3 reflect its excavation or reworking in the third quarter of the fourth millennium at a time when the other earthworks on the hill were going out of use, with the possible exception of the outer east cross-dyke. The inner Hanford outwork remains undated.

4.7.8 The Shroton Spur outwork (Fig 4.9)

Phase I. Three antler picks and an articulated dog from the bottom of the ditch near the centre of site K/L (Fig 3.79) provided measurements which are statistically consistent (T'=0.6; T'(5%)=7.8; ν=3; OxA-7037–8, UB-4148–50). The antlers seem to be functionally related to the digging of the ditch and the dog could have died very soon afterwards.

Phase III. Two articulating animal bone samples from the chalk rubble fills on site M (OxA-7031–2) are later than the samples on the base of the ditch, as is a second articulated dog skeleton found within the phase III fills on site L (OxA-7830).

Other samples from these layers are more problematic. Bulked charcoal samples from a patch of burnt material yielded varying dates (T'=8.5; T'(5%)=6.0; ν=2; HAR-2371–2, 2379). One of these, HAR-2379, is significantly later than the other two. It is not clear exactly what was dated from this deposit. Two samples were identified as *Quercus* sp and *Corylus/Alnus*, the third (HAR-2371) as indeterminate charcoal and 'burnt material'. At the time of excavation, the deposit was described as 'charcoal lumps and a lot of ... unidentifiable burnt material – doesn't seem to be burnt wood as it is much more "spongy" with no definite lumps like charcoal frags. Seems to be stuck together and sometimes comes away in handful-size lumps with no particular shape.' The unknown composition of this material suggests that contamination may be responsible for the anomalous result, and so HAR-2379 has not been included in the model. The sample for HAR-2378 came from a second patch of burnt material. Because of the oak component of HAR-2378 and -2372 and the unidentified nature of HAR-2371, all three have been used as *termini post quos* for their contexts.

The uniform composition of the identified charcoal from the phase III fills of site K/L, all of it *Quercus* sp and *Corylus/Alnus*, compares with that of the charcoals from the inner Stepleton outwork and contrasts with the more diverse composition of charcoals from elsewhere. This might suggest that the charcoals from site K/L were fragments of a burnt, collapsed bank structure, like that inferred for the inner Stepleton outwork. If so, the charcoals should pre-date or be contemporary with the construction of the earthwork. If HAR-2378 and HAR-2371–2 are included in phase I, the model shows good agreement (A>100% for all three

measurements); however, caution dictates that these measurements are used only as *termini post quos* for the contexts from which the samples were recovered.

Human foot and toe bones (OxA-7102), found in apparent articulation close to the source of HAR-2371–2 and -2379, formed part of a group of human bone from at least two very incomplete individuals. The dated metatarsal and phalanges were older than the samples from the base of the ditch (A=6.3%) and almost certainly pre-date the construction of the earthwork. The date is therefore used as a *terminus post quem* for its context.

HAR-2368 was made on *Quercus* sp charcoal from a vestigial posthole forming part of what seemed to be a gateway in the earthwork on site M (Fig 3.75: F8). The charcoal is likely to have been the remains of a post rather than an accidental introduction, since it was entirely of *Quercus* sp, and there was enough of it for a conventional Harwell date (then 50–100 g before pre-treatment). It is, however, likely to post-date the original ditch construction (99.9% probable). The most straightforward interpretation is that the post was inserted during repair or rebuilding some time after the earthwork was constructed. The oak charcoal would provide a *terminus post quem* for the repair.

4.7.9 The main enclosure (Figs 4.10–4.13)

Building a model for the chronology of this monument has been extremely complicated. Stratigraphic sequences were often confusing, owing to repeated recuttings, not all of which may have been identified, and it is probable that each segment had its own history of recuts and deposits, making phase numbers labels for stages of infilling, rather than for chronological horizons. Consistent series of dates have been obtained from two individual segments in different parts of the circuit, from phase I to phase III in segment 9 and for phase III to after phase VI in segment 17. When dates from the same stratigraphic phases in nearby segments are grouped together minor inconsistencies become apparent, but the increased number of determinations in each model provides more realistic estimates of the monument's chronology. The following paragraphs therefore describe three independent sequences and a number of determinations which relate to the overall monument phasing but are stratigraphically isolated from other radiocarbon measurements. The overall estimates for the chronology of the monument have been determined by combining the evidence from the three groups of ditch segments, and the stratigraphically isolated measurements from the ditches, as shown in Figure 4.4.

Segments 5 to 7 (Figs 4.4, 4.10)

Phase I. Samples from the primary silts included one pair of substantial articulating bones from segment 7 (cattle radius and ulna; OxA-7775). The remainder

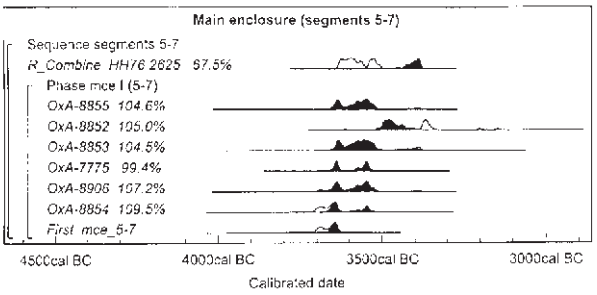

Fig 4.10 Probability distributions of dates from segments 5–7 of the main enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

were disarticulated bone fragments, one from segment 5 (OxA-8855), two from segment 6.2 (OxA-8852–3), and two from segment 7 (OxA-8854, -8906). Five of the six, including the articulating bones, were statistically consistent (T'=1.2; T'(5%)=9.5; ν=4). The exception (OxA-8852) is significantly younger (T'= 21.7; T'(5%)=11.1; ν=5). It was found in segment 6.2 in apparently undisturbed chalky silt (Fig 3.18, section D–D': L9) some 0.10 m away from the sample for OxA-8853 and there is no reason to think that it was intrusive. It seems most likely that OxA-8852 dates the construction or total cleaning-out of segment 6.2 and that the sample for OxA-8853 was redeposited.

Phase II/phase III interface. In the adjoining segment (6.1), the articulated lower trunk and femurs of a young man on the surface of the phase II silts, above the primary silts, provided a date for the end, in that segment, of the succession of silting, cleaning out, and occasional deposition which made up phases I and II (HH76 2625; OxA-7773–4).

Segment 9 (Figs 4.4, 4.11)

Phase I. A horncore and a pig femur fragment from the primary silts yielded statistically consistent results (OxA-7771–2; T'=2.0; T'(5%)=3.8; ν=1).

Phase II. Immediately above the primary silts, two single pieces of *Corylus* sp charcoal from a restricted spread of charcoal and ashy material (L13) in the south butt provided results which are not significantly statistically different (OxA-7027 and OxA-7824; T'=0.7; T'(5%)=3.8; ν=1). A similar deposit (L12), however, overlying it and separated from it only by a thin layer of silt, contained charcoals of varying ages (OxA-7028–9, HAR-1886; T'=8.5; T'(5%)=6.0; ν=2). Of these, OxA-7029 was probably earlier than the bone from the primary silts (A=6.3%). Since the origin of the charcoal was clearly mixed, the latest of the dates has been taken as the best estimate of the age of the deposit in both layers.

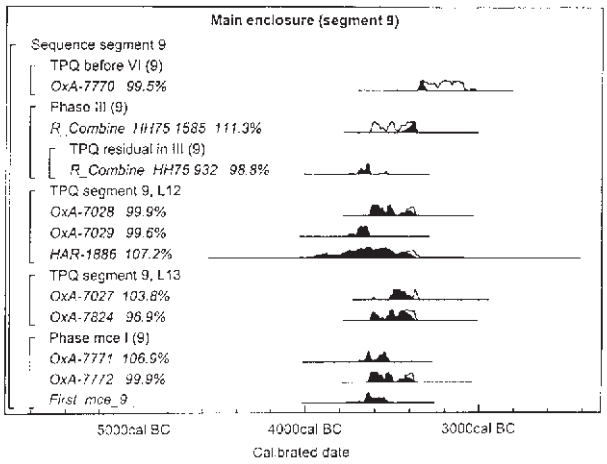

Fig 4.11 Probability distributions of dates from segment 9 of the main enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

Phase III. Measurements on an articulated cattle lower forelimb (HH75 1585; OxA-7015–6) were consistent with dates from the underlying layers (A=111.3%). Two articulating dog phalanges (HH75 932; OxA-7097–8) seem to be older than material in layers beneath them (A=22.7%). It was impossible to tell how dispersed the phalanges had been, since they were extracted from a bulk bone find; they are likely to have been redeposited and so have been used as a *terminus post quem* for the layer in which they were found.

OxA-7770, submitted as a sample from the primary silt, has been used as a *terminus post quem* for phase VI because here layer 9, to which it was attributed, proved to have been applied to relatively fine silts at more than one level, the first of them encountered soon after the phase VI slot had been excavated. This sample was probably not from the primary silt, as the result is not in agreement with this stratigraphic position (A=3.5%).

Segments 16 to 19 (Figs 4.4, 4.12)

Phases I and II. An articulated child burial cut into the base of segment 18, possibly through the primary silt, can have been very little removed in age from the excavation of the ditch (HH76 1948; OxA-7768-9). Animal bone was particularly scarce in the primary silts in this area; the only sample eventually located was a bone fragment from segment 16 (OxA-7767). These results are not statistically significantly different (T'=1.7, T'(5%)=3.8; ν=1).

Phase III. The only sample definitely found in articulation was a distal cattle tibia fragment with several tarsals (UB-4269) from segment 18. Articulating samples, both from segment 17, consisted of a cattle lumbar vertebra and sacrum (HH76 2808; OxA-7022–3) and cattle phalanges (OxA-7099). The measurements on both

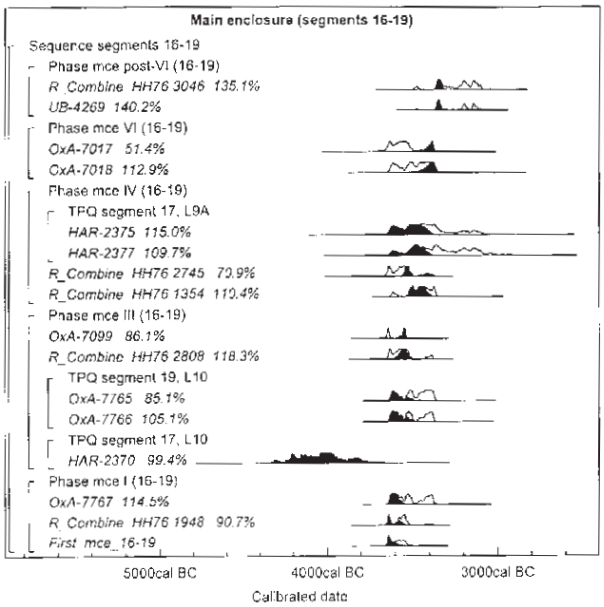

Fig 4.12 Probability distributions of dates from segments 16–19 of the main enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

articulating samples are in good agreement with their stratigraphic position (A=118.3% and 86.1%; Fig 4.12). The stratigraphic sequences in segments 17 and 18 are very similar. Indeed, the continuous longitudinal section (Figs 3.29–30) could suggest that the upper part of the primary silt was cleaned out from both in a single operation, immediately prior to the accumulation of the rubble fills which contained the samples. However, the articulated sample from segment 18 is significantly later than the two articulating samples from segment 17 and than the articulating samples stratified above them, and the model for segments 16–19 shows poor agreement if UB-4269 is included in phase III (A=13.1%). It seems unlikely that all six articulating samples were redeposited. Either the two sequences were not after all contemporary, or the articulated sample for UB-4269 was in an undetected recut. In the predominantly rubble fills of phase III, recuts would have been difficult to identify, and the recognition of one in segment 16 suggests that others may have gone unobserved, especially in the haste of the last days of the excavation when the sample was recovered. Because of the similarity of this sample and measurement with child burial HH76 3046 (see below), UB-4269 has been placed after phase VI.

A date on a bulked sample of *Quercus* sp charcoal from the same layer as the articulating phase III samples in segment 17 (HAR-2370) is used as a *terminus post quem* for its deposition. Two animal bone dates from segment 19 (OxA-7765–6) are treated in the same way, since the layer number to which they were attributed was applied to both part of the primary silts and the overlying chalk rubble fill.

The remaining samples from this area are all from segment 17.

Phase IV. The extensive ashy, dump-like deposit (L9A) contained articulating red deer phalanges (HH76 1354, OxA-7019, -7058) and cattle carpals (HH76 2745, OxA-7020–1), the measurements for which are in good agreement with their stratigraphic position (A=110.4%, A=70.9%). Bulked charcoal samples from the same layer (HAR-2375, -2377) have been treated as *termini post quos* for phase IV because one was of oak and the other contained oak.

Phase VI. Articulating cattle phalanges (OxA-7017) and pig metatarsals (OxA-7018) from the first of two phase VI slots (Fig 3.29: L8A) are in good agreement with the stratigraphy (A=112.9%, A=51.4%).

Post-VI. A child burial (HH76 3046; OxA-7039–40; Figs 3.29–30, 3.34) may have truncated the later of two slots, although this is not certain. Its location in a shallow segment butt, covered only by predominantly earthy fills, made its stratigraphic relation to the rest of the segment unclear, as did its recovery in adverse weather conditions at the very end of the 1976 season of excavation. The measurements are in good agreement with it post-dating the phase VI samples (A=135.1%) and are indistinguishable from UB-4269, the date of articulated cattle bone argued above to have come from an undetected recut in segment 18 (T'=0.0, T'(5%)=3.8, ν=1).

Other segments (Figs 4.4 and 4.13)

Although it was decided to concentrate on particular groups of segments, articulated samples from phase VI contexts elsewhere were submitted because suitable samples from the later part of the sequence were scarce and there was a need to check that the articulating samples from segment 17 were not redeposited. In fact, the articulated samples are not statistically significantly different from the articulating ones (T'=6.4, T'(5%)=9.5, ν=4). However, a hazelnut sample from segment 13 (HAR-2369) is significantly later, suggesting that phase VI continued for some time and may not have been synchronous in all parts of the circuit (T'=18.8, T'(5%)=11.1, ν=5). The earlier dates for the bone samples may reflect the fact that, in the four cases where they came from segments with *successive* phase VI deposits (OxA-8851, -8849, -7017–8, -7039–40), they were all from the earliest (VI/a). This is an effect of sample availability. The later phase VI deposits in these segments and elsewhere may have been coeval with HAR-2369.

During the excavation two other samples were submitted. These are both bulk samples of short-lived charcoal; one came from a discrete spread in a band of cultural material laid along the surface of the primary silt in segment 11 (HAR-1882, Fig 3.23, section D–D': L11), the other from a 'grey pit' in segment 3

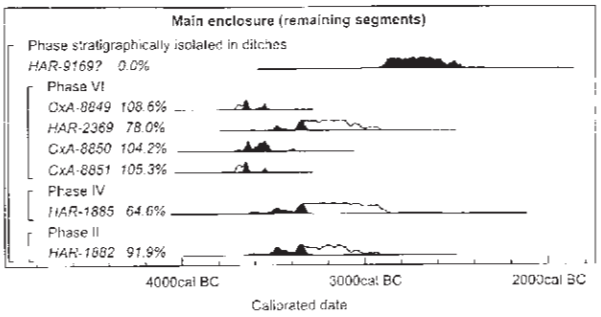

Fig 4.13 Probability distributions of dates from the remaining segments of the main enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

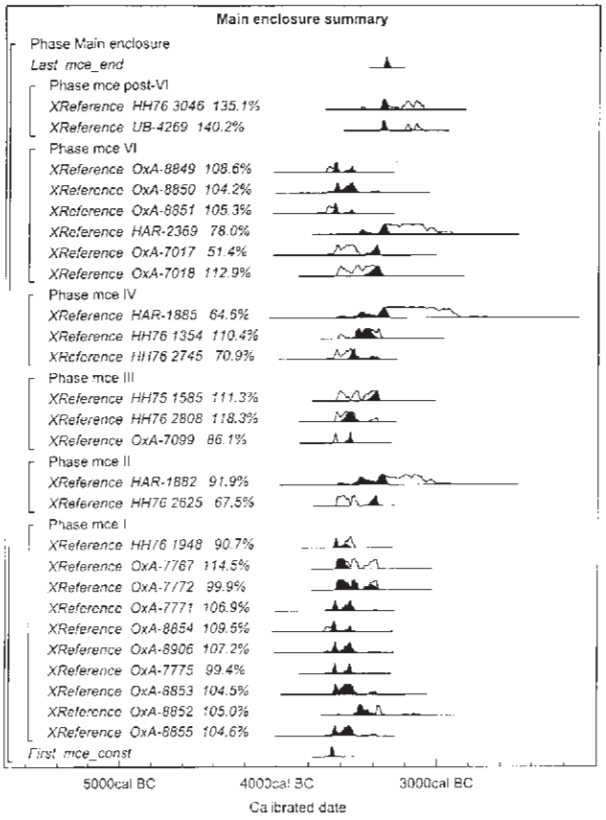

Fig 4.14 Probability distributions of dates from the main enclosure. This summary shows only those dates which directly relate to the deposition of the contexts (ie which are not termini post quos*). The overall construction date for the enclosure (*mce_const*) and the last use of the enclosure (*mce_end*) have been estimated by the first and last dated events from the enclosure within the model described in Figures 4.4 and 4.10–4.13. © English Heritage (Ancient Monuments Laboratory)*

(HAR-1885). Both are likely to be close in age to their contexts, but do little to define their dates because of large error terms and lack of stratigraphic relation to other measurements.

The date range of a bulked charcoal sample from a spread of stylistically late Beaker pottery above the slot in segment 8 (HAR-9169) must be attributed to the

inclusion of redeposited Neolithic charcoal, and/or to the presence in it of oak, since it falls before the currency of Beaker pottery in Britain, *c* 2500–1700 cal BC (Needham 2005).

The construction date of the enclosure (Fig 4.14)

There are eleven radiocarbon measurements on ten samples from the ditch base or from primary silts. These measurements are statistically significantly different (T'=25.7, T'(5%)=16.9, ν=9). However, one measurement (OxA-8852) is significantly later and, if it is excluded, the remaining results are consistent (T'=7.9, T'(5%)=15.5, ν=8). Since this consistent group includes an articulated human skeleton and a pair of articulating cattle bones, it seems likely that all of this material was fresh when deposited in these primary contexts. For this reason, it seems likely that the enclosure was built in a short span of time, even though segments were infilled differentially. An overall estimate for the construction of the enclosure has been calculated using the model shown in Figures 4.4 and 4.10–13, which takes the conservative line of minimising the assumption of synchroneity between segments. A summary diagram showing only those dates which relate to the deposition of their contexts (ie which are not *termini post quos*) is shown in Figure 4.14. An alternative approach to modelling the enclosure is discussed in section 4.9.

4.7.10 The east cross-dykes (Fig 4.15)

The inner east cross-dyke

Phase I. Two single-entity samples of *Corylus* charcoal (OxA-8863–4) from a discrete spread in the primary silt in segment 4 yielded measurements which are statistically consistent with the pre-existing measurement on part of the bulk sample from which they were extracted (HAR-9168; T'=4.3; T'(5%)=6.0; ν=2), suggesting that it was all of the same age. Three disarticulated animal bone and antler samples came from the same context as the charcoal samples and a fourth from the primary silt in segment 5. All seven measurements are, however, statistically significantly different (T'=12.4, T'(5%)=11.1, ν=5). It appears that the earliest sample, a cattle rib (OxA-8857), may be residual. It lay directly on top of the antler sample for OxA-8856 which is significantly later (T'=6.1, T'(5%)=3.8, ν=1). The possibility that the other samples approximate to the construction date of the ditch is enhanced by the wear on the tine tips of the antler sample, which suggests that it may have broken from a larger implement during use.

Phase VII/a. In segment 1, a substantial, compact butchery deposit from what was thought to be a phase VI slot is dated to the later Neolithic (OxA-8893). It is impossible to tell whether the entire slot was of this date or whether the deposit was cut into it. This measurement is not modelled as part of the main Neolithic use of the site, and is the only evidence for activity of this period on the hill.

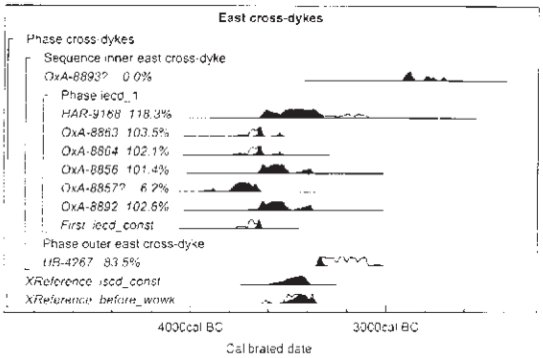

*Fig 4.15 Probability distributions of dates from the east cross-dykes. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. Details of the model used to estimate the construction dates of the inner south cross-dyke (*iscd_const*) and the western outwork (*before_wowk*) are shown in Figure 4.17. © English Heritage (Ancient Monuments Laboratory)*

The outer east cross-dyke

Phase I. A heavily used antler implement in a slight hollow in the floor of a segment butt provided a single, rather late, date (UB-4267). It is uncertain whether this relates to the construction of the whole earthwork or to an extension of the segment in which it was found, since the antler lay in a shallow 'tail' which extended from a deeper, bowl-like segment and was uncharacteristic of other excavated parts of the ditch (Fig 3.41).

4.7.11 The south long barrow (Fig 4.16)

Phases I–II. A red deer antler crown found with its tip embedded in the natural chalk of the base of the east ditch of the long barrow, surrounded and covered by primary silt, is almost certain to have broken from an implement used to dig the ditch, and its age should be close to that event (OxA-8845). Four disarticulated animal bone samples from the primary silts of the west ditch are of comparable age to each other and to the antler sample (OxA-7848, -8846–8; T'=7.2, T'(5%) =9.5, ν=4). A later animal bone sample from phase II silts immediately overlying these and underlying the main rubble fills of the ditch (OxA-7827) is here used as a *terminus post quem* for phase III.

Phase III. An articulating distal cattle tibia fragment and astragalus came from the rubble fill of the south butt of the west ditch (Fig 3.48, section E–E': L19; OxA-7813) and is in agreement with that stratigraphic position (A=53.2%).

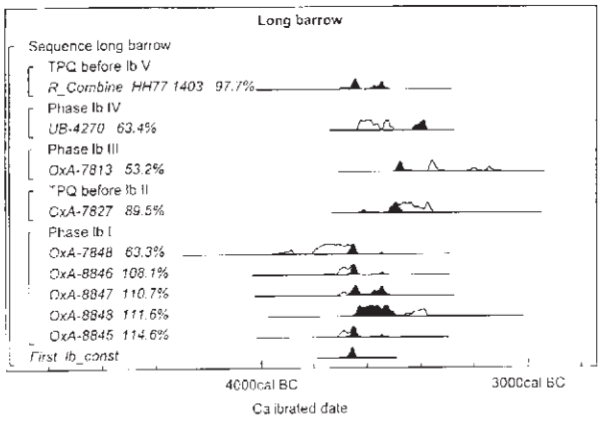

Fig 4.16 Probability distributions of dates from the south long barrow. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

Phase IV. Stratified immediately above the layer containing the articulating cattle bones was a localised spread of ashy material, burnt and unburnt bone, burnt and unburnt artefacts, burnt flint and charred hazelnuts, which seemed to have been tipped into the butt of the west ditch (Fig 3.48, section E–E': L17). Hazelnut shells from L17 provide a date which is in good agreement with the stratigraphic sequence (UB-4270; A=63.4%).

Phase V. Two possibly articulating pig metacarpals came from the finer silts above the rubble fills in the east ditch (OxA-7828–9). These were considerably earlier than OxA-7813 and UB-4273, both of which should pre-date them if the infilling of the two flanking ditches was contemporaneous (A=3.1%). Either the filling of the two ditches occurred at different rates or the pig metacarpals were redeposited. It should be noted that this sample caused problems in chemistry, one of the pretreatments giving a very anomalous $\delta^{15}N$ (2.8 ‰). This pretreated material gave a radiocarbon result which is more than 200 radiocarbon years younger than either of the results quoted here. This suggests that, if anything, the contaminant in OxA-7828–9 would make the results too young. The two measurements quoted were on replicate samples with two separate chemical preparations. These are in accord and represent the best estimate of the age of the sample, although the results must be treated with some additional caution.

4.7.12 The south cross-dykes (Fig 4.17)

These are likely to have been constructed later than the long barrow because they bow outwards around its south-east end. The bank of the inner south cross-dyke on site P2 sealed a distal cattle tibia fragment articulated with five tarsals (UB-4268), which should barely pre-date construction. A possible posthole within the protected chalk of the inner south cross-dyke bank near the west butt (WOWK area 3 F4, already discussed in section 4.7.1) is likely to have been covered by that bank, whether or not it formed part of its structure (Fig 3.44). In this case, *Fraxinus* charcoal from the second of its two successive sockets (OxA-8861–2) would pre-date the building of the cross-dyke. Because *Fraxinus* may be long-lived, the samples are treated as *termini post quos* for construction.

Phase I. Charcoal of mixed species recovered in 1958 from a single concentration in the angle of the ditch floor and side in Bonney's trench A provides a *terminus post quem* for the later silting, but cannot be directly related to the ditch construction because the sample included oak, which may already have been old when burnt (NPL-76).

Phase VI. A cluster of bone and unworked flint nodules and fragments in a slot-like recut on site P2 included two groups of articulating cattle vertebrae (OxA-7825, -7826). UB-4273 is the date of a concentration of hazelnuts in the second of three shallow recuts in the west butt of the ditch in WOWK area 3. Recuts in the two areas may not have been contemporary, since they were made at different stages in the silting of the ditch (Fig 3.43, section C–C': L9, Fig 3.44, sections A–A' and B–B': L7). All measurements are in good agreement with their stratigraphic positions (Fig 4.17).

No suitable samples were available from the outer south cross-dyke, the Neolithic fills of which had been truncated by a later, possibly Iron Age, recut (Fig 3.43: sections D–D', E–E').

4.7.13 The western outwork (Figs 4.4, 4.17)

The western outwork is likely to have been built after the south cross-dykes because it truncates their western butts (Figs 2.9, 2.11). One of the postholes in the scoop or platform on which the bank of the western outwork had stood contained much fragmentary *Quercus* sp charcoal, with a single fragment of *Pinus sylvestris* (WOWK area 2 F6, Fig 3.45). It is likely that the oak charcoal represented the remains of a post that had formed part of the bank structure, and that its date (OxA-7815) is a *terminus post quem* for the construction of the earthwork. The relatively late date of the post accords with the likely place of the outwork in the earthwork sequence.

4.7.14. Discrete features in the central area (Figs 4.4, 4.18)

Three measurements were made on bulked charcoal samples from pits which included oak, and are thus *termini post quos* for their contexts, although they all fall within the life of the enclosure (HAR-3061, -9166, -9167). The fourth (HAR-2041) was made on burnt antler from the same pit (B F57) as the charcoal

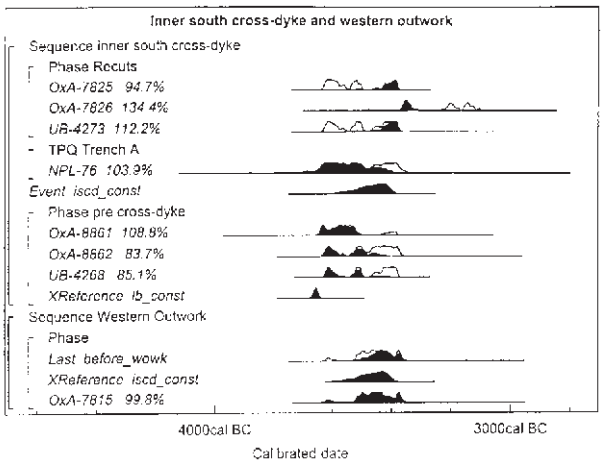

Fig 4.17 Probability distributions of dates from the inner south cross-dyke and western outwork. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

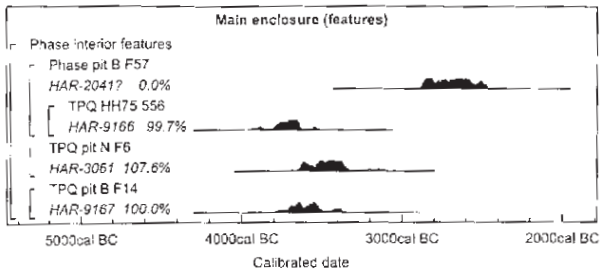

Fig 4.18 Probability distributions of dates from features within the interior of the main enclosure. The position of this group within the overall chronological model of Neolithic activity on Hambledon Hill is shown in Figure 4.4. © English Heritage (Ancient Monuments Laboratory)

sample for HAR-9166. Its late date is incompatible with the associated earlier Neolithic artefact assemblage. Given the problems of dating charred bone and antler, particularly the contamination of collagen by later humic material (Ambers *et al* 1999, 331), HAR-2041 cannot be regarded as an accurate radiocarbon measurement.

4.7.15 The Hanford 'flint mines' (Fig 4.19)

The three pits from which the samples came were connected to each other by tunnel-like break-throughs and appear to form a single complex. All three samples were near the base of the backfill, the *Corylus avellana* charcoal in a break-through and the antler at the opening to one. The latest date, that on the worn antler implement (OxA-7833), must be closest in age to the excavation of the pits, as its location at the opening to a break-through is consistent with it having been used in the original excavation of the feature. Furthermore, the amount of utilised antler from the 'mines' far

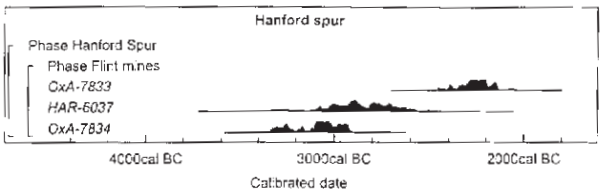

Fig 4.19 Probability distributions of dates from the 'flint mines' on the Hanford spur. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993). © English Heritage (Ancient Monuments Laboratory)

exceeds that from the adjacent Hanford outwork ditches (see Legge, 8.2) and suggests that antler implements were indeed used in their original excavation, a choice unlikely after the end of the second millennium. The other two measurements (HAR-6037, OxA-7834) are significantly earlier and reflect later fourth millennium activity. The pits seem to have been of later third millennium date, with redeposited Neolithic material. Alternatively, the 'mines' might have been relatively recent, with all three samples, like the rest of the finds, redeposited from earlier contexts when the pits were backfilled. This is made less likely by the considerations outlined above and by the absence of more recent material (if a single rabbit femur can be dismissed as intrusive).

4.7.16 Bronze Age and later activity
(Fig 4.20)

Features on the Stepleton spur. A possible corn-dryer inside the Stepleton enclosure (Fig 3.117: 1A F227+F239) is dated to the mid-second millennium by measurements on two charred emmer grains (OxA-7841–2). An unaccompanied crouched inhumation outside the enclosure (Fig 3.117: ST82 F16) is rather later (OxA-7849) and may relate to middle Bronze Age activity in Everley Water Meadow. The dates of these two features, both previously thought to be Neolithic, expand the evidence for second millennium activity on the spur, which otherwise takes the form of Bronze Age material in the ditch tops. This heightens the possibility that other features there may also date from this period.

Everley Water Meadow. All three measurements on charcoal from the burnt mound (HAR-6529–31) are consistent with each other (T'=0.9; T'(5%)=6.0; ν=2) and with the middle Bronze Age pottery from the same contexts. The prevalence of short-life species among the residues suggests that the samples were close in age to the generation of the burnt material.

The hillfort spur. Samples were sought from the ditch sectioned in 1986 (3.7) to test the hypothesis that it was a third Neolithic enclosure (see Ch 2). The only

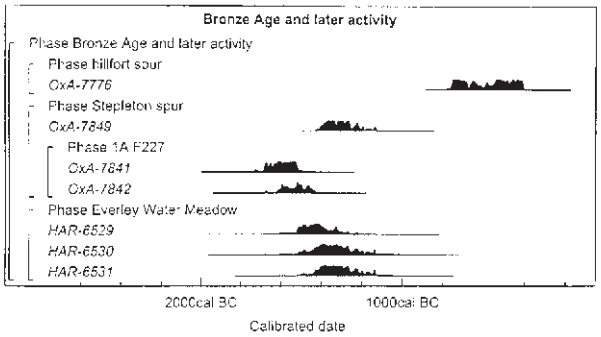

Fig 4.20 Probability distributions of dates of Bronze Age and later activity. Each distribution represents the relative probability that an event occurred at a particular time. These distributions are the result of simple radiocarbon calibration (Stuiver and Reimer 1993). © English Heritage (Ancient Monuments Laboratory)

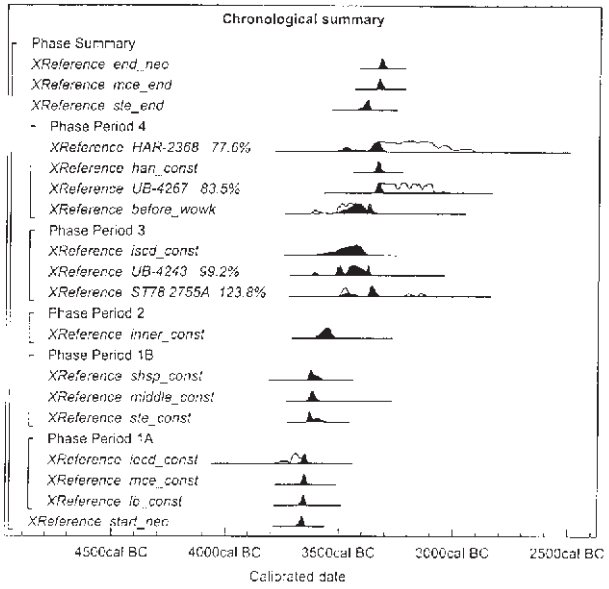

Fig 4.21 Probability distributions of dates of major archaeological events on Hambledon Hill: each distribution represents the relative probability that an event occurred at some particular time. The distributions correspond to aspects of the model described in Figures 4.4–4.13 and 4.15–4.18. For example, the distribution 'ste_const' *is the estimated date for the construction of the Stepleton enclosure. Details of how this estimate has been calculated are shown in Figures 4.4 and 4.5. © English Heritage (Ancient Monuments Laboratory)*

sample available from the lower fills was a longbone fragment too small to be identified to species (OxA-7776). The fragment was recorded as from the primary silt of the ditch; although its position was not precisely located by measurement. It thus probably came from the initial silts on the ditch base and sides or, if not from these, from the 1.50 m of interleaved silts and chalk rubble which made up the rapid fill of the ditch (Figs 3.152–3). There are two possible interpretations.

1. The bone fragment was incorporated in the ditch fill as it began to accumulate and cannot be later than that process. Combined with a pottery assemblage consistent with a fifth–sixth century BC date stratified above the sample (see Brown, Ch 9.3), OxA-7776 points to an earlier first millennium construction date for the earthwork.
2. The bone fragment was intrusive. This is less likely, not least because of the depth of deposit separating the initial silts from the overlying early Iron Age house platform and the compactness of the silts which underlay it (Figs 3.152–3). While penetration through an undetected root- or animal-hole is not out of the question, the cleanliness of the sample, which was still covered with white chalk dust when selected for dating, contrasts with the dark, earth-stained state of the bone from Iron Age contexts, makes this unconvincing.

4.8 Analysis and interpretation stage 2: synthesis

4.8.1 Development of the complex
(Fig 4.21)

Figure 4.21 shows the probability distributions of the estimated dates for the construction of each of the dated earthworks. Estimated date ranges are shown in Table 4.2. By comparing each pair of distributions it is possible to calculate the probability that one earthwork was built before another. These probabilities are shown in Table 4.3. It is important to bear in mind that the model has produced date ranges of varying reliability (see below, section 4.9; Bayliss *et al* 1997), so the probabilities in this table are a best estimate, given the data and model outlined above, and must be interpreted with caution. For example, it must not be forgotten that the estimated date range *before_wowk* is only a *terminus post quem* for that outwork.

Nevertheless, certain patterns do emerge from Table 4.3, which may be used to suggest a sequence of development for the complex (Fig 4.21, Table 4.4).

Period 1

Period 1A

In the central area, the estimated dates for the construction of the main enclosure, the inner east cross-dyke, and the south long barrow are very similar (Fig 4.21; Table 4.3). No relative chronological sequence is apparent between these earthworks; indeed it is possible that all were built at the same time. For example, the difference between the construction dates of the main enclosure and the south long barrow is *–20 to 30 years (at 95% probability)* (Fig 4.22; *1A*). This estimate means that, although it is not clear which earthwork came first, they are likely to have been built within thirty

Table 4.2 Summary chronology of the construction and use of the early Neolithic earthworks

		Distribution	*Estimated date range cal BC (95% unless otherwise specified)*	*Graph(s)*
Main enclosure	Construction	*mce_const*	*3680–3630*	Fig 4.14; Fig 4.21
	Last early/middle Neolithic use	*mce_end*	*3360–3310*	Fig 4.14; Fig 4.21
	Duration of early/middle Neolithic use	*use_mce*	*290–350 years*	
Inner E cross-dyke	Construction	*iecd_const*	*3690–3620*	Fig 4.15; Fig 4.21
Outer E cross-dyke	Construction	*UB-4267*	*3360–3310*	Fig 4.15; Fig 4.21
Inner S cross-dyke	Construction	*iscd_const*	*3570–3390*	Fig 4.15; Fig 4.17; Fig 4.21
W outwork	Construction (tpq)	*before_wowk*	*3510–3360*	Fig 4.15; Fig 4.17; Fig 4.21
Long barrow	Construction	*lb_const*	*3680–3640*	Fig 4.16; Fig 4.17; Fig 4.21
Shroton spur outwork	Construction	*shsp_const*	*3650–3570*	Fig 4.9; Fig 4.21
	Reconstruction of gateway	*HAR-2368*	*3520–3310*	Fig 4.9; Fig 4.21
Stepleton enclosure	Construction	*ste_const*	*3650–3570*	Fig 4.5; Fig 4.6; Fig 4.21
	Final early/middle Neolithic use	*ste_end*	*3430–3370*	Fig 4.5; Fig 4.21
	Duration of early/middle Neolithic use	*use_ste*	*160–260 years*	
Middle Stepleton outwork	Construction	*middle_const*	*3650–3580*	Fig 4.6; Fig 4.21
Inner Stepleton outwork	Construction	*inner_const*	*3630–3500*	Fig 4.6; Fig 4.21
Outer Stepleton outwork	Construction	*UB-4243*	*3620–3600 (3%) or 3530–3360 (92%)*	Fig 4.6; Fig 4.21
Outer Hanford outwork	Construction	*han_const*	*3360–3320*	Fig 4.8; Fig 4.21
Entire hill	Beginning of early/middle Neolithic use	*start_neo*	*3690–3640*	Fig 4.4; Fig 4.21
	Final early/middle Neolithic use	*end_neo*	*3340–3300*	Fig 4.4; Fig 4.21
	Duration of early/middle Neolithic use	*use_neo*	*310–370 years*	

years of each other. The whole of Period 1A spanned *10 to 90 years (at 95% probability)* (Fig 4.22; *use_1A*), and it is likely that a 70-year-old, for example, could have witnessed the construction of all these monuments within his or her lifetime.

Period 1B

Away from the central area, the Shroton spur outwork, the Stepleton enclosure, and the middle Stepleton outwork cluster equally closely but slightly later. For example, the difference in construction dates of the Stepleton enclosure and the middle Stepleton outwork is *–50 to 70 years (at 95% probability)* (Fig 4.22; *1B*). The estimated date for the construction of the Stepleton enclosure takes account of a clear stratigraphic relationship between this ditch and the inner Stepleton outwork (Fig 3.92). The model also incorporates air photographic evidence that the middle outwork is earlier than the inner Stepleton outwork (Ch 2). This relationship is less certain, although the radiocarbon evidence is in good agreement with it. The whole of Period 1B spanned *0 to 110 years (at 95% probability)* (Fig 4.22; *use_1B*), and so it is also possible that a long-lived individual could have witnessed the construction of all the monuments in this period within his or her lifetime.

The interval between periods 1A and 1B may have been very short. For example, the interval between the construction of the main enclosure and the Stepleton enclosure is *0 to 90 years (at 95% probability)* (Fig 4.22; *1A*/*B*).

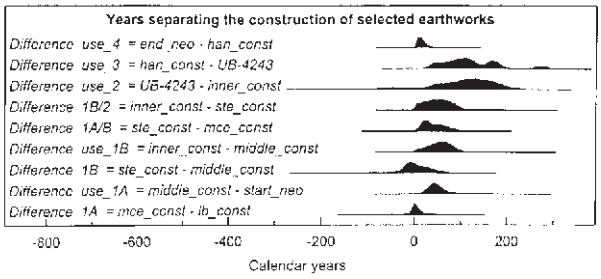

Fig 4.22 Probability distributions of the number of years between the construction of selected earthworks, derived from the model defined in Figures 4.4–4.13 and 4.15–4.18. © English Heritage (Ancient Monuments Laboratory)

Pre-construction activity

A cattle rib from the primary silt of the inner east cross-dyke (Fig 4.15: OxA-8857) pre-dates five other samples from the same context and may have been redeposited (section 4.7.10). Otherwise, there is little hint among the dates of previous Neolithic use of the central area, although the dating of skulls without mandibles, and indeed skull fragments, from primary contexts might tell a different story.

On the Stepleton spur, an older adult, possibly male (Fig 4.6: OxA-7835), must have been buried before the inner Stepleton outwork was built, since the grave would have been covered by the rampart. Its location is also compatible with insertion before the Stepleton enclosure was built. If we put this possible

Table 4.3 Probabilities of the relative chronology of each pair of earthworks

The cells show the probability that the earthwork listed at the left of the table is earlier than the earthwork listed at the head of the table, eg the probability that *shsp_const* is earlier than *UB-4243* is >95%; the probability that *shsp_const* is earlier than *ste_const* is 48% (ie 100% minus 52%)

	Main enclosure (*mce_const*)	Inner E cross-dyke (*iecd_const*)	Stepleton enclosure (*ste-const*)	Middle ST outwork (*middle_const*)	Shroton spur outwork (*shsp_const*)	Inner ST outwork (*inner_const*)	ST78 2755A (*ST78 2755A*)	Outer ST outwork (*UB-4243*)	Inner S cross-dyke *iscd_const*	Western Outwork (*before_wowk*)	Outer E cross-dyke (*UB-4267*)	Outer HN outwork (*han_const*)	Shroton gateway (*HAR-2368*)
Long barrow (*lb_const*)	67%	70%	>99%	>99%	>99%	>99%	100%	100%	100%	100%	100%	100%	100%
Main enclosure (*mce_const*)		54%	>99%	>99%	>99%	100%	100%	100%	100%	100%	100%	100%	100%
Inner E cross-dyke (*iecd_const*)			>95%	>95%	>95%	99%	100%	>99%	>99%	100%	100%	100%	>99%
Stepleton enclosure *(ste_const)*				50%	52%	100%	100%	>95%	>99%	100%	100%	100%	>99%
Middle ST outwork (*middle_const*)					52%	100%	100%	>95%	>99%	>99%	100%	100%	>99%
Shroton spur outwork (*shsp_const*)						>95%	100%	>95%	>99%	100%	100%	100%	>99%
Inner ST outwork (*inner_const*)							100%	92%	92%	>95%	100%	100%	>95%
ST78 2755A (*ST78 2755A)*								22%	17%	28%	>95%	>95%	57%
Outer ST outwork (*UB-4243)*									40%	60%	100%	100%	75%
Inner S cross-dyke (*iscd_const*)										100%	100%	100%	80%
Western outwork (*before_wowk*)											100%	100%	70%
Outer E cross-dyke (*UB-4267*)												39%	15%
Outer HN outwork (*han_const*)													18%

Table 4.4 Provisional periodisation of the fourth millennium cal BC use of the hill

Period	*Elements*	*Distributions*	*Start cal BC*	*End cal BC*	*Duration*	
1A	Main enclosure Inner east cross-dyke Long barrow Hillfort long barrow?	*start_neo* to *middle_const*	*3690–3640 (95% probability)*	*3650–3580 (95% probability)*	*10–90 years (95% probability)*	*20–60 years (68% probability)*
1B	Shroton spur outwork Stepleton enclosure Middle Stepleton outwork	*middle_const* to *inner_const*	*3650–3580 (95% probability)*	*3630–3500 (82% probability)*	*0–110 (95% probability)*	*30–90 years (68% probability)*
2	Inner Stepleton outwork	*inner_const* to *UB–4243*	*3630–3500 (82% probability)*	*3530–3360 (92% probability)*	*10–220 years (90% probability)*	*60–180 years (68% probability)*
3	Inner south cross-dyke Outer Stepleton outwork Phases IV to VI in Stepleton enclosure Skeletons with arrowheads in inner and outer Stepleton outworks Outwork(s) on centre of Hanford spur?	*UB-4243* to *han_const*	*3530–3360 (92% probability)*	*3360–3320 (95% probability)*	*40–140 years (56% probability)*	*20–190 years (92% probability)*
4	Outer cross-dykes? Western outwork Outwork(s) linking Stepleton and Hanford spurs Rebuilding of Shroton spur gateway Child burial and articulated animal bone deposit in segments 17 and 18 of main enclosure	*han_const* to *end_neo*	*3360–3320 (95% probability)*	*3340–3300 (95% probability)*	*0–30 years (95% probability)*	*0–20 years (68% probability)*

relationship into the model, the results remain in good agreement with the inferred sequence (A=102.7%). In either case the burial may be firmly placed in period 1.

On the Shroton spur the anomalously early date of apparently articulated foot and toe bones in a jumble of human remains in the chalk rubble fills (Fig 4.9: OxA-7102) suggests that they, and perhaps the other bones in the group, might pre-date the construction of the earthwork (*shsp_const*). The model incorporating this interpretation exhibits good agreement (A=109.3%).

Period 2

The inner Stepleton outwork must be later than period 1, as it post-dates the Stepleton enclosure and the middle outwork on archaeological grounds. However, little time can have elapsed between the construction of this earthwork and its predecessor, as the measurements for skeletons from the base of the inner Stepleton outwork are not statistically significantly different from those for antler implements on the base of the Stepleton enclosure ditch (T'=5.6; T'(5%)=9.5; ν=4). In fact it can be estimated that the difference in date between the construction of the Stepleton enclosure and the inner Stepleton outwork is between *–10 and 120 years (at 95% probability)* (Fig 4.22; *1B/2*). In other words, it is quite possible that the builders of the inner outwork included individuals who remembered or had taken part in the construction of the enclosure.

The inner Stepleton outwork was burnt and had at least partly collapsed immediately after its construction, with burning debris scorching the chalk and clay of the ditch floor. It may indeed have been built in anticipation of this apparent attack, in which at least two people seem to have died. The collapse must be close in age to the death of a mature male found lying on that floor (UB-4242), and to that of a neonate placed in a crevice at the ditch base (OxA-7101). The man may have been a victim of the catastrophe in which the defences were fired. A direct connection with this event is seen in the contents of a grave 80 m to the north-east, where a young adult male was buried with scorched chalk rubble, burnt clay, charcoal, and charred hazelnuts (Fig 3.113). The only observed source for the burnt chalk and burnt clay was the then freshly burnt rampart, suggesting that his death was also associated with this event. Five radiocarbon dates, four made directly on the skeletons from the grave and the ditch base and one on one of the charred hazelnuts sprinkled in the grave, are consistent with the hypothesis that all three burials are part of the same event (T'=5.6; T'(5%)=9.5; ν=4).

The central part of at least the outer Hanford outwork may have been built before the period 4 outworks which linked the Hanford outworks to those on the Stepleton spur. On the evidence of a single measurement on articulating animal bone (Fig 4.8: OxA-7850), this event could have occurred in period 2 or period 3.

Once the main enclosure was built, individual segments infilled at different rates. Samples from phases III, IV and VI occupy a common span (Fig 4.14), indicating that the interplay between natural silting on the one hand and recutting, deposition, and backfilling on the other proceeded independently in individual segments or groups of segments. Regardless of date, different forms of intervention were nonetheless made in a consistent sequence: the ashy phase IV deposits, where they were made, always preceded the accumulation of phase V secondary silts; while phase VI slots were always cut after these had begun to accumulate. It is as if natural silting was delayed and interrupted to different extents in different segments, but that the acts performed as it proceeded followed a common pattern which extended throughout periods 2, 3, and 4.

Period 3

This period of activity on the hill is significantly later than periods 1 and 2 (Fig 4.21, Table 4.3); for example it can be estimated that the difference between the dates of construction of the inner and outer outworks on the Stepleton spur is between *10 and 220 years (at 95% probability*; Fig 4.22; *use_2*). The construction of the inner south cross-dyke and the outer Stepleton outwork are securely dated to this period. Although the outer outwork has only one measurement, it is on an articulated human skeleton which must be primary (section 4.7.11).

The death of this young man by arrowshot, immediately after the construction of the outer outwork, could have been exactly contemporary with the shooting of a second young man found prone in the chalk rubble filling the inner Stepleton outwork ditch (Fig 4.6, UB-4243, ST79 2755A; T'=3.8; T'(5%)=6.0; ν=2). These two deaths (Figs 3.102–3, 3.105–6) could also be contemporary with the articulated upper body of a woman in the largely silted Stepleton enclosure ditch (Fig 3.88; OxA-7814, T'=4.3; T'(5%)=7.8; ν=3).

This violent event is distinct from the previous one, stratigraphically and statistically (T'=23.8; T'(5%)= 15.5; ν=8). It is possible, of course, that the individuals attributed to each group did not die on the same day. The definition of the events is purely archaeological; the radiocarbon evidence does not, however, contradict that interpretation. The attribution of the female half-skeleton to the second event relies more on the radiocarbon date and less on the archaeology than that of the two young men and is therefore more questionable.

Also in period 3, charred material was put into small pits cut into the largely silted Stepleton enclosure ditch (Fig 4.5: OxA-7048–50). A rich, midden-like deposit of cultural material (phase VI; OxA-7926, -7844) overlying these may also fall in period 3. It is possible that the Stepleton enclosure went out of use

shortly after period 3 (Figure 4.21, Table 4.2), although the dearth of samples from the latest deposits prompts caution on this point.

Period 4

This period saw the last perceptible Neolithic modifications to the complex. It is again distinct, but only the estimated date for segment 3 of the outer Hanford outwork (*han_const)* is based on more than a single measurement. The western outwork may be constructed during this period for two reasons: the distribution shown in Figure 4.21 provides a *terminus post quem* for construction, and the earthwork itself seems to have been built when the period 3 inner south cross-dyke was already standing, since it truncates it. The outer east cross-dyke is placed here on the evidence of a single measurement (UB-4267), which may relate to an extension to a segment rather than its original construction (section 4.7.4). The undated outer south cross-dyke is placed here by analogy with it. A possible rebuilding of the Shroton spur outwork gateway (HAR-2368) may have been part of larger works represented by an incomplete and undated outer bank and ditch (3.4). A child burial cut into the silted main enclosure ditch is securely in period 4 (OxA-7039–40), as is the apparent insertion of articulated cattle bone in to the adjoining segment (UB-4269). There is little evidence for activity in this period on the Stepleton spur.

4.8.2 Duration of activity and processes

The chronological model outlined in section 4.8.1 and Figures 4.4–4.20 suggests that earlier Neolithic activity on the hill began in *3690–3640 cal BC (at 95% probability)* (Fig 4.21; *start_neo*) and ended in *3340–3300 cal BC (at 95% probability)* (Fig 4.21; *end_neo*). This period of use lasted for *between 310 and 370 years (at 95% probability)* (Fig 4.23; *use_neo*). The model also estimates the dates at which earlier Neolithic activity ceased in the two enclosures, and hence the period of use of each. The early Neolithic use of the main enclosure ended *3360–3310 cal BC (at 95% probability)* (Fig 4.21; *mce_end*), giving a span of *290–350 years (at 95% probability)* (Fig 4.23; *use_mce*). That of the Stepleton enclosure ended *3430–3370 cal BC (at 95% probability)* (Fig 4.21; *ste_end*), giving a span of *160–260 years (at 95% probability)* (Fig 4.23; *use_ste*).

4.9 Analysis and interpretation stage 3: sensitivity analyses

As indicated above (section 4.1) the model presented in sections 4.7–8 is just that, an *interpretative* model. In our view, it presents the most realistic view of the chronology of the monument complex. Alternative interpretations are, of course, possible, using sensitivity analyses for example. By comparing different analyses,

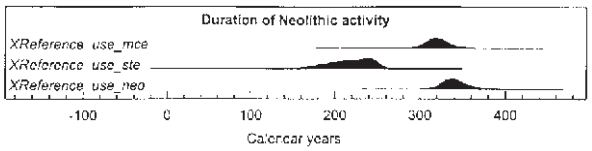

Fig 4.23 Probability distributions showing the durations of use of the main enclosure and the Stepleton enclosure, and the overall duration of Neolithic activity on the hill. The distributions are derived from the model defined in Figures 4.4–4.13 and 4.15–4.18. © English Heritage (Ancient Monuments Laboratory)

it is possible to determine the extent to which our answers depend on the radiocarbon results, the archaeological sequence, and the assumptions of the model.

The modelling process is itself iterative. We have built numerous variants to question the taphonomy of samples which produced unexpected results, to test the archaeological assumptions of our initial models, and to determine the most plausible overall chronology. Here, we give one example of a sensitivity analysis. This model takes a different approach to the overall analysis of the Neolithic activity, but the details of the sequence and phasing of samples, contexts, and monuments are the same as those described in section 4.7. A more extensive discussion which covers the effect of varying the mathematical approaches and scientific components incorporated in the model more fully, and gives further archaeological examples is planned (Bayliss and Bronk Ramsey forthcoming).

The alternative model is outlined in Figure 4.24. In this model all the dated events in each sequence and phase are assumed to be uniformly distributed. So, for example, all the dated material within the Stepleton enclosure is assumed to be a reasonably random selection from a relatively constant accumulation of cultural material during the use of the monument. Overall it is the major events in the Neolithic use of the complex at the top of the hierarchy of phases and sequences, such as the construction and disuse of individual components of the complex, which are assumed to be relatively evenly spaced. This contrasts with the model outlined in Figure 4.4. In this model all the dated material from the whole complex is assumed to be uniformly distributed.

Statistically, the model shown in Figure 4.4 is much more powerfully constrained by the mathematical distributions selected. This approach, however, is preferred because the archaeological assumptions on which it is based are more likely to be true. Overall it is quite feasible that activity on the hill during the earlier Neolithic use of the monument complex was reasonably constant – Hambledon was, and remained, a place of special significance during this time. The assumption that the earthworks were built and abandoned evenly throughout the use of the complex is a less realistic archaeological interpretation, and indeed

is mathematically less powerful. Although the mathematical imperative would be to choose the weaker assumption, the archaeological implication for this approach is that it gives equal weight to events of similar magnitude. Whether the final silting and disuse of an earthwork is an event of similar scale to its construction is, however, arguable. On the other hand, each of the bones and fragments of charcoal which are assumed to be uniformly distributed in the model outlined in Figure 4.4 were probably of equal unimportance! The assumption that the dated material from each of the earthworks forms a uniform distribution is also unlikely to be true. This is for two reasons. Firstly, evidence from experimental earthworks demonstrates that ditches do not silt up evenly (Bell *et al* 1996). Secondly, samples have also been selected for dating preferentially from the bottom of ditches. This does not skew the sampling distribution so heavily in the model shown in Figure 4.4 because the earthworks themselves were not built all at once, but throughout the use of the complex.

Comparison of the results of the two models (Figs 4.21 and 4.25) demonstrates that the overall interpretation of the chronology of the site is robust. In particular, the suggested periodisation of the monument complex is apparent in both analyses.

The main difference between the two models is shown in Figure 4.26. The estimated dates for the start and end of Neolithic activity are different because of the different strength of the constraints within the models. In the model outlined in Figure 4.24, the precision of these estimates is strongly dependent on the number of subdivisions. The top tier of the hierarchy of uniformly distributed phases in this model only contains the 30 distributions which relate to the construction and disuse of the earthworks, whereas the model outlined in Figure 4.4 contains over 120 effective events. Particular attention should be paid to the estimates for the end of early Neolithic activity on the site. This is one of the few distributions from the whole site where the results from the two different models do not overlap. This difference seems to be exacerbated by the shape of the radiocarbon calibration curve, in which there is a 'plateau' between *c* 3300–3000 cal BC. Of more than 140 radiocarbon results from the main Neolithic occupation of the site, less than twenty have calibrated date ranges which fall into this period, and over half of these are measurements with large error terms which were made in the 1970s and early 1980s. Examination of the probability distributions of these calibrated dates show that many have only small amounts of probability which fall onto the 'plateau' (eg OxA-931, Fig 4.7; OxA-7813, Fig 4.16). The only events from the main Neolithic occupation at Hambledon which convincingly appear to fall during the period 3300–3000 cal BC are the construction of segment 3 of the outer Hanford outwork (Fig 4.8) and, possibly, the final use of the main enclosure (post-VI; Fig 4.14). If major activity really continued into this

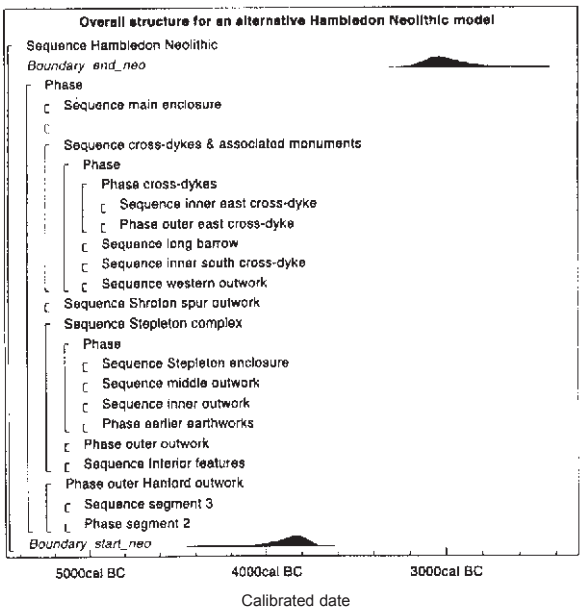

Fig 4.24 Overall structure for an alternative chronological model of Neolithic activity on Hambledon Hill. The component sections of the model are similar to the detailed models shown in Figures 4.5–4.13 and 4.15–4.18, except that each component sequence is enclosed within 'boundaries'. © English Heritage (Ancient Monuments Laboratory)

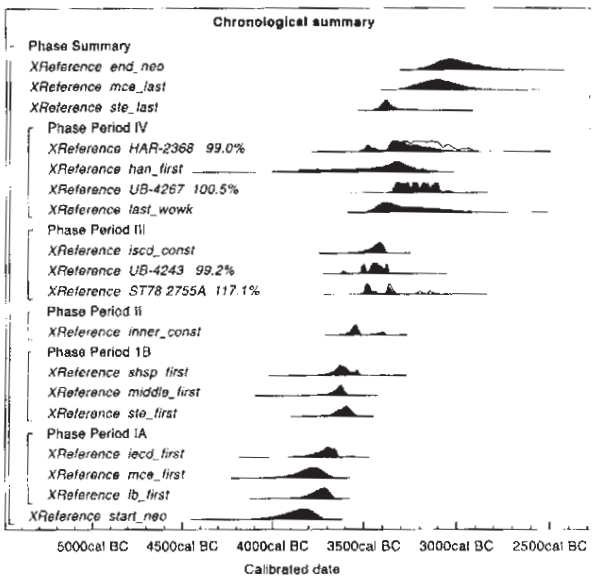

Fig 4.25 Probability distributions of dates of major archaeological events on Hambledon Hill: each distribution represents the relative probability that an event occurred at some particular time. The distributions correspond to aspects of the alternative model outlined in Figure 4.24. © English Heritage (Ancient Monuments Laboratory)

period, then far more dates would fall onto the plateau simply because of the statistical scatter on the radiocarbon measurements. If activity was really uniformly distributed over the period of use of the main monument complex, then a shorter chronology with activity ceasing shortly before 3300 cal BC, as suggested by the

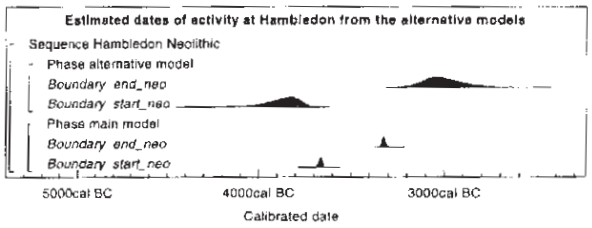

Fig 4.26 Probability distributions of dates for the start and end of Neolithic activity on Hambledon Hill, estimated from the models outlined in Figures 4.4 and 4.24. © English Heritage (Ancient Monuments Laboratory)

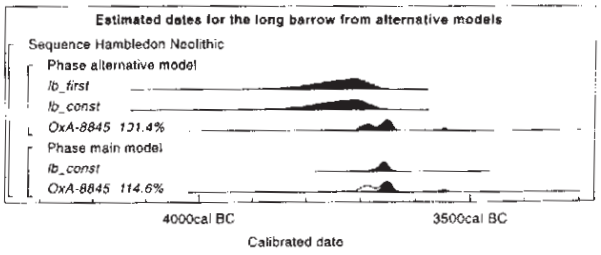

Fig 4.27 Probability distributions for alternative dates for the construction of the south long barrow, estimated from the models outlined in Figures 4.4 and 4.24. © English Heritage (Ancient Monuments Laboratory)

main model would appear most convincing. It is certainly possible, however, that activity actually tailed off with only sporadic episodes of use, such as isolated burials in the main enclosure, extending into the last quarter of the fourth millennium.

Again the middle Neolithic 'plateau' on the calibration curve, onto which dates with wide ranges extend, probably also exaggerates the differences between the calculated spans of use of the monuments. For example, the original model suggests that the main enclosure was in use for between *290 and 350 years* (*use_mce*; Table 4.2). The alternative model outlined in Figure 4.24 suggests that it was in use for between *440 and 1000 years (at 95% probability)*. The statistical consistency of most of the radiocarbon results from all phases of the main enclosure strongly supports a shorter, rather than a longer, period of use for the monument.

Another approach for comparing the alternative models for the chronology of Neolithic activity at Hambledon is to examine the same estimates from both models, thus comparing like with like. These estimates can also be compared with the results from samples which have an unimpeachable archaeological relationship with the event in question. For example, Figure 4.27 shows alternative estimates for the date of the construction of the long barrow. A red deer antler crown was recovered with its tip embedded in the crumbling natural chalk of the base of the east ditch, surrounded and covered by primary silting. This sample must have been a tool used for the construction of the long barrow, and so comparison between the date of that artefact and the estimate provided by the model for the construction of the long barrow should provide an indication of whether the model is correct. It can be seen that the estimates for the construction of the long barrow and OxA-8845 from the main model are very similar, but those from the alternative model are rather different, with the estimates from this latter model being both less precise and rather earlier. This would suggest that the constraints in the alternative model do not sufficiently counteract the effect of the statistical scatter on the radiocarbon measurements.

This brief examination of the differences between two models for the chronology of the Neolithic activity at Hambledon not only demonstrates why the model presented in sections 4.7 and 4.8 has been chosen, but also serves to emphasise the fact that the model presented here is simply one of a number of different approaches which can be taken in order to investigate the chronology of the complex.

4.10 Technical and methodological observations

This dating programme would have been impossible without bone preservation. Articulated and articulating bones provide samples in the silting sequences which are demonstrably not residual and so can be used to constrain the measurements from the ditch bases. This forms the basis of the sampling programme. It cannot be emphasised enough that identifying, drawing or photographing, and separately bagging articulations in the field is invaluable for dating purposes.

With all the reservations expressed above, the radiocarbon dating and analysis programme has achieved its main objectives. An internal periodisation of the complex now exists where there was none before. Furthermore a step has been taken towards the creation of a chronology of the Neolithic in terms of decades rather than of millennia. The periodisation of this Neolithic complex should perhaps be seen as a microcosm of the chronology of the early Neolithic itself. Once more sites are dated, using the approaches adopted here, it will become increasingly possible to disentangle cultural from chronological variation in the record. For example, it is now clear that the very different artefact assemblages from the main enclosure and its Stepleton counterpart were in use concurrently, reflecting two different sets of social and functional choices.

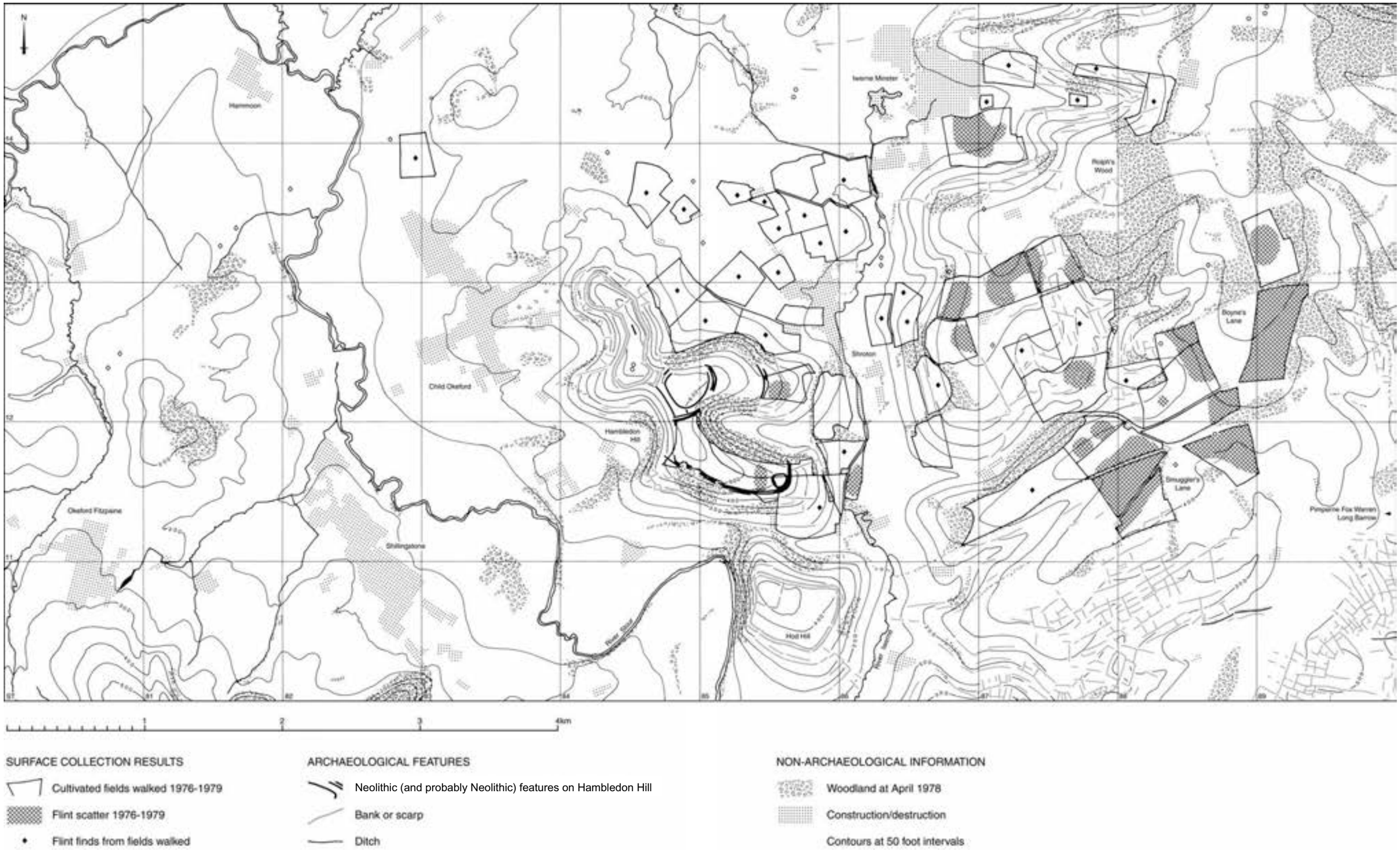

Fig 2.2 The area survey. Results of surface collection, field investigation and interpretation of air photographs are shown on a base of topography and selected 'negative zones'. The early–middle Neolithic features on Hambledon Hill can be seen in context although none of the surface finds or earthwork remains off the hill are indisputably contemporary with them. The map shows the approximate sizes of the scatters of surface implements and the generally high-lying location of these. No finds from documentary sources are shown. Contours are from the OS 1:10,560 maps, woodland, field boundaries and other 'modern' features have been updated from 1977–1978 vertical photographs.

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The Stour valley, Hod Hill, Hambledon Hill and Cranborne Chase, viewed from the south, a watercolour by Heywood Sumner, from a private collection, reproduced by kind permission of the owner.

HAMBLEDON HILL, DORSET, ENGLAND.

Excavation and survey of a Neolithic monument complex and its surrounding landscape

Volume 2

Roger Mercer and Frances Healy

ENGLISH HERITAGE

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Excavation and survey of a Neolithic monument complex and its surrounding landscape

Volume 2

See you our pastures wide and lone,
Where the red oxen browse?
O there was a City thronged and known,
Ere London boasted a house.

And see you, after rain, the trace
Of mound and ditch and wall?
O that was a legion's camping-place,
When Caesar sailed from Gaul.

And see you the marks that show and fade,
Like shadows on the Downs?
O they are the lines the Flint Men made,
To guard their wondrous towns.

Trackway and Camp and City lost,
Salt Marsh where now is corn;
Old Wars, old Peace, old Arts that cease,
And so was England born!

She is not any common Earth,
Water or wood or air,
But Merlin's Isle of Gramarye,
Where you and I will fare.

Rudyard Kipling, from 'Puck's Song', *Puck of Pook's Hill*, 1906

The chalk, which I have spoken of coldly when I discussed the preservation of the Old Road, should somewhere be warmly hymned and praised by every man who belongs to south England, for it is the meaning of that good land. The sand is deserted since men learnt to plough; the Weald, though so much of its forest has fallen, is still nothing but the Weald – clay, and here and there the accursed new towns spreading like any other slime. But the chalk is our landscape and our proper habitation. The chalk gave us our first refuge in war by permitting those vast encampments on the summits. The chalk filtered our drink for us and built up our strong bones; it was the height from the slopes of which our villages, standing in a clean air, could watch the sea or the plain; we carved it – when it was hard enough; it holds our first ornaments; our clear streams run over it; the shapes and curves it takes and the kind of rough grass it bears (an especial grass for sheep), are the cloak of our counties; its lonely breadths delight us when the white clouds and the flocks move over them together; where the waves break it into cliffs, they are the characteristic of our shores, and through its thin coat of whitish mould go the thirsty roots of our three trees – the beech, the holly and the yew. For the clay and the sand might be deserted or flooded and the South Country would still remain, but if the Chalk Hills were taken away we might as well be the Midlands.

Hilaire Belloc, *The Old Road*, 1911

HAMBLEDON HILL, DORSET, ENGLAND.

Excavation and survey of a Neolithic monument complex and its surrounding landscape

Roger Mercer and Frances Healy

with contributions by
Michael J Allen, Phil Austin, Alistair Barclay, Alex Bayliss, Martin Bell, Robert Berstan, Lisa Brown, Catherine Chisham, Alison Cook, Mark Copley, Michael Cowell, Timothy Darvill, Richard Evershed, Jonathon Hather, Hillary Howard, the late Su Johnson, Glynis Jones, the late Robin Kenward, Moira Laidlaw, A J Legge, F G McCormac, J I McKinley, Stuart Needham, Alastair Oswald, Rog Palmer, C Bronk Ramsey, Michael Richards, Fiona Roe, Alan Saville, the late Isobel Smith, Rachael Seager Smith, the late Bob Smith, Elizabeth Somerville, Andrew Stott, and Nick Wells

and principal illustrations by
Silvia Stevenson and John Borland

Further illustrations by Martin Bell, Lisa Brown, Timothy Darvill, Sharon Dixon, Jane Green, Nick Griffiths, Liz James, Alastair Oswald, Rog Palmer, Joanna Richards, Philip Sinton, the late Isobel Smith, Gordon Thomas, and Karen Wicks

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2008

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5 Molluscan and sedimentary evidence for the palaeo-environmental history of Hambledon Hill and its surroundings

Martin Bell, Michael J Allen, the late R W Smith and the late Su Johnson

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5.1 Introduction

The environmental context of Neolithic monuments is particularly relevant in revealing both the differing characters of the main classes of monument and the contrasting time depths of human activity in the settings in which they were placed. The molluscan evidence from Hambledon Hill raises interesting questions about the setting of the site and the activities that took place within it and in the surrounding area. Investigations of molluscs from features on the hilltop associated with the Neolithic enclosures are combined with the study of colluvial and alluvial deposits from the surrounding slopes and valleys and their contained mollusc assemblages. Together these two investigations provide evidence for both the nature of the Neolithic hilltop environment and the development and use of the wider landscape in which the Hambledon Hill complex was set.

No buried soils were recognised on Hambledon Hill during the excavation, although possible truncated examples were identified in the post-excavation stage on site P (see 3.3.2, 3.3.4) but were not sampled. Columns of samples had been taken through ditch sediments but they did not survive, and it is reported that they were largely of vacuous chalk rubble unsuitable for mollusc analysis (R Mercer, pers comm). Nevertheless, a major residue sorting programme from flotation of samples from the Neolithic site was carried out by Professor A J Legge, and the flots were retained for further analysis. This was designed to obtain representative samples of seeds and bones. A proportion of the flots was found to contain abundant molluscs. In the absence of soil samples taken and processed specifically for molluscs from Neolithic contexts on the hill, a selection of the flots was examined by SJ and MB. This provided data about the Neolithic hilltop environments. Residues equate to the heavy fraction of a flotation sample, including bone and lithic material, recovered from the sieve and flots to the light fraction of a flotation sample, including charred plant remains, recovered from the surface of the water.

In order to provide information on the environment and land-use around the hill, R W (Bob) Smith and Martin Bell undertook an investigation of colluvial and valley sediments. These investigations included work on a Bronze Age site in Everley Water Meadow located during fieldwalking by Rog Palmer (see Ch 2). This led to further archaeological and palaeoenvironmental fieldwork at Everley Water Meadow in 1983–4; the archaeological investigation of which was largely conducted by RWS as a part of his postgraduate research (Smith 1985). Molluscan and environmental analysis for this project was conducted by MB and MJA. That study provided much information on how the landscape had evolved during the second half of the Holocene, but it was not possible to identify sedimentary increments which could be related specifically to the time of the Neolithic enclosures.

All the detailed palaeoenvironmental investigations at Hambledon Hill can now be placed into the much wider context of the Wessex chalk by comparison with recent work at Maiden Castle (Sharples 1991), Windmill Hill (Whittle *et al* 1999) and, more locally, at Whitesheet Hill (Rawlings 1994; Rawlings *et al* 2004), as well as ongoing research into the Neolithic landscape of the Allen Valley, Cranborne Chase (Allen 1998; 2000a; 2002; French *et al* 2000; 2003; 2007).

During the molluscan analysis employed here, species nomenclature follows Kerney (1999), but the broad ecological groupings are those outlined by Evans (1972, 194–203) as used in the initial analytical programme (Bell and Allen 1985).

5.2 The causewayed enclosure complex

Martin Bell, Su Johnson and Michael J Allen

A number of selected Neolithic contexts had been sampled and were processed by Professor A J Legge for other environmental evidence by flotation in a Siraf-type tank. A large number of flots were analysed for molluscs for undergraduate projects at the University of Wales, Lampeter, and latterly the University of Reading between 1992–2000. Only a representative proportion of those which produced adequate assemblages for interpretation are reported here. This analysis is based on subsamples additional to those used for student projects and all the identifications have been made by SJ and MB and are presented in Tables 5.1 to 5.3.

It must be acknowledged that assemblages solely derived from flots from flotation do not provide an ideal basis for interpretation. This method may create problems and biases that need to be made explicit at the outset. The sizes of sieves used were 1 mm and 300 μm. If the 300 μm sieve was always used for the flots then the smallest taxa that floated would be recovered, and this would be comparable to conventional analysis employing sieves of 0.5 mm mesh (cf Evans 1972).

There are some shells of this size in all the samples reported. If, however, this small sieve mesh was not always used, then some of the smaller taxa (eg *Vallonia*, *Carychium* and *Punctum*), and more fragile shells, will be under-represented. No residue was available for examination and certain types and sizes of shell which do not readily float will be under-represented, especially apical fragments of the smaller taxa and heavier and larger shells, eg *Pomatias elegans*. The range of species present in these samples, however, indicates that taxa of all sizes were represented, but that small taxa and more fragile species are likely to be under-represented.

A few samples were very large, containing thousands of shells, and these were subsampled using a riffle-type sample divider. Molluscs were extracted from the flots, identified and counted (Tables 5.1–3). These samples should be regarded as a series of spot samples which had not been taken in a column as a sequence. Samples have, therefore, been selected and arranged, not in direct stratigraphical order, but in chronological sequence, to construct chronologically sensible mollusc diagrams (Figs 5.1–3). One sequence of samples has been identified from the main causewayed enclosure and two from the Stepleton spur. Each of these sequences has been compiled from a number of samples from three to five separate ditch segments, which in some instances contained different local stratigraphies. These mollusc diagrams were produced using *Tilia* and *Tiliagraph* software.

Evidence from pits and other internal features cannot be related stratigraphically either to one another, or to the ditches. In interpreting the results we must consider to what extent differences between samples are temporal or spatial. An additional problem of interpretation is that all the samples derive from ditch or feature fills. A significant proportion of the molluscs will therefore be allochthonous, ie derived from a range of contexts which may include eroded material from earlier soils and subsoil features. An autochthonous component, which actually lived in the ditches, may reflect the ditch microenvironment rather than the wider landscape. In particular, there is likely to be a rock-rubble component that lived in scree from eroding banks or the vacuous interstices of the ditch fills (Evans and Jones 1973). We have attempted to assess this factor by indicating in Tables 5.1–3 which of the contexts sampled contained a rock-rubble component and which did not. It confirms that only a small number of rock-rubble contexts were sampled. The same tables also give some indication of the numbers of Neolithic finds in the contexts sampled by grouping them in three categories: none; some; abundant. Most of the samples come from contexts in which artefacts were abundant. This accords with information that contexts were selected for flotation if they appeared to contain promising quantities of charred plant material. Some bias towards contexts with greater evidence of human activity will therefore exist.

5.2.1 The central area

The main enclosure

The samples examined were sieved flots from the 1974 excavation of the main enclosure (Fig 3.9: segments 2, 3 and 4). In total, ten samples were examined from three adjacent ditch segments on Site A; the results are presented in Table 5.1 and Figure 5.1. The samples have been arranged chronologically in what is regarded as a reasonably secure stratigraphic sequence: samples from layers or features 13, 12, 10, 8, 7, and 2 come from segment 3 and were in stratigraphic sequence; 9 is from an adjacent segment (segment 2, immediately to the south-west); 11 is from another (segment 4, immediately to the north-east) and might be a little later than 13; samples from 5 and F1 are from cuts tied to the rest of the stratigraphy. Layer 2 is much later than the other sampled contexts and derives from the turfline sealed by bulldozing the bank in the mid 1960s. The relevant sections are illustrated in Figures 3.9 and 3.13.

This produces the following sequence from earliest to latest:

Samples from L11 and L13 – basal ditch fills in adjoining segments; the two samples are not sequential (Phase I).
Samples from L9 and L12 in adjoining segments; the two samples are not sequential but post-date layers 11 and 13 (Phase II).
Samples from L10 and L8 in segment 3 – chalk rubble fills (Phase III).
Sample from F1 in segment 3 – a pit cut into the chalk rubble fills (Phase IV).
Sample from L7 in segment 3 – slow ditch silts (Phase V).
Sample from L5 in segment 3 – slot cut into slow silts (Phase VI).
Sample from L2 in segment 3 – turfline sealed by 1960s bulldozing (Phase VIII/d).

The earliest nine samples are all thought to be Neolithic and have produced essentially comparable assemblages. They are dominated by a restricted range of species but the assemblages are relatively species-rich. Three of the most common, *Discus rotundatus, Oxychilus cellarius* and *Vitrea contracta,* are found in rock-rubble habitats but the sediments sampled were not vacuous rock-rubble but mixed chalk and soil fills. It is therefore possible that these predatory zonitids represent decaying plant matter, commonly found under leaf litter on a deciduous woodland floor and among leaf and dead vegetation accumulating in ditches on woodland margins (Allen pers obs, Offham Hill, South Lodge, Balksbury). The assemblages include a significant component of taxa which are not found in rock-rubble, eg *Trichia hispida*, *Carychium tridentatum* and *Cochlicopa*. A number of taxa are present in small numbers which are indicative

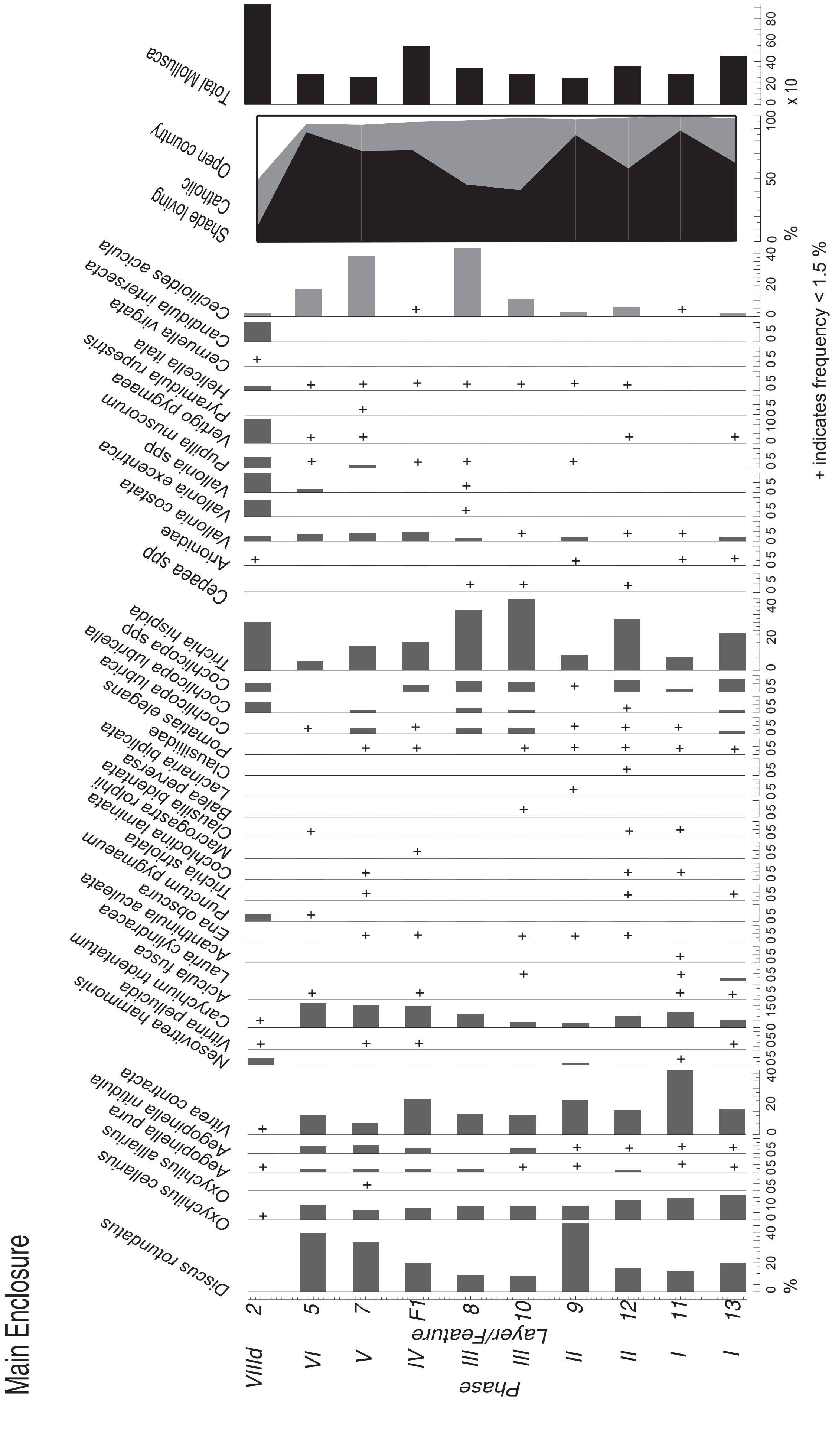

Fig 5.1 Mollusc diagram from main causewayed enclosure ditch.

Table 5.1 Main causewayed enclosure 1974 (site A). Molluscs from ditch samples and internal features

Coarse and 500μm fractions for all samples. Only F1 done by students
Key to artefacts: • (none) ⋆ (some) ⋆⋆ (abundant)
Key to rock rubble: • (none) × (some)

	Main enclosure ditch										*Internal features*			
Phase	*I*	*I*	*II*	*II*	*III*	*III*	*IV*	*V*	*VI*	*VIII*				
Segment	*3*	*4*	*3*	*2*	*3*	*3*	*3*	*3*	*3*	*3*				
Context	*L13*	*L11*	*L12*	*L9*	*L10*	*L8*	*F1*	*L7*	*L5*	*L2*	*F2*	*F6*	*F42*	*F46*
Artefacts	•	⋆	⋆	⋆⋆	⋆	•	⋆	⋆⋆	⋆⋆	⋆	⋆⋆	⋆⋆	⋆	⋆
Rock rubble	•	•	•	•	×	×	•	•	•	•	•	•	•	•
Pomatias elegans (Müller)	3	2	1	1	1	–	1	1	–	–	1	–	2	3
Acicula fusca (Montagu)	2	4	–	–	–	–	3	–	1	–	–	–	–	–
Carychium tridentatum (Risso)	23	30	28	7	10	32	79	39	46	3	3	1	2	–
Cochlicopa lubrica (Müller)	8	1	1	2	10	11	4	8	3	–	–	1	–	–
Cochlicopa lubricella (Porro)	8	–	1	–	5	9	–	4	–	58	–	2	–	–
Cochlicopa spp	35	5	25	3	17	22	22	–	–	49	2	–	–	–
Pyramidula rupestris (Draparnaud)	–	–	–	–	–	–	–	1	–	–	–	–	–	–
Vertigo pygmaea (Draparnaud)	–	–	1	–	–	–	–	3	1	117	–	19	–	2
Pupilla muscorum (Linnaeus)	–	–	–	1	–	2	1	4	1	51	–	5	1	2
Lauria cylindracea (da Costa)	8	1	–	–	3	–	–	–	–	–	–	–	–	–
Vallonia costata (Müller)	10	1	3	5	4	5	25	10	10	22	–	15	–	–
Vallonia excentrica Sterki	–	–	–	–	–	1	–	–	–	83	–	29	–	–
Vallonia spp	–	–	–	–	–	1	–	–	5	91	–	–	–	–
Acanthinula aculeata (Müller)	–	4	–	–	–	–	–	–	–	–	1	–	1	–
Ena obscura (Müller)	–	–	1	1	1	3	3	1	–	–	–	–	–	–
Punctum pygmaeum (Draparnaud)	–	–	–	–	–	–	–	–	1	38	–	1	–	–
Discus rotundatus (Müller)	88	40	57	112	30	38	106	84	111	–	48	27	94	127
Arionidae	+	+	–	+	–	–	–	–	–	+	–	–	–	–
Vitrina pellucida (Müller)	1	–	–	–	–	–	2	1	–	2	–	–	–	–
Vitrea crystallina (Müller)	–	–	–	–	–	–	–	–	–	–	–	15		–
Vitrea contracta (Westerlund)	76	119	56	55	36	45	126	19	35	9	7	22	9	4
Nesovitrea hammonis (Ström)	–	1	–	3	–	–	–	–	–	44	–	–	–	–
Aegopinella pura (Alder)	2	3	6	1	2	6	12	5	6	6	10	–	1	2
Aegopinella nitidula (Draparnaud)	4	4	4	2	4	–	19	14	13	–	–	–	2	–
Oxychilus cellarius (Müller)	78	41	46	23	27	31	43	16	29	3	10	114	20	15
Cecilioides acicula (Müller)	9	3	23	7	34	260	5	160	58	18	8	768	230	55
Cochlodina laminata (Montagu)	–	1	2	–	–	–	–	1	–	–	–	–	–	–
Macrogastra rolphii (Turton)	–	–	–	–	–	–	1	–	–	–	–	–	–	2
Clausilia bidentata (Ström)	–	1	2	–	–	–	–	–	1	–	–	–	–	2
Balea biplicata (Montagu)	–	–	–	1	–	–	–	–	–	–	–	–	1	–
Balea perversa (Linnaeus)	1	–	–	–	1	–	–	–	–	–	–	–	–	–
Clausiliidae	–	–	2	–	–	–	–	–	–	–	–	–	–	–
Candidula intersecta (Poiret)	–	–	–	–	–	–	–	–	–	93	–	1	–	–
Cernuella virgata (da Costa)	–	–	–	–	–	–	–	–	–	3	–	–	–	–
Helicella itala (Linnaeus)	–	–	1	1	1	4	1	1	1	20	–	1	–	1
Trichia striolata (Pfeiffer)	2	–	1	–	–	–	–	1	–	–	–	–	–	–
Trichia hispida (Linnaeus)	104	23	113	23	125	129	96	38	15	236	–	5	–	2
Cepaea spp	–	–	1	–	2	1	–	–	–	–	–	–	–	–
Taxa	17	16	18	15	16	15	17	19	15	16	8	15	10	11
Shannon Index	2.08	1.81	2.01	1.64	1.85	1.97	2.07	2.13	1.87	2.19	1.36	1.87	1.05	0.93
Brillouin Index	2.01	1.73	1.93	1.55	1.76	1.90	2.01	2.01	1.78	2.15	1.23	1.78	0.96	0.85
Δ_2	0.84	0.76	0.82	0.71	0.75	0.80	0.84	0.82	0.78	0.86	0.62	0.76	0.47	0.37
Δ_4	5.44	3.21	4.60	2.50	3.09	4.07	5.49	4.80	3.59	6.12	1.67	3.23	0.91	0.61
Totals	**454**	**281**	**352**	**241**	**279**	**340**	**545**	**251**	**279**	**928**	**82**	**258**	**133**	**162**

of woodland including *Acicula fusca, Ena obscura,* and the Clausiliidae (*Cochlodina laminata, Macrogastra rolphii, Clausilia bidentata, Balea perversa* and *Balea biplicata*). These give species-rich assemblages, suggestive of mature environments with only moderate Δ (delta) diversity indices, indicating a restricted habitat diversity (Tables 5.1–5.3). The rare occurrence of five Clausiliidae species tends to confirm the mature nature of the habitat and indicates the presence of woodland and probably mossy ground litter, and the anthrophobic nature of *Balea perversa* (Kerney 1999, 174) may suggest a largely unmodified woodland. In Neolithic levels the percentage of open-country taxa is low in all samples but rises through the sequences to a maximum of <5% (excluding *Vallonia costata* which can occur in both open country and woodland). This mainly comprises small numbers of *Pupilla muscorum* and *Helicella itala* in which individual species seldom exceed 1.5% in any one context. The other notably abundant species are *Carychium tridentatum* and *Trichia hispida*, the former is a tiny species and may be under-represented in these assemblages because of the sieving and retrieval practices. The latter is recorded in reasonable proportions in the Neolithic, pre-henge, woodland environment from Durrington Walls (Evans 1971).

The latest sample from this sequence (L2) represents the twentieth-century soil buried by bulldozing the hilltop in advance of cultivation in 1964. The mollusc assemblage is totally different from the earlier contexts. It is a more diverse assemblage of *Trichia hispida, Vallonia* spp, *Vertigo pygmaea* and *Pupilla muscorum* with higher diversity indices (*H'*, HB, Δ_2 and Δ_4). It includes the recent introductions *Candidula intersecta* and *Cernuella virgata.* This assemblage is consistent with the grazed grassland which is known to have existed on the hill prior to commencement of cultivation of the excavated part of the site in 1964.

Internal features

Four of the sampled internal features were identified as Neolithic because they contained artefacts (Fig 3.51: features A F2, F6, F42 and F46). None of these fills comprised vacuous chalk rubble. More detailed descriptions are available in the feature catalogue (3.3.7) and all four are illustrated in Figure 3.58:

Feature A F2 – large lobate tree (throw) hollow with chalk rubble and peagrit at base and dark brown loam upper fill with artefacts in all layers including greenstone axe fragment.
Feature A F6 – subcircular pit 1.1 m × 1 m × 0.25 m. Neolithic artefacts (pottery, flints, sarsen axe-polisher, animal bone, cereals, and nuts) in fill of brown soil, chalk lumps and flint.
Feature A F42 – probable feature 0.8 m in diameter, 0.15 m deep. Contained a small amount of pottery in fill of brown soil with large chalk and flint lumps.
Feature A F46 – kidney-shaped pit 1.90 m × 1.55 m × 0.60 m with earth and chalk fills, pottery, struck flint and charcoal concentrated in small recut with dark brown soil fill with flint and chalk. Source of molluscs within feature uncertain.

All but Feature 6 produced mollusc assemblages similar to the ditch fills with 3% or less open-country taxa (Table 5.1). In each case *Discus rotundatus* and *Oxychilus cellarius* predominate and this may reflect a rock-rubble component. *Oxychilus* can also be very common in undisturbed leaf litter in woodland and in windblown leaf litter accumulating in ditches (Allen pers obs, Balksbury, South Lodge). Feature 6 has a wider range of species including significant proportions of *Vertigo pygmaea, Vallonia costata, Vallonia excentrica* and *Pupilla muscorum*, which point to more open conditions (31%). The assemblages also differ in having low diversity indices more typical of immature communities. The artefactual evidence indicates that the feature is earlier Neolithic and, if so, may support evidence (below) from Stepleton for more open areas within the enclosures. There is, however, the possibility of some contamination and mixing in this sample since it also produced an apex of the medieval introduction *Candidula intersecta.*

5.2.2 The Stepleton spur

The samples examined were flots from the 1979 and 1981 excavations.

Stepleton enclosure

The samples are from the north side of the enclosure, from various ditch segments dispersed over 100° of the ditch circuit and a linear distance of *c* 100 m (Fig 3.81: segments 8, 12, 15–17). Consequently the stratigraphic relationships between ditch layers cannot be regarded as secure. None of these fills is regarded as vacuous rubble. The sequence of layers is as follows, all these layers are early Neolithic, fourth millennium cal BC. The relevant sections are illustrated in Figures 3.88 and 3.90:

L2A – segment 12, comprised dark black-brown humic loam with angular chalk lumps and broken flint in a pit cut into the lowest chalk rubble fill (Phase III).
L3A and L3B – cannot be separated stratigraphically. 3B – segment 15, dark grey-brown silt loam with chalk fragments and charcoal. 3A – segment 8, mid-brown silty loam with chalk lumps loose to firm (Phase III).
L3C and L3D – relationship between these two is uncertain. 3C – segment 17, dark brown firm silt loam with chalk rubble. 3D – segment 16, dark brown/black humic loam with burnt material and charcoal (Phase III).
L6A – segment 12, earliest context sampled. Dark brown silt loam with chalk fragments (Phase I).

The results are presented in Figure 5.2 and Table 5.2. The two most abundant taxa show some degree of antipathetic behaviour: *Discus rotundatus* increases and *Vitrea contracta* shows a less pronounced decrease over time. Both are characteristic of rock-rubble as is *Oxychilus cellarius* which represents 10% in the earliest layer (L6A) and less in later layers. The rock-rubble component is likely to have been greater in the earlier layers. Other abundant taxa, not indicative of rock-rubble are the Aegopinellas, *Carychium tridentatum* and *Trichia hispida* which are more common together in stable, long-grass, swards and scrub. The shade-loving species *Acicula fusca* is present in every sample and the other shade-loving taxa are *Ena obscura* and the Clausiliidae. The proportion of open-country taxa is less than 10% in all but two samples: L3D where a higher proportion is due to 17% of *Vallonia costata*, which might not be a part of the open fauna, and the latest sampled layer L2A, where the Vallonias and *Helicella itala* point to slightly more open conditions later in the life of the site.

Stepleton outworks

Samples were also examined from the inner outwork (Fig 3.81: segments 5 and 6) and outer outwork (Fig 3.81; segment 2) at Stepleton which post-date the causewayed enclosure. The results of this analysis are presented in Figure 5.3 and Table 5.2. The samples have been arranged in the following tentative sequence. The relevant sections are illustrated in Figures 3.96, 3.97, 3.99, and 3.103:

L2B – Inner outwork early Bronze Age layer. Dark brown-black burnt loamy clay with flint and chalk lumps and some pea grit (Phase VII/a).
Sample from F511 is a recut in the outer outwork. This contained Beaker pottery. Dark brown-black very humic loam with some chalk and flint (Phase VII/a).
Sample from L3C – Inner outwork. Dark grey-brown silt with charcoal and medium packed chalk lumps (Phase V/I).
Sample from L5B – Medium grey-brown silt with few chalk lumps (Phase II).
Samples from L5 and L4A are from the inner outwork, equivalent positions in the base of two adjacent ditch sections. 4A – burnt dark brown/grey silt with chalk lumps. 5 – dark grey-black silt with some pebbles and burning (Phase I).

Analytical results are shown in Table 5.2 and in Figure 5.3. The basal layers 5 and 4A contained higher proportions of rock-rubble taxa *Vitrea contracta* and *Oxychilus cellarius*; these decline through the sequence, perhaps pointing to a reduced proportion from this habitat. *Discus rotundatus* fluctuates. As in the enclosures there are significant proportions of other taxa not characteristic of rock-rubble, notably *Carychium tridentatum,* the Aegopinellas and *Trichia hispida*. A range of other shade-loving taxa includes *Acanthinula aculeata* in all samples and *Acicula fusca*, present in all but one sample. The proportion of open-country taxa is below 10% in all but the latest two samples (F511 and 2B) which contain post Neolithic artefacts. They contain significant proportions of *Pupilla muscorum* with other taxa *Vallonia costata, Helicella itala* and *Vertigo pygmaea*, which supports the evidence from the Stepleton causewayed enclosure for a more open environment in the later stages of the site's history.

Discrete features

Eight samples were examined from seven features excavated in 1979 and 1981 on the Stepleton spur (locations on Fig 3.108). None of these feature fills was vacuous. In three cases it is not recorded which layer was sampled so the descriptions of each layer have been included.

Feature 2A F37. Feature without any finds, not dated, and possibly recent. Fill of (i) dark brown humus with angular chalk pebbles (ii) lighter brown with higher chalk content and pebbles.
Feature 4B F155. Pit 1.36 × 1.38 × 0.35 m. Contained Neolithic pottery, flint and bone. Sample from Layer 2 – chalk fragments in cream silt.
Feature 4B F153. Pit 0.94 × 0.90 × 0.27 m. Contained Neolithic pottery and other finds. Fill of (i) dark brown loam with chalk fragments, (ii) chalk fragments in cream silt.
Feature 4B F129. Pit outside the Stepleton enclosure, 1.4 × 0.95 × 0.18 m. Many finds including Neolithic pottery, bone, flint and charcoal. Dark brown black loam with chalk fragments.
Feature 4A F3+3B. Pit 1.2 × 1.10 × 0.30 m containing Neolithic pottery, flints and animal bone. Fill of dark soil.
Feature 2A F177. Probable posthole in inner outwork rampart. Fill of (i) dark brown soil with comminuted chalk and flint, (ii) grey-brown soil with a few chalk lumps, (iii) light brown soil and chalk lumps.
Feature 2A F17. Oval pit 1.3 × 0.9 × 0.55 m in inner outwork bank area. Both sampled layers contained Neolithic pottery and flint. Lower fill light chalky matrix; upper fill medium brown humic.

The results are shown in Table 5.3. As with the ditch fills, many of the Stepleton features contain high proportions of the rock-rubble group. Three features contain low proportions of the open-country species (13% or less) comparable to the ditches: the fills of features 2A F17, 2A F177 and 4B F153. This contrasts with features with a larger proportion of open-country taxa: features 4B F155 (27%), 4B F129 (25%), 4A F3 (36%) and 2A F37 (59%). Excepting feature 2A F37, Neolithic pottery was found in these features and indicates that the enclosure interior was more open than the assemblages living in the local ditch microhabitats suggest.

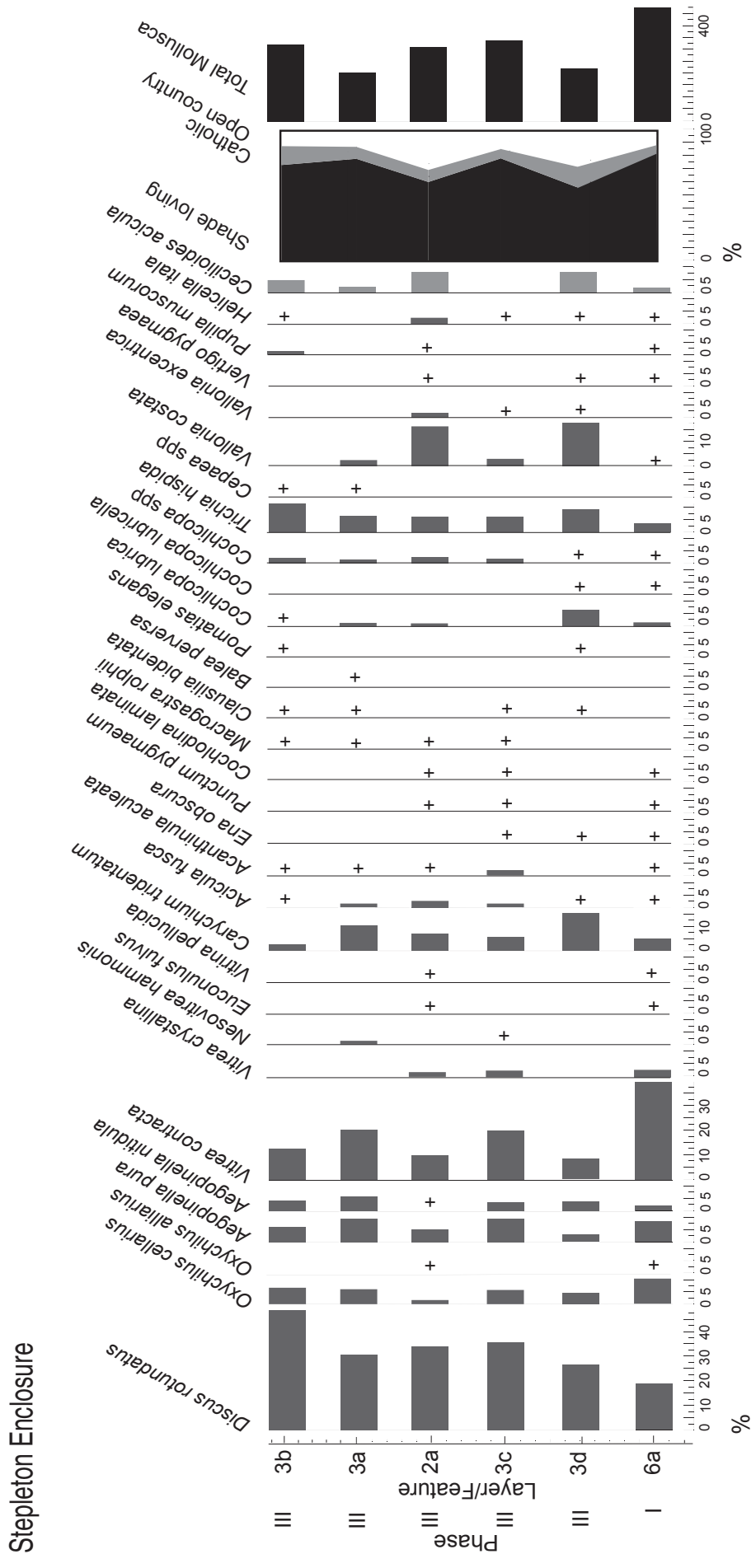

Fig 5.2 Mollusc diagram from Stepleton enclosure.

Table 5.2 Stepleton spur 1979 and 1981. Molluscs from the enclosure ditch in Area 4B and from the inner and outer outworks

Key to artefacts: • (none) * (some) ** (abundant)
Key to rock rubble: • (none) × (some)

	Enclosure ditch						*Inner outwork*					*Outer outwork*
Phase	*I*	*III*	*III*	*III*	*III*	*III*	*I*	*I*	*II*	*V/I*	*VII/a*	*VII/a*
Segment	*12*	*16*	*17*	*12*	*8*	*15*	*5*	*5*	*5*	*5*	*5*	*2*
Sample	*1*			*200*		*3*	*5*	*6*	*5*	*5*		*5*
Context	*6A*	*3D*	*3C*	*2A*	*3A*	*3B*	*5*	*4A*	*5B*	*3C*	*2B*	*F511*
Artefacts	*	**	*	**	**	**	*	**	*	*	**	**
Rock rubble	•	•	•	•	•	•	•	•	•	•	•	•
Pomatias elegans (Müller)	–	1	–	–	–	3	–	1	2	2	5	2
Acicula fusca (Montagu)	6	1	5	8	3	3	+	2	4	5	–	1
Carychium tridentatum (Risso)	22	33	18	21	20	8	16	15	49	34	22	24
Cochlicopa lubrica (Müller)	8	14	–	4	3	3	1	3	2	1	1	7
Cochlicopa lubricella (Porro)	4	2	–	–	–	–	3	2	2	2	2	–
Cochlicopa spp	4	1	6	8	3	7	3	–	6	3	1	–
Vertigo pygmaea (Draparnaud)	1	1	–	3	–	–	–	–	2	1	3	9
Vertigo pusilla Müller	–	–	–	–	–	–	–	–	1	–	–	–
Vertigo spp	–	–	–	–	–	–	–	1	–	2	–	–
Abida secale (Draparnaud)	–	–	–	–	–	–	–	–	–	–	–	1
Pupilla muscorum (Linnaeus)	2	–	–	1	–	4	–	–	12	4	63	72
Vallonia costata (Müller)	1	38	10	49	5	–	5	2	15	1	18	4
Vallonia excentrica Sterki	–	1	1	6	–	–	–	–	2	–	–	4
Acanthinula aculeata (Müller)	4	–	7	3	2	2	1	3	3	8	2	1
Ena montana (Draparnaud)	–	–	–	–	–	–	1	–	–	–	–	–
Ena obscura (Müller)	2	2	1	–	–	–	–	1	1	2	2	–
Punctum pygmaeum (Draparnaud)	1	–	2	1	–	–	–	2	2	1	1	–
Discus rotundatus (Müller)	88	58	117	103	61	152	32	88	96	121	77	51
Arionidae	–	–	–	–	–	–	–	–	–	+	–	–
Vitrina pellucida (Müller)	1	–	–	3	–	–	1	–	–	1	–	–
Vitrea crystallina (Müller)	15	–	9	6	–	–	1	11	–	–	–	2
Vitrea contracta (Westerlund)	183	18	65	30	40	39	99	73	86	51	5	53
Nesovitrea hammonis (Ström)	–	–	1	–	3	–	–	–	–	1	–	–
Aegopinella pura (Alder)	40	6	30	15	18	18	3	18	34	23	5	3
Aegopinella nitidula (Draparnaud)	10	8	11	4	11	12	6	9	16	15	11	10
Oxychilus cellarius (Müller)	47	10	19	5	12	21	98	50	34	35	6	28
Oxychilus alliarius (Miller)	3	–	–	2	–	–	–	–	–	–	–	–
Euconulus fulvus (Müller)	1	–	–	1	–	–	–	–	–	–	–	–
Cecilioides acicula (Müller)	10	20	–	28	5	17	–	–	–	1	21	179
Cochlodina laminata (Montagu)	1	–	3	1	–	–	–	2	2	2	2	2
Macrogastra rolphii (Turton)	–	–	1	2	1	1	–	–	–	–	1	–
Clausilia bidentata (Ström)	–	1	+	–	1	1	–	1	3	1	–	2
Clausiliidae	–	–	–	–	–	–	–	1	–	–	–	–
Balea perversa (Linnaeus)	–	–	–	–	1	–	–	–	–	–	–	–
Cernuella virgata (da Costa)	–	–	–	–	–	–	–	–	–	–	–	2
Helicella itala (Linnaeus)	2	2	3	8	–	2	5	7	5	11	5	22
Trichia striolata (Pfeiffer)	–	–	–	–	–	–	–	–	–	–	2	–
Trichia hispida (Linnaeus)	16	20	20	19	13	36	7	25	32	23	7	5
Helicigona lapicida (Linnaeus)	–	–	–	–	–	–	–	–	–	–	1	–
Cepaea spp	–	–	–	–	1	1	–	–	–	1	–	–
Taxa	22	17	18	22	16	17	15	20	22	23	21	21
Shannon Index	2.00	2.17	2.11	2.28	2.10	1.83	1.70	2.13	2.32	2.21	2.13	2.30
Brillouin Index	1.92	2.05	2.02	2.16	1.97	1.75	1.61	2.03	2.23	2.11	1.99	2.19
Δ_2	0.78	0.85	0.81	0.83	0.83	0.73	0.74	0.83	0.86	0.83	0.81	0.86
Δ_4	3.64	5.85	4.36	5.08	5.01	2.72	2.85	4.99	6.42	4.90	4.35	6.45
Totals	462	217	328	303	196	316	282	317	411	351	241	305

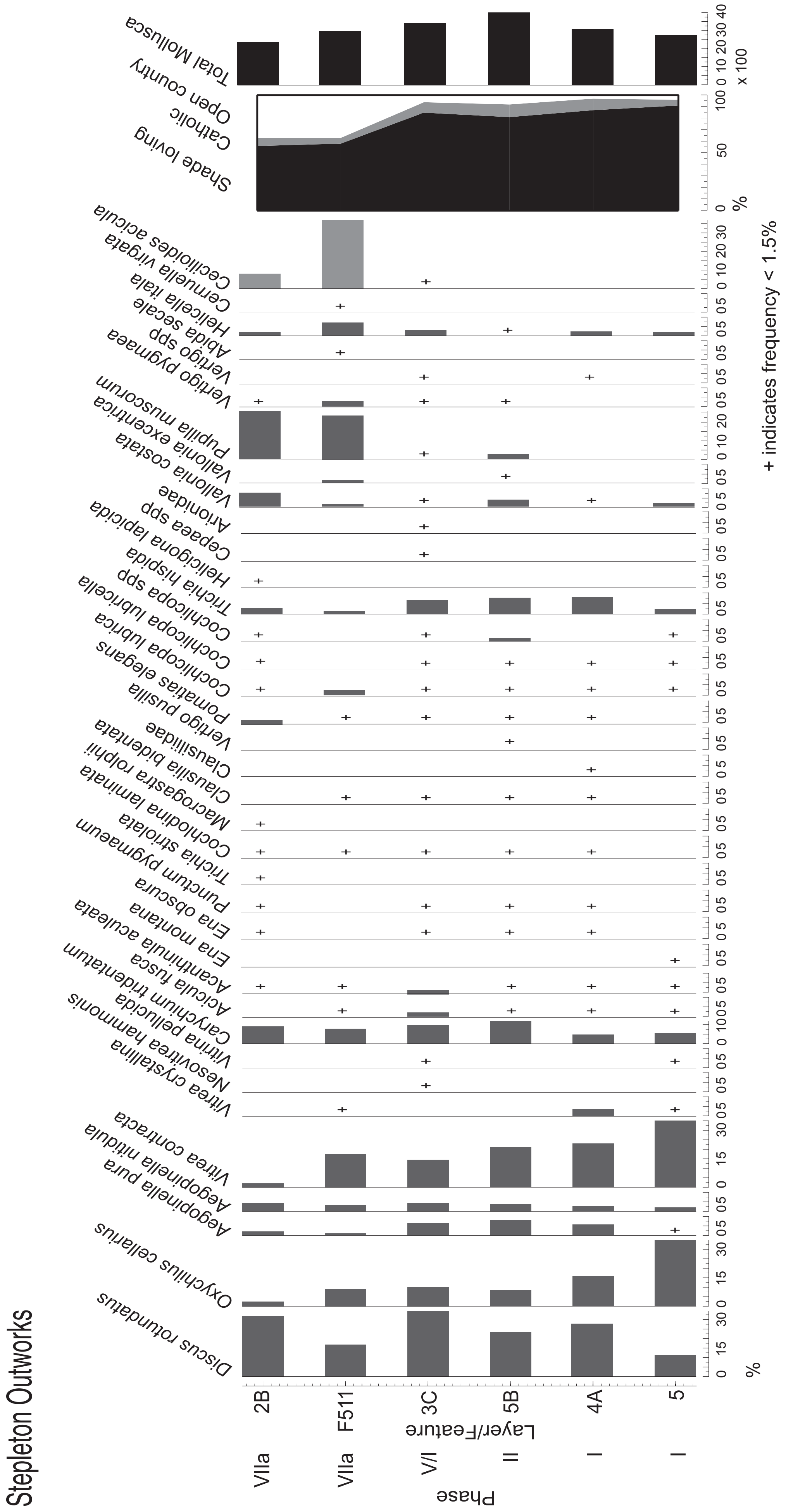

Fig 5.3 Mollusc diagram from Stepleton outworks.

Table 5.3 Stepleton spur 1979 and 1981: molluscs from discrete features

Key to artefacts: • (none) * (some) ** (abundant)
Key to rock rubble: • (none) × (some)
Sample from F17 upper mixed – some shells concreted with chalk, some with more organic matrix.
?coarse fraction only – only 1 bag found per sample
Samples from F37, F129, F153, F155, F177 originally done by students

Feature	*2A F37*	*4B F155*	*4B F153*	*4B F129*	*4A F3*	*2A F177*	*2A F17 lower*	*2A F17 upper*
Artefacts	•	**	**	**	**		*	*
Rock rubble	•	•	•	•	•	•	•	
Pomatias elegans (Müller)	–	–	–	+	–	1	5	3
Acicula fusca (Montagu)	–	–	–	–	–	–	1	3
Carychium tridentatum (Risso)	–	3	1	–	1	2	12	26
Cochlicopa lubrica (Müller)	–	3	–	–	7	–	–	2
Cochlicopa lubricella (Porro)	3	3	–	–	–	1	2	–
Cochlicopa spp	3	4	+	2	–	–	3	10
Vertigo pygmaea (Draparnaud)	3	6	3	2	5	1	–	1
Pupilla muscorum (Linnaeus)	63	9	5	2	11	4	–	10
Vallonia costata (Müller)	5	8	2	–	44	–	1	10
Vallonia excentrica Sterki	13	10	9	18	8	3	–	4
Acanthinula aculeata (Müller)	–	–	1	–	–	3	9	10
Punctum pygmaeum (Draparnaud)	–	–	–	–	–	–	1	–
Discus rotundatus (Müller)	18	18	52	36	28	63	110	161
Arionidae	–	–	–	–	–	–	+	–
Vitrina pellucida (Müller)	–	1	–	–	1	–	–	–
Vitrea contracta (Westerlund)	16	18	44	8	42	2	51	76
Nesovitrea hammonis (Ström)	–	–	–	1	3	–	–	–
Aegopinella pura (Alder)	–	–	1	–	1	–	17	21
Aegopinella nitidula (Draparnaud)	2	1	2	–	1	–	27	17
Oxychilus cellarius (Müller)	9	7	18	19	43	9	84	84
Euconulus fulvus (Müller)	–	–	1	–	1	–	–	–
Cecilioides acicula (Müller)	398	283	376	443	55	67	13	237
Cochlodina laminata (Montagu)	–	–	–	–	–	–	1	4
Macrogastra rolphii (Turton)	–	–	–	–	–	1	–	1
Clausilia bidentata (Ström)	–	1	–	–	–	–	2	–
Balea biplicata (Montagu)	1	1	–	–	–	–	–	–
Balea perversa (Linnaeus)	–	1	–	–	–	–	1	–
Candidula intersecta (Poiret)	2	–	–	–	–	–	–	–
Cernuella virgata (da Costa)	5	–	–	–	–	–	–	–
Helicella itala (Linnaeus)	12	3	–	1	9	2	–	1
Trichia striolata (Pfeiffer)	–	–	–	–	–	–	–	5
Trichia hispida (Linnaeus)	21	7	10	4	6	12	15	39
Cepaea spp	–	–	–	–	1	–	–	–
Taxa	14	17	13	10	17	13	16	19
Shannon Index	2.12	2.49	1.78	1.70	2.16	1.50	1.93	2.13
Brillouin Index	1.99	2.25	1.65	1.55	2.04	1.34	1.86	2.05
Δ_2	0.82	0.90	0.77	0.76	0.85	0.61	0.80	0.82
Δ_4	4.80	9.76	3.37	3.32	5.87	1.59	4.08	4.70
Totals	**176**	**104**	**149**	**93**	**212**	**104**	**342**	**488**

Interestingly, features 4B F153 and 4B F155 were adjacent to each other, yet their subtly different mollusc assemblages suggest that they were not contemporaneous. Feature 2A F37 did not contain Neolithic material, has a larger proportion of open-country taxa (59%) than any other prehistoric feature on the site and contained two taxa which are post-prehistoric introductions, *Candidula intersecta* and *Cernuella virgata;* it is therefore assumed to be recent.

5.2.3 The hillfort spur

The only unprocessed samples available from the hilltop were from a trench excavated in 1986 on the hillfort spur. This trench was designed to test the hypothesis that the ditch was of Neolithic date; radiocarbon dating has subsequently indicated that it is late Bronze Age/early Iron Age (2450 ± 35 BP; OxA-7776, *c* 700–400 cal BC). The samples were unfortunately very small (*c* 160–260 g) and were all from the primary ditch fill. The section shows that they were all from fine-grained sediments, rather than the vacuous chalk rubble that formed the great bulk of the fill. In seven samples examined only eleven molluscs were found and these do not provide a valid basis for interpretation. The section (Fig 3.152) suggests that the primary fill accumulated rapidly; there are alternating fine sediment and chalk rubble layers which, by analogy with the ditch fills of the Overton Down Experimental earthwork (Bell 1990; Bell *et al* 1996), could have accumulated over as little as three or four years.

5.2.4 Causewayed enclosures: discussion

The assemblages are made much more difficult to interpret by three factors noted in the introduction: (a) they are from water sieving which is likely to have distorted assemblage composition, (b) they are feature fills which will contain a proportion of earlier eroded shells and may also reflect more shady ditch microhabitats, (c) they contain high proportions of three taxa which are known to be abundant in rock-rubble. Each of these factors must be taken into consideration.

Sampling taphonomy and questions of scale

Since there were no unsieved samples from Neolithic contexts for comparison, the effects of flotation on assemblage composition are difficult to assess. Comparison elsewhere indicates that the use of flot samples can introduce a significant distortion in the abundance of some taxa (O'Connor 1977, 270). It is probable that small (eg *Carychium tridentatum*) and fragile taxa in particular are under-represented. Some taxa, possibly *Discus* and *Oxychilus*, may be over-represented as a result. Analysis separating taxa recovered from flots and from residues of standard wash-over flotation following Evans (1972) can show a marked distortion in two assemblages. Woodland assemblages from 27 samples from Handley Down Neolithic mortuary enclosure (Allen in prep) showed that open-country taxa (*Vallonia* spp, *Vertigo* spp, and *Pupilla muscorum*) were consistently more commonly present in the flots than the residues, while shade-loving taxa (*Aegopinella nitidula, Oxychilius cellarius* and the Clausiliidea) were more prevalent in the residues. This would indicate that, if anything, the more limited open-country faunas at Hambledon are over-represented as a result of the processing method adopted.

The taphonomy of assemblages from ditches and pits is well explored by Evans (1972, 321). The assemblages include life communities of snails living on the contemporaneous land surface adjacent to the ditch/pit and on the adjacent ditch side of the bank and communities living in the ditch. Shells may also be derived from older or ancient populations in the soil or subsoil through which the ditch/pit was cut. In the primary fills, assemblages living in the ditch will be very limited owing to the inhospitable conditions provided by the coarse and rapidly deposited chalk rubble. In the secondary fills where stabilisation may occur, sedimentation rates decrease, and the assemblage living in the ditch may be appreciable. At this time, however, the ditch is a much shallower feature and the assemblage will reflect both that of the ditch vegetation community and those of the adjacent ecologies (K D Thomas 1985). Only in the upper fills, often characterised by ploughwash (none sampled at Hambledon), are the assemblages likely to relate almost entirely to the local non-ditch habitat, and this is often at a time many centuries, or even millennia after the ditch was first excavated (Allen 1995a; Evans 1972, 321–28; Limbrey 1975, 290–300).

To what spatial scale do these assemblages relate? Modern analogue studies provide some indication of the spatial scale of vegetation boundaries which may be reflected by molluscan assemblages. At a woodland/grassland boundary Davies (1999) showed that woodland species extended across a *c* 5–6 m boundary zone but even within this they declined sharply. Rouse and Evans (1994) showed that in a present-day grassland environment on the ramparts of Maiden Castle distinctive molluscan assemblages were related to characteristics of vegetation structure, lime content and warmth; the assemblages displayed sharp boundaries often on a scale of *c* 4 m. Subfossil assemblages in the Neolithic soil at Easton Down picked out an environmental boundary at a scale of decimetres (Rouse and Evans 1993, fig 12). Modern analogue studies by one of us (MJA) show that species prevalent in mature woodlands at Offham, Sussex, and Butser, Hampshire (*Aegopinella nitidula, Aegopinella pura, Acanthinula aculeata* and *Clausilia bidentata*), can represent up to 10% of the grassland fauna as much as 76 m (Butser) and 215 m (Offham) from the 'source' woodland. Some of the more typical open-country species (*Helicella itala, Cernuella virgata, Candidula* spp and *Vertigo pygmaea*) formed more than 10% of the assemblage within 3 m of the woodland edge.

The accumulation of autumn and winter (November) leaves in ditches at both Offham, Sussex and Balksbury, Hampshire, provided temporary winter refuge for assemblages dominated by *Oxychilus cellarius, Aegopinella nitidula* and *Vitrea* spp. The woodland edge was 35 m and 55 m away from the sampling points. The character of the assemblages changed dramatically in the summer (July) months at Offham with the woodland component listed above representing less than 5% of the live assemblage (but *c* 45% of the dead near-surface assemblage). In ditch contexts, such as Hambledon, spatial resolution is likely to be blurred, because some of the material has been derived. However, the examples outlined do suggest that most of the molluscs are likely to relate to conditions within a few tens of metres of the sampling point. It seems unlikely that high proportions of woodland taxa would have been derived from a woodland/open country boundary more than a few tens of metres away at most.

Some indication of whether the sampled locations are broadly representative of a wider landscape, and how uniform that landscape was, may be provided by species diversity indices (cf Entwistle 1990; Entwistle and Bowden 1991). The application of species diversity indices allows us to examine several factors:

i) closeness of sampled assemblage to a likely real population; Shannon index (*H'*) – Brillouin index (HB), see Evans 1979b; Evans 1983
ii) the diversity of the ecological mosaic sampled (Δ_2 and Δ_4)
iii) the complexity or maturity of the assemblages and thus the environment they inhabited.

There are problems in using any diversity indices on molluscan assemblages derived from the excavation on Hambledon. Species diversity indices should be used only on 'total' archaeological assemblages; ie those from which we have recovered the total or near total population through careful wash-over flotation and extraction from the residues (cf Evans 1972, 44–45). Indices have been calculated for the assemblages derived from flots of sieving (Tables 5.1–5.3); these must be interpreted with caution, because of possible loss of species and bias resulting from flotation.

Interpretation – the landscape and land-use

The ditch fills may contain a significant proportion of taxa eroded from soil and subsoil contexts pre-dating Neolithic activity. The species represented may not all have lived together at one time or place. This is an additional reason for being cautious in the interpretation of the indices of species diversity. It is possible that a derived component accounts for the old woodland taxa such as *Acicula fusca, Ena obscura* and the less common Clausiliidae. There were marked differences in the character of shell preservation in some samples which suggest a reworked component, although specimens that were more eroded or stained were not more abundant among the foregoing taxa. The fragile *Acicula fusca* were often particularly well preserved.

A significant proportion of most of the assemblages is made up of the three taxa, *Discus rotundatus, Oxychilus* and *Vitrea*, which are known to form rock-rubble assemblages. As Tables 5.1–3 show, very few of the sampled contexts were actually vacuous rubble. The few contexts with vacuous chalk rubble (clast-supported sediments) produced similar assemblages to those in non-vacuous (matrix-supported) sediments. There is no marked difference in the assemblages found in chalk rubble fills and the soil-rich secondary fills, or slots associated with concentrations of artefacts and animal bone in the upper ditch fills. Differences would be expected if the predominance of shade-preferring species was the result purely of rock-rubble habitats. We conclude from these observations that the assemblage is likely to include a rock-rubble component but that the available evidence does not suggest that this is the sole explanation for the presence of these three species. They are common in leaf litter and have been noted to be particularly abundant (representing up to 68% of live assemblages), in wind-blown leaf litter in a shallow ditch (Allen pers obs, Offham November 1986). Leaf litter occurring in the autumn and winter creates a wet microenvironment which attracts a small vagrant community contrasting with the summer community (July 1987), but which is more likely to be represented as a result of increased mortality rates in the autumn and winter.

It could be argued that a combination of some of the foregoing possibilities: eg rock-rubble component mixed with other woodland taxa weathered from earlier soils, or subsoils, might explain the predominantly shade-loving character of the assemblage. In most samples there are less than 10% open-country taxa. While it is probable that the factors discussed have exaggerated the evidence for shade, it is not likely that they explain it totally. Ditch sediments forming over a 400-year period in a largely open environment, however rubbly and overgrown the ditch itself may be, would be expected to contain a much larger proportion of open-country taxa, at least in some areas. For instance the well-vegetated ditch of the Overton Down Experimental Earthwork contains few shade-loving taxa, all the more surprising because we know that subsoil features with ancient woodland shells have in this case contributed sediment to the ditch fill (Bell and Johnson 1996). The presence of such a diverse range of shade-loving taxa indicates the existence of mature shady habitats in the vicinity. The Hambledon ditch faunas are mostly similar although there is a small increase in open-country taxa during the life of the Neolithic site. The real change comes, however, with the latest layers containing Beaker and early Bronze Age artefacts, suggesting that it was then, rather than during the main period of Neolithic activity, that the main clearance of Hambledon Hill top took place.

The ditch microenvironment would have created more shady conditions locally. Comparison of the ditch and feature fills at Stepleton indicates that the interior was rather more open and there is similar evidence from feature A F6 in the Hambledon Hill enclosure. If the hilltop was an 'island' of more open conditions within a 'sea' of woodland, this may have acted as a barrier, or delay to colonisation by more xerophilous open-country taxa. This has been suggested as an explanation for the lack of open-country taxa associated with the causewayed enclosures on the South Downs (K D Thomas 1982) and Maiden Castle (Evans and Rouse 1991a). Had this been the case, however, we would expect that species present in woodland, but tolerant of open conditions (eg *Trichia hispida* or *Vallonia costata*) would show a marked increase, which does not occur. We do know that Hambledon Hill was in use for *c* 400 years between 3700–3300 cal BC (see Ch 4). It is a site that the artefact assemblages show was a nexus of social communication for a wide geographical area. Over that period of time, with so much coming and going, there would surely have been opportunities for colonisation by open-country taxa if the hilltop itself had been fully open. As it is, there is just a small increase in the proportion of open-country taxa in contexts which are later in the early Neolithic use of the site.

If we are correct in inferring the survival of trees and scrub at the time of Neolithic activity, then the possibility should be entertained that certain of the interior features originated as tree throw pits or tree hollows. A possible candidate is suggested by the lobate plan of A F2 in the main enclosure (Fig 3.58). Another treehole, containing Neolithic artefacts, lay beneath the main enclosure bank (see 3.3.2) and another may have been utilised on site B (see 3.3.7). The presence of Neolithic artefacts, especially in the upper fills of these features, does not rule out the possibility that they originally held trees. The hints here of a possible symbolic relationship between treethrow and artefact deposition are strengthened by comparable evidence from other sites (C Evans *et al* 1999).

Marked differences have been demonstrated between the two causewayed enclosures in terms of the types of activity and material culture represented (see 3.3.8, 3.5.8), but it is notable that the mollusc assemblages are essentially similar, with no suggestion of contrasting environmental settings. Nor does the limited environmental evidence from the outworks on the Stepleton spur suggest any major clearance at the time when outworks enclosed the entire hilltop. This has previously been interpreted in functional terms as an enclosure associated with cattle husbandry 'the corralling and protection of very large numbers of animals' (Mercer 1990, 29). The molluscan evidence indicates that the main extensive clearance was after this phase; late Neolithic deposits are almost absent, and it seems possible that clearance did not take place until the period of Beaker and early Bronze Age activity.

5.3 Valley sediments around Hambledon Hill

Martin Bell and Michael J Allen

During the final major season of excavation on the Neolithic site in 1982, RWS and MB commenced an investigation of the valley sediments around Hambledon Hill in a search for evidence of prehistoric environment and land-use. The approach adopted was based on that used in a study of dry valley sediments on the South Downs (Bell 1983). An attempt was made to go beyond that earlier study by trying to obtain a more spatial picture of the distribution of sediment types by numerous trenches and test pits rather than a single section. There was only enough time to investigate three landscape units. These were the dry valley sediments in Coombe Bottom, a transect of colluvial sequences from Stepleton Spur to Everley Water Meadow and more extensive work on the river valley sediments in Everley Water Meadow by RWS, which was continued by him in 1983–4 (Fig 1.4).

The field methods involved mechanical excavation to expose the Holocene sediment sequences in section, and the dating of the sequences through the position of artefacts recovered by hand excavation and facilitated by three-dimensional artefact recording The environmental conditions under which the sediments had accumulated were studied chiefly by mollusc analysis. This was based on samples taken in the field and processed by wash-over flotation and sieving down to 0.5 mm using conventional methods (Evans 1972).

5.3.1 Coombe Bottom

This prominent dry valley (Fig 5.7) runs E–W from the Iwerne valley. It has the Hambledon Hill causewayed enclosure at its head and separates the Shroton Spur, with its outworks, to the north, from the Stepleton spur, with its causewayed enclosure and outworks, to the south (Fig 1.4). It was thought that the valley may have trapped sediments derived from activity on the upland and slopes.

The sediments

Sediments on the valley floor were examined primarily by means of an L-shaped machine-cut trench (b) at NGR ST 8565 1190 (Fig 5.4). This was cut by a JCB using a toothless ditching bucket, 7 m long down the valley axis and 5 m long perpendicular to the axis. The latter arm was taken to a depth of 2 m (Fig 5.5) but only the upper *c* 0.74 m was of Holocene date. This was a dark yellowish-brown silty clay loam colluvium, with 20–40% flints and hard rounded chalk pieces. The sedimentary sequence was dated by means of artefact locations from a 2 m by 1 m hand-excavated strip (Fig 5.4). Flint artefacts and flint-gritted pottery were concentrated in the lower part of this sequence; two sherds have been identified as Neolithic, three as Beaker.

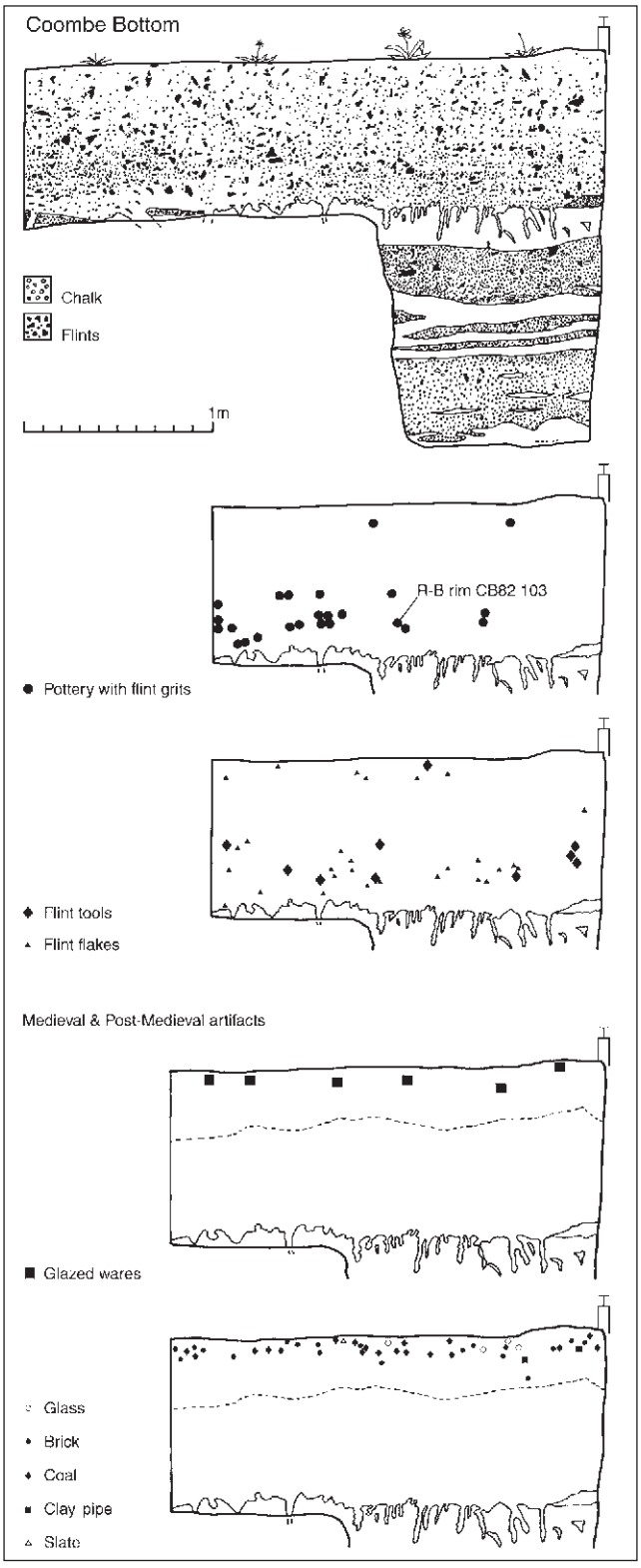

Fig 5.4 Coombe Bottom valley Trench b showing the sedimentary sequence and artefact distributions.

There was a late Iron Age or Romano-British Black Burnished Ware rim 0.20 m from the base of the Holocene sediments. Medieval and post-medieval artefacts were concentrated in the modern, plough-disturbed, layers. Thus a layer of recent ploughsoil concealed older colluvium which appeared to date

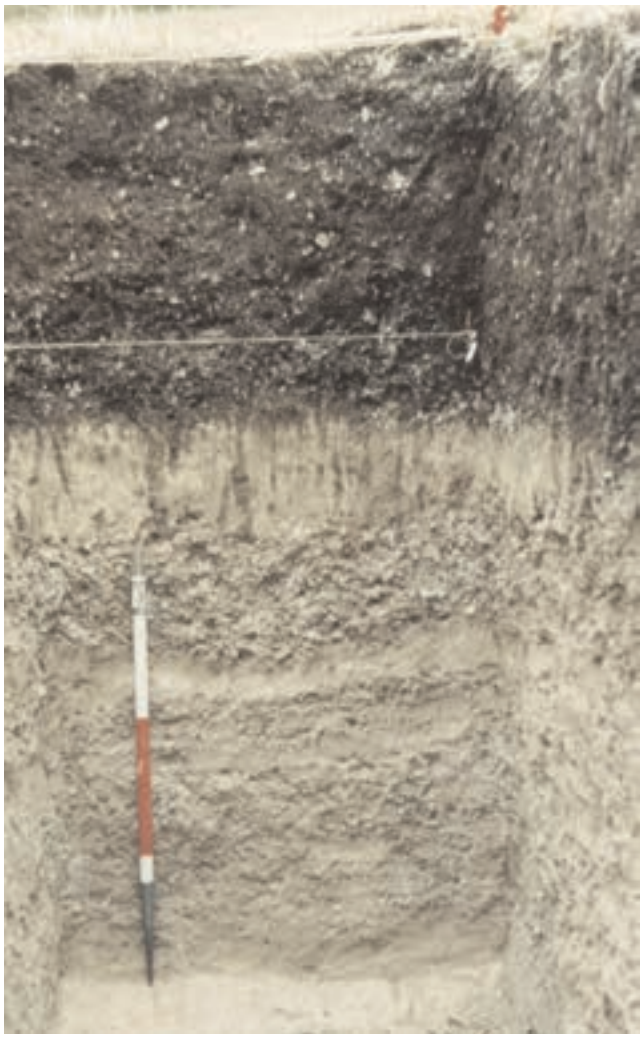

Fig 5.5 Coombe Bottom valley Trench b section. Photo Martin Bell

largely from the late Iron Age/Romano-British periods. This contained a small number of Neolithic and Bronze Age sherds which could suggest some limited activity, perhaps involving manuring, in the valley during these periods. Alternatively these early sherds may have been eroded from hilltop contexts.

Below the post-glacial colluvium was a sequence of chalk meltwater deposits consisting of alternating bands of small chalk pieces in a very soft chalk marl. These deposits are analogous to those of late Devensian date reported by Kerney (1963) and Kerney *et al* (1964) from dry valleys in south-east England and from Holywell Coombe Channel Tunnel site at Folkestone, Kent (Preece and Bridgland 1998), and at Burleston Down in Dorset (Allen 1999).

The molluscs

The stratigraphy at the point sampled can be summarised as follows:

0–0.23 m. Cultivated topsoil. Dark brown (10YR 4/3) silty clay loam with 10% small flints and chalk.

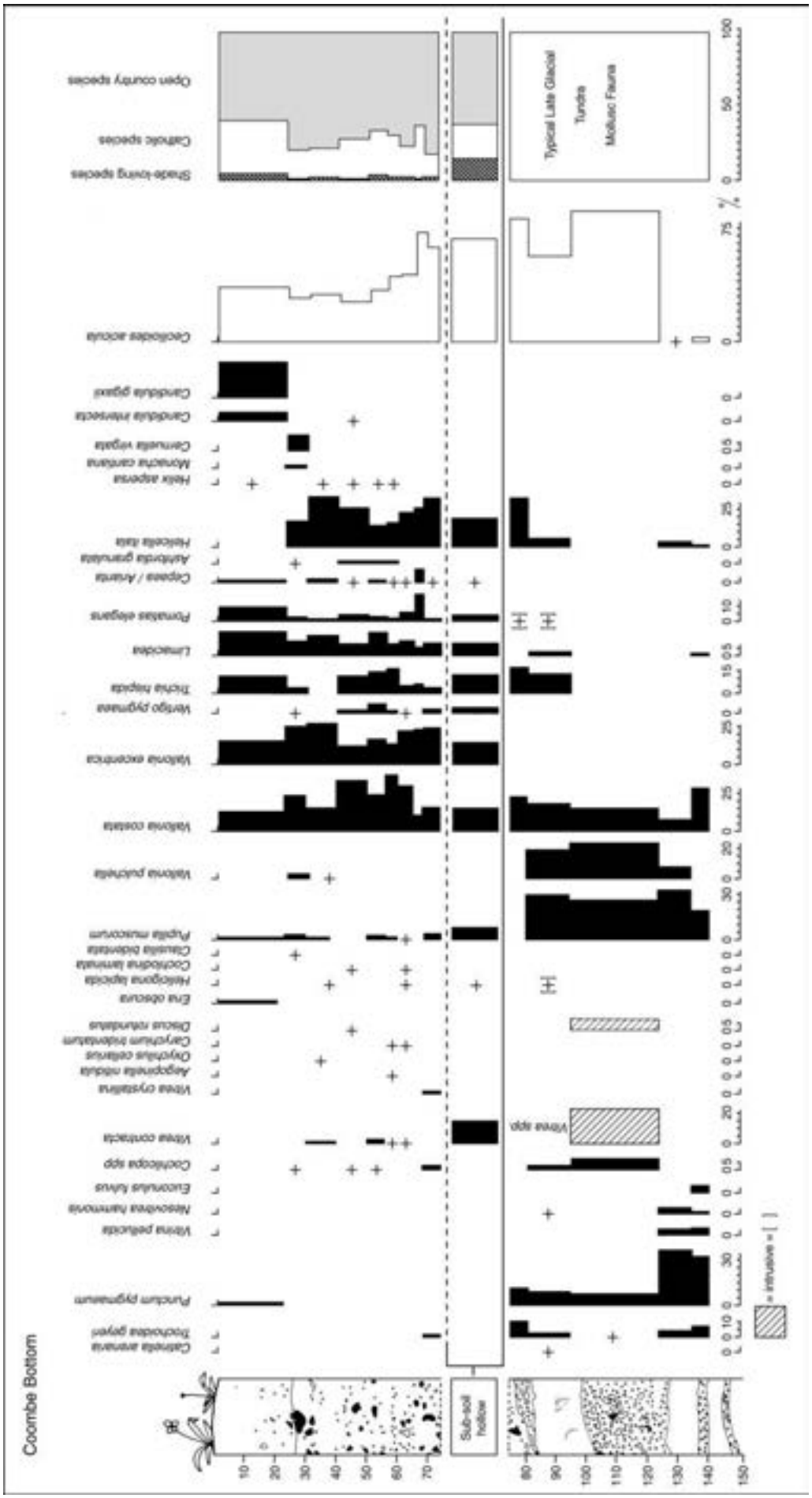

Fig 5.6 Coombe Bottom valley Trench b mollusc diagram.

Table 5.4 Coombe Bottom dry valley: table of molluscs

All totals exclude *C acicula*. [ ] = modern specimens
Note: intrusive (modern) specimens are excluded from calculations

	Chalk meltwater deposits									*Colluvium*					
	hollow	*Late Glacial*					*Prehistoric*			*Roman*		*Medieval–Post-medieval*			
Sample	*15*	*14*	*13*	*12*	*11*	*10*	*9*	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*
Depth (cm)	*spot*	*134–140*	*123–134*	*94–123*	*80–94*	*74–80*	*68–74*	*65–68*	*60–65*	*56–60*	*50–56*	*40–50*	*30–40*	*23–30*	*0–23*
Wt (g)	*904*	*2000*	*2000*	*2000*	*2614*	*1648*	*1556*	*1571*	*1723*	*1733*	*1513*	*2000*	*2000*	*1892*	*2000*
Pomatias elegans (Müller)	1	–	–	–	+	+	1	6	5	3	4	7	2	3	4
Carychium tridentatum (Risso)	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Carychium spp	–	–	–	–	–	–	–	–	+	–	–	–	–	–	–
Catinella arenaria (Bouchard-Chambreaux)	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–
Cochlicopa spp	–	–	–	1	1	–	1	–	–	–	2	1	–	1	–
Vertigo pygmaea (Draparnaud)	1	–	–	–	–	–	1	–	1	3	9	1	–	1	–
Pupilla muscorum (Linnaeus)	2	12	8	2	6	–	2	–	1	2	4	–	2	3	1
Vallonia costata (Müller)	4	19	2	2	6	2	8	4	25	46	34	59	13	24	6
Vallonia pulchella (Müller)	–	–	2	3	6	–	–	–	–	–	–	–	1	2	–
Vallonia excentrica Sterki	4	–	–	–	–	–	12	8	20	19	25	24	23	26	7
Ena obscura (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Punctum pygmaeum (Draparnaud)	–	21	9	1	3	1	–	–	–	–	–	–	–	–	1
Discus rotundatus (Müller)	–	–	–	[1]	–	–	–	–	–	–	–	+	–	–	–
Vitrina pellucida (Müller)	–	3	1	–	–	–	–	–	–	–	–	–	–	–	–
Vitrea crystallina (Müller)	–	–	–	–	–	–	1	–	–	–	–	–	–	–	–
Vitrea contracta (Westerlund)	4	–	–	–	–	–	–	–	1	1	4	–	1	–	–
Vitrea spp	–	–	–	[3]	–	–	–	–	–	–	–	–	–	–	–
Nesovitrea hammonis (Ström)	–	1	1	–	+	–	–	–	–	–	–	–	–	–	–
Aegopinella nitidula (Draparnaud)	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Oxychilus cellarius (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–
Limacidae	2	1	–	–	1	–	4	2	9	11	13	15	11	9	7
Euconulus fulvus (Müller)	–	3	–	–	–	–	–	–	–	–	–	–	–	–	–
Cecilioides acicula (Müller)	58	2	+	94	44	40	86	84	83	106	95	69	40	43	27
Cochlodina laminata (Montagu)	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–
Clausilia bidentata (Ström)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Candidula intersecta (Poiret)	–	–	–	–	–	–	–	–	–	–	–	1	–	–	3
Candidula gigaxii (L Pfeiffer)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	11
Cernuella virgata (Da Costa)	–	–	–	–	–	–	–	–	–	–	–	–	–	10	–
Helicella itala (Linnaeus)	5	1	1	–	2	3	15	9	20	21	21	49	28	18	–
Trochoidea geyeri (Soós)	–	5	1	+	1	1	1	–	–	–	–	–	–	–	–
Monacha cantiana (Montagu)	–	–	–	–	–	–	–	–	–	–	–	–	–	2	–
Ashfordia granulata (Alder)	–	–	–	–	–	–	–	–	–	2	3	3	–	1	–
Trichia hispida (Linnaeus)	3	–	–	–	6	2	2	2	4	21	20	21	–	4	5
Helicigona lapicida (Linnaeus)	+	–	–	–	+	–	–	–	+	–	–	1	–	–	–
Cepaea/*Arianta* spp	+	–	–	–	–	–	+	3	1	1	3	1	2	–	1
Helix aspersa (Müller)	–	–	–	–	–	–	–	–	–	1	1	2	1	–	+
Taxa	9	9	8	5	10	5	11	7	11	14	13	14	11	14	11
Shannon Index (*H'*)	2.08	1.70	1.65	1.52	2.05	1.52	1.88	1.80	1.82	1.92	2.15	1.87	1.75	2.08	2.12
Brillouin Index (HB)	1.68	1.52	1.33	1.07	1.71	1.07	1.62	1.54	1.66	1.77	2.00	1.76	1.58	1.89	1.83
Δ_2	0.86	0.77	0.75	0.77	0.85	0.77	0.80	0.81	0.80	0.80	0.86	0.80	0.78	0.84	0.86
Δ_4	8.85	3.63	3.55	6.20	7.25	6.20	4.45	5.23	4.23	4.20	6.25	4.01	3.65	5.43	7.25
Totals	**26**	**66**	**25**	**9**	**33**	**9**	**48**	**34**	**88**	**133**	**143**	**188**	**85**	**105**	**47**
Magnetic susceptibility ($\times 10^{-8}$ SI/kg)	53	1	2	1	4	23	43	48	50	43	36.5	31	35	39	48

0.23–0.74 m. Post-glacial colluvium. Dark yellowish-brown (10YR 3/4) silty clay loam with 20 to 40% small and medium flints and chalk pieces.
0.74–1.90+ m. Pleistocene chalk meltwater deposits. Pale yellow (2.5Y 8/4) chalk marl with lenses of small rounded chalk pieces.

The Pleistocene sediments had low mollusc numbers (Table 5.4) and a restricted assemblage dominated by *Pupilla muscorum*, *Vallonia costata* and *Punctum pygmaeum*. Of special interest is the presence of *Trochiodea geyeri*, which has been extinct in Britain since the late glacial (Kerney 1999, 184), or very early Holocene, and today has a basically Central European distribution (Kerney and Cameron 1979, 183). There are various British Pleistocene records (Sparks 1953; Evans 1972) including some from Late Devensian assemblages on the North Downs (Kerney 1963) with which this assemblage, as a whole, is closely comparable. It appears to relate to Kerney's (1977) mollusc biozone Z which is equivalent to pollen zones I and II (for an outline of late Pleistocene/early Holocene zonation see Preece and Bridgland 1998, table 1.1). A few shell fragments would not be expected in biozone Z (1 apex of *Discus rotundatus*, 3 apices of *Vitrea* spp and non-apical fragments of *Pomatias elegans* and *Helicigona lapicida*). These are thought to be intrusive via earthworm burrows, which were such an obvious feature at the top of the Pleistocene sequence (Fig 5.5). Bell (1981b, 375) showed that earthworms take mollusc shells down to line aestivation chambers.

The trench did not expose the base of the Pleistocene sequence and the lower part of the stratigraphy may well repay further investigation, since similar sequences elsewhere have produced evidence of interstadial deposits of zone II (eg Burleston Down, Dorset; Allen 1999). It seems probable that the deposits investigated are of zone III date and represent extensive physical erosion within the Coombe Bottom valley in the late Devensian.

At the base of the post-glacial stratigraphy was a subsoil hollow no more than 0.2 m in width and depth. Such features frequently represent fossil tree holes and contain a woodland mollusc assemblage. However, in this case there was a small mollusc assemblage mostly comprising open-country taxa and the feature is perhaps more likely to represent an animal burrow. Mollusc taxa indicative of shaded woodland conditions are likewise very few in the overlying colluvial sequence; consequently there is no evidence for the original climax woodland soil in this valley. This is particularly striking given the predominance of shade-loving taxa reported (above) from Neolithic contexts on the hill. The sediments are so calcareous that these shells are unlikely to have been destroyed by decalcification. A more probable explanation is that the original woodland soils have been removed by erosion. Such erosion of Holocene woodland soils has been documented in parts of chalkland valleys at Itford Bottom, East Sussex (Bell 1983) and throughout much of Wessex and the area of Dorchester, Dorset (Allen 1992; 1997a).

The surviving post-glacial colluvium showed little evidence of either internal stratigraphy or molluscan evidence for ecological change. From the base the assemblage is of open-country character, the predominant taxa being the Vallonias, Limacidae and *Helicella itala*. *Trichia hispida* increases above 0.6 m. This group of species predominates in many colluvial deposits which are believed to derive from arable land (Bell 1983, 131). Non-apical fragments of *Helix aspersa*, a Romano-British introduction, occur down to 0.6 m, implying that the upper part of the colluvium may be Roman or later. The medieval introductions *Candidula intersecta*, *Candidula gigaxii* and *Cernuella virgata* are largely confined to the top 0.3 m and confirm the dating provided by artefacts.

An incipient stone horizon was noted at 0.56–0.6 m, overlain by a stone-free, worm-worked or possibly temporary stabilisation/hiatus in sediment build-up. This is confirmed by the peak in the coarse fraction (>5.6 mm) shown in the particle size histograms (archive), and the stabilisation may be reflected in the increase in molluscs per kilogram and peak in the Shannon (*H'*) index. Evidence of the relict former soil particles with higher magnetic susceptibility may be reflected in the lower portion of the Holocene sequence (Table 5.4).

Soil pits in Coombe Bottom

Five soil pits were dug using a JCB to examine sediment variation within the valley (Figs 1.4 and 5.7). Three pits ran along the lowest part of the valley axis:

Pit H. At NGR ST 8555 1190. 0–0.58 m colluvium. Below 0.58 m were Pleistocene meltwater deposits.
Pit G. At NGR ST 8579 1190. 0–0.63 m colluvium with medieval green-glazed jug handle in the top 0.24 m and a piece of unstratified Romano-British pottery. Below 0.63 m were Pleistocene meltwater deposits.
Pit A. At NGR ST 8578 1189. 0–1.14 m colluvium, at *c* 0.60 m was a post-medieval jug handle, a piece of brown glass and a medieval sherd. There were two Romano-British sherds. Below 1.14 m were Pleistocene meltwater deposits.

Two pits were dug on each side of the valley to obtain information on the cross-profile of valley sediments:

Pit E. At NGR ST 8565 1197 on the north side of Coombe Bottom. 0–0.46 m topsoil and colluvium overlying chalk.
Pit F. At NGR ST 8567 1183 on the south side of Coombe Bottom. 0–0.30 m cultivated topsoil; 0.3–1.36 m colluvium; 1.36–1.58 m possible truncated palaeosol; 1.58 m+ Pleistocene meltwater deposits.

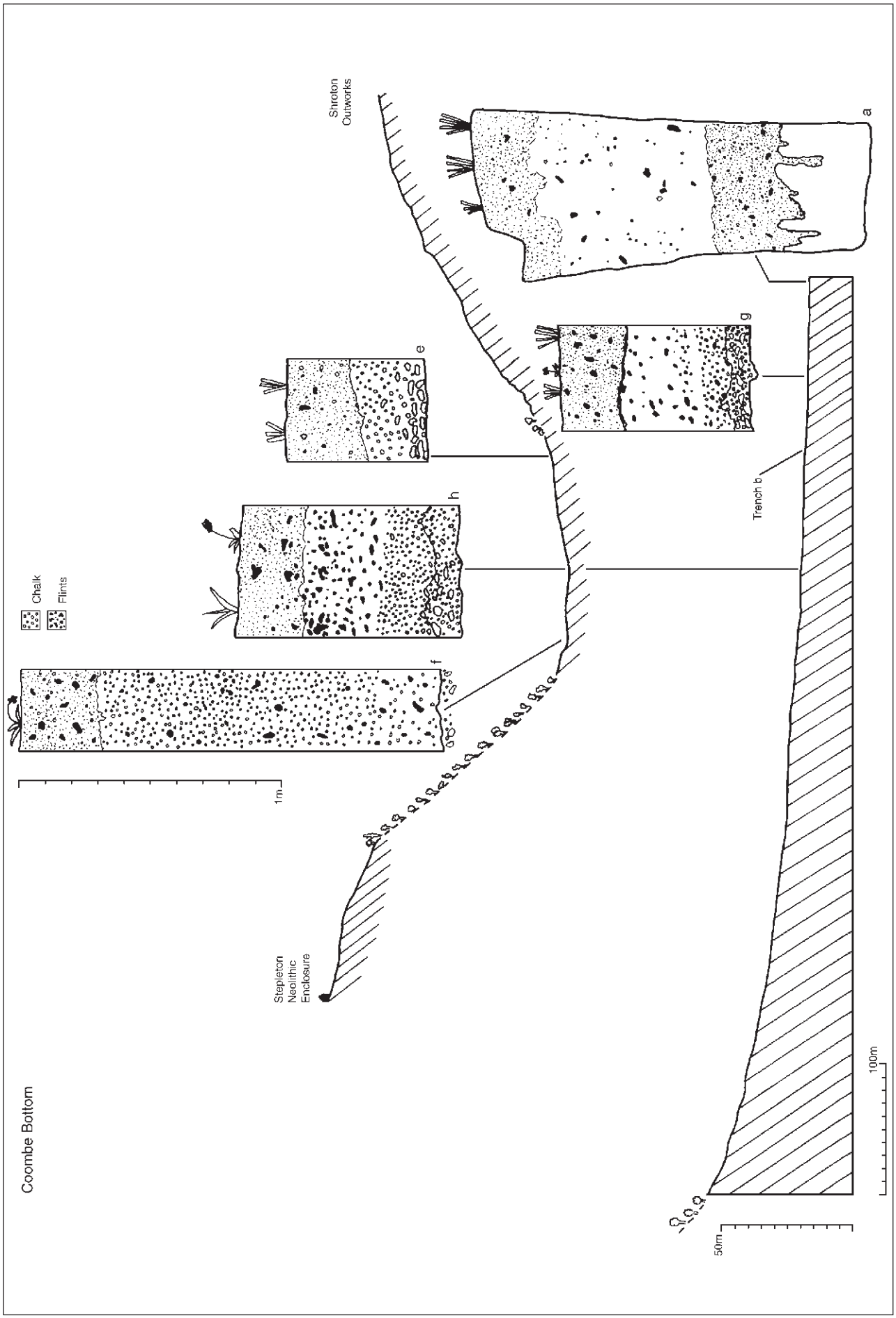

Fig 5.7 Coombe Bottom, cross and long profiles showing soil pit sections.

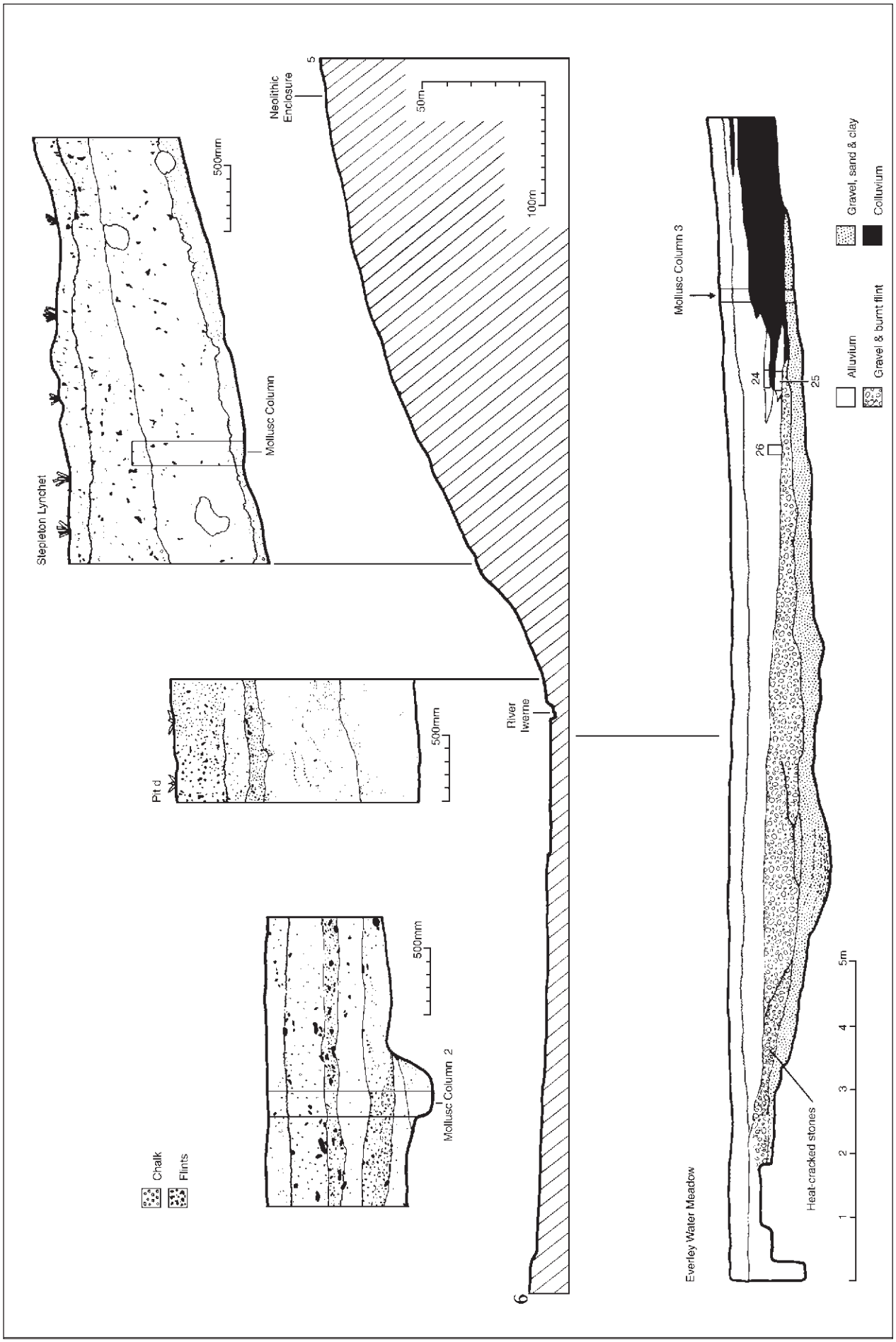

Fig 5.8 Transect from Stepleton enclosure to Everley Water Meadow in the Iwerne valley showing soil pits, mollusc column 3 and excavated sections.

The soil pits down the valley axis indicate that the sequence investigated in Trench B is broadly representative; deeper colluvium exists lower down the valley to the east, but much of this appears to be medieval or later. Ridge and furrow of probable medieval date survives on the south side of the Shroton spur on the slopes of Coombe Bottom (Fig 3.73). Pit F has revealed a much deeper reservoir of colluvium at the foot of Stepleton spur. Further evidence for eroded sediments on this slope come from a series of lynchet banks, the nearest of which is 21 m upslope from Pit F, that act as barriers to further downslope soil movement. It is unfortunate that there was no opportunity to investigate the date and environmental sequence of this colluvium in detail although colluvium elsewhere on Stepleton spur is discussed below.

5.3.2 Stepleton to Everley Water Meadow transect

A line of soil pits was dug to examine the soil and sediment profile from the slopes outside the Stepleton causewayed enclosure down to the valley floor of the Iwerne stream at Everley Water Meadow (Figs 1.4, 5.8).

Stepleton lynchet

On the east side of Stepleton spur, downslope from the Neolithic enclosure, is a series of lynchets (Fig 2.7). It was known from the excavations in the causewayed enclosures that later cultivation had taken place on these slopes. Pottery scatters in the tops of the ditch

Table 5.5 Stepleton Lynchet. Molluscs

All totals exclude *C acicula*

					Lynchet ploughwash						
Sample	*34*	*35*	*36*	*37*	*38*	*39*	*40*	*41*	*42*	*43*	*44*
Depth (cm)	*130–136*	*125–130*	*120–125*	*115–120*	*110–115*	*100–110*	*90–100*	*80–90*	*70–80*	*64–70*	*50–64*
Wt (g)	*1500*	*1600*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*	*1500*
Pomatias elegans (Müller)	1	1	1	8	2	1	5	1	1	2	2
Cochlicopa spp	1	–	5	2	3	2	3	1	1	2	2
Vertigo pygmaea (Draparnaud)	–	4	–	1	–	2	2	2	1	4	21
Pupilla muscorum (Linnaeus)	4	4	4	3	6	6	4	10	7	16	11
Vallonia costata (Müller)	–	4	–	1	6	10	13	22	28	15	5
Vallonia pulchella (Müller)	–	–	2	–	1	1	–	–	–	–	–
Vallonia excentrica (Sterki)	13	11	12	18	15	36	59	64	51	50	24
Punctum pygmaeum (Draparnaud)	–	1	1	–	–	–	–	–	–	–	–
Discus rotundatus (Müller)	+	2	+	1	1	+	+	1	+	+	+
Vitrea contracta (Westerlund)	–	–	–	–	1	–	–	–	–	2	1
Oxychilus cellarius (Müller)	–	–	–	–	–	1	–	–	1	–	–
Limacidae	–	–	–	–	2	–	3	1	8	4	4
Cecilioides acicula (Müller)	–	2	1	2	2	12	35	31	67	57	6
Cochlodina laminata (Montagu)	–	–	–	–	–	1	–	1	–	–	–
Clausilia bidentata (Ström)	+	1	–	–	1	–	+	–	–	–	1
Candidula intersecta (Poiret)	–	–	–	–	–	–	–	–	–	–	9
Candidula gigaxii (L Pfeiffer)	–	–	–	–	–	–	–	–	–	–	2
Cernuella virgata (Da Costa)	–	–	–	–	–	–	–	3	7	5	6
Helicella itala (Linnaeus)	2	8	15	9	13	15	21	12	20	14	4
Trichia hispida (Linnaeus)	1	1	1	+	3	1	4	3	4	6	9
Helicigona lapicida (Linnaeus)	+	+	+	+	+	+	–	+	+	+	–
Cepaea spp	1	+	+	+	1	–	1	–	1	–	–
Helix aspersa (Müller)	–	–	–	–	–	–	–	–	–	+	+
Lymnaea truncatula (Müller)	–	–	–	–	–	–	–	1	–	–	–
Mytilus edulis	–	–	–	–	–	–	–	–	–	+	–
Taxa	7	10	8	8	13	11	10	12	12	11	14
Shannon Index (*H'*)	1.38	1.96	1.63	1.60	2.10	1.62	1.57	1.57	1.77	1.86	2.24
Brillouin Index (HB)	1.10	1.65	1.40	1.38	1.81	1.44	1.44	1.43	1.64	1.72	2.03
Δ_2	0.64	0.82	0.75	0.74	0.84	0.71	0.68	0.67	0.77	0.77	0.86
Δ_4	2.00	5.53	3.36	3.09	5.72	2.58	2.32	2.12	3.37	3.52	6.73
Totals	**23**	**37**	**41**	**43**	**55**	**76**	**115**	**121**	**130**	**120**	**101**
Magnetic susceptibility ($\times 10^{-8}$ SI/kg)	17	21	24	24	25	34	23	23	29	25	20

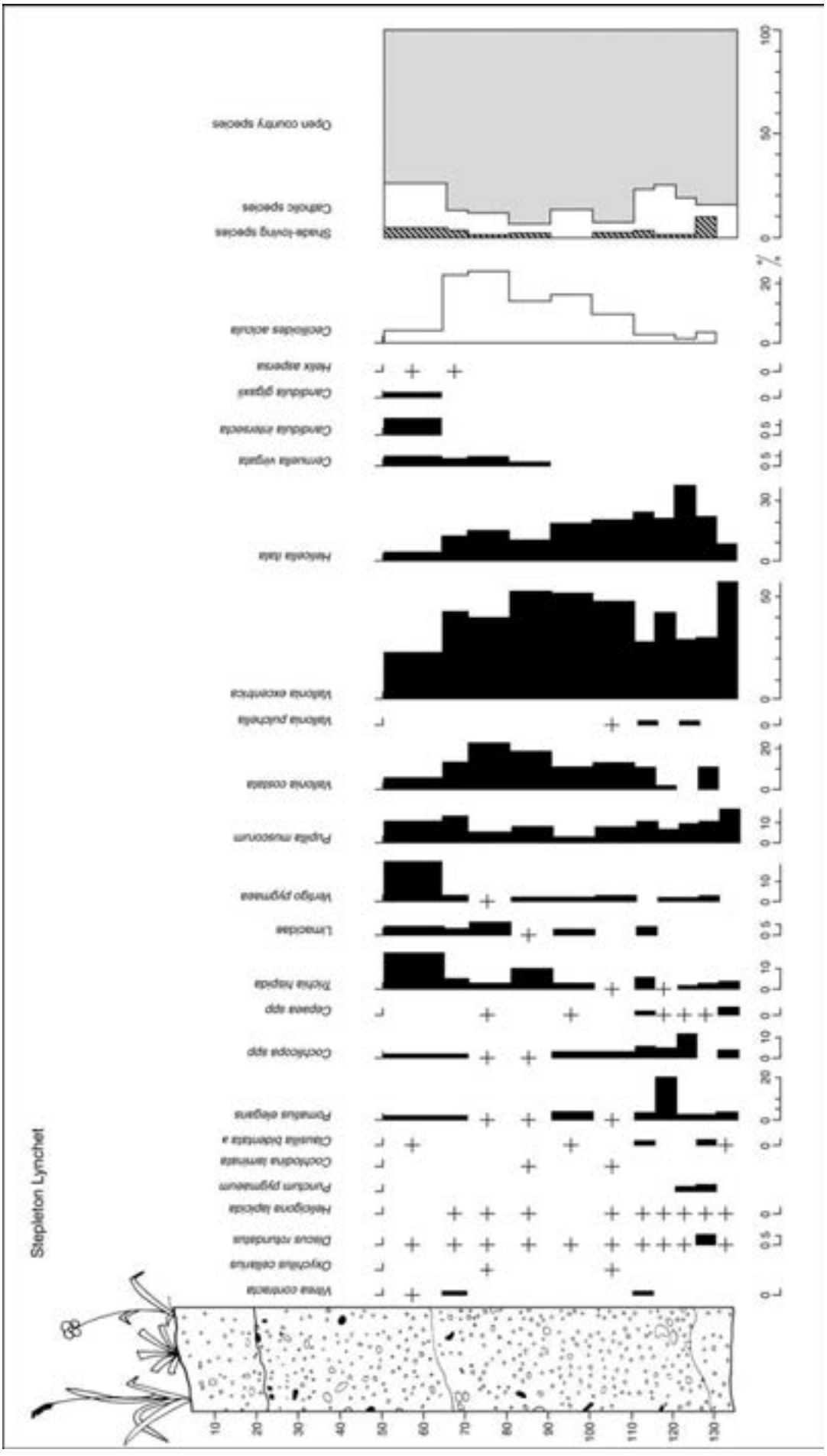

Fig 5.9 Stepleton Lynchet mollusc diagram.

fills suggested cultivation in the Bronze Age to Romano-British periods but nothing later, although ridge and furrow on the south edge of the Shroton spur has already been noted. One of the lynchets forms a very pronounced break of slope *c* 400 m east of the Stepleton enclosure and must reflect a long-standing boundary of cultivation at the top of the steep slope of the Iwerne valley. A trench 3.5 m by 1 m was dug mechanically into the top of this lynchet at NGR ST 8587 1168 (Fig 1.4). Part of the trench face was trowelled back and 163 artefacts were recorded. The datable finds were overwhelmingly late Iron Age or early Romano-British Black Burnished Ware (45 sherds) and Romano-British (27 sherds) in such abundance from a small trench to suggest the proximity of occupation. A shale armlet fragment (Fig 10.2: S36) and late Iron Age and Romano-British sherds occurred in the basal layers. There were only two prehistoric sherds and it can be concluded that the formation of this lynchet was late Iron Age and Romano-British.

Stepleton lynchet molluscs

The stratigraphy at the point sampled is summarised as follows:

0–0.22 m Cultivated topsoil, brown (10YR 4/3) silty loam
0.22–0.64 m Organic-rich recent colluvium, brown (10Y 4/3) silty loam
0.64–1.36 m Chalky organic-poor colluvium, yellowish-brown (10YR 5/6) silt loam with 35% small chalk pieces
0.136+ m Pleistocene deposit, yellow (2.5Y 7/4) marl with 70% small rounded chalk pieces

Since the upper colluvium was clearly modern, only the sediments below 0.5 m were analysed (Fig 5.9). As in Coombe Bottom, shade-loving mollusc species are very few throughout and it must be presumed that here too climax woodland soil and its contained molluscs have been removed by erosion. The lynchet assemblage is remarkably uniform, though the number of shells increases upwards. The overall impression is of unfavourable conditions and low species diversity. The assemblage is dominated by the Vallonias, particularly *Vallonia excentrica*, and *Helicella itala* with smaller numbers of *Pupilla muscorum* and *Trichia hispida*. The restricted diversity and many of the species present are typical of colluvial assemblages, although the abundance of *Vallonia excentrica* suggests grazed grassland phases (Evans 1993), as does the presence of *Vertigo pygmaea* and *Pupilla muscorum*. A modest rise in the last two species above 0.7 m may reflect an episode of more stable conditions (possibly reflected in the 4 diversity indices) between older and more recent colluvial deposits. The introduced species *Cernuella virgata* extends down to 0.9 m, but this species was almost certainly present from the late Iron Age at Maiden Castle (Evans and Rouse 1991b, 125). The other introductions, *Candidula intersecta*, *C gigaxii* and *Helix aspersa*, are confined to the recent colluvium.

Soil pit d

At the base of the Stepleton spur was a pronounced terrace-like feature on the west side of the Iwerne river forming the edge of the valley floor. It was investigated as a possible colluvial deposit by mechanical excavation at NGR ST 8600 1138. This showed (Fig 5.8) that there was only 0.67 m of colluvium, much of it disturbed by recent cultivation. The underlying sequence was Pleistocene solifluction deposits which had apparently been subsequently cut into by the Iwerne stream creating the terrace.

5.3.3 Everley Water Meadow

R W Smith, Martin Bell, Roger Mercer and Frances Healy

Introduction

Everley Water Meadow lies in the Iwerne valley at the foot of the Stepleton spur, at NGR ST 861 115 (Fig 1.4). It was selected for particularly detailed investigation of the question of prehistoric activity in valleys because field survey by Rog Palmer in 1977 had revealed a scatter of worked flint of late Neolithic or early Bronze Age date, and calcined flints. RWS was responsible for this part of the study in 1982 and this led to further investigations by RM and RWS in 1983 and 1984. RWS prepared an interim account of the investigation to 1983 (Smith 1983), which also forms one of several study areas in his PhD thesis (Smith 1985). This work is integrated here with the full results of the 1982–4 excavations, superseding interim reports by RM (Mercer 1983; 1984a; 1984b).The water meadow itself was created in the post-medieval period, apparently around the 1760s. This involved cutting a new channel for the Iwerne stream on the west side of the valley, at the base of the Stepleton slope and slightly upslope from the lowest part of the valley floor occupied by the prehistoric and subsequent channels. From this new channel, and a series of irrigation channels joined to it, some of which were found in the excavation, the meadows would have been seasonally flooded to promote lush growth for pasture.

The field was surveyed and systematically walked in 1982; the methods and results are more fully described by Smith (1983; 1985). A contour survey led to the identification of the lowest part of the valley floor at the base of the Stepleton spur, the contours suggesting the positions of several successive channels (Fig 5.10). To the east, 1–1.2 m above the channels, was a higher gravel terrace. A thin scatter of Roman, medieval and post-medieval artefacts extended over the field without concentrations and is likely to have derived from

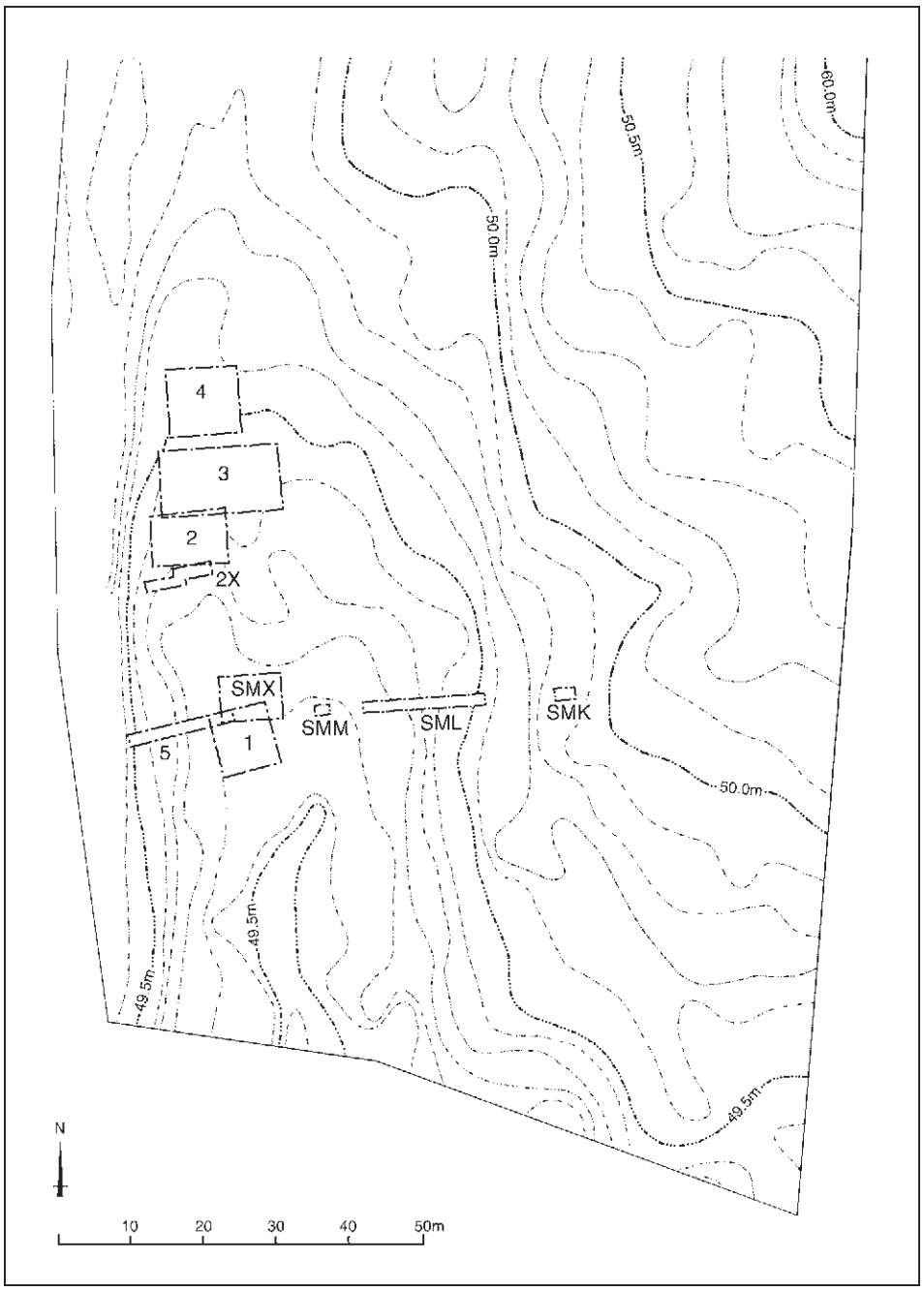

Fig 5.10 Everley Water Meadow. Contour survey and trench plan. The location of Everley Water Meadow is shown in Figure 1.4.

manuring. The pottery was made up of 4 sherds/20 g Roman and 13 sherds/89 g medieval, mainly mid-twelfth to fourteenth-century Laverstock coarsewares, with some late tenth to early eleventh-century Cheddar-type ware. The distributions of struck flint, burnt flint and iron slag were more localised. Twenty-three pieces of struck flint (see Saville 10.2.9, Table 10.60) and half-a-dozen pieces of iron slag occurred in overlapping concentrations on the gravel terrace. Calcined flints were densely distributed along the former river channel and not on the terrace. Excavation subsequently took place in two areas which, although only about 15 m apart, provided different samples of the valley bottom sediments.

The south area

Investigation started here 1982, in which season the field was known as Stepleton Water Meadow. A line of machine-cut test trenches was set out from the terrace into the area of the river channels (Fig 5.10: SMK–SMM). Selected areas were then hand excavated so that the artefacts could be projected onto drawn sections. The westernmost trench (SMN) was expanded into a larger cutting (SMX) in order to examine the palaeochannel deposits. In 1983 this area was extended again (Area 1) and in 1984 a trench was dug by machine from the edge of the already excavated area to just east of the Iwerne stream (Area 5).

Table 5.6 Everley Water Meadow. South area. Description of the sediments represented in Figs 5.11–12

The finds listed for each unit include those from equivalent layers which are not shown on the published section.
At the time of compilation (2002) the pottery from the 1983 season was missing, although preliminary identifications were available. Where sherds are quantified here they are from the 1982 season.

R W Smith's unit	*Layer(s) in Fig 5.12*	*Description*	*Finds*
Ap	1	1980s ploughsoil with alluvial content	Cu alloy coin, iron objects (mainly nails), iron slag, 4 sherds/12 g Roman, 41 sherds/123 g medieval (mainly Laverstock type coarseware, some Cheddar type Saxo-Norman wheelthrown, 1 sherd Hermitage-type sandy ware), 2 sherds/7 g post-medieval, struck flint, animal bone
F1, F2		Gullies probably relating to water meadow	
A		Unploughed alluvium	
B		Stoneline surviving in hollow, where cultivation had not disrupted pre-water meadow turfline	
C		Silt in former channel	
Dp	2	Plough-disturbed alluvial fill of depression over former channel, mixed with gravel by cultivation	Cu alloy ?pin fragment, and iron objects including at least 1 nail, iron ore, iron slag, 1 sherd/4 g Roman (samian), 19 sherds/74 g medieval (mainly Laverstock-type coarseware, some Cheddar type Saxo-Norman wheelthrown), struck flint, animal bone
D	4	Unploughed dark alluvium containing bands and flecks of charcoal. Minor features (3^{n}) were cut from within this layer. Feature 4^{n} is a silt-filled depression.	9 sherds/64 g medieval (some Laverstock type coarseware, mainly Cheddar type Saxo-Norman wheelthrown), fragment of brick or tile, single unworked fragments of Jurassic limestone and Greensand, struck flint, burnt flint, animal bone, shell (?oyster)
E		Lens of small flint and chalk gravel probably representing a stream base, interleaved with D	
F	15A–15C (=Area 1 L1)	Extensive spread of gravel, much of it calcined, in a matrix of sandy silt containing lenses and bands of darker silt	Iron nails, 1 fragment iron ore, slag, 1 body sherd/33 g in grog- and flint-tempered early Bronze Age fabric, 2 body sherds/31 g in sandy late Bronze Age fabric, 1 base sherd/8 g in flint-tempered late Bronze Age/early Iron Age fabric, samian, 3 sherds/11 g medieval (1 Laverstock-type coarseware, 2 Cheddar type Saxo-Norman wheelthrown, smaller and more abraded than BA sherds), brick or tile fragments, fragment of Syenite mould for a socketed axe (probably from Wales or the south-west – Needham, Ch 10, Fig 10.4), 2 weathered Niedermendig lava fragments, Greensand fragments, shale armlet fragment (probably lathe-turned; Fig 6.19: S37), struck flint, much animal bone (some burnt)
H	8	Gravels in a subsidiary (?storm) channel, with burnt flint	Animal bone (including the charred coracoid of a crow or rook), fired clay, iron slag, 1 fragment ?iron ore
5	F10	Rectangular pit containing a mass of heat-shattered flint mixed with charcoal and ash, cut into gravel of channel bank	3 flint flakes, 1 piercer
G, J	14, 16	Dark gravel formations on opposite sides of the channel with calcined flint (less frequent than in F=L15). Heavily stained with iron and manganese	Chisel arrowhead, uncorticated and in sharp condition (Saville, Ch 10, Fig 10.42), unidentified bone fragments Arrowhead provides later Neolithic *terminus post quem* for gravels. Burnt flint may suggest that burnt mound was already in existence upstream when they were deposited
N	13	Grey-brown flinty clay loam below gravels G. May represent traces of a previously more extensive palaeosol Also features beneath gravels in surface of Coombe Rock (not on section), some ?natural but one (area 1 F6) pit-like and containing ash, charcoal and a bone fragment	
K	18	Clean chalk mud mixed with a little sandy silt	Bone fragments extracted with molluscs
L1–2	17a–b	Grey-green mottled brown clay (17a) overlying charcoal-stained grey-green clay (17b)	
L3	17c	Charcoal-stained derived Greensand	
M	19	Iron-stained gravel interleaved with L	
L4–6	17d–j	Braids and lenses of clayey, Greensandy silts	Bone fragments extracted with molluscs from L17d
P		Coombe Rock	

Fig 5.11 Everley Water Meadow. South area (Trench SMX, Area 1, part of Area 5).

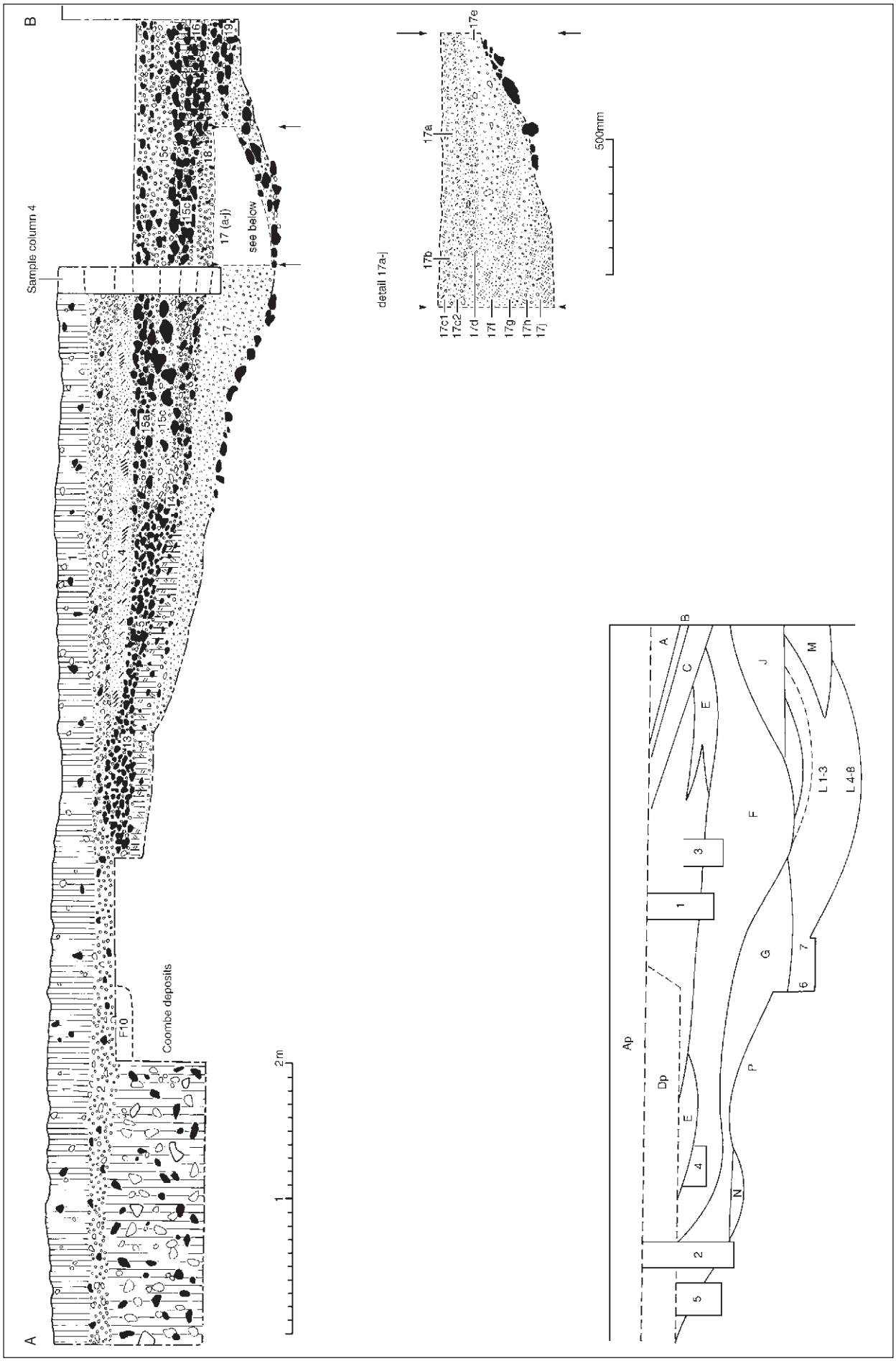

Fig 5.12 Everley Water Meadow. South area. Section and block diagram of palaeochannel deposits, showing the location of Sample Column 4. The notations on the diagram correspond to the stratigraphic units described in Table 5.6.

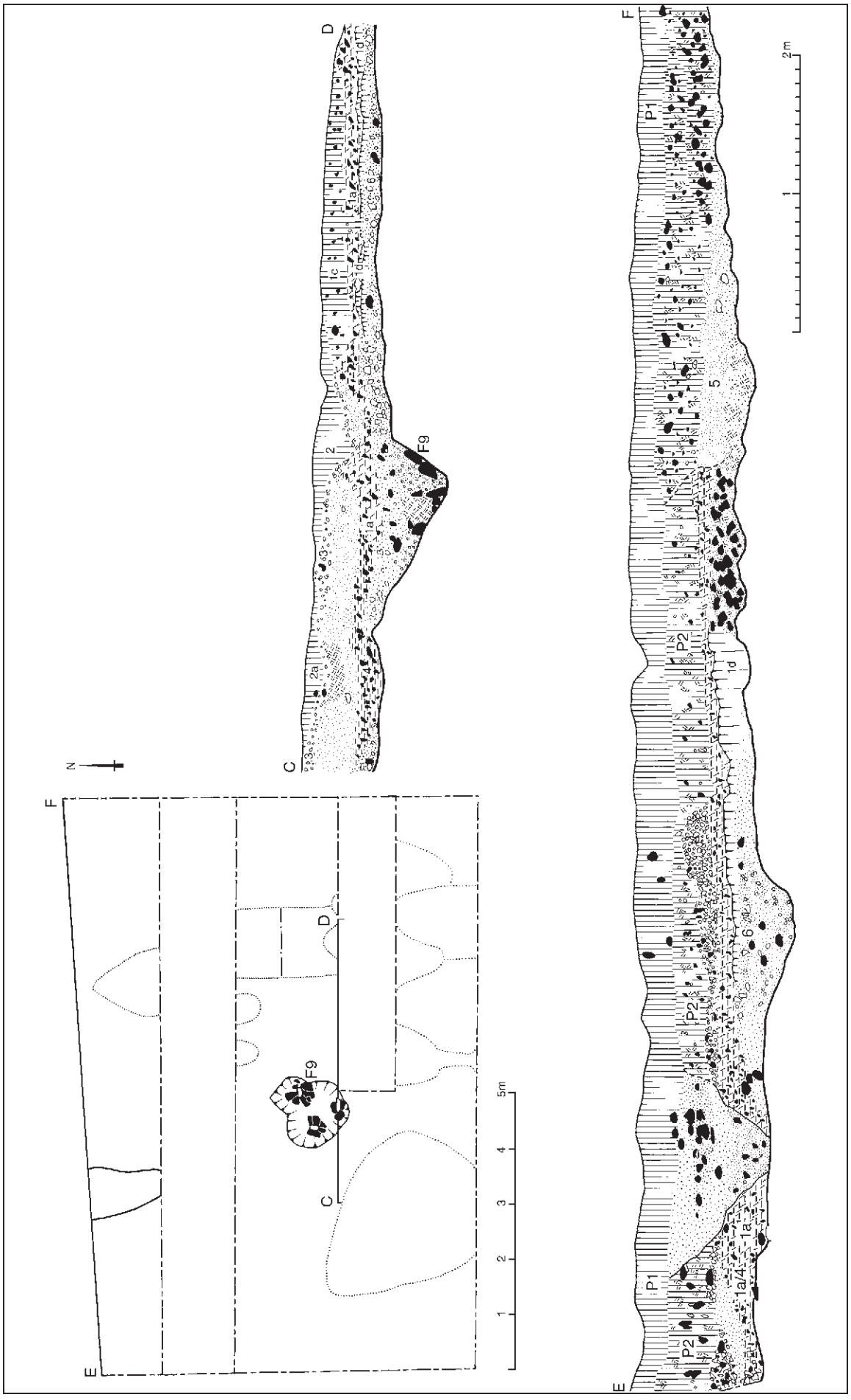

Fig 5.13 Everley Water Meadow. North area. Sections through burnt mound and plan of features in surface of gravel beneath it.

The terrace

The aim of work on the terrace was to identify an archaeological origin for the flint scatter. A ploughsoil 0.23 m thick was underlain by 0.20–0.67 m of decalcified valley gravel with a wavy and involuted lower boundary overlying Coombe Rock containing chalk and Greensand; the latter outcrops in the valley *c* 1 km north of the site (Fig 1.2). Subsequently, apparently during the late glacial, the river Iwerne cut down into these solifluction deposits. During the Holocene, decalcification and the formation of solution features occurred and the trenches also revealed evidence of root casts left by former trees, in one case with charcoal within its fill. The effects of agriculture on the terrace were severe, in places undisturbed gravels had been almost completely planed away and nowhere was there stratigraphic separation between iron nails, medieval pottery (again mainly Laverstock coarsewares) and flint artefacts discarded several millennia earlier. Hopes that prehistoric surfaces might survive intact on the terrace were not realised.

The palaeochannels

The westernmost 1982 trench was sited within the area of the palaeochannel and revealed its western bank, into which a rectangular pit was cut (Fig 5.11: F10). The pit contained a mass of heat-shattered flint mixed with charcoal, ash and a small amount of struck flint (Table 5.6). An adjoining area 8 m by 6 m was opened up (Fig 5.10: SMX), leading to the recovery of a late Bronze Age Syenite stone mould for casting socketed axes (Fig 10.4), a few sherds of late Bronze Age pottery and some metalworking slag. The conjunction of these finds suggested that there might be an industrial site at the stream edge. This prompted further investigations, in the course of which the south area was extended by further excavation in 1983. The channel, which overall was 14 m wide, comprised a series of successive intercutting stream beds. These are shown in plan and section in Figures 5.11–12. The deposits are described in detail in Table 5.6. The slag subsequently proved to be iron slag.

The long section cut in 1984 from the edge of the excavated area to just east of the present Iwerne stream (Fig 5.10: Area 5) revealed the section simplified in Figure 5.8. The alluvium was interleaved with a series of lenses of colluvium (including E), containing small rounded chalk pieces, which thickened as they approach the Stepleton slopes to the west. Modern analogues for these types of deposit are seen in the fans of sediment deposited downslope of rills and gullies during major erosion episodes on the chalk (Boardman 1992; Bell 1992). Similar Iron Age examples were recorded within dry valley sediments at Kiln Combe in Sussex (Bell 1983), and Strawberry Hill, Wiltshire (Allen 1992). The presence of small rounded chalk pieces indicates that gullies were cutting down to underlying chalk or Pleistocene deposits. Since these fans were interleaved with alluvium it is clear that an unknown proportion of the sediment derived from the slope would have been transported by stream activity and reworked as alluvium on the valley floor.

The north area

A single trench was opened in 1983 to examine the densest concentration of burnt flint (Fig 5.10: Area 2) which proved to be a burnt mound. Further trenches were excavated to the north and south in 1984 (Fig 5.10: Areas 2X, 3, 4).

Coombe Rock lay at the base of the sequence, as in the south area. It was succeeded by water-laid clays and silts, which were charcoal-stained in part of Area 2X. Patches of palaeosol survived (eg Fig 5.13: L1d) and there were several probably natural features beneath the burnt mound, of which few were known at that time in the south-west of England. Finds from the palaeosol include an end scraper on a blade with elaborate trimming on both lateral edges (see Saville, 10.2.9), and animal bone fragments (see Legge, 8.4). One pre-mound feature was clearly deliberately constructed. EWM83 F9 was a steep-sided trilobate pit measuring 1.40 m across and more than 0.50 m deep. In it were three stone-packed post sockets *c* 0.15 m in diameter (Fig 5.13).

The mound itself was much truncated by the river, by later features, especially the channels of the water meadow, and by ploughing. Its plan is difficult to reconstruct and, especially towards the edges, it is not always possible to be sure whether the deposit was *in situ* or reworked. It extended for approximately 17 m along the river, and measured at least 8 m across, its south edge lying within Area 2X and its north edge in the south-west part of Area 3, some of it remaining unexcavated to the west of Area 3. At its edges a thickness of as little as 0.02 m survived. It was deepest in a linear depression, probably a former channel, where it survived up to 0.35 m thick. It was made up of soil with a very high density of burnt flint. In Area 2, EWM83 L1A, a black layer with much charcoal and burnt flint, graded westward into EWM83 L4, in which there was much burnt flint but less charcoal. In Area 4, the deposit was divided into EWM84 L4 and L4A. In a deeper, undisturbed area was the upright lower base of a Deverel-Rimbury vessel, with the stump of its wall remaining, next to a red deer antler pick (Fig 5.14). Other finds from the mound included further Deverel-Rimbury sherds, a small amount of relatively undiagnostic struck flint (see Saville, 10.2.9), an unworked shale fragment, and unidentifiable animal bone fragments (see Legge, Ch 8). Over 180 kg of calcined flint were recovered (see Saville, 10.2.9). Charcoal from within and beneath the mound was predominantly of scrub species, mainly Maloideae and *Prunus* sp (see Austin *et al*, 6.1). Three bulked charcoal samples from within the mound were dated to 1600–1260 cal BC (3160±70 BP; HAR-6529), 1520–1120 cal BC (3090±80 BP; HAR-6530) and 1500–1120 cal BC (3070±70 BP; HAR-6531; Fig 4.20; Table 4.1).

Fig 5.14 Everley Water Meadow. North area. Pot base and antler pick in burnt mound. Scale in centimetres

The edges of the mound were directly under the ploughsoil, but most of it remained sealed by water-laid deposits. The ubiquitous alluvium was interspersed with layers and lenses of gravel and chalky material, like those in sample column 2, which are described below. Later ditches and gullies were cut through these deposits. Most of them probably related to the water meadow, notably a straight ditch surviving to 1.50–2.30 wide and *c* 0.50 m deep with shelving sides and a flat bottom (EWM84 F7), which ran on a straight north–south course through Areas 4 and 3 and into Area 2. Within this ditch in Area 4 was a subrectangular depression measuring *c* 4 m × 1.80 m, extending up to 0.20 m below the base of the ditch, with at least five postholes set around its edges. At its centre was a yet deeper ovoid area (EWM84 F7A), measuring *c* 1.80 m × 1.50 m, flanked by a single large posthole with a postpipe 0.20 m in diameter. While these features are difficult to interpret in detail, their location in the ditch suggests that they were the remains of a hatch or sluice. Most of the smaller gullies in both north and south areas ran on a similar alignment. They would seem to have been elements of a system like those described by Whitehead (1967) and Cook (1994), although the scale of the excavation was insufficient to elucidate its plan. If the structure in F7 was indeed a hatch, it would suggest that the ditch was a main or carrier. Not all the later ditches were of the same date or function. Once F7 was silted, a smaller gully (EWM84 F3) was cut through it, extending to either side and crossing it at an oblique angle. Since F3 cannot have drained into or taken water from a silted channel, it must reflect later activity. Insofar as any of the now (2004) missing pottery from these features was identified, it was of Roman and medieval date. Both are likely to have been redeposited.

The molluscs

Martin Bell and Michael J Allen

Four columns of mollusc samples were taken from areas of the site with contrasting sedimentary histories. Work has been concentrated on sample column 2 from Area 2X in the north area, immediately south of the burnt mound (Fig 5.10). Part of the Bronze Age burnt mound was intact on the channel bank and sealed a buried soil (samples 12 and 13). The channel here contained sediments with much burnt gravel and Bronze Age finds. In the south area the channel deposits contained both Bronze Age and Romano-British artefacts and parts at least of the channel fill were apparently reworked in the Romano-British and medieval periods. Here there is less certainty regarding which of the lower channel samples can be attributed to the Bronze Age (Table 5.6). Sample column 1 was collected in 1982 from a part of the channel that was subsequently shown to have evidence of Romano-British reworking; consequently this column has not been analysed. Sample column 4 from Area 1 is a sequence of samples taken from the central area of the channel in 1983 (Fig 5.12). Area 5, the machine-cut trench which extended the same cutting in 1984, produced sample column 3 through the alluvial/colluvial interface shown in Figure 5.8.

Groupings of freshwater species (moving water, ditch, catholic and slum species) follow Sparks (1961). Many of the samples come from stream channels and will be partly allochthonous, ie derived from various habitats; this needs to be borne in mind in their interpretation. In some cases the sedimentary context suggests that the molluscs will be mainly autochthonous, ie they lived *in situ*. These include an old land surface below the burnt mound (sample 12) and overbank alluvial sediments in the upper channel fills: sample column 2, 0.17–0.45 m (which also contains a colluvial component) and 0.58–0.81 m and sample column 3, 0.24–0.64 m. These assemblages can be compared with the molluscan taxocenes defined on the basis of previous studies of chalk river valley floor assemblages (Evans *et al* 1992; Davies *et al* 1996; Davies 1998).

On the mollusc diagram freshwater species have been plotted as percentages over and above the land species (Fig 5.15). The numbers of bivalves have been divided by two to give total of individuals but the bivalves (*Pisidium* spp) have not generally been

identified and were mostly fragmentary. Species diversity indices have been calculated for the terrestrial component of the assemblages (Tables 5.7–5.9).

Sample column 2

The stratigraphy can be briefly summarised as follows. Glynis Jones' identifications of the charred plant remains and Phil Austin's identifications of the charcoal from each sample are appended, excluding the indeterminate fragments:

0–0.17 m. Cultivated topsoil (Ap). Brownish-black (10YR 3/2) silt loam with fine flint sand and 15% medium flint gravel. 2 fragments cf *Quercus* sp, 2 fragments Maloideae.
0.17–0.45 m. Clay alluvium with some colluvium (D). Brownish-black (10YR 3/2) clay loam mottled and gleyed. 10% medium flint gravel, 20% small rounded chalk pieces. 10 grains *Triticum* cf *aestivum*, 8 grains *Triticum* sp, 1 grain cf *Hordeum* sp, 7 grains indeterminate cereal, hazelnut shell fragments, 1 seed *Vicia/Larythus*, 1 seed *Galium aparine*, 23 fragments *Quercus* sp, 7 fragments *Corylus avellana*, 14 fragments *Corylus/Alnus*, 6 fragments Maloideae, 1 fragment *Prunus* sp, 1 fragment cf *Fraxinus excelsior.*
0.45–0.58 m. Gravel band (?E). Brown (10YR 4/4) mottled and gleyed. Clay loam with 70% stones (40% flint, 30% small rounded chalk). 3 grains *Hordeum* sp, 5 fragments cf *Quercus* sp, 2 fragments Maloideae, 2 fragments cf *Prunus* sp.
0.58–0.81 m. Clay (D). Greyish-yellow (10YR 4/2) clay mottled and heavily iron-stained on top, manganese stained and gleyed below. 2% small chalk pieces in top, stone-free below. 2 grains *Triticum* sp, 1 grain *Hordeum* sp, 4 fragments Maloideae, 2 fragments *Quercus* sp, 1 fragment *Fraxinus excelsior.*
0.81–0.92 m. Gravel containing burnt flint (G, J). Dark greyish-yellow (2.5Y 5/2) chalky gravel. 30% burnt flint and 30% rounded flint gravel. Relates to, or derived from, the Bronze Age burnt mound. A middle Bronze Age base fragment was found in this layer (L13A) nearby in the cutting. 1 grain *Triticum* sp, 1 grain *Hordeum* sp, 2 fragments *Quercus* sp, 5 fragments Maloideae or cf Maloideae, 1 fragment cf *Betula* sp, 1 fragment *Corylus/Alnus.*
0.92–1.14 m. Sandy clay (L). Yellowish-brown (2.5Y 5/3) sandy, iron-stained in places. 10% small rounded chalk pieces. Bronze Age or earlier. 1 fragment cf *Quercus* sp, 2 fragments *Corylus/Alnus*, 1 fragment cf Maloideae, 1 fragment *Prunus* sp, 3 fragments cf Salicaceae.
1.14+ m. Coombe Rock (P) with 40% rounded flint gravel, iron-stained.

In addition spot samples were also analysed:

Samples 12 and 13. A thin palaeosol (N). Very dark grey (7.5YR 3/1) horizon from below the Bronze Age burnt mound itself. 63 fragments Maloideae, 31 fragments *Prunus* sp, single fragments of *Corylus avellana*, *Fraxinus excelsior*, *Quercus* sp, *Rhamnus catharticus*, Salicaceae.

Sample 14. The fill of ditch EWM84 F7, briefly described above, with (?redeposited) medieval finds which may relate to the operation of the water meadows. 16 fragments *Quercus* sp, 2 fragments *Corylus avellana*, 1 fragment *Corylus/Alnus*, 5 fragments *Prunus* sp, 2 fragments Maloideae, 1 fragment cf *Acer campestre*, 1 fragment Salicaceae.

The results of molluscan analysis are shown in Figure 5.15 and Table 5.7. The most striking aspect of the assemblage is that the proportion of freshwater species in this column is surprisingly small, *c* 15% at the base, never more than 20% and down to 10% above 0.45 m. Furthermore, there is only limited evidence among the freshwater species for those clearly associated with *moving* water. In the bottom two samples (Unit L), below a layer of calcined flints corresponding to the burnt mound, the moving water group is represented only by single shells of *Bithynia tentaculata* and *Physa fontinalis*, and the ditch group by single shells of *Gyraulus albus* and *Ancylus fluviatalis*. More abundant were *Lymnaea truncatula* and *Lymnaea peregra* which do not demand moving water. At no point in the column is there a pronounced peak of moving water species such as would clearly indicate the base of the watercourse. Of particular interest among the freshwater assemblage is *Myxas glutinosa*, which was present until at least the Romano-British period (Unit D). Today it is a rare and endangered species found in Snowdonia and one site on the Thames, but it was once much more extensively distributed (Kerney 1999, 57).

The terrestrial assemblage is in dramatic contrast to the restricted assemblages from the broadly contemporary colluvial deposits on the other sites; it is richer and more diverse, particularly below *c* 0.58 m. The assemblage as a whole consists of shade-loving species, particularly *Carychium tridentatum, Discus rotundatus, Aegopinella nitidula* and *Oxychilus cellarius*, but no species predominates and the assemblage is most notable in terms of its variety. Of special note is the presence, again until Romano-British times, of *Vertigo pusilla* which today is restricted to a patchy relict distribution (Kerney 1999, 91) and does not occur south of Bristol though it was once more widespread. Also present is *Vertigo moulinsiana,* a species found close to rivers in calcareous areas which has declined in the later Holocene and is not now recorded in this catchment but occurs within a few miles (Drake 1999). Marsh species also occur in small numbers, eg *Succinea/Oxyloma, Vertigo antivertigo* and *Zonitoides nitidus.* There were two pronounced horizons with fewer shade-loving species, both corresponding to layers of gravel. The lower is at 0.81–0.92 m and comprised calcined flint associated with the burnt mound (Unit G). Here the decline in the proportion of shade-loving species is mirrored by an increase in species of catholic ecological preferences particularly Limacidae and *Trichia hispida*. This seems to reflect a genuine

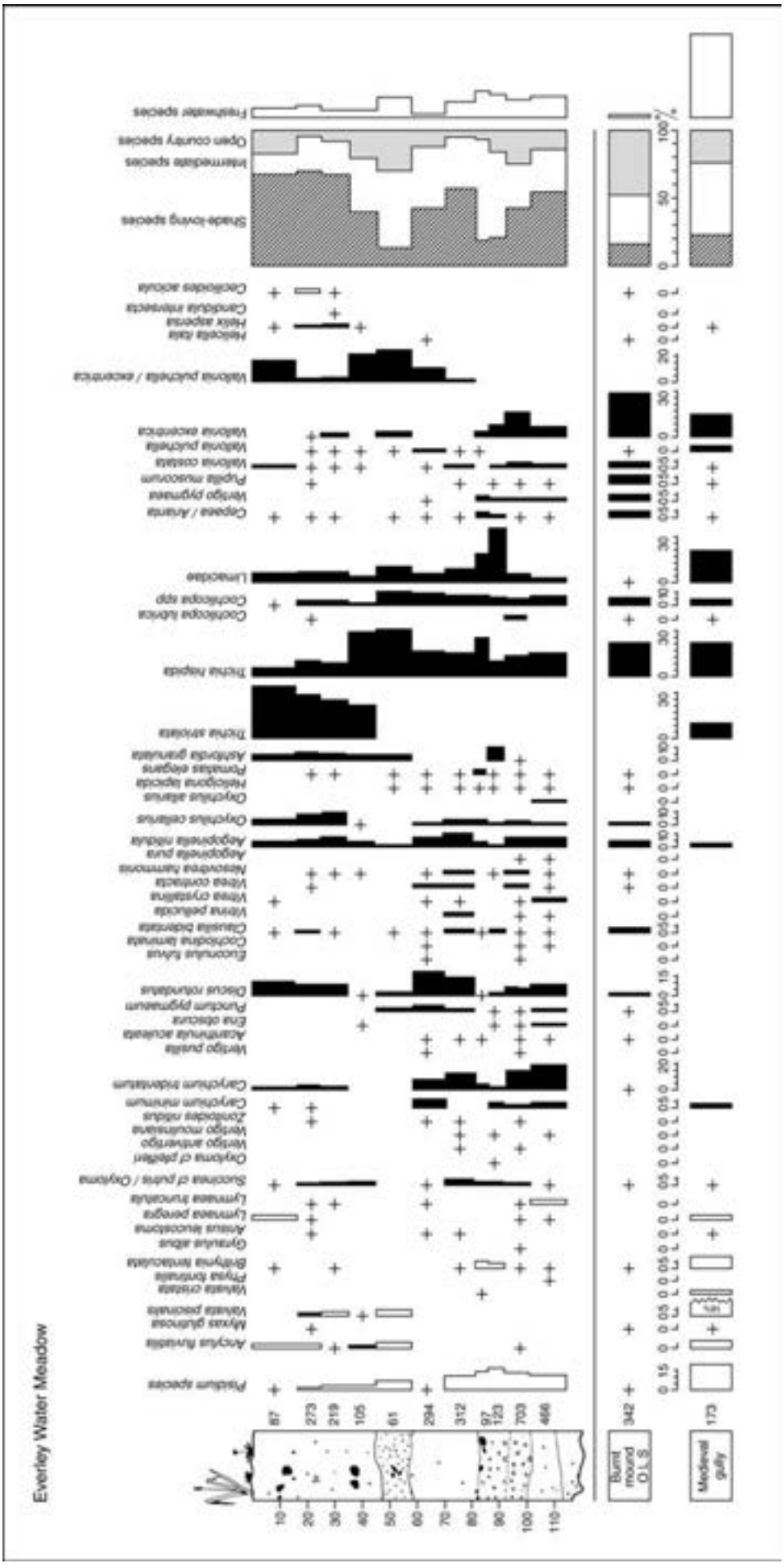

Fig 5.15 Everley Water Meadow. Mollusc Column 2.

Table 5.7 Everley Water Meadow: table of molluscs from column 2

Totals exclude *C acicula*. Species diversity is calculated on the terrestrial assemblage which is assumed to be autochthonous
+ = Taxa reported from winterbournes with intermittent flow • = Taxa reported from winterbournes with perennial flow

	Sample	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*
	Context/feature												*burnt mound*		*gully*
	Depth (cm)	*101–114*	*92–101*	*86–92*	*81–86*	*70–81*	*58–70*	*45–58*	*35–45*	*25–35*	*17–25*	*0–17*	*spot ols*	*spot*	*spot*
	Wt (g)	*1815*	*1688*	*2000*	*2000*	*1716*	*2000*	*2000*	*1916*	*2000*	*2000*	*2000*	*6200*	*2000*	*2000*
	Pomatias elegans (Müller)	5	5	1	3	1	+	+	–	+	+	–	+	–	–
	Carychium minimum (Müller)	21	13	3	–	–	19	–	–	–	2	1	–	–	2
	Carychium tridentatum (Risso)	67	84	2	3	33	20	–	–	5	9	2	2	+	–
	Succinea cf *putris/Oxyloma*	3	10	2	2	11	1	–	3	5	5	1	3	–	–
	Oxyloma cf *pfeifferi* (Rossmässler).	–	–	1	–	–	–	–	–	–	–	–	–	–	–
	Cochlicopa lubrica (Müller)	–	19	–	–	–	–	–	–	–	1	–	1	–	1
	Cochlicopa spp	29	29	6	6	23	25	5	2	8	9	1	20	–	3
	Vertigo pusilla Müller	–	1	–	–	–	1	–	–	–	–	–	–	–	–
	Vertigo antivertigo (Draparnaud)	–	2	–	–	1	–	–	–	–	–	–	–	–	–
	Vertigo pygmaea (Draparnaud)	9	12	2	2	–	1	–	–	–	–	–	17	–	–
	Vertigo moulinsiana (Dupuy)	1	–	1	–	1	–	–	–	–	–	–	–	–	–
	Pupilla muscorum (Linnaeus)	3	7	1	–	1	–	–	–	–	1	–	22	–	1
	Vallonia costata (Müller)	12	24	2	–	5	3	–	1	2	3	2	12	–	1
	Vallonia pulchella (Müller)	–	–	–	–	4	1	1	1	1	2	–	1	–	3
	Vallonia excentrica Sterki	30	108	11	3	–	–	2	–	6	1	–	106	1	11
	Vallonia pulchella/excentrica	–	–	–	–	5	29	12	20	6	4	12	–	–	–
	Acanthinula aculeata (Müller)	5	3	–	1	1	2	–	–	–	–	–	1	–	–
	Ena obscura (Müller)	6	9	2	–	–	–	–	1	–	–	–	–	–	–
	Punctum pygmaeum (Draparnaud)	6	7	1	–	6	11	1	–	–	–	–	3	–	–
	Discus rotundatus (Müller)	30	38	2	1	36	50	2	+	17	21	8	8	–	–
	Vitrina pellucida (Müller)	1	1	–	–	7	–	–	–	–	–	–	–	–	–
	Vitrea crystallina (Müller)	13	3	–	–	2	4	–	–	–	–	1	–	–	–
	Vitrea contracta (Westerlund)	2	11	–	–	6	6	–	–	–	1	–	3	–	–
	Nesovitrea hammonis (Ström)	4	11	1	–	6	2	–	1	2	1	–	2	–	–
	Aegopinella pura (Alder)	3	2	–	–	–	–	–	–	–	–	–	–	–	–
	Aegopinella nitidula (Draparnaud)	28	40	2	3	27	21	1	4	14	13	3	15	1	2
	Oxychilus cellarius (Müller)	9	20	2	2	12	5	–	1	19	19	3	7	–	–
	Oxychilus allairus (Miller)	9	–	–	–	–	–	–	–	–	–	–	–	–	–
	Zonitoides nitidus (Müller)	–	4	–	–	4	1	–	–	–	1	–	–	–	–
	Limacidae	17	44	41	17	28	21	6	5	17	21	6	4	–	13
	Euconulus fulvus (Müller)	–	1	–	–	–	1	–	–	–	–	–	–	–	–
	Cecilioides acicula (Müller)	–	–	–	–	–	–	–	+	1	8	1	1	–	–
	Cochlodina laminata (Montagu)	3	1	–	–	–	1	–	–	–	–	–	–	–	–
	Clausilia bidentata (Ström)	5	4	3	1	7	2	+	–	3	4	+	12	–	–
	Candidula intersecta (Poiret)	–	–	–	–	–	–	–	–	1	–	–	–	–	–
	Helicella itala (Linnaeus)	–	–	–	–	–	4	–	–	–	–	–	2	–	–
	Ashfordia granulata (Alder)	–	–	1	8	–	–	2	4	11	14	3	–	–	–
	cf *Trichia striolata* (C Pfeiffer)	–	–	–	–	–	–	–	24	58	81	31	–	–	11
	Trichia hispida (Linnaeus)	66	89	11	22	47	51	18	32	20	29	6	80	–	17
	Helicigona lapicida (Linnaeus)	+	+	+	1	+	+	+	–	–	–	–	+	–	–
	Cepaea/Arianta spp	2	5	3	3	2	4	1	–	2	1	1	14	–	1
	Helix aspersa (Müller)	–	–	–	–	–	–	–	1	7	6	+	–	–	1
	Land mollusc Taxa	27	29	22	16	23	24	10	13	18	21	14	20	2	12
	Land mollusc total	**389**	**607**	**101**	**78**	**276**	**286**	**51**	**100**	**204**	**249**	**81**	**335**	**2**	**67**
	Theodoxus fluviatilis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	1
+	*Valvata cristata* Müller	–	–	–	1	–	–	–	–	–	–	–	–	–	4
•	*Valvata piscinalis* (Müller)	–	–	–	–	–	–	3	1	5	4	–	–	–	32
	Bithynia tentaculata (Linnaeus)	1	+	3	4	2	–	–	–	1	–	1	3	–	15
• +	*Physa fontinalis* (Linnaeus)	1	–	–	–	–	–	–	–	–	–	–	–	–	–
+	*Lymnaea truncatula* (Müller)	17	8	–	–	–	2	–	–	1	2	–	–	–	–
+	*Lymnaea peregra* (Müller)	6	3	–	–	–	–	–	–	–	3	3	–	–	5
	Myxas glutinosa (Müller)	–	–	–	–	–	–	–	–	–	1	–	1	–	1
+	*Anisus leucostoma* (Millet)	–	–	–	–	1	1	–	–	–	1	–	–	–	2
+	*Gyraulus albus* (Müller)	–	1	–	–	–	–	–	–	–	–	–	–	–	–
• +	*Ancylus fluviatalis* Müller	–	1	–	–	–	–	2	2	3	7	2	–	–	9
	Pisidium (valves) ÷2	49	83	19	14	33	3	4	2	5	6	+	3	–	33
	Freshwater taxa	5	5	2	3	3	3	3	3	5	7	3	3	0	9
	Freshwater totals	**74**	**96**	**22**	**19**	**68**	**6**	**9**	**5**	**15**	**24**	**6**	**7**	**0**	**102**
	Shannon Index (*H'*)	2.73	2.64	2.27	2.25	2.61	2.57	1.88	1.97	2.42	2.35	2.01	2.20	0.69	2.04
	Brillouin Index (HB)	2.60	2.55	2.00	1.98	2.47	2.43	1.64	1.79	2.27	2.21	1.79	2.09	0.35	1.81
	Δ_2	0.91	0.90	0.80	0.85	0.91	0.90	0.80	0.81	0.87	0.85	0.80	0.82	0.50	0.84
	Δ_4	10.23	9.22	4.25	6.02	9.91	9.16	4.43	4.45	7.10	5.81	4.19	4.77	0	5.72
	Totals	**463**	**703**	**123**	**97**	**312**	**292**	**60**	**105**	**219**	**273**	**87**	**342**	**2**	**169**
	Magnetic susceptibility ($\times 10^{-8}$ SI/kg)	3	1	2	2	7	6	10	13	8	8	8	34	31	8

ecological change, rather than a taphonomic artefact of changed sedimentary conditions (Harris 1983). The spot sample taken from a shallow palaeosol below the burnt mound (Unit N) produced a mollusc assemblage broadly matching that from 0.18–1.01 m in sample column 2 (Fig 5.15). This correspondence also strengthens the view that the layer in sample column 2 with fire-cracked flints was indeed contemporary with the burnt mound, rather than derived from it at a later date, like Unit F in the south area. The palaeosol contains a smaller number of freshwater molluscs and more evidence of open-country species which account for 48% with only 15% shade-loving species. The predominant species is *Vallonia excentrica* which generally achieves abundance in grazed grassland (Evans 1993). The assemblage is comparable to taxocenes 1 and 6 of Evans *et al* (1992), which appear to derive from meadow or pasture subject to only occasional winter floods. It is certainly at the drier end of the spectrum of floodplain faunas, as the presence of *Pupilla muscorum* suggests (Davies 1998) and lacking in those species which Robinson (1988) found to be characteristic of regularly flooded pastures in the upper Thames catchment. Clearly there was an episode of open conditions immediately preceding, and at the time of, the burnt mound. Following this the shade-loving species again increase.

The assemblage at 0.58–0.81 m is from an alluvial clay and is likely to be mainly autochtonous. Faunas of similar composition are associated with alder and willow carrs along the banks of the river Test in Hampshire (Davies *et al* 1996).

The second layer of chalk fragments and gravel (between 0.45 and 0.58 m, Unit E) corresponds to a phase of Romano-British colluviation. It appears to mark a hiatus at which a number of changes occur, perhaps relating to an erosion episode. There are fewer molluscs but slightly more *Pisidium, Ancylus fluviatalis* and *Valvata piscinalis*, indicating a greater fluvial component. Shade-loving species decline and a number of them never become abundant again. In the gravel layer they are replaced by species of more catholic ecological preferences. The occurrence of *Helix aspersa* indicates that the sediments above 0.45 m are Romano-British or later.

Following this, some shade-loving species again increase (Unit D) but this time they are entirely dominated by a single species, cf *Trichia striolata*. This identification is given as probable because there is some uncertainly as to whether a particularly striated form of *Trichia* found in some southern British riverine sequences is *Trichia striolata* or a striated variant of *Trichia hispida* (M Robinson pers comm referring to Wallingford, and J G Evans pers comm on Runnymede). Its presence here is paralleled in the riverside sequence at Runnymede Bridge, Surrey (Evans 1980). *Trichia striolata* is abundant today in the fen environments of the Hampshire Test (Davies *et al* 1996). Also noteworthy, though less abundant, is *Ashfordia granulata*, which is also present in the underlying deposits. Today it is a species found along river banks and other damp herbage (Kerney 1999, 190); it occurs in carr and fen environments in the Test Valley (Davies *et al* 1996) but is rarely found subfossil (Evans 1972, 178).

The sediments in Unit D between 0.17 and 0.45 m contained small chalk pieces, demonstrating a significant colluvial component. It is thus noteworthy that the molluscs from this layer show little evidence of the restricted range of open-country species which we have seen in these deposits in Coombe Bottom and Stepleton lynchet. Presumably the assemblages from more favourable environments in the valley centre have greatly diluted the faunas from less favourable, arable environments upslope from which a proportion of these sediments were derived. They also contain an alluvial component and the assemblages have similarities with Taxocene 1 (Evans *et al* 1992), which appears to indicate meadow/pasture although in this case there is also evidence of shade, probably along the stream banks.

Creation of the water meadows from the eighteenth century presumably accounts for the continued presence of some freshwater species after channelling of the stream, but there is no clear species change that we can associate with the establishment of lush meadows, although evidence for this may well have been destroyed by the recent cultivation of the surface horizons (Unit Ap). A spot sample (14) from ditch EWM84 F7 east of the palaeochannel clearly relates to the upper part of the sample column 2 sequence, as the presence of cf *Trichia striolata* shows. This contained a much larger proportion of moving water species than any other sample; the ditch probably formed part of the irrigation system of the water meadows.

Sample column 3

The location of this column in Area 5 is shown in Figure 5.8, and the results are presented in Tables 5.8–9. Because the mollusc numbers are low, the results are not presented graphically. Phil Austin's identifications of the charcoal from each sample are appended, excluding the indeterminate fragments. The stratigraphy sampled is summarised as follows:

0–0.14 m. Cultivated topsoil.
0–24–0.43 m. Alluvium with a few rounded small chalk pieces.
0.43–0.64 m. Alluvium with small rounded chalk pieces. 13 fragments *Quercus* sp, 2 fragments *Corylus avellana*.
0.64–1.00 m. Chalky colluvium. 7 fragments *Quercus* sp, 2 fragments Maloideae, 2 fragments *Prunus* sp.
1.00–1.24 m. Sand with flint gravel, some fire-cracked.
1.00–1.24 m+. Coombe Deposits.

In addition spot samples were taken as shown in Figure 5.8:

Spot sample 24, a lens of chalk pieces and sand in possible channel. 3 fragments *Quercus* sp, 2 fragments *Prunus* sp, 2 fragments *Maloideae*.

Spot sample 25, sandy silt with charcoal, possible channel.
Spot sample 26, clay alluvium with some chalk pieces.

Only one sample in the series, spot sample 24, contains a substantial proportion of freshwater species (57%). This includes moving-water species *Valvata piscinalis* and *Bithynia tentaculata*, the catholic species *Lymnaea peregra* and the slum species *Lymnaea truncatula*. Thus the molluscs confirm the field impression that this lens is probably a stream-bed deposit. As regards the rest of the sequence, freshwater species nowhere account for more than 8% over and above the terrestrial total.

The terrestrial assemblage at the base of sample column 3 does not resemble the basically shade-loving assemblage in the lower half of sample column 2. However, the basal sample in sample column 3 probably corresponds to the sample column 2 sample at *c* 0.81–0.92 m since both contain burnt flints and contain comparable molluscan assemblages. That in sample column 3 comprises 30% shade-loving species, only one open-country species (*Vallonia excentrica*) and a predominance of species of catholic ecological preferences. The assemblages from the overlying chalky colluvium does not find a match in sample column 2 and almost certainly relates to the inferred erosion hiatus in that column at *c* 0.58 m. The assemblage contains very few shade-loving species and is entirely dominated by *Trichia hispida*, *Vallonia excentrica*, the Limacidae and *Vallonia costata;* an assemblage that very closely matches that from chalky, presumably arable-derived, colluvium of the Stepleton lynchet, Coombe Bottom, etc. The presence of *Helix aspersa* in this colluvium points to a Romano-British or later date.

Spot sample 24, the probable channel deposit, and the overlying sediments in the main column, produced assemblages in which cf *Trichia striolata* is overwhelmingly predominant, thus suggesting that these layers relate to the sediments above *c* 0.45 m in sample column 2. They include a smaller, though still significant proportion, of shade-loving species. Although these upper layers are basically alluvium, they contain some small rounded chalk pieces, reflecting a colluvial component the proportion of which decreases with distance from the valley side. The molluscs tell a similar story with a much larger proportion of those species already identified as typical of colluvial assemblages than in sample column 2.

Sample column 4

This column of four samples (Tables 5.8–9) was collected in Area 1 in 1983 and water-sieved in Edinburgh. Many of the samples contained only a few shells but the lowest samples from Units L and K (Fig 5.12: L18, L17) in the base of the sequence contained more useful numbers and provide some additional information. The two lowest samples contain *Trochoidea geyeri* which has been extinct since the late glacial; all other taxa present are also found in the late glacial. Above these is a sample with some post-glacial taxa. The sample from Unit K (L18) is rich in post-glacial Mollusca with a significant number of woodland taxa and may correspond to the samples below 0.92 m in sample column 2. This column indicates the survival of late-glacial chalk meltwater deposits in the base of the channel sequence.

Modern stream samples

To provide comparanda for the mollusc assemblages from the palaeochannels two samples were collected from the modern stream sediments. Sample 16 was sediment from the stream edge close to the excavation, sample 17 from the north edge of the water meadows near the outlet of Ranston Lake. The faunas are listed in Table 5.9; they are much richer in molluscs and of sharply contrasting character when compared to the earlier assemblages. There is a total of 20 freshwater taxa as compared to 11 from the pre-eighteenth-century contexts. Freshwater molluscs dominate both modern samples. Land Mollusca, which predominate in all the prehistoric samples, comprise only 2.7% of the combined land and freshwater total in sample 16, and 8% in sample 17. The logical inference to draw from this is that the creation of the water meadows and the landscape lakes and ponds which lie upstream in Shroton Park and beyond have created a very different stream regime to that which existed before the post-medieval period.

Everley Water Meadow conclusions

Martin Bell and R W Smith

The date of Unit L remains rather unclear. The mollusc samples from the base of this unit in sample column 4 turned out to be late glacial. Elsewhere the unit was thicker and rich in charcoal, especially at its surface (L17a–b). Having excavated this unit, RWS's (pers comm) view was that this unit could not all be late glacial. It may be that the sediments sampled in sample column 4 are a separate earlier deposit or that they include a derived late-glacial fauna. If that is accepted then the presence of much charcoal could relate to either natural fires or to human activity some time between the Mesolithic and the Bronze Age. Extensive Mesolithic flint scatters are known nearby to the east on the chalk escarpment at Iwerne Minster (Summers 1941) and 1 km south in the Iwerne valley at Stourpaine (Palmer 1977, 152). Some of the flintwork from the valley is likely to be of Neolithic date although it is uncertain whether any is contemporary with the causewayed enclosure complex. It is possible that, as RWS (1983) suggested, the charcoal-rich surface of Unit L points to clearance and valley floor activity at around this time.

The burnt mound excavated in Areas 2 and 3 was severely truncated, but enough of its base remained to show that it belonged to the middle Bronze Age.

Table 5.8 Everley Water Meadow: table of terrestrial molluscs from columns 3 and 4, and modern stream samples 16 and 17

All totals exclude *C acicula*. Species diversity is calculated on the terrestrial assemblage which is assumed to be autochthonous

	Column 3									*Column 4*				*Mod stream*	
Sample	*25*	*26*	*18*	*19*	*20*	*24*	*21*	*22*	*23*	*K*	*L*	*L*	*L*	*16*	*17*
Depth (cm)	*spot*	*spot*	*106–124*	*85–100*	*64–85*	*spot*	*43–64*	*24–43*	*0–24*		*top 10*	*Mid 10*	*Bot 10*		
Wt (g)	*860*	*2000*	*2000*	*2000*	*2000*	*1800*	*2000*	*1750*	*2000*					*732*	*1482*
Pomatias elegans (Müller)	1	+	2	+	2	–	4	1	+	–	–	–	–	–	1
Carychium tridentatum (Risso)	–	–	2	–	–	–	1	2	1	4	–	–	–	cf 6	–
Carychium sp	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Succinea cf *putris*/*Oxyloma*	–	–	2	2	1	–	1	3	–	8	4	1	10	8	1
Cochlicopa lubrica (Müller)	–	–	–	1	–	–	2	–	–	–	–	–	–	–	–
Cochlicopa spp	1	+	6	3	2	2	4	2	2	6	–	–	–	–	1
Columella columella (Martens)	–	–	–	–	–	–	–	–	–	1	1	1	1	–	–
Vertigo pusilla Müller	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Vertigo antivertigo (Draparnaud)	–	–	–	–	–	–	–	–	–	4	4	–	–	–	–
Vertigo pygmaea (Draparnaud)	–	–	–	2	–	1	–	–	1	–	–	–	–	–	–
Vertigo spp	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–
Pupilla muscorum (Linnaeus)	–	–	–	–	–	–	–	–	–	+	4	15	6	1	–
Vallonia costata (Müller)	–	–	1	4	2	1	5	2	15	1	3	3	3	–	–
Vallonia pulchella (Müller)	–	–	–	2	1	4	4	2	4	–	3	5	3	–	1
Vallonia excentrica Sterki	–	3	6	24	44	6	2	2	12	4	–	3	–	–	–
Vallonia spp	–	–	–	–	–	–	22	13	–	–	–	2	–	–	1
Acanthinula aculeata (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
Ena cf *obscura* (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
Punctum pygmaeum (Draparnaud)	–	–	–	–	–	–	–	–	–	+	+	1	–	–	–
Discus rotundatus (Müller)	1	+	+	–	+	+	–	15	8	+	–	–	–	2	12
Vitrina pellucida (Müller)	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–
Vitrea crystallina (Müller)	–	–	1	–	–	–	–	2	–	–	–	–	–	2	–
Vitrea contracta (Westerlund)	–	–	–	–	–	–	–	–	–	4	–	–	–	2	–
Vitrea spp	–	–	–	–	–	–	–	–	–	–	+	–	–	–	1
Nesovitrea hammonis (Ström)	–	–	2	–	–	1	2	2	1	1	–	–	–	1	1
Aegopinella nitidula (Draparnaud)	–	–	1	–	1	1	–	2	2	22	2	–	–	cf 4	4
Oxychilus cellarius (Müller)	–	–	4	–	–	1	3	5	2	–	–	–	–	–	–
Aegopinella/*Oxychilus* sp	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2
Zonitoides nitidus (Müller)	–	–	–	–	1	–	–	–	–	4	–	–	–	–	–
Limacidae	1	–	2	3	7	6	7	3	5	5	2	1	1	3	2
Euconulus fulvus (Müller)	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–
Cecilioides acicula (Müller)	–	–	–	1	–	1	2	–	1	–	–	–	–	–	1
Cochlodina laminata (Montagu)	–	–	–	–	+	–	–	–	–	–	–	–	–	–	–
Clausilia bidentata (Ström)	–	–	+	–	+	–	1	+	2	13	–	–	–	–	–
Clausiliidae	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1
Candidula intersecta (Poiret)	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
Cernuella virgata (da Costa)	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–
Helicella itala (Linnaeus)	–	–	–	–	1	–	+	–	–	–	–	–	–	1	–
Trochoidea geyeri (Soós)	–	–	–	–	–	–	–	–	–	4	7	9	7	–	–
Helicellids	–	–	–	–	–	–	–	–	11	–	–	–	–	–	–
Ashfordia granulata (Alder)	–	–	8	–	–	4	–	1	–	–	–	–	–	1	2
cf *Trichia striolata* (C Pfeiffer)	–	–	–	1	2	22	59	26	13	–	–	–	–	–	–
Trichia hispida (Linnaeus)	3	5	24	33	33	4	9	2	7	–	–	–	–	8	11
Helicigona lapicida (Linnaeus)	–	–	+	–	+	–	–	–	–	–	–	–	–	–	–
Cepaea/*Arianta* spp	–	–	5	1	+	–	–	1	–	2	–	–	–	1	1
Helix aspersa (Müller)	+	+	–	3	+	+	1	+	1	–	–	–	–	–	1
Land taxa	6	5	15	11	12	12	14	17	16	21	11	10	8	16	15
Land mollusc totals	**7**	**8**	**67**	**79**	**97**	**53**	**127**	**86**	**88**	**86**	**31**	**32**	**32**	**45**	**44**
Shannon Index (*H'*)	1.61	0.66	2.19	1.67	1.47	1.94	1.88	2.32	2.40						
Brillouin Index (HB)	0.96	0.50	1.91	1.49	1.32	1.67	1.72	2.05	2.14						
Δ_2	0.80	0.47	0.83	0.72	0.67	0.78	0.75	0.85	0.89						
Δ_4	0	1.15	5.23	2.73	2.11	3.92	3.04	6.18	8.92						
Magnetic susceptibility ($\times 10^{-8}$ SI/kg)	9	5	6	12	6	6	6	8	10	–	–	–	–	–	–

Table 5.9 Everley Water Meadow: table of aquatic molluscs from columns 3 and 4, and modern stream samples 16 and 17

All totals exclude *C acicula*
\+ = Taxa reported from winterbournes with intermittent flow • = Taxa reported from winterbournes with perennial flow

	Column	*Column 3*									*Column 4*				*Mod stream*	
	Sample	*25*	*26*	*18*	*19*	*20*	*24*	*21*	*22*	*23*	*K*	*L*	*L*	*L*	*16*	*17*
	Depth (cm)															
	spot	*spot*	*106–124*	*85–100*	*64–85*	*spot*	*43–64*	*24–43*	*0–24*		*top 10*	*Mid 10*	*Bot 10*			
	Wt (g)	*860*	*2000*	*2000*	*2000*	*2000*	*1800*	*2000*	*1750*	*2000*					*732*	*1482*
	Theodoxus fluviatilis (Linnaeus)	–	–	–	–	–	–	–	1	+	–	–	–	–	–	–
+	*Valvata cristata* Müller	–	–	–	1	–	–	–	–	–	–	–	–	–	48	14
•	*Valvata piscinalis* (Müller)	–	1	–	3	1	6	5	1	1	–	–	–	–	12	3
	Potamopyrgus antipodarum (Gray)	–	–	–	–	–	–	–	–	–	–	–	–	–	2	25
	Bithynia tentaculata (Linnaeus)	+	13	1	–	1	2	1	–	+	–	–	–	–	10	3
+	*Lymnaea truncatula* (Müller)	–	–	–	–	–	1	–	1	1	5	1	4	1	–	–
	Lymnaea cf *palustris* (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	6	–
	Lymnaea cf *truncatula* (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
+	*Lymnaea peregra* (Müller)	–	1	1	–	1	1	–	1	1	6	–	–	–	51	–
	Lymnaea cf *peregra* (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	14	12
	Lymnaea sp	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1
	Physa fontinalis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	110	14
	Planorbis planorbis (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	26	11
	Planorbis carinatus Müller	–	–	–	–	–	–	+	–	–	–	–	–	–	+	–
	Anisus leucostoma (Millet)	–	–	–	–	–	–	–	–	–	3	2	2	–	–	5
	Anisus vortex (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	196	110
	Bathyomphalus contortus (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	8	15
	Gyraulus albus (Müller)	–	–	–	–	–	–	–	–	–	–	–	–	–	127	44
	Armiger crista (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	4	–
	Hippeutis complanatus (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	20	3
	Planorbis sp	–	–	–	–	–	–	–	–	–	–	–	–	–	34	12
• +	*Ancylus fluviatalis* Müller	–	–	–	–	–	–	2	–	1	2	4	–	–	5	19
	Sphaerium corneum (Linnaeus)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–
	Pisidium henslowanum (Sheppard)	–	–	–	–	–	–	–	–	–	–	–	–	–	3	–
	Pisidium pulchellum Jenyns	–	–	–	–	–	–	–	–	–	–	–	–	–	5	–
	Pisidium/*Sphaerium* (valves) ÷2	–	1	1	2	2	20	2	1	2	8	5	7	–	42	49
	Pisidium sp (valves) ÷2	–	–	–	–	–	–	–	–	–	–	–	–	–	448	116
	Mytlius edulis	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Freshwater taxa	0	4	3	3	4	5	4	5	5	5	4	3	1	19	13
	Freshwater totals	**0**	**16**	**3**	**6**	**5**	**30**	**10**	**5**	**5**	**20**	**10**	**10**	**1**	**1117**	**456**

The functions of burnt mounds are as yet imperfectly understood, but they are particularly common in the Bronze Age (Bradley 1978, 83) and are frequently associated with river banks and settlement. Examples have now been recorded, or are inferred, within almost all the classic Deverel-Rimbury settlements of Wessex from Shearplace Hill to South Lodge, both in Dorset. Pit F10 on the river bank a little further downstream in the south area may well have been contemporary, and the mound was almost certainly the source of the burnt flint incorporated in later deposits here. The socketed axe mould fragment and late Bronze Age sherds from gravels deposited or reworked in Roman or later times reflect activity for which no *in situ* evidence was recovered. The mould, of Syenite from Wales or the south-west, was probably used to cast Stogursey axes, the production of which spanned much of the late Bronze Age (see Needham, 10.1.4). The fragment and the sherds together hold out the possibility of late Bronze Age metalworking and settlement a little way upstream.

In prehistory the valley sediments were characterised predominantly by gravels with some sand bands and finer sediments. These deposits formed within

channel-beds, and point bars of what may originally have been a braided channel system. The first evidence for significant overbank flooding, leading to the wider deposition of alluvium, is in the Romano-British and medieval periods. By this time the landscape was substantially cleared and the slopes were extensively cultivated. Significant amounts of colluvium have been shown to have reached the valley floor in the Romano-British period where reworking took place, contributing sediment for deposition as alluvium. This supports the general model that alluvium deposition on river valleys floors followed widespread clearance and extensive cultivation (Shotton 1978; Limbrey 1983; Limbrey and Robinson 1988).

In the Romano-British period the area was cultivated, following levelling or erosion of the earlier burnt mound; manuring took place at a time when some alluviation was occurring. Further cultivation occurred in the medieval period prior to the post-medieval creation of the water meadows, which comparison of the modern and palaeochannel stream faunas indicates created major change in the character of the river environment. It is striking what a small proportion of freshwater taxa, and especially the moving water group, is present in the pre-eighteenth-century channel deposits. The project sectioned the whole of the lowest part of the valley without locating (or at least sampling) ancient stream deposits which are as rich in freshwater shells as the present stream. The prehistoric stream cannot have occupied the modern course because that lies slightly upslope and we have shown that it was an artificial post-medieval cut through Romano-British and medieval colluvial deposits. This must lead us to question whether the prehistoric to pre-eighteenth-century channels did actually carry year-round moving water similar to the modern stream.

Because of the ecological interest which attaches to chalkland streams there are a number of studies which compare the present-day mollusc faunas of perennial and intermittent sections of winterbourne chalk streams. Lists comparing the mollusc taxa in the two sections have been published for the South Winterbourne in Dorset (Casey and Ladle 1976) and for the Winterbourne, a tributary of the Lambourne in Berkshire (Wright *et al* 1984). These studies provide the basis of the annotations in Tables 5.7 and 5.9, indicating those freshwater taxa found in streams of seasonal and perennial flow. Other studies of the molluscan ecology of winterbournes which have been useful for comparison are Berrie and Wright (1984) and Ladle and Bass (1981). The intermittent sections of these streams have a restricted range of taxa, usually fewer than 10. This compares with 22 freshwater taxa recorded in the present Iwerne stream and 11 taxa recorded in pre-eighteenth-century contexts at Everley Water Meadow. Of these, six taxa (marked by a '+' in Tables 5.7–9) have been recorded from the seasonal sections of winterbournes. Two of the taxa represented by several individuals, *Bithynia tentaculata* and *Valvata piscinalis*, are not recorded from sections of intermittent flow. Two (*Ancylus fluviatilis* and *Physa fontinalis*), which are found in intermittent streams in Dorset, are confined to those sections of the Berkshire Winterbourne with perennial flow (Wright *et al* 1984). Such contrasts in assemblage composition are perhaps explicable in terms of the volume and seasonality of flow in specific winterbournes. It is unfortunate that the fragmentary condition of the *Pisidium* species, and limited time, have prevented their identification, since in the Berkshire Winterbourne study there were different *Pisidium* species in stretches of seasonal and perennial flow (Wright *et al* 1984). The available evidence does, however, show that the prehistoric and early historic Iwerne had an impoverished freshwater mollusc fauna similar to that of winterbourne streams. The presence of some taxa not recorded in streams of intermittent flow suggests that, in common with many chalk streams, while flow was probably greatly reduced in late summer to early winter (Ladle and Bass 1981, fig 2) the flow probably did not totally cease.

There is wider evidence that past variation in chalk streams would have exerted significant influence on the suitability of downland areas for settlement and agriculture. It has been shown that the headwaters of the Wiltshire Kennet near Avebury did not support a perennial stream in prehistory (Evans *et al* 1993). Conversely the South Winterbourne in Dorset, which today has seasonal flow, flowed perennially in the past (Evans and Rouse 1991a). Chalk streams on the South Downs flowed at a higher level and more continuously prior to pumping of the chalk aquifer from the nineteenth century (Bell 1981a, 56–9). Lockwood (1983) has calculated the hydrological effects of deciduous woodland on stream flow, concluding that in wildwood times streams would have had a more seasonal flow with much reduced discharge in summer. However, no marked change in the freshwater mollusc fauna of the Iwerne occurred as the landscape became more open in later prehistory, nor when it was subject to widespread cultivation from Romano-British times. The major change in the character of the river seems to have taken place much later, during the post-medieval period. So marked is the change in river regime suggested by the molluscs that we should consider that water management at this time may have involved a major diversion of the Iwerne headwaters. The geological map shows an extensive area of alluvium and gravel extending west of the Iwerne and north of Hambledon Hill (Fig 1.2). It seems possible that discharge from the headwaters once flowed west into the Stour and was diverted south in the eighteenth century, but this remains speculative and has not been investigated on the ground. Diversion of the river may have been associated both with the creation of water meadows and perhaps landscaping and emparkment up the valley with the making of a small lake at Shroton, all of which would further have enhanced freshwater mollusc diversity.

5.4 Wider comparisons and discussion

Michael J Allen and Martin Bell

Introduction and limitations

The study of Hambledon Hill in the Neolithic is restricted to the hilltop environment itself. There is little evidence for the presence of activity or environments contemporary with the causewayed enclosures and outworks in the surroundings (see Ch 2; RCHME 1996). Indeed, this state of palaeoenvironmental and archaeological evidence is comparable to many other studies of causewayed enclosures on the chalk of southern England. Examples include Maiden Castle, Dorset (Evans and Rouse 1991a; 1991b), Whitesheet Hill, Wiltshire (Rawlings 1994; Rawlings *et al* 2004), Offham, East Sussex (Drewett 1977), and Whitehawk, East Sussex (Russell and Rudling 1996, 51–56). The discussion below is divided into two principal sections: that relating to the Neolithic landscape, and that relating to the later Holocene landscape.

Neolithic

The Neolithic hilltop environment and land-use

Prior to analysis of the environmental evidence the general perception of Hambledon Hill in the Neolithic seems to have been of a cleared grassland landscape. The English Nature (1987) leaflet on the Nature Reserve describes the present grassland community as existing since the time of Neolithic activity. More widely, Barker and Webley (1978) have hypothesised that causewayed camps in general were situated in grassland areas. Certain types of Neolithic site were situated in cleared areas; in the earlier Neolithic long barrows and chambered tombs were usually within clearings of modest size and were frequently places with a history of earlier activity (Bradley 1993, 45) sometimes even represented by, for instance, artefacts or features of Mesolithic date (Allen 1995b; Allen and Gardiner 2002), or evidence of Neolithic activity and cultivation. Later in the Neolithic, henges and cursus monuments were situated in larger cleared areas. Since causewayed enclosures are the most prominent foci of activity by groups which, at Hambledon Hill, at least, were clearly engaged to a significant extent in animal husbandry and crop growing (Jones and Legge, 6.2), it was not an unreasonable deduction that the site would be in a cleared landscape.

That model is not, however, supported by the molluscan evidence. The difficulties of interpreting these ditch faunas have already been discussed at length. It is the case that molluscs will largely reflect conditions local to the point of sampling. The evidence suggests, however, that we cannot discount the entire suite of shade-loving taxa as being a result of local ditch micro-environments and rock-rubble faunas. It seems improbable that such a consistent group of mainly shade-loving Neolithic assemblages would derive from shaded ditches in an otherwise open landscape. The sheer taxonomic range, inclusion of uncommon species and proportions of shade-loving taxa indicate the presence of more extensive shaded habitats. Despite the ambiguity of the recovery methods of the shells, the Shannon and Brillouin indices are close, suggesting near 'total populations', and mirror the indices from shaded habitats at Maiden Castle (Evans and Rouse 1991b). These moderate diversity indices, and constant Δ (delta) indices, suggest the presence of a large, uniform, and moderately complex local habitat more in keeping with mature woodland than many other habitats. The causewayed enclosures seem to have been situated in a landscape where significant woodland remained and clearance was only partial. The environment seems to have become slightly more open in the 400-year life of the early Neolithic site. It is possible that clearance occurred in the later Neolithic, as suggested in Chapter 3 (3.3.2); no samples of that period have been analysed and, given the continued presence of shade-loving taxa in the early Bronze Age, we consider that the main clearance of this landscape is most likely to have taken place in the Beaker and early Bronze Age periods.

Proximity and character of woodland

Less certain is the proximity of the woodland to the enclosures. We have already suggested on the basis of modern analogue studies that most of the molluscs are likely to have reflected the environment within tens of metres of the ditches. While there is no certain evidence from the molluscs that the top of the hill was fully cleared in the Neolithic, the molluscan evidence would allow the possibility that some trees remained within the enclosures. We acknowledge, however, that the existence of the enclosures makes it likely that some clearance took place, but it may not have been much more than the area of the enclosures. Given the problems of interpreting these samples, it is possible that a partly cleared area extended in places to the top of the surrounding steep slopes which are within 200 m of the enclosures. If so, that would have created a partially cleared area of *c* 50 ha (*c* 80 acres), providing vistas over the surrounding lowland. We stress, however, that the evidence points to a wooded, or partly cleared, landscape not a bald grassy hilltop surrounded by woodland.

As regards the character of the tree cover, the molluscan evidence indicates mature deciduous woodland. The assemblage includes rupestral taxa (ie those living on firm dry surfaces such as rocks and trees, Evans 1972, 399). In this case the probable habitat is trees and fallen logs; there are other taxa which are found in moss and leaf litter. This picture accords with the charcoal evidence (see Austin *et al*, Ch 6), which points to

a temporary clearing at an ecotone, including mixed and pure stands of woodland, open and woodland edge areas. All this implies a much more extensively wooded environment than the mixed scrub and long grassland that is today invading the steeper slopes of Hambledon Hill and many other chalklands as a result of reduced grazing pressure from domestic animals and rabbits.

Is this local setting similar to other causewayed enclosures in southern England?

Counter-intuitive as this interpretation of the causewayed enclosure environment may seem, it gains a strong measure of support from comparison with a growing body of environmental evidence from other causewayed enclosures (Evans and O'Connor 1998, 205). Extensive mollusc analyses, from more reliable contexts and better samples, at Maiden Castle (Evans *et al* 1988; Evans and Rouse 1991b), Windmill Hill (Fishpool 1999) and Whitesheet Hill (Allen 2004), all show that woodland survived at the time of the construction of the early Neolithic causewayed enclosures. Certain contexts at both Maiden Castle and Windmill Hill showed evidence of partial and local clearance, similar to that suggested by some of the interior features at Hambledon, but there is also evidence of Neolithic regeneration at Maiden Castle. Major clearance, as at Hambledon, does not take place until the time of Beaker and early Bronze Age activity. The intensively used Windmill Hill causewayed enclosure produced more evidence of clearance, but with the possibility of surviving scrub or woodland during some phases of activity (Evans 1972; Fishpool 1999). Investigations by K D Thomas (1982) of a series of Neolithic enclosures on the South Downs were, like Hambledon, largely based on ditch assemblages, but woodland taxa were predominant throughout. Knap Hill (Connah 1965) has similarly produced a woodland mollusc assemblage. Further afield, in East Anglia, the situation at the wetland edge causewayed enclosure of Etton (Pryor 1998) was rather different. The surrounding landscape seems to have been mainly grazed grassland. A quarter, to half, of the landscape was tree or shrub covered with the enclosure apparently being more open than its surroundings, and dung beetles indicate that the enclosure was used for domesticates.

A chalk hilltop complex, possibly similar to Hambledon but less fully studied, can be seen at Whitesheet Hill, where a Neolithic causewayed enclosure is possibly flanked by other Neolithic enclosures on adjacent spurs separated by a deep dry valley (in this case Swincombe Bottom). At the centre of the complex is an Iron Age hillfort. As in the Hambledon complex, the Neolithic environmental data contemporary with the causewayed enclosure is confined to hilltop features. The deep causewayed ditch (3.8 m) is dated to 3780–3380 cal BC (4800±70 BP, BM-2784; 4820±50 BP, BM-2785) and a number of shallow pits within the enclosure have produced similar dates. Poorly preserved land snail evidence from the coarse rubbly primary fills tentatively indicates some shade but local environs which were generally open, if not comprising long grass. The ditch recut associated with Mortlake-style Peterborough Ware produced snails (Allen 2004) and pollen (Scaife 2004) indicating tall ungrazed grassland and some shrubs (snails) of hazel, oak and *Prunus* (charcoal). However, in contrast to the picture at Hambledon, the local environment (pollen) was largely devoid of trees, but the presence of both *Pteridium* and *Dryopteris*-type spores may indicate that woodland existed prior to clearance (Scaife 2004).

While these comparisons clearly show some contrasts in the environmental settings of causewayed enclosures, what is striking is how many were situated in landscapes which were partly wooded. This must lead us to reject earlier notions that these were necessarily focal points in the agricultural economy of these communities. Increasingly, causewayed enclosures are regarded as peripheral to the main foci of Neolithic land-use (Bradley 1984b, 26–7; C Evans 1988; Gardiner 1991a; Thomas 1991, 32–8; Edmonds 1993, 104; Allen 1997a, 278–9). Indeed they need not have been physically in the centre of the Neolithic 'lived-in' landscape; social meeting points may be better located on the margins of several joining social or physical landscapes, in an ecotonal location, or at the social margin. In such areas Evans and O'Connor (1998, 205) suggest there may even have been deliberate maintenance of woodland through the Neolithic.

People and trees

It has been argued that the creation of concentric causewayed enclosures reflects the boundaries between cleared and wild areas (C Evans 1988). Brown (1997) has made the important point that openings within the wildwood are not necessarily deliberate human acts of clearance. Some may reflect opportunistic utilisation of areas of natural tree throw with which we are becoming increasingly familiar from the more frequent storms of recent years, particularly that on 16 October 1987 (Bell and Walker 1992, fig 1.5). That may be a relevant model for this highly exposed hilltop location from which the molluscan record is more consistent with woodland disturbance and regrowth rather than large-scale clearance. It is particularly noteworthy that in at least one case (Hambledon AF2) we have shade-loving molluscs in a clear example of a tree-throw feature which also contained Neolithic artefacts. Comparable associations are reported by C Evans *et al* (1999) in East Anglia where a plausible case is made that these represent deliberate acts of middening in tree throw features. The point is well made that, in a forested environment, trees are likely to have been 'central to concerns, myths, classifications and values' (C Evans *et al* 1999, 241). As Davies (1988) puts it,

trees stand over and against the generations in a way which demands acknowledgement. Ingold (1993) refers to trees as Chronotopes – places charged with temporality. These observations provide us with a model of earlier Neolithic activity *within* an at least partly wooded landscape which seems to be in better accord with the evidence than the traditional model of a largely cleared agricultural landscape.

How extensive was this woodland?

We cannot define how extensive were any of the woodland tracts defined above. Sampling around the base of the hillslope failed to find contexts contemporary with the Neolithic activity on the hilltop. Further afield locally there are neither sites nor environmental data with which to determine the extent, or range of this woodland. Whether it was just confined to the steeper slopes of the Hambledon complex, or whether woodland and forest extended across much of the wider landscape of the Oxford Clay of Blackmoor Vale and the Tertiary deposits and low rolling chalkland of Cranborne Chase, must remain largely speculation. Some clue as to the nature of this environment may, however, be obtained from examining both local Neolithic landscapes, eg the Allen Valley, Cranborne Chase (Entwistle and Bowden 1991; Allen 1999; 2000a; 2002; French *et al* 2000; 2003) and the Dorchester environs (Allen 1997a; 1997b) and the environment of other Neolithic chalkland monumental landscapes such as Stonehenge (Allen *et al* 1990; Cleal and Allen 1995; Allen 1997c) and Avebury (Smith 1984; Whittle *et al* 1999; Allen 2005a). These are briefly explored below.

Can we see any development of the hill-top land-use and environment during the Neolithic?

Unlike some other Neolithic monuments, there is no clear evidence for major clearance, or local woodland regeneration, as suggested at Maiden Castle, for instance. Woodland encroachment is also suggested at Offham, and at Whitesheet Hill (Allen 2004). In the Hambledon complex, however, we can tentatively suggest slightly more open conditions on the hilltop in later contexts in the Hambledon Hill enclosure and more so in the post-Neolithic Stepleton outwork samples.

The local Hambledon landscape

The Hambledon landscape produced no evidence of Neolithic colluviation and this accords with the evidence for only limited and local clearance at this time. A similar absence of Neolithic colluvium has been revealed by other chalkland landscape surveys in the South Downs, Sussex (Bell 1983; Allen 2005b), in the Maiden Castle landscape in Dorset (Evans 1991, 251; Middle Farm, Dorset, Allen 1997b), in Wiltshire around Stonehenge (Richards 1990) and in the area of the Wessex Linear Ditches Project (Bradley *et al* 1994). Areas which emerged as a major foci of later Neolithic ceremonial activity were extensively cleared during the Neolithic, as at Avebury (Smith 1984), Stonehenge (Allen *et al* 1990; Allen 1997c), and, in Dorset, Mount Pleasant (Evans and Jones 1979) and the Cranborne Chase Cursus (Barrett *et al* 1991).

Neolithic soil profiles seem to have been stripped from the valley, footslope and lowland locations later in the Holocene, perhaps associated with more extensive activity in the later Bronze Age or Iron Age. The removal of these Neolithic soils in valley locations (cf Allen 1992), may relate to periods of intensive activity (clearance, preparation of ground for construction, tillage) in the earlier Bronze Age and relate to renewed activity on the hill at this time. In common with many areas of less intensive later Neolithic activity, such as the South Downs and the Maiden Castle area, Hambledon Hill seems to have been extensively cleared in the Beaker period/early Bronze Age.

Soil erosion

It has been widely accepted that in the mid Holocene much of the chalkland carried brown forest soils (eg Limbrey 1975) for example in the Maiden Castle landscape (Evans 1991), but see Allen (2002) and French *et al* (2000; 2003). The rich dark soil with woodland molluscs found in some Neolithic features would represent remnants of this soil, which in many parts of the hill seems to have been highly calcareous. Unfortunately the Hambledon project produced no surviving Neolithic buried soils. Taylor (1960) describes a 'typical rendzina soil' beneath a bank sectioned by Bonney in 1960 and possible truncated soils were noted in the post-excavation stages from site P (see 3.3.2, 3.3.4). However, there was no evidence of a stoneless A-horizon and the profile was almost certainly truncated since it was overlain by a hump in the ploughsoil rather than by an undisturbed bank (see 3.3.2). It may therefore represent an area protected from solution and mechanical erosion below a subsequently largely eroded bank. The effect of chalk dissolution on the archaeological record – originally described by Atkinson (1957) – remains difficult to quantify because it is so often complicated by the erosive effects of tillage. It has, since the early days of the project, been accepted that the archaeological features on Hambledon Hill have been truncated as a result of this combination of processes, and estimates of between 0.30 m and 1 m are made in Chapter 1 for various areas of the hilltop. Former thicker soils of this order would be in line with the molluscan evidence for woodland cover surviving into the Neolithic. We can also approach this quantification problem by calculating back, in a very crude way, from the cross-sectional area of the colluvial deposits investigated in slope and valley bottom reservoirs (Bell 1986). Thus in Coombe

Bottom we have the product of about 0.20 m of erosion from the catchment and on a transect down the east end of the Stepleton spur from the Stepleton lynchet to the base of the slope we have a product of 0.06 m. These figures are of a similar order of magnitude to those calculated from other areas (Bell 1986; R Evans 1990). This is based only on the erosion products and does not include the effects of dissolution processes. The surviving colluvia must represent minima. We presume that the former earlier Holocene soils have been scoured out, probably at the time of Bronze Age clearance, from the Coombe Bottom valley. The full extent of colluvial deposits is unlikely to have been identified by this limited study, and it is clear from the investigation of the colluvial alluvial interface in Everley Water Meadow that colluvium has been reworked by stream action.

The wider Neolithic landscape

The interpretation of Hambledon Hill landscape provides some detail within which to understand the communities on and around Hambledon Hill. These communities, however, ranged across a much wider landscape, and thus some comparison with that wider landscape allows us to view the Hambledon data more holistically. The examination of this wider landscape examines two sets of data: firstly the as yet unpublished data from the Whitesheet Hill causewayed enclosure, and Iron Age footslope colluvium on the lower slopes of that hill, and secondly the data from Cranborne Chase. In this area the published work of Entwistle and Bowden (1991), provides a general basis, but much more detailed results are now available from the recent research by one of us (MJA) in the Allen Valley and at Down Farm (Allen 1999; 2000a; 2002; French *et al* 2000; 2003; 2007). We have compared the local landscape with similar chalkland monuments listed above, such as Maiden Castle etc; however, perhaps more pertinent to the Neolithic landscape to which Hambledon Hill related, is the detailed work on the reconstruction of the Neolithic landscape of a part of Cranborne Chase (the Allen Valley), on the edge of which Hambledon Hill lies. The head of the Allen Valley, and a concentration of Neolithic monuments therein, lies only 12 km from Hambledon Hill. Research conducted initially by Bowden and Entwistle (1991) provided the basis for more detailed research (Allen 1998; 2000a; 2002; French *et al* 2000; 2007) of detailed composite analysis of a number of Neolithic monuments and earlier Bronze Age sites (Allen 1998), which will provide maps showing the development of the vegetation mosaic in the area (cf Allen 2000b).

In the Allen Valley and on the Down Farm chalkland plateau of Cranborne Chase, we can see that the major changes in this landscape occurred not in the Bronze Age, as perceived by Barrett *et al* (1991), but considerably earlier (French *et al* 2000; 2003; 2007; Allen 2002). Land snail evidence indicates that, apart from the very early monuments (long barrows), which initially existed in clearings in woodland, many of the succeeding Neolithic monuments (cursus, henges etc), were established in a largely open landscape. Large-scale augering (French *et al* 2000; 2003; 2007) has demonstrated that the soils had become denuded and rendzinas formed by, at latest, the later Neolithic and that, in contrast to many other areas of the chalkland, neither extensive nor deep colluvial deposits exist. In many ways this equates with the Neolithic landscape of both Dorchester and Stonehenge. Indeed the mosaic pattern of vegetation postulated from high-resolution mapping of past landscapes (cf Allen 2000b) demonstrates the landscape diversity at this time.

The post-Neolithic landscape of Hambledon Hill and its surroundings

We have concluded that woodland persisted on and around the Hambledon hilltop throughout the period of the early Neolithic site. Clearance was underway by the period of Beaker and Bronze Age activity on the Stepleton Spur. The chalk upland of the hill and Coombe Bottom was cleared during the Bronze Age and some colluviation occurred. By contrast the Iwerne valley retained significant tree cover throughout the Bronze Age and, although the old land surface below the burnt mound shows that there was cleared grassland on the banks of the stream at that time, regeneration followed. The scarcity of Iron Age artefacts from the hilltop excavations, given the proximity of two major hillforts, implies that at this time the hilltop may have been given over to pasture. Possibly in the Bronze Age, and certainly by Iron Age and Romano-British times, there were fields on the Stepleton Spur. Many of the other fields on the sides of Hambledon and its spurs are likely to be of similar date, although there is evidence that some pre-date the hillfort. This was the period of greatest arable activity in the landscape, when colluvial deposits were deposited in Coombe Bottom and at the base of the Stepleton slope in the Iwerne valley. The valley floor was cleared and cultivated during the Romano-British period but the stream sides remained shaded and are likely to have retained tree cover. In post-Roman times there is some ridge and furrow on the Shroton spur and in the hillfort but the upland is likely to have been mainly pasture with arable around the valley bottom settlements, as indicated by artefact distributions pointing to arable and manuring in Coombe Bottom and the area which later became Everley Water Meadow.

The really big change in the valley floor landscape comes in the eighteenth century when the water meadows were created. These are rich pastures on which early lambs could be fattened, hay produced and then cattle maintained in the late summer (Doherty 1985). The practice created a distinctive habitat type in many river valleys in Wessex; a few still survive, for instance near Salisbury (Cowan 1982; Sheail 1971) and are

important for nature conservation purposes. To create the water meadows at Everley a new channel was cut slightly upslope, and leading from this were irrigation channels. The diverse range of freshwater molluscan taxa found in the Iwerne stream today is in sharp contrast to the smaller percentage and much narrower species range of freshwater taxa found in the Iwerne channels of prehistoric to medieval date. It is concluded that the pre-eighteenth-century channels of the Iwerne carried a much reduced flow which, by comparison with the faunas of other winterbourne streams, was probably seasonal and largely confined to the wettest months of the year. The molluscs suggest that, in some years at least, the flow may not totally have ceased in summer. It seems probable that the making of water meadows, the creation of lakes and the emparked landscapes of the valley floor was associated with substantial waterwork operations, which in any case are implied by the new Iwerne channel. This may have involved the diversion of flow from elsewhere down the Iwerne channel to create the present perennial stream with its richer, more diverse, mollusc fauna.

Viewing the post-medieval landscape of the Iwerne valley with its gentry mansions, lakes and parks we may conclude that the dramatic landscape transformation of the post-medieval period owed more to the need to make a mark on the landscape, as part of social interaction, than it did to the requirements of everyday agricultural production. In that respect this most recent dramatic transformation may well be similar to the first, the making of the early Neolithic complex up on the hill, at least if the implications of the molluscan assemblages are accepted.

6 Charcoal and charred plant remains

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6.1 The wood charcoal

Phil Austin, Catherine Barnett (neé Chisham) and Jonathan Hather

6.1.1 Introduction

The excavations at Hambledon Hill resulted in the recovery of a substantial amount of wood charcoal macro-remains from a diverse range of contexts, representing episodes of site use extending from the Boreal to the early Bronze Age on the hilltop and into the post-medieval period in Everley Water Meadow. While this report focuses on the period of intensive use of the hilltop in the earlier Neolithic, material from other periods was also examined and is discussed below.

Incorporated into this report are the results of two earlier investigations of the charcoal – that from the main causewayed enclosure ditch (Chisham 1994), and from pits on the Stepleton spur (Austin 1995). Some of the remaining fractions of samples originally identified by Carole Keepax in the 1970s in advance of radiocarbon dating have been re-examined as part of this investigation and the results are integrated here.

Aims

The following aims were formulated with respect to the palaeoenvironmental investigation as a whole, and the broader context of the socio-cultural interpretation of the site:

a) to provide an account of the prehistoric vegetation on and around the site complex and, where possible, investigate evidence for temporal and spatial vegetational change, and
b) to investigate the evidence for the exploitation of woody plants for their functional properties and/or non-functional (culturally associated) attributes.

Methods

Recovery, sampling, and identification

Manual recovery was practised consistently each season for each context type and accounts for the majority of charcoal collected. Charcoal finds were often lifted in bulk and subsequently sorted with tweezers under good light. Some individual fragments were picked out by hand during excavation. Wet sieving, dry sieving, and flotation of bulk samples were practised less consistently, according to resources and context, as described more fully by Jones and Legge (6.2). Contexts apparently rich in plant remains were sampled more intensively than those less obviously so. Pits, for example, were sampled more than ditches.

Comprehensive temporal and spatial coverage of the site was attempted by examining samples from discrete phases or horizons, and specific features. The contemporaneity of individual ditch segments and the phases to which the layers in them were assigned are not, however, ensured. Ditch fills are therefore regarded as more-or-less homogeneous 'Neolithic' deposits for the purposes of interpretation, except where otherwise stated. Samples from postholes or and pits classed as definite or probable (3.1.2) were selected in preference to samples from otherwise poorly defined, or possibly contaminated, contexts. Multiple samples recovered from the same feature are treated as a single sample except when a feature contained distinct contexts or stratification.

The areas and context groups from which charcoal was examined are listed in Table 6.1. Charcoal from the following context groups was not examined: the outer east and south cross-dykes, pits excavated on the Stepleton spur in 1978–80 and 1982, and the Iron Age hillfort. This material was not studied principally because either no charcoal was available for examination, fragment condition was very poor and/or the quantity of charcoal available was too small to provide any useable information, or it was judged that the information gained would not make a significant contribution to the overall interpretation.

Examination of fragments

Prior to examination each sample was passed through a nest of 4 mm-, 2 mm-, and 1 mm-gauge sieves. Although charcoal fragments <4 mm are sometimes examined, in this investigation only material from the >4 mm size category were considered for identification. Keepax (1988) suggests that examination only of fragments >3.75 mm does not significantly affect the range of taxa represented and identified. Fragments <4 mm are less likely to retain sufficient diagnostic anatomical features to allow secure identification. Anatomical features used to determine relative maturity, for example, may also be absent for the same reason (Gale 2004). Thus the amount of information available decreases as the time required to gather it increases.

All recovery techniques may affect fragment quantity and quality, thus influencing the range of taxa recovered (Smart and Hoffman 1988). Hand-picking, for example, favours the recovery of fragments

Table 6.1 Summary of charcoal samples examined – all periods

Values for indeterminate fragments are both included in the overall fragment totals and recorded separately. Counts of 'not-woody' fragments are excluded.
Totals of recorded charcoal finds are for the entire context group, not simply those parts of it from which charcoal was examined. They may include samples not containing charcoal.

Area	*Fragments*	*Indeterminate fragments*	*Taxa identified*	*Samples examined*	*Features from which charcoal examined*	*Recorded charcoal finds*	*% of samples examined*
Main enclosure pits	1130	29	8	61	17	108	56
Main enclosure bank area, site P1	25	0	5	4	2	4	100
Main enclosure ditch	1240	57	16	78		97	80
Inner east cross-dyke	131	22	6	3		8	38
Inner south cross-dyke	102	1	7	4		8	50
Long barrow	18	0	3	5		7	71
Inner south cross dyke/western outwork bank area	64	0	5	6	2	6	100
Western outwork bank area	84	0	2	2	1	2	100
Western outwork	6	0	1	1		1	100
Central area totals	**2800**	**109**	**17**	**164**	**22**	**241**	**68**
Shroton spur outwork	**140**	**1**	**3**	**4**		**31**	**13**
Stepleton spur pits	648	12	13	118	18	289	41
Stepleton enclosure	336	20	7	21		78	27
Structure in NW of Stepleton enclosure	11	2	2	4	32	40	10
Inner outwork gateway and bank area	371	13	3	9	9	38	24
Inner outwork	1538	233	14	36		121	30
Middle outwork	12	0	3	2		7	29
Outer outwork	9	0	1	1		3	33
Stepleton spur totals	**2925**	**280**	**17**	**191**	**29**	**576**	**33**
Hanford spur ?Boreal features	68	2	3	10	3	13	77
Hanford spur pits	165	27	6	22	3	77	29
Hanford spur gateway	151	2	1	11	1	13	85
Inner Hanford outwork	230	38	6	12		19	63
Outer Hanford outwork	133	16	8	10		14	71
Hanford spur 'flint mines'	102	3	6	17		36	47
Hanford spur totals	**849**	**88**	**12**	**82**	**7**	**172**	**48**
Everley Water Meadow burnt mound/old land surface	215	38	8	5		34	15
Everley Water Meadow other contexts	260	71	11	17		82	21
Everley Water Meadow totals	**475**	**109**	**11**	**22**		**116**	**19**
Overall totals	**7189**	**587**	**25**	**463**	**58**	**1136**	**41**

sufficiently conspicuous to be identified by the human eye, and large enough to be handled relatively securely, while flotation can lead to fragment loss and size reduction (Greenlee 1992). Floated material consisted of fragments predominantly falling within the <4 mm size fractions. To a lesser extent this also applied to fragments recovered through wet sieving. A large proportion of fragments from samples retrieved manually tended to fall into the >4 mm class size. Where present, fragments falling into smaller size classes from these same samples often exhibited characteristics indicative of relatively recent (post-excavation) fracturing. It follows that fragment counts for some samples may have increased since recovery, and fragments <4 mm may have derived from fragments >4 mm.

Where such suspicions existed material from the <4 mm sieves was often examined. Taxa composition in lower size ranges did not, however, differ significantly from that of material recovered from the >4 mm sieve. Because of these findings and the cursory nature of these supplementary examinations, the identifications made are not included in the overall results of the investigation. These factors, in addition to the limited amount of time available and the large amount of material to be examined, seemed sufficient to justify the decision to restrict the size range examined. However, where wet-sieved samples contained no fragments >4 mm, a decision was made to gather the limited information offered by those <4 mm and the results of these examinations are included in the results and feature in the interpretation.

Keepax (1988) recommends examination of a minimum of 100 fragments per sample (preferably 3–400) to recover the full range of taxa present. In excess of this figure it becomes progressively less likely that any taxa previously unrecorded from that sample will be identified. The policy adopted for this analysis was therefore to examine a minimum of 100 fragments per sample or feature wherever possible.

Quantification

Interpretations of charcoal assemblages are dependent on an understanding of charcoal taphonomy and the methods used to identify relationships between the charcoal assemblage and the former abundance of individual taxa. Investigations into the taphonomy of archaeological charcoal (eg Lopinot 1984; Rossen and Olsen 1985; Keepax 1988; Smart and Hoffman 1988; March 1992), demonstrate unequivocally that the relationship between archaeological charcoal and its original source, the palaeoenvironment, is a complex one. Such relationships are inferred from the relative values of fragment counts, weights, or volumes for different taxa (Smart and Hoffman 1988). While these properties can be empirically established, the values obtained may have little, if any, meaning.

It is believed, therefore, that attempts to quantify the material examined by reference to fragment numbers, weight, or volume would be potentially more misleading than it would be informative. Presence/absence analysis is, arguably, the least misleading approach available at present for the analysis of archaeological charcoal, and this is the principal method used here. Each taxon present in each context is regarded as equally significant in terms of source environment irrespective of actual quantities recorded by fragment number, weight, or volume of that species. Popper (1988, 61) defines this as the 'ubiquity' of a taxon. In essence it is a measure of the frequency of occurrence in each context type of the taxa identified. Focus on assemblage/sample composition and the archaeological context facilitates context-related variation analysis. Context-related variation has been extended to the interpretation of wood charcoal assemblages with some success by Thompson (1984) and by Cartwright (1997). This approach is implicit in the interpretative analysis of the material from this site.

Identification

Fragments were prepared following the methodology advocated by Leney and Casteel (1975) and examined under an epi-illuminated microscope at magnifications up to ×400. Identification, to the lowest possible taxonomic level (species level wherever possible), was determined with reference to the relevant literature (Schweingruber 1990a; 1990b; IAWA Committee 1989). Further reference was made to modern charcoal specimens and reference slides held at the Institute of Archaeology, University College London, when identification was in doubt.

Fragments which could not be positively identified but bore a distinct similarity to a particular taxon were recorded as 'cf' and are included in the final analysis as being of that taxon. Wood charcoal fragments for which no identification was possible, and fragments identified as non-woody charred organic material, are recorded as 'indeterminate' and 'non-woody', respectively, and included in the results as such. Quantities of 'non-woody' material are recorded only in the full list of results (in the archive) and are not included in the summary results. Binomial species names are given where a specimen could be securely identified as being a particular species or where only one representative of the genus is native. Nomenclature follows that of Stace (1991).

Differentiating members of the Rosaceae family is particularly difficult, even as uncharred wood. Members of the Rosaceae, subfamily Maloideae, for example, often cannot be determined below this level (Schweingruber 1990b). However, some of the fragments identified as such were tentatively further identified as cf *Sorbus* (whitebeams, rowan, wild service tree) or cf *Crataegus* (hawthorns). It is thought that the latter is the genus most likely to be represented. Likewise, in the form of wood charcoal, *Prunus* cannot often be confidently differentiated below genus level. Nonetheless, it was occasionally possible to identify fragments as cf *P avium* (wild cherry) or cf *P spinosa* (blackthorn). At this site it is thought that *P spinosa* is the species most likely to be represented as charcoal. Several species of both native genera of Salicaceae (*Salix* and *Populus* – willow and aspen) are likely to be represented. Occasional identifications of cf *Salix* were made. No such distinctions are made in the presentation of the results. While differentiation was normally possible, fragments recorded as *Corylus*/*Alnus* (hazel/alder) did not retain sufficient anatomical features to enable the separation of these two members of the Betulaceae. Growing conditions preferred by *Alnus glutinosa* were available nearby and it is thought that at least some of the fragments could be of this taxon. The majority, however, are likely to be *Corylus avellana* (hazel).

6.1.2 Results

In total, 7185 fragments were examined (including earlier studies) from 463 samples. Of these, 587 fragments could not be securely identified. Twenty-five taxa were identified from the site as a whole, representing a potential floristic range in excess of 40 distinct species. Table 6.1 summarises the context groups from which samples were examined. Absolute fragment counts are also shown. Table 6.2 lists all the taxa identified, arranged according to plant form, and includes suggested 'missing' taxa, identified with reference to phytosociological models such as those of Polunin and Walters (1985), Ellenberg (1988), Rodwell (1991), and Peterken (1993). Figures 6.1–3 summarise taxon ubiquity. The assemblage as a whole

Table 6.2 List of all taxa identified and of 'missing' woody taxa, arranged according to plant form

+ taxa identified in post-Neolithic samples only, * includes some shrub species, ** includes some large tree species.
Taxa not anatomically distinguishable below family/subfamily/genus are listed accordingly.
'Missing' taxa are those present in modern chalkland/deciduous woodland habitats (following Polunin and Walters 1985; Rodwell 1991) and thus likely to have been components of the former vegetation in the area, although not identified among the Hambledon samples.

Identified taxa			*'Missing' taxa*	
Large- or medium-sized trees				
Acer campestre		Field maple		
Betula sp		Birch		
Carpinus betulus		Hornbeam		
Fagus sylvatica		Beech		
Fraxinus excelsior		Ash		
Pinus sylvestris		Scots pine		
Quercus sp		Oaks		
Salicaceae				
	(*Salix* sp)	Willows*		
	(*Populus* sp)	Poplars		
Taxus baccata		Yew		
Tilia sp		Limes		
Ulmus sp		Elms		
Small trees or large shrubs				
Buxus sempervirens		Box	*Sambucus nigra*	Elder
Cornus sanguinea		Dogwood	*Ligustrum vulgare*	Privet
Corylus avellana		Hazel	*Euonymus europaeus*	Spindle tree
Corylus/*Alnus glutinosa*		Hazel/alder		
Frangula alnus+		Alder buckthorn		
Ilex aquifolium		Holly		
Maloideae				
	(*Crataegus* sp)	Hawthorns		
	(*Malus* sp)	Apple		
	(*Sorbus* sp)	Whitebeams**		
		Rowan		
		Wild service tree		
	(*Pyrus* sp)	Pear**		
Prunus sp		Blackthorn		
		Cherries**		
Rhamnus cathartica+		Buckthorn		
Viburnam sp		Guelder rose		
		Wayfaring tree		
Shrubs, lianas, climbers, epiphytes				
Erica vagans		Cornish heath	*Lonicera* spp	Honeysuckle
Vitis vinifera		Grapevine	*Hedera helix*	Ivy
Clematis vitalba+		Traveller's joy	*Viscum album*	Mistletoe
Rosa spp+		Dog roses*	*Rubus* spp	Brambles

is among the richest recorded for a Neolithic site in Britain. While this undoubtedly reflects the scale of the archaeological investigation, more significantly, it demonstrates the very broad range of woody plants actually available and exploited.

Description of samples/context type

Charcoal of Boreal age

Once the identifications were made, it became apparent that the charcoal assemblage from one feature (HN82 F279, then thought to be a posthole, although not a very convincing one, in the substructure of the inner Hanford outwork bank) consisted mainly of *Pinus sylvestris*, with some *Corylus*/*Alnus* and ?Betulaceae. This combination of taxa was atypical of Neolithic contexts on the hill and suggestive of a substantially earlier date. Two single fragments of *Pinus sylvestris* charcoal were dated to 7580–7200 cal BC (OxA-7845, 8400±60 BP) and 7600–7380 cal BC (OxA-7846, 8480±55 BP; Ch 4), confirming a Boreal age for the charcoal and perhaps for the feature. *Pinus* charcoal from another possible posthole (WOWK3 F4, apparently part of the substructure of the Neolithic inner south crosos-dyke bank) was also dated, with an older result: 8160–7590 cal BC (OxA-7816, 8725±55 BP; Ch 4). Here the associated taxon was *Corylus*/*Alnus*).

These measurements raise the possibility that other *Pinus* charcoal from the hill may also date from the early Mesolithic. *Pinus* charcoal was unevenly and often widely spaced. It was found without artefacts in two other nearby features on the Hanford spur (HN82 F507 and F773, in which all the charcoal was *Pinus sylvestris* except for a single *Corylus* fragment from F773, a feature similar in character to F279. These and the dated features are described and discussed in Chapter 3. Only two single fragments of *Pinus* charcoal were found in contexts with Neolithic artefacts and charcoal of temperate deciduous taxa.

Ditch deposits

Figure 6.1 shows the ubiquity of taxa in samples from the main causewayed enclosure ditch, the Stepleton enclosure ditch and inner Stepleton outwork ditch. The following description applies only to the Neolithic deposits in these ditches.

The general pattern that emerges is the predominance of *Quercus*, *Corylus* and Maloideae. *Prunus* and *Fraxinus* are also ranked high and feature prominently in most samples. This pattern is evident through all phases. Relative proportions are also generally temporally consistent, from the earliest to later deposits. Detailed discussion of individual ditch phases is generally not warranted, given the general homogeneity of the charcoal from ditch deposits. Nonetheless certain deposits do require further comment.

In the main causewayed enclosure ditch phase IV deposits were most extensive on site G (segments 16–19) with smaller quantities of charcoal elsewhere. Samples from site G were particularly rich (17 taxa), and account for the apparently higher taxon diversity of the main causewayed enclosure ditch as a whole (Fig 6.1). If these contexts are not taken into consideration, the assemblage from the main enclosure ditch is more-or-less in keeping with those from the other ditches.

Samples from the ditches of the south long barrow are small and few and probably do not fully represent the original composition of the context. Possible invertebrate damage was evident in *Corylus* fragments from the single phase I sample.

The Hanford inner and outer outwork ditches have higher proportions of taxa indicative of open conditions, particularly from basal deposits in the inner outwork, although the overall range of taxa represented is comparable to other deposits. It may be significant than the Hanford spur is spatially distinct from the core of the complex, and that at least parts of the Hanford outworks seem to have been built at a relatively late stage (Ch 4).

Possible structural remains

The Shroton outwork. Only three taxa were recovered from the ditch, *Fraxinus*, *Corylus* and *Quercus*. It is thought that their presence may relate to structural features associated with the bank. Material from the Shroton spur postholes was not examined.

The main enclosure. A possible posthole in the bank area of the main causewayed enclosure (Fig 3.7: P1 F29) contained *Corylus* charcoal.

The western outwork. Charcoal from a posthole in the western outwork bank area (Fig 3.45: WOWK2 F6) was dominated by *Quercus*, some of which was dated to *3630–3350 cal BC* (4660±40 BP; OxA-7815) and seems to confirm the presence of a post in the bank area. One fragment of *Pinus* was identified.

The inner south cross-dyke. The part of WOWK3 F4 that contained Boreal *Pinus* charcoal and some *Corylus*/*Alnus* charcoal (described above) was cut by a deeper feature, probably a posthole, which contained *Fraxinus* charcoal dated to *3650–3510 cal BC* (OxA-8861, 4780±45 BP) and *3640–3420 cal BC* (OxA-8862, 4690±45 BP).

The inner Stepleton outwork. In the gateway area of the inner outwork, samples from postholes (Fig 3.111: 3B F401, F442, F450, F502, F601B, F603, and F601) were exclusively identified as *Quercus*. The charcoal from F601B was recorded in the field as 'burnt wood *in situ*'. Charcoal from 3B F524, a posthole in the bank area a little to the east of the gateway, was identified as Maloideae. The Maloideae include a few taxa suitable for post use (eg *Sorbus aria*), and it may be relevant that the post is unlikely to have been more than 0.10 m in diameter. Charcoal from 3B F537 in the same area was identified as *Pinus*. It is uncertain, however, whether the charcoal came from posthole F537A or from a nebulous spread of material which overlay it.

The strongest evidence for the probable nature of structural wood use at the site is provided by charcoal from the phase II and III deposits (see 3.5.4). While *Quercus* and *Corylus* were ubiquitous in these contexts, other taxa less obviously associated with structural use were also present, eg *Ilex aquifolium*. Layer 4A in cutting 1 of segment 6 is particularly significant in that it seemingly represents *in situ* burning of possible structural material (Fig 3.99; Pls VIII–IX). Burnt clay and coherent charred timbers were exceptionally well preserved within a band of Clay-with-Flints, which the bank was constructed from at this point. Away from the Clay-with-Flints, charcoal from this horizon and the phase III fills, also associated with the burning and bank collapse, was less well preserved within a chalk matrix. The combination of finds and features is interpreted as representing some kind of catastrophe, probably a conflagration (Mercer 1980). *Corylus* accounts for most of the identified charcoal from this deposit. *Quercus* and *Acer* were also present in small quantities. The high occurrence of *Corylus* and low occurrence of *Quercus* in this horizon contrasts with the increase in occurrence of *Quercus* in chalk rubble fills higher up in the segment. This possibly reflects the sequence in which wooden features entered the ditch following burning and bank collapse. Seemingly *Corylus* roundwood (?wattle/hurdle work) was incorporated into the ditch followed by *Quercus* timbers from the body of the bank.

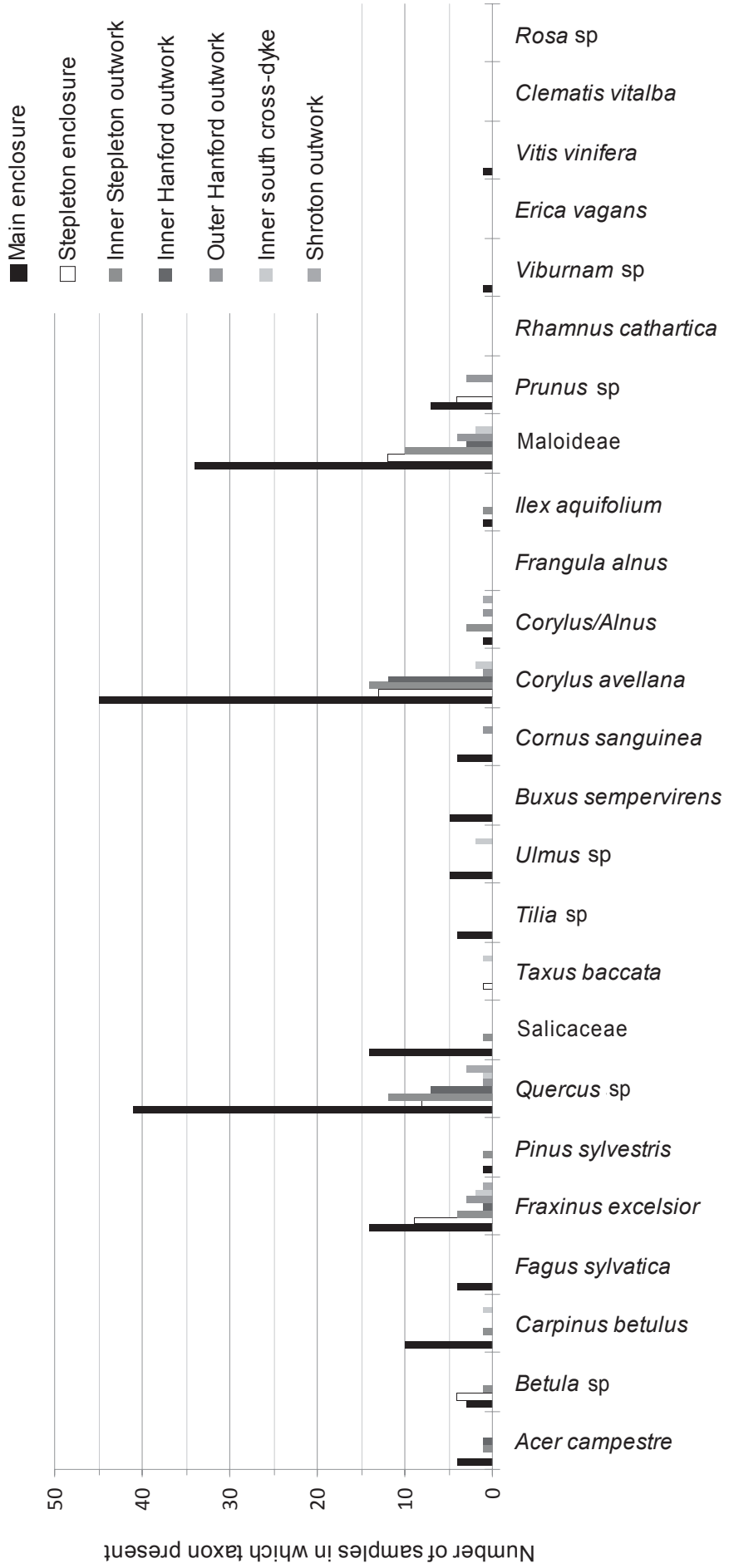

Fig 6.1 Charcoal taxon ubiquity. Banks and ditches (Neolithic contexts only).

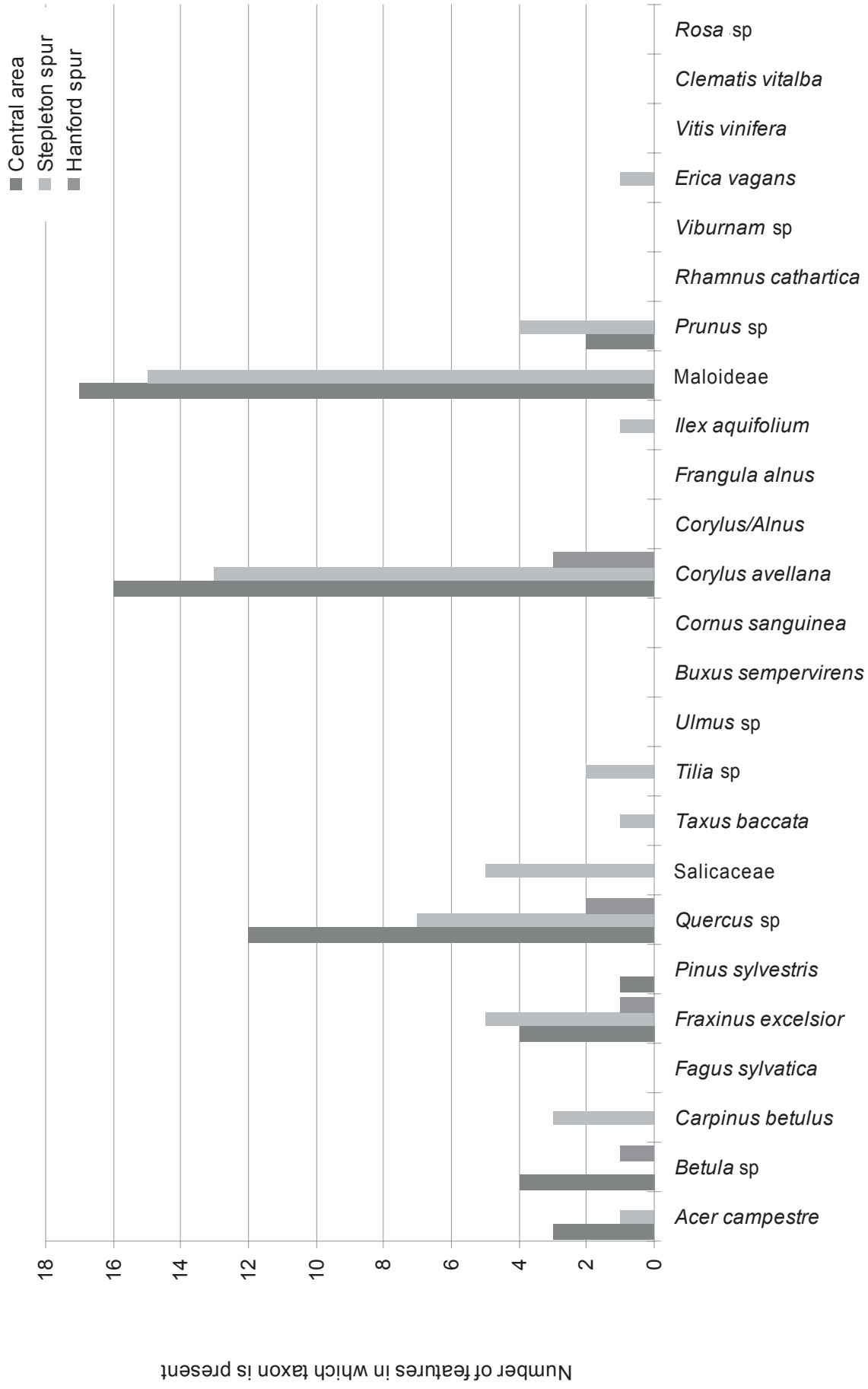

Fig 6.2 Charcoal taxon ubiquity. Neolithic pits.

The Hanford outworks. Samples from the Hanford inner outwork 'gateway' posthole HN82 F854, were composed exclusively of mature wood of *Quercus*, representing what may have been a substantial former post.

Pits

All the pits investigated were Neolithic. The results are presented in Figure 6.2. Differences in the taxon composition of pits from the different areas of the site are apparent. The charcoals from the Stepleton pits are the most diverse (13 taxa), followed by main causewayed enclosure pits (eight taxa) and the Hanford pits (six taxa; Table 6.1). The apparent disparity in the range of taxa identified from pit contexts as a whole may reflect the quantity of material examined from each area. Considerably more fragments were available, and were examined, from the 17 Stepleton and 18 central area pits than from the three Hanford spur pits.

The Hanford 'flint mines'

Charcoal samples from the Hanford 'flint mines' do not suggest any distinctive function (Fig 6.3). It may be significant that all the taxa present, particularly *Quercus*, *Fraxinus*, and *Corylus*, are good fuelwoods.

6.1.3 Discussion of the results

The following discussion is divided into two parts. The first considers the results of the charcoal analysis primarily as ecological information concerning the former vegetation on and around the site over the period it was in use. The second part focuses on anthropogenic factors as they relate to possible past human/plant relationships. This separation is for convenience only. It is not suggested that ecological and cultural considerations are at all mutually exclusive.

The nature and source of the Neolithic vegetation

The charcoal could be interpreted as reflecting a highly varied mixture of vegetation types, both in terms of structure and composition. Clear affinities between the archaeological assemblage and any one particular modern woodland type are not apparent. No single floristic association (eg a chalkland flora) can be said to dominate the Neolithic remains. What seems clear, however, is that the ecotonal location of the site complex is reflected in the richness of the charcoal assemblage as a whole.

The minimum ecological prerequisites for each of the plants identified could have been satisfied locally, perhaps even within 1 km of the site. This possibility arises because of the patchwork of soil types and geology of the area (see 1.1, 1.3). It is sufficient here to note the presence of the chalk outcrop, on which the site itself is located, the Greensand and clays to the north of the site, and the limestone to the west (Fig 1.2). Each of these offers the possibility of distinct ecological niches. The proximity of the rivers Iwerne and Stour, which flank the site to the east and west respectively, further contributes to the biotic and edaphic diversity and thus the overall potential floristic richness of the area.

The quantity of samples available from Neolithic contexts was significantly greater than from post-Neolithic contexts. While this may partly account for differences in taxon representation between Neolithic and post-Neolithic samples, it cannot be regarded as a complete explanation of the variations. Despite temporal differences in intensity of site use, it is thought that the richness of the Neolithic assemblage represents the real presence of a higher level of taxon diversity and vegetation cover, available and accessible during this period.

The most obvious feature of the Neolithic assemblage is the ubiquitous presence of *Quercus*, *Corylus* and Maloideae. Unfortunately, for the purposes of palaeoenvironmental interpretation, each of these taxa is somewhat catholic in its ecological requirements and, correspondingly, in its geographical distribution. This is evident from both the archaeological record (Godwin 1975; Keepax 1988) and more recent ecological studies (Rodwell 1991; Packham *et al* 1992). Not only can these taxa be considered poor ecological indicators, they also have a long-established history as preferred sources of fuel, and as raw materials for construction and artefact manufacture (eg Edlin 1970). Furthermore, all are potential sources of human foodstuffs in the form of, for example, nuts, berries and young shoots, and sources of livestock fodder (Rackham 1977). The most commonly represented taxa may arguably provide more information about the cultural/economic use of wood, and associated resources, than they do about the nature of the former vegetation. Nonetheless, these taxa consistently occur abundantly in samples throughout the site and over the *c* 300–400 years of Neolithic site use. In itself this can be taken to indicate their continuing availability.

The Neolithic samples contain taxa tolerant of shade – *Ilex*, *Carpinus* and *Taxus*, moderate shade taxa – *Ulmus*, moderate light-demanding taxa – *Quercus* and *Tilia*, and light-demanding taxa – *Acer*, *Betula*, *Cornus*, *Fraxinus* and *Prunus* (Edlin 1949). While *Corylus* is shade-tolerant, it requires open conditions for high nut production. The conspicuous presence of charred hazelnut shell at the site (see Jones and Legge, 6.2) indicates that some *Corylus* grew in open conditions. Some shade-tolerant taxa can also thrive in open conditions and so their presence is not conclusive evidence of closed woodland. However, the present-day ecology of many of the medium/large tree taxa (eg *Taxus*, *Fagus*) suggests that these could have been present in more-or-less pure stands. Both these produce heavy shade, under which it is difficult for other plants to survive. Similarly, other canopy-forming trees (*Quercus*, *Ulmus*, *Fraxinus*, *Carpinus*, *Tilia*, and some members of the Salicaceae and Maloideae) indicate that mixed or pure stands of woodland are likely to have been present.

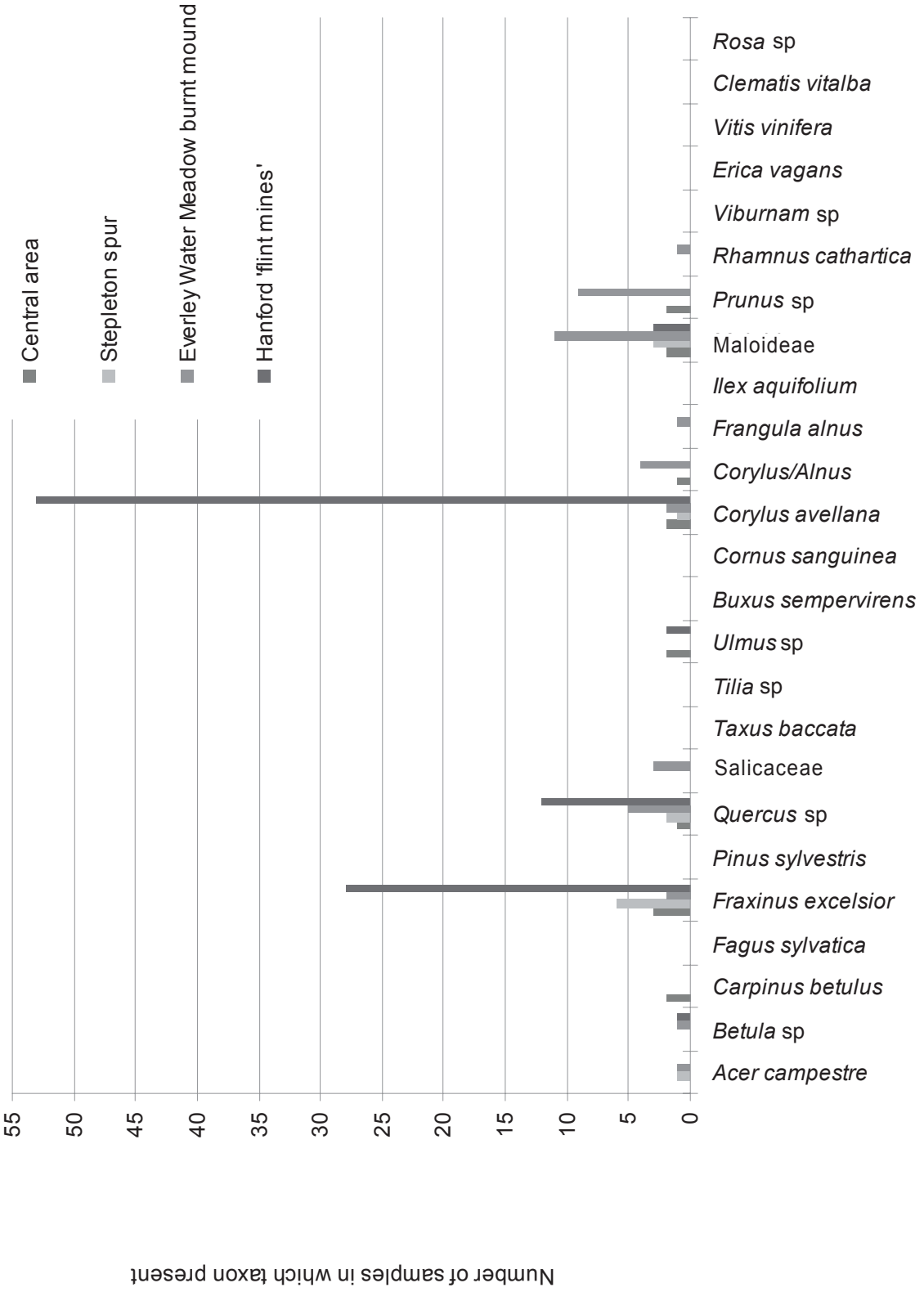

Fig 6.3 Charcoal taxon ubiquity. Beaker and Bronze Age contexts.

Many of the taxa identified are calcicoles (lime-loving) and thus could have grown on the hill itself. Whether or not this is so is difficult to demonstrate. Convincing evidence for trees growing on the hill slopes or within the confines of the site is scarce. Only one tree hollow can be confidently dated to the Neolithic (P1 F24/24A), although others may be coeval (see 3.3.7). Fragments of Maloideae, *Tilia* and *Pinus* charcoal were recovered from F24a, but are not thought to relate to the tree that grew there. Stratigraphically this feature pre-dates the main enclosure bank, and seemingly indicates that trees were growing on the hill prior to the bank's construction. No clear evidence was found for post-construction tree growth on the site, although the lack of such evidence does not exclude this possibility. It is also possible that the steeper slopes of the chalk outcrop were not cleared of vegetation until the Bronze Age, if then. *Taxus* and *Buxus*, for example, survive particularly well on the scarp slopes and coombes of modern chalklands (Smith 1980) and could have done so in the past. *Fraxinus*, *Taxus* and, less certainly identified, *Crataegus* and *Prunus spinosa*, are capable of colonising disturbed chalkland habitats as pioneers (ibid). These taxa are present in both primary and subsequent Neolithic deposits. *Pinus* and *Betula* are other potential pioneer species but do not thrive on chalk. Their presence may suggest more geographically widespread disturbance. *Viburnam*, *Alnus*, and many Salicaceae particularly prefer much damper conditions and would have flourished along the margins of local rivers.

The presence of taxa requiring open conditions (eg *Betula*) indicates that open areas and woodland edges were present. The causes, spatial distribution, and permanency of clearings are, however, less certain and cannot be determined on the basis of the charcoal evidence alone. The dynamic nature of woodland ecology may provide an adequate explanation for the presence of openings in the canopy. Mechanisms such as windthrow and the senescence of individual trees or even-aged stands are factors which contribute to the presence of openings in modern woodland habitats (White 1979) and are believed to have done so in the Neolithic (T Brown 1997). Conversely, initial anthropogenic clearance and localised thinning of existing closed woodland, may have increased the susceptibility of the remaining vegetation to natural processes of disturbance. If regenerated 'secondary woodland' is allowed to occur, its character can differ markedly from that of the original woodland in both overall composition and the relative abundance of particular taxa (Peterken 1996), especially if it is subjected to further human interference. Clearance episodes and the establishment of patches of secondary woodland could be supported by the composition of the Hambledon charcoal assemblage.

T Brown (1997) suggests that natural openings may have been opportunistically exploited and maintained by human populations during the Neolithic. While this is speculative, it is possible that site locations were partly chosen to exploit natural openings, which were subsequently much modified. However, differentiating between a natural opening not subject to significant human interference, a deliberately maintained natural opening, and clearance created solely by human agency remains problematic. It seems probable that at Hambledon both natural processes and anthropogenic clearance contributed to the presence of open areas.

Other sources of palaeoenvironmental information

The composition of the charcoal assemblage alone does not demonstrate unequivocally the form of woody vegetation associated with the site complex throughout the Neolithic (ie closed dense woodland, open light woodland, or open scrub/grassland with occasional trees). The molluscan evidence (Bell *et al*, Ch 5) suggests that the complex stood in a landscape where significant woodland remained and clearance was only partial, the environment becoming slightly more open in the 400-year life of the early Neolithic site, but undergoing more intense and sustained clearance only in the early Bronze Age. The charcoal evidence does not conflict with these conclusions. The faunal remains (Legge, Ch 8) include cattle, pig, and small numbers of wild mammals whose primary natural habitat is woodland or open woodland/woodland edge. The presence of such species strengthens the argument for extensive woodland cover and woodland margins.

Comparison with other sites

Direct detailed comparison with other charcoal assemblages is often impossible, not least because of differences in scale of excavation and charcoal recovery, and preferred method of quantification. Bearing these reservations in mind, much the same principal taxa are recorded in the charcoals from Maiden Castle (Salisbury and Jane 1940; Gale 1991), Whitesheet Hill (Gale 2004), and Offham Hill (Cartwright 1976). The Whitesheet Hill and Offham Hill charcoal assemblages are interpreted as representing initial disturbance around the time of enclosure construction followed by differing degrees of woodland regeneration. However, Salisbury's and Jane's (1940) interpretation of the charcoal from Maiden Castle proposed an open environment in the Neolithic. This assessment was severely criticised by Godwin and Tansley (1941) and subsequently by Gale (1991) in the light of her analysis of the charcoal from more recent excavations. Charcoal studies from enclosure and non-enclosure sites from the south Dorset Ridgeway project (Carruthers and Thomas 1991), and the Stonehenge environs project (Gale 1990), appear to demonstrate the persistence of extensive, but not necessarily closed or continuous, woodland in southern Britain throughout the Neolithic. Insofar as comparison is possible, the results of this investigation are thus similar to the charcoal evidence from other earlier Neolithic sites in broadly comparable geographic locations.

However, while it could be argued from the charcoal evidence that predominantly wooded environments were preferred locations for such sites (bearing in mind that woodland regeneration appears to have been allowed to occur following initial clearance episodes) this is by no means conclusive. Similarly, it does not follow that the vegetation associated with enclosures typifies more distant areas or other site types during the earlier Neolithic. These comments appear to be supported by palaeoenvironmental evidence from other sources, notably mollusc remains (Bell *et al,* Ch 5) and, less frequently, pollen (eg Thorley 1981; Scaife 1982; Scaife 1991; Waton 1982) from enclosure and non-enclosure sites. For example, away from the Maiden Castle enclosure, a broadly contemporary Neolithic pit produced a fairly open country molluscan fauna, while the later Flagstones enclosure, also in the Dorchester area, built *c* 3000 cal BC, stood in pasture (Allen 1997b, 167–74).

Vegetation change

Interpretation is complicated by the nature and temporal resolution of the archaeological evidence, our understanding of ecological processes, and difficulties in distinguishing between the effects of past human activities and those of natural phenomena. Ecological processes, for example, can operate at different scales, micro-scale fluctuations occurring within the wider context of macro-scale events and processes. The compositions of wooded ecosystems, therefore, may fluctuate at stand level, appear to remain stable for centuries at a regional, or 'landscape', level, but may undergo significant and fundamental changes at larger scales (Delcourt *et al* 1983; Sprugal 1991; Peterken 1996).

Comparison of the assemblage with the composition of modern woody plant communities, described by Rodwell (1991) and Polunin and Walters (1985), suggests minor taxa (eg *Sambucus nigra*, *Ligustrum vulgare*, *Euonymus europaeus*, *Hedera helix* and *Rubus* agg), although not identified among the assemblage, would have been present during the Neolithic along with the identified taxa. Significantly, perhaps, while these taxa have poor fuel value or are of limited economic use, their presence in samples might be expected if indiscriminate clearance had occurred; instead selection from the local area is indicated.

Only four of the 25 taxa identified were not represented in the Neolithic samples: *Clematis vitalba*, *Rhamnus catharticus*, *Frangula alnus* and *Rosa*, which came from likely Roman contexts. Neolithic samples contain the following large tree taxa not present in Bronze Age and younger samples: *Fagus*, *Taxus*, and *Tilia*. Beaker and Bronze Age samples contain four of the eleven large- or medium-sized tree taxa (Fig 6.3); later Bronze Age to medieval samples contain seven taxa in this category. Given the differences in sampling methods, quantity of samples, and the amount of charcoal recovered from contexts of different periods, it is not clear if this represents a genuine decline in the presence of large/medium-sized tree taxa from the Bronze Age onwards. Changes in the nature and intensity of site use may also be reflected. Apart from *Quercus*, *Fraxinus* is the commonest large tree taxon in post-Neolithic samples. Like *Acer*, this species is light-demanding. Both taxa often feature in open conditions, such as those presently found in scrub, hedgerows, or light open woodland and woodland margins. It may be significant that both species coppice well and, historically, have been heavily managed as such (Edlin 1970). These considerations, along with the apparent higher proportion of small tree or large shrub and shrub or climber taxa, which also require open conditions, in post-Neolithic samples, may support the argument for prolonged woodland clearance.

Comments regarding specific identifications

Buxus sempervirens. While *Buxus* is considered native to the British Isles (Stace 1991) it is rarely found as charcoal. Keepax (1988) cites only one pre-Roman find, tentatively identified by Godwin (1975) from a Neolithic context. While it can be locally abundant where suitable growing conditions exist today, it is otherwise rather scarce. It seems probable that this was also so in the Neolithic, with local occurrence indicated by its presence in the ditches.

Pinus sylvestris. Some confusion remains over the status of *Pinus* in southern Britain. It is generally regarded as native to Scotland, from where it was reintroduced into England and the southern counties following its virtual extinction by the mid-Holocene (Birks *et al* 1975). Charcoal of this taxon occurs in several samples at Hambledon, and at other Neolithic sites in the south of England (Godwin 1975; Keepax 1988). The Boreal dates for samples from two features at Hambledon, cited above, leave open the possibility of a Neolithic date for pine charcoal from other contexts on the hill, in some of which it was associated with Neolithic artefacts and more abundant charcoal of temperate woodland taxa. This is made all the more likely by pollen evidence such as that from the Hampshire Basin and other areas in the south of England (Scaife 1991) which demonstrates the local presence and persistence of *Pinus* from the Neolithic to the middle Iron Age. Earlier still, *Pinus* pollen and charcoal from a probable Mesolithic soil lens in the Fir Tree Field shaft, Cranborne Chase (Green and Allen 1997), and from massive postholes of Boreal age in the Stonehenge area (Cleal *et al* 1995, fig 25), show that pine was a component of the Boreal chalk landscape.

Vitis vinifera. A single fragment of *Vitis* charcoal was identified during Chisham's (1994) study of charcoal from the main causewayed enclosure ditch. The fragment formed part of sample HH76 67 and came from layer 9A (a phase IV deposit) in segment 17 (Fig 3.29). The fragment appears to have been part of the stem of a mature specimen, with three to four annual rings remaining. The specimen would have been mature enough to support fruit production.

The *Vitis* charcoal complements the single charred grape pip recovered from pit 4B F53 on the Stepleton spur (Jones and Legge 1987; Jones and Legge, 6.2). Despite deriving from different areas of the site the finds are more-or-less contemporary. The pip has been radiocarbon-dated to *3640–3340 cal BC* (4660±80 BP; OxA-931). While the *Vitis* charcoal is not itself dated, there are radiocarbon dates for other samples from the same context: articulating animal bone has been dated to *3570–3380 cal BC* (mean of two measurements of 4800±65 BP – OxA-7020, OxA-7021) and *3530–3390 cal BC* (mean of 4725±60 BP – OxA-7019 and 4625±65 BP – OxA-7058); and bulk charcoal samples have been dated to *3650–3390 cal BC* (4670±100 BP; HAR-2375) and *3640–3400 cal BC* (4610±90 BP; HAR-2377). Together these two finds are the earliest known record of this taxon in Britain and, for the charcoal fragment, the earliest example recorded anywhere in northern Europe.

The following questions arise from the presence of this taxon in Neolithic Britain: was *Vitis* native or imported? And, perhaps more significantly, was it being cultivated, either in its wild or domesticated form? To be attributed native status a species must have been recorded from post-glacial deposits predating the isolation of Britain from mainland Europe *c* 10,000BP (Godwin 1975, but see N Brown 1997). The find of *Vitis* charcoal is clearly too recent to fulfil this criteria. Nonetheless the absence of earlier finds does not rule out the possibility that it entered southern Britain in the early post-glacial, maintaining a minor presence which has remained undetected to date. At present it seems more likely that it was imported, either as seed or cuttings, from a source in Asia or the Mediterranean. Although there is no clear consensus, *Vitis* is generally considered native to Western Asia, and was probably first brought into cultivation in the Levant *c* 5000 cal BC. Evidence for the cultivation of this taxon in Europe is scanty, and generally later in date. The earliest examples cited by Jones and Legge (1987) are seeds of the wild variety from levels dated to between the eleventh and the eighth millennia cal BC at Balma Abeurador in the south of France (Vaquer *et al* 1986). Rausing (1990) discusses grape-pip impressions in early Neolithic sherds from three sites in southern Sweden (Mogetorp, Östra Vrå, and Moäng). The Mogetorp find may have pre-dated Hambledon by as much as 1000 years, since associated radiocarbon dates span the second half of the fifth millennium cal BC. *Vitis* pollen has also been recorded in Neolithic contexts in Denmark (Rausing 1990). The pathway by which the Hambledon specimens may have arrived remains unclear, but raises interesting questions as to the chronology and nature of contact and exchange between Britain and continental Europe.

The grape pip is described as morphologically comparable with domesticated varieties (Jones and Legge 1987; Jones this chapter). Regrettably, no such differentiation can be made for the charcoal specimen. However, given that the pip appears to be a domesticate it is a reasonable assumption that the wood was also from a domesticated variety. Much of the earlier Neolithic falls within the Atlantic period, partly characterised by the 'climatic optimum'. During this period Britain is believed to have experienced greater precipitation and higher summer temperatures than at present, by as much as 2°C (Barber *et al* 2004). This would have provided favourable growing conditions for *Vitis*, although the chalkland soils would not have been ideal. During this period other thermophilous species make a marked impression in the palynological record, notably *Tilia*, *Fagus* and *Carpinus* (all represented at Hambledon).

If the Hambledon specimens are domesticates, the cultivation of *Vitis* in Neolithic Britain is a strong possibility. This is strengthened by the presence of mature wood capable of fruit production. The purpose of its cultivation is open to speculation, but fruit consumption and fermentation are the obvious candidates. It seems that *Vitis* was a rare and exotic specimen in Neolithic Britain and may thus have been attributed special significance.

Erica vagans. Six fragments of *E vagans* were identified in three samples (ST81 C257, C259, C264), all from pit 4B F178 on the Stepleton spur, which was rich in Neolithic artefacts (see 3.5.6). It is believed that this find represents the only macrofossil record of this taxon in post-glacial prehistoric deposits in Britain (McClintock, pers comm). The present-day distribution of this species in Britain is confined to specific locations at the Lizard peninsula, Cornwall, where it is a significant component of 'tall' and 'mixed heath' communities. Its occurrence here is closely linked to soils overlying the Gabbro and Serpentine bedrocks. Marrs and Proctor (1978) suggest this association may be due to the specific soil conditions required to meet nutritional needs. It is also found in isolated locations in north-west Ireland, western France, and northern Spain (McClintock 1989). Given its present-day distribution, it is an apparently anomalous component of the Hambledon charcoal assemblage.

Unusually for a member of the Ericaceae, this taxon is able to tolerate alkaline soils, such as those found at Hambledon Hill. The warm and humid climate of the region where it grows today may have been matched in other areas during the Atlantic 'climatic optimum'. It is therefore possible that it grew in or around the site, probably as a component of 'Chalk heath', during the Neolithic. Evidence for heathland communities in southern Britain prior to the Bronze Age is, however, sparse, and rests mainly on the inference of clearance by Mesolithic populations. For example, pollen from Oakhanger, Hampshire (Rankine *et al* 1960) and Iping Common, Sussex (Dimbleby *et al* 1965), is interpreted as indicating woodland clearance followed by development of heathland vegetation prior to the Neolithic. Similarly, pollen

from non-cultural deposits suggests that the modern heaths of east Dorset and west Hampshire may have their origin in the early Atlantic period (Moore 1962). More recently, Allen and Scaife (1991) have discussed the evidence for the creation and expansion of a predominantly heath vegetation in the Poole Basin in the late Bronze Age. They suggest that this derived from significant but limited Neolithic heath vegetation, itself perhaps deriving from late Devensian relict communities. Nonetheless, evidence for lowland Neolithic (acid) heath communities remains limited; whereas for 'Chalk heath' it is apparently non-existent. Therefore, while localised heathland may have existed, it is believed that the specific requirements for the growth of *E vagans* were not available. In the 'mixed heath' communities of the Lizard peninsula *E vagans* typically co-dominates with *Ulex europaeus* (gorse). No charcoal from this taxon has been identified from Hambledon Hill, although it was present in post-Neolithic contexts at Maiden Castle (Gale 1991). There is little to encourage speculation that *E vagans* was growing anywhere in Dorset during the Neolithic.

The favoured hypothesis is that *E vagans* was imported from Cornwall, for reasons that are unclear. Heather may have been available from sources closer to Hambledon Hill which, it is felt, would negate the need to import heather from such a distant source, unless it was valued for specific properties or attributes which are no longer apparent. Therefore, a more plausible explanation for its presence at Hambledon Hill is that it was transported incidentally, possibly along with more valuable goods or raw materials. Evidence of long distance trade in polished stone axes and pottery provides the necessary link between Hambledon Hill and the Lizard peninsula. Axeheads of rocks from the south-west were deposited on the hill, mainly inside the main enclosure (Smith, Ch 6), and their sources correlate well with the modern distribution of *E vagans*. The Gabbro-tempered pottery from pits in the main enclosure provides another connection with the Lizard peninsula (see Smith, 9.1; Darvill, 9.2). While the evidence is circumstantial, it seems highly plausible that *E vagans* was transported along with the stone axeheads and/or the gabbroic pottery.

Clematis vitalba and *Rosa*. The combined presence of *Clematis* and *Rosa* is interesting in as much as it is suggestive of hedge-like vegetation or woodland margin (although *Clematis* can also occur in closed woodland). Fragments of these taxa were identified only in a single sample from a ploughsoil in which the most abundant pottery is Roman. *Prunus*, also a common species of modern hedgerows, was also present. Sample composition and probable date, added to the presence of a Romano-British hollow way running through the inner outwork gateway, increase the possibility that the sample may represent a hedge, in a more formalised landscape.

Anthropogenic factors

Arguably one of the principal constraints encountered when attempting to reconstruct vegetation from charcoal remains is the association of wood with charcoal creation and human activities. The presence of charcoal in an archaeological context is not an incidental occurrence (unlike the presence of mollusca and pollen, for example). In practical terms human agency operates decisively at three key stages: 1) the acquisition or avoidance of wood, 2) its exposure to fire and, 3) its incorporation, or (re)deposition, into the context from which it is recovered archaeologically. Similarly, ecological constraints, actions arising from functional requirements, political concerns and cultural perceptions and beliefs may influence woodland composition, and the woods that are exploited, over a range of temporal and spatial scales and with different degrees of intensity. It is not intended to deal with these issues in great detail here. Nonetheless such factors are likely to influence the nature and composition of charcoal remains and their interpretation profoundly.

Source of the wood charcoal

In the British Isles today naturally occurring large fires are rare in wooded areas. Where they do occur it is usually due to the flammable nature of some types of ground vegetation, rather than the presence of combustible tree taxa (Packham *et al* 1992). There is no evidence that any of the charcoal at Hambledon Hill derives from non-anthropogenic *in situ* burning of living vegetation, and it is likely that human agency was the sole source of the charcoal at the site. No hearth-like features are described from Neolithic contexts. Nonetheless, it is assumed that most of the charcoal was generated in hearth-like fires, the precise function of which we can only speculate. Domestic fires, for food processing, warmth, and light; fires explicitly to burn waste, from vegetation clearance, artefact manufacture, and construction activities; and ceremonial and symbolic fires, are equally plausible.

Condition of the charcoal and possible maintenance of structures

Invertebrate damage and fungal degradation were inferred from the presence of 'bore-holes', fungal hyphae, and descriptions of the morphological characteristics of uncharred degraded wood (eg Hicken 1975; Rayner and Boddy 1988). Fungal hyphae were observed in vessels and, very occasionally, in the ground tissue of many fragments from various contexts across the site. Insect damage frequently follows fungal attack (Hicken 1975), and it is thought this further contributed to the poor condition of the fragments. The extent of decay in the original wood cannot be determined from the charcoal. Because wood charcoal is highly resistant to biological degradation (Keepax 1988), any degradation is likely to have begun prior to charring. It cannot be determined if degradation

occurred prior to acquisition, during stockpiling, or *in situ* (during use). Salisbury and Jane (1940) used evidence of fungal degradation in the charcoal from Maiden Castle to infer the local collection of fuelwood. While an acceptable hypothesis for some of the Hambledon material, this possibility is less plausible when considering samples probably derived from structures, and an alternative explanation is required.

The condition of charcoal from the ditches was often poor. Fragments were frequently contaminated (sometimes severely) with calcareous deposits, occasional mineral deposits (?Fe), and other inclusions. Charcoal (especially *Quercus*) closely associated with the chalk matrix below silt horizons was particularly affected. Excepting material from the samples specified below, the condition of the charcoal from possible structural material was generally fairly good. Invertebrate damage and, perhaps, fungal degradation were less evident in fragments from postholes (mostly *Quercus*) than fragments from other contexts (mostly *Corylus*). The intrusive deposits described above were also evident in many fragments.

The lower levels in the central part of segment 6 of the inner Stepleton outwork provides the clearest evidence of *in situ* burning of structural features (see above), apparently destroyed in a single episode. Numerous fragments in samples from this deposit appeared either 'vitrified' (mostly in samples ST79 C91 and C107) or, while possibly not 'vitrified', very brittle and prone to crumbling, losing coherence when handled (ST79 C34, C35 and C39). Brittle fragments also showed signs of decay, ie invertebrate damage and/or fungal degradation (suggestive of, for example, 'white rot'). Anatomical features in 'vitrified' fragments were highly distorted and many were unidentifiable. This phenomenon is believed to be caused by rapid intense heating at temperatures in excess of 700°C (Prior and Alvin 1983). The 'vitrified' charcoal adds support to the idea of wooden features being destroyed by intense fire, perhaps during a conflagration. Charcoal from other contexts did not generally display such extreme distortion. 'Vitrified' charcoal showing comparable physical distortion has been identified from Maiden Castle by Gale (1991). The combination of these factors may support the hypothesis offered here that degradation principally occurred during use and that some structural components were perhaps nearing the end of their useful life.

Two possibilities arise from the condition of numerous *Quercus* fragments from postholes: a) the onset of decay occurred before posts were being fire-hardened prior to use, or b) posts were not fire-hardened in this way and were showing signs of degradation in use. The first possibility suggests that wood in prime condition was not available or not being used. Alternatively wood was stockpiled, or reused, and suffered degradation during this time. In this instance fire-hardening may have been employed to improve the durability of poor-quality wood. However, Whittle (1997, 158) suggests that fire-hardening in the (later) Neolithic was not 'normal practice'. The second possibility, and the one favoured here, is that wood was decaying while in use prior to burning. Similarities between the Hambledon material and descriptions of charcoal from late Neolithic posts and postholes at West Kennet (Whittle 1997) further support this conclusion.

Charcoal from a single posthole was typically made up of one abundant taxon by fragment quantity (almost exclusively *Quercus*), and commonly one or more fragments from one to four other taxa. While this may be explained simply by the accidental inclusion of stray material, alternative possibilities are that the less represented taxa are remnants of former posts, or wedges. Inconsistencies in the quality of *Quercus* fragments from the same feature may indicate that decaying posts were being replaced with the same taxon. Post replacement may have occurred in some instances, notably 3B F601, and supports the idea of maintenance of structural features.

The presence of deliberately grown barriers or boundaries might also be supported by the charcoal evidence, but remains conjectural. Taxa suited to forming protective barriers (notably *Crataegus* and *Prunus spinosa*, which are likely to have been present among the Maloideae and *Prunus*) are much in evidence in all contexts. Charcoal of these taxa recovered from ditches may represent the maintenance of such features or, alternatively, the routine clearance of invasive scrub.

Selection/avoidance and non-structural plant use

The strength of the evidence from ethnographic and historical accounts (eg Heizer 1963; Smart and Hoffman 1988; Hastorf and Johannessen 1991; Shackleton and Prins 1992), demonstrates that the selection, avoidance, or conservation, of particular woods, or woodland stands, is often a complex amalgam of ecological, functional, and non-functional considerations. For example, the relative abundance and location of specific taxa, the purpose for which the wood is intended, particular properties, such as durability or strength, or cultural associations, such as links to ancestors, may all be important factors simultaneously contributing to perceptions of what can and cannot be exploited at a given time. The probable contribution of such factors to the nature of a charcoal assemblage is generally inferred, but can rarely be demonstrated.

However, the presence of both *Erica vagans* and *Vitis vinifera* clearly suggests that alien and exotic plant resources were available, through cultural connections, and accessible, via trade networks, to the Neolithic people of Dorset. Similarly, the diversity of the assemblage and correlations between context type and taxa present, suggests that, in addition to the gathering of (dead) wood for fuel, wood was being specifically selected for other reasons, such as for construction and artefact manufacture. Also, given the supposed functions of the site, it cannot be ruled out that wood may have been

gathered for less mundane reasons. Heizer (1963), for example, discusses 'ritualised' fuel gathering in which the act of gathering and stockpiling wood is part of larger ritual practices, while Hastorf and Johannessen (1991) describe the importance of symbolic associations in the choice of fuelwoods. Symbolic and ceremonial fires are well documented in northern Europe (Frazer 1923), and particular woods may have been selected for these purposes. *Betula* charcoal, for example, recovered from inside a fragmentary pot at the base of the main causewayed enclosure bank on site P1, is suggestive of symbolic/ceremonial use of particular woods, while *Corylus* and Maloideae charcoal inside one of two child skulls built into a flint cairn on the base of the adjacent ditch suggest deliberate placement.

Virtually all the trees and shrubs represented have parts of value as plant foods, medicines, poisons, animal fodder, and bedding as well as fuel (eg nuts, berries, fruits, leaves, and inner bark: Grieve 1976; Mabey 1996). Arguably, taxa considered more useful as a source of secondary products, rather than for their wood (eg *Sambucus*), may have been preserved for uses such as these, or, alongside other woods, conserved to maintain the required conditions for non-woody plants exploited for such purposes.

Exploitation of the physical properties and aesthetic qualities of many of the woods represented is historically and ethnographically well documented (Edlin 1970). The fashioning of objects designed for functional or esoteric purposes is likely to have been a common activity. Presumably some of the Hambledon charcoal originated from discarded, broken, or purposefully burnt artefacts, and as by-products of activities such as artefact manufacture. Individual trees, specific taxa, and/or particular stands may have been valued as living components of the landscape or as deadwood (on or off site), solely for their aesthetic qualities or attributed magical or spiritual properties, as documented in various historical and ethnographic accounts (Porteous 1928; Hadfield 1974; Davies 1988; Schama 1995; Rival 1998) and inference from archaeological sources (Boyd 1988). The composition of post-Neolithic samples may indicate that less desirable woods (eg *Rhamnus*) were gathered when preferred woods were absent, or inaccessible, a response discussed by Shackleton and Prins (1992).

Pits and ditches

In terms of the taxa represented, the Stepleton pits are richer than those elsewhere on the hill. They are, indeed, the only pits to contain *Erica vagans*, *Ilex*, *Taxus*, *Carpinus*, and Salicaceae. The diversity of taxa is one of numerous distinctions between the contents and manner of filling of pits here and in the central area. An emphasis on day-to-day living is more apparent in many of the Stepleton pits (see 3.5.6). If this was so, it may be that activities such as food processing and artefact manufacture were the origin of the charred material. This interpretation would adequately explain the diversity of the assemblage. All of the taxa commonly represented are good fuel woods and/or have potentially useful functional properties for artefact manufacture. Significantly, none of the Stepleton pits contained the exotic artefacts recovered from the main causewayed enclosure pits. It seems likely, therefore, that the charcoal was deposited as fire debris, from burnt fuel and waste, reflecting disparate mundane activities.

The pit samples from the central area are less rich (eight taxa) than the ditch deposits (17 taxa). Pits in the central area contained only two taxa, *Pinus* and *Betula*, not identified from Stepleton pit samples. The esoteric functions proposed for this enclosure may be significant, but neither the composition of the charcoal assemblage from the pits as a whole, nor patterns in the composition of individual pit samples, stands out, unless, for reasons that are unclear, the restricted range of taxa represented is considered significant in itself, given the range of taxa that potentially could be present. Initially, therefore, it appears no claim can be convincingly made for the 'ritualised' symbolic deposition of charcoal, despite the nature of main causewayed enclosure pit deposits. Nonetheless, many taxa in the main causewayed enclosure pits have eclectic, and apparently ancient, symbolic associations, notably *Quercus* and *Fraxinus* (Frazer 1923). It is tempting to regard such associations as the primary reason for the presence of certain taxa in the main causewayed enclosure pits. We can only cautiously infer that special meaning may have been attributed in the past to some acts of deposition involving charcoal and, perhaps, specific taxa. Put in the context of the supposed functions of the enclosure, and persuasive evidence for the symbolic deposition of high-status objects, it seems a reasonable assumption to regard the charcoal in these pits as more than meaninglessly deposited waste.

Woodland management

It is often asserted that woodland management was practised in the Neolithic. Orme and Coles (1985), for example, document evidence of woodland management on the Somerset levels, while coppiced stools were found still rooted in the ditch of the Etton causewayed enclosure (Taylor 1998). Rackham (1977, 71) describes Neolithic coppicing as 'a surprisingly elaborate system', compared to modern and medieval practices, and suggests (Rackham 1979) that both the growing and use of wood were organised activities. There is no unequivocal evidence, direct or indirect, for woodland management at Hambledon Hill. Fragments were generally unsuitable for growth characteristic analysis or the determination of diameter when cut. *Corylus* fragments from structural deposits in the inner Stepleton outwork (see above) were composed of the innermost growth rings, and may have been roundwood. Nonetheless, none of the characteristics of the earliest rings indicating vigorous (re)growth associated with coppicing (Rackham 1977)

were apparent in these fragments, or in others with innermost rings. The presence of posts and probability of wattle hurdles, associated with bank revetments, therefore, remains suggestive but is not evidence of management or systematic cropping.

Nonetheless, wood requirements for construction, fuel, and other purposes, must have necessitated ready supplies of suitable wood encouraging, perhaps, methodical resource management. Intermittent construction and the maintenance of existing structures could have had a significant impact on the structure and composition of the vegetation. Trees tend to develop a squat form when grown in open conditions, with retention of side branches, while dense, closed woodland favours the production of tall, straight boles (Desch and Dinwoodie 1981). At least during the earliest phases of the site, timbers suitable for substantial construction work may have been naturally available from existing closed woodland. More purposeful management of wood resources may have been implemented later, when reduced natural availability due to previous cropping and probable changes in woodland/vegetation structure threatened supplies. The principal taxa associated with structural features, *Quercus* and *Corylus*, respond extremely well to management (Edlin 1970). Coppicing (intended or incidental) of these, and other suitable taxa (eg *Fraxinus*, *Acer*), may have resulted if stools were not grubbed-up following felling. Subsequent regrowth would provide future potential supplies of wood and fodder (Rackham 1977).

6.1.4 Conclusion

This charcoal analysis suggests that the site was located in a temporary clearing at an ecotone, and functioned in a predominantly wooded mosaic of vegetation types throughout the Neolithic. Ongoing natural and anthropogenic disturbance probably contributed to the creation of open areas and a shifting patchwork of woodland types, of which secondary woodland was possibly a significant, and increasingly dominant, characteristic. Direct evidence of silviculture is lacking. Woodland is, however, likely to have been managed and, while management was probably not intensive, it may have affected the character of the vegetation in some areas. The occurrence of woodland regeneration suggests that woodland was a valued landscape feature, important perhaps not just as a source of wood and other potential resources, but also for more cultural/esoteric associations. A predominantly cattle-based pastoral economy, for example, such as that proposed for Hambledon during the Neolithic by Legge (Ch 8), may have encouraged the preservation of extensive wooded areas favourable for animal husbandry as well as for game. While clearance specifically for crops is a possibility, anthropogenic clearance may have been more a by-product of acquiring wood than a purposeful strategy for providing cleared land for other purposes.

A considerable range of wood-related resources were available locally. Others, such as *Vitis vinifera*, might have been imported as an exotic fruit from continental Europe or deliberately introduced and grown at the site. Intra-site variability in charcoal deposits is not distinctive. However, the charcoal assemblages from pits on the Stepleton spur and in the central area seem significantly different from each other and from those from ditch deposits, other than phase IV of the main enclosure on site G, and may partly reflect the different nature of activities carried out in these areas. Wood was possibly being exploited in both functional and non-functional capacities, and also perhaps featured in ceremonial activities in its own right and as part of larger symbolic concerns. The use of timber in the construction and maintenance of the earthworks would have had a continuing, if intermittent, impact on the surrounding woodland.

6.2 Evaluating the role of cereal cultivation in the Neolithic: charred plant remains from Hambledon Hill

Glynis Jones and A J Legge

6.2.1 Sampling and recovery

Charred plant remains were recovered from the central area, the Stepleton spur, the Hanford spur and Everley Water Meadow. Recovery methods included froth flotation (Jarman *et al* 1972), wet-sieving, dry-sieving and manual recovery. Flotation, using sieves of mesh size 1 mm and 300μ, was carried out by AJL at the main causewayed enclosure in 1974 and on the Stepleton spur in 1979 and 1981. In 1978 deposits from the Stepleton spur were wet-sieved using sieves of the same mesh sizes as those used for flotation.

Table 6.3 Charred plant remains. Recovery methods

Area	*No. of samples taken for:*			*Finds recovered manually*
	Flotation	*Wet-sieving*	*Dry-sieving*	
Central area features 1974	>24			18
Central area features 1975				28
Central area features 1977			6	77
Main enclosure ditch	>11	13		106
Cross-dykes		1		37
Long barrow		1	*c* 11	14
Stepleton spur features 1978		60	1	40
Stepleton spur features 1979	45		6	17
Stepleton spur features 1980				40
Stepleton spur features 1981	184			291
Stepleton spur features 1982	3			52
Stepleton enclosure ditch	11			88
Stepleton outworks	6	3		115
Hanford spur		30	*c* 12	103
Everley Water Meadow		35		96

One-eighth of the large cereal deposit collected in 1982 from F39 outside the Stepleton enclosure was floated and wet-sieved in the laboratory, using sieves of mesh sizes 1 mm and 300 mm for the flot and 1 mm for the heavy residue. In other years and areas of the hill, charred plant remains were retrieved manually or by wet- or dry-sieving with a 0.25 inch mesh. Charred plant remains were also recovered from samples wet-sieved for molluscs in Everley Water Meadow (mesh size 0.5 mm) in 1983 and 1984. In all, *c* 1300 samples were taken (including *c* 450 samples for flotation or wet-sieving) either specifically for charred plant remains or for charcoal, molluscs etc. The breakdown of the different sample types taken from different areas is given in Table 6.3. Where samples were taken specifically for charred plant remains, these were chosen on the basis of visible charred remains. In the area of the Stepleton enclosure, pits were more intensively sampled than ditches (see Table 6.3).

The >1 mm fractions from flotation and wet-sieving were totally sorted for charred plant remains with one exception: the sample from ST82 F39 was subsampled after flotation/wet-sieving and one-eighth of the >1 mm flot, <1 mm flot and heavy residue were sorted (equivalent to 1/64 of the original sample). The <1 mm fractions for most of the other samples (and any heavy residues collected after flotation) were unavailable and were not sorted. Cereal and wild plant remains from these samples, as well as those from charcoal and mollusc samples etc, were identified by reference to modern comparative collections in the Department of Archaeology, University of Cambridge and the Department of Archaeology, University of Sheffield. Cereals were quantified by counting the embryo ends of grains, the bases of wheat glumes and the rachis internodes of barley and free-threshing wheat. Hazelnut shell was quantified by weight. The cereal identifications (with accompanying wild species) are presented in Tables 6.4–6.12, and the location of the samples is shown in Figures 3.70 and 3.132. The locations and size of hazelnut shell finds are shown in Figures 3.71 and 3.133.

The different recovery strategies are reflected in the quantity and quality of the charred plant remains recovered. Virtually all of the charred plant remains from the main causewayed enclosure were recovered in 1974 (Figs 3.70–71) and the few finds from other years, when recovery was mostly manual, were all of hazelnut shell. For the Stepleton spur, a contrast is apparent between the areas sampled for flotation or wet-sieving and those sampled manually. The only cereal find recovered from the areas sampled manually

Fig 6.4 Two views of grape pip from 4B F53. Photos Glynis Jones

Table 6.4 Charred plant remains from Neolithic features in the central area 1974

+ = <10 g shell
gl = glume bases (everything else = seed)

Feature	*A F2*	*A F5*	*A F6*	*A F9*	*A F11*	*A F12*	*A F28*	*A F41A*	*A F41B*	*A F78*	*?*
Sample									*1, 2, 3 to 4, 3 to 6*		
Triticum dicoccum gl	0	0	0	0	0	0	0	1	1	0	0
Triticum dicoccum	2	2	0	0	2	3	3	70	82	4	1
T cf *dicoccum*	0	0	0	0	0	0	0	4	4	0	1
Triticum sp	2	0	0	0	0	2	3	60	39	0	2
Hordeum sp	0	0	0	0	1	0	0	0	6	0	0
cf *Hordeum* sp	0	0	0	0	0	0	0	0	4	0	1
indet cereal	3	0	1	1	0	0	0	23	26	2	0
Corylus avellana	+	0	+	0	0	0	0	+	+	0	+
indet fruit frags	0	0	0	0	0	0	0	0	0	0	0

(1980 and 1982) was the huge concentration found in 1982 and processed in the laboratory. In the wet-sieved area (1978), most of the cereal finds are large concentrations which may have been apparent to the naked eye (Fig 3.132). In the areas where flotation was also carried out (1979 and 1981), numerous smaller cereal finds are also well represented (Fig 3.132), reflecting a different sampling strategy not primarily directed towards visible concentrations of charred remains. On the Hanford spur (which was also wet-sieved), all the charred plant remains were recovered manually and all were of hazelnut shell. Throughout, cereal remains were recovered only by flotation or wet-sieving; manual recovery provided hazelnut shell only. This supports earlier observations at Neolithic sites (Moffett *et al* 1989).

6.2.2 Species represented

The predominant cereals, from the areas of both the main causewayed enclosure and the Stepleton enclosure, are *Triticum dicoccum* Schübl (emmer wheat) and *Hordeum* sp (barley). Most of the barley is unidentifiable either to species (two- or six-row) or as either hulled or naked, but six-row naked barley (*H vulgare* L var *nudum*) and one grain of hulled barley were identified from a Neolithic feature on the Stepleton spur. Two-row barley (*H distichum* L) was identified from a medieval (or later) sample from Everley Water Meadow. Several samples of Romano-British, medieval or later date also contained bread wheat (*T aestivum* L s l).

Hazelnut shell (*Corylus avellana* L) is common throughout the Neolithic site, and a single seed of grape (*Vitis vinifera* L), apparently of the cultivated variety, was found on the Stepleton spur (ST81 F53, Fig 6.4; Jones and Legge 1987). Finds of other wild species are sparse, with occasional finds of *Galium aparine* L (lady's bedstraw), *Vicia*/*Lathyrus* sp (vetch/vetchling) and *Bromus* sp (brome grass) as well as *Anthemis cotula* L (stinking mayweed) in one medieval (or later) sample from Everley Water Meadow.

Table 6.5 Charred plant remains from main causewayed enclosure ditch 1974

+ = <10 g shell

Segment	*2*	*3*	*3*
Feature		*1*	
Layer	*9*		*2*
Triticum sp	0	1	0
indet cereal	2	0	1
Corylus avellana	0	+	0
cf *Vicia*/*Lathyrus*	1	0	0

In all the Neolithic features (except ST82 F39 – see below), the cereals are apparently in a cleaned state with virtually no chaff remains (in the form of glume bases or rachis internodes) and with very few weed seeds. The absence of small-seeded weeds may be due to the fact that the <1 mm fractions have not been sorted but the paucity of weed seeds >1 mm cannot be attributed to this.

6.2.3 Spatial distribution

Most of the charred plant remains were recovered from within and around the Stepleton enclosure which may be partly a result of the more intensive sampling in this the smaller of the two enclosures. No cereal remains, and very little hazelnut shell, were found on the Hanford Spur despite wet-sieving.

Among the cereals, both emmer wheat and barley are represented at both enclosures. In the main enclosure, barley is represented by a few grains only (Tables 6.4–6.5) but this is true also of emmer except for one feature (HH74 F41) which yielded a concentration of emmer grains. Emmer predominated on the Stepleton spur (Tables 6.6–6.9), but some features also contained significant quantities of barley (notably 1A F110, where barley predominated). Given the small number of samples from the main enclosure, however, this difference may be fortuitous.

Table 6.6 Charred plant remains from Neolithic features on the Stepleton spur 1978

st = straight grains + = <10 g shell

Feature	*1A F7*	*1A F8*	*1A F57*	*1A F110*	*1A F205*	*1A F228*	*1A F229*	*1A F295*	*1A F350*
Sample(s)	*37, 39*	*80*	*18, 38, 67, 71, 79*	*17, 41–49, 61–53, 55, 84*	*82*	*76*	*93*	*85*	*86, 90, 106, 107, 111*
Triticum dicoccum	4	0	91	47	0	2	6	5	26
T cf *dicoccum*	3	0	35	5	0	0	6	2	14
Triticum sp	13	0	72	13	8	1	4	1	18
Hordeum, naked st	0	0	0	1	0	0	0	0	0
Hordeum, naked	0	0	0	5	0	0	0	0	0
Hordeum, hulled	0	1	0	0	0	0	0	0	0
Hordeum sp	1	1	16	285	0	1	1	1	17
cf *Hordeum* sp	0	0	5	0	0	0	1	2	1
indet cereal	0	1	22	77	5	0	11	3	12
Corylus avellana	+	0	+	+	+	0	+	+	+
Galium aparine	0	0	0	0	0	0	0	0	0

Hazelnut shell is unevenly distributed around the hill, even allowing for variations in sampling. In the area of the main enclosure, a very large concentration of nutshell was found in an upper level of one of the ditches of the south long barrow, and a smaller concentration (though it may have been larger before Desmond Bonney's 1959 excavation) in the slot of one of the south cross-dykes (Fig 3.71). On the Stepleton spur, larger quantities of hazelnut shell were found at the north end, both inside and outside the enclosure ditches (Fig 3.133). These concentrations are unlikely to be an artefact of the recovery programme, since the finds in the area of the main enclosure are so large that they would have been visible to the naked eye, and the variation across the Stepleton spur is apparent even though recovery methods were comparable across the site (especially when comparing the areas sampled for flotation in 1979 and 1981). Elsewhere on the hill small quantities of hazelnut shell are a common occurrence.

6.2.4 Contexts rich in charred plant remains

All of the contexts rich in cereal remains (ie with 50+ items) were pits of various types, except for one sample from the east butt of segment 12 of the Stepleton enclosure, which could nevertheless be the fill of a pit cut into the chalk rubble fills. Most of these were also rich in other finds (either hazelnut shell, charcoal, animal bone, struck flint or pottery, or a combination of these), but not invariably. Two of the pits in the Stepleton enclosure (1A F57 and 4B F137) were unique in containing fragments of infant skull (not complete inhumations). Emmer predominates in both, with small quantities of nutshell (and barley in F137). 1A F110 is unusual both in shape and in the complete absence of struck flint. Two fragments of iron were found in the pit but so were fragments of a small Neolithic cup, similar to the one from ST82 F39 (see below), and two of the barley grains from the pit have been dated to *3640–3490 cal BC* (*58% probability*) *or 3470–3370 cal BC* (*37% probability*) (4725±40 BP; OxA-7837) and *3630–3590 cal BC* (*7% probability*) *or 3530–3360 cal BC* (*88% probability*) (4670±40 BP; OxA-7838). This was also the only feature on the hill with a rich sample dominated by barley but it also contained significant quantities of emmer and nutshell.

ST82 F39 is unique, both in the quantity and nature of the cereal remains recovered. A large quantity of charred remains was apparently tipped into the pit at the north end (Fig 6.5). The sample consists almost entirely of emmer wheat with quantities of hazelnut shell and a few seeds of *Bromus* sp. A small Neolithic cup, other pottery and burnt flint were found among the grain, with burnt antler fragments above. Two of the emmer grains have been dated to *3650–3500 cal BC* (*75% probability*) *or 3440–3370 cal BC* (*20% probability*) (4750±40 BP; OxA-7839) and *3640–3490 cal BC* (*61% probability*) *or 3470–3370 cal BC* (*34% probability*) (4730±45 BP; OxA-7840). The state of the emmer is also unique in that numerous charred glume bases were found with the grain. Each spikelet of emmer usually consists of two grains surrounded by a pair of glumes and so a ratio of 1:1 for

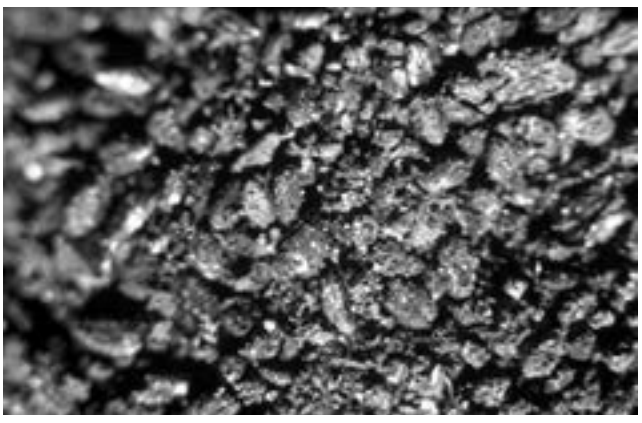

Fig 6.5 Detail of charred grain in ST82 F39

Table 6.7 Charred plant remains from Neolithic features on the Stepleton spur 1979

+ = <10 g shell
st = straight grains, tw = twisted grains

Feature	*2A F7*	*2A F47*	*2A F48*	*2A F142*	*2A F159*	*2A F182*	*2A F184*	*2A F198*	*2A F201*	*2A F206*	*2A F217*	*2A F268*	*2A F321*	*2A F374*	*2A F 378*	*2A F409*	*2A F413*
Sample(s)	*T4*	*T2*	*T11*	*T32, T69*	*T34, T61, T66, –*					*T23, – -*		*T41, T42*	*T48*		*T51, –*		*T52*
Triticum dicoccum	0	1	1	1	12	8	1	4	0	24	4	0	135	0	0	22	0
T cf *dicoccum*	0	0	0	1	2	1	0	0	2	2	1	0	0	0	0	0	1
Triticum sp	0	0	0	0	4	5	1	1	0	11	12	2	0	2	2	1	0
H vulgare, naked tw	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0
Hordeum, naked st	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0
Hordeum, naked	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0
Hordeum sp	0	0	0	0	2	1	0	0	0	0	0	0	18	0	0	0	0
cf *Hordeum* sp	1	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
indet cereal	0	1	2	0	5	8	3	3	4	13	6	2	5	5	3	0	0
Corylus avellana	+	+	0	0	0	0	0	0	+	0	0	0	0	0	0	+	0
cf *Vicia/Lathyrus*	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Galium aparine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0

Table 6.8 Charred plant remains from Neolithic features on the Stepleton spur 1981

+ = <10 g shell

Feature	*4A F3*	*4A F3B*	*4B F47*	*4B F53*	*4B F60*	*4B F63*	*4B F64*	*4B F80*	*4B F82*	*4B F92*	*4B F129*	*4B F130*	*4B F137*	*4B F144*	*4B F153*	*4B F155*	*4B F164*	*4B F178*	*4B F198*	*4B F232*
Sample(s)	*T3, –*	*108*	*19*	*18*	*33*	*30*	*17*	*115*		*114*	*85*	*67*	*118*	*28*	*119*	*116, 122*	*103*	*120, 126*	*113, 121, 123*	*109*
Triticum dicoccum	0	0	0	13	0	1	1	3	3	2	13	17	23	1	2	5	0	19	18	0
T cf *dicoccum*	1	1	0	1	0	0	5	1	0	0	1	18	5	1	1	0	0	5	5	0
Triticum sp	1	0	0	15	0	2	3	1	0	1	3	9	12	0	0	1	0	4	5	0
Hordeum sp	0	0	0	1	0	0	1	0	0	1	1	3	0	0	1	0	0	17	5	0
cf *Hordeum* sp	0	0	0	8	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0
indet cereal	2	1	1	23	1	0	2	0	1	4	7	30	15	1	1	6	1	25	11	1
Corylus avellana	+	0	0	0	0	0	0	0	0	0	0	+	+	0	0	0	0	0	0	0
Vitis vinifera	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 6.9 Charred plant remains from 1/64 of fill of ST82 F39

1/8 sieved = 0.9 kg; 1/8 subsample sorted = 1/64 of total
gl = glume bases
+ = <10 g shell

	>1 mm flot	*<1 mm flot*	*heavy residue*	*totals*
Triticum dicoccum gl	640	132	77	849
Triticum dicoccum	1682	0	3	1685
cf *T dicoccum*	5	0	0	5
Corylus avellana	0	0	+	+
Bromus sp	3	0	0	3

grain to glume bases would be expected for spikelets which have not yet been dehusked. Glume bases survive charring less well than grain, however, so the 2:1 ratio of grains to glume bases in the subsample sorted is consistent with the deposition of whole spikelets, which disintegrate easily when charred (G Jones 1987). Indeed two or three pairs of grains, still attached to their glume bases, were found in the subsample. Glume wheats such as emmer are commonly stored in spikelet form and dehusked piecemeal as required (Hillman 1981a). This deposit therefore apparently represents emmer charred before dehusking, but it is not possible to determine whether the spikelets were deliberately burnt or accidentally charred, eg in storage or while parching prior to dehusking. The deposit of spikelets is certainly large compared to other Neolithic finds: the 1/64 subsample sorted is equivalent to 850 spikelets, making the total sample *c* 50,000 spikelets.

In the area of the main causewayed enclosure, the two largest concentrations of hazelnut shell were outside the enclosure, in the slot cut into in the south butt of the west ditch of the long barrow (dated to *3640–3370 cal BC* (4741±26 BP; UB-4270) and in the slot towards the W butt of the inner S cross-dyke (dated to *3520–3500 cal BC* (*2% probability*) *or 3470–3370 cal BC* (*93% probability*) (4714±33 BP; UB-4273). In the area of the Stepleton enclosure, the largest concentrations of hazelnut shell were again either outside the enclosure ditches (4B F129 and ST82 F4) or just inside (4B F198). Of the moderate concentrations, three were outside the ditches (4B F137 and F712 and ST82 F39), one was within the ditch (the east butt of segment 12), two were just inside the ditch (4B F155 and F178) and two were near the centre of the enclosure (1A F57 and 2A F268). 4B F712 contained a complete inhumation surrounded by flint nodules, stones, burnt chalk and clay, possibly related to the destruction of the innermost outwork rampart (see Ch 3.5.6). A fragment of nutshell from the pit was dated to *3640–3550 cal BC* (*23% probability*) *or 3540–3360 cal BC* (*72% probability*) (4700±45 BP; OxA-7843).

1A F227 and F239 have been tentatively interpreted as an almost ploughed out corn-drier, F227 being the oven and F239 the stokehole (Fig 3.116). Samples from both are dominated by emmer with some nutshell (and barley in the latter). Two of the emmer grains (from F227) have been dated to the Bronze Age: 1740–1490 cal BC (3315±45 BP; OxA-7841) and 1680–1430 cal BC (3255±40 BP; OxA-7842).

6.2.5 Discussion

In terms of the cereal species represented, Hambledon Hill holds no surprises: emmer wheat, naked and hulled barley (including six-row) all occur at other Neolithic sites (Moffett *et al* 1989; Jones and Rowley-Conwy 2007), including those in the region of Hambledon, eg Maiden Castle (Palmer and Jones 1991), Down Farm (M Jones 1991), Flagstones (Straker 1997) and Whitesheet Hill (Hinton 2004). Hazelnut shell is also a regular, and much commented upon, feature of Neolithic sites (eg Moffett *et al* 1989; J Thomas 1991; 1999; 2003; G Jones 2000; Robinson 2000). The occurrence on the Stepleton spur of a single grape pip, apparently of the cultivated variety and radiocarbon dated to *3640–3340 cal BC* (4660±80 BP; OxA-931; Jones and Legge 1987), is, however, unique. This find is complemented by one of *Vitis* charcoal from site G in the main causewayed enclosure (Austin *et al* this chapter), perhaps suggesting that vines were grown locally (though grapes could also have been transported on the vine). A picture of feasting accompanied by wine-drinking is conjured up but this is of course by no means proven by a single seed and a single fragment of charcoal.

Perhaps the most remarkable aspect of the Hambledon Hill plant assemblage is its sheer quantity (*c* 2,500 cereal grains plus a spikelet deposit with *c* 100,000 grains). Even without the spikelet deposit, this amounts to more cereal than that recovered from all other British Neolithic enclosures put together. In large part this can be attributed to the extent of the excavations and the scale of the sieving and flotation programme. In both enclosures, the charred remains consist of an uneven scatter of hazelnut shell and cereals (both emmer and barley).

The cereal remains, like those of many other Neolithic sites (eg Hillman 1981b; Legge 1981b; Moffett *et al* 1989; Fairweather and Ralston 1993, Jones and Rowley-Conwy 2007), consist almost entirely of cleaned grain, with very little surviving chaff or weed seeds, with the exception of the very large deposit of emmer spikelets to the north of the Stepleton enclosure. This find is comparable to the cereal remains from one of the timber buildings at Lismore Fields, Buxton, Derbyshire, where emmer spikelets may have been stored and dehusked (G Jones forthcoming; Jones and Rowley-Conwy 2007). The sample on the Stepleton spur had clearly been deposited after it became charred, but whether as refuse (from an accident in storage or during parching) or as a part of some ritual action is impossible to tell.

Table 6.10 Charred plant remains from Stepleton features of Bronze Age and uncertain date

+ = <10 g shell

Date	*BA*	*BA*	*?Neolithic*	*?Natural*	*?*	*?*	*?*	*?Neolithic*
Feature	*1A F227*	*1A F239*	*1A F278*	*2A F36*	*2A F41*	*2A F53*	*2A F80*	*2A F179*
Sample(s)	*63, 69, –*	*78, 81*	*75*	*T6*	*T10*	*T20*	*T16*	
Triticum dicoccum	63	63	0	0	1	0	9	7
T cf *dicoccum*	22	20	4	0	0	0	3	0
Triticum sp	54	81	8	1	0	0	1	1
Hordeum sp	0	15	4	0	0	0	0	1
cf *Hordeum* sp	1	10	2	0	3	1	2	2
indet cereal	25	49	0	0	0	0	0	0
Corylus avellana	+	+	+	0	0	0	+	0
Galium aparine	1	0	0	0	0	0	0	0

Table 6.11 Charred plant remains from the Stepleton enclosure and inner Stepleton outwork

	Stepleton enclosure					*Inner Stepleton outwork*			
Segment	*12*	*12*	*15*	*16*	*17*	*3*	*5*	*5*	*6*
Subdivision	*U5*	*U5*	*U9*	*U12*	*U14*	*U1*	*C10*	*C11*	*C1*
Layer	*6A*	*2A*	*3B*	*3D*	*3C*	*4C*	*5*	*2B*	*4A*
Triticum dicoccum	1	60	0	1	0	2	0	1	0
T cf *dicoccum*	1	14	0	0	0	1	0	0	0
Triticum sp	0	11	1	0	0	1	0	0	2
Hordeum sp	1	24	0	1	0	1	1	0	0
cf *Hordeum* sp	0	3	1	0	0	0	0	0	0
indet cereal	0	24	0	2	5	4	0	0	0
Galium aparine	0	8	0	0	0	0	0	0	0

Table 6.12 Charred plant remains from Everley Water Meadow mollusc samples

+ = <10 g shell
gl = glume bases, ra = rachis internodes

Date	*BA+*	*IA–Med*	*?*	*Med/PM*	*Med/PM*	*Med/PM*	*MBA*	*Post-med*	*RB+*	*RB+*	*Med?*	*Med/PM*	*recent*	*RB+*	*RB+*	*Med*
Area	*2X*	*2X*	*2X*	*2X*	*2X*	*2X*	*3*	*3*	*5*	*5*	*5*	*5*	*5*	*5*	*5*	*5*
Column	*2*	*2*	*2*	*2*	*2*	*2*		*spot #*	*3*	*3*	*3*	*3*	*3*	*spot #*	*spot #*	*spot #*
Sample	*4*	*5*	*7*	*8*	*9*	*10*		*14*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*
Triticum dicoccum gl	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
T cf *dicoccum*	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
T aestivum ra	0	0	0	0	0	0	0	20	0	1	0	0	5	0	1	0
T cf *aestivum*	0	0	0	5	2	3	0	18	7	19	15	0	3	24	9	2
Triticum sp	1	2	0	1	4	3	0	8	2	2	2	1	0	9	3	0
Hordeum distichum ra	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hordeum sp ra	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Hordeum sp	1	1	3	0	0	0	2	4	0	0	1	0	0	0	4	0
cf *Hordeum* sp	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0
indet cereal	3	0	0	0	7	0	0	13	0	3	2	0	0	5	3	0
Corylus avellana	0	0	0	0	0	+	0	0	0	0	0	0	0	0	0	0
Vicia/Lathyrus	0	0	0	1	0	0	1	2	0	0	0	0	0	1	0	0
Galium aparine	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Bromus sp	0	0	0	0	0	0	0	7	2	0	0	0	0	0	0	0
Anthemis cotula	0	0	0	0	0	0	0	10	0	0	0	0	0	0	0	0

Indeed, for all the grain at Hambledon Hill, two possibilities exist: either they were burnt accidentally or deliberately, perhaps as part of some funeral rite. They are unlikely to represent the remains of feasting, as cereals are normally consumed either as bread or in the form of a gruel, neither of which is likely to yield quantities of whole, identifiable grains when subsequently burnt. Hazelnut shell, on the other hand, being a by-product of food preparation, could result from feasting or day-to-day consumption, the shells becoming burnt as waste or fuel.

The size of the Hambledon Hill plant assemblage provides an opportunity for re-evaluating the role of wild and cultivated plant foods. It has long been recognised that cereals tend to be under-represented in comparison with hazelnuts at unsieved sites (Moffett *et al* 1989; Legge 1989) and so Moffett *et al* (1989), in their review of plant remains at British Neolithic sites, considered only sites where deposits were sieved. They conclude, from the dearth of cereal remains, that there was 'considerable reliance on collected plant resources'. For most of the sites in their table (ibid, table 1), however, the number of samples taken was small, the largest number being from Hazelton (61 samples totalling 550 litres of deposit) where, in fact, quite a large number of cereal grains (283) was recovered. Indeed, the total volume of soil processed for this table amounts to *c* 3,000 litres (247 samples), less than the volume of the *c* 450 samples processed from Hambledon Hill. A larger number of Neolithic sites have since been sampled for charred plant remains, and the quantity of cereals is now much more impressive (Jones and Rowley-Conwy 2007).

There is also a fundamental difference between hazelnuts and cereals in that, for hazelnuts, the part of the plant most frequently recovered is the nutshell, which represents the waste product of consumption, whereas the waste products from cereal consumption are straw and chaff. All of these components may be used as fuel or kindling for fires but, whereas nutshell is robust and likely to survive burning in a charred form, cereal chaff is much more likely to be burnt to ash (Hillman 1981a; Boardman and Jones 1990). Cereal chaff and straw also have other uses, eg as fodder or temper, which do not apply to nutshell.

There is every reason therefore to think that cereal chaff and straw may be under-represented compared to hazelnut shell (G Jones 2000) and, in the case of cereal grain, there is no reason why it should be burnt at all other than by accident or by deliberate 'sacrifice'. In other words, in an economy where cereals provide the bulk of the diet but where hazelnuts (and other wild resources) are consumed in season, one might well expect the recoverable archaeological remains to be dominated by the more durable waste product of hazelnuts. Only when sampling is extensive, or when a house containing stored cereals is burnt down, might one reasonably expect to find the remains of the rare accidents which generate charred cereal grain. This, in fact, is exactly what one finds at Hambledon Hill (with extensive sampling) and in the timber buildings at Balbridie (Fairweather and Ralston 1993) and Lismore Fields (G Jones forthcoming). While this does not prove that the Neolithic diet was cereal-based, it is at least consistent with this hypothesis.

Using the conversion factor for hazelnut shell weight given by Hinton (2004), the largest concentration of nutshell at Hambledon Hill (in one of the long barrow ditches) is equivalent to *c* 350 nuts. As this represents about one-third of the hazelnut shell on the hill, it is not, in itself, evidence for hazelnut consumption on a grand scale. Similarly, the largest concentration of cereal remains (the spikelet deposit outside the Stepleton enclosure) amounts to *c* 7 litres. In both cases, the recovered charred remains probably represent a fraction, and for cereals a very small fraction, of the total plant food consumed. Any attempt to estimate the relative importance of each from a simple comparison of the quantities found is therefore meaningless.

6.2.6 Conclusions

It is clear that both cultivated cereals and collected wild plant foods contributed to the British Neolithic diet. There is debate, however, concerning the relative contribution of each (Moffett *et al* 1989; Entwistle and Grant 1989; Legge 1989; G Jones 2000; Rowley-Conwy 2000; Monk 2000), which has implications for our understanding of the type of communities in Britain at this time. It has been argued that a mobile economy based largely on wild plant foods would fit well with other evidence for mobility in the Neolithic, and the predominance of hazelnuts at Neolithic sites has been used as evidence to support this view (eg Moffett *et al* 1989; Entwistle and Grant 1989; J Thomas 1991; 1999). More recently, a case has been made for the ceremonial context of cereals which may reflect their use as a special-purpose food (J Thomas 1996; 1999; 2003). Others have argued that cereals were a staple food of the Neolithic, supplemented by wild plant foods when in season (eg Legge 1989; G Jones 2000; Rowley-Conwy 2000; Monk 2000, Jones and Rowley-Conwy 2007), and several reasons for the perceived scarcity of cereals in the British Neolithic have been suggested. These include the unsuitable recovery methods employed at many sites excavated before about 1980, the small scale of sampling at many sites, the predominance of excavated sites with a ritual purpose in southern Britain, and the biases inherent in the archaeological preservation of hazelnuts and cereals.

Where modern recovery techniques have been combined with large-scale sampling at Neolithic sites, as at Hambledon Hill, cereals are often found in quantity despite the biases against their preservation. While both wild and domesticated plants may have played a ceremonial role at causewayed enclosures, it is equally possible that they represent remains from the preparation of ordinary foods for consumption at the site, in which case, given the different taphonomic pathways involved, the quantity of grains relative to nutshells at Hambledon Hill (even without the spikelet deposit) is substantial, and may be indicative of their dietary contribution. Moreover, at Hambledon Hill, cereal grain (both emmer wheat and barley) was widely distributed in the interior pits of both the main and Stepleton enclosures, as was hazelnut shell. The largest concentrations of both plant foods were found near or just outside the enclosure ditches and, as both were deposited in similar contexts, it would be difficult to argue a special purpose for one and not the other.

7 Human remains and diet

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7.1 The human remains

Jacqueline I McKinley

Incorporating parts of an earlier report by the late Robin Kenward

7.1.1 Introduction

History of analysis

The vast majority of the human remains from the excavations were originally examined by Mrs Robin Kenward (hereafter referred to as RK). The bone was received by her at intervals from 1974 to 1984, with some further material extracted from among the animal bone forwarded in 1985, the year in which she produced her report. In 1995, when the publication programme commenced, RK did not wish to continue her involvement with the project due to other pressures on her time and the osteological input passed to the writer.

Initially (in 1996), the writer compiled a report from RK's identifications, using parts of the original report submitted by her in 1985. Two skulls, excavated by Desmond Bonney from the east cross-dykes in 1960, were found to form part of the archive given to the Dorset County Museum by RCHME in 1996 and were incorporated in this report, following examination by the writer. Fragments of a human femur from the same excavation are recorded in Charles Higham's unpublished animal bone report, but have not been located. They are likely to be with the animal bone in the Cambridge University Museum. Human bone recovered from among the animal bone in two contexts was also forwarded to the writer in 1996.

In February and October 1997, as part of the selection procedure for human bone samples suitable for radiocarbon dating, the writer re-examined some of the bone from twenty finds. During this re-examination, it became apparent that there had been omissions in the original analysis; most significantly, there was no record of numerous cut-marks observed on some of the bone, which had clearly been made in antiquity. In view of the importance of the assemblage, particularly the potential significance of the cut-marks for understanding the treatment of the dead, a full re-scan of the assemblage was commissioned and was undertaken by the writer in the summer of 1998. The aims of the re-scan were specific and limited in scope, being essentially two-fold: to scan the bone for ancient modification, including cut-marks, gnawing and weathering, and to produce a comprehensive record of pathological lesions. The opportunity was also taken to make a consistent record of the number of bone fragments and precisely which parts of the bones were represented, an important taphonomic factor in an assemblage of this type. The re-scan was not intended to be a full re-evaluation of the bone; specifically there was no comprehensive checking of RK's suggested 'pairing' or 'joins' between bones and there was no provision for taking measurements additional to those taken by RK. Although not strictly part of the re-scan, the age and sex of individuals were re-evaluated, as, in some instances, was the number of individuals in specific finds. There was also a certain amount of reassessment of joins and pairing, but only that which came to light during the course of the re-scan.

The human remains

Human remains of Neolithic, Bronze Age, Iron Age and Anglo-Saxon date were recovered. Excluding the 12 Anglo-Saxon inhumation burials, which are referred to in this text by their grave numbers, the human remains are referred to here by their find numbers, of which 350 were allocated to human bone recovered from 16 main locations (Table 7.2). Finds were most abundant in the main causewayed enclosure ditch (39%) and the inner Stepleton outwork (10%).

Three basic types of deposit were represented among the prehistoric finds. The articulated skeletal remains of 13 individuals (including one dating to the Bronze Age and one to the Iron Age) were recovered from seven locations (Tables 7.1–2). Fifteen skulls, generally minus the mandible, were found in seven locations. The remaining 295 finds comprised more than 1,651 fragments of disarticulated bone.

7.1.2. Methods

The bone was washed and marked by RK, with some assistance from her extra-mural students. One of the aims of the analysis was to ascertain whether any bone fragments recovered from different localities would join together, which involved reconstruction undertaken by RK.

Numbers of individuals

The minimum number of individuals represented among the disarticulated, fragmentary bone was assessed from counts of the most frequently occurring skeletal element in all the finds (ie including articulated remains and skulls) within each of the 16 main locations (Table 7.1). That bone may have been dispersed

Table 7.1 Summary of human remains from prehistoric contexts

* in the Find column and *italics* elsewhere = bone unavailable for examination during re-scan, data taken from RK's identifications
% skel = % of articulated skeleton recovered
No. frags = number of fragments present
Skel elem = skeletal elements represented: sk = skull, a = axial skeleton, u = upper limb, l = lower limb, sk (m) = mandible only, without other parts of skull, s (t) = loose tooth or teeth only, without other parts of skull
Associations = associated finds of human bone
Type: artic = articulated remains, s = skull(s) with (+m) or without (–m) mandible, frag = disarticulated, fragmentary bone
Pathology: amtl = *ante mortem* tooth loss, pd = periodontal disease, oa = osteoarthritis, op = osteophytes, exo = exostoses, d l = destructive lesion, pnb = periostial new bone, ddd = degenerative disc disease, Sch = Schmorl's node, mv = morphological variation, C = cervical, T = thoracic, L = lumbar, S = sacral, bsm = body surface margins, man = mandibular, max = maxillary, a-c = acromio-clavicular, r/l = right/left, p/d = proximal/distal, IP = inter-phalangeal, ap = articular process, tp = transverse process
Wear/rm = wear/root (or fungal, or insect) marks, on a scale of 1 (low) to 5 (high)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
Central area													
Main enclosure	I	1	HH77 682		2 × sk-m		s	inc HH77 725, 848, 849, 852, 1037	1) young juvenile (6–7 yr) 2) older juvenile		1) calculus; mv – 'pegged' l max I2 2) mv – r max I2 'pegged'	1) cuts	/1–3
Main enclosure	I	4	HH74 HB 8		frag	1	l		adult				/1
Main enclosure	I	6.2	HH76 3030		frag	23	s(m) a u l	inc HH76 3034, 3036, 3038, 3040–43	older juvenile		pnb – innominate, femur shaft, visceral rib; hypoplasia; mv – retarded eruption man P2	?sooting	/<1
Main enclosure	I	7	HH76 2702		frag	1	s(t)		older juvenile/young subadult				1–2/1
Main enclosure	I	7	HH76 2833		frag	5	u		subadult/adult	??F			<1/<1
Main enclosure	I/II	18	HH76 1948	*c* 85%	artic				juvenile		calculus; *cribra orbitalia*; premature suture fusion		4–5/2
Main enclosure	II	1	HH77 621		frag	1	l		adult				/2–3
Main enclosure	II	1	HH77 911		frag	1	u		older subadult/adult				3/2–3
Main enclosure	II	2	HH74 AB 315		frag	4	a l	HH74 AB 346–7	juvenile				1/1
Main enclosure	II	3	HH74 HB 1a		sk-m				young juvenile (5–6 yr)		calculus; *cribra orbitalia*; endocranial new bone; mv – partial metopic suture		1/3
Main enclosure	II	3	HH74 1b		sk-m		s		mature adult (25–25 yr)	F	amtl; caries; abscess; calculus; mv – metopic suture		/2–3
Main enclosure	II	3	HH74 HB 6		sk-m		s	paired with HH74 HB 5	young subadult	?F			/1–2
Main enclosure	II	6.1	HH76 2032		frag	1	l	joins HH76 2044 (main enclosure III), ?=HH76 3030	older juvenile		pnb – femur shaft		
Main enclosure	II	6.1	HH76 2033		frag	1	a		adult			?sooting	
Main enclosure	II	6.1	HH76 2035		frag	5	l		adult	??M			
Main enclosure	II	6.1	HH76 2668		frag	1	u		subadult/adult			dry	<1/<1

Main enclosure	II	8	HH75 2101		frag	>25	s	?=HH 76 2183	subadult/adult	?F		cuts, charred	/2
Main enclosure	II	8	HH75 2109		frag	*c* 3	s		older infant/ young juvenile				1/3
Main enclosure	II	8	HH75 2115		frag	8	s		older infant/ young juvenile				/2
Main enclosure	II	8	HH75 2176		frag	1	a	?=HH75 2183	subadult				
Main enclosure	II	8	HH75 2177		frag	1	l		subadult/adult			dry	/3
Main enclosure	II	8	HH75 2183		frag	8	s (m) a l	inc HH75 2136 (joins)	young subadult		calculus; hypoplasia		1–2/
Main enclosure	II	11	HH75 1848		frag	6	s (m)		older mature adult	??M	pd; calculus; abscess; hypoplasia; pnb – mandible; mv – man r M3 3-cusps		1/1
Main enclosure	II/III	6.1	HH76 *1868**		frag	1	l		*subadult/adult*				??
Main enclosure	II/III	6.1	HH76 2625	*c* 15%	artic		a l		young/younger mature adult	M	exo – femur shafts; new bone – ischium; pitting — acetabula	cuts, canid gnawing, ?sooting	<1/1
Main enclosure	III	3	HH74 AB 346		frag	4	l	?=HH74 HB 2	juvenile			dry	
Main enclosure	III	4	HH74 HB 2		frag	6	s	?=HH74 AB 346	older juvenile (*c* 11yr)		calculus; mv – all man molars 5-cusp		<1/<1
Main enclosure	III	4	HH74 HB 3		frag	1	s		infant/juvenile				/<1
Main enclosure	III	4	HH74 HB 4		frag	>5	s		infant/juvenile				/<1
Main enclosure	III	4	HH74 HB 5		frag	5	s (m)	paired with HH74 HB 6	subadult	??F	mv – ?retarded development man r M2, paramolar cusp man l M2	dry	3/3
Main enclosure	III	4	HH74 AB 77		frag	3	l		juvenile			?canid gnawing	
Main enclosure	III	4	HH74 AB *300**		frag	1	l		*young adult*				??
Main enclosure	III	4	HH74 AB 301		frag	5	l	inc AB 308 (join) & 304 (paired)	adult		pnb – fibula shaft	?canid gnawing	4/1
Main enclosure	III	6.1	HH76 2029		frag	2	l	??= HH76 1870	subadult/adult			dry	/<1
Main enclosure	III	6.1	HH76 2044		frag	1	l	joins HH76 2032 (main enclosure II)	older juvenile			?sooting	
Main enclosure	III	8	HH75 337		frag	3	s		adult				
Main enclosure	III	8	HH75 2017		frag	1	l	?=HH75 2183	older juvenile/subadult				
3–4/3–4													
Main enclosure	III	8	HH75 2023		frag		s	inc HH75 2138	infant (*c* 3 yr)		endocranial new bone – l & r sphenoid, r temporal	cuts	2/1–2
Main enclosure	III	8	HH75 2024		frag	>80	s	inc HH75 2025	infant				/2
Main enclosure	III	8	HH75 2135		frag	10	s		young infant (1.5–2yr)		*cribra orbitalia*		1–2/
Main enclosure	III	8	HH75 2137		frag	5	s (m)		young infant (1.5–2yr)				<1/1–2
Main enclosure	III	9	HH75 1179		sk-m & frags	*c* 43	s	inc HH75 1180 (join) & 1350 (paired)	1) young juvenile (6–7yr) 2) older infant/young juvenile		1) *cribra orbitalia*; hypervascularity	1) cuts	1)/<1 2) 3–4/ 3–4

Table 7.1 (*cont'd*)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
Main enclosure	III	11	HH75 1715		frag	3	a		older infant/juvenile				
Main enclosure	III	11	HH75 2128		frag	>8	s u/l?		juvenile			charred	/2
Main enclosure	III	14	HH76 2999		frag	10	1) s a u 2) l		1) older infant 2) adult				1/1
Main enclosure	III	19	HH76 2984		frag	3	s (t)	?=HH76 3052	older adult				
Main enclosure	IV	1	HH77 581		frag	2	l		adult				5/
Main enclosure	IV	1	HH77 610		frag	3	s (m)		older adult		amtl; pd; caries; oa – temporo-mandibular; mv – impaction l molars	cuts, ?sooting, dry	<1/<1
Main enclosure	IV	16	HH76 1598		frag	4	u	inc HH76 1929 (pair)	adult				3–4/3–4
Main enclosure	IV	17	HH76 2741		sk+m & frag	>30	s a	inc HH76 1158 & 2792 (join) & 2826 =	1) older juvenile 2) juvenile		calculus; hypoplasia; *cribra orbitalia*; mv – enamel pearl	dry	1–3/1–3
Main enclosure	IV	17	HH76 2796		frag	>6	s a		1) juvenile (*c* 9yr) 2) adult		1) calculus	dry	<1/<1
Main enclosure	IV	17	HH76 2923		frag	13	s		adult		mv — metopic suture	charred	/<1
Main enclosure	IV	18	HH76 2954		frag			Joins HH76 2956 from phase VI					
Main enclosure	IV	19	HH76 1621		frag	1	s (t)		older adult				/2–3
Main enclosure	IV	19	HH76 1823		sk+m		s a	inc HH76 1824 & 3052 (join), ?2984=	older adult	M	amtl; caries; hypercementosis; abscess; calculus; ddd – C; exo – patella; mv – enamel pearl; occipital bunning	cuts??	1–4/1–2
Main enclosure	IV	19	HH76 3053		frag	2	l		young/mature adult		mv – squatting facet		/<1
Main enclosure	V	3	HH74 AB 82		frag	1	l		subadult/adult				4–5/
Main enclosure	V	3	HH74 AB 260		frag	2	u		adult	??F			/<1
Main enclosure	V	3	HH74 AB 347		frag	1	l	?pair HH74 AB 346 (main enclosure III)	juvenile				
Main enclosure	V	7	HH76 1572		frag	12	s		older mature/older adult	??F		?sooting	4–5/
Main enclosure	VI	1	HH77 360		frag	>6	s		young subadult (13–15yr)		calculus		3–4/
Main enclosure	VI	1	HH77 590		frag	1	?l/		?human/?animal				4/4
Main enclosure	VI	3	HH74 AB 201		frag	5	u		adult	??M			3–4/<1
Main enclosure	VI	3	HH74 AB 211		frag	2	u		young/mature adult	F			1–2/

Main enclosure	VI	4	HH74 AB 357		frag	*c* 6	s	inc HH74 AB 358, 364, 382 & 384 (join)	young/mature adult	??M		5/5
Main enclosure	VI	5	HH76 1475		frag	10	s		subadult/young adult			1/1
Main enclosure	VI	5	HH76 1966		frag	1	l		subadult			
Main enclosure	VI	6.2	HH76 695		frag	*c* 15	s	??=HH76 1572	adult			
Main enclosure	VI	6.2	HH76 3009		frag	6	s	?=HH76 3011, ??=3012	subadult–mature adult	*cribra orbitalia*; ?trauma – depressed fracture?	?sooting/ ?charred	2–3/2–3
Main enclosure	VI	6.2	HH76 3011		frag	3	l	?=HH76 3009	subadult/adult	??F	dry	4/4
Main enclosure	VI	6.2	HH76 3012		frag	5	l	??=HH76 3009	1) subadult 2) adult		dry	1–2/
Main enclosure	VI	7	*HH76 1839**		frag	1	u	?=HH76 1870	*subadult*			??
Main enclosure	VI	7	HH76 1855		frag	2	l	inc HH76 1852 (pair)	subadult/adult		?charred	<1/
Main enclosure	VI	7	HH76 1856		frag	*c* 34	s	inc HH76 1870, 1908, 1912, 1928	older juvenile/young subadult (?×2)	mv – supernumerary tooth, 2 l max I shovelled, one with extra cusp		1–2/1
Main enclosure	VI	7	HH76 1911		frag	1	l		older subadult/adult	??F		3–4/3–4
Main enclosure	VI	7	*HH76 1915**		frag	*c* 3	a l		*subadult/adult*			??
Main enclosure	VI	8	HH75 238		frag	1	l		adult	??M		2–3/2–3
Main enclosure	VI	8	HH75 241		frag	1	l		adult	??F	cuts, dry	/1
Main enclosure	VI	8	HH75 1684		frag	1	u		subadult/adult			3/3
Main enclosure	VI	8	HH75 1753		frag	1	l		adult			4/1
Main enclosure	VI	9	HH75 598		frag	2	l	?pair HH75 653	older subadult/adult			2/1
Main enclosure	VI	9	HH75 607		frag	1	s	?=HH75 608	mature adult	?abscess		
Main enclosure	VI	9	HH75 608		frag	1	s	?=HH75 607	mature adult			<1/
Main enclosure	VI	9	HH75 653		frag	2	l	?pair HH75 598	adult	exo – femur shaft	??cuts	1/1
Main enclosure	VI	9	HH75 699		frag	13	s	inc HH75 700 (join)	young/mature adult		cut/nick	<1/<1
Main enclosure	VI	14	HH76 2193		frag	*c* 28	s	inc HH76 2206 & 2224 (join)	older mature/older adult		?sooting	3–5/
Main enclosure	VI	14	HH76 2799		frag	1	s (t)		older adult	calculus		
Main enclosure	VI	17	HH76 1071		frag	4	s (m)	inc HH76 1252 (join)	young adult	??M	calculus; caries; pnb – ramus; mv – large M3 5-cusp	3/3
Main enclosure	VI	17	HH76 1841		frag	1	l		adult			<1/1
Main enclosure	VI	18	HH76 1126		frag	1	s (t)		older adult	hypercementosis		1/
Main enclosure	VI	18	HH76 2956		frag	2	l	inc HH76 2954, ?=3053	adult		?cuts	1/1
Main enclosure	VI	19	HH76 988		frag	1	s		older mature adult			5/5
Main enclosure	VI	19	HH76 1177		frag	3	u	??=HH76 988	adult			3–4/3–4
Main enclosure	VI	19	*HH76 1183**		frag	1	s (t)		*adult*			??
Main enclosure	VII	17	HH76 3046	*c* 70%	artic				young juvenile	calculus; premature suture fusion		2–4/1
Main enclosure	VII/a	19	HH76 1101		frag	1	s (t)		older mature/older adult			4–5/4–5

Table 7.1 (*cont'd*)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
Main enclosure	VIII/a	3	*HH74 AB 79**		frag	1	s (t)		*young juvenile*				??
Main enclosure	VIII/a	5	HH76 2904		frag	1	l		adult			dry	3/1
Main enclosure	U/S	14	HH76 3014		frag	1	l		adult			?cut, dry, ?sooting	4–5/1–2
Inner E cross-dyke	I/II	4	HH60 (Bonney's trench L)		sk –m		s		mature adult	F	amtl; abscess; mv – bipartite P2 root		1/1
Inner E cross-dyke	III	5	HH75 1360		sk –m		s	? =HH75 1340	young adult	??M	*cribra orbitalia*	cuts, ?sooting	3/4
Inner E cross-dyke	V	5	HH75 1340		frag	5	s (m)	HH75 1775 from outer E cross-dyke (joins), =?1360	young/younger mature adult	??M			3/2–3
Inner E cross-dyke	VII/a	5	HH60 (Bonney's trench L)		frag	1	l		*?adult – missing*				??
Outer E cross-dyke	I/II	3	HH60 (Bonney's trench L)		sk –m		s		young/younger mature adult	F	abscess; mv – displacement tooth sockets		4/2–3
Outer E cross-dyke	III	3	HH75 441		frag	>1	s		juvenile/subadult				4/4
Outer E cross-dyke	V	3	HH75 1449		frag	1	l		subadult/adult				5/5
Outer E cross-dyke	VI	4	HH75 1949		frag	1	?l		adult		d l (?infection)		<1/
Outer E cross-dyke	VIII/a	5	HH75 1775		frag	1	s (t)	joins HH75 1340 from inner E cross-dyke	adult				3/2
Inner S cross-dyke	III	1	*HH77 572**		frag	1	l		*adult*				??
Inner S cross-dyke	III	1	*HH77 634**		frag	1	l		*adult*				??
Inner S cross-dyke	VIII/a	1	*HH77 75**		frag	1	u/l		*?*				??
Long barrow	I	1	HH77 1948		frag	1	?l		young adult				3–4/3–4
Long barrow	VI	3	HH77 700		frag	1	l	?pair to HH77 1677	subadult/adult				5/5
Long barrow	VI	3	HH77 916		frag	7	s (t)	inc HH77 94 & 142	1) subadult/young adult; 2) older mature/older adult		calculus; hypoplasia		

Long barrow	VIII	1	HH77 1677	frag	2	l	?pair to HH77 700	adult		exo – femur shaft		5/5
Long barrow	VIII	1	HH77 52	frag	3	s a u		adult			?sooting	<1/
Long barrow	VIII	1	HH77 57	frag	1	a		adult				<1/
Long barrow	VIII	1	HH77 59	frag	>17	a l	inc HH77 61 (join) & 78 (part joins), =77/99 (pair), ?=103	adult	?M			1/
Long barrow	VIII	1	HH77 69	frag	25	s (m) a u l	inc HH77 90 (joins)	adult (?parts of second)	M	mv – squatting facet	dry	1/1–2
Long barrow	VIII	1	HH77 77	frag	1	l	joins part HH77 99, pair to 59/61/78, ?=103	adult	?M		cuts, canid gnawing	<1/
Long barrow	VIII	1	HH77 78	frag	3	l	part joins HH77 59, rest different individual	adult				<1/
Long barrow	VIII	1	HH77 80	frag	40	s a u l	?inc HH77 2327, some ?=HH77 94	1) young/younger mature adult 2) ?adult	1) ?M		?sooting, dry	1–2/
Long barrow	VIII	1	HH77 82	frag	1	l	?=HH77 80	young/younger mature adult				2/
Long barrow	VIII	1	HH77 84	frag	1	s		immature >infant				4/
Long barrow	VIII	1	HH77 85	frag	4	a u l		young/mature adult				1/
Long barrow	VIII	1	HH77 88	frag	1	s		adult	?M	?depressed fracture/wound		
Long barrow	VIII	1	HH77 91	frag	7	a l	?=HH77 80	adult			dry	1/
Long barrow	VIII	1	HH77 94	frag	10	a u l	1) inc HH7 79 & 97 (join), joins 100	1) young/mature adult 2) adult	??M ??F	op – calcaneum	?sooting, dry	1–5/
Long barrow	VIII	1	HH77 95	frag	5	s a u l		mature adult			cuts, canid gnawing	1–2/
Long barrow	VIII	1	HH77 99	frag	*c* 30	a u l	part (?2) joins HH77 77, part (1) joins HH77 100	2 × young/younger mature adult	F ?M	1) op – rib, navicular; exo – femur shaft	dry	1–5/
Long barrow	VIII	1	HH77 100	frag	31	s a u l	joins HH77 94 & 99 (2 diff individuals)	1) young/mature adult 2) adult	M ?F		dry	1–3/
Long barrow	VIII	1	HH77 103	frag	27	s a u l	?=HH77 59 & 77	young/younger mature adult				1–2/
Long barrow	VIII	1	HH77 104	frag	>3	l		mature adult			?sooting	3/
Long barrow	VIII	1	*HH77 106**	frag	1	s (t)	?=HH77 80	*adult*				??
Long barrow	VIII	1	HH77 142	frag	2	s		adult				1/
Long barrow	VIII	1	HH77 143	frag	1	s		adult	??M			/<1
Long barrow	VIII	1	HH77 2327	frag	1	a		young/mature adult		op – rib facet		

Table 7.1 (*cont'd*)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
A F64			HH74 AB 433		frag	2	s (t)	inc 432	older infant/young juvenile				1/4
A F64			HH74 AB 440		frag	2	l		adult				4/
A F120			HH74 AB 484		frag	2	s, u		adult				2/2
B F14			HH75 611		frag	1	s		immature			charred	/1
B F1			HH75 432		frag	2	s		juvenile		*cribra orbitalia*		1/
B F1			HH75 701		frag	1	s(m)		young juvenile				1/1
N F11			HH77 604		frag	1	l		adult				2/
Shroton spur													
Shroton spur outwork	III	3	HH76 1604		frag	1	s (t)	?=HH76 1916	older adult				4–5/4–5
Shroton spur outwork	III	3	HH76 1606		frag	1	s (t)	fits HH76 1916	older adult		caries		
Shroton spur outwork	III	3	HH76 1916		frag	1	s (m)		older adult	F	pd; calculus	cuts	/<1
Shroton spur outwork	III	3	HH76 1917		frag	*c* 13	a l		young/mature adult	??M			<1/
Shroton spur outwork	III	3	HH76 1918		frag	>34	s (m) u l		adult		pnb – fibula		2–5+/ 2–5+
Shroton spur outwork	III	3	HH76 1919		frag	6	s (t)	?=HH76 1916	older adult				4–5+/
Shroton spur outwork	III	3	HH76 1920		frag	2	u /l ?		adult				/1–2
Shroton spur outwork	III	3	HH76 1958		frag	1	u		adult				/2–3
Shroton spur outwork	III	3	HH76 1959		frag	2	s (t)	?=HH76 1916	older adult				/5
Shroton spur outwork	III	3	HH76 1960		frag	2	u/l		>infant				4/4
Shroton spur outwork	III	3	HH76 1961		frag	12	u l	?=HH76 1968	adult		depression – cuneiform		/<1
Shroton spur outwork	III	3	HH76 1962		frag	1	l	??=HH76 1916	adult	??F			
Shroton spur outwork	III	3	HH76 1963		frag	10	u l		young/mature adult		oa – p radius; exo – radial tuberosity; pnb – fibula	?cuts	3–4/3–4
Shroton spur outwork	III	3	HH76 1967		frag	27	a		adult				/2–3
Shroton spur outwork	III	3	HH76 1968		frag	8	l	?=HH76 1961 & 1988	mature adult		oa – 1st proximal foot phalanx		1–3/

Shroton spur outwork	III	3	HH76 1988		frag	4	l		adult				
Shroton spur outwork	III	*3*	*HH76 1991**		frag	1	s (t)		*older infant/young juvenile*				??
Shroton spur outwork	III	3	HH76 1604		frag	1	s (t)	?=HH76 1916	older adult				5/5
Shroton spur outwork	VIII	33	HH76 2724		frag	1	s (t)	??=HH76 1916	older mature/older adult				3/
Shroton spur outwork	K F5	3	HH76 426		frag	1	l		adult				5/5
Stepleton spur													
Stepleton enclosure	IV	3	ST80 1310		frag	*c* 72	s		immature >infant				
Stepleton enclosure	III	4	ST80 647		frag	*c* 61	s u/l	inc ST80 648	older infant/young juvenile				2/3
Stepleton enclosure	III	7	ST81 1288		frag	3	l		adult				1/2
Stepleton enclosure	III	17	ST81 2107		frag	2	l		adult		exo – femur shaft		1/
Stepleton enclosure	III	12	ST81 1107		frag	1	l		adult	?M		dry	4/4
Stepleton enclosure	III	12	ST81 1296		frag	22	s		young infant			cuts	/2
Stepleton enclosure	IV	8	ST81 2399		frag	1	s		adult			?sooting	<1/<1
Stepleton enclosure	IV	10	ST81 3188	*c* 40%	artic			inc ST81 434, 766, 3187, 3189	mature adult	F	calculus; pd; op – C6–7, 1T, 2 l & 3 r ribs, r trapezoid, middle finger phalanx; oa – 1st ribs, d l – radius head; mv – man M3 5-cusp	dry, sooting, rodent gnawing	<1–3/1
Stepleton enclosure	VI	4	ST80 852		frag	7	l		adult				2/2
Stepleton enclosure	VI	8	ST81 874		frag	1	s	?=ST81 442	adult				1/
Stepleton enclosure	VI	7	ST81 875		frag	7	s		adult	?M	endocranial new bone	charred	2–3/
Stepleton enclosure	VIII/a	3	ST80 301		frag	1	s (t)		subadult		mv – shovelled max r I1		/2
Stepleton enclosure	VIII/a	3	ST80 2134		frag	1	s		adult				4–5/
Stepleton enclosure	VIII/a	4	ST80 258		frag	1	s (t)		older infant				2/2
Stepleton enclosure	VIII/a	6	ST80 383		frag	31	l		adult	??M			2/1

Table 7.1 (*cont'd*)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
Stepleton enclosure	VIII/a	8	ST81 442		frag	1	s	?ST81 874=	adult				1/1
Middle Stepleton outwork	III	6	ST79 2497	*c* 50%	frag	>106	s a u l	inc ST79 2187, 2202, 2511–8, 2520–7, 2673–5, 2678–89, 2691, 2693	young juvenile (*c* 6yr)		*cribra orbitalia*; new bone – r humerus shaft		2–3/ 2–3
Middle Stepleton outwork	VIII/a	3	ST78 1166		frag	1	s (t)		older subadult/young adult		calculus		
Inner Stepleton outwork	I	5	ST79 1354		frag	1	l		subadult/adult				/<1
Inner Stepleton outwork	I	5	ST79 1428		frag	8	s (m)		older adult	??M	calculus; pd		/1
Inner Stepleton outwork	I	5	ST79 1296		frag	4	l		immature				/1
Inner Stepleton outwork	I	6	ST79 1477		frag	2	l		adult				<1/1–2
Inner Stepleton outwork	I	7	ST78 2842		frag	>28	s		infant				/1–2
Inner Stepleton outwork	I	7	ST78 2944		frag	*c* 17	s		infant/juvenile				<1/
Inner Stepleton outwork	I	7	ST79 2726	*c* 95%	artic				older mature adult	M	calculus; *cribra orbitalia*; Sch – T12, L1–3; oa – 12th c-v; trauma – rib fracture, pitting – 3 rib facets; exo – l femur shaft, patella, calcaneum; op – T2 tp, L2 ap; mv – occipital bunning, vastus notch, partial sacralisation L5, calcaneum dual facets, squatting facets	cuts	2–3/ 2–4
Inner Stepleton outwork	I	9	ST78 2756	*c* 85%	artic				neonate (0–4 months)	??F	mv – metatarsals/carpals 3 centres ossification	?cut	
Inner Stepleton outwork	III	7	ST78 1101		frag	29	s		infant				/1–2
Inner Stepleton outwork	III	7	ST78 2755	*c* 98%	artic				older subadult/young adult (17–20yr)	M	calculus; d l – r 1st proximal phalanx; Sch – T5–10, T12, L1–3; pitting – C ap; mv – slight shovelling max I2, vastus notch, squatting facets, dual calcaneal facets	cuts, canid & rodent gnawing, ?sooting	/<1–2

Inner Stepleton outwork	III	7	ST78 2755a	frag	31	s a u		young infant (1.5–2yr)				
Inner Stepleton outwork	III	7	ST78 2795	frag	28	s		young/mature adult	??M			/<1
Inner Stepleton outwork	III	7	ST78 2845	frag	*c* 15	s a	?=ST78 2842	older infant				
Inner Stepleton outwork	III	9	ST78 1100	sk +m	>40	s a	inc ST78 2047	young/younger mature adult	F	calculus		4/1–4
Inner Stepleton outwork	III	9	ST78 1100a	frag	9	s		older infant (3–4 yr)		mv – max I2 shovelled		/2
Inner Stepleton outwork	III	9	ST78 1625	frag	1	s	?= ST78 2248	?immature				
Inner Stepleton outwork	III	9	ST78 2248	frag	>18	1) s a u/l 2) a		1) infant (*c* 3yr) 2) adult				1/<1
Inner Stepleton outwork	III	9	*ST78 2584**	frag	3/1	s u /s	1) ?=ST78 1100 2) ?=ST78 2756	*1) adult* *2) neonate/young infant*				??
Inner Stepleton outwork	III	9	ST78 2919a	frag	>11	s a u	inc ST 78 2870 & 2932	infant				/<1
Inner Stepleton outwork	III	9	ST78 2919b	frag	6	l	?=ST 78 1100	subadult/adult	F			<1
Inner Stepleton outwork	V/1	5	ST79 1112	frag	1	s		adult				2/4
Inner Stepleton outwork	V/2	6	*ST79 1751**	frag	1	u		*infant/juvenile*				??
Inner Stepleton outwork	V/2.	9	ST78 2871	frag	3	l	?=ST 78 1100	older subadult/adult	??F		dry	2–3/5
Inner Stepleton outwork	VIII/a	4	ST80 2115	frag	2	u		subadult/adult				3/2
Inner Stepleton outwork	VIII/a	5	ST80 1095	frag	1	l		adult				4/2
Inner Stepleton outwork	VIII/a	6	ST79 531	frag	>2	u l		juvenile/subadult				>5/>5
Inner Stepleton outwork	VIII/a	7	ST78 1185	frag	1	l		??immature >juvenile				>5/>5
Inner Stepleton outwork	VIII/a	7	ST79 1281	frag	1	l		?subadult				>5/>5
bank/topsoil	Inner outwork bank areas		ST78 69	frag	1	l		adult				<1
Outer Stepleton outwork	I	7	ST78 967	sk –m		+a	inc ST 78 968	older subadult	??F	*cribra orbitalia*; mv – atlas central groove		1/3

Table 7.1 (*cont'd*)

Location	*Phase*	*Segment*	*Find*	*% skeleton*	*Type*	*No. frags*	*Skel elem*	*Associations*	*Age*	*Sex*	*Pathology*	*Condition*	*Wear/rm*
Outer Stepleton outwork	I	3	ST80 1875	*c* 98%	artic				young adult	M	hypoplasia; calculus; pnb – l femur shaft; osteoid osteoma – l femur shaft; exo – calcaneum; mv – retention man deciduous m2, max I2 shovelled, wormian, squatting facet	cuts, rodent gnawing, arrowhead	1/
Outer Stepleton outwork	I	5	ST80 2069		frag	1	u		subadult/adult				1/3
1A F70			ST78 964	*c* 80%	artic			inc ST 78 710	older infant/young juvenile (*c* 5yr)		*cribra orbitalia*; mv – man M1 4-cusp	?sooting	3–4/3–4
1A F57			ST78 1235		frag	21	s		?young infant				2/1
2A F200			ST79 2025	*c* 40%	artic			inc ST 79 2386	older adult	??M	pd; calculus; abscess; oa – 1T, 1L; op – 5 proximal, 6 middle & 1 distal phalanx; exo – patella, r femur shaft	scorched	1/3
4B F137			ST81 2053		frag	12	s	inc ST 81 2036	infant/juvenile				<1/
4B F137			ST81 2172		frag	38	s	inc ST 81 2173	older infant/young juvenile		?sinus – parietal	?sooting	2–3/<1
4B F712			ST81 3181	*c* 98%	artic				young adult	M	calculus; op – 1 r & 1 l rib, auricular surfaces; oa – 1 r rib; mv – impaction man r M3, wormian, atlas dual facets, accessory transverse foramen C5–7, squatting facets		1–5/1–3
ST82 F16	BA		ST82 114	*c* 45%	artic		crtic	inc ST82 115, 117, 119–126, 130	mature/older adult	M	ddd – 2C; mv – man M1 4-cusps	dry, sooting, ?badly crushed	1–3/2
U/S			ST78 966		frag	1	s (t)		adult				2/
U/S			ST81 2576		frag	1	l		juvenile				1/2
Hanford spur													
Inner Hanford outwork	III	2	HN82 342		frag	3	s		infant/young juvenile				1/2
Inner Hanford outwork	III	2	HN82 344		frag	5	1.		subadult/adult				<1/1
Inner Hanford outwork	III	2	HN82 365		frag	4	s (m)		infant (*c* 3yr)				/<1
Inner Hanford outwork	V	2	HN82 334		frag	11	s (m)	?=HN82 236	older adult	?M	calculus; pd; abscess		1–2/1–2
Inner Hanford outwork	V	3	HN82 240		frag	3	s		older adult	??F			1–2/1–2
Inner Hanford outwork	V	3	HN82 270		frag	2	s		adult				>1/>1

Inner Hanford outwork	V	3	HN82 293	frag	1	u		adult				/>1
Inner Hanford outwork	V	3	HN82 403	frag	1	a		infant			canid gnawing, cut marks, dry	/1–2
Inner Hanford outwork	VII/a	3	HN82 236	sk –m			inc HN 82 257	mature/older adult	??M	osteomas		1–2/1
Inner Hanford outwork	VII/a	3	HN82 248	frag	8	l	inc HN 82 255 & 260 (join)	young/mature adult			rodent gnawing	/1
Inner Hanford outwork	VII/a	3	HN82 258	frag	*c* 4	a u l		adult	??F			
Inner Hanford outwork	VII/a	3	HN82 278	frag	3	l		young/mature adult		mv – squatting facet		/<1
Inner Hanford outwork	VII/a	3	HN82 339	frag	2	l		adult		hypervascularity – femur neck		2/2
Outer Hanford outwork	I	3	HN82 119	frag	5	l	?=HN82 200	adult				1–2/1–2
Outer Hanford outwork	I	3	HN82 200	sk –m				mature adult	F	mv – wormian		2–3/1–2
Outer Hanford outwork	I	3	HN82 221	frag	2	l	?=HN 82 200	adult				1–2
Outer Hanford outwork	III	1	HN82 416	frag	1	s (m)		older infant				
Outer Hanford outwork	V	2	HN78 2306	frag	1	s (m)		older mature/older adult	??M		abscess	/1
F854			HN82 721	frag	1	s (t)		older juvenile/young subadult				/2
'Flint mines'			HN82 572	frag	1	s		older mature/older adult				dry 2/
'Flint mines'			HN82 634	frag	1	s	?=HN82 572	adult				1/1
Hillfort												
Hillfort	IA		HH86 97	artic		r foot		mature/older adult exo – distal phalanx		op – middle & proximal phalanges;		<1/

within a limited area is demonstrated by joins or pairings (noted by RK) between fragments from different, though relatively closely spaced localities, for example the inner and outer east cross-dykes. Adult and immature bone was assessed separately, with a further breakdown into the different immature age categories; the age and sex attributed within the adult group was also considered. The most frequently occurring bone fragment in the adult skeletal assemblage was the femur shaft, the mandible being the most common element among the immature bone.

The checking of possible joins or pairing between bone fragments and skeletal elements was not one of the objectives of the re-scan and, therefore, was not systematically undertaken, nor was there a detailed study of possible links between different contexts or phases. Consequently, it was considered appropriate to include RK's estimates for the number of individuals (Table 7.2). RK appears to have estimated the minimum number of individuals represented by the disarticulated fragments of bone from obvious joins, between both broken bone fragments and articulating bones, pairing of bones, and correlation of age and sex, all with due consideration of the contextual data. However, some of RK's suggested 'pairings' and 'joins' were not substantiated in the re-scan and others had been overlooked. Two figures were generally arrived at by RK within each of the different site localities, a 'minimum' and a potential 'maximum' number. The 'minimum' figure was based on the probability that immediately adjacent or fairly closely spaced deposits of unduplicated skeletal elements, of similar age and sex but with no joins or pairing, might represent parts of the same individual. The 'maximum' figure was based on the assumption that all separately numbered bone fragments of similar age/sex where no pairing or joins were observed represented parts of different individuals. It should be noted that figures based on such premises will in all probability provide an over-estimate of numbers.

Age

In the re-scan, age was assessed from the stage of tooth development (van Beek 1983), epiphyseal bone fusion (Gray 1977; McMinn and Hutchings 1985), immature long bone dimensions (Bass 1987), degree of occlusal tooth wear (Brothwell 1972a), and the general degree of cranial suture fusion. The following age categories are employed:

Table 7.2 Original and revised estimates of numbers of individuals from Neolithic contexts

Artic = articulated skeletal remains, Skull = skull only
Totals include articulated remains, skulls and fragmentary remains, showing the minimum and potential maximum numbers of individuals (see 7.1.2)
* bone unavailable for examination during re-scan

	Original		***Revised***					
	Immature	*Adult*	*Immature*			*Adult*		
			Artic	*Skull*	*Totals*	*Artic*	*Skull*	*Totals*
Central area								
Main causewayed enclosure	24–44	21–36	2	6	19	1	2	11
Inner east cross-dyke		2–3					2	2
Outer east cross-dyke	1	4–5			1		1	2
Inner south cross-dyke	1	1			1			1*
Long barrow		4–7			1			4
Features	2–5	3–4			1			1
Totals	**26–49**	**35–56**	2	6	**23**	1	5	**21**
Shroton spur outwork	**1–3**	**3–4**			**1***			**2**
Stepleton spur								
Enclosure	3	11–13			3	1		2
Inner outwork	12–16	12–16	1		3	2	1	6
Middle outwork	2	1			1			1
Outer outwork	1	3		1	1	1		2
Features	4	3	1		1/?2	2		2
Totals	**23–29**	**33–40**	2	1	**9/?10**	6	1	**13**
Hanford spur								
Inner outwork	2–3	4–13			1		1	2
Outer outwork	1	2–4			1		1	1/?2
'Flint mines'	1	1–2						1
Totals	**4–5**	**7–19**			**2**		2	**4/?5**
Overall totals	**55–85**	**75–115**	4	7	**35/?36**	7	8	**40/?41**

foetus/neonate	<6 months
infant	6 months–4 years
juvenile	*c* 5–12 years
subadult	*c* 13–18 years
young adult	*c* 19–25 years
mature adult	*c* 26–45 years
older adult	*c* 45 years+

Where insufficient evidence was present for age assessment there may be overlaps between the assigned categories.

In the re-scan, sex was assessed from the sexually dimorphic traits of the skeleton (Bass 1987; Brothwell 1972a). The levels of reliability attributed reflect the quantity and quality of available traits on which the assessment was based; '??' denotes 'possible', '?' denotes 'probable'.

Skeletal indices

Stature was estimated using Trotter's and Gleser's regression equations (1952; 1958; Brothwell 1972a; 1981). Cranial index was calculated according to Brothwell (1972a; 1981). Platymeric and platycnemic indices were calculated according to Bass (1987).

Ancient modification

All bone fragments were visually scanned for indications of ancient cut-marks. All the cuts noted by the writer were described and marked prior to the bone being forwarded to A J Legge for verification. Owing largely to the condition of the bone, Legge attributed probability levels to each of the cuts or series of cuts.

Examination under a Scanning Electron Microscope (SEM) verified the character of the cuts first noted by the writer on the femur shaft during selection of bone for radiocarbon dating. A sample of nine bone fragments with cuts was subject to further SEM investigation and micrographs were produced by Malcolm Ward at the Ancient Monuments Laboratory. A series of 11 individual gold-coated casts (up to three being taken from two bone fragments with several groups of cuts) were made from a silicone-based precision-impressed dental material, Optosil P. The SEM was used in the backscatter mode with the anode at 15kV. Magnifications were between 10× and 100× and the image was inverted (black for white) to try to counteract the fact that 'hollows' appeared as 'hills' on the silicone impressions.

The condition of the bone, both general weathering and abrasion, and root/fungal/insect marks, was assessed on a scale of 1–5; 1 denoting slight wear or root (including fungal/insect) marking (cortical bone not quite 'fresh' in appearance), 5 denoting heavy wear or marking (cortical bone surface substantially eroded). Potential canid and rodent gnaw-marks were assessed with the advice of A J Legge and Peter Andrews.

The archive

Every bone fragment from prehistoric contexts was recorded on a numbered skeleton sheet showing, as near as possible, the precise area of bone represented (RK had completed skeleton sheets for only the 13 articulated skeletons from the prehistoric contexts together with five other general skeleton sheets). Where appropriate, dental record sheets show tooth wear patterns and the location of dental lesions. A number of measurements additional to those recorded by RK were taken where they were deemed of value, for example, for sexing or the calculation of indices. These did not form part of the re-scan, and were therefore small-scale and inconsistent. The archive includes detailed comments on morphology and descriptions of pathological lesions; the presence of any animal bone in an individual assemblage; location and form of cut-marks and gnawing with some additional descriptions by A J Legge; and the condition of the bone.

Skeleton sheets were not completed for the Anglo-Saxon burials, RK having already done so (for 10 of the 12 skeletons), but each burial has dental records sheets showing attrition and location of lesions and joint record sheets where appropriate.

RK's original report, including cranial/post-cranial measurement and skeleton sheets for the Saxon burials and some of the prehistoric bone, is also held in archive.

7.1.3 Results – Neolithic, Bronze Age and Iron Age

With the exception of a crushed but articulated Bronze Age individual from ST82 F16 on the Stepleton spur (ST82 114; Fig 3.117) and an articulated foot recovered from a feature in the bank area of the north cross rampart in the Iron Age hillfort (HH86 97; Fig 3.150), all other prehistoric human remains are of Neolithic date. It is probable that much, if not all of the material recovered from post-Neolithic contexts (most of it from phase VIII/a in the ditches) was reworked from earlier ones.

A summary of the results is presented in Table 7.1. To give an impression of the skeletal elements represented among the disarticulated fragments, four main skeletal categories are shown – skull, axial skeleton, upper limb and lower limb. It should be noted that one or more fragments from any of these categories may be all that is present (see key to Table 7.1). Thirteen bone finds (all disarticulated fragments) could not be located during the re-scan. These numbers are italicised in Table 7.1 and marked with an asterisk (*); the summary results given are taken from RK's records.

Condition of the bone and ancient modifications

Weathering and root-marks (Table 7.3)

In general terms the bone is in good condition, but varying degrees of weathering (surface wear/abrasion) and root-marking were observed throughout the

Table 7.3 Percentages of weathered and root-marked bone by deposit type. Heavily affected bone is scored 4 or 5 in Table 7.1

category	*% weathered*	*% root-marked*	*% heavily weathered*	*% heavily root marked*
skulls	80%	100%	18%	12%
articulated skeletal material	71%	71%	21%	14%
disarticulated fragments	49%	15%	47%	10%
overall rates	54%	60%	17%	11%

assemblage, and among bone fragments from individual finds. 'Root-marking' has been adopted as a general term, but may also cover surface marking produced as a result of fungal or insect activity (Armour-Chelu and Andrews 1996). It is often difficult to distinguish between such marks other than by microscopic examination, but it is probable that all three have been factors to some degree.

Among the articulated skeletons, the degree of weathering and root-marking was rarely uniform across a single skeleton; the condition of different skeletal elements sometimes varying considerably with scores from 0 to 5. There was no consistent pattern with respect to location or phase; bone recovered from pits and ditches showed similar variability, and bone from primary deposits displayed the same levels of wear and root-marks as those from tertiary deposits. Among the skulls, a single cranium was not always affected uniformly, for example only the right side of the vault of HH74 HB 6 was root-marked, and the right side of HH74 HB 1b was more heavily affected than the left. Among the disarticulated fragments weathering and root-marking were generally slight; bone from the Hanford spur was particularly lightly affected, with maximum scores of 3 for weathering and 2 for root-marks, while that from the Shroton spur was noticeably more heavily affected than the bone from elsewhere. Particularly heavy wear and root-marking were also noted in fragments from the phase VIII/a deposits in the inner Stepleton outwork; and root-marking increased in severity in the phase VI deposits in the main causewayed enclosure and in the upper levels of the east cross-dykes. Few of the fragments from the south long barrow were root-marked, but those that were affected generally scored 4–5.

There were numerous instances in which one end of a bone fragment was heavily worn or root-marked while the other end had a fresh appearance. This may have resulted from the position of the bone in the ground, experiments having shown preferential damage to the side of the bone facing up after burial due to the effects of percolating water (Armour-Chelu and Andrews 1996); alternatively, it may indicate that parts of the disarticulated bone fragments were left protruding above ground for some time after deposition, the rest of the fragment being buried.

A small proportion (7%) of the bone, all disarticulated fragments, had a distinctive form of fine longitudinal fissuring/cracking, characteristic of very dry bone. Such fissuring is characteristic of rapid drying (Wysocki 1998, 156), perhaps following soaking (?rain) followed by drying in intense sunlight. Small numbers of such fragments were found in all locations.

The patterns of weathering and root-marking noted in the human bone do not appear to be repeated in the animal bone. The animal bone from the deep deposits was generally fairly fresh in appearance, only that from the upper or disturbed levels showing indications of weathering (see Legge, Ch 8). The depth from which the bone was recovered does not appear to have been such a significant factor with regard to the condition of the human bone. Although there was an increase in the severity of root-marking in the later phases in some localities, and bone from the final phase on the Stepleton spur was more heavily worn than elsewhere, the condition of the bone from these phases was not uniform and heavy wear/root-marks also occurred in earlier phases. A similar variation in the degree of weathering was also noted between the (much smaller) human and animal bone assemblages from Etton, Cambridgeshire (Pryor 1998).

While there is some indication that location, and thereby possibly the burial micro-environment, was a factor in the condition of the bone, such variation may equally reflect different treatment of bone in the different localities. There is, for instance, some indication from the radiocarbon dates that human bone from the Shroton outwork had been subject to more re-working (?repeated redeposition or longer exposure prior to final burial) than bone from the Hanford outworks (Ch 4). It may be worth noting that the condition of the bone from the Anglo-Saxon graves on the Stepleton spur was considerably poorer than that of any from the Neolithic contexts, though this was almost certainly the result of plough-damage.

Of the three types of deposit, skulls were the most consistently worn and root-marked category. The articulated skeletal material was also substantially more frequently weathered and root-marked than the disarticulated bone fragments. The condition of the skulls indicates that they were subject to greater exposure to the elements than the rest of the assemblage, particularly since all, except some from the Hanford spur, were recovered from on or near the base of ditches. Most of the articulated skeletal remains were also recovered on or close to ditch bases, some were apparently deliberately covered, others not. The degree of weathering seen in this category suggests that at least

some of the remains were exposed to the elements for some length of time. Skeleton ST78 2755 lay prone in a layer of chalk rubble in the inner Stepleton outwork and was believed to be associated with an attack on the Stepleton enclosure. Although the bone was slightly root-marked, there was no visual weathering, implying that this body was covered fairly rapidly. The highly variable condition of the disarticulated bone fragments seems to indicate that not all the material in this category was subject to the same taphonomic processes, or, if so, then for different lengths of time or for a different number of episodes. There were a number of instances in which non-adjacent fragments from different phases were found to match, for example HH74 HB 5 (mandible) and 6 (skull minus mandible) from different phases within adjoining segments of the main causewayed enclosure ditch – indicating re-working of material. Differential treatment of Neolithic remains deposited in different areas of the long cairn at Parc le Breos Cwm, Gower, has been suggested by Wysocki (1998), the remains from the chamber appearing far more weathered than those from the passage.

Fragmentation

Almost all (98.7%) of the disarticulated material consisted of bone fragments rather than complete bones. The only exceptions comprise a complete, but broken, radius from the Shroton spur (HH76 1963) and 20 hand or foot bones, half of which are from the south long barrow. In general, only the shafts of limb bones were recovered, a mere 1.7% of the assemblage comprising fragments of articular surface. Although breaks along the lengths of shafts were clearly either post-depositional (joining fragments) or of recent origin, the broken ends of long bones usually showed the same level of wear as the adjacent cortical surface. Since the bone was generally in fairly robust condition, the lack of spongy bone is not considered to have been a result of soil conditions adverse to bone survival, but is regarded chiefly as a consequence of its treatment prior to final deposition.

In addition to a large part of the assemblage clearly being deposited as 'dry' fragments, a certain amount of breakage probably occurred as the result of pressure from the burial environment. A large quantity of the human bone was recovered from fairly deep contexts and many of the fills comprised coarse chalk rubble. Over 40% of the disarticulated bone assemblage consisted of skull fragments – between one and 20 fragments in a single find – predominantly vault. The close proximity and distribution of many of these fragments, together with the joins between some, suggests that they were slightly less fragmentary at the time of deposition. Most of the 15 skulls deposited on or close to the ditch bases were shattered, some badly (>75 fragments), and several had been warped as a result of soil pressure. Some of the articulated skeletons were described as 'crushed' by RK, for example the older adult burial ST79 2025, the immature individual ST78 964 and the Bronze Age burial ST82 114, all from features on the Stepleton spur. The first may have suffered as a result of its position under the massive inner outwork bank or due to more recent agricultural activity. Although an articulated skeleton (ST78 2755) from the inner Stepleton outwork had apparently not been left exposed for long, the cranium was badly broken, with more than 283 very small fragments in addition to the 39 main fragments which could be joined.

The bulldozing of the mound of the south long barrow in the 1960s removed all the human remains contained within it from their original contexts, the nature of which must remain uncertain. The fragmentary human bone was found mostly within the south-west quadrant with some in the north-west, other fragments having been spread over the area between the long barrow and the south cross-dykes. With the exception of loose teeth and *c* 50% of the small bones of the hands and feet, the bones had been broken into small fragments by years of agricultural activity. The only human bone from the long barrow ditches was a fragment of long bone (HH77 1948) from the primary silts and five loose teeth found together in the phase VI slot cut into the south-east ditch. Much material was probably lost as a result of the recent disturbances, both through fragmentation and dispersal. One-hundred-and-seventy fragments were identifiable to a specific skeletal element, 58 fragments could only be described as long bone.

Gnawing

Since some of the animal bone recovered showed evidence of having been gnawed by carnivorous scavengers (a minimum of 2.7% of the animal bone fragments had been subject to dog gnawing, and 0.3% to rodent gnawing, see Legge, Ch 8), the human bone was examined for traces of similar activity. For reference, RK looked at recent collections of the remains of animals eaten by wolves and human bones from corpses dragged from shallow graves by hyænas. The latter provided useful information on which skeletal elements were most likely to show traces of gnawing, which included vertebral bodies, the iliac portion of the pelvic bones, the articular ends of long bones and the basal portion of the skull, leaving the cranial vault with characteristic bevelled edges. In other words, the more 'nutritious' spongy bones with their greater infiltration by cartilage and blood vessels, many functioning as a storehouse for marrow, were eaten, the more compact bone being left. The former skeletal elements would also have been physically easier to consume. In addition to the bevelled/crenellated edges produced when fresh bone breaks due to carnivore gnawing (often formed by conjoined punctures), puncture marks (which may appear as 'pock-marks' in the surface of compact bone) are created in the bone surface by the anterior teeth and grooves where the animal has gnawed across the grain of the bone. It has been observed, however, that carnivores can scavenge a

corpse without leaving any visible marks on the bone (Haynes 1980; Horwitz and Smith 1988). The potential destructive power of carnivores is demonstrated by the mere 0.30–0.40 m length of long bone shaft which was all that remained of a reindeer eaten by wolves (RK). Dogs and foxes could consume a large proportion of the human skeleton (Legge, pers comm), as with the hyænas mentioned above, particularly the remains of young immature individuals.

A few fragments of human bone show clearly visible traces of gnawing, by both canids (dogs and/or foxes; seven finds, *c* 2%) and rodents (*c* 1%). There were no indications to suggest the activity of wolves, the presence of which in the vicinity of Hambledon during the Neolithic period would be highly unlikely (Legge, pers comm). It may be significant that four of the ten finds in which gnawed bone was positively noted were articulated skeletal material (canid and rodent gnawing), that is 33% of the articulated bone, compared with 2% of the fragmentary bone. Among the animal bone, gnawing was more frequent on the Stepleton spur than elsewhere (see Legge, Ch 8). Gnawed human remains were noted among the bone from three finds on the Stepleton spur (3%), three from the main causewayed enclosure (2%), three from the south long barrow (6%) and two from the Hanford spur (8%). The figures should, however, be treated with caution, since there is compelling indirect evidence that gnawing was far more widespread (see below).

Direct evidence for canid gnawing took the form of puncture marks, pock-marks on long bone shafts, crenellated broken edges to bone, and grooving. For example, bipolar puncture marks were recorded on either side of a fragment of immature ilium (HN82 403) from the inner Hanford outwork; two punctures are in the anterior side of the bone, one on the dorsal side (Figs 7.1–2).

Extensive gnawing was noted in the articulated remains of an adult male (HH76 2625), comprising just the lower axial skeleton and the femora, recovered from phase II/III of the main causewayed enclosure ditch (Figs 7.3–4). Here the iliac crests of the pelvic bones have crenellated edges and puncture marks in one side and there are two broad, diffuse grooves, 5 mm wide, *c* 4.3 mm apart in the anterior of the first sacral body. The proximal and distal ends of the left femur had partly been removed (the ball joints of the hips remaining intact) leaving crenellated edges, fractured puncture marks and pock-marks along the adjacent shafts (Figs 7.3–4). Pock-marks were also seen in the right femur proximal shaft concentrated over a 51 mm proximal–distal area, continuing – very dispersed – down the medial and dorsal sides. It is likely that the body was partly decomposed before removal to this position and that it was either dragged from a shallow grave or removed from an exposed position above ground. The probable weight of the body suggests that more than one animal was involved in its movement.

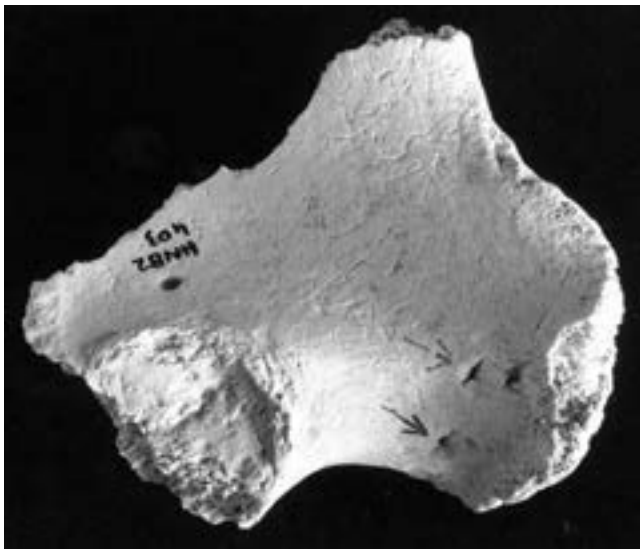

Fig 7.1 HN82 403 (infant); ventral view of left ilium (pelvic bone), showing puncture marks from canid gnawing. Photo Elaine Wakefield (Wessex Archaeology)

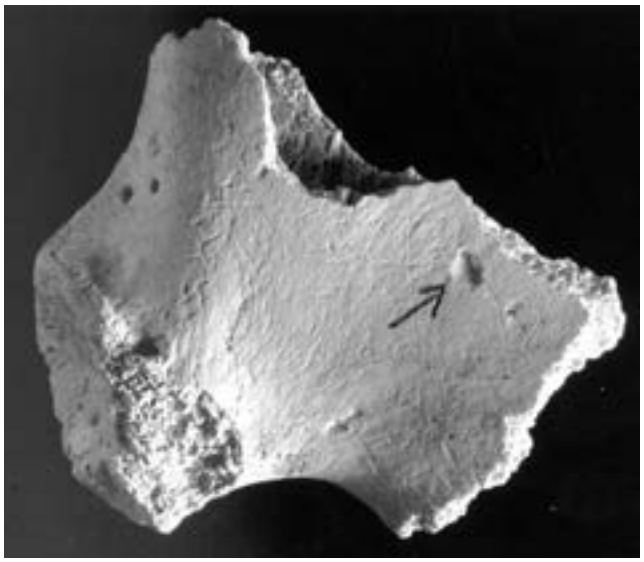

Fig 7.2 HN82 403; dorsal view of left ilium, showing puncture marks from canid gnawing (in opposition to those in Fig 7.1) and a series of cut-marks. Photo Elaine Wakefield (Wessex Archaeology)

Crenellated margins and puncture marks were also noted around the proximal end of a fragment of left femur from the south long barrow (HH77 77), with a series of four pock-marks in the anterior and posterior surfaces of the shaft (Fig 7.5). Several rib shaft fragments from the articulated skeleton ST 2755 from the Stepleton spur had puncture marks and crenellated areas on the upper or lower borders; in one right rib, a 9 mm area of rodent gnawing overlay a slightly larger area of canid gnawing (Fig 7.6).

Most of the punctures were in the region of 3.9–5 mm in diameter; the presence of some smaller ones, *c* 1.7 mm diameter, suggests either several species of scavenger, or both immature and adult individuals.

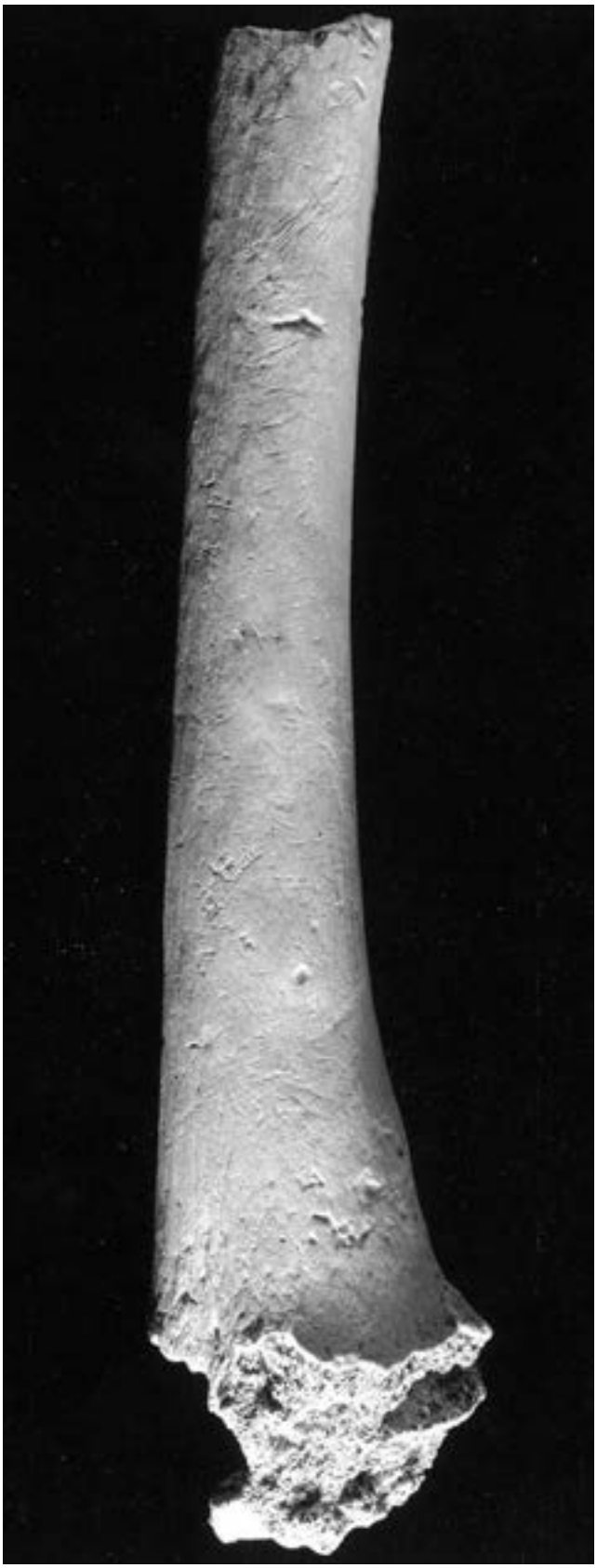

Fig 7.3 HH76 2625 (adult male 18–30 yr); anterior–lateral view of left mid-distal femur, showing several series of cut-marks and scrapes, canid gnawing to articular surface and pock-marks in the shaft, and changes due to various forms of weathering. Photo Elaine Wakefield (Wessex Archaeology)

Fig 7.4 HH76 2625; anterior view of left distal femur showing several series of cut-marks and scrapes, canid gnawing to articular surface and pock-marks in the shaft, and changes due to various forms of weathering. Photo Elaine Wakefield (Wessex Archaeology)

Fig 7.5 HH77 77 (adult ?male); lateral view of left proximal femur showing crenellations due to gnawing and puncture mark above lesser trochanter (to right). Photo Elaine Wakefield (Wessex Archaeology)

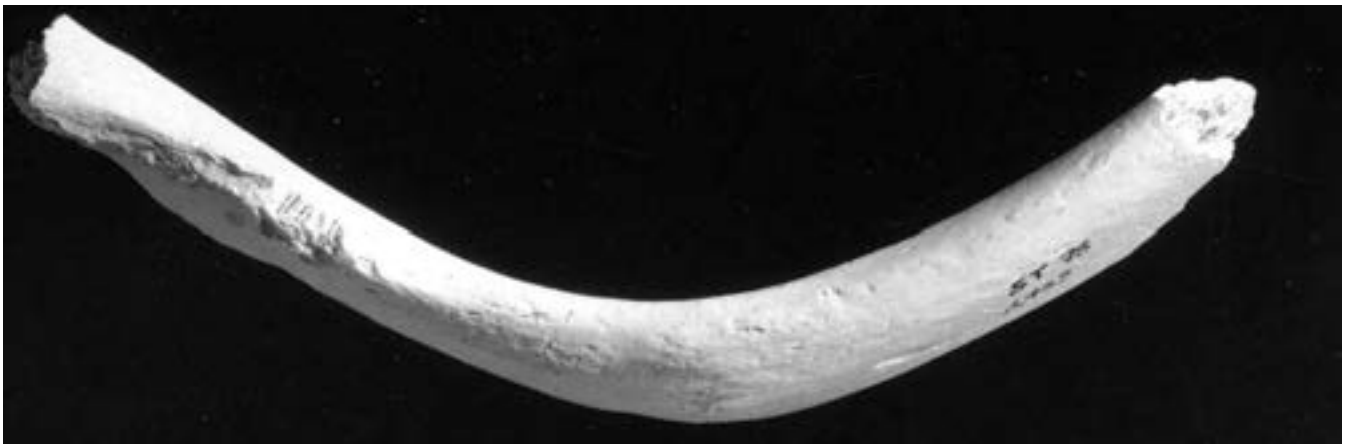

Fig 7.6 ST78 2755 (male, 17–20 yr); right rib showing area of rodent gnawing along superior border overlying canid gnawing and puncture in external surface of shaft (to left of number marked on bone). Photo Elaine Wakefield (Wessex Archaeology)

An extensive area – 56.6 × 37.0 mm – of rodent gnawing was noted along the sagittal suture of the skull of ST80 1875, extending through the exocranial surface and much of the diploë. Probable gnawing was also noted in other parts of the skull and on the margins of broken edges in the left scapula, right clavicle and left femur. The presence of rodent tooth marks need not necessarily suggest exposure of the body either in the open or in a shallow grave. In many places the ditch fills were vacuous and the possibility of access by rodents some time after final deposition should not be overlooked, though there are limits to the depth to which small rodents will burrow.

It is highly probable that these few examples of clearly evident gnawing represent a minimum number; subsequent weathering and abrasion obscuring the broken edges of bone fragments and rendering grooving difficult to distinguish from other surface marks. Indirect evidence suggests that the activity of scavengers was far more prevalent. There is a noticeable dearth among the disarticulated bone of fragments of vertebrae and pelvic bones (3.7%, most from the long barrow (0.8%) or from a single deposit made up of ST79 2497 and other finds in segment 6 of the middle Stepleton outwork (1.3%)), hand and foot bones (2.5%, most from the long barrow) and the articular surfaces of long bones (1.7%; 0.8% from the long barrow, 0.3% from the Hanford spur), ie the very parts of the skeleton most likely to be completely lost due to consumption by scavengers (Binford 1981, 171–73). The degree of weathering noted to the bone does not suggest that these skeletal elements or parts of bones have been lost owing to adverse soil conditions. While it may be that there were other taphonomic or cultural forces that may have affected the skeletal elements observed in analysis (see below), it is probable that a large proportion of this bone has been lost as a result of the activities of scavengers. Binford has discussed and illustrated the distinctive patterns in surviving long bone parts following canid gnawing, which includes the progressive removal of one or both ends of the long bone, the 'cylinder' – a segment of the central part of the long bone shaft – often comprising one of the last surviving parts (Binford 1981, 171–73, figs 4.56–57). His definition of animal gnawing as 'an attritional process resulting in the progressive deletion of certain parts from the assemblage' may be pertinent to the observed bone recovery in the human bone assemblage from Hambledon Hill. Similarly, the observation that 'Animals manipulate bones and carcasses by literally tearing them down structurally' may be seen to describe the dispersed distribution of partial cadavers.

It may be significant that a substantially higher percentage of the immature individuals in the assemblage were identified from the articulated remains and skulls (36%) as compared with the adults (15%), with a correspondingly lower percentage from among the disarticulated remains. Some infant and juvenile remains are likely to have been completely removed from the assemblage as a result of the activities of scavengers, particularly since it is known that wild animals tend to remove their food out of the open to a 'safe place' prior to consumption (Legge, pers comm).

There is no note of any gnawing, canid or rodent, to the human bone from the causewayed enclosure at Staines, Surrey (Robertson-MacKay 1987). However, Pryor (1998) reports that canid gnawing was recorded in half of the fifteen fragments of disarticulated human bone recovered from Etton. Here, as at Hambledon, the human bone differed from the animal bone in being more abraded, but, in apparent contrast, the human bone was more gnawed than the animal (4% of the 275 fragments of animal bone recovered were gnawed). About 50% of the human remains from the chambers at Parc le Breos Cwm had been gnawed (Wysocki 1998) and it was noted that long bones were most frequently represented by segments of shaft (no gnawing was noted to human bone from the passage). What could not be conclusively stated in the latter was how much of the gnawing had occurred prior to deposition

in the cairn and how much subsequent to it, though Wysocki suggests that the former was principally the case. Lee (2006) observed no gnawing on the human bone from the long barrow at Haddenham, Cambridgeshire.

Charred bone and 'sooting'

Human bone in five finds showed positive evidence of charring (1.4%) giving a slightly higher figure than for the animal bone (0.7%). All were disarticulated fragments from both adult and immature individuals, and all except one came from the main causewayed enclosure.

Most of the charring was to fragments of skull vault. A fragment of immature vault from BF14 (HH75 611) is charred black. There is brown-black charring to the endocranial and exocranial surfaces of a right lateral frontal from segment 8 of the main enclosure (HH75 2101), crossing the broken edge of the fragment, and in the endocranium adjacent to the nasal sinus and left orbital vault; a few other fragments of vault were charred grey. The left lateral and right half of a frontal from segment 17 of the main enclosure (HH76 2923) is slightly charred (dark brown) in the exo- and endocranial surfaces (darker endo-). In ST81 875, from segment 7 of the Stepleton enclosure, there is brown and black charring to the frontal at the left medial supra-orbit and the left side of the glabella, where the bone is also broken (Fig 7.7). Two fragments of long bone from two other finds were very slightly charred (brown).

The condition of the bone (fragmentation and colour) indicates that it was burnt as dry, or close to dry, bone (McKinley 1994, 76–78), and probably when already fragmented. There is no evidence for cremated bone. Although a large proportion (*c* 41%) of the finds included fragments of vault, a similarly large proportion of long bone shaft fragments were also recovered. It appears significant, therefore, that most of the charred fragments were cranial.

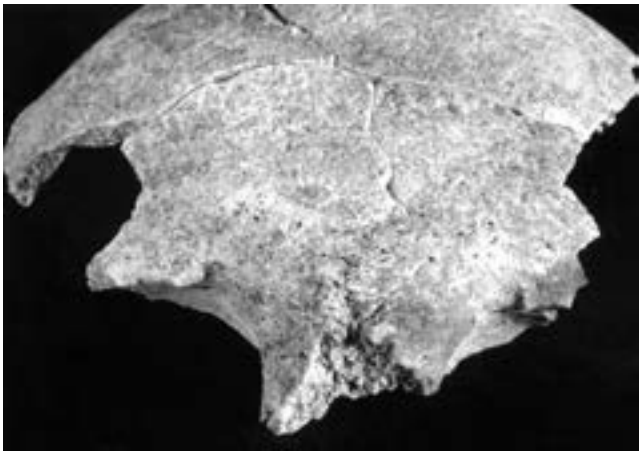

Fig 7.7 ST81 875 (adult ?male); frontal vault showing charring to left supra-orbit and glabella. Photo Elaine Wakefield (Wessex Archaeology)

There is no note of charring to the small amount of human bone recovered from the causewayed enclosures at Staines (Robertson-MacKay 1987) or Etton (Pryor 1998). Some bones from the Fussell's Lodge long barrow in Wiltshire were 'burnt and scorched' (Brothwell and Blake 1966, 40). Both cremated and dry burnt bone were recovered from the West Kennet long barrow in the same county (Wells 1962, 81; Piggott 1962, 24). A few fragments of charred and more thoroughly burnt bone occurred in undisturbed contexts at Hazleton, Gloucestershire (Saville 1990b, 104, 183 and 260), and 'charring' of uncertain nature was noted in several early long barrow excavations (Kinnes 1992, 101). The bone from Haddenham exhibits varying levels of oxidation (illustrated by the colour of the bone) which, together with the evidence for articulation, suggested that both green and dry bone may have been burnt *in situ* when the mortuary was fired (Lee 2006).

Clearly there are two separate types of activity reflected in these occurrences: cremation, as a mode of disposal of the dead, with subsequent interment of cremated bone in a similar vein to the deposition of the unburnt remains, and burning of already dry bone, the significance of which is debatable. The latter may have been deliberate and had some 'ritual' significance. Alternatively it may have been incidental, the distinction between human and animal bone or any other 'debris' no longer being maintained once the main mortuary ritual had been performed. The six contexts containing burnt human bone from Hambledon Hill also contained charcoal and animal bone, the latter showing some evidence of burning in two contexts. Fragments of disarticulated and fragmentary burnt human bone have also been found in numerous late Bronze Age/early Iron Age 'midden' deposits such as at Potterne, Wiltshire (McKinley 2000), and Iron Age 'structured' pit deposits such as those at Ham Hill, Somerset (McKinley 1999a), where the significance attached to the human remains is also believed to have altered from that attached to skeletal remains involved in a specific mortuary ritual.

Bone fragments from 23 finds (7%), including parts of two articulated skeletons, were noted to have a 'dirty' or dark-stained appearance, indicative of charcoal staining or 'sooting'. A small proportion (*c* 18%) of these finds were from charcoal-rich contexts and may have been stained during their final burial, though it should also be noted that many other fragments from charcoal-rich deposits were not stained. The remainder of the fragments were recovered from charcoal-free contexts, which suggests that they were stained or sooted prior to deposition.

Cut-marks

Cut-marks were recorded in bones from 23 of the finds (*c* 7%). Poor definition of possible cuts in eight of these, due to the erosive/masking effects of weathering/root-marks and the shallow depth of incision into the

bone, made conclusive identification impossible in some instances. The numbers involved included five articulated skeletons (36% of articulated material), three skulls (21% of skulls) and 15 disarticulated fragments (5% of this category).

Cuts were most commonly seen in the skull (43%) and femur (35%), two (9%) had cuts in parts of the pelvic bones (ischium and ilium) and there were single instances of cuts in the rib, radius, fibula and tibia (Table 7.4). Among the articulated skeletal material, cuts were most commonly seen in only one bone (three of five), though cuts were seen in both femora from one skeleton, and in the left radius and three ribs of another. Those affected include individuals across the age range (neonate to older adult) and of both sexes. Distribution covered all the main localities, including the south long barrow, with no significant concentration apparent within any particular area.

The sharp profile (sometimes diminished by weathering), apparent in visual inspection and confirmed by microscopic examination, demonstrated that the cuts were the result of human action. The profile was generally angled, having one side steeper than the other, with an acute base (Fig 7.8). The use of stone tools may be distinguished by longitudinal striations within the cut and 'feathering' towards the ends (Fig 7.9) created by the 'serrated' edge of the blade (P Andrews, pers comm).

The cut-marks were all of a similar form and type – short, shallow incisions, *c* 3.54–42 mm in length, commonly occurring as small groups of parallel or almost parallel lines, generally set at a transverse angle. Most of the marks were extremely shallow, though there were several slightly deeper incisions. In most instances, relatively few cuts (*c* 1–15) were evident in one skeletal element, however, in excess of 100 cuts were recorded along the length of the anterior shaft of the left femur of HH76 2625 (Figs 7.3–4, 7.8–9). Table 7.4 presents a description of the cuts and their location, and a guide to the associated muscle groups etc (these are not necessarily muscle insertions).

This type of cut is characteristically produced in the butchery of animals during 'filleting', ie defleshing. They are the 'shorter, more oblique cuts made to the underside of the exposed bone to free it from the mass of meat and/or sever muscle insertions' (Binford 1981, 129) and are characteristically 'very superficial, rarely deep' (Binford 1981, 131). Some of the marks may best be referred to as 'scrapes' rather than 'cuts', resulting from the action of scraping flesh off the bone as part of a cleaning process rather than the removal of any substantial quantity of soft tissue. This latter action, where undertaken by a highly skilled operative, may leave no marks on the bone at all (P Andrews, pers comm); conversely, it has been demonstrated that 'when the object of the activity was a cleaned bone, rather than meat, skeletal elements were expected to bear a relatively large number of cut-marks compared with skeletons defleshed for meat' (Russell 1987a; 1987b). While many of the marks noted are most likely to represent 'scrapes', some were slightly deeper and appear to have comprised the 'cuts' associated with defleshing rather than cleaning, eg one cut on the left femur of HH76 2625 (Fig 7.3) and those on the radius and ribs of ST78 2755 (Figs 7.10–11).

There was no indication of chop marks or of the specifically located (around the proximal and distal ends of long bones; eg Ubelaker 1984, 191, figs 101–2) cuts indicative of dismemberment (Binford 1981, 91–126), or of bone breakage to facilitate the

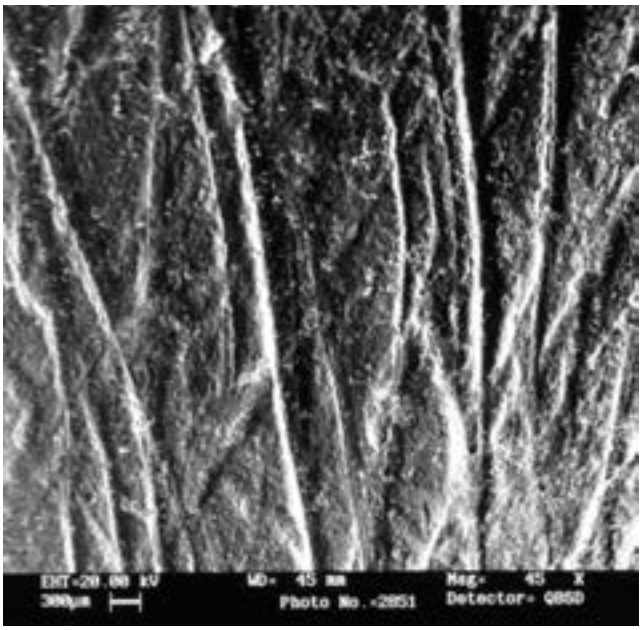

Fig 7.8 HH76 2625; SEM image of a cast of a group of cuts/scrapes (sharp profile) and ?abrasions/trampling (×45 magnification). Photo Malcolm Ward (English Heritage)

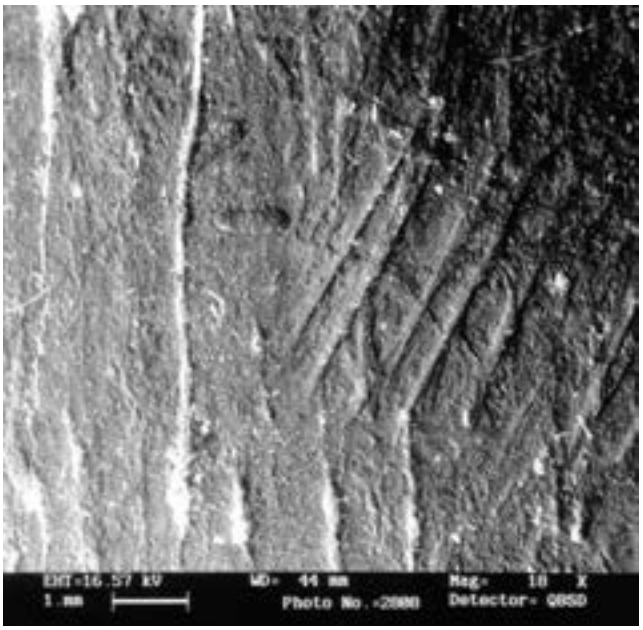

Fig 7.9 HH76 2625; SEM image of a cast of a group of scrapes and abrasions/trampling (×18 magnification). Photo Malcolm Ward (English Heritage)

extraction of marrow (ibid, 148–63). Comparison of the location and type of cuts seen in the human bone from Hambledon Hill with those observed in the animal bone, illustrates the difference in the processes of human manipulation of the two assemblages (see Legge, Ch 8).

Fig 7.10 ST78 2755 (male 17–20 yr); dorso–lateral view of left proximal radius shaft showing three small groups of cut-marks. Photo Elaine Wakefield (Wessex Archaeology)

There were difficulties in distinguishing some of the cuts, due both to the nature of the incisions themselves and the condition of the bone. None of the cuts, by virtue of their nature, were very deep, only the very surface of the cortex being affected. Cuts of this type are likely to be completely erased from bone which has suffered moderate, possibly even relatively mild, weathering of the cortical surfaces; root-marking may both mask and mimic such cut-marks, making them difficult to distinguish, particularly where there is also erosion of the surface (see for example, Figs 7.1–4 and 7.10). Further potential difficulties were introduced by the burial environment, which often included quantities of flint, and undoubtedly there had been some post-depositional abrasion producing incidental scratches on the bone surface. In experiment, the latter has been noted to occur as the fill around the bone settles after deposition (Armour-Chelu and Andrews 1996). Pre-depositional abrasion due to trampling may create surface marks very similar to some of those seen in this assemblage (ibid), and with this assemblage it is known that bone lay exposed on the surface prior to burial. The effects of most of these factors are amply demonstrated in the femora of HH76 2625 (Figs 7.3–4).

It is highly probable that the cuts recorded here are a minimum, both within one deposit or find and the assemblage as a whole. This presents difficulties in interpretation with regard to both the treatment of the remains of individuals and what it may reflect of the mortuary rituals in general. The apparent exclusion (see below) of the Hanford spur from whatever general activity was occurring is probably genuine, given the relatively fresh condition of the bone from this locality (see above). In other areas, the activity was not confined to individuals of any particular age or sex.

In the majority of cases, the cuts can be linked with either the severing of specific muscle attachments (Table 7.4) and/or cleaning/stripping the bone of its soft tissues by repeated short scrapes, possibly accompanied by tugging away of the tissue. Although it is probable that some cuts will have been missed or effectively erased, the general impression is that the location of individual cuts or scrapes on the different bones do not follow a consistent pattern, and do not suggest systematic and complete defleshing of bodies and cleaning of the bones. Some of the cuts, to the visceral surfaces of ribs, lingual surface of mandible and the ischium for instance, would appear difficult to make other than to a body already partially defleshed and/or disarticulated.

One possible key to the interpretation of the rituals being practised is the inclusion of the articulated skeletal remains. Here, some clear, deep incisions were noted to either a single bone, or a few bones within the skeleton. It had previously appeared as though the articulated skeleton ST78 2755 from the Stepleton inner outwork ditch had rested undisturbed – though not exposed for long (see above) – in the position in

Table 7.4 Summary of cut-marked bone from Neolithic contexts, compiled in consultation with A J Legge (AJL)

Order follows that of Table 7.1

Find	*Age/Sex*	*Type*	*Description*
HH77 682	young juvenile	frag	Long, fine scratch mark, 41.5 mm, crossing medio-lateral right lateral parietal *c* 17.2 mm dorsal to coronal suture. ?2 parallel cuts mid-lateral right occipital, max 13.3 mm long, 1.3 mm apart, inferior-medial to superior-lateral at *c* 20°. *Temporoparietalis* or *temporalis* and *epicranius*
HH75 2101	subadult/adult ?female	frag	1) 2, closely spaced (*c* 0.02 mm apart), slightly curved, parallel lines, min. 34.7 mm long. Precise location unknown, area posterior-inferior of parietal. Sharply incised and angled, cut so deep that the fragment has partly broken, probably in excavation, along this line (Figs 7.15–16). 2) Centre frontal, 10.2 mm long, 26.5 mm superior to glabella at *c* 60°. 3) Possible 3 others – may be abrasion or trampling. *Temporoparietalis* or *temporalis*
HH76 2625	young/younger mature adult male	artic	1) Anterior ventral of left iliac surface, dorsal-ventral, horizontal to iliac border and *c* 20 mm superior to it, stopping short of inferior of public tubercle. Cut-mark, 20.7 mm long. Could have caught inferior anterior margin of *iliacus* but seems a little low. 2) Medial side left femur lesser trochanter, *c* 5 short – 3.7–8.9 mm cuts, medio-lateral in superior half. *Psoas major*/*?pectineus* 3) Extensive series small cuts, along length of left femur shaft from within 80 mm of distal end to with 42 mm of the broken proximal end. Mostly along anterior & anterior lateral shaft, with lesser numbers on anterior medial side (Figs 7.3–4, 7.8–9). Fine, short blade marks, occurring individually & in groups of up to 11, generally angled *c* 30–40°, inferior-lateral to superior-medial on medial side and inferior-medial to superior-lateral on lateral side. Left proximal shaft: several short – *c* 3.7 mm – cuts in proximal anterior margin, 1st *c* 56.8 mm inferior to greater trochanter, medio-lateral, then 4.4 mm lower group of three, then two more at a slight angle, over 17.6 mm length of bone. Next batch down, over 17 mm length of proximal lateral shaft, groups of 4, 1, 2, 1 & 1, cuts *c* 6.3 mm long at a slight angle. Next batch over *c* 8 mm length of shaft, 2 adjacent groups at different angles, cuts *c* 5.1 mm long. Distal half of shaft (from break – 193.6 mm length), covered in cuts, possible may not have recorded all proximal to distal: dense group of deep cuts over 20 mm length, at *c* 45° angle, lateral-medial shaft, 14 cuts, 15 mm long angle progressively more acute as go to lateral side, some cross each other. Fainter group above this, *c* 5, and numerous small cuts inferior and lateral, *c* 13.4 mm left to level of modern damage. Below this, dispersed collection faint and deep cuts all along anterior-lateral shaft over 77.2 mm length, generally at slight angle, *c* 22 cuts up to 9.5 mm long, some probably from trampling and/or abrasion. Distal *anterior* shaft, several small groups of 4–5 cuts, 3.8 mm long, down to second marker. 2 strong groups of cuts inferior to TL inferior marker, 93.4 mm from distal end, *c* 7 cuts in each group, short, one almost horizontal, other angled. Few below this but not many. *Vastus intermedius* 4) Right femur has a few cuts, but much less than left, anterior-lateral of shaft, two concentrations, 4 short (max 8.5 mm) cuts over 14.6 mm length, one groups horizontal other angled *c* 45°. In mid shaft, medial anterior group of 6 faint cuts, 4.5 mm area shaft, 4.5 mm long. TL (4), one cut over medial-lateral border, *c* 3.1 mm long. Possible other but very faint. All fine, short blade marks, not very deep, made into green bone. *Vastus intermedius* 5) Right femur lesser trochanter, area cuts on and around trochanter (TL) as in left. *Psoas major*/*?pectineus* and ilio-femoral ligament attachment.
HH75 1179	young juvenile	sk–m	Mostly medio-lateral across centre-right of frontal, 9–12 mm long, straight or slightly curved at one end. Series 5 cuts, 22 mm superior to orbital margin to within 10 mm coronal suture. Cranium has a large number of other scores and striae which may be due to human action, or trampling/abrasion. One medio-lateral cut in middle left parietal has possible *post-mortem* break along it – cut can just be seen running parallel to part of the break. *Epicranius*, *temporoparietalis* or *temporalis*
HH75 2023	infant	?frag/ ?sk–m	Right medio-distal parietal has series of *c* 6 cuts adjacent to sagittal & lambdoid sutures in groups of up to 3. One cut has a convincing oblique cross-section found when a flint tool is used at an angle. Others are eroded but have the appearance of multiple incisions at one point & along a similar line. Some cuts also noted in left parietal but bit less certain. Multiple scores & grooves, some probably result of trampling &/or abrasion, but good deal eroded, cannot be certain. ?*Epicranius* or removal of scalp?
HH76 1824	older adult male	sk+m	Left lateral occipital adjacent to lambdoid suture but not crossing it, three lines becoming progressively fainter superiorly, set at *c* 25–30° angle, max 12.4 mm long, similar orientation. 11.2 mm between inferior line & middle one, upper line 3.7 mm above the middle line, ?trampling/abrasion or human action?. Right distal parietal, anterior-posterior cut 20.5 mm long. ?*Epicranius*

Find	*Age/Sex*	*Type*	*Description*
HH77 610	older adult	frag	Medial side left condyle neck from posterior end of sigmoid, at 45 degree angle anterior and inferior, 7.5 mm long. *70%* probability *Pterygondeus lateralis*
HH75 241	adult ??female	frag	3 fine cuts across anterior surface of distal femur shaft *c* 23 mm *Articularis genus* or *vastus intermedius*
HH75 653	adult	frag	Small group 3–4 faint parallel marks (in max 5 mm area) + one other slightly higher up, across 6.8 mm area. Right proximal femur shaft, medial anterior surface. Bone surface eroded with numerous scores and striae, some of which go over rounded surfaces after the manner of cut marks – but too little definition to go beyond 'possible', some likely to be trampling/abrasion. *Vastus intermedius*
HH75 699	young/mature adult	frag	Small 'nick' in left superior-anterior parietal, 3.4 mm ?
HH76 2956	adult	frag	3 parallel cuts, 3.6 mm long, across posterior-medial of mid shaft femur over a 2.3 mm area. Ill-defined 60% probability. *Vastus intermedius* or *articularis genus*
HH76 3014	adult	frag	2, very faint parallel cuts, 1.5 mm apart on lateral side of proximal femur shaft, 6.8 mm long. May be others but bone very abraded. *Vastus intermedius*
HH75 1360	young adult male	sk–m	*c* 15.5 mm cut in left side occipital, crossing lambdoid suture to left parietal at *c* 80° angle, *c* 43 mm inferior to lambda. Margins of 'cuts' are rounded and eroded, causing loss of detail (85% probability). Many other striae and scores *Epicranius*
HH77 77	adult probable male	frag	2 short, 4.3 mm, roughly parallel cuts, angled across anterior lateral side femur shaft. *Vastus intermedius*
HH77 95	mature adult	frag	Pair of parallel lines in dorsal surface of inferior left ischium, surface adjacent to tuberosity, *c* 15.4 mm long, 2.1 mm apart, at angle *c* 180°, series of 8, shorter lines set at right angles, some crossing the longer two creating a box effect, some ceasing at margins of longer lines (Figs 7.13–14). *Obturator externus*
HH76 1916	older adult female	frag	2 vertical cuts on disto-buccal body of mandible at base of ramus, 19.4 mm long. *Pterygondeus medialis*
HH76 1963	young/mature adult	frag	2–3 parallel cuts, almost horizontally across one side of fibula shaft, *c* 1.6 mm apart. The whole shaft is covered by small marks crossing the shaft, but it is also heavily root marked & eroded so difficult to identify convincingly. One of five possible muscle attachments or interosseous membrane.
ST81 1296	young infant	frag	3 possible cut-marks on an undefined vault fragment, max 16.4 mm. Eroded with loss of definition (75% probability).
ST78 2756	neonate	artic	4 small, parallel marks angled across the anterior shaft towards broken end right femur (proximal half shaft). Over 7.16 mm length of shaft, each *c* 3.54 mm in length. Possible cuts? *Vastus intermedius*
ST79 2726	older mature adult male	artic	2 possible cuts to right lesser trochanter, 80° angle, superior-lateral to inferior-medial, max 10.7 mm long, 2 mm apart. *Psoas major.*
ST78 2755	older subadult/ young adult male	artic	Proximal end left radius, dorso-lateral side, *c* 77–110 mm from head, 3 small groups of cuts (2–5) max 4.6 mm long, all at similar (but not identical) 45° angle, superior-lateral to medio-inferior (Fig 7.10). Three right rib shafts have cut marks: 1) dorsal-lateral surface, 2, slightly curved parallel cuts *c* 8.8 mm long, almost vertical, cross inferior border, 2) in visceral surface, slightly angled 17.8 mm, 3) upper end of lateral surface, *c* 210 mm from head, angled front-rear and downwards, *c* six parallel cuts, spread over three small groups within 15 mm area, each a max of 5.3 mm long (Figs 7.11–12). *supinator* and *pronator teres* in radius
ST80 1875	young adult male	artic	Possible cuts in distal shaft right tibia, posterior-lateral surface, 3 short (max 3.8 mm), parallel cuts, one off-set between others, at 45° angle. 2.5 mm between adjacent cuts, off-set one (lateral) between these two. General appearance '= -' ?interosseous membrane.
HN82 403	infant	frag	Series of 4 cuts, maximum 22.6 mm long, in dorsal surface of left ilium, roughly parallel, between 3.5–8 mm apart, radiating out distally from superior margin (Fig 7.12). Several shorter cuts set at right-angles, one, *c* 12 mm long, crosses one longitudinal cut and terminates at the adjacent (most dorsal) one, series of *c* 7 short marks, *c* 2.2 mm, respect the anterior edge of the anterior-most of the longitudinal cuts. Covers *c* 16.9 × 27.6 mm area *gluteus minimus* and ?*gluteus medius*

Fig 7.11 ST78 2755; view of dorsal (upper) and visceral (lower) surfaces of right rib shaft fragments with cut-marks. Photo Elaine Wakefield (Wessex Archaeology)

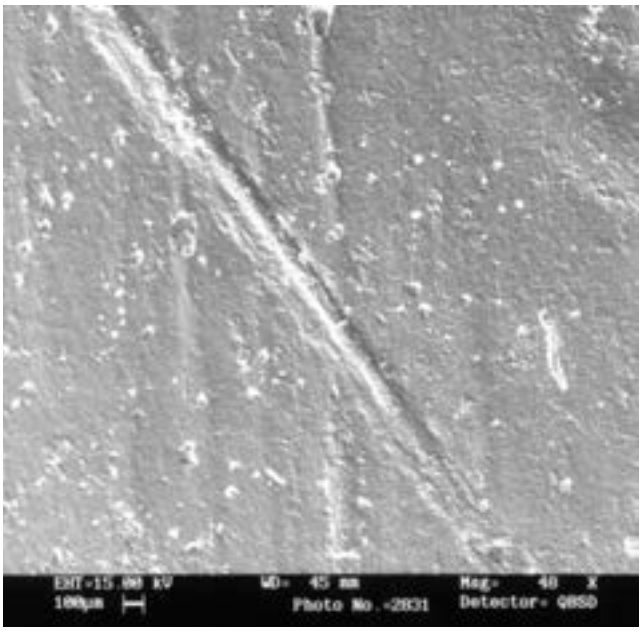

Fig 7.12 ST78 2755; SEM image of a cast of a cut-mark in visceral surface of right rib shaft. Photo Malcolm Ward (English Heritage)

which he fell, having been killed, probably during an attack on the enclosure (Figs 3.102–4). However, cuts to the left radius and three ribs (Figs 7.10–12) suggest this was not the case; some *post mortem* manipulation of the body appears to have occurred. The cuts to the radius are within the area of the supinator and pronator teres muscle attachments, the cuts in the ribs cross the dorso-lateral surface in two fragments, possibly extending to the attachments for the intercostal muscles and membranes, the cut in the third fragment crossing the area covered by the pleura. Cuts designed to sever individual muscle attachments to bone were obviously made to specific bones of this cadaver, but there was no apparent attempt at disarticulation. The corpse had also been subject to limited canid and rodent gnawing (see above). The myriad scrapes and cuts along the anterior shafts of the femora of HH76 2625, are mostly in the area covered by the vastus intermedius (Figs 7.3–4), and suggest both defleshing and cleaning of the bone; but why was activity limited to this anterior area and why did it appear to be concentrated on the left femur?

What the current evidence suggests is that cadavers were subject to partial removal or loosening of soft tissues and subsequent cleaning of the bones, possibly constituting part of an on-going process as the body reached various stages of decomposition, and representing components within a mortuary rite involving other modes of excarnation.

Odd exceptions, however, are provided by HH77 95 from the south long barrow and HN82 403 from the Hanford spur, each of which has a bizarre group of very shallow cuts on part of the pelvic bone (ischium and ilium respectively) forming a geometric pattern (Figs 7.2, 7.13–14). These cuts, although individually of a similar form to all the others, cannot be simply the products of defleshing or cleaning. The restricted distribution of this pattern of cuts to fragments of pelvic bone could be of significance, as may be the observation that HN82 403 is the only bone from the Hanford spur on which cut-marks were observed, while HH77 95 was one of only two from the long barrow. Several cattle bones from Etton had been 'firmly scored' with parallel diagonal or transverse lines which were apparently not associated with meat processing (Armour-Chelu 1998a). It was believed these may have comprised 'tally sticks'; did the odd marks on the pelvic bones from Hambledon serve some such similar purpose?

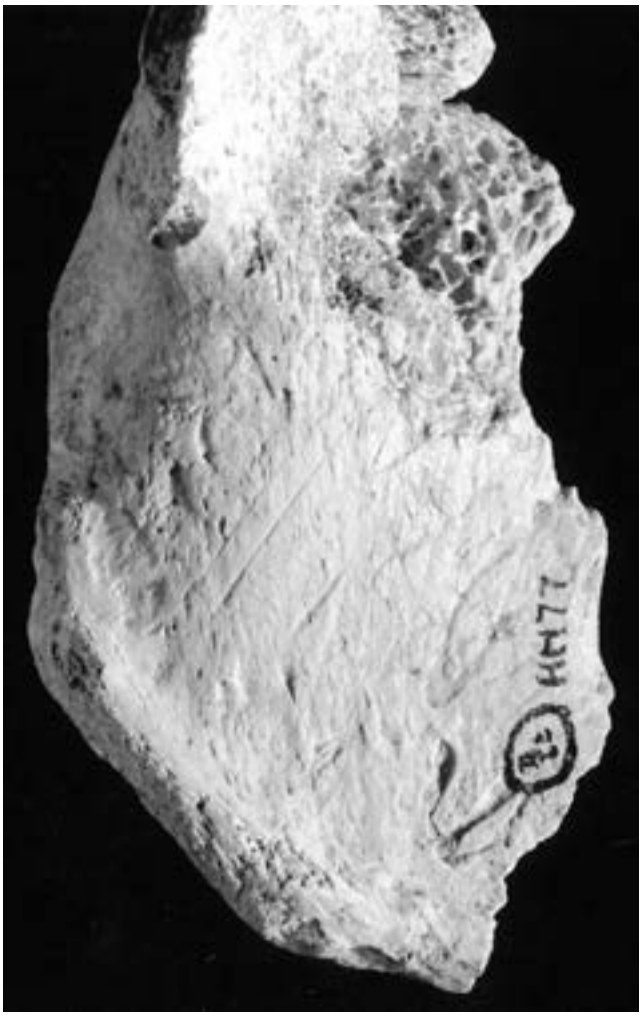

Fig 7.13 HH77 95 (mature adult); view of dorsal surface of ischium (pelvic bone) showing series of cut-marks creating 'boxed' effect and crenellated margins indicative of canid gnawing. Photo Elaine Wakefield (Wessex Archaeology)

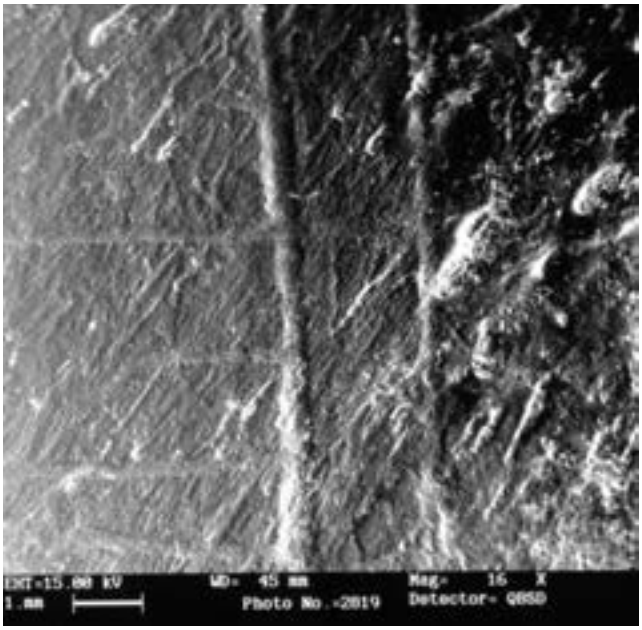

Fig 7.14 HH77 95; SEM image of a cast of cut-marks in the dorsal surface of the ischium. Photo Malcolm Ward (English Heritage)

One other point of note illustrated by the immature innominate HN82 403 is that the canid gnawing, at least in this instance, occurred after the cuts had been made to the bone (Fig 7.2). This does not, however, negate the possibility of earlier gnawing. The sequence of events was not clear in any other instance, there being no further overlaps between the two kinds of mark.

Similar cuts to those noted in the Hambledon Hill assemblage were observed on Neanderthal bones from Krapina in Croatia, though their distribution in the latter instance was far more consistent, demonstrating more systematic activity. Russell (1987a; 1987b) showed how the location and form of the cut-marks closely matched those on modern skeletons which had been defleshed with stone tools after partial decomposition in preparation for burial of the cleaned bones (see above – cleaning resulting in frequent marks).

Records of non-traumatic cut-marks to human bone from Neolithic contexts in Britain are very rare. The cut-marks noted in the human bones from the causewayed enclosure at Staines were either the result of traumatic injury or decapitation, and described as 'blows' rather than cuts. Harman and Evans (1991) noted one possible cut-mark to a fragment of humerus shaft from the Giants' Hills 2 long barrow in Lincolnshire, but describe neither the cut nor its location any further. A fragment of right distal humerus from the Haddenham long barrow had four groups (4–15 cuts) of short, parallel cut-marks in the anterior, medial and posterior surfaces in the areas of the brachialis and triceps attachments (Wakely 2006). The latter are of the same form and nature as those noted in the human bone from Hambledon Hill. One other cut was noted in this assemblage of almost 3,000 fragments (minimum seven individuals; Lee 2006), a *c* 5 mm long cut in a fragment of zygoma (Baxter, pers comm). Similar cut-marks were noted in two adult femora from the, probably Neolithic, assemblage excavated from Carsington Pasture Cave in Derbyshire (Chamberlain 1999); both femora were from the same individual, one of 20 identified. In this instance, however, the location of the cuts, around the distal end of the bones, is indicative of dismemberment rather than defleshing (Binford 1981, 91–126). A variety of non-pathological/traumatic cut-marks were recorded in human bone from the glacial period, at Gough's Cave in the Cheddar Gorge (Cook 1986). The nature of the manipulation in this instance was very different from that seen at Hambledon Hill, the remains apparently indicating scalping, beheading and butchery, including marrow extraction (Nuttall 1998). Wysocki and Whittle briefly mention 'evidence of corpse dismemberment with lithic implements' at Coldrum, Kent, and Eyford, Gloucestershire' (2000, 595), although they do not expand on the nature of that evidence.

Characteristics indicative of cannibalism have been discussed by Turner (1993) and are outlined by Roberts and Manchester (1997, 86); they include

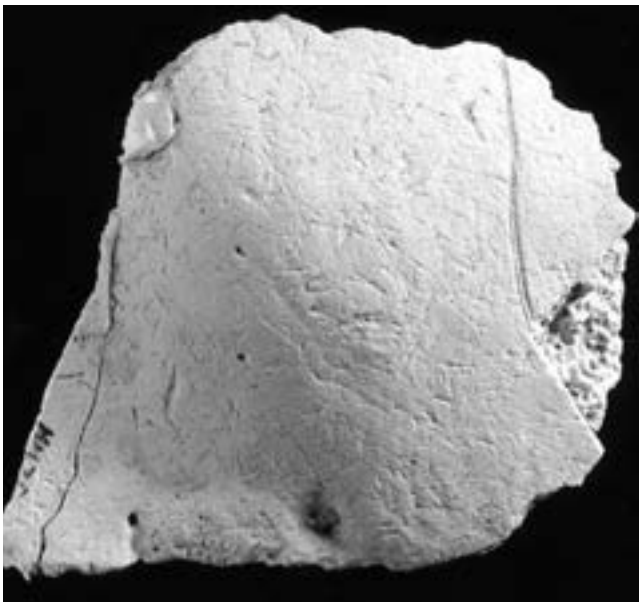

Fig 7.15 HH75 2101 (subadult/adult ?female); exocranial surface of a fragment of ?parietal vault, showing incised parallel lines. Photo Elaine Wakefield (Wessex Archaeology)

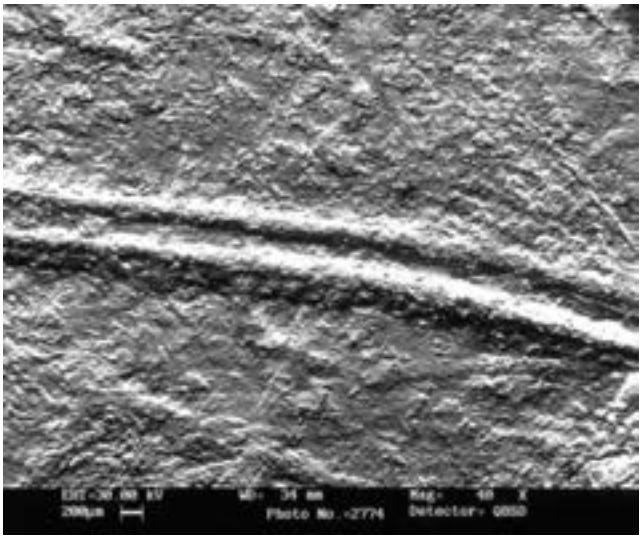

Fig 7.16 HH75 2101; SEM image of a cast of parallel lines in ?parietal vault. Photo Malcolm Ward (English Heritage)

numerous features which were not observed in the Hambledon Hill assemblage such as peri-mortem bone breaks, anvil-hammerstone abrasions and bone fragment end polishing. A case for Neolithic cannibalism was argued by Villa *et al* (1986) for the human remains from the cave at Fontbrégoua, near Salernes in southern France. Here, although there are some groups of short, shallow cuts similar to those seen in the Hambledon Hill bone, their distribution and frequency are quite different, and they are accompanied by much longer cuts of varied orientation and breakage of bone characteristic of marrow extraction and removal of the contents of the cranium (Bouville 1987). The authors also illustrate the similarities between the condition of the human and animal bone, indicating they were both subject to the same taphonomic processes (Villa *et al* 1986). Instances elsewhere in Neolithic Europe of cuts of a similar nature to those seen in the Hambledon Hill and Haddenham assemblages were discussed by Wakely (2006), from Furfooz in Belgium (de Laet 1958) and Ponte Paolina in Sicily (Fulchieri *et al* 1986).

That the cut-marks on the Hambledon Hill bone were overlooked in the original analysis raises a general cause for concern. By their nature these marks are relatively shallow, easily masked by the effects of weathering and root-marks, and more or less apparent depending on the light by which they are examined; they are also, it would seem, difficult to discern if the bone is not examined with the possibility of their existence in mind. Many of the Neolithic human bone assemblages from this country were assessed many years ago when human bone analysis was in its infancy and osteoarchaeology, as it is now practised, unknown. There is now, in the light of accumulating evidence, a case for re-assessment of at least the best-preserved of this previously excavated material, to ascertain the potential for cut-marks to the bone overlooked in the original examination.

Demography

Number of individuals (Table 7.2)

A minimum of four immature (under 18 yr) individuals and seven adults were identified from the articulated skeletal material. A further seven immature individuals and eight adults were represented by the skulls deposited on or near the bases of ditches. The minimum number estimates from the disarticulated, fragmentary material suggest that 24, possibly 25, immature individuals and 25, possibly 26, adults are represented. The overall minimum number obtained from the re-scan is therefore 75, possibly 77 individuals. As outlined above (7.1.1–2), RK employed a different methodology to estimate the number of individuals represented, calculating an overall minimum number of 132 individuals, with a potential overall maximum of 196; figures which included between 39 and 65 immature individuals and 64 and 102 adults from among the fragmentary, disarticulated bone. Even the minimum number of 75 individuals obtained from the re-scan would make this the largest known deposit of Neolithic human remains from England.

In the following discussion the figures and percentages presented are those estimated by the writer during the re-scan, including two skulls from Desmond Bonney's excavations which were not available to RK. RK's figures are given in *[italics]*. Table 7.2 presents the distribution of each type of deposit and number of individuals by location, and shows that the greatest number of individuals was identified from the main causewayed enclosure, 54% of immature individuals

and 27% of adults *[44% and 27%]*, with 9% of immature individuals and 15% of adults *[22% and 15%]* from the inner Stepleton outwork.

Most of these remains were deposited between 3700 and 3300 cal BC, and direct dates for human remains, spanning this period, are available in 13 cases (Table 4.1). The stratigraphic phasing within the ditches summarised in Table 7.1 has limitations, arising from recuts and redeposition of material. For example, in the main causewayed enclosure, bone from phase IV contexts (the 'grey pits') may have been redeposited from phases I–III, and that in phase VI contexts (the slots) from phases I–V. Bone fragments from different phases within the same localities were found to join. In view of these difficulties it has been decided that any attempt at detailed discussion of phasing would produce results of limited value and integrity. On a broad scale however, it is clear that human bone, unlike artefacts, was being deposited predominantly in the early phases (Table 7.1, Figs 3.60–61, 3.124–5). In the main causewayed enclosure, of the estimated number of individuals, *c* 38% *[25%]* were in phase I–II deposits and *c* 31% *[18%]* in phase III deposits. Although a high percentage (*c* 21% *[31%]*) were recovered from phase VI contexts, they could include bone redeposited from phases I–V. Most deposits in the east cross-dykes were again early, and those in the inner outwork on the Stepleton spur were largely within the primary deposits *[c 43%]* or phase III *[c 30%]*. In contrast, most of the estimated number of individuals from the Stepleton enclosure were from the later and tertiary silts *[62%]*, as were most of those from the inner Hanford outwork *[64%]*. These figures may indicate a change in the focus of activity on the site over time.

Age (Table 7.5)

A high proportion of the estimated number of individuals identified were immature; 40% of those identified from articulated skeletal material or skulls and 45% of the total estimated number of individuals *[RK – 42%]*. It is probable that immature individuals, particularly neonates and young infants, are under-represented among the disarticulated material. In addition to the possible factors discussed above (see '*Gnawing*'), the fragile remains of such young individuals would be less likely to survive the various excarnation episodes to which this material was apparently subjected – which may explain the lower percentage of immature individuals represented among the fragmentary remains (65%) as compared with the adults (85%). The remains of a neonate in the inner Stepleton outwork ditch (ST78 2756) survived well because the individual had been placed in a crack in the chalk in the ditch side (Fig 3.92). In segment 8 of the main causewayed enclosure ditch, skull fragments from two young infants (HH75 2135 and 2137) were recovered from the phase III deposits (Fig 3.20). The mechanical destruction of the south long barrow, causing considerable damage to the bones buried there, may have been instrumental in the absence of immature remains in this locality.

The comparatively high death rate of infants and young juveniles (*c* 27% of the assemblage) accords with that expected in a 'normal population' (Brothwell 1972b). These are the years during which such young individuals are particularly prone to infectious diseases. High mortality among young and younger mature adults (*c* 15%) may be attributed to strenuous activity including work, warfare and childbearing. However, a relatively high proportion of adults, a minimum of *c* 6%, appear to have survived beyond *c* 45 years. This latter figure compares closely with that of 5.3% of adults >50 yr quoted by Brothwell for the English Neolithic (1972a, table 26).

The lack of completeness and questionable integrity of much of the Neolithic skeletal record has been highlighted by numerous writers (eg Saville 1990b; Kinnes 1992) and demands caution in attempting comparison between British Neolithic populations. Brothwell (1973, table 143) shows a 30% immature to 70% adult ratio for a Neolithic 'tomb' population and suggests that there may have been a bias against child burials in the chambered tombs (Brothwell 1971, 117). These figures are closely followed by Thorpe in his review of data from Wessex (1984, 48) where from an overall average of *c* 62% adult and 38% immature individuals, there is a clear distinction between long barrow populations (*c* 71% adult, 29% immature) and those from causewayed enclosures (*c* 37% adult, 63% immature). It should be noted, however, that the latter category includes data from Hambledon Hill which have subsequently been revised; if the figures used by Thorpe are the same as those quoted by Tilley (1994, 169) the 'Sixty per cent ...children' quoted is well above the 45% [*RK – 42%*] of the revised figures.

The figures from Hambledon Hill correspond closely with those from both the West Kennet long barrow (Piggott 1962) and Hazleton (Saville 1990b); from the former *c* 58% adult and 42% immature individuals were identified, from the latter *c* 52/64% and 36/43% respectively. This observation suggests that the previously held distinction between the long barrow and causewayed enclosure populations is not as consistent as has been implied, and that the data need to be reviewed with greater rigour and consideration of possible in-built biases with regard to survival, recovery and recognition of bone.

Sex (Table 7.6)

Of the minimum of 40, possibly 41 *[RK – 75]* adults identified, only 27 (*c* 66% *[RK – 36%]*) could be sexed, of which 10 (*c* 25% *[RK – 13%])* were ascertained to be female (three subadults were also sexed as female) and 17 male (*c* 42% *[RK – 23%]*). Any significance which may be attached to this apparent disproportionately low number of females must be tempered by the fact that a high proportion of the estimated number of

Table 7.5 Estimated age at death of individuals from Neolithic contexts

All figures are from the re-scan except those marked *, which were missing
N/YI = neonate/young infant (0–2 yr), YI = young infant (6 mth–2 yr), I = infant (0–4 yr), OI = older infant (2–4 yr), OI/YJ = older infant/young juvenile (2–8 yr), YJ = young juvenile (*c* 5–8 yr), J = juvenile (*c* 5–12 yr), OJ = older juvenile (*c* 8–12 yr), J/S = juvenile/subadult (*c* 5–18 yr), YS = young subadult (*c* 13–15 yr), S = subadult (*c* 13–18 yr), OS = older subadult (*c* 15–18 yr), Ya = young adult (*c* 18–15 yr), Y/YMa = young/younger mature adult (*c* 18–30 yr), Ma = mature adult (*c* 25–45 yr), OMa = older mature adult (*c* 30–45 yr), OM/Oa = older mature/older adult (>30 yr), Oa = older adult (>45 yr), a = adult (>18 yr), S/a = subadult/adult (>13 yr)
A = articulated, S = skull, F = fragment(s)

	N/YI	*YI*	*I*	*OI*	*OI/YJ*	*YJ*	*J*	*OJ*	*J/S*	*YS*	*S*	*OS*	*OS/Ya*	*Ya*	*Y/YMa*	*Y/Ma*	*Ma*	*OMa*	*M/Oa*	*Oa*	*a*	*S/a*
Central area																						
Main causewayed enclosure	F2		?S1	F1	F2	A1	A1	S2		S1	F1			F1	A1		S1		F1	S1	F3	
						S3		F3		F1					F2					F1		
Inner E cross-dyke														S1			S1					
Outer E cross-dyke									F1							S1					F1	
Inner S cross-dyke										F1											*F1**	
Long barrow									F1					F1	F1	F1			F1			
Features						F1															F1	
Shroton spur outwork					*F1**												F1			F1		
Stepleton spur																						
Enclosure		F1		F1							F1						A1				F1	
Middle outwork						F1							F1									
Inner outwork	A1	F1	F1										A1		S1	F1		A1				F1
													F1									
Outer outwork												S1		A1								F1
Features					A1									A1						A1		
					F1																	
Hanford spur																						
Inner outwork			F1															?F1	S1	F1		
Outer outwork				F1													S1					
																	?F1					
'Flint mines'																			F1			
Totals	A1	F2	?S1	F3	A1	A1	A1	S2	F2	S1	F2	S1	A1	A2	A1	S1	A1	A1	S1	A1	F7	F1
	F2		F2		F4	S3		F3		F2			F2	S1	S1	F2	S3	?F1	F3	S1		
						F2								F2	F2		F1/?2			F4		

Table 7.6 Sexing of individuals from Neolithic contexts, re-scan figures

N/YI = neonate/young infant (0–2 yr), YI = young infant (6 mth–2 yr), I = infant (0–4 yr), OI = older infant (2–4 yr), OI/YJ = older infant/young juvenile (2–8 yr), YJ = young juvenile (*c* 5–8 yr), J = juvenile (*c* 5–12 yr), OJ = older juvenile (*c* 8–12 yr), J/S = juvenile/subadult (*c* 5–18 yr), YS = young subadult (*c* 13–15 yr), S = subadult (*c* 13–18 yr), OS = older subadult (*c* 15–18 yr), Ya = young adult (*c* 18–15 yr), Y/YMa = young/younger mature adult (*c* 18–30 yr), Ma = mature adult (*c* 25–45 yr), OMa = older mature adult (*c* 30–45 yr), OM/Oa = older mature/older adult (>30 yr), Oa = older adult (>45 yr), a = adult (>18 yr), S/a = subadult/adult (>13 yr)
?? = 'possible', ? = 'probable'
Confident identifications are included in 'total' column.

	Female			*Male*		
	??	*?*	*Totals*	*??*	*?*	*Totals*
Central area						
Main causewayed enclosure	1	1	3 (YS, S, Ma)	3		4 (Ya, Y/YMa, Y/Ma, Oa)
Outer east cross-dyke			2 (Y/YMa, Ma)	1		1 (Ya)
Long barrow			1 (Y/YMa)	1		2 (Ya, Y/Ma)
Shroton spur outwork			1 (Oa)			
Stepleton spur						
Stepleton enclosure			1 (Ma)			1 (a)
Inner outwork			2 (OS/Ya, Y/YMa)	2		4 (OS/Ya, Y/Ma, OMa, Oa)
Outer outwork	1		1 (OS)			1 (Ya)
Features				1		2 (Ya, Oa)
Hanford spur						
Inner outwork	1		1 (Oa)	2		2 (O/Ma, OMa)
Outer outwork			1 (Ma)			
Totals	3	1	13	10		17

adults was not sexed (33%), that is 64% of the estimated minimum total population. These unsexed individuals may include a greater proportion of females than males. The ease with which skeletal remains may be sexed is largely dependent on the level of skeletal recovery. That 75% of the articulated skeletal remains were male and only 12% female may indicate that the apparent bias within the sex ratio reflects more the type of deposit recovered than the general numbers of males and females within the population. Although it is possible that the apparent sexual imbalance in the Hambledon Hill population represents a true cultural bias, the writer would stress extreme caution against over-interpretation based on such incomplete data.

The median age range for the females was within the *c* 18–30 year range and that for the males in the *c* 18–45 year range, but, in general, there was little observable significant difference between the sexes. Though caution should be applied in view of the small numbers involved, the tendency for a preponderance of males in the slightly older adult age range has been noted elsewhere (Brothwell 1972b, table 25).

Brothwell has commented (1973, 284) that despite the incomplete nature of most Neolithic skeletons, rendering accurate sexing difficult, there is a marked preponderance of male Neolithic burials in comparison with those of females. This, he suggested, 'reflects the superimposition of a culturally determined sex bias on the true ratio'. It should be noted that Brothwell was referring to tomb populations, where it was apparently possible to attribute sex to a much greater proportion of the adults identified than in the Hambledon Hill assemblage. Of the 196 adults in Brothwell's table 143 (1973) only 18% were unsexed as compared with the much greater 44% from Hambledon Hill. Although in general terms there does appear to be a preponderance of males over females from the published tomb assemblages, this is not universally the case in individual barrows. Greater numbers of females than males were identified from both West Kennet (Piggott 1962) and Ascott-under-Wychwood (Chesterman 1977). Saville, for example (1990b, 261), rejects Brothwell's theory on the basis of the inherent difficulties of sexing disarticulated and fragmentary skeletal material (24–33% of the adults identified at Hazleton were unsexed) and the 'inclusion of suspect data from disarticulated samples'. The latter factor, alongside a temptation to over-interpret a limited database, will continue to bias our understanding of the true state of the 'cemetery' population in the British Neolithic.

Comment on population 'dynamics' is precluded partly by the nature of the deposits and partly by the time scale over which the deposition of human remains took place, which may have been up to 400 years. Viewed as a single assemblage, the population included individuals across a wide age range from neonate to older adult, in proportions not dissimilar to the 'normal', rural 'domestic' cemetery populations commonly seen in archaeological reports. Both sexes are represented across the adult age ranges. Other than the concentrations within the main causewayed enclosure and the inner Stepleton outwork discussed above,

there is no apparent significance in the spatial distribution of individuals of either sex or within different age groups. Nor does there appear to be any age- or sex-based significance within the broad 'early' or 'late' groupings discussed above, with the exception of the main causewayed enclosure. Here, immature individuals were predominant in the early phases, I–III.

Physical anthropology

Stature estimation

Incomplete skeletal recovery precluded stature estimation in most cases. The long bones of only four individuals, all males, survived sufficiently intact to enable stature estimations to be made. The range was between 1.63 and 1.72 m (5' 4" and 5' 7¾"), with an average of 1.68 m. These figures compare closely with those given by Brothwell for Neolithic males (1973, table 149), with an identical mean of 1.68 m (5' 6").

Cranial indices

The cranial index was calculated from six complete skulls, two female, three male and one unsexed. Five were in the dolichocranial (long-headed) range, one (female) in the mesocranial, with indices between 66.68 and 76.5 and a mean of 71.2, SD 4.2. The male skulls were between 66.68 and 69.12, with a mean of 67.54 (SD 1.36); the two female skulls were 73.2 and 76.5. These figures fall within the peak-range of *c* 71–74 (dolichocranial) noted by Brothwell for British Neolithic skulls (1973, fig 65).

Asymmetry of long bone lengths

There were only four individuals whose upper and lower limb bones were complete enough to measure. There was no appreciable difference between left and right sides. The left femora from ST81 1875 (from the outer Stepleton outwork) and ST81 3181 (from pit 4B F712 outside the Stepleton enclosure) were very slightly longer than the right side (up to 5 mm) and the right femur of ST78 2755a (from the inner Stepleton outwork) was 4 mm longer than the left. The right humerus of ST81 3181 was 7 mm longer than the left and the deltoid tubercle of the clavicle was more prominent on the right side. The right humerus of ST81 1875 was 6 mm longer than the left. The significance of asymmetry in the length of the long bones of the upper limb has been considered by Steele and Mays (1995). They concluded that the asymmetry may be 'attributed to the effects of mechanical loading consequent to handedness bias'.

Platymeric and platycnemic indices

The degree of anterior-posterior flattening of the proximal femur (platymeric index) was calculated from five left and two right femora, from five adult males (rescan). A range of 74.75 to 94.0 was recorded, with a mean of 81.4 and a SD of 6.1. Only the right femur from ST79 2726 (from the inner Stepleton outwork) was outside the platymeric range, the left femur from the same individual giving an 11.05 lower reading.

The platycnemic index (meso-lateral flattening of the tibia) was calculated from three male tibiae, giving a range of 63.71–66.16, a mean of 64.6 and a SD of 1.3 mm. Squatting facets were observed in all three tibiae, which may indicate a link between the condition and platycnemia as has been suggested elsewhere (Brothwell 1972a; Molleson 1993).

Dental attrition

There were a small number of cases where heavy wear to the anterior teeth was found in association with light wear on the molars, for example ST81 3188 (a mature adult female from the Stepleton enclosure), which RK believed could be due to use of the front teeth for some cultural activity similar to that of Eskimo women chewing hides, or to malocclusion of the molars. However, only 13 out of 32 teeth were recovered from 3188 and the right side of the maxilla was missing, hence it is possible that painful dental lesions in the absent dentition had affected the way in which this individual chewed her food. Malocclusion of the dentition in HH77 610 (an older adult from the phase VI slot in the main enclosure) is suggested by the labial angle of the left mandibular molars resulting in abnormal wear in the buccal surface of the teeth. A marked overbite was demonstrated in ST78 2755 by the uneven polish in the maxillary and mandibular incisors.

Pathology and morphological variations

The observed pathology among the Neolithic remains was undoubtedly affected by the pattern of bone survival, in itself a product of taphonomic and cultural processes (see above). The most frequently recovered skeletal elements were cranial and fragments of long bone shaft. Comparatively few vertebrae, articular surfaces, hand or foot bones were found; consequently there was particularly limited evidence of joint diseases.

Pathological lesions and/or morphological variations were noted in bone from 74 finds, including all the articulated skeletal remains (13 individuals) and all 15 skulls. The remains represent those of *c* 51 individuals. A summary of pathological lesions and morphological variations is presented in Table 7.1.

Dental disease

All or parts of a minimum of 29 erupted permanent dentitions were recorded, including a total of 439 erupted permanent teeth and 538 tooth positions (Table 7.7).

Ante mortem tooth loss was evident in five dentitions, two female, two male and one unsexed. A total of 9/538 teeth had been lost *ante mortem* (1.7%); 4/147 in the female dentitions (2.7%), 2/288 in the male dentitions (0.7%). Four of the lost teeth were molars, with three second incisors, one canine and one premolar.

Table 7.7 Numbers of mandibles and maxillae, erupted permanent teeth and socket positions

	mandibles		*maxillae*		*mandibular teeth*	*maxillary teeth*	*mandibular sockets*	*maxillary sockets*
	L	*R*	*L*	*R*				
female	4	4	7	6	35	65	54	93
male	13	12	10	7	140	91	179	109
unsexed	7	7	3	3	74	34	86	17
totals	24	23	20	16	249	190	319	219

Any comment on the apparent sex-based variation in prevalence would be inappropriate in view of the small number of dentitions involved. The general rate is very low, considerably less than the *c* 15% indicated by Brothwell (1972a, fig 56) for this period, and the 10.1% derived from figures recently compiled by Schulting (1998).

Tooth loss tends to increase with age and may be related to one or more factors, eg excess wear, diet and dental hygiene. Dental calculus (calcified plaque) harbours the bacteria which predisposes to periodontal disease (a gum infection) and the development of dental caries. Slight to moderate levels of calculus were noted in all permanent dentitions, including those of immature individuals, and some deciduous dentitions were also slightly affected. No severe cases were observed.

Slight periodontal disease was noted in nine permanent dentitions, always in association with calculus deposits. There was a general increase in severity with the age of the individual. Seven individuals also exhibited either dental caries, abscesses or *ante mortem* tooth loss, though there was no consistent link between the conditions, the latter also occurring in the absence of periodontal disease.

Carious lesions were noted in five permanent dentitions, with an overall rate of 7/439 (1.6%); 4/231 (1.7%) in the male dentitions, 1/100 (1%) in the female. No carious lesions were noted in the deciduous dentitions. Most of the affected teeth were molars (one canine), the majority of lesions being cervical in origin. With one exception – the canine, in which the crown was totally destroyed – all the lesions were slight. The overall rate is lower than the 5% given by Brothwell for Neolithic populations (1972a, figure 55) and the 2.5% calculated by Schulting in his review of 1748 teeth from early Neolithic sites in Britain (1998).

Infection from carious lesions may track down into the tooth sockets, resulting in the development of dental abscesses. Seven permanent dentitions (five male, two female) had abscesses in 9/538 (1.7%) of sockets; females 4/147 (2.7%) and males 5/288 (1.7%). The anterior teeth were chiefly affected including two incisors, two premolars and one canine. Only one of these dentitions had carious lesions, though this and two others had suffered *ante mortem* tooth loss which may have been affected by caries attack. In some cases, the associated tooth had been lost *post mortem* and potentially associated conditions within the tooth thereby lost. The high rate of lesions in the anterior teeth may have been related to excess occlusal wear or damage to the crowns, leading to exposure of the pulp cavity with subsequent infection. The low rates observed are consistent with other British Neolithic groups (Brothwell 1972a, 151), being slightly lower than the figure of 4.1% given by Schulting (1998).

Dental hypoplasia is a developmental defect in the tooth enamel formed in response to growth arrest in the immature individual. The predominant causes are believed to include periods of illness or nutritional stress (Hillson 1979). Slight enamel hypoplasia was noted in permanent dentitions recovered from one articulated skeleton, one skull and four fragmentary finds.

A harmless condition involving the excessive formation of secondary cementation, slight to mild hypercementosis was noted in two dentitions. The cause of the condition is not clear (Hillson 1990, 164), though possible factors may include age, periapical inflammation, mechanical stimulation or trauma.

The main factor affecting dental disease is diet (Hillson 1990, 283) and 'the interaction with the micro-organisms that live in the mouth', in which plaque deposits perform a major role. Different dietary intakes increase (carbohydrate, sugars) or decrease (proteins) the activity or presence of acid-producing bacteria. Hillson (1990) gives the presence of dental plaque (indicated by calculus in archaeological material) and carbohydrates in the diet as prerequisites for caries formation. The low rates of dental disease in the Hambledon Hill assemblage suggests a diet high in meat-based proteins (see also Richards, 7.2), inclusive of foods which would assist in the natural mechanical cleaning of the teeth, and relatively low in processed carbohydrates. The possible natural predisposition of the population to be more resistant to caries attack should not be overlooked (Hillson 1990, 287).

Deficiency disease

Cribra orbitalia, manifest as pitting in the roof of one or both orbits, is believed to be connected with childhood iron deficiency anaemia, although Molleson (1993) argues that vitamin C deficiency and intestinal parasites may also have played a contributory role. The condition was observed in 14/52 (27%) of orbital vaults, most lesions being porotic or cribotic (Robledo *et al* 1995). The rate is similar to that of 22.6% quoted for the British Neolithic by Brothwell (1973, table 156).

The vast majority of individuals affected were immature (infants and juveniles) where the rate was 50% (12/24), lesions being observed in only one adult male (1/13; 8%) and one unsexed adult. Higher rates among immature individuals may be expected given that they require greater amounts of iron as a consequence of growth requirements (Robledo *et al* 1995).

Trauma

Evidence for fractures to bone was noted in only one instance, in the right eleventh rib of ST79 2726 from the base of the inner Stepleton outwork (1/147, 0.06%), which had a well-healed vertical fracture at the dorsal angle. Such fractures most commonly result from a fall against a hard object (Adams 1987).

A smooth, concave depression, *c* 8.9 mm diameter and 2 mm deep was observed in the left lateral side of the frontal bone in HH76 3009 from the phase VI slot in the main enclosure (subadult/adult), 22 mm from the coronal suture. The depression may have resulted from a compression fracture in the skull, caused by a blunt instrument. An oval depression – 27.8 mm long, 7.1 mm wide and *c* 1 mm deep – was also observed in the left frontal of HH77 88, displaced from the long barrow (adult male), medial and parallel to the temporal line. This may also represent the well-healed remnants of a skull fracture.

Infections

Infection of the periosteal membrane covering bone may lead to the formation of periosteal new bone. Infection may be introduced directly to the bone as a result of trauma, develop in response to some adjacent soft tissue infection, or spread via the blood stream from foci elsewhere in the body (Roberts and Manchester 1997, 127–30). Lesions were noted in bone from one articulated skeleton and from seven fragmentary finds, and were most frequently seen in the femur and fibula shafts (five cases) with no associated lesions.

Lesions in the ventral surface of a rib shaft from HH76 3030 from the base of the main enclosure (older juvenile) may have been related to some form of pulmonary infection (Wakely *et al* 1991). The multiple involvement of other bones from this individual, including the ilium and femur, does not suggest the product of a secondary infective process (Roberts and Manchester 1997, 127) but what specific form of infection may have caused the lesions is unclear.

The small area of periosteal new bone bucco-distal to the third molar socket in HH75 1848 from the main enclosure (??male, 30–45 yr) may have been associated with some form of dental or soft tissue infection.

Extensive areas of endocranial new bone were noted in the skull bones of two immature individuals, HH75 2023 (*c* 3 yr) and HH74 HB 1a (5–6 yr), both from the main enclosure. The cerebral surfaces of the sphenoid greater wings were affected in both cases, with some extension into the squamous part of the temporal bones, and along the transverse sinus groove of the occipital in HH74 HB 1a. The area around the foramen ovale of the sphenoids was particularly affected. The lesions indicate an infection within the meningeal membrane (dura mater), the extensive nature of which is likely to have been at least a contributory factor in the death of these individuals.

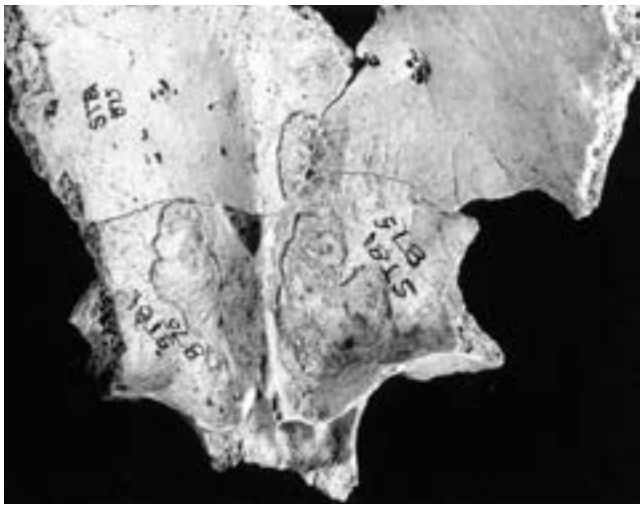

Fig 7.17 ST81 875 (adult ?male); endocranial surface of frontal vault showing plaque-like new bone. Photo Elaine Wakefield (Wessex Archaeology)

Plaque-like new bone was also observed in the endocranial surface of the frontal bone from ST81 875 (Fig 7.17) on either side of the frontal crest.

Tumours

Two large ivory osteomata, one in the right side of the frontal adjacent to the suture forming a smooth 'tumulus' (22.5 × 17.0 mm, 5.6 mm high) and the other in the left occipital adjacent to the bregma forming a 'button' (9.9 mm diameter, *c* 3 mm high), were recorded in the skull of HN82 236 from the inner Hanford outwork (??male over 25 yr). These benign tumours are unlikely to have had anything other than a 'cosmetic' effect on the individual (Roberts and Manchester 1997, 188). A similar lesion was noted in a male skull from Wayland's Smithy (Brothwell 1973, 296).

A smooth bony 'swelling' (*c* 39.43 mm long, 2.24 mm high) in the left femur distal shaft from ST80 1875 from the outer Stepleton outwork (male, 18–25 yr) has the morphological and radiographic characteristic of an osteoid osteoma (Roberts and Manchester 1997, 189). Although benign, they are reported to produce considerable persistent pain.

Joint disease

Osteoarthritis is manifest by eburnation of the joint surface and/or pitting in association with osteophytes on joint surface margins (Rogers *et al* 1987; Rogers and Waldron 1994). Lesions were observed in the remains of seven individuals, most over 30 yr and including a minimum of three males and one female.

With the exceptions of ST79 2025 (possible male, over 45 yr) and ST79 2726 (male *c* 30–45 yr), lesions were seen in only one joint.

Those affected included the vertebral articular process facets (2/251, *c* 0.6%), temporo-mandibular joint (1/26, 4.0%), a metatarsal-phalangeal joint (1/39, 2.6%), an elbow joint (radial articulation; 1/15, 6.6%), and the costo-vertebral joints (14/65, 21.5%), the latter including 12 affected facets from ST9 2726.

Only 97 adult vertebrae were recovered from the assemblage, among the remains from 10 individuals including five males and two females. Most (five) were from articulated remains, three represented cervical vertebrae found with skulls, only two complete vertebrae being recovered among the fragmentary finds.

Degenerative disc disease is characterised by pitting in the vertebral body surfaces often accompanied by osteophyte formation on the surface margins; they are most commonly found in the mid- and lower cervical, upper thoracic and lower lumbar regions of the spine (Rogers and Waldron 1994), and the prevalence of the disease increases with age. Lesions were noted in one spine, male over 25 yr, with lesions in cervical vertebrae (1/28 cervical).

Schmorl's nodes develop in response to a rupture in the intervertebral disc allowing the nucleus pulposus to protrude into the vertebral body. They most frequently occur in the vertebrae subject to greatest mechanical stress at points in the normal curvature of the spine (Manchester 1983). Lesions were noted in two male spines, both articulated skeletons from the inner Stepleton outwork. The younger male (15–25 yr) was most severely affected with lesions in 10 vertebrae, the 30–45 yr male having lesions in only four (all vertebra recovered from both). No vertebrae above T5 were affected, with lesions in 8/44 thoracic and 6/22 lumbar.

The distribution of other destructive lesions (including pitting) and new bone formation (osteophytes) associated with joints is shown in summary in Table 7.1. Osteophytes were seen in 1–12 joint surfaces in bones from *c* eight individuals (five articulated, three fragmentary) and pitting in up to three joint surfaces in three individuals (all articulated). Such lesions are often difficult to classify, but some may represent the early stages of osteoarthritis.

Miscellaneous conditions

Two crania showed the developmental defect of premature suture fusion, which can result in remodelling of the normal skull shape (Ortner and Putschar 1985). They were from articulated skeletons buried in adjacent segments of the main enclosure near the beginning and end of the Neolithic sequence, one (HH76 1948) on the base of segment 18, dated to *3660–3540 cal BC* (mean of OxA-7768 and -7769), the other (HH76 3046) in the upper fills of segment 17, dated to *3380–3320 cal BC* (mean of OxA-7039 and -7040). These skulls were examined by Dr M Briggs and Dr M Poole at the request of RK. With respect to the sagittal and partial fusion of the lambdoid sutures in HH76 1948 (juvenile), they observed that there was 'some asymmetry of the forehead and supra-orbital region, and the inside of the skull has excessive digital markings, and erosion of the posterior clinoids suggestive of raised intracranial pressure'. They concluded that such an individual may have been 'mentally retarded, suffered from epilepsy, possibly from visual loss as well', and that there would have been 'some visible deformity' of the frontal region and possibly the face. Although it was felt that the condition in itself would not have led to the death of the individual, the attendant dangers of possible epilepsy may have been a contributory factor. Premature fusion of the sagittal suture in HH76 3046 (young juvenile, *c* 5–8 yr) was believed unlikely to have led to any pathological problems secondary to the cosmetic one of the probable development of a scaphocranial skull shape. The occurrence of this relatively rare skeletal anomaly in two individuals whose remains were close to each other in space though not in time suggests that there was some genetic link between them.

Exostoses are bony growths which may develop at tendon and ligament insertions on the bone. Causative factors include advancing age, traumatic stress, or various diseases (Rogers and Waldron 1994, 24–25). It is not always possible to be conclusive with respect to the aetiology of particular lesions.

Very little conclusion with respect to lifestyle may be drawn from the pathological conditions observed. The recorded lesions can only represent a very small proportion of what must have existed, the nature of the assemblage severely curtailing the amount of retrievable data. The condition of the dentitions provides the most information, with indications of low rates of disease, even for the Neolithic, suggestive of a high meat-protein diet. The high rate of *cribra orbitalia* in the infants and juveniles may reflect other dietary inadequacies hampering the absorption of proteins and iron within the diet, or reflect the greater susceptibility of these young individuals to infection and parasitic disease (Robledo *et al* 1995).

Morphological variations

These are 'normal' variations in the skeletal morphology and may, with other predisposing factors, indicate genetic relationships within a 'population' (Berry and Berry 1967). Work by Finnegan (1978) has shown there may be some slight bias to one side in bilateral traits and a slight sex-based bias in the incidence of some variations, but neither appeared of great significance. Overall figures of incidence are not available for most of the variations. Twenty-two morphological variations were noted in the skeletal material from Hambledon Hill, a summary of which is presented in Table 7.1.

Shovel-shaped incisors were observed in five dentitions (*c* 17%), all except one from the Stepleton enclosure, with two from neighbouring deposits in the inner outwork. Two maxillary second incisors were 'pegged',

both from individuals in the same find (HH77 682), whose skulls were built into a flint cairn on the base of the main causewayed enclosure ditch. The maxilla of HH76 1870 (9–15 yr) was examined by Professor A E W Miles at the request of RK. He noted the development of a molariform supernumerary tooth in the midline of the maxilla resulting in a slight distortion in the left first incisor, which had failed to erupt properly, and the displacement of the left second incisor. The midline of the maxillary incisor region is the most common place for supernumerary teeth to develop (Miles, pers comm to RK). Other dental variations include three 5-cusped mandibular third molars; two 4-cusped mandibular first molars, both from features on the Stepleton spur; two occurrences of enamel pearls, both from skulls deposited in phase IV within the main causewayed enclosure; and retention of deciduous mandibular molars with retarded or non-eruption of the premolars, eg ST80 1875 (male 18–25 yr) where a radiograph demonstrated the absence of the second premolar. Of the 29 appropriate areas of dentition available for study none showed absence of the third molars, a variation noted in 11% of British Neolithic dentitions by Brothwell (1973, 293).

Of the 27 crania in which the appropriate parts survived for examination, wormian bones were found in three of 27 recorded lambdoid sutures, that is 11% compared with the much higher 48% given by Brothwell for the British Neolithic (1973, table 152) and the 52% recorded from Hazleton by Rogers (1990, 198). A metopic suture was observed in three of the 35 (8.6%) frontal bones analysed, a similar figure to that of 7.5% quoted by Brothwell for British Neolithic communities (1973, abb 70) but higher than that of 5.5% noted by Rogers at Hazleton (1990, 198). Occipital bunning was noted in two of 27 (7.4%) occipital bones.

Dual facets in the superior articular surfaces were noted in two of seven atlas vertebrae. Small squatting facets were noted in the tibiae of seven of the nine individuals (mostly males) from which the distal tibia was recovered. Two of the eight individuals from which the patellae were recovered showed the presence of a vastus notch, both individuals being recovered from the inner Stepleton outwork.

The significance which may be attached to many of these variations is limited, and in some cases their status as 'natural' variations is open to question. There are arguments to suggest wormian bones develop in response to parturition trauma and 'squatting' facets' are often attributed as developmental defects in response to the adoption of prolonged periods spent in a squatting posture. While the suggestion of any 'genetic' links between individuals on the basis of any of these variations would be seriously open to question, it is of interest to note the frequency with which some occur within limited locations, occasionally in immediately adjacent skeletal material, while being absent from other parts of the assemblage.

The nature of the deposits

Articulated skeletal remains

These have not been classified as 'burials' since it is clear that not all the articulated skeletal remains could be described as such; formal 'burial' being characterised as deliberate deposition of the body (particularly within a grave) with subsequent coverage by earth or a stone cairn. Five of the eleven Neolithic deposits (ie excluding the Bronze Age burial ST82 114 and the Iron Age foot HH86 97) may have been the *in situ* remains of formal burials. Three individuals, ST79 2025 (??male, over 45 yr), ST78 964 (*c* 5 yr) and ST81 3181 (male, 18–25 yr), were buried in separate Neolithic pits on the Stepleton spur. At least one of these, ST81 3181, was associated with a rich deposit of charcoal, other burnt material, and artefacts. One immature individual (HH76 1948) was buried at the base of the main causewayed enclosure ditch under a flint cairn and a second (HH76 3046) was buried in a grave cut into the main enclosure, probably also under a flint cairn; both had grave goods (Fig 3.32). There also appeared to be a flattish spread of nodules over HH76 2625, the lower axial skeleton and femora discussed above, which may have been a deliberate covering (Fig 3.15).

Cadavers were deposited on the bases of ditches, including within recesses in the chalk, and higher up in the fills in the inner Stepleton inner outwork (ST79 2726; Figs 3.92, 3.100–4) and the outer outwork (ST 80 1875; Figs 3.105–6). Whether these bodies were covered in some way immediately after deposition is unknown, rendering their interpretation open to question. The complete, articulated skeleton HH78 2755 (male, 17–20 yr) may have been 'buried' in that he was covered with chalk rubble, apparently prior to full skeletalisation, but he does not seem to have been formally buried. The position (prone; Figs 3.102–3) and location (in chalk rubble at first interpreted as derived from a collapsed bank) of the skeleton, together with the recovery of a flint arrowhead from the thoracic region, originally led to the belief that the individual had been shot in the back while fleeing along the ditch during an attack on the enclosure and thereafter had laid undisturbed. There was no osteological evidence to support such a cause of death, though it is not implausible that an arrow may have passed between the ribs without damaging the bone. However, the presence of clear *post mortem* manipulation of the body (see *Cut-marks* and Table 7.4) and limited canid and rodent gnawing, together with the general evidence for excarnation practices (see above), leads one to speculate on a slightly different series of events. The position in which the body lay, slightly to the outside of centre towards the butt end of a ditch segment, over disarticulated bone fragments already deposited in the base of the ditch, may have been achieved by rolling the body into the ditch from the outside edge. While the individual may have been the victim of an arrow in the

back, it is also possible that the arrowhead was contained within a 'pocket' attached to a belt or around the neck, and was unrelated to his cause of death.

An arrowhead in a similar position was recovered from HH80 1875 (male, 18–25 yr); this complete skeleton was laid flexed within a recess on the base of the outer Stepleton outwork, in one side of the butt end of a ditch segment. As with ST78 2755, there was no osteological evidence to support the inference that the individual had been shot, and there was possible evidence of *post mortem* manipulation of some of the bone (Table 7.4). Is it possible that these two individuals are illustrative of the earliest stages of the excarnation process?

A similarly positioned flint arrowhead was recovered from a broadly contemporary crouched inhumation burial in Wor Barrow (Pitt Rivers 1898, 63). Here again, the assumption, in the absence of associated osteological evidence, was that the individual (an adult male) had been shot. There are numerous other comparably located arrowheads without osteological evidence to support their interpretation as causes of death (Mercer 1999, 149). Two positive identifications have, however, been made: at Ascott-under-Wychwood, Oxfordshire, where a leaf arrowhead was found embedded in a lumbar vertebra, and at Pen-y-Wyrlod, Brecknock, where an arrowhead tip was lodged in a sternal rib fragment (Wysocki and Whittle 2000, 599–600).

The other articulated remains had been disturbed, leaving the precise nature of their deposition open to debate, but all were within ditch fills with no evidence of grave cuts, which suggests that they were of a similar nature to the cadavers placed on the ditch bases. At least one of these bodies (HH76 2625; male, 18–30 yr), from the main causewayed enclosure, had been subject to substantial gnawing by scavengers (Figs 7.3–4). Only the articulated lower axial skeleton and the femora survived (Figs 3.16–17), probably having been dragged from elsewhere or the rest of the body having been dragged away from this position (see '*Gnawing*'). In addition, the femora and part of the innominate had been substantially stripped of soft tissues by human action (see '*Cut-marks*' and Table 7.4). The implication is that the partly decomposed body was either removed from a shallow grave or an above-ground position, probably by animal action, preceded and/or followed by a deliberate process of defleshing and cleaning of bones. A similar scenario may be suggested for ST81 3188 from the Stepleton enclosure, where only the upper half of the articulated skeleton remained *in situ*, though in this instance no cut-marks were noted on the bone (see comment in '*Cut-marks*'). It appears that these latter remains are those of cadavers which had reached a later stage in the excarnation process.

A large proportion (six) of the articulated skeletal remains were those of adult males, mostly 18–25 yr, with one female and four immature individuals. Consequently, 35% of the males identified were from articulated remains, compared with only *c* 8% of the females and 12.5% of the immature individuals. What is unclear is whether this apparent imbalance is due to cultural, demographic or taphonomic factors (see '*Condition of the bone and ancient modifications*'). Also of note is the fact that eight (73%) of the finds in this category were from the Stepleton spur, with three from the main causewayed enclosure. The latter observation may reflect spatial variations in the treatment of cadavers.

Skulls

Of the 15 finds within this category, 12 (80%) were skulls minus the mandibles, though a cervical vertebra was recovered with one. The three skulls with mandibles all included between one and three cervical vertebrae, with none below the C4.

Eight of the skulls were placed directly on ditch floors, in the main causewayed enclosure (three), the east cross-dykes (two), the Stepleton outworks (two), and the Hanford outworks (one). Two from the main causewayed enclosure ditch, both juveniles, were placed on and in the same flint cairn. Three other skulls without mandibles were recovered from close to the ditch bases in the main causewayed enclosure ditch and the east cross-dykes. Another skull was from tertiary deposits in the Hanford ditches, with one from a disturbed context in the main causewayed enclosure ditch. In contrast to the articulated remains, the skulls were more widely distributed, with the majority (eight, *c* 67%) being recovered from the main causewayed enclosure ditch.

The largest proportion (seven) of the skulls were those of females (*c* 54% of identified females), with three male (*c* 18%) and five immature (*c* 16%). As was observed with regard to the articulated remains, it is unclear whether the apparent imbalance between the sexes is due to cultural, demographic or taphonomic factors (see '*Condition of the bone and ancient modifications*').

There was no osteological evidence for decapitation, although the inclusion of skulls with the mandible and some upper cervical vertebrae implies this may have occurred in the three cases observed. Vertebrae between the second cervical to the first thoracic have been noted as the point of severance in decapitation, with the mid-cervical (C3–4) forming the most common point (Harman *et al* 1981; Manchester 1983, 63; McKinley 1993). Had decapitation occurred it would be a matter for speculation whether it was *peri-* or *post-mortem*. The absence of the mandible in the majority of cases indicates the deposition of already disarticulated, probably dry bone.

Cut-marks were noted in three of the skulls without mandibles (two immature, one adult male). The cuts were of the same nature as those noted in the post-cranial skeletal elements and some could be associated with specific muscle attachments (Table 7.4). The

location and orientation of the cuts are not characteristic of those seen in scalping (During and Nilsson 1991; Mays and Steele 1996), being more consistent with defleshing/cleaning as noted elsewhere.

Disarticulated bone fragments

Approximately 36% of finds in this category were fragments of skull alone, *c* 25% lower limb, *c* 5% fragments of upper limb bone only, and *c* 3% fragments of axial skeleton only. A mixture of skeletal areas was recovered from *c* 24% of the finds. Bone from the remaining finds was not identified to skeletal element (see Table 7.1). It should be noted that, although all the bone from the south long barrow falls into this category, it may largely do so as a result of the bulldozing of the mound in the 1960s. The original condition of the bone prior to this modern disturbance is not known, though there were a relatively substantial number of joins, pairing or matches between individual finds (Table 7.1) suggesting there had at least been *increased* fragmentation in the 1960s.

The parietal vault is the most frequently identified skull fragment (25 finds, 26 including the south long barrow). Fragments of occipital (15 finds) and frontal vault (16 finds, 18 including the long barrow), and mandible (16 finds, 18 including the long barrow) occur less frequently. Fragments of temporal vault (nine finds) are relatively rare.

Where lower limb bone was identified, the most commonly occurring fragment was the femur shaft (*c* 49%, 50% including the long barrow). This was the most frequently recovered fragment of adult bone among the disarticulated material (24 finds, 39 including the long barrow). There was no significant difference between recovery of left (13 finds, 17 including the long barrow) and right (15 finds, 20 including the long barrow) femora (all ages). Fragments of tibia (11 finds, 18 including the long barrow) and fibula shaft (19 finds, 24 including the long barrow) were commonly recovered, but foot bones were very rare. Only *c* 2% of finds in this category contained fragments of hand or foot bones, and it is probably significant that the majority were from the long barrow (see above, '*Condition of the bone and ancient modifications*', for taphonomic and cultural effects).

In several instances where bones from more than one skeletal area were recovered together, although clearly disarticulated, a large proportion of a single skeleton was recovered and certainly in one instance (ST79 2497) it appeared as though the skull at least had been largely intact at the time of deposition. The remains were found 'scattered' within a compact, *c* 1 m × 1 m area of chalk rubble fill in the middle Stepleton outwork (Fig 3.93). A similar deposit (HH76 3030) was found on the base of segment 6.2 of the main causewayed enclosure, where it was built into a flint cairn (Fig 3.18). In a third case, most of a skull, with cut-marks to the vault (HH75 2023), was found scattered across a restricted area of segment 8 of the main causewayed enclosure (Fig 3.20). All these cases involved the remains of immature individuals.

There is also evidence for movement of bone fragments derived from one skeleton both between phases and across parts of the site (see Table 7.1 for 'associations'); eg HH74 HB 5 and 6, a mandible and skull probably from the same subadult, were recovered from adjacent segments of the main causewayed enclosure ditch. What is unclear is whether this type of movement simply represents incidental redeposition of fragments during reworking of the ditch fills, redeposition of body parts due to animal activity (scavenging) or during manipulation as part of the excarnation process, or deliberate 'curation' of already 'dry' bone fragments. Nor can it be stated with any certainty over what distance across the hilltop such movement occurred – the main causewayed enclosure and that on the Stepleton spur were, for a large part of their existence, contemporary, and it is conceivable that body parts or dry bone fragments may have been exchanged between the two areas.

The condition of much of the bone in this category (see '*Condition of the bone and ancient modifications*') suggests that it represents material from the later stages of the excarnation process. Cut-marks were less frequently observed on material in this category than that in the other two (see cautionary note above), but there was a conspicuous absence of small bones, elements of the axial skeleton, and articular surfaces. An alternative suggestion may be that this bone represents the remains of more easily transportable material brought to the site from elsewhere.

7.1.4 Discussion – Neolithic

The vast majority of known Neolithic human remains in Britain have been recovered from 'tombs' (Brothwell 1973; Thorpe 1984, 48). Disarticulated human bone fragments and burials (predominantly of infants) have been found in ditches at other Neolithic enclosures, such as (in approximate chronological order) Windmill Hill, Wiltshire (Smith 1965, 136–40; Whittle *et al* 1999, 344–6, 361–2), Maiden Castle, Dorset (Sharples and Henderson 1991), Flagstones, Dorset (Healy 1997a, 37), Durrington Walls and Woodhenge, both in Wiltshire (Wainwright with Longworth 1971, 191), and Mount Pleasant, Dorset (Wainwright 1979a, 247–9), but the numbers of individuals identified from these locations are not on the scale seen at Hambledon Hill.

Formal 'burial', that is deliberate deposition of the body with subsequent coverage by earth or a stone cairn, of individual cadavers in the Neolithic at Hambledon Hill was rare, accounting for a maximum of *c* 7% of individuals. The only features which may be seen as nominal 'grave cuts' are the three pits on the Stepleton spur and one grave cut though the fill of the main causewayed enclosure ditch. Other depositions of articulated cadavers did not appear to involve a grave. Some bodies were apparently placed in position in the ditches where they may, or may not, have been covered

in some way; certainly some of those on the ditch bases were covered with flint cairns. The cairns would, and obviously did, serve to keep off the scavengers which are known to have frequented the site, and this may have been their main purpose. Other, partially articulated skeletons, clearly arrived in their final position by way of non-human agencies.

The ditch burials from Windmill Hill were both of infants (Smith 1965, 136), although an adult male was buried under the outer bank (Whittle *et al* 1999, 79–82), and the only complete skeleton from the causewayed enclosure ditch at Maiden Castle was an infant (Sharples and Henderson 1991), as were both the ditch burials from Flagstones – excluding the one cremation burial – (Healy 1997a), and all the articulated skeletal remains ('burials') from the Mount Pleasant ditches (Wainwright 1979a). The possible cultural significance of this observation may be considered in the light of Brothwell's suggestion that there may have been a bias against child burials in the chambered tombs (1971, 117), a theory supported by the relatively low percentage of immature individuals identified from Neolithic tomb 'populations' (see *'Age'* above). That the distinction, if it existed, was not a simple one or universally adhered to is demonstrated by the fact that *c* 34% of the Hazleton tomb population was less than five years old (Rogers 1990, 183), as was *c* 30% of that from West Kennet (Wells 1962), while *c* 22% of the population from the cairn at Parc Le Breos Cwm, West Glamorgan, was <13 years old (Wysocki 1998). Of the immature individuals identified from Hambledon Hill, *c* 30% were represented among the articulated remains, 16% among the skulls, and *c* 54% among the disarticulated fragments. Also to be considered are the various factors which would seriously affect the survival of remains from such young individuals other than where protected by burial in a grave or under a cairn, for example destruction or removal by scavengers and preferential loss due to weathering (see '*Condition of the bone and ancient modifications*').

The recovery of fragments representative of all skeletal elements from the south long barrow, including the vast majority of the small hand and foot bones from among the disarticulated bone, strongly suggested that the remains of at least some complete skeletons, from cadavers which had not been subject to excarnation, were present prior to bulldozing in the 1960s. One can only speculate whether these would have comprised articulated 'burials' or if they were already disarticulated. However, cut-marks were noted on two fragments from the long barrow (including the 'geometric' marks on HH77 95) and two fragments showed clear evidence of canid gnawing, suggesting that a variety of deposition types may have been present.

Skulls will roll, particularly if pushed. It is, therefore, possible that at least some of the 13 skulls arrived in position by accident. However, the skulls recovered on or near the base of ditches do not have the appearance of accidental deposits (eg Figs 3.11–12); their placement, disarticulated and probably 'dry', appears deliberate. Two of the immature skulls were afforded the same treatment as two of the immature cadavers (and a collection of disarticulated immature bone fragments), being covered by or incorporated within flint cairns. The separation of dry, disarticulated skulls and long bones from each other and the rest of the skeletal elements has been observed in long barrows eg West Kennet, Wiltshire (Piggott 1962), Fussell's Lodge, Wiltshire (Ashbee 1966), and Hazleton, Gloucestershire (Saville 1990b). The significance of the skulls from Hambledon Hill appears to lie in their positioning, though the actual nature of the deposits is debatable. Head cults and the importance of the skull as an easily identifiable part of the human skeleton are common themes throughout prehistory, and the symbolic significance may be that the skull is seen as an easily recognisable token of the individual or the group and a clear marker of possession. The placing of these remains at Hambledon may, however, have served several purposes: they may have been totemic, or may have acted as a warning or as guardians. The predominance among them of females and of infants and children may seem incongruous here, but women and children are essential to the continuity of a community and form the hub of a family group, and, as such, would be ideal representations of a society, assuming, that is, that the choice was deliberate.

The predominance of skull fragments and fragments of long bone shaft among the disarticulated remains from Hambledon Hill echoes the skeletal elements recovered from other Neolithic enclosures. Bones from the ditches at Windmill Hill were nearly all parts of skulls and long bones (Smith 1965, 136–7), fragments of skull and long bones were recovered from Durrington Walls and Woodhenge (Wainwright with Longworth 1971), and adult skull fragments from Mount Pleasant (Wainwright 1979a). Thorpe (1984) compared the composition of the skeletal elements recovered from causewayed enclosures and from long barrows in Wessex. His graphs (ibid, figs 4.4 and 4.5) show considerable disparities between the two monument types. Skulls were much more frequent in causewayed enclosures than in long barrows, *c* 45 (44%) compared with *c* 21 (8%); and long bones rather less frequent, *c* 36 (35%) compared to *c* 109 (43%). A significant difference was in the third category, 'others', which comprised only 21% of skeletal elements from the causewayed enclosures compared to 49% from long barrows. Was this apparent selection due to natural causes or cultural ones?

There may be some significance in the observation that the skeletal elements most commonly recovered from the causewayed enclosures are the elements which have been noted as 'missing' from some long barrows. For example, Wells (1962) noted that both lower limb bones and skulls (minus mandible) had apparently been 'removed' from the assemblage at

West Kennet, and some of the long bones from Hazleton were observed to be absent (Saville 1990b). It is not uncommon for skeletal elements to be described as 'missing' from long barrow assemblages but there is no one exclusive pattern. Brothwell and Blake (1966, 62), having analysed the bone from Fussell's Lodge, commented that there was 'a relative lack of ribs, small bones of the hands and feet, patellae, clavicles, and scapulae', the most commonly occurring region being the skull. Chesterman (1977) noted that bones were missing from the Ascott-under-Wychwood assemblage in Oxfordshire, but specified no particular elements, and Whittle (1991) makes the same observation for Wayland's Smithy.

In their analysis of the bone from Fussell's Lodge, Brothwell and Blake (1966) concluded that '*burial* [present writers italics] initially took place elsewhere, and when the bones were partially or completely clear of soft tissue attachments major regions were removed for barrow burial'. This suggestion that the disarticulated remains from the long barrow were probably *exhumed* from elsewhere may be applied to the skulls and disarticulated remains recovered from Hambledon Hill and other similar sites. The articulated remains at Hambledon provide evidence for burial in shallow graves or under flint cairns, both of which would facilitate recovery after the required decomposition. The predominance of large bones, particularly skull and long bones, that is those easily identified with and easiest to physically recover, would all support this argument. An insight into excarnation of one individual is provided by a deep, eventually backfilled, grave sealed under the outer bank at Windmill Hill. On its floor was the essentially complete but rather displaced skeleton of an adult male, with several thousand amphibian bones and some small rodent bones, the most obvious interpretation being that the grave was left open, during which time the corpse decomposed and attracted rodents while frogs and toads fell into the almost vertical-sided open grave and could not get out. No gnawing or cut-marks were noted on the bone, suggesting that excarnation may in this case have been passive (Whittle *et al* 1999, 79–82, 344–6).

It has been demonstrated, however, that other forms of excarnation were (?also) being practised at Hambledon Hill. The cut-marks noted, though few (7% of finds), indicate that, at least, periodic defleshing and cleaning of individual cadavers was occurring, most probably as part of an ongoing process (see above). The effects of carnivorous scavengers on cadavers have been discussed in detail above ('*Gnawing*'). The skeletal elements recovered from among the disarticulated bone fragments at Hambledon Hill are precisely those one would expect to see had dogs or foxes had frequent access to exposed cadavers or those easily removed from shallow graves. There is some direct evidence (in the form of visible gnawing) for carnivorous scavengers at Hambledon Hill and compelling indirect evidence (from the skeletal elements and parts of bones recovered) that their activity was considerably more common. The location of much of the articulated skeletal material could also be interpreted as representing the remains of either exposed cadavers or those placed in shallow graves. It is likely that a complex process of excarnation, involving exhumation, exposure (with associated scavenging) and periodic defleshing and cleaning of bones was being practised at Hambledon Hill, either as individual rites or in combination. Nor would this exclude the possibility of further 'curation' of skeletalised remains. What may appear, to modern sensibilities, to represent a rather grotesque and unpleasant vision, would not necessarily have been viewed as such in a world where it constituted 'normal' behaviour.

The question which now arises is whether what was apparently occurring at Hambledon Hill was 'normal' practice. Evidence for defleshing is currently extremely scant, only Haddenham (Wakely 2006) having produced comparable evidence to date. The only gnaw marks noted on the skeletal material from Fussell's Lodge were those of rodents (Ashbee 1966). No gnaw marks were noted on the disarticulated bone recovered from the ditches at the other enclosure sites discussed above. However, Wysocki (1998) has reported extensive gnawing to the bone recovered from the chambers at Parc le Breos Cwm and argues for initial exposure of the cadavers with subsequent deposition of the skeletal remains in the cairn.

Possible links between long barrows and enclosure sites have been discussed by several authors. Such discussion generally centres around the absence of certain skeletal elements from long barrow assemblages – the varying degrees of articulation commonly seen in the tombs generally being attributed to re-arrangement of remains during subsequent burials (Saville 1990b, 263–5). The evidence from some barrows is for the removal of bone following decomposition, for example at West Kennet (Piggott 1962). Following the identification of a shortfall of skulls and long bones at West Kennet, Smith argued that the skulls and long bones from Windmill Hill could reflect the removal of bones from any or all of the four nearby chambered long barrows, perhaps as fetishes or mementos (1965, 137). Evidence from elsewhere has been used to support the view that bone was being brought into long barrows following a primary mortuary ritual elsewhere, for example at Fussell's Lodge (Brothwell and Blake 1966), Ascott-under-Wychwood (Chesterman 1977) and Parc le Breos Cwm (Wysocki 1998). Chesterman argued for exposure of cadavers prior to burial but not at any specified site (ibid), a similar argument being demonstrated convincingly by Wysocki (1998) for the remains deposited in the chamber (as distinct from the passage) at Parc le Breos Cwm. At Fussell's Lodge, Ashbee (1966) suggested the traffic may have been from enclosures to long barrows, or possibly both ways. For Wayland's Smithy, Whittle (1991) has cautiously, but probably

realistically, opted for a mode of disposal which was not mutually exclusive of comings, goings or staying-put, without specifying any other potential associated locations.

In the light of these hypotheses it is perhaps an understatement to call 'unfortunate' the fact that the south long barrow at Hambledon Hill was bulldozed flat in the 1960s. A direct comparison between the two sets of data from such immediately adjacent deposits would have been of great value; currently it is only possible to suggest that the long barrow assemblage may also have represented a mix of deposition types.

There are indications that there were either slight temporal or locational shifts in the treatment of the human remains on the hill. The predominance of the Stepleton enclosure for the recovery of articulated remains and the main causewayed enclosure for the disarticulated fragments may simply reflect a variation in the scale of activity between the two areas, or a genuine variation in mortuary rite. Were bodies from Stepleton transferred to the main enclosure once the excarnation process had run its course? Was the treatment of corpses simply different in this location? Or was there a temporal shift in treatment which did not allow for the previously 'normal' practice to extend beyond the early stages? No articulated skeletal material was recovered from the Hanford spur, and both the skulls from there appear to have been deposited disarticulated and dry, and yet the majority of the bone from this location was less weathered than that recovered from other parts of the site, and the only set of cut-marks observed may not have been directly associated with defleshing or cleaning (Table 7.4). The latter observations may indicate that the bone from Hanford was subject to less 'curation' than that recovered from other parts of the hill.

Tilley (1994) has interpreted Hambledon Hill as 'death island' on the edge of the Cranborne Chase 'ocean' of barrows. Death is a transition, and the remains of the dead, in their different forms, most probably did acquire new roles. The 'circulation of ancestral bones' has previously been suggested as a theme in megalithic chambered tombs (Gresham 1972) and in itself is perfectly plausible. However, one major flaw in Tilley's argument is that he fails to consider the undoubted effect of scavengers on the taphonomy of the remains from the enclosure ditch, which the writer believes may be largely responsible for the skeletal elements represented. A further difficulty has to be the lack of reliable osteological analysis to link the skeletal material between the 'ocean' and the 'island', putting the theory to a practical test.

7.1.5 The Anglo-Saxon burials

Human remains were recovered from 11 of the 12 graves which formed a small cemetery located on and behind the Stepleton innermost outwork bank (3.5.7). A summary of the results is presented in Table 7.8.

Disturbance and condition

The majority of the graves, with one exception (grave 12, cutting Clay-with-Flints), were cut through the outwork bank into natural chalk, had been badly truncated by ploughing, and survived to depths of less than 0.20 m. Graves 1–11 formed a fairly regular row along a *c* 17 m north–south length of the outwork, Grave 12 being situated *c* 16 m to the south (Figs 3.116, 3.119–22). The outwork bank was badly ploughed-down and this, together with the very shallow remaining depth of the graves, makes the potential for loss of other burials fairly high. Further damage had been inflicted on the remains as a result of animal burrowing. Despite the level of post-depositional disturbance, skeletal recovery from the adult burials was relatively good, at between *c* 70% and *c* 98% (Table 7.8); the low levels of skeletal recovery from the immature graves was more the product of poor bone survival than disturbance.

Much of the bone was badly fragmented, presumably in consequence of the reduction in grave depth by ploughing. One of the skulls was badly warped (Grave 3). The bone was generally in poor condition, noticeably more so than the Neolithic remains, being eroded and root-marked, and sometimes dry and fissured; the neonatal bone was particularly badly eroded. Slight green staining was noted on the lateral border of the left scapula from Grave 1, suggestive of the possible one-time presence of copper-alloy in the grave, perhaps a cloak-pin or brooch. No items of copper-alloy were found in the grave, but artefacts may have been removed as a result of disturbance.

Bone from two of the skeletons – both recovered from the same outlying grave (12) – had dark staining, with the exception of the right arm bones from both. This suggests that the bodies may have been wrapped or covered in some form of organic material, from which the right arms protruded or were otherwise protected.

Demographic data

Twelve individuals were identified from the 11 graves, Grave 12 containing the remains of two adult females. Nine adults were identified, including five males and four females, with one (possibly male) older subadult and two neonates/young infants under 8 months (Table 7.8). There is no significant difference in the age of the adults dependent on sex, there being one female and one male of over 45 yr, and a similar distribution of sexes in the younger age ranges.

The cemetery population has the appearance of a small, 'extended family group'. The absence of more immature individuals, with only the two very young neonates/infants, is curious; however, in view of the very low skeletal recovery from the infant graves, it is possible that the remains of immature individuals have been preferentially lost due to truncation and detrimental soil conditions.

Table 7.8 Summary of Saxon inhumations

% skel = % of articulated skeleton recovered
No. frags = number of fragments present
amtl = *ante mortem* tooth loss, pd = periodontal disease, oa = osteoarthritis, op = osteophytes, exo = exostoses, dl = destructive lesion, pnb periostial new bone, ddd = degenerative disc disease, Sch = Schmorl's node, mv = morphological variation. C = cervical, T = thoracic, L = lumbar, S = sacral, bsm = body surface margins, man mandibular, max = maxillary, a-c = acromio-clavicular, r/l = right/left, p/d = proximal/distal, IP = inter-phalangeal, ap = articular process, tp = transverse process

Grave and find number	*% skel*	*Age*	*Sex*	*Pathology*
1 ST78 499	*c* 85%	adult *c* 25–30 yr	male	caries, calculus, hypoplasia, oa – bilateral sterno-clavicular, op – r pisiform, C1, T8 & L5 bsm, l rib, mv – overcrowding man teeth, C5 dual transverse forama, wormians, man M3 5 – cusp, premature fusion sagittal suture
2 ST78 890	*c* 93%	adult >25 yr	male	amtl, calculus, cribra orbitalia, Sch –T11, pitting – l a-c, r rib, op – l d ulna, 1st & 11th ribs, C1–2, 5T bsm, oa – l c-v, mv – wormians (6), all man molars 5-cusp, impacted max M3
3 ST77 127	*c* 88%	adult >25 yr	male	calculus, trauma – ?r clavicle, ?r ulna, un-united fracture r radius, fractures l tibia & fibula, pnb – l tibia & fibula, dl – r d humerus, l acetabulum, r scapula, hyper-vascularity – r d humerus, r d radius, pitting – a-c, T10 rib, l 1st rib, cribra orbitalia, exo – p femur, op – l femur head, l patella, T5–6 & T8 bsm, L6-S1 bsm & ap, 2 r & 5 l rib, Sch – L1–2, mv – man l M3 6 – cusps + Carabelli cusp, max M3 root 'pegged', wormians, atlas central groove, sternal foramen, L6
4 ST77 133	*c* 96%	adult >30 yr	male	calculus, hypoplasia, abscess, op – r scapula, r d humerus, r sacro-iliac, 3 r & 1 l rib, C1–2, T5 & T9 ap, Sch – T8–11, L2–3, pitting – T3–4, T7, T9 & T11 (all ap), oa – l sacro-iliac, T3 ap, exo – p femora, mv – max gap-toothed, metopic suture, wormians (12), squatting facets, fusion middle & distal segments l 5th toe
5 ST77 132	*c* 97%	adult >45 yr	male	amtl, pd, calculus, abscess, ddd – C3–7, 3T, 3L, Sch – 2T, oa – r 1st IP joint, l hip, r sacro-iliac, r c-v, l 11/12th c-v, C3–4, C7, T1, 1L, exo – p femora, patellae, d fibulae, r p fibula, l calcaneum, iliac crests, r ischial tuberosity, ilia rectus femoris, op – l d femur, patellae, l calcaneum, r talus, l scapula, r acetabulum, l ankle, r talus, sesamoids, 3 r & 2 l ribs, C1–2, C5–7 ap, T1–5 & other 4T bsm, 3L bsm, pitting – r 3rd & 5th tarso-metatarsal joints, mclavicles, r tarsals, dl – r talus, r 1st & 5th proximal IP joint (LL), r 1st distal IP (LL), calcification costo-sternal cartilage, mv – max I2 'pegged', pseudo-facet l d fibula, calcaneal dual facets, atlas central groove, fusion 2L bodies
6 ST78 751, 1469	*c* 98%	adult *c* 25–30 yr	female	hypoplasia, calculus, dl – r 2/3rd proximal foot phalanx, l d humerus, ddd – S1, op – C1, T5-6 & T8 bsm, cribra orbitalia, mv – man l M^3 6-cusps & r 5-cusp with Carabelli, squatting facets, calcaneal dual facets, middle & distal segments both 5th toes fused, premature fusion sagittal suture
7 ST78 793	*c* 1%	neonate (0–4 mths)		
8 ST78 503	*c* 2%	neonate/ young infant (4–8 mths)		
9 ST78 1197	*c* 85%	adult >45 yr	female	amtl, abscess, calculus, endocranial new bone, osteoporosis – ass vertebral body collapse T12, L4–5, trauma – compression fracture T12, calcified rib cartilage, oa – r a-c, 3 r carpals, r hip, C2–5, T12 ap, T1 c-v, ddd – C3–7, T1–2, T8–9, L1–3, op – scapulae, l d humerus, p ulnae, patellae, knees, l d fibula, l talus, finger phalanges (1st proximal IP joints, 4 middle both IP, 5 distal IP), 3 l rib facet, C1, T3–7 & T10–11 bsm, L4–5 bsm, new bone – l d femur, exo – r d femur, l patella, pitting – r temporo-mandibular, 1st rib heads, L2 ap, mv – squatting facets, absence max M3
11 ST78 987	*c* 70%	subadult 15–18 yr	??male	caries, calculus, mv – overcrowding man teeth, man M3 5-cusp, man M1 6-cusp, 3 centre ossification 1st metacarpals, delayed ossification/calcification C1 & C2
12 ST78 2617	*c* 80%	adult *c* 18–25 yr	female	calculus, cribra orbitalia, op – C1, mv – metopic suture
12 ST78 2618	*c* 70%	adult *c* 30–45 yr	female	pd, calculus, caries, abscess, pitting – temporo-mandibular joints, l acetabulum, op – r p radius, l rib, Sch – 1L, modified l max canine (artefactual not pathological)

The evidence for a pre-seventh century Anglo-Saxon presence in Dorset is sparse, and the few – less than a dozen – early cemeteries, of which Hambledon Hill is one, often comprised small numbers of burials, possibly indicative of small, pioneering groups of settlers pushing westwards (Green 1984; Eagles 1994).

Physical anthropology

Stature estimation

It was possible to estimate the stature of seven of the adults. The height range for the males (four individuals) was between 1.71 and 1.74 m (5' 7¼"–5' 8½"), with an average of 1.72 m (5' 7¾"); for the females (three individuals) the range was 1.49 m (4' 11½") to 1.67 m (5' 5½"), with an average of 1.59 m (5' 2½"). The estimated heights of the females were significantly less than for the males. Other Anglo-Saxon groups show similar mean heights at, for example, 1.58 m for the females and 1.67 m for the males from Alton, Hampshire (Powers and Brothwell 1988). Further to the east, at Apple Down in Sussex (Harman 1990), the average estimated height for the males (38 individuals) was 1.74 m (5' 8½"), but a substantial proportion (16%) were 1.80 m (5' 10¾") and above. Contemporaneous, though culturally different, cemeteries in Dorset, comprising the indigenous population, also show similar mean heights – female 1.59 m and male 1.71 m at Ulwell (Waldron 1988) – or lower ones – female 1.56 m, males 1.89 m at Tolpuddle (McKinley 1999b).

The average height for the Anglo-Saxon males from Hambledon Hill was 40 mm greater than for the Neolithic males, the Anglo-Saxons having a much smaller range of heights and a maximum that was 20 mm higher than for the Neolithic males.

Cranial index

The cranial indices of six individuals (four male, two female) was calculated giving a range of 70–76.38. All except one fell into the dolichocranial range, that from Grave 5 (male) being in the mesocranial range. There was no significant variation within the group or between the Anglo-Saxon and Neolithic indices. The Saxon indices fall within the central area of the range of 66–81 recorded at Apple Down (Harman 1990), where the average was 74.4 and skulls were most commonly (48%) within the dolichocranial range. The tendency towards long-headedness corresponds with the general trend in the Anglo-Saxon period (Marlow 1992).

Pathological lesions and morphological variations

Some pathological lesions and morphological variations were noted in the remains of all the individuals identified except the two neonates (Table 7.8). The nature of some of the conditions is discussed in greater detail in the Neolithic section, to which the reader is referred.

Dental disease

Ten permanent dentitions were recorded; a total of 277 erupted permanent teeth were counted and 272 permanent tooth positions. Calculus deposits were noted in all the permanent dentitions, with heavy deposits in only one (Grave 5). Periodontal disease was observed in one male (Grave 5) and one female (Grave 12B) dentition, both exhibiting other dental lesions which may have been associated.

Ante mortem tooth loss was evident in three dentitions, one female and two male. In total, 30 out of the 272 teeth were lost (11%); 2% for the males, 24.6% for the females. The latter high rate is due to the older adult female (Grave 9) having lost almost all her teeth; there was a substantial reduction in the thickness of the mandibular body, which was only 7.3 mm wide and 6.4 mm deep, producing the characteristic 'slack jaw' which must have seriously restricted the type of food this individual was capable of consuming. In the two males, both molars and premolars had been lost (predominantly the latter). The overall rate is higher than that of 6.9% from Apple Down (Harman 1990), but slightly lower than that of *c* 14% shown by Brothwell (1972a) for Saxon populations.

Carious lesions were noted in three dentitions, two male and one female, with an overall rate of 2.5%. All the lesions were small, most were cervical in origin (71%), and molars were predominantly affected (86%). The rate is considerably lower than that of 10% from Apple Down (Harman 1990) and the 6% given by Brothwell for Saxon populations (1972a, fig 55). However, the significance of at least the former comparison should be measured against the higher *ante mortem* tooth loss rate from the Hambledon group, itself skewed by the condition of the older female dentition (Grave 9). Dental abscesses were observed in four dentitions, two male and two female, with an overall rate of 1.8%, 1.1% for the male, 3.3% for the females. The overall rate was again lower than that of 7.2% recorded at Apple Down (Harman 1990). With the exception of the higher rate of *ante mortem* tooth loss among the Saxons, there is little difference in the rates of various dental diseases between the two assemblages from Hambledon Hill, and it may be argued that the Saxon group had a similarly high-protein diet to that inferred for their Neolithic predecessors (see above). This may, in part, have been due to their 'settler' status; being, apparently, among the first Saxons to push westward in the seventh century, they may not have settled anywhere long enough to have established arable crops.

Deficiency disease

Cribra orbitalia was noted in four of the eight individuals where the orbital vaults survived, with a rate of 37%. Lesions were mostly mild porotic, with cribotic lesions in both orbits of the young adult female 12a. The rate is slightly higher than that noted among the Neolithic remains in general, significantly so in comparison with the low rate among the adults (8%). It is

also slightly higher than the rates noted for the closely contemporary – though used by an indigenous group – cemetery at Tolpuddle (overall rate 28%), where the rate was far greater among the immature individuals than the adults (McKinley 1999b). The apparent discrepancy in the rates may be diet-related, reflecting the uncertain existence of this small group of early settlers.

Osteoporosis, rarefaction of the trabecular bone and thinning of the cortices, had led to the characteristic anterior collapse of the twelfth thoracic vertebra in the older adult female from Grave 9, with a healed compression fracture across the centre of the bone. This type of pathological fracture is not uncommon in association with senile osteoporosis (Adams 1986, 111; 1987, 102–3) and would have produced kyphosis (anglulation) of the spine. There was also lateral and posterior collapse of the fourth and fifth lumbar vertebral bodies respectively. The condition would have produced back pain, particularly in association with the fracture, and affected the breathing and mobility of this individual.

Trauma

A well-healed, but un-united fracture was observed in the distal half of the right radius from Grave 3 (Fig 7.18), which had resulted in shortening of the bone, and apparent rotation of the distal end. The X-radiograph indicated a spiral fracture, with well-healed margins and no indication of associated infectious changes. Fractures to the bones of the forearm, occurring as a result of direct force or a heavy fall onto the wrist (Adams 1987, 160), are prone to non-union as a consequence of either impaired blood supply or inadequate immobilisation with resultant rotational shearing movement between the broken fragments (the forearm being active in the pronation of the hand). Areas of hypervascularity (indicative of increased blood supply) in the right distal humerus and the distal radius shaft suggest there was a problem with the blood supply to the arm, but inadequate immobilisation is likely to have been a major factor in the non-union. Disruption to the contours of the right distal ulna and the medial shaft of the right clavicle are likely to have been associated with the same traumatic event. The strength and functioning of the forearm and hand must have been impaired in consequence of the injury.

The same individual, an adult male, had a well-healed, but misaligned spiral fracture in the left tibia and fibula, with medial displacement and shortening of the bones by *c* 15.3 mm (Fig 7.19). Fractures of this type are sustained by the exertion of a rotational force, such as may be inflicted in falling from some height. The X-radiograph of the tibia also showed what may have been a second spiral fracture, distal to the first, suggesting a compound fracture. The tibia and fibula shafts both have periosteal new bone on the medial surfaces, indicative of associated soft tissue infection. It is probable that both fractures were sustained in the same traumatic event.

Fig 7.18 ST77 79/Saxon Grave 3 (male >25 yr); right radius (medial aspect) and ulna (lateral aspect) showing healed, un-fused fracture in distal radius and shortening of the bone. Photo Elaine Wakefield (Wessex Archaeology)

Joint disease

Lesions indicative of osteoarthritis were noted in the remains of five individuals, including four males and one female. Between one and eleven joints were affected in each individual, the number of joints involved increasing with age. The most commonly affected joints

Fig 7.19 ST77 79/Saxon Grave 3; left tibia (lateral aspect) and fibula (medial aspect) showing a mis-aligned spiral fracture in the distal halves of the shafts, with shortening of the bone and associated pyogenic lesions. Photo Elaine Wakefield (Wessex Archaeology)

were the sterno-clavicular (22%), acromio-clavicular (12%) and cervical articular processes (12%). The numbers in each group were, however, small and no significant conclusions can be drawn from the figures.

Degenerative disc disease was noted in two of the female spines and one male, the scale of involvement apparently increasing with age in both sexes. All areas of the spine were involved, with higher prevalence in the upper and lower regions. Overall rates were cervical 18% (female 26%, male 12%), thoracic 7% (female 9%, male 4%), lumbar 14% (female 16%, male 11%) and first sacral 14% (female 33%).

Schmorl's nodes were observed in five spines, including four males and one female. Rates were highest in the lumbar spine at 12% (males 14%, females 7%), with 8% (males 10%) of thoracic vertebrae affected. No vertebrae above T8 were affected.

The distribution of other destructive lesions and osteophytes associated with joints is shown in Table 7.8. Osteophytes were seen in 1–34 joint surfaces in bones from all nine of the adults, with a marked increase in involvement in the two older adults (from Graves 5 and 9); lesions were more common in joints of the upper limbs in the female and the lower limbs in the male, both had frequent spinal lesions. Pitting was recorded in between two to six joints in six of the adults, most commonly in the older adult male (Grave 5).

Miscellaneous conditions

Exostoses and other new bone were noted at between one and eleven sites in four individuals, frequency again appearing to increase with age, the older adult male being most affected.

Morphological variations

A summary is presented in Table 7.8. Premature fusion and obliteration of the sagittal suture was observed in two younger mature adult crania from Graves 1 (male) and 6 (female). Wormian bones were present in the lambdoid sutures of four individuals (Graves 1–4, males), individuals from Graves 4 and 12a both having a metopic suture. Only four individuals share more than one trait; the adult male from Grave 1 and the subadult male from Grave 11 both have overcrowding of the anterior teeth and a five-cusped mandibular third molar, and the adult male from Grave 4 and adult female from Grave 6 both have fusion of the fifth middle and distal foot phalanges and squatting facets – though the latter is believed to be linked to behavioural formation rather than potentially genetic.

Evidence for an Anglo-Saxon presence in the west in the sixth century has been recovered from several Dorset hillforts and it has been suggested that this may be indicative of Saxon involvement in 'native struggles', with warriors bearing allegiance to some British leader (Eagles 1994, 27). The Anglo-Saxon assemblage from Hambledon Hill does not represent such a group, suggesting rather a shift to more peaceful attempts at settlement in the area to the west by a 'family-style' group, which comprised at least two elderly and infirm adults (a female and a male) who would have required a degree of care from the others within their small, possibly still mobile community.

7.2 Hambledon Hill stable isotope values

Michael P Richards

7.2.1 Introduction

This section presents bone collagen stable isotope values for Neolithic humans and fauna from Hambledon Hill. Stable isotope analysis provides us with direct evidence of the more general aspects of past human diets, which can then be related to the floral and faunal remains from the site. This assemblage is particularly interesting, as there are a wide range of ages of humans represented here, as well as large numbers of males and females, which has allowed some exploration of the links between gender, age and diet. This analysis addresses a number of questions. Firstly, what was the general diet at this site? Were marine foods part of the diet, suggesting movement between this site and the coast? And how much animal protein was in these people's diets? Secondly, were the diets similar for all these individuals, and therefore suggestive of the burial of a group of people with uniform subsistence? Thirdly, were there variations in the diets that could be linked to gender? And, finally, could the isotope values of the juveniles provide some insight into cultural practices such as weaning age?

Stable isotope analyses

Stable isotope analysis of human bone collagen can tell us about the protein sources in human diets of the last 5–15 years of life (depending on the bone element sampled; Schwarcz and Schoeninger 1991; Ambrose 1993). The carbon and nitrogen in that bone have come from foods eaten over a lifetime, and various foods have unique ratios of two isotopes of carbon (^{13}C and ^{12}C), and two isotopes of nitrogen (^{15}N and ^{14}N). These isotopes behave similarly chemically, but, as one is heavier than the other, fractionation can occur during various physiological reactions, such as photosynthesis. The ratios of the two carbon isotopes, the $\delta^{13}C$ value, and the ratios of nitrogen, the $\delta^{15}N$ value, are known for a wide range of foods. Therefore, if the $\delta^{13}C$ and $\delta^{15}N$ of human bone collagen are measured, then comparison of these values with the known food values makes it possible to infer what foods were eaten in the past.

Collagen is chosen for analyses as it is the best-preserved part of the bone, and is the same material extracted for radiocarbon dating of bone. It appears that, based on various feeding experiments (Ambrose and Norr 1993; Tieszen and Fagre 1993), collagen isotope values reflect the isotope values of dietary protein. And, as bone collagen is constantly being replaced ('bone turn-over'), the collagen $\delta^{13}C$ and $\delta^{15}N$ values are an average of the last 5–15 years of diet.

There is a great variation in $\delta^{13}C$ values between terrestrial and marine ecosystems. Therefore, a human who derives a predominant (>90%) amount of his or her protein from marine sources will have $\delta^{13}C$ values close to –12 ± 1‰. Those who have no marine protein in their diet will have $\delta^{13}C$ values closer to –20 ± 1‰. Individuals who derive 50% of their protein from marine, and 50% from terrestrial, sources will have $\delta^{13}C$ values between these two, *c* –16‰.

On the other hand, $\delta^{15}N$ values reflect the trophic level of an organism in a food chain. Generally, human collagen $\delta^{15}N$ values are 2–4‰ higher than the protein they consume. If we measure the $\delta^{15}N$ values of associated fauna, whose diets we have some idea about, we can compare these values to those of the humans in order to see whether humans behaved more like herbivores, with plant protein predominating, or carnivores, with animal protein being the most important. Usually, as humans are omnivores, their $\delta^{15}N$ values fit somewhere in between those of herbivores and carnivores. The $\delta^{15}N$ value then reflects the relative amounts of animal (meat or milk) *vs* plant protein in diets over the previous 5–15 years.

Table 7.9 Comparison of isotope values obtained from collagen extracted following the methods outlined by Richards (1998), 'MR' and collagen extracted as part of the radiocarbon dating process at the Oxford Radiocarbon Accelerator Unit, '^{14}C'. The measurement errors on each measurement are $\delta^{13}C$ ± 0.3 ‰, and $\delta^{15}N$±0.4 ‰

Sample	*Method*	*$\delta^{13}C$ (±0.3)*	*$\delta^{15}N$ (±0.4)*	*C:N*
ST81 3188	MR	–20.9	10.3	3.4
ST81 3188	^{14}C	–21.1	10.0	3.4
ST78 2755	MR	–20.5	7.8	3.4
ST78 2755	^{14}C	–20.6	7.9	3.0

7.2.2 The stable isotope results

Stable isotope analyses were undertaken of 51 Neolithic humans, mostly adults, from various areas of this site. The isotope values of an additional four humans and a large number of faunal remains were also measured as part of the radiocarbon dating process at the Oxford Radiocarbon Accelerator Unit, and these values are discussed below. For most samples, the collagen extraction procedure followed was standard, and is outlined by Richards and Hedges (1999). Radiocarbon samples are prepared in a similar manner, and the resulting isotope values between the two methods are, as expected, statistically identical (Table 7.9). All of the human isotope values are given in Table 7.10.

Fauna

The faunal isotope values from the site are plotted in Figure 7.20. The $\delta^{13}C$ values of all of the species are about –22 to –20‰, which is as expected for terrestrial animals. There is a single *Bos* sample that does stand

Table 7.10 Human stable isotope values

All results are for single measurements, except where indicated.
Age and sex identifications are from McKinley (this chapter): AD = adult, Y = young, M = mature, YM = younger mature, JUV = juvenile, O = older, INF = infant, NEO = neonate, SU = subadult
The bone elements sampled are: F = femur, C cranium, U = unidentifiable bone fragment, M = mandible, RA = radius, T= tibia, H = humerus, LB= long bone, P = parietal, O = occipital, RI = rib, V = various
The final sample, ST82 124, is later, dating to 1430–1130 cal BC (3050±45 BP; OxA-7849).

Sample	*Location*	*Sex*	*Age*	*Element*	*$\delta^{13}C$*	*$\delta^{15}N$*	*C:N*	*Method*	*No. of measurements*
HH74 HB 1b	Main enclosure	F	M AD	C	**-1.1**	**10.0**	3.4	MR	
HH74 AB 201	Main enclosure	??M	AD	H	**-20.7**	**8.8**	3.4	MR	
HH74 AB 260	Main enclosure	??F	AD	RA	**-0.7**	**9.3**	3.3	MR	
HH74 AB 304	Main enclosure	?	AD	T	**-0.5**	**9.3**	3.4	MR	
HH74 AB 315	Main enclosure	?	JUV	LB	**-20.8**	**7.7**	3.3	MR	
HH75 241	Main enclosure	??F	AD	F	**-21.1**	**8.9**	3.4	MR	
HH75 337	Main enclosure	?	AD	P	**-21.3**	**9.2**	3.4	MR	
HH76 695	Main enclosure	?	AD	P	**-21.2**	**9.4**	3.4	MR	
HH76 1177	Main enclosure	?	AD	H	**-21.0**	**8.8**	3.4	MR	
HH76 1948	Main enclosure	?	JUV	F	**-21.4**	**8.9**	3.4	14C	2
HH76 2206	Main enclosure	?	OM/O AD	O	**-21.1**	**8.8**	3.4	MR	
HH76 2625	Main enclosure	M	Y/YM AD	U	**-20.7**	**8.4**	3.2	MR	
HH76 3046	Main enclosure	?	Y JUV	U	**-20.7**	**10.7**	3.0	14C	4
HH76 3052	Main enclosure	M	O AD	U	**-20.8**	**7.2**	3.1	MR	
HH77 581	Main enclosure	?	AD	LB	**-20.9**	**8.6**	3.2	MR	
HH75 1360	Inner east cross-dyke	??M	Y AD	C	**-20.5**	**9.4**	3.3	MR	
HH77 59	Long barrow	?M	AD	?F	**-20.2**	**8.8**	3.2	MR	
HH77 69	Long barrow	M	AD	U	**-20.5**	**9.8**	3.3	MR	
HH77 80	Long barrow	?M	Y/YM AD	U	**-20.9**	**9.6**	3.3	MR	
HH77 85	Long barrow	?	Y/M AD	U	**-20.7**	**9.9**	3.4	MR	
HH77 91	Long barrow	?	AD	F	**-20.8**	**9.1**	3.3	MR	
HH77 94	Long barrow	?	Y/M AD	V	**-20.6**	**9.7**	3.3	MR	3
HH77 95	Long barrow	?	M AD	U	**-20.3**	**10.2**	3.2	MR	
HH74 AB 440	A F64	?	AD	F	**-20.4**	**8.6**	3.4	MR	
HH76 1963	Shroton spur	?	Y/M AD	RA	**-20.3**	**10.1**	3.3	MR	
HH76 1967	Shroton spur	?	AD	RI	**-21.0**	**9.5**	3.3	MR	
HH76 1968	Shroton spur		M AD		**-20.4**	**10.2**	2.9	14C	
ST80 383	Stepleton enclosure	??M	AD	T	**-20.8**	**8.6**	3.3	MR	
ST81 1288	Stepleton enclosure	?	AD	T	**-20.8**	**9.3**	3.4	MR	
ST81 3188	Stepleton enclosure	F	M AD	U	**-21.0**	**10.2**	3.4	MR/14C	3
ST79 2686	Middle Stepleton outwork	?	Y JUV	RI	**-20.7**	**9.7**	3.4	MR	
ST78 1100	Inner Stepleton outwork	F	Y/YM AD	U	**-20.9**	**10.9**	3.3	MR	
ST78 2755	Inner Stepleton outwork	M	O SU/AD	F	**-20.5**	**7.8**	3.1	MR/14C	2
ST 78 2755A	Inner Stepleton outwork	?	Y INF	U	**-20.4**	**10.4**	2.9	14C	2
ST78 2871	Inner Stepleton outwork	??F	O SU/AD	F	**-20.9**	**9.3**	3.3	MR	
ST78 2919	Inner Stepleton outwork	?	INF	?C/LB	**-20.8**	**10.0**	3.3	MR	2
ST 79 2756	Inner Stepleton outwork	?	NEO	U	**-20.8**	**10.2**	3.1	14C	2
ST79 2726	Inner Stepleton outwork	M	OM AD	U	**-20.2**	**10.0**	3.3	MR	
ST80 1095	Inner Stepleton outwork	?	AD	F	**-21.8**	**9.3**	3.7	MR	
ST78 967	Outer Stepleton outwork	??F	O SU	C	**-20.2**	**8.1**	3.3	MR	
ST80 1875	Outer Stepleton outwork	M	Y AD	F	**-20.8**	**9.0**	3.2	MR	
ST80 2069	Outer Stepleton outwork	?	SU/AD	RA	**-21.3**	**8.2**	3.4	MR	
ST78 1235	1A F57	?	?Y INF	C	**-21.1**	**10.3**	3.4	MR	
ST78 964	1A F70	?	O INF/Y JUV	F	**-21.2**	**9.9**	3.4	14C	
ST79 2025	2A F200	??M	O AD	F	**-20.4**	**9.4**	3.4	MR/14C	2
ST81 2173	4B F137	?	O INF	C	**-21.1**	**10.3**	3.4	MR	
ST81 3181	4B F712	M	Y AD	F	**-20.3**	**9.7**	3.3	MR	
HN82 236	Inner Hanford outwork	??M	M/O AD	C	**-20.6**	**9.4**	3.4	MR	
HN82 270	Inner Hanford outwork	?	AD	P	**-21.2**	**9.3**	3.4	MR	
HN82 278	Inner Hanford outwork	?	Y/M AD	T	**-20.9**	**9.3**	3.3	MR	
HN82 293	Inner Hanford outwork	?	AD	CL	**-20.7**	**9.2**	3.3	MR	
HN82 339	Inner Hanford outwork	?	AD	F	**-21.0**	**9.7**	3.3	MR	
HN82 344	Inner Hanford outwork	?	SU/AD	T	**-20.9**	**8.8**	3.3	MR	
HN82 200	Outer Hanford outwork	F	M AD	C	**-20.9**	**9.3**	3.3	MR	
HN82 221	Outer Hanford outwork	?	AD	T	**-20.2**	**9.0**	3.3	MR	
ST82 124	ST82 F16	M	M/O AD	F	**-21.2**	**9.1**	3.5	14C	

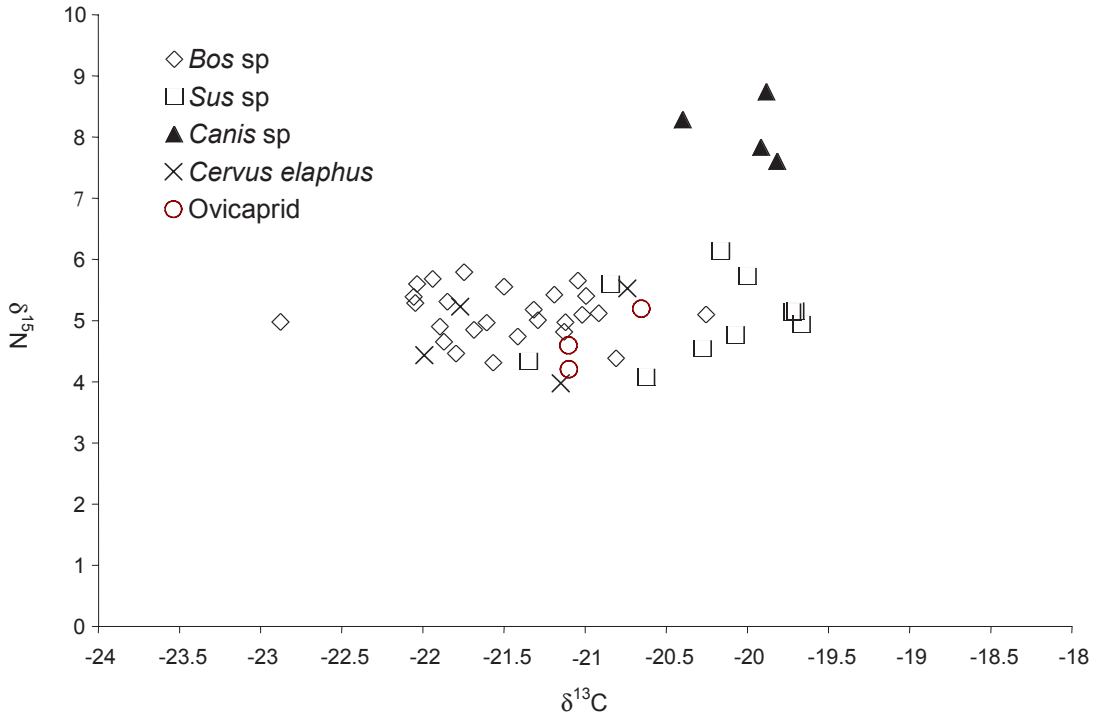

Fig 7.20 Animal bone collagen stable isotope values. These fauna come from many locations at the site, and date to the early/middle Neolithic.

out though, with a $\delta^{13}C$ value of –22.8 ‰ (HH77 2123 from beneath the inner south cross-dyke bank). There are indications that forest vegetation may be more negative in $\delta^{13}C$ than plants grown in the open (van der Merwe and Medina 1991), and this vegetation $\delta^{13}C$ difference will be reflected in the bone collagen $\delta^{13}C$ values of animals that live in the two different ecosystems. Could this *Bos* sample with the more negative $\delta^{13}C$ value be a forest dweller, and therefore be from a wild, rather than domesticated, cattle? The dog values are more positive than the herbivores/omnivores. It is most likely that what is observed here is the approximately 1‰ shift in $\delta^{13}C$ values that have been observed by others for carnivores (Bocherens *et al* 1995).

The $\delta^{15}N$ values are more variable than the $\delta^{13}C$ values, and nicely show the differences in $\delta^{15}N$ related to the source of dietary protein. The herbivores (cattle and red deer) are at about 5‰, which is the same value observed for other areas in Europe in the Holocene (Bocherens *et al* 1991; Katzenberg and Weber 1999; Richards 2000). The dog values are about 3‰ higher, indicating that their dietary protein has come entirely from herbivores, although we cannot, unfortunately, narrow down the species consumed. The values obtained for pigs are interesting. Wild pigs, as omnivores, might be expected to have $\delta^{15}N$ values between those of herbivores and carnivores, in the region of 6 or 7‰. Pig bone from the site does not, however. It has values indicative of a purely plant protein diet, which may suggest that they are domestic animals whose diets are being controlled by humans, or may simply indicate that wild pigs had a largely herbivorous diet.

Adult human isotope values

All of the human adult isotope values are plotted together with the average faunal values in Figure 7.21. The $\delta^{13}C$ values cluster around –21‰, indicating that the dietary protein was entirely from terrestrial sources, with no significant input of marine foods. The $\delta^{13}C$ values are actually quite similar, and only range over about 1‰. As discussed above with the dog $\delta^{13}C$ values, some of this variation might relate to differing amounts of animal protein in the diet.

There is a wider range of $\delta^{15}N$ values, here definitely indicating different sources of dietary protein, particularly in the amounts of animal *vs* plant protein in the diet. Most of the individuals have $\delta^{15}N$ values between 9 and 10‰, which, when compared with the faunal values, indicate a diet with most of the protein coming from animal, rather than plant, sources (herbivores at 5–6‰, plus the $\delta^{15}N$ enrichment of 2–4‰, would equal 'carnivore' $\delta^{15}N$ human values of up to 10‰). Individuals with lower $\delta^{15}N$ values obtained their dietary protein from both plant and animal sources.

The differences in diets evidenced by the wide range of $\delta^{15}N$ values leads one to question whether they may be reflecting cultural differences in diet. To see if the diet varied between male and female, values were plotted from adult samples whose sex could be identified fairly confidently using McKinley's criteria. She has four categories for sex: unidentifiable, possible male or female (denoted by ??), probable male or female (?) and likely male or female. Values are plotted in Figure 7.22 only for samples that were in the last

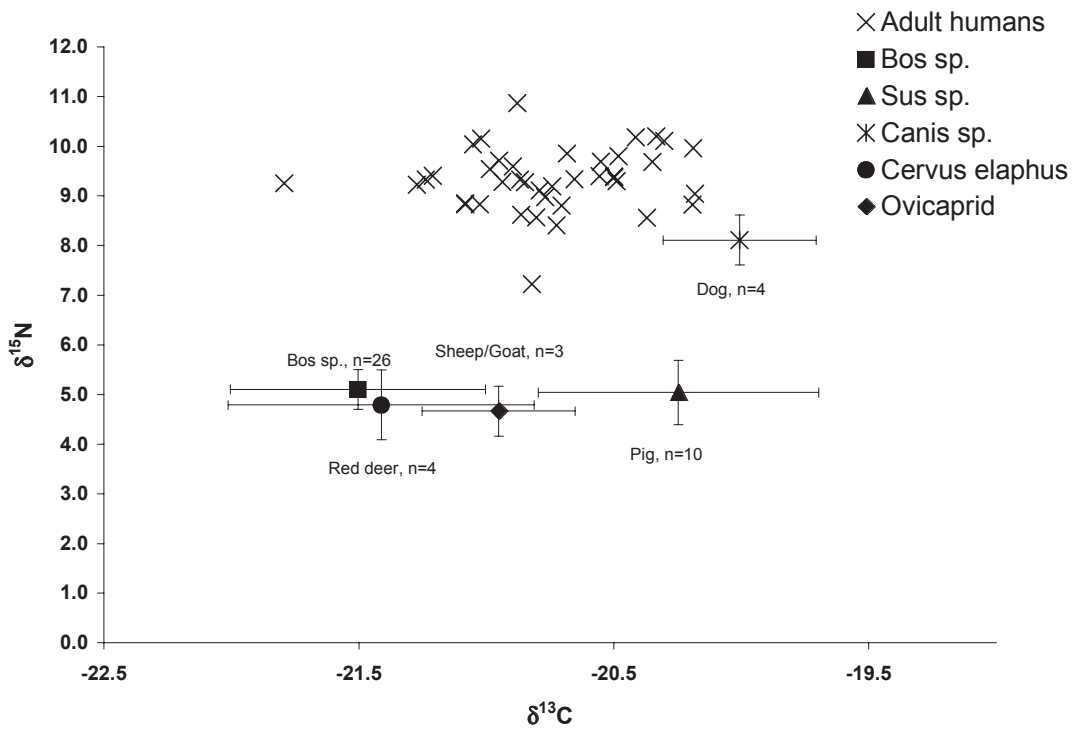

Fig 7.21 Adult human stable isotope values. These values are plotted with the average faunal isotope values for comparison.

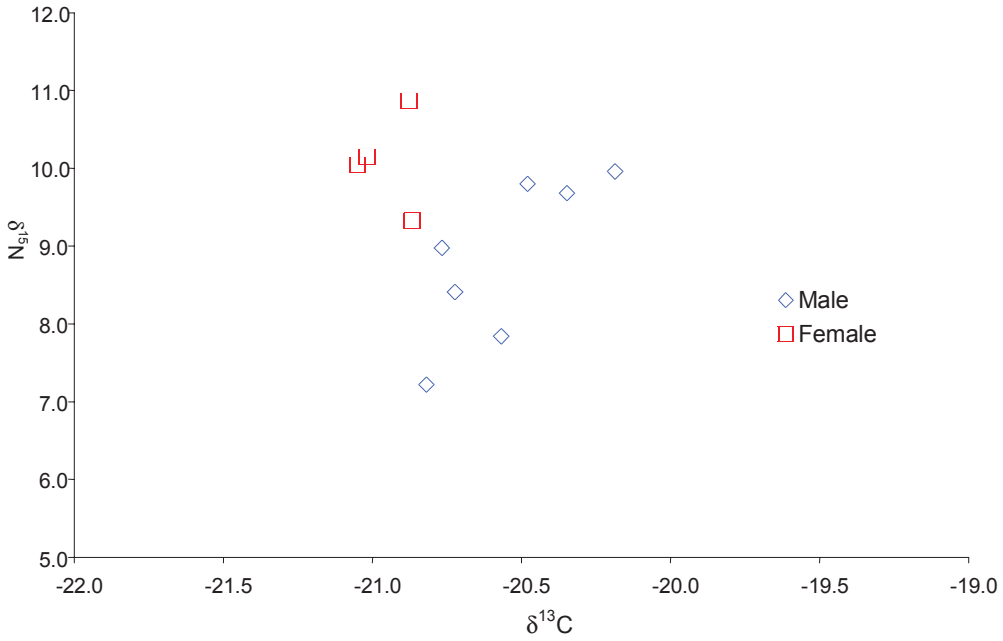

Fig 7.22 Adult human isotope values plotted by sex, as determined by McKinley (7.1).

category. The numbers of samples are small (too small to draw any real conclusions), but it does seem that there are more males with lower $\delta^{15}N$ values.

To see if there was any correlation between the location of the samples and the isotope values, the adult values from the main causewayed enclosure, Stepleton enclosure, south long barrow, Shroton outwork and the Hanford spur are plotted in Figure 7.23. There are no obvious patterns, as the data seem to vary regardless of location. There is, however, one exception, as the long barrow values are very similar to each other. Based on the sex identification and elements sampled, at least three different individuals should have been measured, so the similar values are not due to multiple measurements on the same individual.

Juvenile human isotope values

No isotope values of children are plotted in Figures 7.21–23 because of the possible complications of the 'weaning effect'. This occurs in children who are breastfeeding, as they have elevated $\delta^{15}N$ values, as,

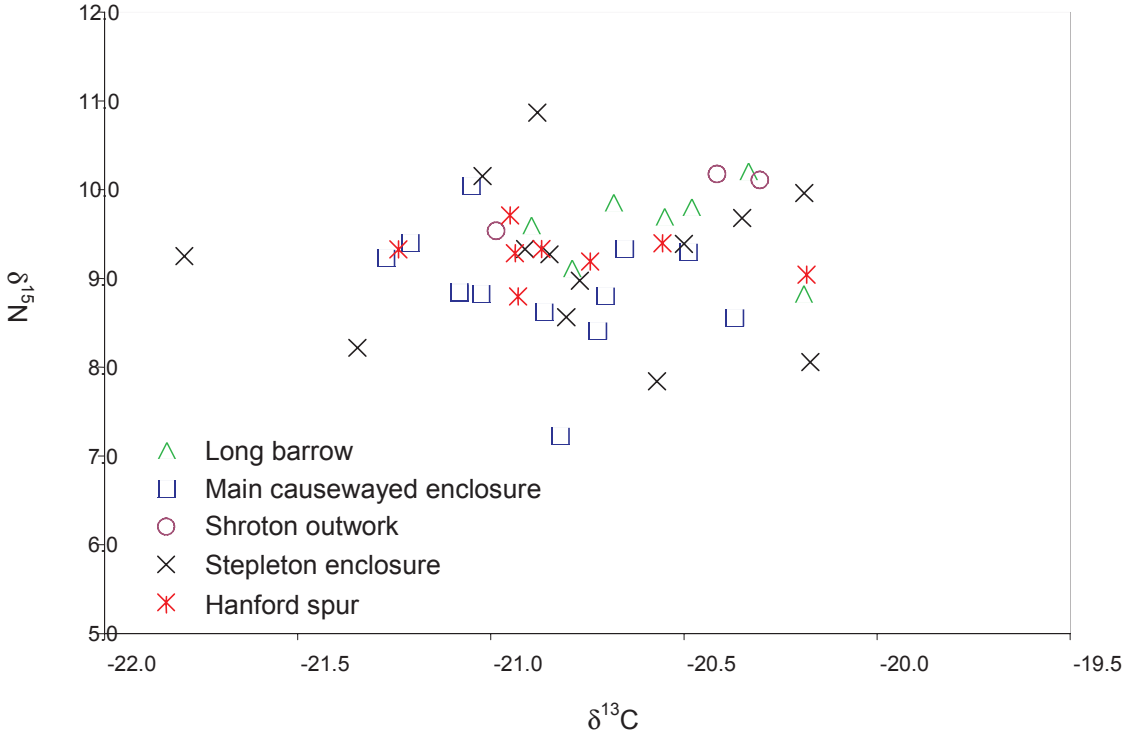

Fig 7.23 Adult human isotope values, plotted according to the location from which they were recovered at the site.

Fig 7.24 All of the Hambledon Hill humans, including juveniles, plotted using the age categories given by McKinley (7.1).

essentially, they are 'feeding' off their mothers. This means that bone collagen laid down while the child is breastfeeding will have $\delta^{15}N$ values 2–4‰ higher than their mothers (due to the trophic level increase; Katzenberg and Pfeiffer 1995; Herring *et al* 1998; Richards *et al* 2002). Therefore the children's $\delta^{15}N$ values were not plotted with the adults, as some of their bone collagen may have been elevated, reflecting their breast milk diet rather than their $\delta^{15}N$ values derived from other foods. Instead, the $\delta^{15}N$ values of all individuals are plotted with their associated age categories assigned by McKinley in Figure 7.24. As predicted, most of the children do have high bone collagen $\delta^{15}N$ values. With more data, and finer age categories, it is possible to see the point where weaning actually occurred in a population, as we would then see a drop in children's $\delta^{15}N$ values. There is another interesting feature of this plot, as it appears that there is a dip in $\delta^{15}N$ values in the older juveniles. This $\delta^{15}N$ 'dip' has been predicted for children that are in a growth period, such as puberty. Again, with better data from children, it might be possible to determine the age at which this

event occurs in a prehistoric population, which would in turn reflect the general health and nutrition of that population.

7.2.3 Conclusions

Stable isotope analysis here has shown that there was a wide range of diets represented in the human burials at Hambledon Hill. It is clear from the $\delta^{13}C$ values that marine foods were not an important part of the diet, and the $\delta^{15}N$ values showed there was a wide range of diets reflecting different amounts of animal (meat or milk) and plant protein. However, most of the adults obtained their protein from animal (meat or milk) sources. Interestingly, from some preliminary data given here, it did look as if women had more animal protein than men, but much larger sample sizes are needed before definite conclusions can be reached.

7.3 Organic residue analysis of pottery vessels: determination of vessel use and radiocarbon dates

Mark Copley, Robert Berstan, Andrew Stott and Richard Evershed

7.3.1 Introduction

During the processing of organic materials in unglazed pottery vessels lipids can be absorbed into the vessel wall, due to the porous nature of the ceramic fabric. Organic compounds such as animal fats, plant oils and plant waxes are known to survive burial in this state for several thousand years (Evershed *et al* 1999). Once these lipids are extracted, quantification and identification is accomplished through the use of modern analytical techniques, primarily via high temperature-gas chromatography (HT-GC) and HT-GC/mass spectrometry (HT-GC/MS; Evershed *et al* 1990). Characterisation of lipid extracts to commodity type has only been possible through detailed knowledge of diagnostic compounds and their associated degradation products that are likely to be produced during vessel use (eg during cooking) and/or burial. For example, triacylglycerols (TAGs) are found in abundance in fresh animal fats; however, they are degraded to diacylglycerols (DAGs), monoacylglycerols (MAGs) and free fatty acids during burial/vessel use, and in archaeological pottery it is the free fatty acids that tend to predominate (Evershed 1993). Furthermore, this has been shown through laboratory degradation experiments (eg Charters *et al* 1997; Dudd *et al* 1998). As such it has been possible to detect the processing of animal fats (eg Evershed *et al* 1992), leafy vegetables (Evershed *et al* 1991; Evershed *et al* 1994), specific plant oils (Evershed *et al* 1999), palm fruit (Copley *et al* 2001) and beeswax (Evershed *et al* 1997b). The chemical structures of some commonly detected lipids from archaeological pottery are shown in Figure 7.25.

Recent work has shown that compound-specific stable carbon isotope measurements provide a further criterion for assigning the origins of organic residues preserved in archaeological ceramics. To this end we use a GC-combustion-isotope ratio mass spectrometer (GC-C-IRMS), which allows the carbon stable isotope ($\delta^{13}C$) values of individual compounds within complex mixtures to be determined. We have found that the $\delta^{13}C$ values for the principal fatty acids ($C_{16:0}$ and $C_{18:0}$) are crucial in distinguishing between different animal fats, eg ruminant and non-ruminant adipose fats and dairy fats (Evershed *et al* 1997a; Dudd and Evershed 1998; Mottram *et al* 1999), as well as in the identification of the mixing of commodities (Evershed *et al* 1999; Copley *et al* 2001). For an overview of the use of compound-specific stable isotopes in archaeology, see (Evershed *et al* 1999).

A new aspect of the application of preserved lipids to archaeological research developed in this laboratory is the radiocarbon dating of specific compounds present in the lipid extracts of potsherds (Stott *et al* 2001). The major advantages of this approach are that dates are derived from compounds that can be directly linked to the use of the vessels; thus potential problems of contamination are minimised, ensuring that exogenous carbon from contaminants (principally plasticisers from plastic storage bags, etc) do not compromise the measured radiocarbon date.

As part of a wider study into vessel use in southern Britain in prehistory, we have analysed over 900 pottery samples from 13 sites, ranging from the early Neolithic to late Iron Age (Copley *et al* 2003). Although we have been largely focusing on the question of the extent of dairying in southern Britain, it has also been possible to determine the relative importance of the processing of ruminant and non-ruminant animal products, as well as plant and bee products (eg beeswax), and thus build up a more complete picture of vessel use in prehistory. The organic residue analysis of pottery vessels from Hambledon Hill constitutes an important component of this wider study.

7.3.2 Materials and methods

Lipid analyses were performed using our established protocols that are described in detail in earlier publications (eg Evershed *et al* 1990; Evershed *et al* 1999). Briefly, analyses proceeded as follows.

Samples

The pottery vessels were held at the Dorset County Museum, and a total of 72 sherds were submitted for organic residue analysis (Table 7.11). These sherds were selected from excavations on both the central area and the Stepleton spur. Sherds originating from different parts of the same vessel are identified in Table 7.11. Their illustration numbers, find numbers and contexts are listed in Table 7.12.

Table 7.11 Lipid components of the potsherds from Hambledon Hill and their assignments to commodity origin

FFa = free fatty acids; MAG = monoacylglycerols; DAG = diacylglycerols; TAG = triacylglycerols; ALK = *n*-alkanes; ALC = *n*-alcohols; WE = wax esters; K = ketones; n/d = not detected; tr = trace concentrations
⋆ = samples submitted for GC-C-IRMS analysis; † = samples submitted for compound-specific ^{14}C analysis.

Sample number	*Same vessel as*	*Lipid concentration (mg g^{-1})*	*Lipid components detected*	*Assignment based on TAG distributions*	*Assignment based on $\delta^{13}C$ values*	*Assignment based on ($\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$) values*
HH1		tr	n/d	n/d		
HH2		tr	n/d	n/d		
HH3⋆		0.23	FFa	n/d	dairy fat?	dairy fat
HH4		tr	FFa (tr)	n/d		
HH5⋆		0.05	FFa; MAG	n/d	ruminant fat?	dairy fat??
HH6⋆		0.63	FFa; MAG (tr);	ruminant fat?	dairy fat	dairy fat
HH7⋆	HH61	0.02	FFa (tr) DAG (tr); TAG	n/d	mixed dairy/ruminant fat?	dairy fat??
HH8⋆		0.03	FFa; MAG	n/d	dairy fat	dairy fat
HH9⋆		0.04	FFa; K	n/d	dairy fat	dairy fat
HH10⋆		0.04	FFa	n/d	mixed animal fats	mixed animal fats
HH11		tr	FFa (tr)	n/d		
HH12		0.03	FFa (tr)	n/d		
HH13	HH64	tr		n/d		
HH14⋆		0.24	TAG; K	ruminant fat (tr)	mixed animal fats	mixed animal fats
HH15		tr	n/d	n/d		
HH16		0.07	FFa (tr); K	n/d		
HH17⋆		0.11	FFa; MAG; DAG; TAG	ruminant fat?	dairy fat?	dairy fat
HH18⋆		0.50	FFa; K	n/d	dairy fat	dairy fat
HH19		tr	n/d	n/d		
HH20		tr	FFa (tr)	n/d		
HH21		tr	n/d	n/d		
HH22⋆		0.17	FFa; MAG	n/d	dairy fat?	dairy fat
HH23		tr	n/d	n/d		
HH24		tr	n/d	n/d		
HH25		tr	n/d	n/d		
HH26		0.03	FFa (tr); K	n/d		
HH27⋆		0.78	FFa; MAG; DAG; TAG; K	mixed animal fats	dairy fat	dairy fat
HH28⋆		0.68	FFa; MAG (tr)	n/d	mixed animal fat	mixed animal fat
HH29		tr	n/d	n/d		
HH30		0.09	FFa (tr)	n/d		
HH31⋆		0.06	FFa; MAG; DAG; TAG; ALK (tr); ALC (tr); WE (tr)	ruminant fat	mixed animal fat	mixed animal fat
HH32	HH69	tr	n/d	n/d		
HH33⋆		0.14	FFa; MAG; DAG; K; ALK (tr); ALC (tr); WE (tr)	n/d	ruminant fat	ruminant fat
HH34⋆		0.89	FFa; K	n/d	dairy fat	dairy fat
HH35		tr	n/d	n/d		
HH36		0.08	FFa (tr)	n/d		
HH37		0.11	FFa (tr); MAG; K	n/d		
HH38		tr	n/d	n/d		
HH39⋆		0.14	FFa; MAG (tr); DAG; TAG	ruminant fat?	dairy fat	dairy fat
HH40		tr	n/d	n/d		
HH41		tr	n/d	n/d		
HH42⋆		0.18	FFa	n/d	mixed animal fat	mixed animal fat
HH43		tr	n/d	n/d		
HH44	HH72	0.08	FFa (tr); MAG (tr)	n/d		
HH45	HH71	tr	n/d	n/d		
HH46		0.06	FFa (tr); MAG; ALK (tr); ALC (tr)	n/d		

Sample number	*Same vessel as*	*Lipid concentration (mg g^{-1})*	*Lipid components detected*	*Assignment based on TAG distributions*	*Assignment based on $\delta^{13}C$ values*	*Assignment based on ($\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$) values*
HH47*	HH59	0.09	FFa; ALK (tr); ALC (tr); WE (tr)	n/d	dairy fat?	dairy fat
HH48		0.01	K	n/d		
HH49		tr	n/d	n/d		
HH50		0.08	FFa (tr)	n/d		
HH51*		0.08	FFa; MAG; DAG (tr); TAG	mixed animal fat	ruminant fat??	ruminant fat
HH52*		0.11	FFa; MAG; DAG; TAG	mixed animal fat	ruminant fat??	ruminant fat
HH53*	HH56	0.80	FFa; MAG; DAG; TAG	mixed animal fat	ruminant fat?	ruminant fat
HH54*†		0.08	FFa	n/d	mixed ruminant/dairy fat	dairy fat??
HH55*		0.09	FFa; MAG; DAG; TAG	ruminant fat	ruminant fat?	ruminant fat
HH56*†	HH53	0.13	FFa; MAG; DAG; TAG; K	mixed animal fat	ruminant fat	ruminant fat
HH57	HH25, HH58	tr	n/d	n/d		
HH58	HH 25, HH57	tr	n/d	n/d		
HH59	HH47	0.06	FFa (tr)	n/d		
HH60*		0.11	FFa; MAG; DAG; TAG; ALK (tr); ALC (tr)	mixed animal fat?	mixed ruminant/dairy fat	dairy fat??
HH61	HH7	tr	n/d	n/d		
HH62*		0.50	FFa; TAG; K	mixed animal fat?	dairy fat?	dairy fat
HH63		0.27	FFa; TAG (tr)	n/d		
HH64	HH13	tr	n/d	n/d		
HH65	HH66–67	tr	n/d	n/d		
HH66	HH65, HH67	tr	n/d	n/d		
HH67	HH65–66	tr	n/d	n/d		
HH68		tr	n/d	n/d		
HH69	HH32	tr	n/d	n/d		
HH70		tr	n/d	n/d		
HH71	HH45	0.04	FFa; MAG; DAG; TAG	ruminant fat		
HH72†	HH44	0.20	FFa; MAG; DAG; TAG	ruminant fat (tr)		

Solvent extraction of lipid residues

Approximately 2 g samples were taken and their surfaces cleaned using a modelling drill to remove any exogenous surface lipids (eg soil or finger lipids due to handling). The samples were then ground to a fine powder, accurately weighed and a known amount (20 μg) of internal standard (*n*-tetratriacontane) added. The lipids were extracted with a mixture of chloroform and methanol (2:1 v/v). Following separation from the ground potsherd, the solvent was evaporated under a gentle stream of nitrogen to obtain the total lipid extract (TLE). Portions (generally one-fifth aliquots) of the extracts were then trimethylsilylated and submitted directly to analysis by GC. Where necessary, combined GC/MS analyses were also performed on trimethylsilylated aliquots of the lipid extracts enabling the elucidation of structures of components not identifiable on the basis of GC retention time alone.

Preparation of trimethylsilyl derivatives

Portions of the total lipid extracts were derivatised using N,*O*-bis(trimethylsilyl) trifluoroacetamide (20 μl; 70°C; 20 min; Sigma-Aldrich Company Ltd, Gillingham, UK) and analysed by GC and GC/MS.

Saponification of total lipid extracts

Methanolic sodium hydroxide (5% v/v) was added to the TLE and heated at 70°C for 1 h. Following neutralisation, lipids were extracted into hexane and the solvent evaporated under a gentle stream of nitrogen.

Preparation of fatty acid methyl ester (FAME) derivatives

FAMEs were prepared by reaction with BF_3-methanol (14% w/v; 2 ml; Sigma-Aldrich, Gillingham, UK) at

Table 7.12 Contexts of the analysed potsherds from Hambledon Hill

Sample no.	*Illustration no.*	*Site code*	*Find no.*	*Context*
HH1	P2	HH75		Central area, pit B F14, L3
HH2	P1	HH75		Central area, pit B F14, L3
HH3	P12	HH74	992	Main causewayed enclosure, segment 4, L4, phase V
HH4	P18	HH74	1209	Long Barrow, W ditch (segment 1), LB3 SII, phase III
HH5	P3	HH77	22	Main causewayed enclosure, site P1 bank area, L2 (topsoil)
HH6	P21	ST80	1269	Stepleton enclosure, segment 4, U8, L2A, phase IV
HH7	P13	ST79	2223	Stepleton spur pit 2A F134
HH8	P14	HH75	2120	Main causewayed enclosure, segment 8, L7A, phase II
HH9	P16	ST82	98	Stepleton spur, pit ST82 F39
HH10	P20	ST79	2585	Inner Stepleton outwork, segment 5, C4, L5A, phase III/a
HH11	P82	HH75	902	Main causewayed enclosure, segment 9, L6, L7, phases III, VI
HH12	P54	ST81	2393	Stepleton spur pit 4B F80
HH13	P77	ST79	2001	Stepleton spur pit 2A F268
HH14	P114	HH74	580	Main causewayed enclosure, segment 3, L5, phase VI
HH15	P23	ST78	703	Stepleton spur, pit 1A F57, L2
HH16	P31	HH76	2003	Main causewayed enclosure, segment 17, L8 phase VI
HH17	P37	HH75	1846	Main causewayed enclosure, segment 8, L6/7, phase III
HH18	P34	ST80	52	Stepleton spur pit 3A F94
HH19	P32	ST80	1896	Stepleton enclosure, segment 6, L4, phase III
HH20	P36	ST81	870	Stepleton enclosure, segment 7, L2, phase VI
HH21	P33	ST81	2369	Stepleton enclosure, segment 16, L3D, phase III
HH22	P38	HH77	1591	Long Barrow, W ditch (segment 1), LB2 SII, L22, phase VI
HH23	P42	ST81	962	Stepleton enclosure, segment 14, L2, phase VI
HH24	P61	ST79	2564	Stepleton spur pit 2A F201
HH25	P57	HH75	852	Main causewayed enclosure, segment 9, L7, phase III
HH26	P98	HH74	721	Main causewayed enclosure, segment 4, L5, phase VI
HH27	P107	ST81	607	Stepleton enclosure, segment 11, L2, phase VI
HH28	P108	HH76	1468	Main causewayed enclosure, segment 16, L9, phase V
HH29	P118	ST78	719	Stepleton spur pit 1A F57, L2
HH30	P41	HH77	853	Main causewayed enclosure, segment 1, F7, phase VI
HH31	P63	HH77	2089	Central area, pit N F42, L3/4
HH32	P144	ST81	518	Stepleton enclosure, segment 14, L2, phase VI
HH33	P48	ST81	1265	Stepleton enclosure, segment 8, U3, L2A, phase IV
HH34	P47	ST80	1480	Inner Stepleton outwork, segment, 4.2, L4A, phase I
HH35	P113	HH76	1099	Main causewayed enclosure, segment 18, L10, phase III
HH36	P103	ST81	1240	Stepleton enclosure, segment 8, U3 L2A, phase IV
HH37	P121	HH75	1461	Main causewayed enclosure, segment 11, L6, phaseVI
HH38	P85	ST79	1684	Stepleton spur, pit 4B F137
HH39	P109	ST81	365	Stepleton enclosure, segment 7, L2, phase VI
HH40	P102	ST80	119	Stepleton enclosure, segment 5, L1, phase VIII/a
HH41	P110	HH74	1119	Central area, pit A F64
HH42	P55	HH74	751	Main causewayed enclosure, segment 3, L5, phase VI
HH43	P51	HH77	2295	Long barrow, W ditch (segment 1), LB3 L34, phase I
HH44	P79	HH77	1924	Long barrow, E ditch (segment 3), LB5 L17, phase I
HH45	P71	HN82	310/370	Inner Hanford outwork, segment 3, L4/L3C, phase III
HH46	P68	ST79	1018	Inner Stepleton outwork, segment 6, C3, in base of L4, perhaps already in place when rubble entered ditch, phase I/phase III interface
HH47	P74	ST79	1659	Stepleton spur pit 2A F159, L1
HH48	P147	ST80	1071	Stepleton enclosure, segment 4, U8 L2A, phase IV
HH49	P150	ST80	506	Stepleton enclosure, segment 2, L1, phase VIII/a
HH50	P24	ST78	721	Stepleton spur, pit 1A F57, L2 (base)
HH51		ST81	179	Stepleton enclosure, segment 15, L1, phase VIII/a
HH52		ST81	735	Stepleton enclosure, segment 15, L3B, phase III
HH53		ST81	257	Stepleton enclosure, segment 15, L3B, phase III
HH54		ST81	938	Stepleton enclosure, segment 14, L3B, phase III
HH55		ST81	2241	Stepleton enclosure, segment 17, L3B, phase III
HH56		ST81	96	Stepleton enclosure, segment 15, L3B, phase III
HH57	P57	HH75	900	Main causewayed enclosure, segment 9, L9, phase I
HH58	P57	HH75	1169	Main causewayed enclosure, segment 9, L7, phase III
HH59	P74	ST79	1659	Stepleton spur pit 2A F159, L1
HH60	P61	ST79	2564	Stepleton spur pit 2A F201
HH61	P13	ST79	2223	Stepleton spur pit 2A F134

Sample no.	*Illustration no.*	*Site code*	*Find no.*	*Context*
HH62		ST80	1137	Inner Stepleton outwork, segment 4.2, U4, L4A, phase I
HH63	P21	ST80	1269	Stepleton enclosure, segment 4, U8, L2A, phase IV
HH64	P77	ST79	2035	Stepleton spur pit 2A F268
HH65	P46	WOWK82	121	Inner south cross-dyke, segment 2, L7, phase VI
HH66	P46	WOWK82	115	Inner south cross-dyke, segment 2, L7, phase VI
HH67	P46	WOWK82	29	Inner south cross-dyke, segment 2, L7, phase VI
HH68	P11	HH77	2184	Central area, pit N F82, L3
HH69	P144	ST81	518	Stepleton enclosure, segment 14, L2, phase VI
HH70		HH77	564	Inner south cross-dyke, segment 1, L8, phase VI
HH71	P71	HH82	369	Inner Hanford outwork, segment 3, L3C, phase III
HH72	P79	HH77	1924	Long barrow, E ditch (segment 3), LB5 L17, phase I

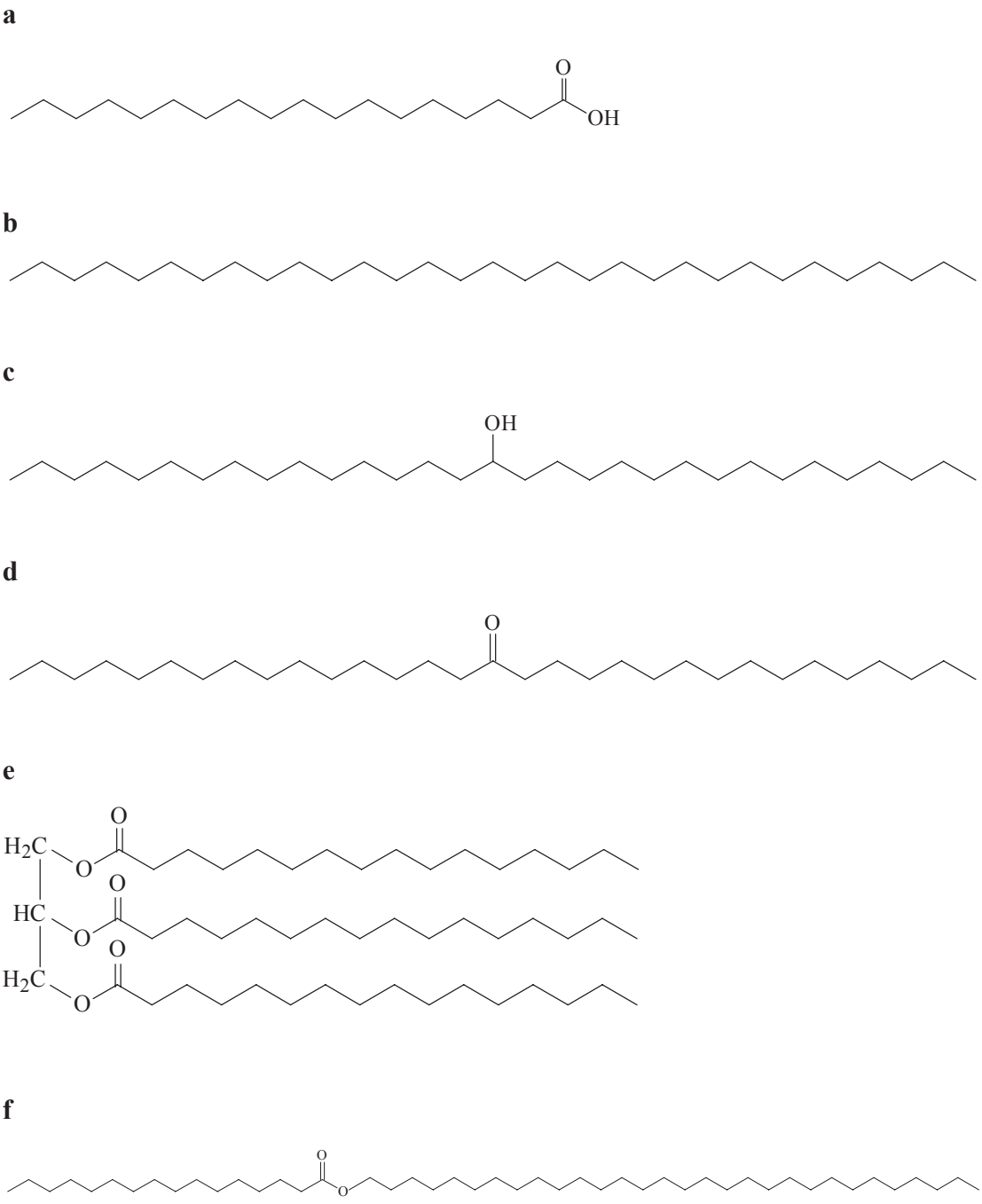

Fig 7.25 Some commonly occurring lipids: a) n-octadecanoic acid ($C_{18:0}$ fatty acid), b) n-untriacosane (C_{31} alkane), c) n-)untriacosan-16-ol (C_{31} alcohol), d) n-untriacosan-16-one (C_{31} ketone), e) tripalmitin (C_{48} triacylglycerol), and f) triacosanyl palmitate (C_{46} palmitic wax ester).

70°C for 1 h. The methyl ester derivatives were extracted with chloroform and the solvent removed under nitrogen. FAMEs were re-dissolved into hexane for analysis by GC and GC-C-IRMS.

Preparation of FAME derivatives for compound-specific radiocarbon dating

The FAMEs were prepared as described by Stott *et al* (2001). The individual fatty acids were isolated via preparative capillary gas chromatography (PCGC) comprising a Hewlett Packard 7673 autosampler coupled to a Hewlett Packard 5890 Series II GC interfaced to a Gerstal preparative fraction collector. Separations were achieved using a 'megabore' fused silica capillary column (30 m × 0.53 mm i.d.) coated with a dimethyl polysiloxane stationary phase (DB-1, 0.5 mm film thickness). Typically *c* 100 preparative 'runs' were required to isolate sufficient (>200 μg per compound) of each component for accelerator mass spectrometry (AMS) at the Oxford Radiocarbon Accelerator.

7.3.3 Results

The GC and GC/MS analyses served to quantify and identify compounds in the lipid extract, such that it is possible to determine the presence of: (i) an animal fat or plant oil, (ii) plant epicuticular waxes, (iii) beeswax or other sealants, and/or (iv) mid-chain ketones that indicate that the vessel has been subjected to heating to >300°C (Evershed *et al* 1995; Raven *et al* 1997). Furthermore, GC-C-IRMS analyses can distinguish between ruminant and non-ruminant adipose fats and dairy fats by determining the $\delta^{13}C_{16:0}$, $\delta^{13}C_{18:0}$ and $(\delta^{13}C_{18:0}–\delta^{13}C_{16:0})$ values.

GC analyses were performed on the solvent extracts of a sub-sample of each potsherd. The results of screening by GC are summarised in Table 7.11 on a sample-by-sample basis, giving the total lipid concentration per gram of powdered sherd, and a brief description of the compounds detected. Where sufficient concentrations of lipid were present in the extracts, $\delta^{13}C$ values of the principal fatty acids were determined by GC-C-IRMS (as indicated by an asterisk in Table 7.11). Figure 7.26 shows the partial gas chromatogram of the total lipid extract of sherd HH17, which displays the range of compounds that were detected amongst the extracts of potsherds investigated.

Forty-two of the 72 sherds (58%) from Hambledon Hill yielded concentrations of lipid residues of up to 0.89 mg g^{-1} dry weight of sherd (mean 0.11 mg g^{-1}). The majority of extracts comprised degraded animal fat residues which are characterised by (a) relatively high abundances of $C_{18:0}$ fatty acid, (b) monoacylglycerols with acyl carbon number in the range of C_{32} to C_{34}, (c) diacylglycerols with acyl carbon number in the region of C_{32} to C_{36} and (d) triacylglycerols with acyl

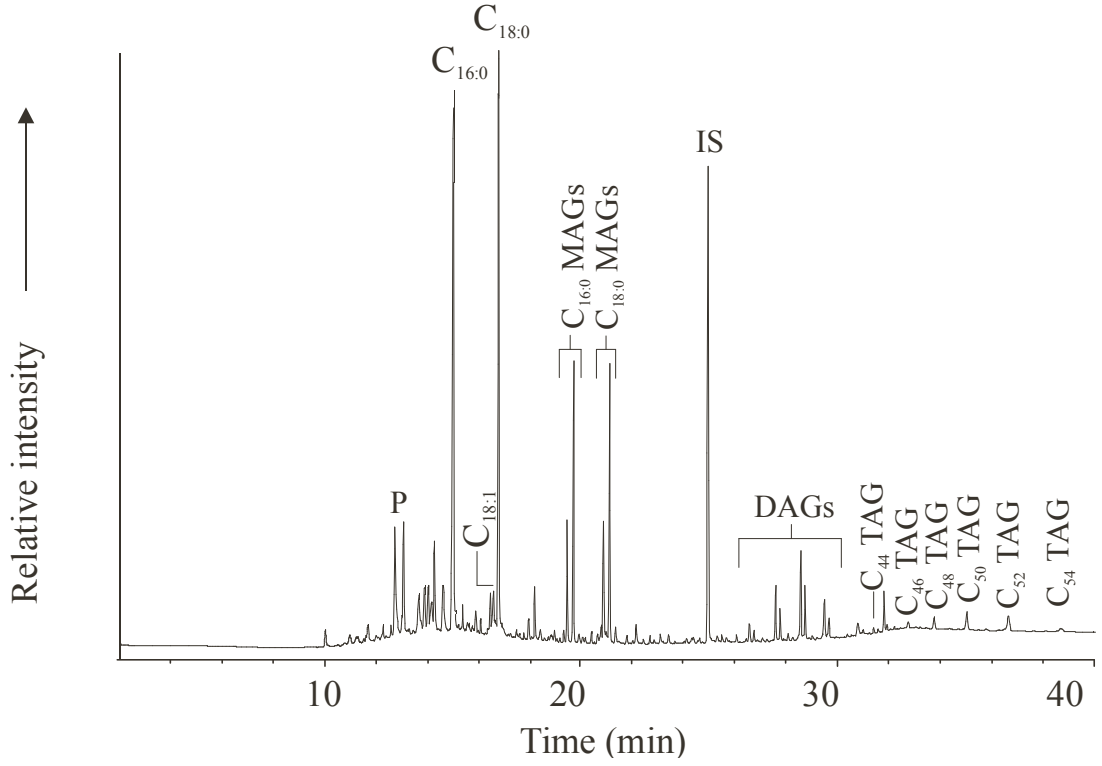

Fig 7.26 Partial HTGC profile of the trimethylsilylated total lipid extract from sample HH17, containing lipid components characteristic of a degraded animal fat. Key: FAx:y are free fatty acids of carbon length x, and degree of unsaturation y. $C_{X:0}$ MAGs are monoacylglycerols of carbon length x, DAGs are diacylglycerols, and C_x TAG are triacylglycerols of carbon length x. IS is the internal standard (C^{34} n-alkane). P is a plasticiser probably originating from the plastic bags in which the sherds were originally stored in the museum.

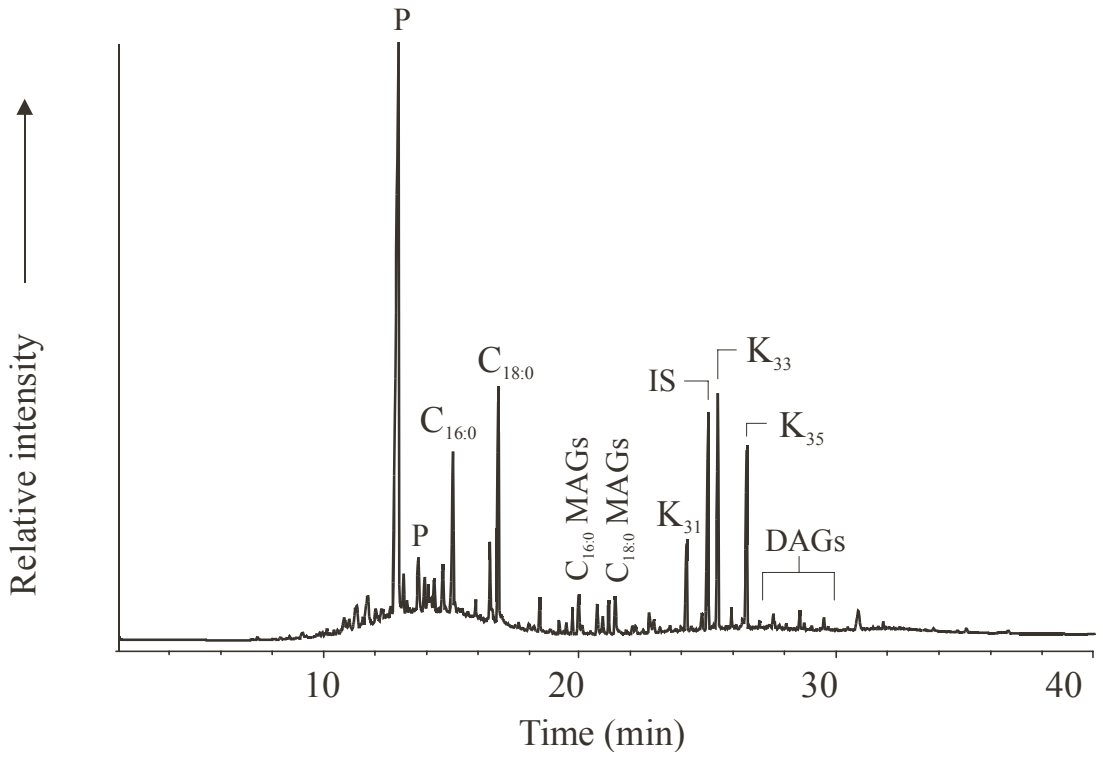

Fig 7.27 Partial HTGC profile of the trimethylsilylated total lipid extract from sample HH14, containing lipid components characteristic of a degraded animal fat. Key: FAx:y are free fatty acids of carbon length x, and degree of unsaturation y. $C_{X:0}$ MAGs are monoacylglycerols of carbon length x, DAGs are diacylglycerols, and K_x are mid-chain ketones of carbon length x. IS is the internal standard (C_{34} n-alkane). P is a plasticiser probably originating from the plastic bags in which the sherds were originally stored in the museum.

$$CH_3(CH_2)_nCO_2H + CH_3(CH_2)_mCO_2H \xrightarrow[-CO_2,\ -H_2O]{\Delta,\ >300^oC} CH_3(CH_2)_nC(=O)(CH_2)_mCH_3$$

Fig 7.28 The ketonic decarboxylation of free fatty acids which leads to the formation of ketones by condensation of the fatty acids. The reaction is catalysed by metal oxides and proceeds at temperatures in excess of 300°C. The subscripts n and m correspond to alkyl chain lengths in the range 13–16 (Evershed et al *1995; Raven* et al *1997).*

carbon number in the range of C_{46} to C_{54} with C_{48} to C_{52} predominating (eg Fig 7.26). The TAG distributions seen in fresh milk fat contrast to those detected in adipose fats in that they are characteristically wide, owing to the inclusion of lower molecular weight (minor) TAGs (C_{40} to C_{44}). During vessel use/burial, these lower molecular weight TAGs are preferentially lost (Dudd and Evershed 1998), resulting in a degraded TAG distribution that resembles that of a ruminant adipose fat. Indeed, neither these lower molecular weight TAGs, nor the short chain fatty acids derived from them, were detected in any of the sherds.

Direct evidence for the heating of the vessels to high temperatures was observed in 12 (17%) of the vessels, in the form of mid-chain ketones (eg the sherd shown in Fig 7.27). Ketones are formed through the heating of free fatty acids in the presence of clay minerals at temperatures in excess of 300°C (Evershed *et al* 1995; Raven *et al* 1997), this reaction is shown in Figure 7.28.

The primary lipid constituents of epicuticular leaf waxes are *n*-alkanes, primary alcohols and wax esters. *n*-Alkanes and alcohols were detected in five of the sherds, three of which also contained wax esters, thereby indicating the processing of plants in these vessels (see Table 7.11).

Figure 7.29 shows a graph of the $\delta^{13}C_{18:0}$ versus $\delta^{13}C_{16:0}$ values for the 27 extracts that contained significant concentrations of these fatty acids. Values obtained for modern reference animal fats from the major domesticated animals exploited in British prehistory are grouped within ellipses. Onto this, values for the archaeological sherds have been overlaid. The $\delta^{13}C$ values for the $C_{18:0}$ fatty acid are more depleted in milk fats than in ruminant adipose fats, thus enabling distinctions to be drawn between milk and adipose fats from ruminant animals (Dudd and Evershed 1998). This is witnessed in the 2.3‰ shift between the centroids of the reference ruminant adipose fat and ruminant dairy

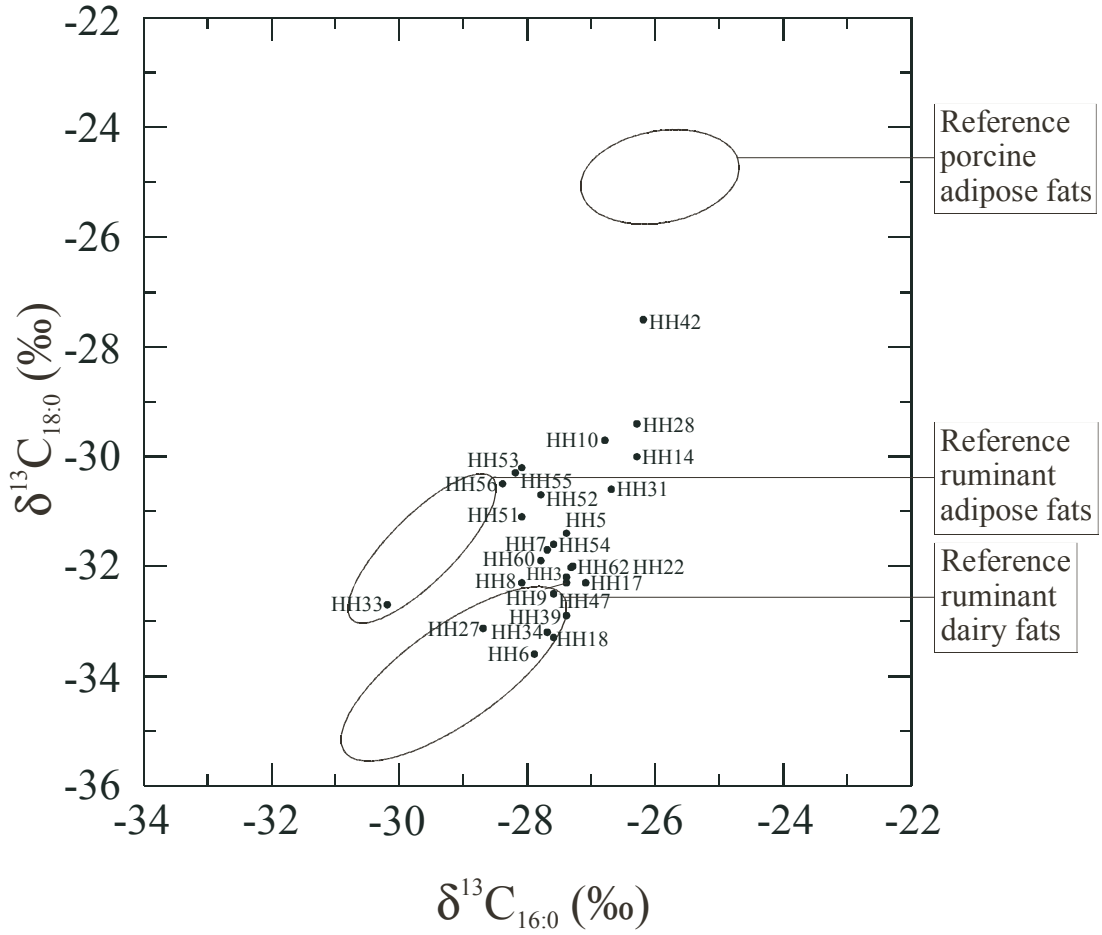

*Fig 7.29 Plot of the $\delta^{13}C$ values of the fatty acid methyl esters prepared from lipid extracts from the Hambledon Hill assemblage. The reference fats are represented by confidence ellipses (1 standard deviation). Sherds that plot in between the ruminant and non-ruminant reference fats are indicative of the mixing of these two fats in the pottery vessel. The carbon stable isotope values have been corrected for the contribution of carbon from the derivatising methyl group and expressed as being relative to the v-PDB standard (*Bellemnitella americana*), $\delta^{13}C = 1000[(R_{sample}–R_{standard})/R_{standard}]$, where R is $^{13}C/^{12}C$ in per mil (‰). All the animals were raised on C_3 diets. The $\delta^{13}C$ values for the fatty acids have been adjusted for post-Industrial Revolution effects of fossil fuel burning, which has led to more depleted atmospheric $\delta^{13}CO_2$ values, and has been calculated to be 1.2‰ (Friedli* et al *1986). Instrumental precision is ±0.3‰.*

fat ellipses. The less depleted $\delta^{13}C$ values seen for the fatty acids in non-ruminant fats compared to those in ruminant fats, are believed to be due to differences in diet and in the metabolic and biochemical processes involved in the formation of body fats in ruminant and non-ruminant animals.

Seven of the sherds plot within the dairy fat field, and a further nine plot just outside of the ellipse (but still have $\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$ values in the range of –4.1‰ to –5.5‰, which is characteristic of dairy fats). Two of the sherds plot within/close to the ruminant adipose fat ellipse. A further two sherds plot along the axis of the ruminant adipose reference fat ellipse, and are likely to be indicative of predominantly bovine/ovine adipose fats, as determined by their $\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$ values. None of the sherds plot within the porcine adipose fat field; however, seven sherds plot in the area of the graph associated with mixed ruminant and non-ruminant adipose fats. This mixing may have occurred either contemporaneously or through re-use of the vessels in antiquity.

Three of the sherds were selected for compound-specific ^{14}C dating (samples HH54, HH56 and HH72; labelled † in Table 7.11) since these were those yielding the highest abundances of free fatty acids and/or fatty acyl lipids. The $C_{16:0}$ and $C_{18:0}$ fatty acid components were isolated (as their methyl ester derivatives) and submitted for compound-specific AMS dating. The radiocarbon dates obtained (corrected for the derivatising methanol) are given in Table 7.13.

7.3.4 Discussion

The lipids contained in the pottery from Hambledon Hill are reasonably well preserved compared to other prehistoric sites we have investigated. It is noteworthy that TAGs are still detectable in significant abundances in 15 out of 72 (21%) of the sherds. Some of the sherds analysed herein originated from the same vessel (as shown in Table 7.11) and it is reassuring that similar results were obtained for these replicate analyses

Table 7.13 Compound-specific radiocarbon dates of absorbed lipid residues in pottery vessels

*Corrected for contribution from the derivatisation reagent

Sample	*Target fatty acid*	*Date±error BP**	*Calibrated date (2σ) BC**	*OxA-X sample codes*	*Context*
HH54	$C_{16:0}$	4280±60	3090–2670	806-10	Stepleton enclosure, segment 14, L3B, phase III
	$C_{18:0}$	4550±90	3550–2900	806-11	
HH56	$C_{16:0}$	4780±80	3700–3370	807-12	Stepleton enclosure, segment 15, L3B, phase III
	$C_{18:0}$	4840±60	3770–3380	807-13	
HH72	$C_{18:0}$	4540±80	3550–2900	849-10	South long barrow, E ditch (segment 3), LB5, L17, phase I

although, not unexpectedly, the lipid concentrations were found to differ, probably as a result of either the physical behaviour of lipid during vessel use, ie lipid concentrations have been shown to vary significantly down the profile of specific vessel forms (Charters *et al* 1993; Charters *et al* 1995), and/or localised differences in the burial environment which affect preservation. However, it should be noted that we generally attempt to minimise variations related to use by only sampling rim/upper body sherds.

The $\delta^{13}C$ values of the fatty acids extracted from the sherds are indicative of a mixed economy, and are consistent with the mixing of both non-ruminant (porcine) and ruminant fats, as well as ruminant adipose and dairy fats. Seven (26%) of the sherds contain fatty acids with $\delta^{13}C$ values indicative of dairy fats, and a further nine probably also contain fatty acids of predominantly a dairy fat origin (based on their $\delta^{13}C_{18:0}$–$\delta^{13}C_{16:0}$ values). Unlike the fatty acyl lipid distributions (ratios of fatty and acid abundances and TAG distributions) the $\delta^{13}C$ values provide a robust chemical signal unaffected by decay, thus, providing direct evidence for the presence of dairy fats in these latter sherds.

Fifteen per cent of the sherds contained predominantly ruminant adipose fats, but none of the sherds contained fatty acids with $\delta^{13}C$ values indicative of purely a non-ruminant (eg porcine) fat. However, out of the 27 sherds that contained sufficient concentrations of fatty acids for GC-C-IRMS analysis, seven (26%) contained fatty acids that were characteristic of the mixing of ruminant and non-ruminant fats. This is in accordance with the faunal evidence, which indicates a predominance of cattle bone at the site, although in some contexts large quantities of pig bones have been detected (Legge 1981a; see Legge Ch 8). Lipids characteristic of higher plants were detected in five of the sherds, thereby indicating the mixing of animal products (both dairy and adipose fats) and plant lipids through vessel use and/or re-use in antiquity.

The compound-specific ^{14}C dates obtained for the three sherds (Table 7.13) are in accordance with the early Neolithic date of the site. It should be emphasised that these are among the first compound-specific dates reported for archaeological pottery and were recorded during research aimed at developing this as a new approach to dating archaeological pottery. This development work is still in progress and improvements in precision are anticipated.

In summary, 42 out of 72 (58%) of the sherds contained significant lipid concentrations, of which 27 exhibited free/bound fatty acids in sufficiently high abundances for isotopic analysis. Of these, 26% (7 out of 27) contained predominantly dairy fats, 7% (2/27) contained ruminant adipose fats, and 67% (18 out of 27) contained mixtures of non-ruminant and ruminant (adipose and dairy) fats. The presence of dairy fats in at least 26% of the vessels suggests that dairying was a very important element of animal husbandry at Hambledon Hill. Similar results have also been obtained from other early Neolithic British sites such as Windmill Hill, where 54% of the sherds that contained fatty acid residues were found to have been used in the processing of dairy products, and from Eton Rowing Lake where 78% of the sherds that contained fatty acid residues were found to have been used in the processing of dairy products (Copley *et al* 2003). These results confirm that the processing of dairy products in vessels, such as those analysed herein, was widespread from the early Neolithic in southern Britain.

8 Livestock and Neolithic society at Hambledon Hill

A J Legge

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8.1 The Neolithic ditches and pits

8.1.1 Introduction

The animal bones come from the two Neolithic causewayed enclosures with their associated features and a Neolithic long barrow. The Neolithic enclosure ditches are made up of many separate segments and the stratification in these is complex as a result of frequent recutting in Neolithic times, as is described elsewhere in this volume. Thus, although the bone sample is large, there are relatively few instances in which a single layer from any one feature presented a sufficient number of bones for numerical analysis to have much meaning at that level. In consequence much of the numerical analysis in part 1 of this report (8.1.2) is based upon combined samples, for example treating all bones from one phase in an entire ditch circuit as a single sample. Part 2 of the report (8.1.3) considers bone representation in smaller units of the stratigraphy and, where possible, at the level of single features. The stratigraphic analysis shows that some proportion of the bone will have been disturbed and redeposited and, while in almost all cases the Neolithic association is secure, there are relatively few deposits which are the result of a discrete period of human activity.

Method of recording the sample

All identifiable bones were recorded by their stratigraphic provenance and then according to the species identified, the bone element or part element, the side of the body, fusion state, and other conditions such as gnawing, burning, cut or chop marks and pathology. Where the term 'referred' is used below, this indicates that some poorly preserved bones are attributed to the species concerned, but with less than the usual level of confidence. All records were made in simple numerical codes that were counted and sorted using a commercially available database package. During the excavation it was recognised that some groups of bones were in articulation and these were carefully excavated and recorded and were bagged together. In other instances groups of bones were identified during the bench analysis for which, by the closeness of fit between complex joint surfaces, a record of 'probable articulation' could be made with some degree of confidence. This record is of obvious importance in the interpretation of the site. Subsequently, the use of bones for radiocarbon dating selected from articulated – and thus undisturbed – bone groups has resolved certain problems raised in the dating of charcoal samples from the site (Ch 4).

The total identified bone sample from the Neolithic sites is 6340 post-cranial bone fragments and 1522 part tooth rows and loose teeth. The mandibles show different degrees of fragmentation from one context to another, but the samples were sufficiently intact for age determinations to be made with confidence. On the other hand, crania and maxillary tooth rows were heavily fragmented, and most upper teeth were found loose, as is common in prehistoric bone samples from southern Britain and elsewhere. The tooth counts in the tables below are therefore based upon complete or partially complete mandibular tooth rows which contain the lower third deciduous (dp_4) and/or permanent lower third molars (M_3). Loose specimens of these same teeth are also incorporated in the mandibular counts, with due allowance for the short period of overlap when both teeth are present in the mandible.

Preservation of the bone sample

The bone sample from the hilltop is generally well preserved and it was skilfully excavated under good stratigraphic control. The best preservation is found in the deeper ditch segments and in the pits where the bone was close to, or in contact with, the basal chalk. In such cases the bone preservation is almost perfect and surface modifications such as cut-marks or gnawing by carnivores and other mammals can readily be identified. In more superficial deposits and in some rather loose chalk rubble ditch fills there has been some degree of erosion of the bone surface by percolating water and other agencies. In these specimens, cut-marks are likely to be obscured and the presence of dog gnawing cannot be identified with confidence so that the recorded frequency of these activities must be regarded as a minimum statement.

Figure 8.1 shows the observed frequency of dog gnawing on pig, cattle and caprine bones from the ditches and from the pits at each site, in each case as a proportion of the identified post-cranial bones of the identified species. The overall frequency of gnawing is low. The Stepleton enclosure and inner outwork show the highest incidence, which is significantly greater there than elsewhere in the complex. In the Stepleton ditches, 8% of pig bones, 6% of cattle bones and 3% of caprine bones are gnawed whereas at the other sites only cattle bones show about 2.5–3% incidence of gnawing and other species show little or none.

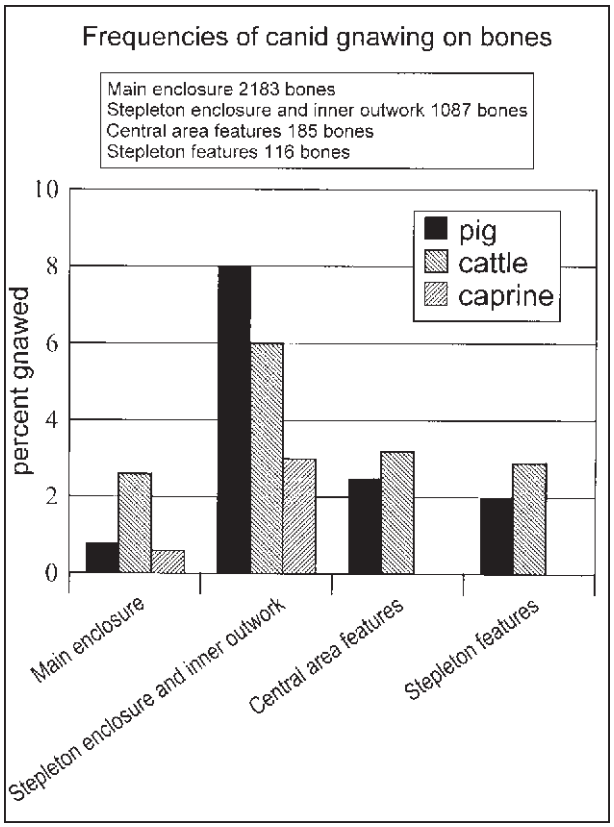

Fig 8.1 Frequencies of canid gnawing on the bones of three species.

The nature of the site was such that some bones appear to have been exposed on the ground surface for some time before being buried, while other bones were directly deposited in ditch segments or pits and rapidly buried. Significantly higher levels of dog gnawing were noted on the small early Iron Age assemblage excavated from the hillfort (8.3), where 18% of pig bones, 15% of cattle bones and 9% of caprine bones were gnawed. Although the variable state of preservation of the Hambledon bone assemblage places inevitable limitations on the observation of dog gnawing, it would appear that dogs were not a major agency in the destruction of bone at the site. However, the animal bone, as is the case with the human bone at the site, was doubtless dispersed in part by the activities of dogs.

8.1.2 Results part 1. The species found

At the gross level, the fauna of both areas is heavily dominated by large cattle, which make up 60–70% of the identified bones and jaws in most contexts. The pig is second in abundance at about 20–30% of the identified bones and caprines form 15–20%. The red deer is present in a small proportion, though the bones are more abundant on the Stepleton spur than in the central area. Antlers of red deer were commonly found but these were clearly imported for use as artefacts and are separately treated below. The proportions of the common species vary considerably in particular contexts and in a few of these pig bones are more common than those of cattle. The small number of bones identified from the Bronze Age site of Everley Water Meadow does not allow conclusions to be made about the faunal composition at that time. The bones from the early Iron Age house excavated at the hill fort are heavily dominated by caprines and pig.

Domestic mammals

The predominant species in the entire Neolithic fauna, though not in every context, is that of domestic cattle, *Bos taurus*. The bones of domestic pigs (*Sus scrofa*) are also common and from the counts of both post-cranial bones and from the mandibles, these are second in numerical abundance when averaged across the entirety of each site. However, an important point should be noted here. At both enclosures cattle form the largest proportion of the faunas from the numbers of identified post-cranial bones but are rather less well represented by identified mandibles. Pigs, on the other hand, are better represented by the counts of identified mandibles and on this basis even exceed cattle on the Stepleton spur (Fig 8.2). In general, both caprines and pigs have higher representations from mandible counts than from post-cranial bones, which suggests a higher

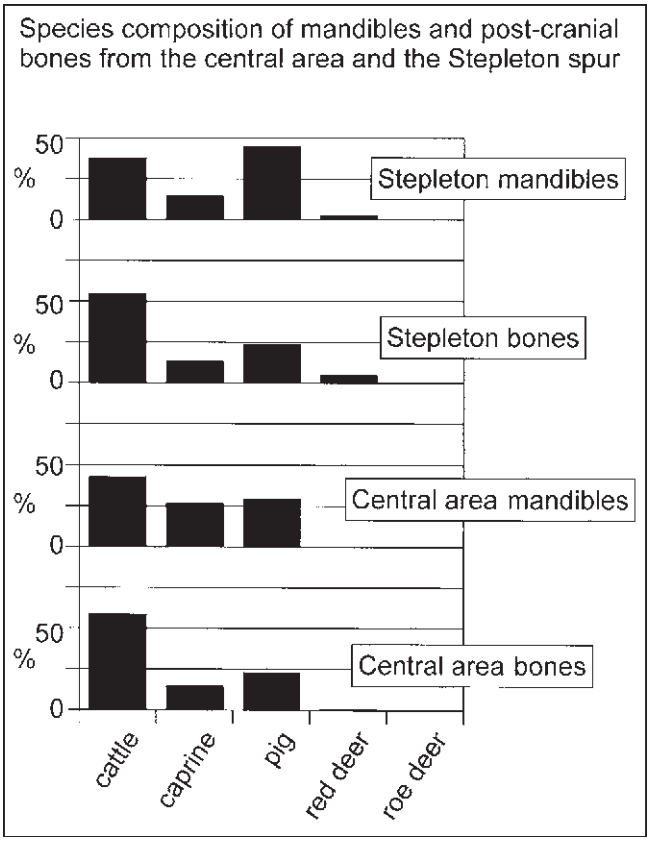

Fig 8.2 Species composition as expressed by frequencies of identified mandibles and post-cranial bones from the central area and the Stepleton spur.

level of attrition working on the smaller bones, especially in the main causewayed enclosure ditch fills. The larger and more robust cattle bones show a better survival in relation to the mandibles, and, especially where the pig is concerned, this is related to the very young ages at which these were killed. Most pigs were infantile or juvenile at death and thus with skeletons that were largely unfused. The attrition of the bone sample, both by dogs and by adverse burial conditions, was high under such circumstances. This aspect of the bone remains is further considered below.

Domestic sheep and goat are grouped below as 'caprines,' and in almost all contexts these are the least abundant of the three domestic food species. Sheep (*Ovis aries*) form more than 98% of those caprine bones that can be reliably identified to the species level. The goat (*Capra hircus*) is certainly present in the Neolithic fauna, though the species was rather uncommon. The bones of domestic dogs, *Canis lupus familiaris*, were found widely among the sites at Hambledon, though their bones were not found in all contexts. The presence of cut-marks on the dog bones at points not likely to be associated with skinning alone is suggestive that these too were eaten, though this cannot be proven.

Wild mammals

A small proportion of the cattle bones are those of the wild ancestral species *Bos primigenius* and, of the pig bones, a few bones were identified as wild pig on the basis of large size. The bones of red deer (*Cervus elaphus*) and roe deer (*Capreolus capreolus*) were found at most sites within the Neolithic complex but as a small proportion of the identified sample. There are occasional finds of bones from the beaver (*Castor fiber*), the badger (*Meles meles*), the otter (*Lutra lutra*) and the fox (*Vulpes vulpes*). Bones from the smaller mammals are limited to occasional specimens from the hare (*Lepus europaeus*), voles (mostly *Arvicola terrestris*), the mole (*Talpa europaea),* the pine marten (*Martes martes*) and the red squirrel (*Sciurus vulgaris*).

Cattle: bone measurements, body size and the proportion of sexes in the cull

All bone measurements were taken in mm, using in part the measurements designated by Dreisch (1976). Other measurements that were taken are described here.

It has long been known that adult cattle show a marked sexual dimorphism, in contrast, for example, to sheep, which do not. Because of this, the sex ratio in the adult cattle cull can be determined by the use of the appropriate bone measurements. The measurements taken from the bones of male cattle are, in almost all instances, significantly larger than those of female cattle. When these measurements are plotted as a scatter diagram of two measurements or even as a histogram using only a single measurement, the measurements of cattle bones show a bimodal distribution when both sexes are found (Degerbøl 1970; Grigson 1982, 1999; Higham 1968; Higham and Message 1969; Jewell 1963a; Legge 1981b; 1992). Where a proportion of the wild, large-bodied *Bos primigenius* was also killed, the situation is more complex and the resulting scatter is more difficult to interpret. Where a single measurement is plotted, for example the articular width of the distal metacarpal or distal humerus, against the numbers of specimens in defined size classes, the diagram is likely to show three peaks of abundance. This is because the females of the wild form and the males of the domestic form show similar widths so that the three groups are (a) smallest – domestic females, (b) intermediate – domestic males and wild females, and (c) largest – wild males.

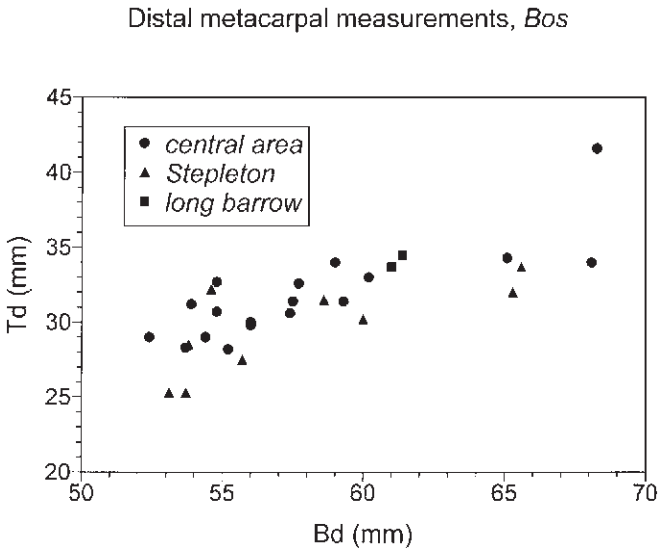

Fig 8.3 Measurements of distal metacarpals of cattle, Bos.

Figure 8.3 shows the scatter of the distal metacarpal measurements, and the interpretation of the diagram is relatively straightforward. Twenty-four distal metacarpals have Bd measurements below 63 mm, and Td measurements below 35 mm (fifteen central area, seven Stepleton and two long barrow). These are interpreted as being the females of domestic cattle, those killed after the age of 30 months or so when the distal metacarpal undergoes bone fusion. In addition to these, there are two further specimens, not shown on the diagram, which have Bd measurements of about 53 mm but on which damage prevented the Td measurement being taken. These obviously also belong to the female group. To the right of the female group are the metacarpals of four larger cattle (two from the central area and two from Stepleton) and these are interpreted as being from adult males. A single large metacarpal, with an Td measurement of more than 40 mm, falls outside these groups, with measurements within the range of known *Bos primigenius* females. The diagram thus shows 24 female domestic cattle to 4 male, a ratio of 6 female cattle to each male.

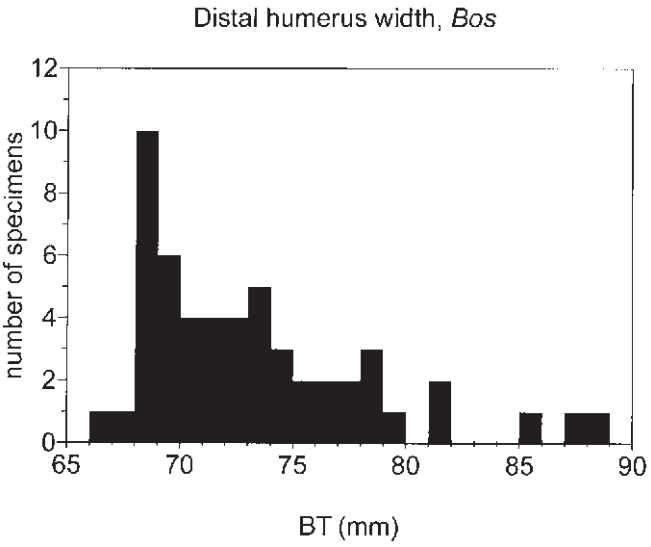

Fig 8.4 The distal humerus widths of Bos.

The measurements of the distal humerus offer a larger sample of both domestic and wild cattle. It may be noted that this bone is not ideal for this type of analysis, as it fuses early in the animal's life and it is very probably subject to some degree of post-fusion bone growth. As many of the cattle were killed when young, a significant proportion of the distal humeri would have been recently fused, and thus subject to further growth. In consequence of this, the width measurement, when taken alone, is problematic to interpret. This is illustrated in Figure 8.4, where the BT measurement is plotted in 2 mm size classes against the number of specimens falling in each size class. The histogram shows a bias towards the smaller animals, and those with BT measurements below 78 mm or so are the putative domestic cows. The larger animals, with measurements of 78 mm and upwards, are comparatively few and these will be both domestic males and an uncertain proportion of wild *Bos primigenius*.

These data can be better interpreted by the means of a scatter diagram, as is shown in Figure 8.5. Here the same width measurement, BT, is plotted against a second measurement, designated as HT, using the same sample of *Bos* distal humeri. This measurement is not featured in Dreisch (1976), but is taken on the medial margin of the distal humerus, the line of the measurement being parallel to the long axis of the bone. Two groups can be discerned on the basis of their measurements. The specimens which have an HT measurement of *less* than 46 mm are interpreted as being those from domestic cattle. This group can be further subdivided. Those having a BT measurement of less than 75 mm are interpreted as coming from the females, while those being larger than this dimension (but still with an HT measurement of less than 46 mm) are interpreted as the domestic males. It is not claimed here that this division is absolute, especially remembering the problems of possible post-fusion growth shown by the distal humerus as outlined above, and the sex of specimens with a BT measurement of a few millimetres above or below 75 mm is, of course, uncertain. However, as with the metacarpal measurements, the scatter shows a marked bias towards the smaller females. There is then a group of larger animals, in which specimens have an HT measurement of 48 mm and above, and these are interpreted as being examples of wild cattle, *Bos primigenius*. These fall within the known size range of Danish *Bos primigenius* as were published by Degerbøl (1970). As he noted, there is a significant difference in the form of the distal humerus

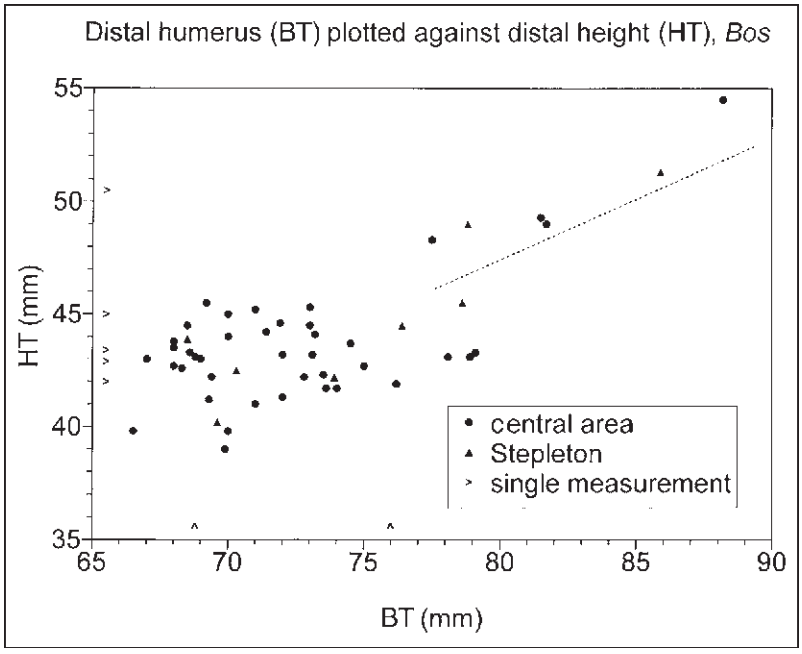

Fig 8.5 Distal humerus width plotted against height, Bos. *The six specimens falling above the broken line are interpreted as being from* Bos primigenius.

articulation between male domestic cattle and female *Bos primigenius*. Significantly, Neolithic male domestic cattle usually show a similar range of articular *width* (BT) to female wild cattle, but the *thickness* (HT) measurement is proportionately greater in both males and females of the wild form of cattle. This method has been used to discriminate between the distal humeri of wild and domestic cattle from the Neolithic site of Selevac in Serbia (Legge 1990), and the same method is applied here to the data from Hambledon Hill. The six specimens showing the more robust HT measurements of 48 mm or greater (four central area, two Stepleton) are interpreted as being both males and females of *Bos primigenius*.

There are some additional specimens included in the diagram from which only one measurement was possible. These are shown as open symbols at the axis for which that measurement was taken. The HT measurement shows an additional four female domestic cattle and one of *Bos primigenius,* while the BT measurement adds a further two female domestic cattle. The distal humerus measurements are thus interpreted as being from 49 domestic cattle, of which 42 or so were female and five to seven were male, a female:male ratio again of 6:1 or 7:1. The seven large cattle (including one specimen with an HT measurement of 50.5 mm) are interpreted as *Bos primigenius*, with both sexes being about equally represented.

Figures 8.3–5 thus show that the domestic cattle were killed in a female:male ratio of about 6:1. Other Neolithic causewayed enclosures and henge monuments have also been found to have a predominance of female cattle in the cull population, as was shown by Grigson (1965; 1982; 1999).

The reasons that underlie the predominance of female cattle bones at Hambledon and other sites are of obvious interest in the interpretation of the earlier Neolithic economy. In the demonstrations of the sex ratio from cattle limb bones shown above, only fully fused specimens were measured; that is, those where the diaphysis (shaft) and epiphysis (the joint surface) are fused together and the cartilaginous junction at this point in the immature mammal is wholly eliminated. Ideally the measurements will be taken from those bones which fuse later in the animal's life, when growth is largely, though not necessarily entirely, complete. A further caution is necessary. The survival of bones in archaeological assemblages is greatly increased after fusion, when the bone attains its full hardness and density. Before this event the more weakly ossified end parts of the bone are readily destroyed, as any large pet dog will willingly demonstrate for its owner. Gnawed bones, from a well-preserved sample, can easily be recognised by their scored and channelled surface. However, while the ideal approach would combine these facts and measure only a well-preserved and numerous sample of late-fusing bones, this is seldom possible. Post-fusion growth in early-fusing bones means that their measurements will give less clear-cut patterns than those based upon data from later-fusing bones, yet the nature of bone survival is such that seldom are there sufficient measurable (undamaged) late-fusing bones to provide a sufficient sample. In spite of these limitations, it is clear that the distal humerus measurements are sufficiently dimorphic that the adult sex ratio can be determined from these and that most of the cull cattle at Hambledon were female.

The age structure of the cull

The attribution of an age at death to the mandibles of domestic mammals in archaeological samples has been the subject of much debate in recent decades. Silver (1969) published tabulations of the ages attributed to tooth eruption events in cattle, caprines and pig, which were derived from recent and earlier veterinary publications. These data appeared to show that tooth eruption in domestic mammals was observed to be significantly slower in the eighteenth and nineteenth centuries than is found in the same species in more recent times. He further suggested that these 'long' ages should be applied to domestic mammal bones of archaeological origin, suggesting that the advantages of modern breeding and feeding would not then have been apparent, and bodily development consequently slower. In spite of the assumptions contained in this belief, it was for some time accepted that the 'long' tooth eruption ages should be applied to archaeological samples. Not until the 1980s was this assumption questioned.

New data on tooth eruption ages were gathered with specific archaeological approaches in mind (Bull and Payne 1982; Deniz and Payne 1982; Beasley *et al* 1984). Further, detailed reviews of the early literature on which Silver's paper was based showed that some of these sources were highly doubtful and were usually copied without acknowledgement from yet earlier sources (Legge 1992, 18–20). A close review of the relevant literature showed that the only reliable and original source for tooth eruption events in early nineteenth-century domestic mammals was that of Simonds (1854). Even this work was republished by Brown (1902) with scant acknowledgement to the original. In his comprehensive study, Simonds gave tooth eruption ages, based on the direct observation of a very large sample of known-age cattle from the first half of the nineteenth century, that are the same as those found in domestic cattle now. Further, recent work on the development of cattle dentition from well-preserved samples from the Bronze Age middens at Grime's Graves, Norfolk, involving both X-ray and cementum banding studies, showed that teeth in these prehistoric cattle had developed at the same time as do those in modern cattle (Beasley *et al* forthcoming). From this, the ages attributed here to tooth eruption events in the domestic mammals found at Hambledon are those given by Simonds (1854). While objection may be raised that tooth *wear* rates could have differed between sites, the use of these attributed ages is

defended on the grounds that (a) much of the discussion below concerns tooth *eruption* and not tooth wear, and (b) even the attribution of age-related wear stages gives a more realistic slaughter pattern than does the use of arbitrary wear stages of unequal and unknown duration.

The complexity of the Hambledon sites means that the sample, though large, is divided between many different contexts. Few of these have sufficient cattle mandibles and teeth to provide a sample with numerical meaning. Inevitably some samples must be grouped by phase or type of feature to provide a background against which subsamples from more limited areas or phases can be tested. As shown above, cattle were the predominant species found in the excavations when considered in terms of identified bone numbers. Obviously the large size of Neolithic cattle means that, in terms of biomass, this species was by far of the greatest importance at the site. The age structure of the population is therefore of particular interest in reflecting the economic and social strategy that underlay the slaughter policy.

Mandible fragments which contain several teeth can be quite closely aged. Many of the Hambledon mandibles were found to be fragmented and, in consequence, large numbers of loose teeth were also identified. The eruption and wear patterns shown by the more intact specimens were used to attribute ages to the more fragmented molars and the isolated teeth, in particular the lower third deciduous (milk) molars and lower third permanent molars, respectively noted here below as dp_4 and M_3. Care was taken to exclude any dp_4 which showed the root damage that is caused by the eruption of the fourth permanent premolar (P_4) which replaces it; such teeth were likely to have fallen from the mouths of living animals. The cattle mandibles and teeth were placed into one of nine age classes which span from birth to senescence (Legge 1992, 20–25), where the ages attributed to certain events are set out in some detail.

The cattle from all sites at Hambledon Hill show a restricted age distribution and were found to be predominantly from their early adult years (Fig 8.5). The most common wear state found for the M_3 was characteristic of an age of 18–36 months, shown by the erupting or erupted but unworn tooth (*c* 24 months of age) through to the same tooth showing early wear on the third cusp (*c* 30–36 months; Simonds 1854, figs 30, 31). By these criteria, some 55–60% of the cattle were killed between 18 and 36 months of age. Few cattle were killed below six months of age and, as an average figure, only about 20% were killed below one year of age. Cattle in older age classes are again rather uncommon with about 18% of the cattle mandibles coming from animals aged between three and six years. Only rarely were cattle killed at ages greater than six years. Figure 8.6 shows the population structure derived from the cattle mandibles grouped for three main ditch fills; those of the two enclosures and the inner

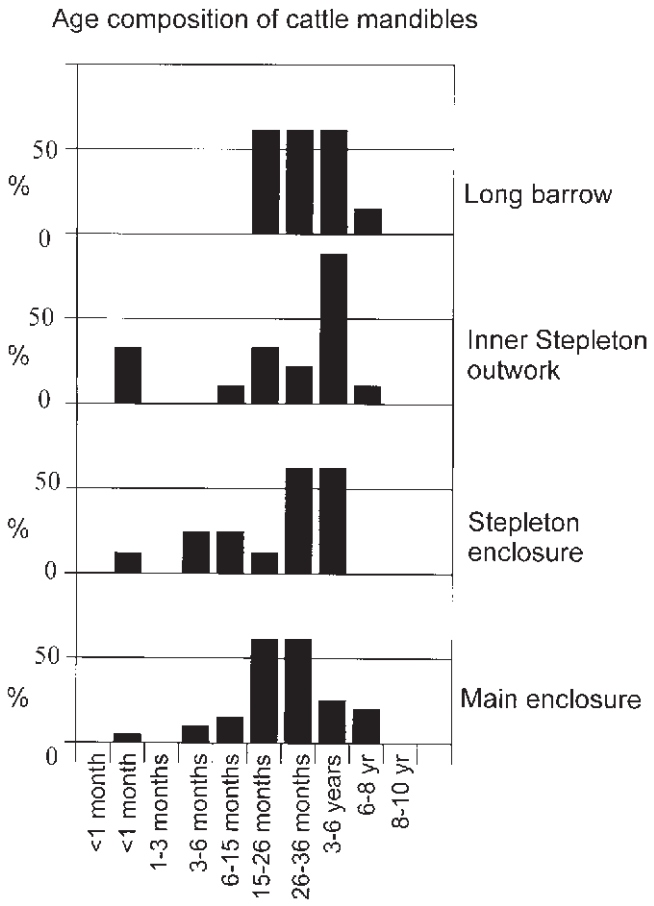

Fig 8.6 Distribution of age classes in cattle mandibles from four areas.

Stepleton outwork. The curves are essentially very similar, with low proportions of subadult cattle, but with the cull rising sharply between one-and-a-half and four years of age. Only 10% of the cattle were killed after that time, so that very few older cows can be represented. The data from a large sample of Bronze Age cattle mandibles excavated at Grime's Graves, and aged by the same method, are added for comparative purposes (Legge 1992). The sample from the south long barrow at Hambledon is very similar, with the exception that no infantile cattle mandibles were found. The inner Stepleton outwork has a rather higher proportion of cattle less than one year of age (about 28%) and none likely to be of more than five or six years of age (Fig 8.7).

The limited bone recovery practised in some earlier excavations at Neolithic sites means that few samples are sufficient for detailed comparison. A modest quantity of bone was reported from the 'pre-enclosure' and 'enclosure' phases of settlement at Windmill Hill, including a few mandibles and some loose teeth of cattle, and more has been reported from recent excavations. The cattle horncores found at Windmill Hill were nearly all from mature and older females of five years old and above (Grigson 1965; 1982; 1999; Jope 1965). However, while the horncores reflect the predominance of female domestic cattle at the site,

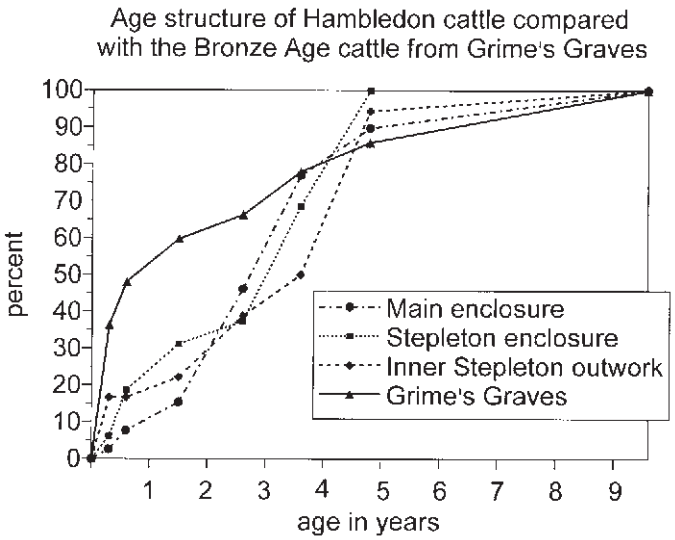

Fig 8.7 Slaughter pattern (age at death) in cattle mandibles from three areas compared with those from Bronze Age Grime's Graves.

Grigson has suggested that those from older cattle survive better due to their higher density, so that this finding may not accurately reflect the age structure of the cattle population (Grigson 1982, 33). A more accurate system of ageing is possible from the teeth, though the samples from Windmill Hill are of only moderate numbers. The wear states shown by the teeth were placed into four classes, of unworn, slight wear, medium wear and strong wear (Grigson 1982). Table 8.1 shows the proportions given in these wear classes.

The dp_4 with slight wear or no wear obviously belong to small calves. The dp_4 with 'strong' wear must be from an animal of two years or more in age, as this tooth is not replaced until 30 months. The undifferentiated M_1 and M_2 with 'medium' wear are likely to be from animals of between 12 months (M_1 medium wear) and 24 months (M_2 medium wear). An age cannot be attributed to the M_1 and M_2 which show 'strong wear' as the M_1 can show quite heavy wear by 36 months of age. The M_3 with slight and medium wear would fall in the 24–36 month age class and only those with 'strong' wear would be older than this, though by how much is impossible to determine. The side of the jaw from which the mandible fragment or tooth is derived is not given. In spite of the uncertainties of these data, the three unworn or lightly worn dp_4 come from animals of less than six months of age. Four M_3 are from young adults and two are a little more mature. Only two teeth come from older animals. The combined M_1/M_2 sample does not contradict this, with most teeth falling into the medium wear category characteristic of young adult cattle. More recently it has been shown that of seven lower third permanent molars, four were in early stages of wear and three were in full wear (Grigson 1999, 220).

Table 8.1 Wear classes of mandibular teeth from Windmill Hill, from Grigson (1982)

* = part mandible; only the 'oldest' tooth from each mandible is counted in the table

Tooth wear states as given	*dp_4*	*M_1 or M_2*	*M_1**	*M_2**	*M_3*
unworn	2	1	1	1	
slight wear	1	5			4
medium wear		11			2
strong wear	1	7		2	2

The Windmill Hill cattle are also aged on the basis of the frequency of fused and unfused bones (Grigson 1999, table 147, 219). The problems of defining slaughter policy from the proportions of unfused and fused bones are too well known to be discussed fully here; not the least of these is that the forces that work against the survival of unfused bones ensure that this part of the assemblage is grossly understated in most instances. This is further explored below and elsewhere (Legge 1992). Grigson shows the proportions in which the different bones at Windmill Hill were found either unfused or fused (Grigson 1999, 147, 219). She concludes from these data that half the cattle '... survived until the age of 3½–4 years'. Of the group of bones which fuse latest (42–48 months), 17 were found unfused and 26 fused (39% unfused) when the 1988 and Keiller/Smith excavation totals are combined.

On the other hand, the larger mandible sample from Hambledon does allow a fairly detailed reconstruction of the age structure of the cull (Figs 8.5–7). From the slaughter pattern shown in Figure 8.6, about half of the cattle were over 36 months when killed but only 20% were older than 48 months. These figures can be used to cross-check the quality of post-cranial bone survival (see below for discussion of this). At the Hambledon complex this indicates that some 85–90% of the fused bones do survive of the number that can be predicted as discarded when fused, but that only 5–25% of the bones survive that were predicted as discarded unfused. If this example can be extended to the data from Windmill Hill, then the number of unfused bones would have to be multiplied by 3 or 4 times to compare with those found in the fused state. It would therefore appear likely that subadult and young adult cattle were killed rather more often, and perhaps in a narrower band of age classes, at Windmill Hill than Grigson allows in her conclusions that '... clearly old and moderately old cattle predominated in the life of the inhabitants of Windmill Hill' (Grigson 1999, 220).

At the Etton causewayed enclosure near Peterborough, Armour-Chelu (1992; 1998a) has reported a small sample of cattle mandibles from phase I of the enclosure ditch, and seven dp_4 and 11 M_3 from the buried soil. Using Grant's (1982) system of recording cattle tooth eruption and wear, the complete

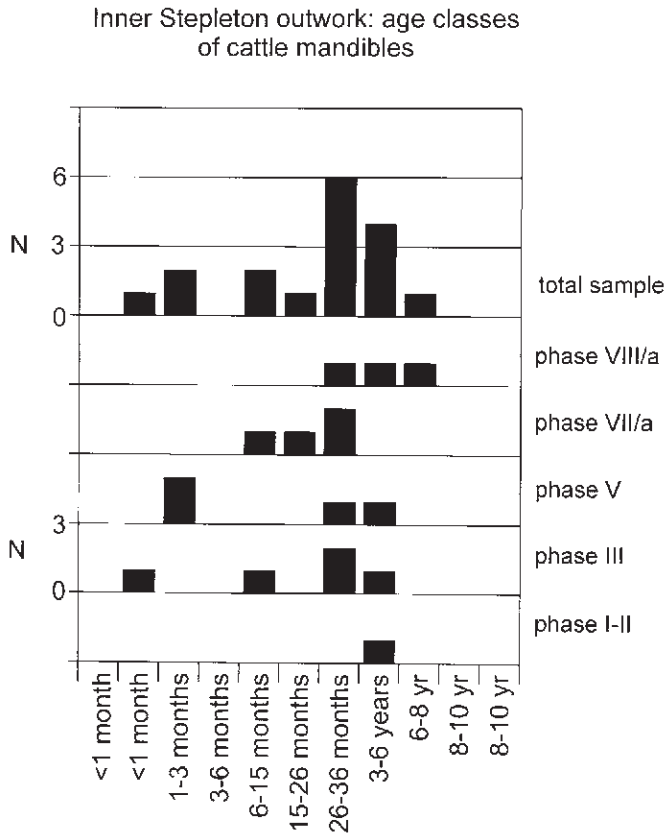

Fig 8.8 Distribution of age classes in cattle mandibles from five phases of the inner Stepleton outwork.

mandibles from phase I were judged to be 'fully mature' at the time of death. From the range of 'mean wear stages' as given, most of the mandibles would be from young adults, as were seven of the eleven loose M_3. Seven loose dp_4 were from cattle of under six months in age. The Etton sample is thus quite similar to the population age structure found at Hambledon Hill. Unfortunately other published causewayed enclosure excavations have too little bone for additional comparisons.

Interpretation of the cattle cull

The cattle age structure found at Hambledon, and possibly also at some other causewayed enclosures, cannot be characteristic of the cull from an entire breeding herd, as few mature, breeding age females are represented. On the contrary, the young cull ages mean that few of the cows that were killed at Hambledon could have reproduced themselves; indeed, this may even have been the reason why these were chosen in the predominant age classes. The slaughter pattern at Hambledon is thus in marked contrast to those reported from the few earlier prehistoric sites which have been interpreted as being of a domestic character. Yet at middle Bronze Age Grime's Graves (Legge 1981a; 1992) the cull of adult cattle was also found to be about 6:1 in favour of cows, though the age profile of the cull cattle showed that large numbers of calves were killed, often at very early ages, while the adult female cattle survived well into maturity and even up to ten years old. This slaughter pattern has been interpreted as that derived from the purposeful cull, with occasional natural death, of cattle from the age profile found within a breeding herd, in this case with a specific leaning towards maximising dairy outputs. It is a simple inference, from the adult sex ratio, that the cull calves – those of only a few weeks or months of age – would mostly have been male, killed in this case at ages before the earliest bone fusion.

At Hambledon the greater part of the cattle killed were female, and most of these were of subadult or young adult ages. The age structure of the cattle cull makes it unlikely that this was derived from a resident herd. On the other hand, the narrow age range of the majority leads to the conclusion that it may reasonably be regarded as the product of deliberate selection. This may have been because cows in this age class were the most commonly available surplus animals, or for some other reason that is less readily deduced. It has been shown that most fused cattle bones at Grime's Graves were also those of females and this, combined with the high incidence of infantile slaughter, suggested that animal husbandry was based upon the conservation of adult, productive livestock by means of milk production. It is well known that this system of food production provides the highest return, especially where the grazing area is constrained, though the human labour inputs to the system are high. Milk production has the further advantage that a highly palatable food is produced on a daily basis, and that this is easily processed by volume reduction into equally palatable forms that may also be stored in the medium to long term, as was tentatively suggested in Legge 1981a and 1989). On the basis of this model it is possible to identify a source of the cull cattle at Hambledon. At Grime's Graves, few males were carried much beyond infancy, and it would seem that only sufficient males survived into adult life to secure the reproduction of the herd. On the other hand, most females were probably retained to that point where the husbandman makes the final selection of the young cows to keep for breeding and those for cull. This was perhaps on the basis of body conformation, or on reproductive success. For instance, experience might encourage the retention of those cows which conceived early, while those which failed to conceive were selected for cull. Such a model would explain both the predominance both of cows and of the young age classes found at the site.

The alternative view might consider that cattle in the Neolithic period were important only as meat supplies. This raises an important question about the size of the consuming Neolithic community, when a single beast of near adult size would have provided some 300 kg of meat, offal and fat – a considerable investment both in the killing and in the consumption. If the cattle killed at Hambledon were *not* from a resident breeding herd, then it is plausible that selected animals were taken there from a wider physical and social catchment.

Hambledon Hill could thus be viewed as a gathering place within a wide social catchment, at which the slaughter of cattle were events of conspicuous consumption. If so, it would seem that young cows were rather more acceptable as slaughter, or possibly were simply more available, than were young steers. Whatever the manner or motive of the slaughter events, the fact remains that few young males were culled at Hambledon, which implies that few such animals were raised. It is possible that young cows were selected for reasons of belief, ritual or social preference, or possibly these were the surplus adults from a husbandry system in which cattle were exploited on a day-to-day basis for outputs other than meat. Only the discovery and proper excavation of a domestic bone sample within the putative social catchment of Hambledon Hill can resolve these questions.

Cattle: bone survival and bone representation at Hambledon Hill

A consideration of the pattern of bone survival at Hambledon is of obvious concern in the further interpretation of the sample. For instance, it is possible that the cattle bones arrived only as parts of animals, being transported in joints of meat, or that entire animals were driven to the site for slaughter. The abundance of mandibles argues for the latter as most probable, though this interpretation needs to be supported by a consideration of the pattern of bone representation. It is also possible that bones were differentially deposited within the site according to a system of human belief or of behaviour; this is further considered in the second part of this report. Attractive as such conclusions may be, it is first necessary to examine the pattern of bone survival for more mundane influences.

The discussion that follows is based on the cattle bones, as these are both the most numerous and form the most robust species that was found. The different cattle bones, as with all mammals, fuse in a known sequence and at about the same age in all individuals within a population, subject to the normal variation found in living organisms. It has been emphasised that when bones pass through the fusion process, the likelihood of their survival is greatly enhanced. This pattern can be discerned in bone assemblages from all periods and recovered from widely different places. Those bones which fuse early in the animal's life, such as the distal humerus and proximal scapula, are usually well preserved in bone assemblages, while late-fusing bones (for example the proximal humerus, proximal tibia, and both proximal and distal femur) are much less commonly found. Destruction of the less dense, unfused bones is easily accomplished by dogs, a process subsequently magnified under rather harsh burial conditions. This pattern of bone survival is wholly typical of the assemblages from Hambledon Hill and the point is strikingly illustrated in Figure 8.9, which shows the bone survival for the main enclosure

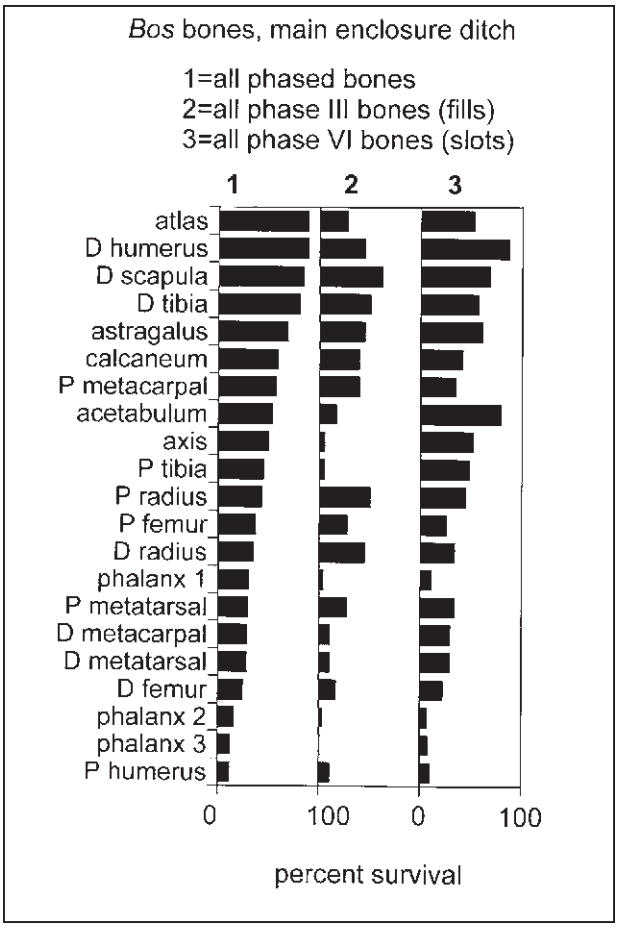

Fig 8.9 Cattle bone survival in (a) the combined sample from the main enclosure ditch and (b) two subsamples from phases III and IV.

ditch for three different groups of bone. The diagram is set out in the conventional manner, by simply depicting the relative abundance of each bone, in declining frequency, making due allowance for paired and axial bones. It is necessary to use combined samples in these diagrams, as single layers in ditch segments, or the bones from a single feature, are usually too few. It can be seen that bones which fuse early, such as the distal humerus, scapula, distal tibia are well represented, as are bones with no fusion point like the astragalus or proximal metacarpal. This suggests that fusion age has indeed had a marked effect upon bone survival. This can be seen even more clearly for those bones which have a fusion point, and for which approximate fusion ages are known. Figure 8.10 shows the relationship between fusion age (based upon the data given by Silver 1969) and bone survival for the sample from phase VI of the main enclosure ditch, and Figure 8.11 displays the data from the Stepleton enclosure ditch. In both diagrams, the relationship between fusion age and bone survival is strikingly evident, with the early-fusing bones being common and the bones then progressively less common with increased fusion age. The relationship which emerges is remarkably

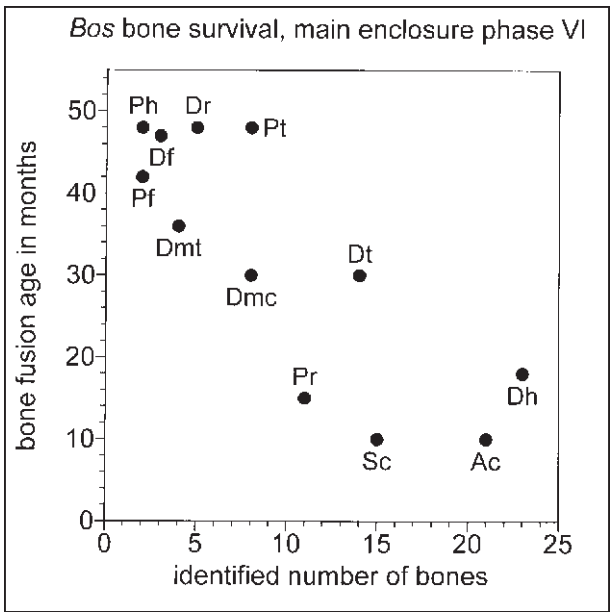

Fig 8.10 Cattle bone survival from phase VI of the main enclosure ditch. P=proximal end D=distal end; Sc=scapula; h=humerus; r=radius; mc=metacarpal; Ac=acetabulum of pelvis; f=femur; t=tibia; mt=metatarsal.

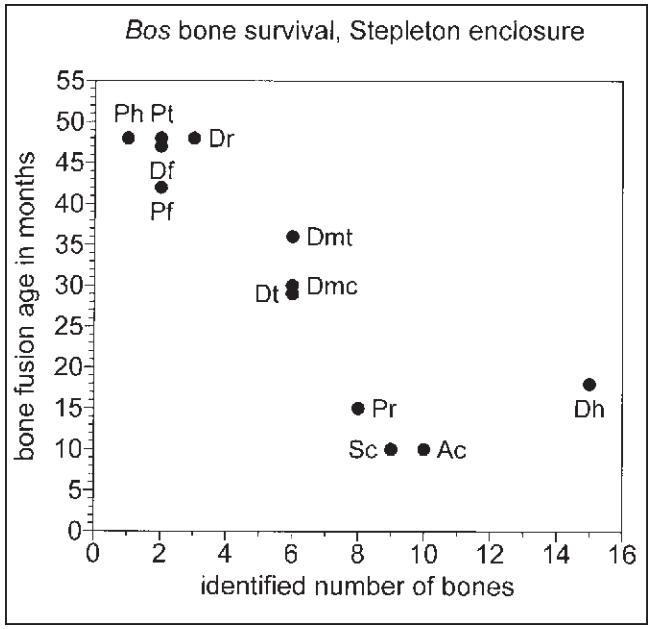

Fig 8.11 Cattle bone survival from the Stepleton enclosure ditch. Key as Figure 8.10.

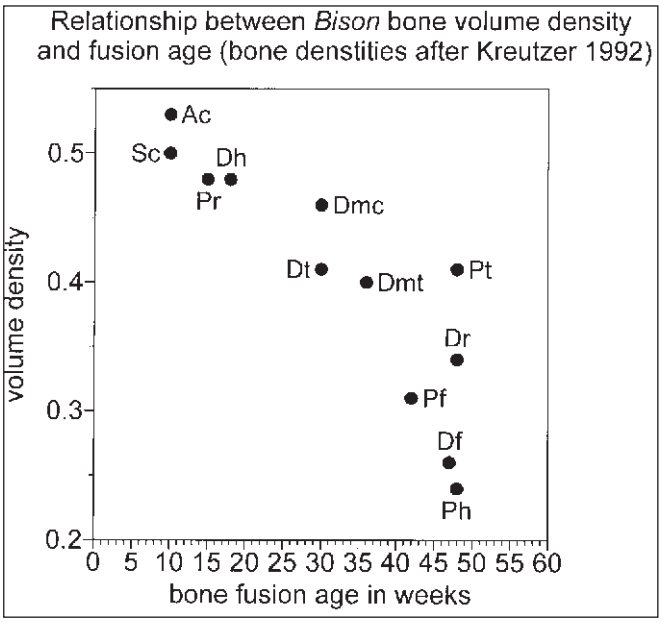

Fig 8.12 Relationship between bone density and the survival of cattle bone. Values for volume density after Kreutzer 1992. Key as Figure 8.10.

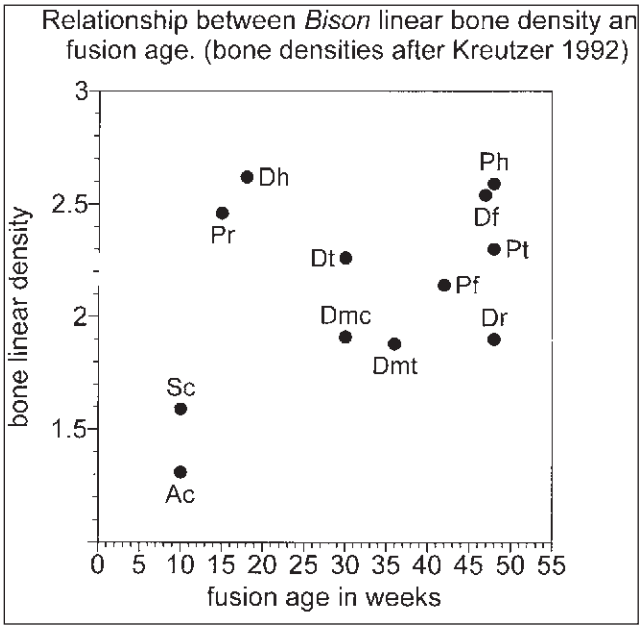

Fig 8.13 Relationship between bone density and the survival of cattle bone. Values for linear bone density after Kreutzer 1992. Key as Figure 8.10.

constant for an archaeological sample. The early-fusing bones (in particular the acetabulum, distal humerus, distal radius and scapula glenoid, designated Ac, Dh, Sc, Pr), are particularly common in the archaeological sample while at the other extreme, the late-fusing bones (proximal humerus, Ph, distal radius, Dr, proximal and distal femur, Pf and Df, proximal tibia, Pt) were found to be much less common. Bones with fusion ages which are intermediate between the earliest and latest fusion ages also show a constant relationship.

The relationships between bone density and bone survival has been a major interest in faunal studies of recent times, though on occasions with insufficient regard for the age profile of the cull population from which the bone sample was derived (Legge 1992. The relevant sources for the measurement of bone density and the effects of this on bone survival are too numerous to list here, but these were comprehensively reviewed by Lyman (1998). Bone density values were originally calculated by simple displacement in water (Brain 1969), though more recently by a variety of

other methods. Recently photon densitometry has been applied to these measurements (Lyman 1984) and also by Kreutzer (1992), who has used the technique to measure bone density in 12 adult (fused) skeletons of the American bison, *Bison occidentalis.* Kreutzer initially measured 'linear density' across the bison bones, and then modified these density measurements in relation to the volume of the bone at the scan site, thus producing 'volume densities' (and see Kreutzer 1992 for a discussion of the limitations of linear density measurements by this technique). The American bison is a closely related bovid species of a size near enough to large Neolithic cattle for the density measurements to be borrowed for comparative purposes and, at the time of writing, Kreutzer's measurements provide the best available comparison for bone density in European *Bos taurus*. The pattern seen in Figure 8.12 suggests that this borrowing is reasonably valid. Here, Kreutzer's calculated values for bone 'volume density' from *Bison occidentalis* are set against the familiar bone fusion ages for the epiphyses of cattle limb bones. Figure 8.13 shows her 'linear densities' used in the same way, and it can be seen that any relationship between the two values is at best highly variable. In Figure 8.12 the relationship between bone fusion age and volume density is reasonably constant, with the early-fusing bones having the highest post-fusion densities and, as the time of bone fusion proceeds though the animal's life, the density of the fused bone falls progressively in a notably consistent relationship, especially bearing in mind the uncertainties of the published bone fusion ages for cattle and other species (Silver 1969) and the borrowing between species in this exercise.

The relationship shown above, in which bone fusion age and bone density are so closely linked, has obviously been the significant factor in the formation of the Hambledon cattle bone assemblages. Figure 8.14 shows the survival of cattle bone from the main enclosure, where the number of identified specimens of each bone is plotted against Kreutzer's volume density measurements. The relationship between the bone volume density and the survival of the different bones is marked; as volume density rises, so too does the number of identified bones in a constant relationship.

Using Kreutzer's figures, it has been shown that the early-fusing cattle bones have high volume densities and that the late-fusing bones have low volume densities and that these conditions are closely related to the survival of cattle bones at the Hambledon sites. This effect is also particularly marked on the cattle bone assemblage because of the age structure of the cattle cull. It has been shown above that about 60% of the cattle were selected for cull at between 18 and 36 months of age, the very period during which the different bones of the cattle skeleton undergo their sequential fusion. This means that most cattle were killed at an age when their *early*-fusing bones had passed through this process, while the *late*-fusing bones had not.

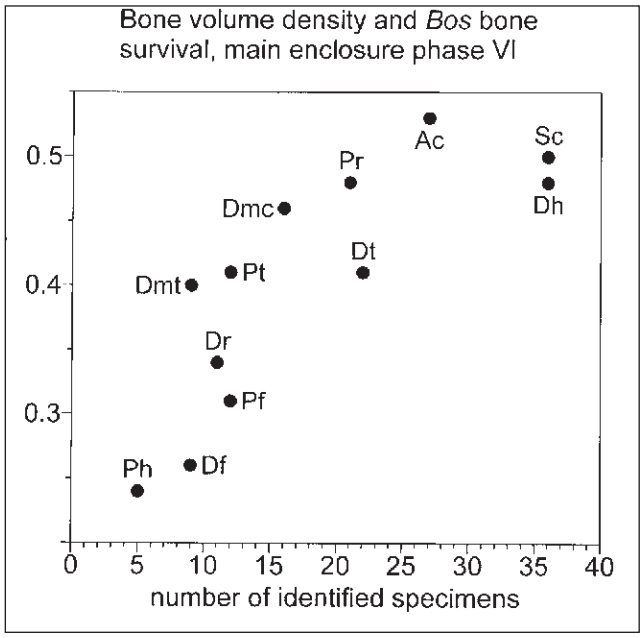

Fig 8.14 Relationship between bone density and the survival of cattle bone in the main enclosure phase VI. Values for volume density after Kreutzer 1992. Key as Figure 8.10.

The pattern of bone representation at Hambledon Hill is thus density-dependent and also closely related to the particular age structure of the population. It is possible to examine the pattern of bone survival in yet more detail, in particular in relation to the proportions in which unfused and fused bones have survived. From the slaughter pattern (Fig 8.6) it is possible to measure the percentage of cattle that were killed at the time when each limb bone will have become fused. These percentages will then show the proportion of each different limb bone that were discarded in the unfused and the fused state, as predicted by the age profile of the surviving jaws. The fills of the main enclosure ditch contained mandibles which indicate a minimum number of 23 cattle. The limb bones discarded after slaughter and butchery would obviously be twice this number (NISp=46). The number of identified, fused specimens of each bone is then expressed as a percentage of the predicted number that were discarded in that state. The same may then be calculated for the unfused bones that were identified in the assemblage. It is recognised that this method contains certain assumptions, not the least in that the bone fusion ages used here may be inaccurate, as has been found for tooth eruption data derived from veterinary sources. However, in spite of such limitations, it appears reasonable to attempt such investigations rather than to simply assume that all bones were equally likely to survive regardless of their fusion state or, even more seriously, to assume that the proportions in which mammal bones survive in archaeological assemblages have any meaning when separated from the age profile of the cull population.

Table 8.2 Main enclosure. Numbers of identified cattle bones, their fusion ages and the predicted number that were discarded related to the numbers of identified bones

Bone	*Fusion age (months)*	*Percentage slaughtered above this age*	*Predicted number discarded fused*	*Identified number of bones*	*Per cent survival of predicted number*
Scapula	10	90%	41	36	88%
P humerus	48	25%	12	6	50%
D humerus	18	83%	38	38	100%
P radius	15	85%	39	21	54%
D radius	48	25%	12	11	92%
Acetabulum	10	88%	40	27	68%
P femur	42	35%	16	12	75%
D femur	48	25%	12	9	75%
P tibia	48	25%	12	12	100%
D tibia	30	60%	28	22	79%
D metacarpal	30	60%	28	16	57%
D metatarsal	36	55%	25	10	40%

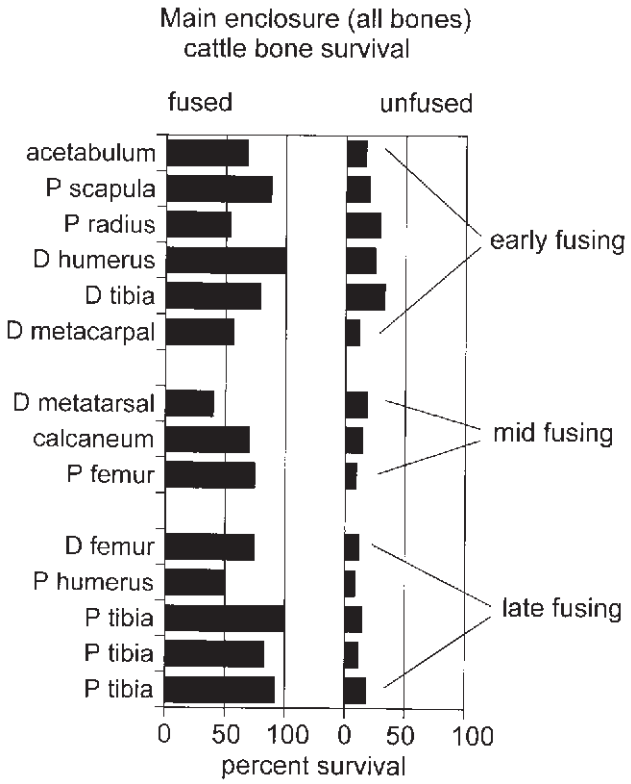

Fig 8.15 Survival of the fused and unfused bones of cattle in the main enclosure ditch, whole sample.

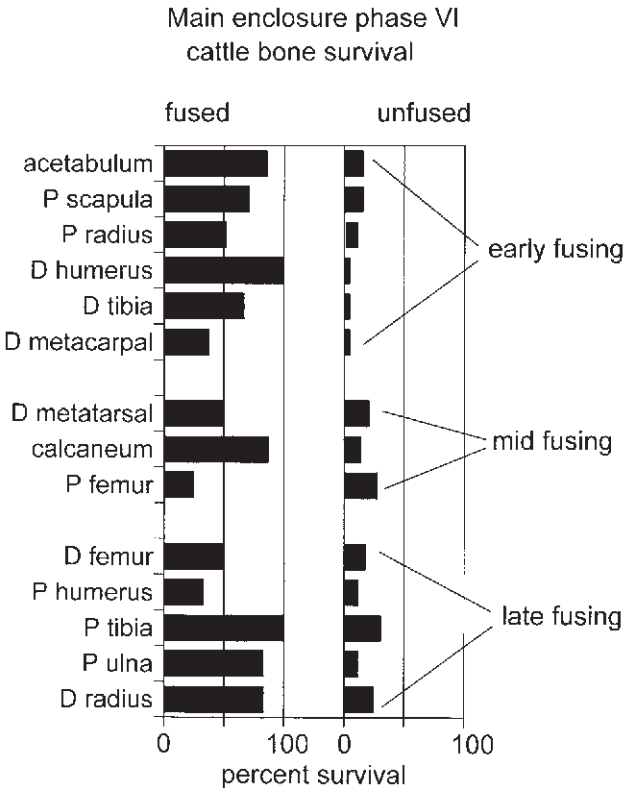

Fig 8.16 Survival of the fused and unfused bones of cattle in phase VI of the main enclosure ditch.

For example:

1. Fusion in the cattle scapula occurs at 10 months of age
2. Percentage of cattle killed beyond 10 months of age at Hambledon Hill = 90%
3. From this, the number of scapulae predicted as discarded older than 10 months = 90% of 46 = 41 (to the nearest whole number)
4. Number of fused scapulae that were identified in the sample = 36
5. The proportion of fused scapulae surviving is 36 of the 41 specimens predicted as discarded when fused = 88% survival.

The numbers of identified bones, their fusion ages and the predicted number that were discarded are given in Table 8.2. The result of this calculation is shown in Figures 8.15–16, which show the survival of fused and unfused cattle bones calculated in the same way, for the whole sample from the main enclosure ditch, and then only for phase VI of that ditch fill. This method of calculation produces the striking result that some of the late-fusing bones actually survive to a large proportion of those predicted as discarded when fused. Conversely, it is evident that the survival of most unfused limb bones is very much worse, in the range 5% to 25% of the predicted number that were discarded.

The bone representation for *fused limb* bones is thus much more constant than the crude unadjusted figures would appear to show, with most fused limb bones surviving at 70–100% of the predicted number that were discarded. Most notably, this method redresses the bias that is inherent against the survival of late-fusing bones.

From this, it may be argued that the observed pattern of cattle bone representation at Hambledon Hill is strongly conditioned by density-related conditions, closely connected to bone fusion and the age profile of the cull population. The bone representation is the product of post-discard attrition due to the large numbers of unfused bones that were discarded. The relative completeness of the representation of adult cattle bones supports the interpretation that living cattle were brought to the site, there to be slaughtered and the meat consumed close by.

Age structure of the pig cull

The pig is the second most abundant mammal at all sites and in some contexts pig mandibles equal or exceed those of cattle in number. The pig mandibles are generally very fragmented and complete tooth rows are rare. The dentition of pigs can be closely aged up to 30 months or so, by which time the dentition shows considerable wear and age estimates become less certain. This is because the pig has low crowned (bunodont) teeth and, once the enamel of the occlusal surface is worn away, few age-related changes can be observed apart from a general wearing away of the tooth. Pig teeth lack the internal enamel pillars and folding (in particular the infundibulum), which change more visibly in cattle, deer and caprines into older age classes. However, this does not present a serious problem at Hambledon, as almost all of the pigs that were killed were young, aged below 24 months at death. The total sample consisted of 125 mandibles and part mandibles.

The age profiles for the various sites are given in Figures 8.17–18. Inevitably the division of the sample between many ditch segments and phases within them results in some very small samples, so the age profiles given here are also combined into larger units. For example Figure 8.17 shows the cull pattern for all pig mandibles from each of the two enclosure ditches, and also for the entire sample from each area, including the pits. Data are also presented as histograms of age classes for the larger sample from the different phases of the main enclosure ditch (Fig 8.18) and for the various ditches and features on the Stepleton spur (Fig 8.19).

From Figure 8.17 two important facts emerge. Firstly, it is notable that the pigs were not selected for cull in any particular age class, beyond the fact that the greater majority were below 24 months of age. In both areas, pigs were killed in all age classes up to that point, and only a very small proportion of the mandibles were found to come from pigs older than this (given collectively as 'aged' in Figures 8.17 and 8.18).

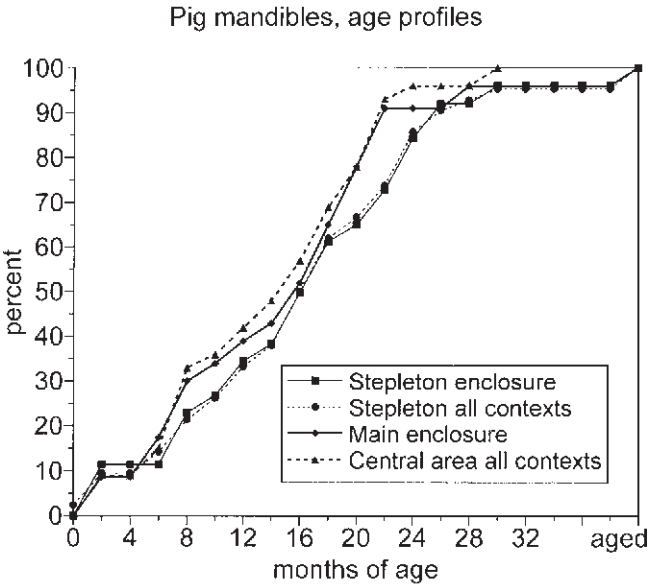

Fig 8.17 Slaughter patterns (age at death) in pig mandibles from four areas.

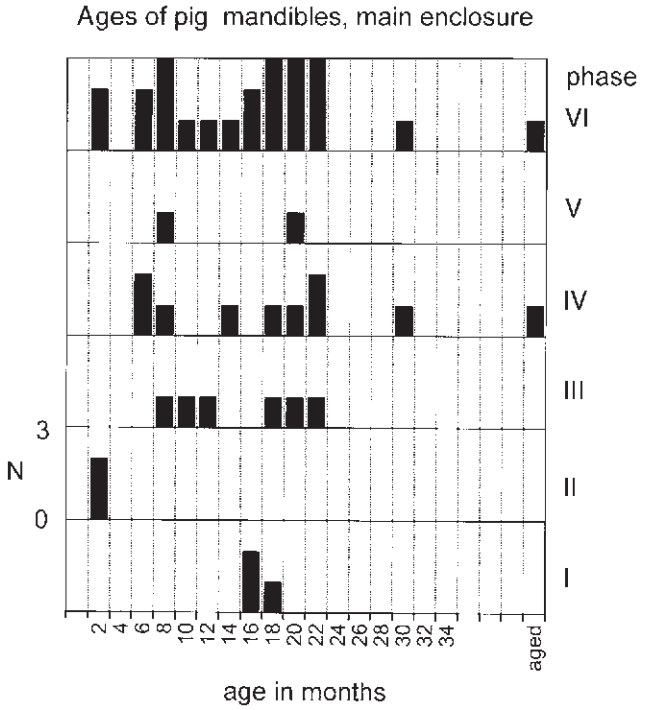

Fig 8.18 The distribution of age classes in pig mandibles from 6 phases from the main enclosure.

Secondly, the age profiles found from the main enclosure ditch, the Stepleton enclosure ditch and the total samples from both sites, are remarkably similar (Fig 8.17). The mean age at death is closely similar in both samples: 13.4 months in the main enclosure ditch and 14.4 months in the Stepleton enclosure ditch. Only one site differs significantly from this general pattern, that of the enigmatic third millennium cal BC 'flint mines' on the Hanford Spur, where rather more pigs were found to have been killed below six months of age. This sample is further discussed below.

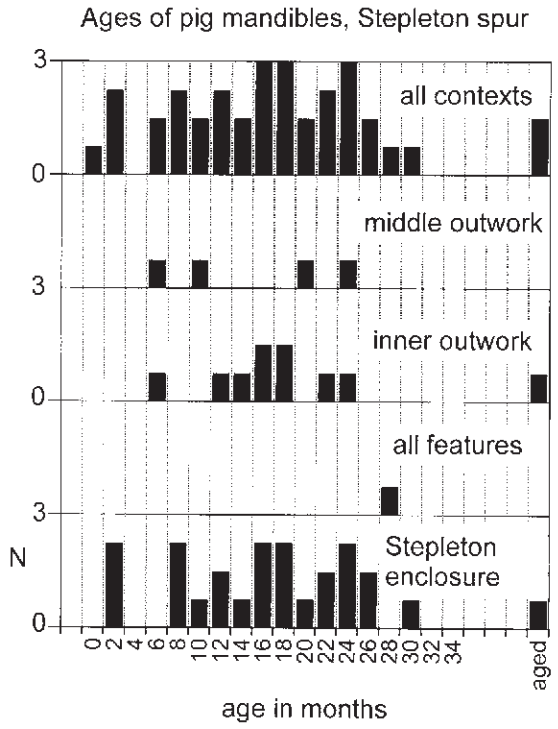

Fig 8.19 The distribution of age classes in pig mandibles from four areas and a combined sample.

The age structure of the pigs is therefore rather predictable. Animals of all ages below two years were killed at the site, a familiar and preferred age for human consumption. Indeed, because of the nature of reproduction in the pig, with multiple rather than single births, all pig populations, even in the wild, are predominantly made up of subadult individuals. The consistent age patterns found across the sites do argue that the greater part of the pigs were also taken to the site having been selected from domestic herds, and that wild pig bones at the site were few. The selection was for young animals but, as has been noted, this is an almost invariable human practice in a wide variety of circumstances.

Pig bones and the body size

Although the pig is second in abundance in most of the contexts excavated at Hambledon, it is shown above that most were juvenile and in consequence few bones could be measured. Only 12 specimens of even the early-fusing distal humerus were sufficiently intact. Little comparative data are available for this species. Harcourt (1971) gave the 'distal width' measurement of some pig humeri and it is highly likely that this is the same as the BT measurement used here. Comparison of the BT measurements from 11 pig humeri published from the later Neolithic site of Durrington Walls can be compared with 12 distal humeri from the main and Stepleton enclosures, with a BT measurement of 29–40 mm. Harcourt (1971, 339) gives a range of 27–35 mm for a further 122 distal fragments specimens. Harcourt (1979) further gives the range of 29–35 mm for the BT measurement of 17 specimens excavated at Mount Pleasant. There is little scope for detailed comparison, owing to the small number of specimens and the paucity of comparative data. It is probable that some of the larger specimens from Hambledon were wild pigs, though most appear to fall within the range of known Neolithic domestic pigs.

Age structure of the caprine cull

The mandibles of caprines at Hambledon were identified as being all from sheep. In common with the postcranial bones, the mandibles are highly fragmented. This causes inevitable uncertainties in attributing ages to some specimens. For example, the largest sample comes from the main enclosure ditch; of 20 specimens that have been placed into one of nine age classes following the method of Payne (1973), only four are teeth that have remained rooted in the bone; the remainder are isolated dp_4 and M_3. As discussed above, these teeth are both carried for a short while as the deciduous molars are replaced shortly after the eruption of the M_3 (Simonds 1854, figs 40, 42, 91–95). Consequently, with fragmented material, there is the possibility of counting a specimen twice when these teeth are separately aged, even with due allowance for the short period when both teeth may be found in the jaw. Two heavily worn specimens of dp_4 and 2 unworn or lightly worn M_3 in one sample were treated as coming from two broken mandibles.

Only three sites have samples of more than ten specimens to which ages can be attributed (Fig 8.20). The two largest samples, from the main enclosure and the Stepleton enclosure, are further plotted on a cumulative graph and compared there with a large sample

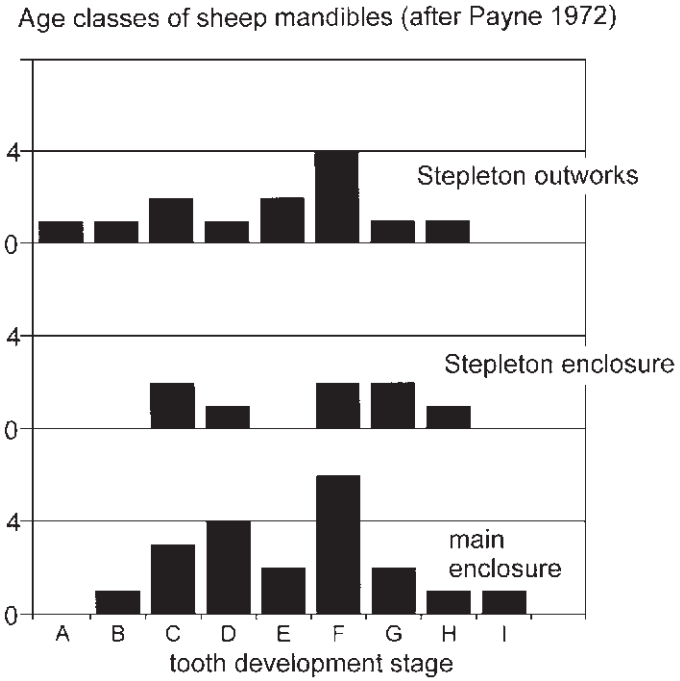

Fig 8.20 Age classes in sheep mandibles from three areas.

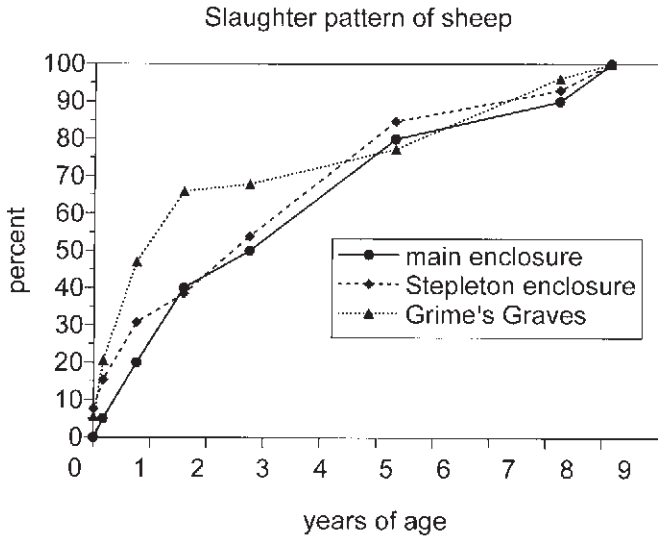

Fig 8.21 Slaughter patterns (age at death) in sheep mandibles from two areas compared with Grime's Graves.

from a domestic settlement from the Bronze Age at Grime's Graves (Legge 1992; Fig 8.21). As is shown in that report, the large samples of mandibles from two excavations at that site give very similar slaughter patterns and these conform to that generally found in sheep husbandry. The Grime's Graves samples show that the major part of the cull fell between ten months and two years of age (stages C and D after Payne 1973), with a slower rate thereafter as the older breeding animals were culled (or would die) towards the latter part of their lives. The pattern at Hambledon is somewhat different, as far as can be determined from the small and fragmented samples. The cull has few animals of one year or below and few of the oldest age classes G to H. The majority were culled between one year and about five or six years of age. This pattern is not readily susceptible to interpretation. It seems quite probable that, with evidence of heavy fragmentation, more mandibles would have been destroyed from the youngest specimens, though the oldest would be expected to have better survival. It is evident, however, that the sheep were not selected for cull in a relatively narrow age band, as has been found with the cattle mandibles, but appear to reflect the full age spectrum that was available in the Neolithic breeding herds, perhaps with fewer aged specimens than might usually be found.

Caprine bones and their body size

Most of the caprine bones from all sites were heavily fragmented and in consequence few could be measured. Goat bones were rare, with few certain identifications, which included fragments of horncore and one distal metacarpal. More than 98% of the caprine bones were identified as being those of sheep. Because of the few measurements little can be said about the size of the sheep at Hambledon. The BT measurements of four distal humeri, identified as those of sheep, fall within the range given for eight specimens from Durrington Walls of 24–28 mm (Harcourt 1971, table XXXVI, 343). The Neolithic sheep appear to have been a little more robust than adult male specimens of the modern feral Soay sheep (Legge and Payne forthcoming); three of the four distal humeri from Hambledon Hill are slightly larger than the largest from a sample of modern male Soay sheep that were raised in southern England.

Red deer bones

Bones of red deer are a small proportion of the large mammals found at the two enclosures, and average about 2% of the identified bones from the central area enclosure and 5–7% from the Stepleton spur. Few bones were found in any one feature or layer, so that the representation of red deer bones can only be considered at the gross level. Figure 8.22 shows the relative abundance of red deer bones in the central area and on the Stepleton spur, comparing both with the gross (uncorrected) proportions of identified cattle bones from the main enclosure ditch. The bones of red deer are mostly those which fuse early and are of high density, again showing an assemblage that has undergone a high rate of attrition. Only a few animals need be represented at each site. The bones in the larger sample, from Stepleton, need come from no more than five animals (five proximal left metatarsals, five right calcanea) and those from the central area from no more than three. This is at best only a measure of relative abundance as, from few bones so widely dispersed, the minimum number of individuals is even more uncertain than is usual with such calculations.

Figure 8.22 shows that there is a marked representation of the distal limb at both sites (metapodials, navicular-cuboid and the calcaneum at Stepleton) and certain upper limb bones which show early fusion with the consequent high survival in most bone assemblages (distal scapula, distal humerus, distal tibia). Bones of higher meat utility, (other than the scapula and humerus) such as the pelvic bones, femur, and proximal tibia are scarce. The red deer would have been hunted, and those from the Neolithic period were large, even as big as those from the Mesolithic site of Star Carr (Fig 8.23). The overall bone representation pattern appears to have been influenced by their large size. Firstly, the head parts of the red deer are hardly represented with the exception of the abundant antler, which was found in almost all context groups. However, it must be stressed that it is improbable that more than a very small proportion of this antler was derived from animals killed while the site was occupied. Most of the antler is 'shed', that is, naturally cast in the annual cycle of replacement and growth of that organ. Even when the specimen comes from a deer killed while carrying antlers, it is probable that the time and place of its death were remote from the activity on the hilltop (and see below, 8.2). Apart from the antlers,

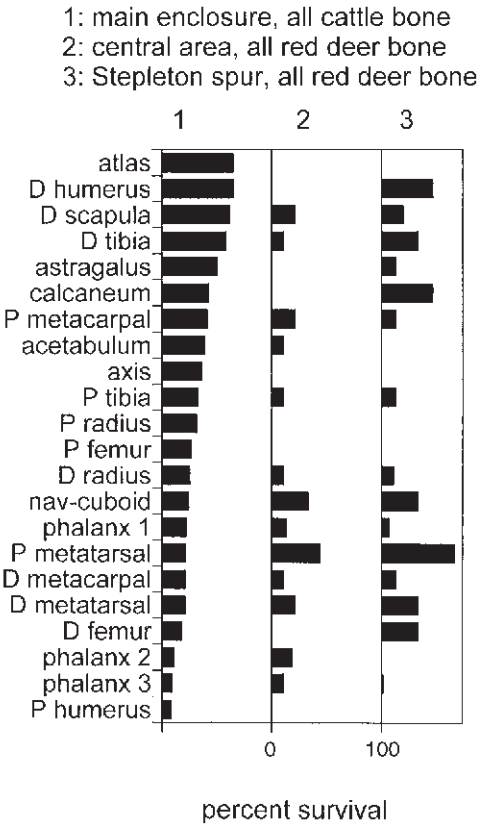

Fig 8.22 Survival of red deer bones from two areas compared with the gross survival of cattle bones from the main enclosure.

other cranial parts were very seldom found. Two fragmentary red deer mandibles and a small number of loose maxillary teeth come from the inner Stepleton outwork and a few maxillary teeth from the outer outwork. In the main enclosure, a left mandible came from layer 9 (phase VI) in segment 14 of the inner ditch. All of the jaws and loose teeth come from young adult red deer.

The low proportion of cranial parts suggests that the deer were hunted remotely from the hill, and that limb segments were carried to the site from killing points elsewhere, while the heads were abandoned. The large red deer of Neolithic times would weigh 100–150 kg (Whitehead 1964) and, when killed, the carcass would obviously need to be segmented for transportation. It is a familiar concept that certain parts, notably the head, are more likely to be consumed at the point of kill than removed to a distance. This appears to be the case with the Hambledon red deer. The low proportion of late-fusing, higher meat utility bones can be explained by the processes of attrition that had worked on all bones at the site. The small sample of red deer – as with the cattle – come from animals in which the later-fusing bones may still have been unfused and would thus be more attractive to dogs when discarded. It is probable that the red deer arrived at the sites as parts of carcasses. Even if deer were abundant in the immediate locality, it may be that the people had preoccupations other than that of hunting.

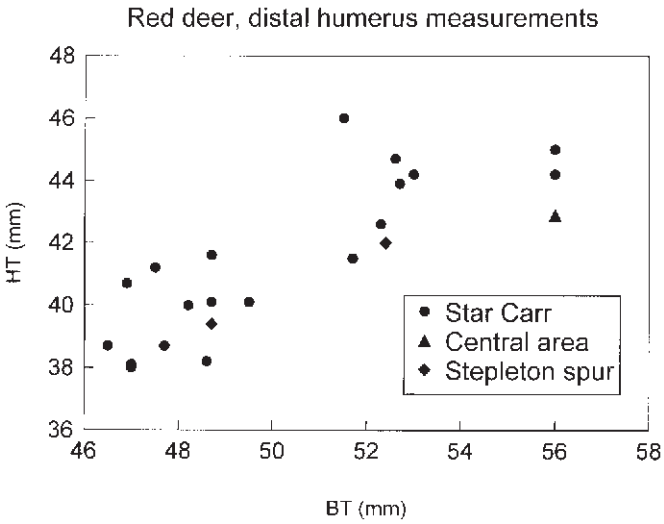

Fig 8.23 Measurements of distal humeri of red deer from two areas compared with those from the Mesolithic site of Star Carr.

The large red deer from Hambledon are indicative of good environmental conditions for this species, which prefers a habitat of open woodland for much of the year. Figure 8.23 shows the three measurable distal humeri from Hambledon compared with measurements of the same bone taken from the Mesolithic red deer at Star Carr, which are known to be of large body size compared to modern populations of the same animal in Britain (Legge and Rowley-Conwy 1988, fig 25). This measurement needs to be used with caution as it is known that this increases significantly after bone fusion (ibid, fig 23). The specimens from Hambledon would appear to be from fully mature specimens, as one from the main enclosure is as large as any from Star Carr and two from the Stepleton spur fall well within the same population. Besides these, an astragalus, a distal metatarsal and a metacarpal all have measurements that fall within those taken from the equivalent bones from Star Carr.

The preferred habitat of red deer is one of fairly open woodland, with a diet which, especially in winter, is dependant upon a good deal of browsing of young twigs from woody plants (Mitchell *et al* 1977; Ahlen 1965). However, the low proportion of red deer from the Hambledon Neolithic complex is unlikely to be a close reflection of the prevailing landscape, as it would appear that the human population had preoccupations other than hunting when at Hambledon Hill. The scarcity of red deer in British Neolithic sites contrasts sharply with some Neolithic and even Bronze Age sites from mainland Europe where the proportion of red deer in site faunas can be large, even exceeding in abundance the proportion of any one domestic species (Higham 1968; Legge 1990; 1994).

The roe deer bones

The roe deer is an uncommon component of the fauna at Hambledon Hill. This small deer has a retiring habit and prefers low and thick cover in which it seeks

concealment. Although it appears to have been locally abundant in Neolithic Britain (Maltby 1990), it was little hunted around Hambledon Hill, and was seldom taken to the site. The bones that survive are mainly those of the distal limb extremities, while cranial fragments are few. However, the few measurements that were possible also suggest that the animals came from a habitat that was satisfactory for this species. Three distal humeri from Hambledon have BT measurements of 27.2 mm, 25.3 mm and 24.6 mm. The largest of these exceeds any of the eight specimens from Star Carr, and the two others fall in the upper part of the Star Carr range, as does a single distal metatarsal.

Besides the post-cranial bones, some roe deer antlers have been found among the digging implements discarded in the ditch fills, although most are from juvenile animals (see below, 8.2).

Evidence for the season of use at Hambledon

The manner in which causewayed enclosures were used has been the subject of speculation since the time of their first recognition. The interrupted banks and ditches led to the suggestion that such sites were gathering places rather than defensive enclosures, and they were often thought to be associated with large-scale cattle herding. The Neolithic farming economy was considered (albeit from virtually no evidence) as largely mobile or, at best, semi-sedentary, although, somewhat oddly, such speculations did not encourage the systematic collection of data to test these beliefs. Scant regard was given to the systematic collection of bones in earlier excavations and even less to the recovery of charred plant remains. Though there is now some improvement in data recovery, few sites have yet been excavated to an acceptable standard.

One important development in animal bone studies has been testing for occasional, seasonal, or year-round use of archaeological sites. Certain time-dependent changes in mammalian hard tissues can be related to the seasons of death. Obvious examples are the development of the dentition of wild mammals in the early months after birth and the annual growth and shedding cycle of deer antlers.

Clark (1954) used the presence of both shed and unshed antlers of red deer and elk to argue that Star Carr was occupied principally in the late winter and spring seasons. Later work on the faunal remains of this site has questioned this reasoning on several grounds (Caulfield 1978; Legge and Rowley-Conwy 1988. Firstly, almost all of the red deer antlers were worked in some way, and could better be regarded, like the flint nodules at the site, as a raw material subject to transportation and storage. Secondly, the small roe deer antlers are not worked, and their fully developed state, as found at Star Carr, is characteristic of summer deaths, and not of those occurring in the winter season. This interpretation is further supported by the presence of infantile mandibles from roe deer (*Capreolus capreolus*), red deer (*Cervus elaphus*) and elk (*Alces alces*) and of immature mandibles of the same species that show stages of tooth development that are also typical of early summer deaths.

Hambledon has also yielded large quantities of antler, and in prehistoric times this was an important material for the excavation of the ditches and other features. However, as with the case of Star Carr or with the abundant antlers found at Neolithic flint mining sites (Clutton-Brock 1984; Legge 1981a), the season at which an antler was collected needs bear little relation to the season in which it was finally used and discarded. Antler was clearly an important raw material during the Neolithic period and would have been the subject of long-distance trade and probably of long-term accumulation against future needs.

More exact tests are possible from the developing mandibles of young mammals. These have the advantage that the developmental stage of the young mandible allows a fairly precise age to be attributed to its death. In mammals a deciduous (milk) set of teeth – present from birth or soon after – is gradually replaced as the animal develops towards maturity. Wild mammals living in temperate climates usually show a birth season that is closely related to the prevailing climatic regime which, in this northerly latitude, is usually in the spring, a time which ensures good nutrition for the mother and her new offspring. Where the season of birth is known (usually drawn from modern studies of the same species) the degree of eruption and wear on the juvenile teeth can determine the time of year in which the mammal was killed within reasonably close limits. However, it has been shown above that the proportion of red and roe deer among the mammal remains at Hambledon is low, and consequently their mandibles are few. Most of the mandibles recovered at Hambledon come from the domestic species of cattle, sheep and pig. Of these, the sheep are the most likely to have shown a marked birth season.

The development of sheep mandibles

In the latitude of southern Britain domestic sheep exhibit a highly seasonal reproductive cycle (Hafez 1968). Oestrus in the female is stimulated by the shortening autumn day length and, given free access for the rams, the greater part of the births will occur in the following spring. This has obvious survival advantages for the offspring, as they are born when grass growth is good and the summer season allows an extended growth period before the young face the winter season. It should be noted that, under simple systems of husbandry, there is little opportunity to modify this natural pattern. Births may be delayed by restricting access of the rams to the females, so that conception occurs at the next oestrus cycle some 20 days later, and births can be spread out by such means. However, this presents the danger that returns may be diminished as each subsequent oestrus cycle shows reduced levels of fertility. Furthermore, delaying birth too much will

Table 8.3 The development of juvenile sheep mandibles

'Early to moderate wear' represents the states of wear in which only the tips of the cusps are worn (early wear) through to a stage where dentine is exposed, but the infundibulae are still 'open' (moderate wear)
⋆ = inferred from modern comparative material. The Soay sheep data are from a collection of modern skeletons (Holmes, Legge, and Payne in prep)

site	*sample*	*age*	*dp_4*	*M_1*
Harlow temple (IA)	12	6–8 mo	early to moderate wear	eruption to early wear
Harlow temple (Roman)	60	6–8 mo	early to moderate wear	eruption to early wear
Grime's Graves (BA)	23	6–8 mo	early to moderate wear	eruption to early wear
Chesterford temple (Roman)	118	<3 mo	early to moderate wear	not erupted
Chesterford temple (Roman)	227	6 mo	early to moderate wear	eruption to early wear
Modern Soay⋆	6	5–8 mo	early to moderate wear	eruption to early wear

result in summer births and the risk that lambs may be too small at the end of summer to survive the following winter successfully.

The question of birth season in prehistoric and Roman sheep was investigated in some detail at two temple sites; Harlow temple (Legge and Dorrington 1987) and Chesterford temple (Legge *et al* 1991; 1999). At both sites large numbers of lambs were sacrificed, but only in highly restricted age classes. At Harlow, lambs were killed at one of two discrete ages, at six months or about 18 months old. This pattern was found both in the Iron Age levels at the temple site and in the succeeding Roman temple. Various possibilities were considered to explain these findings though the preferred interpretation was that lambs then, as now, were born in spring and sacrifice took place in the autumn season, with the offering either of a 6-month or 18-month lamb, depending upon the affluence or need of the person giving sacrifice.

The pattern found at the Chesterford temple was somewhat different. Here lambs were again killed in one of only two age classes, but either as infantiles (under two months old) or as juveniles of six to eight months old. Again, the two age classes as defined by tooth eruption and wear were very narrow and were clearly separate; no jaws were found in intermediate stages of development. Together, the evidence from these temple sites shows that ritual events were closely defined by the season of the year and further supports the interpretation that both the Iron Age and Roman sheep gave birth in spring, under a natural seasonal regime, as indeed, with few exceptions, the species does now. Conversely, at residential sites with evidence for a full range of domestic activities and the residues of a farming economy, sheep mandibles will be found in *all* developmental stages from infancy to senescence, as was shown at Down Farm (Legge 1991) or Grime's Graves (Legge 1992).

In the same way the sheep mandibles and one from a roe deer provide some information about the use of Hambledon. The charred plant remains suggest that food was taken to the settlement in a partly prepared state; in other words, the site does not appear to be concerned with primary cereal production (see Jones and Legge, Ch 6). The same also applies to the sheep, in which the population structure shows a very low percentage of immature animals, lower than would be expected at a site concerned with the husbandry of this species. It would seem that, here too, selected animals were taken to the site and that the full range of age classes found in a breeding flock were not represented in the cull. In consequence, the number of subadult teeth is low and many are isolated from the jaws. Ageing has been done mainly from the deciduous third molar (dp_4), from both upper and lower jaws.

Evidence for the development of juvenile sheep mandibles is available from several sites and this can be supported both by modern comparative samples and certain other published sources (Table 8.3). Fourteen caprine dp_4 come from various Neolithic contexts across the hill. These are set out in ascending order of age in Table 8.4 using the alphabetic designations of tooth wear stage as illustrated by Grant (1982).

The small sample of caprine teeth does not point to an unequivocal, single season of use for the Hambledon enclosure. Four specimens come from caprines that were newborn or aged only a few weeks at the time of death. One specimen with erupting M_1 can be closely aged to a little less than three months and a further specimen is perhaps a month or so older still (Simonds 1854, fig 35, 84). One part mandible and six isolated dp_4 show the same wear state, equivalent to Grant's stage g or h, and these can be aged to 6–9 months. A single left mandible of the roe deer, found in the Stepleton enclosure, has moderate wear on the dp_4 and light wear on the M_1 and can be aged to about six months (Legge and Rowley-Conwy 1988). The caprine jaws aged from one year and upwards are not included in the table.

It was argued that the data from the Harlow Roman temple showed that sheep gave birth in spring in both Iron Age and Roman times, as they do now. Spring births of lambs are necessary to allow time for growth so as to ensure their best survival in the first winter. It seems probable that this was also the pattern in Neolithic times. If this is correct, the lambs of less than three months of age are evidence of a human presence during the spring at Hambledon Hill and the 6–9 month lambs would have been killed in the late summer

Table 8.4 Caprine dp_4 from Neolithic contexts, set out in ascending order of age using alphabetic designations of tooth wear stage illustrated by Grant (1982)

site	*find*	*dp_4*	*M_1*	*M_2*	*comment*
Shroton spur phase III	HH76 1904	b	–	–	almost unworn; newborn
Main enclosure phase VI	HH76 623	c	–	–	slight wear; less than 1 month of age
Inner Stepleton outwork phase V	ST79 1395	d	–	–	slight wear, less than 2 months of age
Outer Stepleton outwork phase III	ST80 2335	d	–	–	slight wear, less than 2 months of age.
Stepleton enclosure phase III	ST81 1107	f	c	–	slight wear on M_1, about 3 months of age.
Inner Stepleton outwork phase VII/a	ST78 2707	f	c	–	slight wear on M_1, about 3 months of age
Main enclosure phase VI	HH75 1837	f	d	V	moderate wear on M_1, about 3 months of age
Inner Hanford outwork phase III	HN82 344	g	f	–	6–9 months of age
Main enclosure phase VI	HH76 421	g	–	–	6–9 months of age
Stepleton enclosure phase III	ST81 437	g	–	–	6–9 months of age
B F2	HH75 215	g	–	–	6–9 months of age
Main enclosure phase IV	HH74 420	g	–	–	6–9 months of age
Stepleton enclosure phase VI	ST81 3187	g	–	–	6–9 months of age
Inner E cross-dyke phase I–II	HH75 1981	h	–	–	6–9 months age
Inner E cross-dyke phase VI	HH75 1473	h	d	b	Slight wear on M_2, 6–9 months of age

and autumn. Although the specimens are few, Table 8.4 shows that these two age groups appear to be separate and that no specimens fall between them. This implies – but certainly does not prove – a summer gap in the caprine slaughter. It would seem that the site was visited in the spring and late summer/early autumn, possibly with little or no use during the mid-summer and with no evidence for use in winter. An alternative possibility is that the few lambs of less than 3 months of age were summer births, and were killed at the same time as those aged at 6–8 months, all as autumn culls. This would have the effect of suggesting a more restricted human presence, only in the autumn.

In the light of the evidence for the prevalence of spring births in prehistoric and other early sheep, the first interpretation is preferred, in which the site was mainly used in the spring and late summer but with no evidence for winter use. However, with the small sample, and consequently limited data available, this point cannot be settled with certainty.

Conclusions

The sites on Hambledon Hill have together provided one of the larger bone samples from the British Neolithic. The bones come from a large number of different contexts and the sample has been analysed with regard to the complexity of the stratification. However, many of the resulting samples are of low numbers and not all samples from the excavated area are sufficiently large to have any numerical meaning alone. Consequently samples have been examined both from discrete contexts and 'lumped' by area, layer and/or phase. In some instances dense bone accumulations can be identified as the product of single or short-term events, and this is further explored in Part 2 (8.1.3 below).

The predominance of cattle in the fauna, and the general composition of the fauna, agree well with what is known of other causewayed enclosure sites. At Windmill Hill, Grigson (1999, table 145.3, 212) has reported that cattle form more than 63% to 71% of the three samples excavated from that site during the twentieth century. The cattle remains from Hambledon show some notable features, especially in relation to both the age profiles and to the sex ratio, both of were highly selected. The age profile is not that of a typical herd structure, which itself would be unsustainable with so few mature cows. This allows some further interpretation. These were animals that were *selected* for slaughter, but from a herd which is otherwise not represented at the site, and which must therefore have been housed elsewhere. This is a powerful argument that the cattle thus selected were taken from their living place, where the breeding herd was housed, to the site where they were killed.

A second point is also relevant to this discussion. It has been shown that the cattle were mainly killed as young adults, at ages where some, but not all, of the bones of the body would have been fused. While it is recognised that considerable post-fusion growth does take place in bones, sufficient work has been done on modern comparative samples to show that discrimination between the sexes is possible from these bones. Measurements of the earlier-fusing bones are indicative of a population that was predominantly female. The possible objections to this deduction have been set out above, but it is argued here that the findings relating to limb bone measurements from this and other sites and from the cattle horncores found at Durrington Walls does show that Neolithic cattle herds were largely made up of adult females.

The low numbers of wild animals are also characteristic of the known Neolithic sites in Britain, most of which are apparently of a ceremonial or ritual kind, in particular causewayed enclosures, henges, or often enigmatic pit fills. It would be reasonable to anticipate that domestic sites from the earlier Neolithic in Britain would be marked by high frequencies of wild mammals,

both large and small, especially those that are fur-bearing, though this is not the case. An exception to this is the appropriately named Coneybury 'anomaly', an early Neolithic pit excavated near the Coneybury Henge in Wiltshire (Maltby 1990). The fill contained a substantial number of bones, apparently the remains of one butchery event, in which about eight cattle were slaughtered. Most of the cattle were young, and six were selected for cull in the same age group of 15–26 months which predominates at Hambledon Hill. Maltby identified the cattle as domestic, which is apparent from the selected age structure of the cull.

The Coneybury pit fauna is exceptional in that the primary fills of the pit contained 450 cattle bones, and also 304 roe deer bones, a proportion that Maltby described as '... unparalleled in Britain' for the early Neolithic period (ibid, 60). The high proportion of roe deer can be partly attributed to the more complete skeletal representation: for the roe deer, most bones of the body were identified while the cattle remains were mostly distal limbs. Even so, the frequency of roe deer is striking. At the same time, this abundance is in sharp contrast to the rather low proportion of red deer bones. This would suggest that the Neolithic hunters had access to areas of woodland with rather low, dense cover, which is preferred by the small, shy roe deer while the larger red deer prefers a more open woodland habitat. It is also possible that the roe deer were taken by collaborative drives using nets or traps, as was common for this species in later times (Whitehead 1964, 214–19).

It is unlikely that the Coneybury fauna was derived from a domestic settlement. Whatever the circumstance of its deposition, however, it emphasises the nature of the Hambledon Hill fauna, lacking as it does the degree of diversity that would be anticipated in settlements of the earlier Neolithic period.

It has often been assumed that the contents of such Neolithic pits are unstructured dumps of domestic rubbish, even in the absence of direct evidence to that end. Yet the evidence of deliberate arrangement of some such pit fills also needs to be considered (Barrett *et al* 1991; Legge 1991) and the bones from the Coneybury pit are evidently related to a brief and sumptuous slaughter event. However such sites are interpreted, and as much as recent archaeological theory interweaves the 'domestic' and the 'ritual', in the writer's view the Neolithic sites as yet excavated in southern Britain do not reflect the full range of daily maintenance activities and, in consequence, show only certain aspects of the Neolithic food-producing economy. The absence of a full range of anticipated debris and wastes of domestic food processing has been used to argue for a form of 'gathering' economy within the Neolithic, apparently of a form whereby domestic animals are commonplace, wild animals are rare, and the charred remains of both wild and domestic plants are also rare. As is shown elsewhere in this volume, at least where the charred plant remains are concerned, the apparent absence of evidence is more a reflection of minuscule sampling strategies in earlier excavations. Again, the cereals at Hambledon appear to have arrived in a semi-processed state; where, therefore, were the sites at which the processing was done? It is from these sites that bone remains may say something of the actual usage of the landscape and something of its form.

The nature of the activity at Hambledon, with several phases of recutting of ditches, has resulted in most of the bone samples being fragmented and dispersed. Only locally do articulated bones survive and, in some instances, substantial parts of entire carcasses are found. This suggests that butchery involved the stripping of meat from the bones and the partial processing of bones for fat extraction at one point. How cooking was accomplished in the Neolithic remains an open question, as roasting before a fire does not necessarily result in charring to the bones. In the writer's experience with cooking sheep, pigs and cattle in this manner, by the stage that any protruding bones are burnt, the meat has been rendered inedible by charring. It seems more likely that meat was cooked off the bone, by boiling or roasting. Whether the meals were prepared and eaten communally or in smaller groups remains an open question.

The number of cattle killed at Hambledon can be approximately calculated from the surviving teeth and bones (Table 8.5). The numbers of right and left mandibular teeth agree quite well in both instances, though the post-cranial bones give rather lower figures. In the central area the post-cranial bones suggest cattle numbers at about 52–80% of those indicated by the jaws while on the Stepleton spur, where the bones evidently underwent more harsh attrition, the bones suggest 30–60% of the number of cattle indicated by the jaws. Neither site was fully excavated. In the central area only about 20% of the enclosure ditch was excavated, and a smaller proportion of the interior and the

Table 8.5 Minimum number of cattle killed at Hambledon from the identified teeth and bones

	mandible	*proximal scapula*	*distal tibia*	*astragalus*
Central area ditches and features	36 right 38 left	26 right 30 left	27 right 23 left	25 right 20 left
Stepleton spur enclosure ditches and features	24 right 25 left	17 right 15 left	5 right 7 left	9 right 10 left

other ditches. At Stepleton a larger proportion of the enclosure ditch was excavated, amounting to about 70% of the ditch fills, together with almost all of the interior and varying proportions of the outworks. Taking the higher figures of cattle numbers as indicated by the mandibular teeth, it may be suggested that about 100 individual cattle were killed in the central area, while for Stepleton the figure is lower at perhaps 35–40. There are many factors, both known and unknown, that have worked against the survival of bones at these sites. Even so, the relative abundance of cattle bones and the number of beasts indicated do give some idea of the relative activity at the two sites.

8.1.3 Results part 2. Patterns of distribution at the Hambledon sites: species and bones

There is some evidence that the bone assemblages from the Hambledon sites were the product of substantial social gatherings. This raises the question as to the extent to which the distribution of bones within the site can throw any light on the nature of these events. The bone assemblage was clearly altered by dogs and, in some cases, probably by surface weathering before burial. The pattern of survival of cattle bones has been examined in detail as the most numerous and the most robust species found at the site.

Much effort is now expended in animal bone studies on understanding the processes that were involved in the dispersal and burial of animal bones, and it has long been recognised that the density of particular bones has a marked influence on their survival. Some of these problems have been discussed in Part 1 above. This part considers the distribution of the species and bones as these were found rather than a predicted pattern of discard based upon the cull ages.

Variation between sites in the Hambledon Neolithic complex

The nature of the site and its complex stratigraphy and phasing require that the composition of the fauna is considered at a local level where this is numerically possible. However, an overall view of the assemblage in the two main enclosure ditches – the main enclosure ditch and the Stepleton enclosure ditch – will serve as a background against which local deviations from this average can be seen.

The main enclosure ditch

The segmented main enclosure ditch produced a gross sample of 2307 identified bones and 366 jaws and loose teeth. Eighteen segments of the enclosure ditch have been excavated, and the Neolithic stratigraphy has been grouped into six phases (I–VI). The bone sample is firstly considered at this level. The tabulation of the proportions of species below are based upon limb bones (1988 specimens), as vertebrae, ribs and skulls were very fragmentary and had sometimes suffered further damage in excavation, with the attendant problems of quantification (Table 8.6). The proportions of the species show some degree of variation, although it should be noted that sample numbers differ greatly between the phases. Cattle predominate in all, though the proportion of these is lowest in phases IV and V. However, the final phase VI of the ditch fill, the upper 'slots', with their dense bone concentrations,

Table 8.6 Main enclosure ditch. Post-cranial bones (per cent)

	all ditch	*phases I+II*	*phase III*	*phase IV*	*phase V*	*phase VI*
cattle	59.4	66.3	71.9	49.0	55.8	60.9
caprines	15.4	13.8	12.3	18.8	15.9	16.0
pig	22.6	15.1	12.6	29.0	27.4	20.5
red deer	1.2	0	0.8	2.2	0.9	1.0
roe deer	0.7	0	0.5	0.6	0	0.8
dog	0.7	0	1.6	0.3	0	0.8
samples (no. of specimens)	2283	86	373	357	113	1059

Table 8.7 Main enclosure ditch. Mandibles (per cent)

	all ditch	*phases I+II*	*phase III*	*phase IV*	*phase V*	*phase VI*
cattle	43.3	18.2	73.7	34.8	33.3	45.0
caprines	26.9	36.3	21.0	39.1	33.3	17.5
pig	29.8	45.5	5.3	26.1	33.3	35.0
red deer	0		0			2.5
roe deer	0		0			0
dog			0			0
samples (no. of specimens)	104	11	20	23	6	40

shows a high proportion of cattle consistent within the earlier phases of the ditch fill, suggesting that the proportions in which the species were killed remained broadly consistent throughout the construction and sedimentation of the main enclosure ditch.

In tabulating the proportions of species from dentition (Table 8.7), loose teeth have not been included in the counts except in the cases of isolated dp_4 and M_3. With this method there is a small possibility that an animal might be counted twice as, during the development of the dentition, these two teeth are both present in the jaw for a short while until the dp_4 is shed. When this tooth falls, the roots show evidence of considerable resorbtion caused by pressure from the erupting P_4 from below. Where this root damage was present on a dp_4 it was not included in the counts. Samples with very few mandibles are not separately listed in the table. The mandible counts are much more variable between the phases of the enclosure ditch. Although cattle again are the major part of the fauna from the entire sample, caprines and pig make up a larger proportion of the fauna and the latter species is the most abundant mammal in phases I+II and phase VI. It must be remembered that both mandibles and maxillae are usually highly fragmented and, in the light of other evidence that some of the bone samples were disturbed subsequent to redeposition, it seems likely that the 'entire' sample is the more accurate reflection of the overall killing pattern at the site. The relatively small samples from some phases mean that variation may be more strongly influenced by local killing events. There is also some evidence for the differential deposition of head parts. In the 'entire' sample from each phase the mandible counts indicate a higher number of individuals than do the post-cranial bones, while the reverse is found in some ditch segments. Accordingly, the bones in each ditch segment have been examined for local evidence of variation. The following discussion concentrates mainly on the bones of cattle as these are, in most instances, numerically superior and because the robust skeleton of this species has better withstood the processes of attrition that work upon the bones.

Figure 8.24 shows the cattle bone survival for three of the largest samples which come from a single layer within a ditch segment, compared with the gross sample of identified bones from the main enclosure. The subsamples come from the denser bone accumulations in the 'slots' cut into the upper ditch fills. The basal sediments, and the ditch fills, have small samples which by their nature are highly variable. Sample 1 consists of the cattle bones from the 'phased' sample, ordered in decreasing abundance. The atlas vertebra shows the highest level of survival, closely followed by the distal humerus, distal scapula and distal tibia, all of which fuse early during the skeletal maturation. Later-fusing bones such as the proximal and distal femur, proximal tibia and distal metapodials have much lower rates of survival, as has been considered elsewhere.

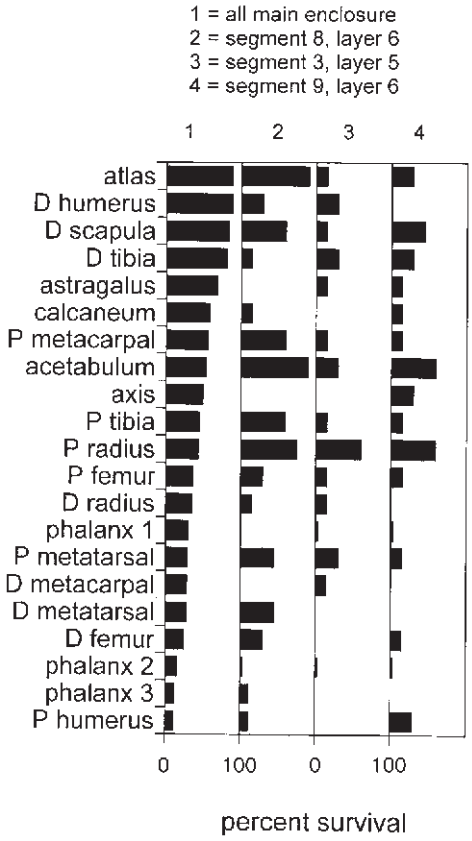

Fig 8.24 Survival of cattle bones from the three largest single-context samples compared with the gross sample from the main enclosure.

The whole sample from the enclosure ditches provides a broad pattern against which the bone representation in more local deposits can be considered. However, it must be remembered that the pattern of bone representation will reflect a wider range of events than human activity alone, as was shown in part 1 of this report.

Three of the larger cattle bone samples are compared with this pattern, each from one layer in one ditch segment. The sample from layer 6 in segment 8 is 103 bones. Some articulated bones of pig (left metacarpals III and IV) and caprine (phalanx 1–3) in this layer suggest that it was not disturbed after deposition. The cattle limb bones indicate a minimum of three animals in this layer, based on three atlas vertebrae, three right proximal tibia (one left), three right proximal metatarsals (no left), and three right proximal radius (two left). The mandibles in the same layer come from two infant cattle (dp_4 in early wear) and two adult cattle (two right and one left mandibles), giving a rather higher MNI count than do the bones. Some bones in the layer clearly come from infant cattle, though only a small proportion of these survive due to their fragility. Certain bones show significantly higher survival than is seen in the 'average' sample; in particular, the acetabulum of the pelvis, the proximal radius, proximal tibia and proximal metapodials.

Sample 3, from layer 5 in segment 3, consists of 54 identified cattle bones. It contains the bones of two, possibly three, cattle (three right proximal scapula, two each of right and left proximal radius, two left distal tibiae, two right acetabula). In this instance both the maxillary tooth rows and the mandibles also come from two adult cattle.

Sample 4 is from layer 6 in segment 9, based upon 45 identified cattle bones. The right proximal radius, left distal tibia and right acetabulum all suggest a minimum of two animals, though there are three right scapula articulations. The fragmentary mandibles also represent two animals.

The fills of the 'slots' thus appear to contain the bones of a small number of cattle, which it seems likely were killed and butchered in discrete events. The representation of skeletal parts is comparatively uniform between the samples, but with the later-fusing bones strongly represented due in particular to the age structure of the cattle cull at Hambledon.

A more detailed comparison is possible only if the samples are combined. Figure 8.24 shows the cattle bone representation in the three most prolific slots compared with the remaining parts of the fills from the ditch segments. The number of individuals (MInd) represented by jaws and by bones in these combined samples is shown in Table 8.8. Survival percentage is thus calculated upon a MInd count of 12 cattle for the 'slots' sample and 8 for the ditch fill sample. It is evident that the 'slots' sample has a better bone representation than that from the ditch fills, having as it does higher counts of the late-fusing bones, such as the axis and atlas vertebrae, and the acetabulum, proximal tibia, distal femur and distal metapodials. This supports the interpretation that the bones were accumulated as deliberate deposits in the 'slots' and were relatively little disturbed thereafter, while the bone accumulations in the fills had undergone a longer process of accumulation.

There is one bird bone from the main enclosure, the left radius of a small species of goose, from layer 8A (phase III) in segment 9. The specimen is somewhat smaller than that of the Greylag Goose, *Anser anser*. This suggests, on the basis of modern distributions, either the White-fronted Goose *Anser albifrons* or the Pink-footed Goose, *Anser brachyrhynchus*.

The inner east cross-dyke

This contained a sample of 222 identified bones, although most were from phase VI, in which cattle and pig bones were equal in number (Table 8.9). The larger sample, from phase VI, the 'slots' cut into the fill, has several examples of bones in articulation. In layer 6c in segment 4 was an articulated joint from the distal hind limb of pig, consisting of the astragalus, calcaneum and metatarsals III and IV. The distal metatarsals were fused. Paired pig metacarpals were also found in segment layer 6 of the same segment.

A large group of associated *Bos* bones in the upper fill of segment 1 appear to be from a relatively undisturbed deposit from a single event of consumption, which occurred in the early third millennium, on the evidence of a date of 2920–2700 cal BC (4255±50 BP; OxA-8893) for two articulated cattle vertebrae. The bones of two adult cattle were found, representing most elements of the skeleton. Some bones were found either as proximal or distal ends and these had been broken through the mid shaft for marrow extraction, while others were discarded whole, indicating that not all of the bones were processed in a manner to extract all available food. None of the bones were observed to show dog gnawing or burning. Only an unfused lumbar vertebra showed a single cut-mark. With these were further infantile cattle bones, and some bones of pigs and caprines. Two articulated caprine cervical vertebrae formed part of the same deposit (see below).

Table 8.8 Main enclosure. Minimum numbers of cattle in phase VI 'slots' and other ditch fills

cattle bones, phase VI 'slots'		*cattle bone, other ditch fills*	
mandibles	*post-cranial bones*	*mandibles*	*post-cranial bones*
9 right and 12 left	axis – 14	6 right and 7 left	axis – 8
	distal humerus –12		distal humerus – 8
	acetabulum – 11		scapula – 8

Table 8.9 Inner East cross-dyke

	phase I/II	*phase II*	*phase III*	*phase V*	*phase VI*	*phase VII*
cattle	2		3	9	31	46
caprine	2		5	3	24	13
pig	1		3	6	68	6
red deer					2	
roe deer						
dog		1				
totals	5	1	11	18	125	65

The cattle bones were:
Cranium: Fragmented skull and horncore. The mandible fragments come from at least three animals; 1 right M_3 is from an animal of about 30 months of age, and 2 right dp_4 come from animals of about 3 months and 24 months of age. Two left M_3 are from young adult cattle.

The axial skeleton:
Two cervical vertebrae, one fused, one unfused
5 thoracic vertebrae, all unfused
2 lumbar vertebra, unfused, one infantile
sacrum, with the centrum in process of fusion
1 right ischium of the pelvis.

The limb bones:
2 left scapulae, fused
1 complete left humerus, fused, and 1 right and 1 left proximal humeri, fused
1 complete left radius, 1 right and 1 left proximal radius, 1 right distal radius, all fused
2 right ulnae, fused
1 left distal femur, fused, and right shaft fragments
1 complete right tibia, 1 right proximal tibia, and right and left distal tibia, all fused
2 right proximal and one right distal metacarpals, fused
1 right proximal, and one right and three left distal metatarsals, fused. One infantile right metatarsal shaft and part of unfused distal articulation
1 right and 1 left astragalus
1 right navicular-cuboid
1 phalanx 1

A group of caprine bones was found in the same context and these are thought to be from one individual. These did not include head parts, but were all fused. These were: left distal humerus, right proximal radius, left proximal femur, left ischium, right proximal metacarpal and fragments, left calcaneum, 2 phalanx 1. Two associated caprine cervical vertebra were recorded as probably articulating.

The cattle post-cranial bones probably represent two animals which appear to have been deposited in a single brief event. If this was so, a prodigious quantity of meat would have been consumed, suggesting a gathering of some size. The large cattle of the Neolithic period would each have weighed 400–500 kg, so that the two cows together would be some 800 kg deadweight. About 500 kg of this would be immediately edible as meat and offal, suggesting that some hundreds of people would be present as consumers.

The bone representation, which includes much fragmented bone but also some complete limb bones, suggests that much of this was processed – and possibly consumed – in the immediate vicinity of the site. Almost all limb bones come from two animals, with only the femur and pelvic bones being under represented. Possibly these high-value joints were carried away from the kill site, though it must be remembered that these cattle were killed as young adults, as were most in the earlier episodes of activity at Hambledon, and thus before fusion of the femur and proximal tibia. This markedly reduces the likelihood of the survival of these bones owing to their lower density and a careful selection shown by dogs in taking such bones. It would seem that the site retained some social purpose, even into the later Neolithic.

The outer east cross-dyke

This ditch has a relatively small number of bones, and only in phase VI are these in any quantity (Table 8.10). The red deer bone in phase V is a right distal radius with the articulation in process of fusion. Most of the teeth in these levels were found loose. Phase I has fragments of a right caprine mandible, including an M_3 in full wear. Phase III has right and left M^3 from a young adult pig. Phase VI, with a larger sample, has two right mandible fragments of 20 months or so in age, and three left mandible fragments of cattle (two animals) again of young adults.

In phase VI, the 'slots' cut in the upper ditch fills, a good deal of the bone was deposited either in articulation or as discrete events. There is an unusual concentration of goat bones, probably of one individual. Several articulated limb segments were present in layer 4 of segment 4 (Table 8.11). Skull and rib fragments were also recorded from this context, and two adult caprine mandibles with M_3 in early wear to cusp 3,

Table 8.10 The outer east cross dyke

	phase I	*phase III*	*phase V*	*phase VI*
cattle	4	8	8	27
caprines		3	3	34
pig	1		7	12
red deer			1	
totals	5	11	19	73

Table 8.11 Outer east cross-dyke. Caprine bones in phase VI in segment 4

	recorded as goat	*recorded as caprine*
axial skeleton:	atlas, axis, 2 cervical and 1 thoracic vertebrae	
scapula		fragments only
humerus	1 right	fragments of left
radius/ulna		1 right
metacarpal	1 right	
femur		shaft fragments only
tibia	1 right	shaft fragments only
astragalus	1 right, 1 left	
calcaneum	1 right	
metatarsal	1 left	
phalanges	3 first, 1 second, 1 third	2 first
vertebrae		fragments of 2 cervical

though these were recovered only as complete sets of loose teeth. In Table 8.11 the fused, distal right metacarpal, two phalanx 1 and one phalanx 2 were recorded as an articulated group. A further sample from layer 4A, the fill of a second slot, which cut layer 4, comprised a fused right distal tibia, right astragalus and calcaneum. These too were recorded as an articulated sample. Layer 4 also contained a cattle acetabulum, ilium and pubis, which though not joined, were from the same specimen.

The inner south cross-dyke

A small sample of 63 identified post-cranial bones came from the phased Neolithic levels and bank deposits (Table 8.12). The small sample is of interest again because of the evidence for articulated segments of limbs that were deposited in the bank area and in the 'slots' cut into the upper ditch fill. In layer 2B beneath the bank was an articulated joint from a lower left hind limb of *Bos*, consisting of the distal tibia, astragalus, calcaneum, navicular-cuboid, the lateral and small cuneiform bones. There is also part of a proximal left metacarpal and right calcaneum. Parts of the vertebral column of *Bos* were found articulated in layer 9 of the ditch (phase VI/a): an axis vertebra and a cervical vertebra were articulated, as were two thoracic vertebrae and three lumbar vertebrae with a sacrum. It would appear that segments of the vertebral column were deposited while still joined by soft tissues. Jaws were highly fragmented and most teeth were loose premolars and molars, but with no third permanent molars. A group of isolated caprine teeth were probably from a right mandible, with an unerupted M_3, giving an age of 15–18 months.

Table 8.12 Inner south cross dyke. Identified bones by phase

	phase I	*phase III*	*phase VI*
cattle	6	7	27
caprines		4	3
pig	3	1	2
red deer			1
totals	9	12	33

The outer south cross-dyke

This ditch has a very small bone sample from the Neolithic levels, with only fragments of a goat skull from phase I, identified from the cross section of the horncore base. Phase II has fragments of infantile pig scapula (R), humerus (L) and radius (R), and left calcaneum, while cattle is represented by a fragmented right ilium and part ischium. The same phase has a part worn cattle M_3, again from a young adult. The possible Iron Age recut has the following numbers of identified bones: ten cattle, seven pig, two caprine and one roe deer. The composition of this group has the appearance of being derived from disturbed Neolithic fills.

The western outwork

This ditch produced only a small bone sample of 20 identified bones, 19 of which were from phase III, the chalk rubble fills. Of these, 17 are from cattle and two from pig. The bones were not disturbed after burial as in two instances conjoining fragments were found; the unfused proximal articulation and shaft of a right tibia in area 4 and lumbar vertebrae 4 and 5 in area 1. Together the two samples contain the following bones of *Bos*, some of which had been gnawed by dogs (indicated by ⋆ in the following list). The fragments were: one scapula, one humerus, two radii, one ulna, one ilium, four femora (one⋆), two tibia (one⋆), one metatarsal, one calcaneum⋆, and three vertebrae. The bones of more than one *Bos* are represented. For instance, an unfused articulation from a metacarpal cannot be from the same animal as a fused distal radius; proximal tibiae are present both fused and unfused, and the femur fragments were recorded as infantile. The few bones therefore represent parts of three individuals; one infantile, one of less than four years and one greater than that age. No mandibles or teeth were found in the basal silts or fills.

The south long barrow

The long barrow stratigraphy is divided into eight phases and the stratification requires that the bones are firstly considered by phases, as subdivision beyond this level results in very small samples in each context (Table 8.13). The largest samples come from phases III (chalk rubble ditch fills), VI (ditch 'slots') and VIII (tertiary fills and disturbance). The jaws are somewhat less fragmented than is found at most sites within the Neolithic complex, and 19 of 25 'countable' specimens have teeth remaining in their sockets (Table 8.14). The exception is the 'slots', where the pig mandibles are relatively intact but the cattle teeth were found loose.

The small sample of cattle bones in the basal silts does not present any particular feature; three fragments of right scapula, two distal right fused metacarpals, one phalanx 1 and two vertebra fragments were found. The largest sample is from the phase III ditch fills. In these, certain groups of bones were probably deposited in association. Segment 3 layer 13 has 25 cattle bones, of an unusual character. These include the following vertebrae: two atlas, two axis, three thoracic, one sacrum and two vertebral fragments. The vertebrae were all fully adult apart from one infantile thoracic vertebra. The low survival of vertebrae at the site in general makes the chance conjunction of these specimens very unlikely. Four fused distal metatarsals, two right and two left, were also found in the same segment and layer, with two phalanx 1, two phalanx 2 and one phalanx 3. The remaining bones are fragments of femur, ischium, pubis and a navicular-cuboid. This context also produced fragments of a radius and tibia of roe deer, both left side. In layer 19 of segment 1 two complete, right-hand-side

Table 8.13 Long barrow. Identified bones by phase

	phases I and II	*phase III*	*phase IV*	*phase V*	*phase VI*	*VI/I and II*	*phase VII*	*phase VIII*	*totals*
cattle	8	67	14	15	62	7	4	32	209
caprine		16	1	2	15	3	2	7	46
pig	2	13	4	4	7		4	13	47
red deer		2			2			1	5
roe deer		2							2
dog			1						1
totals	10	100	20	21	86	10	10	53	310

Table 8.14 Long barrow: identified mandibles by phase

	phase I	*phase III*	*phase IV*	*phase V*	*phase VI*	*inter slot silts*	*Phase VII*	*VIII –*	*totals*
cattle		3	1	1	5		1		11
caprine		2							2
pig		2	1		3				6
red deer									
roe deer									
dog									
totals		7	2	1	8		1		19

metacarpals were found together (HH771199). The measurements of these show that they were derived from large cows (see above).

The small bone sample from the phase IV deposit in the butt of the south-west ditch included 14 cattle bones, of which five were vertebrae, plus fragments of femur, metacarpal, rib, two mandibular hinges and two phalanges. Cattle bone in the 'slow silts' included a large proximal right metacarpal and a metatarsal, both identified as *Bos primigenius*. Further fragmentary *Bos primigenius* bones were identified from the 'slots'. The articulation of a left scapula, and a right distal humerus, though unfused, were identified as wild cattle and fragments of femur and tibia shaft were referred to that species. The slots in both ditches again have unusual quantities of associated vertebrae. Layer 18 in section IV in the north-west of segment 1 contained one cervical vertebra, one thoracic, three lumbar and fragments of possibly eight further vertebrae, as well as a right and a left fused acetabulum with ilium and pubis fragments, two left proximal radius and one scapula, two fused right distal tibia, an infantile right humerus shaft fragment and two phalanx 2. The same layer in section VI had one thoracic vertebra and eleven fragments of thoracic vertebra with right and left scapula, right and left proximal radius, left acetabulum and ischium, a right fused proximal femur, a left proximal metatarsal and skull and rib fragments. In the phase III fills, one pig and three cattle bones were gnawed by dogs, while this was not seen on any bones from the 'slots'. Two bones were charred; one bone from the grey pit and one from the slots.

Certain contexts and features of the long barrow present unusual associations of bones. These are often paired or in multiples of the same bone and significant numbers of vertebrae were also identified. It is probable that better preservation of the fragmentary specimens would have shown these to have been deposited in articulation. Other bones besides the vertebrae, such as the pelvis and the femur, also have very high meat values and it might be inferred that such joints were being preferentially deposited. However, this does not appear to have been the case. Figure 8.25 shows the bone representation for the cattle bones in phases III (chalk rubble fills) and VI (slots), compared with the whole barrow sample and that from the main enclosure ditch. As is shown above, bone representation in the main enclosure declines in relation to a complex interaction of bone density and bone fusion age, with the latter having a profound effect upon bone survival due to the particular age classes selected for slaughter at the site. Phases III and VI of the long barrow obviously have a less complete pattern of bone representation, largely due to the small sample sizes. It is also evident that certain bones are well represented in phases II and VI, in particular the scapula articulation, distal humerus, acetabulum, distal tibia, distal metacarpal and distal metatarsal, and in phase VI the proximal radius. These are all bones that fuse early, and would have been fused in most of the cattle killed at Hambledon. It would appear that the same processes of attrition had worked upon the bones deposited at the barrow as in most of the remaining areas of the site.

Features in the central area

The features were mainly rather shallow pits, truncated by modern ploughing. Ninety-three identified bones and 44 jaws and loose teeth come from 26 features, among which cattle bones predominate (Fig

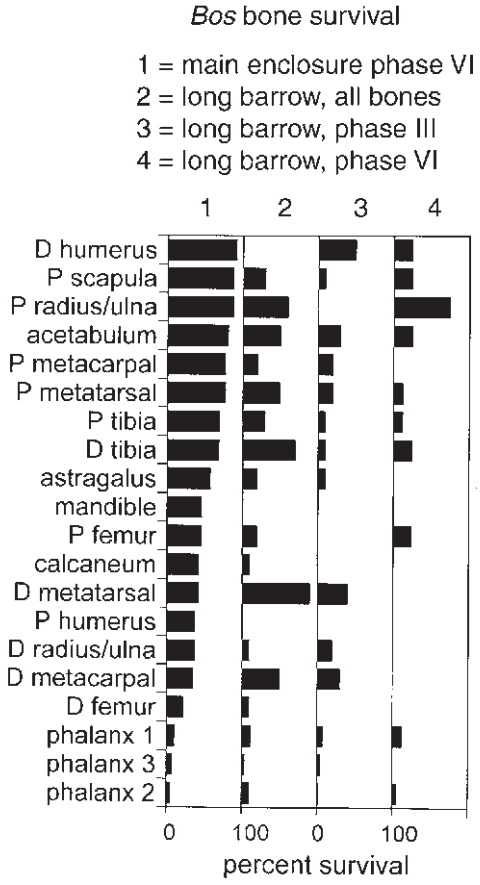

Fig 8.25 Survival of cattle bones from the entire south long barrow sample and phases III and VI of the barrow compared with those of phase VI (the slots) from the main enclosure.

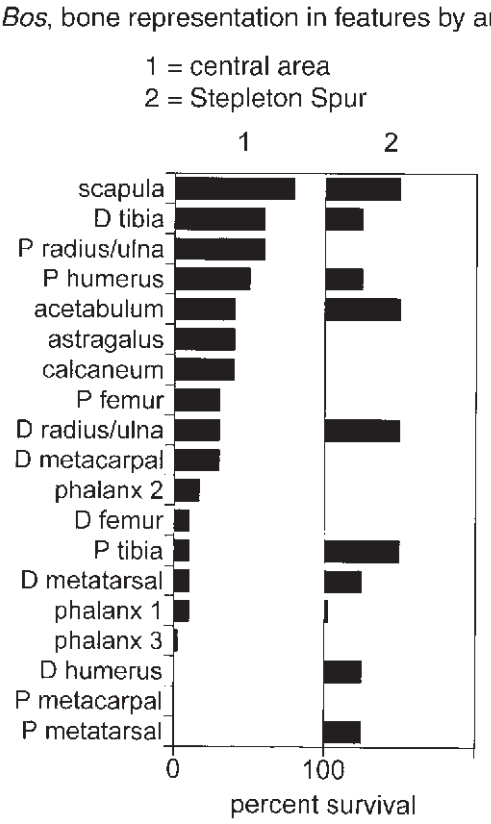

Fig 8.26 Cattle bone survival in the discrete features of the central area and Stepleton spur.

8.26). Skulls and mandibles are very fragmented and most identifications of cranial parts are of loose teeth. These need represent no more than four pig, three cattle and two caprines. Most of the features have few bones:

P2 F14 Of the 13 identified bones from this feature, seven are fragments of distal limb (cattle five and caprine two).

N F 1 contained 11 identified bones, five of which are fragments from at least three cattle ribs.

N F 7i/ii contained only a single pig incisor, and the mandibular ramus of a dog. A more diverse fauna is represented by the post-cranial bones. Pig bones were mainly shaft fragments of scapula (right and left), right radius and ulna, and the right ilium and ischium of the pelvis. A right radius fragment was referred to red deer. Cattle bones are again mainly from the hind limb; right ilium and left ischium, right distal fused femur, right distal fused tibia and shaft fragments (both right and left), and a part axis vertebra, one thoracic vertebra, a complete sacrum and five rib fragments. A fragment of left humerus shaft was identified as caprine.

N F11, layer 3. This feature contained three right M_3 of pig. Two of these were loose and in early wear on the first cusp and one was erupting through the bone of a mandible fragment. These represent three young adult animals, aged about 16–18 months. Only an isolated cattle molar represented any other species.

Limb bones of pigs comprised a distal fused tibia and two fragmentary vertebrae in process of fusion. Cattle bones were relatively more common, and comprise parts of two cattle hind limbs and some fragments of forelimb. A right innominate (ilium and ischium) was found in process of fusion, together with two unfused proximal femoral articulations, shaft fragments of tibia, two left astragali, a navicular-cuboid, two phalanx 1 and fragments of lumbar and other vertebrae. The front limb was represented by a very fragmented right scapula, right humerus, and right ulna. A left immature cattle radius was also present. Only three caprine bones were found; a fused left distal tibia, right astragalus and a fused lumbar vertebra.

Figure 8.27 shows the cattle bone representation in features N F11, layer 3 and N F7i/ii, layer 3, compared with the bone representation in all features that were excavated in the central area. In both features the front limb is represented by scapula and radius-ulna, though the humerus is absent from N F11 L3. There are, though, few metacarpal bones. The axial skeleton is quite well represented by pelvic bones, recorded here as 'acetabulum' and the hind limb by the proximal

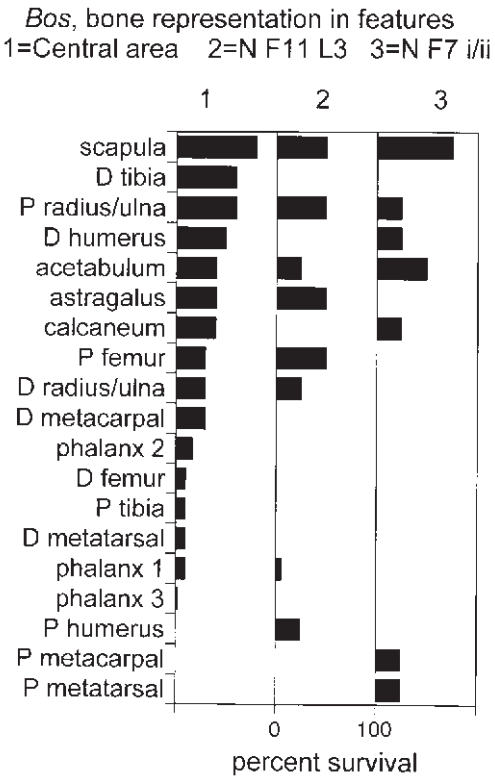

Fig 8.27 Cattle bone survival in a combined sample from all features in the central area compared with the two largest samples from features there.

Table 8.15 Selected central area features. Totals of cattle limb and pelvic bones and totals of pelvis fragments among them

feature	*no. of identified cattle limb and pelvic bones*	*no. of* Bos *pelvic fragments*
B F2	3	1
N F1 layer 3	3	1
N F6 layer 3	4	0
N F7i/ii layer 3	14	2
N F7iii layer 3	12	4
N F10 layer 3	3	2
N F11 layer 3	19	4
N F25	11	4

femur in N F11 L3. Pelvic bones are highly prone to fragmentation but, bearing this in mind, there are substantial fragments, and these form a rather high proportion of the identified bones (Table 8.15). This tabulation excludes ribs and vertebrae which, because of their fragmented state, are problematic to quantify. Of 71 identified cattle limb and pelvic bones, nearly one-third – 18 fragments – are from the pelvis. The pelvis is of high meat value and, although the associated femur is less common, the narrow age range of slaughter for the cattle would mean that most of these were discarded unfused with a consequent low probability of survival. The presence of the femur in N F11, and the general scatter of the somewhat denser pelvic bones does suggest that discrete events of consumption may be represented by the larger pit fills. On the other hand, 15 of the pits have less than 10 identified bones in each and some contain a large proportion of limb extremities. While such body parts are of obvious utility, there is no pattern common to all pits.

The Shroton spur outwork

There is a sample of only 143 identified post-cranial bones, 100 of which come from the phased Neolithic levels (Table 8.16). The basal silts of segment 1 contained the partial skeleton of a dog (HH76 2864), consisting of the skull and mandible, with bones of the left forelimb, consisting of humerus, scapula, radius and ulna, carpals, with metacarpals I–IV. A few bones from the right forelimb were found, consisting of one metacarpal IV and three of the carpal bones. Beside the dog were the bones of two distal sheep limbs, presumably deposited at one time: right and left proximal metacarpals, right and left distal metacarpals, one complete left metatarsal, one phalanx 1, two phalanx 2 and two phalanx 3. The phase III fills of segment 2 had associated pig bones – an immature radius and ulna, found together, and phase II in the same segment 2, layer 8, had pig metacarpals IV and V, also found in association. A second articulated dog (HH76 1608) was exposed in a phase III deposit in the south face of the excavation. Only some vertebrae and ribs were recovered.

Teeth and jaws:
Phase I in segment 1: a left mandible from the semi-complete dog, with adult teeth P_2 to M_2 with little wear.
Phase III in segment 3: pig dp_4 with heavy wear, about 10–12 months of age. Cattle: left M_3 with slight wear, aged about 26 months, right mandible, aged about 28 months, and right mandible aged about 3–5 years. Caprine: right dp_4 infantile, and, in segment 2, left M^3, about 24 months.

The Stepleton enclosure ditch

The Stepleton enclosure ditch has produced a sample of 598 identifiable bones from the phased Neolithic deposits and 37 mandibles and loose teeth. The proportions of the species are shown in Table 8.17. Table 8.18 shows the composition of mandibles alone. Besides those listed in the table, there were an immature dog mandible found in phase I, an adult right dog mandible in phase III and the fragmentary cranium of an immature dog in phase IV.

The most striking feature of the faunal assemblage is that the different tabulations, based firstly upon the identified post-cranial bones and then on the number of jaws, show certain divergences. The proportions of species show a good deal of variation from one site to another, with cattle forming a smaller proportion of the bones than is found in the various phases of the

Table 8.16 Shroton spur. Identified bones by phase

		phase I+II	*phase III*	*phase V*	*phase VIII/a*	*totals*
cattle	3	4	30 (44.8%)	2	23 (53.5%)	62
caprine		15	11 (16.4%)	1	8 (18.6%)	35
pig		1	22 (32.8%)	2	9 (20.9%)	34
red deer					3 (7.0%)	3
dog			4 (6.0%)			4
totals	3	20	67	5	43	

Table 8.17 Stepleton enclosure ditch 1: post-cranial bones (per cent)

	all ditch	*phase III*	*phase IV*	*phase V*	*phase VI*	*phase VIII/a*
cattle	54.7	50.4	67.4	46.3	56.3	53.2
caprines	14.4	23.6	12.2	4.9	11.3	14.6
pig	24.1	19.3	14.3	43.9	26.3	24.4
red deer	4.8	6.7	4.1	4.9	1.9	6.7
roe deer	1.0	0	2.0	0	1.4	0.6
dog	1.0	0	0	0	2.8	0
sample	598	119	49	41	213	164

Table 8.18 Stepleton enclosure. Mandibles (per cent)

* = isolated upper tooth only

	all ditch	*phase VI*	*phase VIII/a*
cattle	35.1	50.0	36.4
caprines	13.5	10.0	18.2
pig	40.5	30.0	27.3
red deer	2.7	0	9.0
roe deer	*	0	0
dog	8.1	0	9.0
sample	37	10	11

Table 8.19 Middle Stepleton outwork. Bone by phase

phase	*pig*	*roe deer*	*red deer*	*cattle*	*caprine*	*totals*
I	1	0	1	6	3	**11**
II	2	0	0	5	2	**9**
III	7	1	2	13	9	**32**
V	3	1	0	8	3	**15**
Misc and unstratified	1	0	0	0	0	**1**
totals	14	2	3	32	17	

main enclosure ditch, while pig bones are significantly more common. Caprine bones are variable from phase to phase. Red deer make up 6.7% of the identified bones in the ditch fills, the highest proportion found in the Neolithic complex. Even so, no more than one animal needs be represented. All bones in which this state could be determined were fused; right and left scapulae, left proximal and left distal metatarsals, fragments of left tibia shaft, a left navicular-cuboid and right calcaneum (the latter having the appearance of being from an aged animal), sacrum and a single phalanx 1. Interestingly, the right scapula is pierced, apparently by a projectile.

Few articulated bones were found. In the phase III fills a left distal tibia and astragalus of *Bos* appeared to articulate well (segment 15, U10, layer 3B), and in the 'midden like' phase VI deposits (segment 3, U9D, layer 2) conjoining parts of a right innominate, and a tibia and patella probably came from a dog, most of which remained in articulation at the interface of the phase III and phase VI fills. In the supposed old ploughsoils a right distal cattle tibia and right astragalus articulate well (segment 2, U16B, layer 1).

The middle Stepleton outwork (Ditch 3)

This provided a small sample of identified bones, teeth and jaws (Table 8.19). In spite of the small sample, several groups of bones were found in articulation. In the basal silts of the ditch a *Bos* right astragalus and calcaneum were found in a group of bone at the interface of the phase II and phase III silts (segment 5, layer 4A, phase I) and a *Bos* phalanx 1 and phalanx 2 in the phase I–II silts (segment 11 layer 5). The phase III fills contained part of an immature caprine (segment 5 layer 3A) consisting of a scapula, humerus and radius. Also in phase III (segment 6 layer 4), several *Bos* vertebrae were found in articulation, including two well-preserved and five fragmentary cervical and lumbar vertebrae (ST79 2152). One of these, identified as C5, was heavily diseased.

The dentition from the ditch is again very fragmentary. Phase II has two left maxillary dp^4 from pigs aged

Table 8.20 Inner Stepleton outwork. Bone by phase

phase	*cattle*	*caprine*	*pig*	*red deer*	*roe deer*	***totals***
I	5		3			8
II	4	2	1			7
III	74 (55.2)	16 (11.9)	30 (22.5)	12 (8.9)	2 (1.5)	134
V	55 (43.3)	27 (21.2)	33 (26.0)	7 (5.5)	5 (4.0)	127
VII	53 (45.7)	22 (19.0)	27 (23.2)	8 (6.9)	6 (5.2)	116
VIII/a	53 (45.7)	28 (24.1)	23 (19.8)	9 (7.8)	3 (2.6)	116
Totals	244	95	117	36	16	

Table 8.21 Inner Stepleton outwork. Mandibles

phase	*pig*	*roe deer*	*red deer*	*cattle*	*caprine*	*totals*
II	1			1		2
III	2	1	0	3	1	7
V	2	1	0	3	2	8
VII	2	1	1 tooth	3	2	8
VIII/a	2	0	1 tooth	3	2	7
totals	9	3		13	7	

Table 8.22 Inner Stepleton outwork. Survival of bones in relation to jaws and loose teeth, based on that part of the sample summarised in Tables 8.39–40

	bones	*jaws*	*ratio bones:jaws*
cattle	244	13	23.5:1
caprine	95	7	13.6:1
pig	117	9	13.0:1
roe deer	16	3	5.3:1

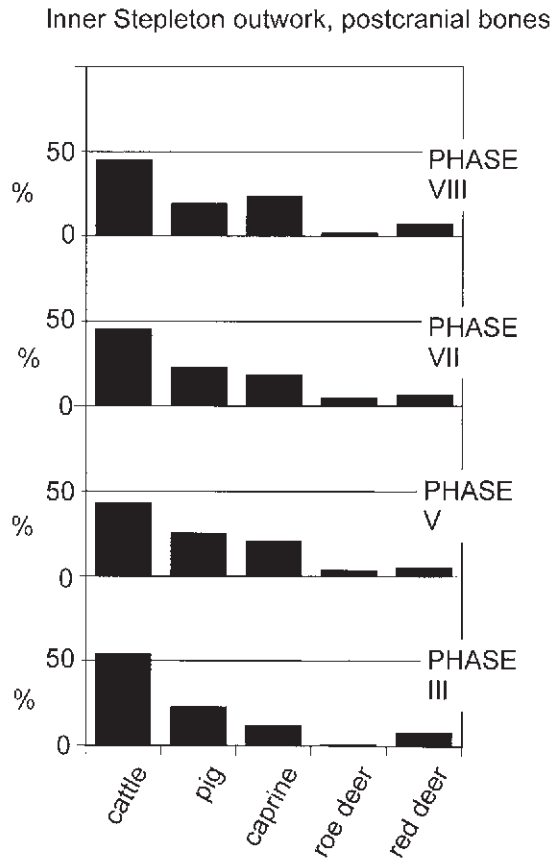

Fig 8.28 Species composition from post-cranial bones only from the inner Stepleton outwork.

a few weeks, and a left M^3 from a young adult. Phase III has two left dp^4, again from pigs aged only a few weeks, and the left mandibular dp_4 from a young lamb. Phase V has a left mandibular tooth row (M_1–M_3) of a pig, with unworn M_3, aged about 18 months. The same phase has a mandibular tooth row (M_2 and M_3) of *Bos*, aged 24–30 months.

The inner Stepleton outwork (Ditch 2)

The ditch provided a sample of 508 identified post-cranial bones from six phases (Table 8.20). Only four of these have more than 100 post-cranial bones. The distribution of the five most common species, based only on the numbers of identified specimens, is quite uniform (Fig 8.28). The mandibles from all phases are highly fragmented, and most teeth are found loose. Consequently the calculation of the number each species represented is based upon upper or lower teeth, both loose and in jaws, by counting third deciduous and third permanent molars (Table 8.21). The survival of bones in relation to jaws and loose teeth is shown in Table 8.22. This shows that the bones and jaws have undergone a good deal of attrition, and that the bones are more fragmented and preservation is generally poorer here than in the central area. The best survival of bones is from the cattle, as the most robust species, with caprines and pigs showing a much lower ratio. The low survival of roe deer bones might in part result from differential transportation. The low number of pig bones surviving relative to the jaws is related to the early ages at which most pigs were killed so that a large proportion of the pig bones were discarded as infantile bones or in the unfused state.

In spite of the evidence of a high level of attrition shown by the ratios of identified bones to mandibles, several groups of articulated bones were found in the following contexts:

Phase III, segment 6, C2, layer 4
Several cattle vertebrae, found in articulation (ST 79 601)

Phase V (segment 5, C11, layer 3B)
A concentration of bones suggests that the post-cranial bones of two sheep and some articulated beaver bones were deposited at the same time. The sheep bones consist of: one left scapula, two right and two left distal humerus (all fused), two right and 1 left proximal radius, one right and one left proximal ulna, two right femur shaft, two left distal tibia (both fused), left patella, left proximal metacarpal, five fragmentary vertebrae, and rib fragments. In this same context was part of the right hind limb of a beaver, comprising the innominate, femur shaft, tibia shaft (unfused proximal) a metatarsal IV, and astragalus and calcaneum. No cranial parts of the sheep were found, but a single upper beaver tooth was recorded from the same context.

Phase V (segment 8, layer 3)
Right and left fused distal humeri of roe deer, found together and recorded as a probable pair from the same animal. The right scapula, right proximal radius and a part metatarsal shaft were also present in the same layer of the same segment. In segment 6 there was a part right femur shaft of roe deer. The proximity of the specimens, and the general rarity of roe deer at the site, suggests that these may all be parts of the same individual.

Phase VIII/a (segment 3, layer 3)
A concentration of foot bones from pig were found, consisting of right and left metatarsals III, metacarpal IV and phalanx 1 and phalanx 2.

Phase VII/a
This phase was recorded in excavation as having the character of a midden. However, the bones present no particular features other than being highly fragmented. None were recorded as articulating.

Other species from the Inner Stepleton outwork
Dog: a left tibia shaft, phase III and a right tibia shaft, phase V
Fox: an axis vertebra, phase III, and a right ulna, phase V
Frog: a partial skeleton in phase III
Bird: two bird bones were found together in layer 6 in cutting 5 (both ST79 1027):

1. Proximal right coracoid, articular surface damaged. Due to this damage, on both form and size this fits well with the Carrion Crow *Corvus corone corone* or possibly the Rook *Corvus frugilegus.*
2. Shaft fragment of proximal left humerus, articulation missing. This resembles that of the Great Crested Grebe *Podiceps cristatus* though the identification is tentative.

Rabbit: bones were found in phases V (one bone), VII (seven bones), VII/a (one bone and most of one skeleton). These bones are regarded as intrusive.

The proportions of the larger mammals found in the inner Stepleton outwork do not differ from the rest of the site with the exception that red and roe deer are rather more common. The age profile of the cattle shows a rather greater spread in the age classes and increased younger animals in the cull. Of 17 part mandibles and loose teeth that can be placed into age classes, six are from very young calves, six come from 6–26 month animals, and five are older than 36 months.

The outer Stepleton outwork (ditch 4)

This ditch produced only a small sample of 50 identified bones (Table 8.23). Three cattle bones showed significant dog gnawing (two in phase III, one in phase VII/a) and a cow horncore in phase III showed rodent gnawing. The caprine bones in phase I (segment 7, layer 4) were a left and right distal tibia, with a right astragalus and navicular cuboid. The right-hand bones appeared to have been deposited in articulation.

The rabbit bones in phase VIII/a (Site 1B, segment 7, layer 2) were found as a partial skeleton and are regarded as intrusive.

Few mandibles were recovered from this ditch. A *Bos* left M^3 in phase VIII/a is from a young adult and in superficial contexts an M_3 came from an animal of 8 years or more in age. In phase I and phase VIII/a isolated dp_4 were from pigs of a few weeks of age. In phase I was a right maxilla with the dentition P^4– M^3 is from a pig aged between 24 and 30 months. Caprines and red deer are represented only by isolated teeth.

Table 8.23 The outer Stepleton outwork. Bone by phase

phase	*pig*	*roe deer*	*red deer*	*cattle*	*caprine*	*totals*
II	0	0	0	1	6	7
III	2	0	1	23	3	29
VII/a	0	0	0	2	0	2
VIII/a	0	0	1	0	2	1
Misc and unstratified	1	0	1	1	0	3
totals	3	0	3	27	11	

Stepleton features

Skulls and mandibles are also very fragmented in these features, mainly represented by loose teeth. Reduced to a minimum number, there would be no more than two pigs, two cattle and one caprine. A single roe deer upper molar was identified. The 118 identified bones were predominantly those of pig. The identified specimens are distributed among 25 features, with most from 4B F137 (four pig, nine cattle, nine caprine) and 4B F178 (24 pig, 6 cattle, 12 caprine). The remaining features have five or less identified bones in each. One bone each of red deer (metatarsal fragment, 2A F182) and roe deer (metatarsal, 4B F130) were identified. ST82 F39, which contained a large amount of charred

grain, produced only an unfused pig metatarsal and a proximal fused tibia of *Bos*. The largest sample of any one species – the 24 pig bones from feature 4B F178 – are predominantly foot bones, plus four fragments of pelvis and five from bones of the font limb.

Inner Hanford outwork

A sample of only 141 post-cranial bones was found in this ditch (Table 8.24). The cattle bones in the basal silts (phase I) were fragments of radius and ulna, two right distal metacarpals, one fused and one unfused, a right innominate, an axis vertebra, lumbar vertebra and sacrum, and horncore and rib fragments. No articulated groups of bone were identified.

Teeth and jaws:
phase I: *Bos* – left maxilla of young adult
phase III: sheep – right mandible of adult and left mandible of immature
phase III: pig – right mandible, 24 month old.
phase VII/1: pig – right dp^4, a few months old
phase VII/a: pig – a left maxilla, about 6 months old.

Outer Hanford outwork

This ditch has a small sample of bones and jaws, though with some large segments of articulated or associated *Bos* skeleton (Table 8.25).

Very few jaws and teeth were found. Phase I had two right mandibles of pig, one aged about 4 months and the second 12 months. In phase VII/1 was the left mandible of a pig of about 24 months.

In the phase I (segment 3, U1, layer 5, find HN82 153) were seven cattle lumbar vertebrae and a sacrum, which were discarded in articulation. A further group of associated bones from the same context (find HN82 154) consisted of a complete right innominate and fragments of the left, with a complete left tibia. All bones were fully fused. It is very probable that both groups of bones were derived from the butchery of the same animal. From the same segment but in layer 5A and from farther north, were two thoracic and two lumbar *Bos* vertebrae, probably originally articulated. The two lumbar vertebrae were fused together by pathological exostoses. In the basal silts of segment 2 (phase I, U7, layer 5C) was part of an articulated hind limb of pig, comprising the astragalus, calcaneum, the navicular and the cuboid.

'Flint mines'

The bone sample from these features is unusual in two respects. Firstly, the fauna has greater diversity than is found elsewhere on the site and, secondly, the majority of the bones and jaws from the larger mammals, with the exception of the cattle, are infantile and juvenile (Table 8.26). It is probable that at least some of the immature animals were deposited as whole carcasses. Some of the bones are scattered and fragmented but piglet bones in layer 2 of F644 come from two newborn individuals that were deposited entire. An infantile mandible and other pig bones in layer 3 of F601 may also represent one individual, as may caprine bones in layer 2 of F644. Evidence for dog gnawing on the caprine tibia suggests that a whole or part carcass may have been partially destroyed. A fused right distal humerus in layer 2 of F618, though slightly eroded and the measurement consequently estimated, is from a male of *Bos primigenius*. Badger bones in layer 1 of F601 come from a right forelimb (humerus and radius/ulna), with also a fused, left distal tibia. Roe deer bones in layer 2 of F644 are mainly those of the distal hind limb, right and left metatarsal fragments and phalanges. Red deer are represented by right and left metatarsals and a right metacarpal plus metacarpal

Table 8.24 Inner Hanford outwork. Bone by phase

	phase I	*phase III*	*phase VII/1*	*phase VII/a–b*
cattle	18	36	13	31
caprine	2	10	2	3
pig	1	14	8	5
red deer		1		1
roe deer				1
dog		1		
totals	21	62	23	41

Table 8.25 Outer Hanford outwork. Bone by phase

	phase I	*phase III*	*phase VII/1*	*phase VII/a*	*totals*
cattle	24	6	13	3	46
caprine	4	1	3		8
pig	14	4	2	1	21
red deer			1		1
roe deer			1		1
totals	42	11	20	4	

Table 8.26 'Flint mines'. Identified post-cranial bones

* infantile individuals

species	*post-cranial bones*
dog	14
pig	16 + 2 individuals*, ?3rd individual*
roe deer	16
red deer	6
cattle (domestic)	42
caprines	26 + ?1 individual*
badger	10
fox	9
otter	1
hare	3
squirrel	1
rabbit	2
mole	6

fragment in layer 2 of F618, and, in layer 3 of F601, by a fused distal metacarpal and metatarsal fragment. In layer 2 of F644 was the proximal left ulna of a medium-sized duck, with the articulation damaged. This specimen is possibly from the Mallard *Anas platyrhynchos* or the Widgeon, *Anas penelope*.

The tooth rows are also largely those of immature and even neonatal animals:

Pig
Two left mandibles, newborn. Right mandible, aged 6 months. Three isolated milk teeth are probably derived from these specimens. The mandibles with two skeletons of piglets, the mandibles showing these to be newborn. Left mandible, newborn. Right mandible, about three months of age. Loose upper and lower deciduous teeth probably come from these specimens.

Cattle
Four upper permanent premolars and one M^1 are fully adult. Two loose upper and lower molars, adult. Upper left maxilla, from an aged specimen with permanent molars in heavy wear.

Caprines
A right mandible aged 3–4 months. Left maxilla, about 3–4 months of age and unfused shaft of left ulna, left femur, right tibia (gnawed distal), left metacarpal and metapodial fragments, phalanges 1 and 2. In addition, fragmentary right and left maxillae, about 18 months of age. Right and left mandibles, probably paired, aged 2–3 months.

Dog
Left mandible with unworn milk dentition.

Fox
Right and left mandibles and a fragmentary right maxilla. All infantile. Skull and mandible fragments, adult. A fragmentary skull, with adult but unworn dentition.

Roe deer
A left mandible with slightly worn premolars; about one year of age. Right and left maxilla fragments, with lightly worn dp^4; aged a few weeks only.

In addition to the above, the fills of these features contained large numbers of amphibian bones, both of frogs (*Rana* sp) and toad (*Bufo* sp). It is probable that these derive from entire skeletons as most of the bones were unbroken and were found in local concentrations. Consequently these are regarded as bone accumulations from deaths during hibernation. Smith (1954) records that toads often hibernate in places far removed from their spawning places, and frequently use the burrows of other mammals as places of concealment. A toad had apparently (and unsuccessfully) hibernated in the post-orbital fossa of a cow skull from a Neolithic pit at Down Farm in Dorset (Legge 1991). The frog prefers to hibernate in or near water, though Smith (1954) reports that the hibernation sites may on occasions be at some distance from water.

Modern skeletons of the common toad *Bufo bufo* and the common frog *Rana temporaria* were used for comparison and, from the similarity of the comparative and prehistoric specimens, it is probable that these species were the common forms found in the prehistoric levels. The bones were, in most cases, unbroken, showing that these species were not food items derived from the fox or badger. They amounted to at least 59 individuals, mainly of *Bufo*.

The bones of at least some of the smaller animals are thus likely to be intrusive, and this may also explain the presence of the fox and badger bones, mammals also likely to have burrowed into the sediments. The hare and squirrel do not burrow and the otter would be unlikely to live in the hilltop setting. However, a modern fox skeleton in the author's reference collection was a stray find during archaeological excavations in Cambridgeshire, the animal having died in its burrow. Careful retrieval showed the stomach contents to have been five hare feet. Possibly the few bones of the hare, beaver and squirrel were food remains carried by foxes or other meat-eating mammals. Rabbit bones have been found in many of the superficial sediments at Hambledon Hill and there is little evidence that the species was present in Britain in prehistoric times. The pit contents are likely therefore to be a mixture of adventitious and discarded bones, and not the product only of human intent, especially as the pits seem to have been backfilled. Possibly the loose fill proved attractive for borrowing mammals, which occasionally died there. The infantile pig and caprine specimens might be regarded as scavenged carcasses, carried to den areas by the carnivorous mammals, though the infrequent evidence for gnawing argues against this. The original purpose of pits can seldom be inferred from the contents, which are usually secondary to the primary purpose. This seems to be the case here, where an unusual diversity of species arose from a combination of circumstances.

8.1.4 Conclusions

The fills of ditches and features at Hambledon present a variety of conditions for both deposition and preservation of the bones. The bones have been examined in detail in relation to the complex stratification of the site. Although the bone sample is large, division into the many segments and phases of the ditch fills means that some samples are of low numbers. For example, the main enclosure ditch has 18 excavated segments and six main phases of sedimentation within these. A sample of 2283 identified bones, divided between 108 contexts, gives samples that show a high degree of variation in the species found. As has been shown, the combined sample – whether from the entire Neolithic ditch fill, or from the different phases into which this

has been subdivided – shows that cattle predominate in the fauna. When examined at the level of individual contexts, pig bones often equal or exceed those of cattle. This is commonly found in the analysis of archaeological samples where variability can be closely related to sample size. In the case of the main enclosure ditch fills, the variability may well be real and a reflection of the periodic human activities there, though in most instances the bone samples show variable degrees of attrition, which has been further clouded by the multiple recutting and the inevitable incorporation of reworked bones back into the sediments.

The samples from the Stepleton ditches are smaller than those from the main enclosure, though the comparison of the whole samples from both ditches suggests that the faunas were very similar. It is striking that at both sites the post-cranial bones show a predominance of cattle at 55–60% and pig bones at 23–24%, while comparison of the mandibles shows pigs to have been rather more common than cattle on the Stepleton spur, at 40.5% in the Stepleton enclosure ditch against 30% in the main enclosure ditch. It is quite possible that the mandibles give a better reflection than the post-cranial bones of the proportions in which the species were killed. A large proportion of pigs were killed when very young, and almost all were under two years of age. It has been shown that bone survival in this species, in relation to the mandible count, is little more than half that found for the cattle bones. However, although more pigs may have been killed than cattle at certain times and places at the site, it must be remembered that these were mostly small animals while the cattle were large and in early maturity. A further difference which appears to be genuine is the consistently higher proportion of red deer bones at the Stepleton enclosure.

The uppermost ditch recuts in the central area, designated as the 'slots', do reveal discrete events of slaughter and consumption, often with evidence that several cattle were killed at one time. In these features the bone representation tends to be more complete and the bones are commonly in larger fragments and found in articulation. Many of these bone deposits suggest that the meat was removed from the bones by stripping away the muscle groups and the bones then discarded with relatively little further processing. This, combined with the evidence for the highly selected ages of the cull cattle, supports the interpretation that events of a particular character were associated with the use of the site, and that part of these activities was the consumption of meat in large quantities.

Given that the bird bones are so few in number, little can be said about their significance. The specimens of duck and goose were likely to have been eaten, but also would have provided feathers for the flights of arrows, among other purposes. The evident abundance of carrion at the site – as both human and non-human remains – would have provided considerable encouragement to both rooks and crows to visit. Both species were used as food in the past, even, if rarely, into recent times. The gathering of young rooks was the more favoured due to the colony nesting habit of the species. However, the meat is regarded as '… dry and coarse' (Davidson 1999).

8.1.5 Appendix: measurements

Dog

The dog bones from Hambledon Hill are, in the main, scattered and fragmentary. The measurements that could be taken show that the dogs were of the comparatively uniform Neolithic type as described by Harcourt (1974). The factors used by Harcourt to calculate shoulder height from limb bone length in dogs are used here (ibid, 154).

The dog skeleton from segment 3 of the Stepleton enclosure has complete humerus and radius from both sides and a complete left tibia. It seems very probable that Harcourt's 'total length' measurement for these bones is the same as the measurement GL after Dreisch (1976). Using Harcourt's factors for these bones, the stature of this dog is calculated from the humerus at 0.46 m and at 0.45 m from both the radius and tibia. Another complete humerus, found with a few cranial and vertebral fragments, is from a slightly smaller dog and in this instance the shoulder height is calculated as 0.41 m. These fall within, or close, to the size range calculated from long bone measurements given by Harcourt (1974, 157, table 1, and multiplication factors, 154).

Cranial measurements from Hambledon Hill are few, but those available again agree closely with Harcourt's data. One complete maxillary tooth row (P^2 to M^2) has a length measurement of 59.9 mm. This is equivalent to Harcourt's measurement XI, for which he lists five Neolithic specimens from southern England as 58 mm and 65 mm (Windmill Hill), 61 and 64 mm (Maiden Castle) and 60 mm (Easton Down). Harcourt gives the 'mandibular cheek tooth row length' for these same specimens, which is evidently the same as measurement 13 of Dreisch (1976, fig 23a) as 64 mm and 71 mm (Windmill Hill), 68 mm and 69 mm (Maiden Castle) and 67 mm (Easton Down). The mandible from the Hambledon dog skeleton has a length of 65.6 mm for this measurement and a second specimen from the Shroton outwork is 63.0 mm on this dimension. The skull and mandible measurements from Hambledon Hill thus fall within the range of contemporary dogs from the locality.

The measured bones

ST81 1156. Stepleton enclosure, segment 3, interface of layers 3B and 2, phase IV. The complete skeleton of a dog. All bones are fused, including the vertebrae, and the mandibular teeth have significant wear, showing that the dog was fully adult. The cranium, ribs and some other bones were fragmented to the point where measurements could not be taken. The measurements are listed below, following the designations of Dreisch (1976).

Mandible, left side:
4=102.0 5=99.0 6=103.4 7=67.3 8=65.6 9=62.0
10=31.6 11=35.0 12=27.0 13=18.2 14=17.8 18=57.0
19=19.9

Atlas vertebra:
GL=33.4 LAd=12.3

Axis vertebra:
H=35.4 LAPa=45.0 LCDe=40.9

Scapula:
right: SLC=20.4 GLP=25.3 LG=23.0 BG=14.6
left: SLC=21.0 GLP=25.0 LG=23.0 BG=14.5

Humerus:
right: GL=142.0 GLC=137.4 DP=34.2 BD=25.0
left: GL=141.2 GLC=137.6 DP=33.8 BD=25.8

Radius:
right: GL=136.0 SD=9.8 BP=14.8 BD=20.0
left: GL=136.5 SD=9.8 BP=15.0 BD=20.0

Ulna:
right: SDO=18.0 DPA=20.0

Femur
right: SD=11.4 BD=25.3 left: BP=30.4 DC=16.0

Tibia:
left: GL=152.0 BP=29.8 SD=10.0 BD=18.0

Astragalus:
right: GL=21.2

Calcaneum:
right: GL=36.6 GB=14.6
left: GL=36.7 GB=14.6

HH76 2864. Shroton spur outwork, site K/L, layer 8, phase I. Canis, fragmented skull, axis, five cervical vertebrae, the fragmentary bones of the left fore limb and seven rib articulations.

right maxilla, with teeth P^4–M^2
16=15.8 P^4 L=16.5 GB=8.9 M^1 L=12.0 M^1 B=14.0 M^2 L=7.4
M^2 B=9.4
left maxilla, complete tooth row (P^1 and P^2 alveolus only)
15=59.9 16=16.2 17=45.3 P^4 L=16.3 GB=8.9 M^1 L=12.0
M^1 B=13.8 M^2 L=7.0 M^2 B=9.3

HH76 2226.Main enclosure, segment 14, layer 9, phase VI. Dog, left metatarsal IV. GL=58.0.

HH76 2835. Main enclosure, segment 14, cutting k, layer 11, phase VI. Adult left mandible: 8=63.0.
HH76 2099. Main enclosure, segment 14, cutting k, layer 7, phase VI. Canis, fragmentary right humerus and ulna, probably originally articulated.
humerus: Bd=25.9 SD=10.5
radius: SDO=17.2 DPA=19.6

Table 8.27 *Bos* distal humerus measurements

Certain measurements, where the bone had suffered slight damage, were estimated and these specimens are designated by the letter 'E' in this and all similar tables

code	*find*	*R/L*	*BT (mm)*	*HT (mm)*	*group*
HH74	100	R	76.2	41.9	7
HH74	124	L	74.0E	41.7	7
HH74	126	L	71.0	45.2	7
HH74	144	L	–	42.0	7
HH74	144	L	68.8	43.1	7
HH74	145	L	71.0	41.0	7
HH74	192	R	69.0	43.0	7
HH74	193	L	70.0	45.0	7
HH74	216	R	69.9	39.0	7
HH74	259	R	73.1	43.2	4
HH77	918	L	77.5	48.3	3
HH75	342	L	88.2	54.5	10
HH75	382	R	69.2	45.3	1
HH75	588	R	81.5	49.3	7
HH75	636	L	70.0	44.0	7
HH75	652	R	68.0	43.8	7
HH75	812	R	70.0	39.8	4
HH75	911	R	74.5	43.7	4
HH75	1078	R	73.2	44.1	4
HH75	1527	L	68.5	44.5	
HH75	1708	L	87.4	55.2	7
HH75	2121	L	72.0	43.2	22
HH76	278	R	78.9	43.1	52
HH76	476	R	73.6	41.7	10
HH76	825	R	69.3	41.2	15
HH76	1230	R	68.3	42.6	5
HH76	1376	R	–	42.9	7
HH76	1473	R	69.4	42.2	7
HH76	1808	L	72.0	41.3	5
HH76	1965	R	66.5	39.8	3
HH76	2089	L	68.8	–	7.1
HH76	2172	L	68.0	42.7	52
HH76	2175	R	73.0	44.5	49
HH76	2176	R	68.0	43.5	49
HH76	2204	R	71.4	41.6	7
HH76	2227	R	81.7	49.0E	7
HH76	2252	R	67.0	43.0	7
HH76	2808	L	75.0	42.7	4
HH76	2882	L	78.1	43.1	6
HH76	2926	L	72.8	42.2	3
HH76	2970	L	79.1	43.3	4
HH77	316	R	71.9	44.6	33
HH77	323	R	73.2	42.3	33
HH77	1403	L	–	45.0	37.2
HH77	2089	L	73.0	45.3	
HH77	2209	L	68.6	43.3	38
ST79	994	L	76.0E	–	65
ST80	341	R	73.9	42.2	60
ST80	908	L	78.6E	45.5	60
ST80	1415	R	76.4	44.5	72
ST81	48	R	72.3	44.2	
ST81	73	R	–	43.5	60
ST81	346	R	69.6	40.2	60
ST81	2	R	–	50.5	
ST81	2370	L	68.5E	43.9	53
ST81	2095	L	78.8	49.0	57
ST81	3189	L	70.3E	42.5	59
ST81	3189	R	85.9	51.3	59
HN82			86.0	50.2	

Table 8.28 *Bos* distal metacarpal measurements

code	*find*	*R/L*	*Bd (mm)*	*Td (mm)*	*group*
HH74	57	L	56.0	30.0	7
HH74	78	R	52.4	29.0	3
HH74	140	L	68.1	34.0E	7
HH75	316	R	59.0	34.0	15
HH75	438	L	54.8	30.7	19
HH75	773	R	57.5	31.4	4
HH75	1236	R	60.2	33.0E	7
HH75	1786	L	53.9	31.2	9
HH76	582	R	54.4	29.0	3
HH76	1594	L	65.1	34.2	5
HH76	1935	L	68.3	41.6	
HH76	2091	L	56.0	29.8	7.1
HH76	2095	R	57.7	32.6	7.1
HH76	2750	L	53.7	28.3	5
HH76	2892	L	59.3	31.4	7
HH76	2970	L	57.4	30.6	4
HH77	560	R	55.2	28.2	28
HH77	1199	R	61.4	34.5E	37
HH77	1199	R	61.0	33.7	37
HN82	283	R	53.1	–	89
HN82	288	L	55.7	27.5E	92.1
HN82	469	R	50.9	30.6	85
ST78	985	R	53.7	–	72
ST80	541	R	65.6	33.7	68
ST80	864	R	54.6	32.2	60
ST80	1469	L	58.6	31.5	60
ST81	2	R	53.8	28.5	
ST81	341	R	60.0	30.2	59
ST81	1322	R	65.3	31.0E	58
			65.3E	32.0E	

Table 8.29 *Bos* proximal metacarpal measurements

code	*find*	*R/L*	*Bp (mm)*	*Dp (mm)*	*group*
HH74	136	R	54.8	32.7	7
ST78	2700	R	56.7	33.7	65
HH76	678	R	56.7	35.2	16.1

Table 8.31 *Bos* proximal metatarsal measurements

code	*find*	*R/L*	*Bp (mm)*	*Dp (mm)*	*group*
HH74	250	R	43.0	46.0	7
HH75	564	L	48.0	49.4	7
HH75	592	R	50.9	55.0	7
HH76	1895	R	44.0	47.8	5
HH77	78	R	51.8	–	65?
HN82	336	L	43.4	44.4	88.2
ST78	2919	R	–	41.7	64

Table 8.32 *Bos* astragalus measurements

code	*find no.*	*R/L*	*GLI (mm)*	*Bd (mm)*	*group*
HH75	2062	R	71.5	48.2	4
HH76	1256	L	60.8	–	7
HH76	1738	R	60.9	43.7	5
HH76	1929	R	61.5	-	5
HH76	2869	L	67.0	47.0	7
HH76	2970	L	64.9	43.8	4
HH77	514	R	73.0	47.1	7
HH77	1464	L	66.2	–	1
HH77	1946	L	68.4	–	1
HH77	2123	L	64.2	44.7	25
ST78	2045	L	70.2	–	64
ST78	2915	L	64.2	–	64
ST81	1991	L	67.0	41.3	53

HH76 2216. Main enclosure, segment 14, cutting k, layer 9, phase VI. A complete, fused humerus. The same context produced one dog tooth and four vertebral fragments.
left humerus: GL=128.5 GLC=124.0 Bd=25.0 SD=10.3

ST79 1806. Inner Stepleton outwork, segment 6, cutting 9, layer 3, phase VII/a. The canid bones from this context were largely fragmentary and were: right and left ulna, right femur, atlas, four vertebra fragments, one metacarpal V and two phalanx 1.
left ulna: DPA=31.9
left metacarpal V: GL=72.2
phalanx 1: GL=30.4 Bp=9.7

HN82 802. F606, layer 1, 'flint mines'. A right canid ulna, fused proximal end.
SDO=27.8 DPA=32.6

Cattle, pig, deer and caprines

The data in Tables 8.27–45 are in part based on the conventions of Dreisch (1976). In that work rather few measurements are designated for the articular ends of limb bones. There are other differences that should be noted. In Dreisch's figure 44h the designation Bd is used for the maximum *articular* width of the distal metacarpal, while the same designation refers to the maximum *epiphyseal* width of the distal metatarsal, taken above the articular surface. In the tables published here, the measurement Bd is taken at the maximum width of the *articular* surface of both the metacarpal and metatarsal. Certain measurements, where the bone had suffered slight damage, were estimated and these specimens are designated by the letter 'E'. All measurements are expressed in mm. Where possible, the final column of each table attributes the find to one of the context groups defined in Table 3.1. This makes it possible to distinguish specimens from securely Neolithic contexts (the vast majority) from the remainder.

Table 8.33 Pig – *Sus scrofa*, distal humerus measurements

code	*find no.*	*R/L*	*BT (mm)*	*HT (mm)*	*group*
HH74	149	L	30.4E	27.2	7
HH75	565	R	36.2	30.1	7
HH75	2162	R	34.2	–	21
HH76	1231	R	–	30.0	5
HH76	1880	R	32.3	30.5	5
HH76	1898	R	29.1	27.9	5
HH76	2815	L	40.4	30.4	7
HN82	323	R	–	34.0	91
ST78	2764	L	33.4	30.8	64
ST79	1775	R	36.0	31.0	67
ST80	279	L	34.4	28.5	60
ST80	829	L	34.2	28.5	60
ST80	1476	R	33.5	30.7	59
ST81	3187	L	37.5	29.1	58.1

Table 8.34 Pig – *Sus scrofa*, astragalus measurements

code	*find*	*R/L*	*GLC (mm)*	*group*
HH76	1220	L	45.1	49
HH76	1929	L	37.5	5
ST78	1470	L	45.0	63
ST79	2027	L	43.8	65
ST79	2038	R	41.2	78

Table 8.35 Roe deer – *Capreolus capreolus*, distal humerus measurements

code	*find*	*R/L*	*BT (mm)*	*HT (mm)*	*group*
HH76	1839	L	25.3	19.9	7
ST78	1063	R	24.6	22.3	65
ST80	694	L	27.2	21.8	74

Table 8.36 Red deer – *Cervus elaphus*, distal humerus measurements

code	*find*	*R/L*	*BT (mm)*	*HT (mm)*	*group*
HH75	235	R	56.0	42.9	7
ST79	991	R	52.5	42.0	64
ST79	333	L	–	41.6	67
ST79	1215	R	48.7	39.4	64

Table 8.37 Red deer – *Cervus elaphus*, proximal metacarpal measurements

code	*find*	*R/L*	*Bp (mm)*	*Dp (mm)*	*group*
ST80	2114	L	39.3	28.1	80

Table 8.38 Red deer – *Cervus elaphus*, proximal metatarsal measurements

code	*find*	*R/L*	*Bp (mm)*	*Dp (mm)*	*group*
ST79	979	L	37.8	35.1	68
ST80	939	L	37.5	34.2	56

Table 8.39 Red deer – *Cervus elaphus*, distal metatarsal

code	*find*	*R/L*	*Bd (mm)*	*Td (mm)*	*group*
ST80	1089	R	40.2	27.8	72

Table 8.40 Red deer – *Cervus elaphus*, distal tibia measurements

code	*find*	*R/L*	*Bd (mm)*	*Td (mm)*	*group*
ST80	738	R	45.6E	43.5	83

Table 8.41 Red deer – *Cervus elaphus*, astragalus measurements

code	*find*	*R/L*	*GLI (mm)*	*Bd (mm)*	*group*
ST79	2039	R	54.3	35.1	68

Table 8.42 Sheep – *Ovis aries*, distal humerus measurements

code	*find*	*R/L*	*BT (mm)*	*HT (mm)*	*group*
HH76	2129	L	27.3	–	7
HH77	1734	R	27.9	16.0	1
ST79	1098	L	24.0	14.9	65
ST79	459	R	27.9	18.1	65

Table 8.43 Sheep – *Ovis aries*, distal metacarpal measurements

code	*find*	*R/L*	*Bd (mm)*	*Td (mm)*	*group*
HH75	1949	R	27.1	16.3	22

Table 8.44 Sheep – *Ovis aries*, distal metatarsal measurements

code	*find*	*R/L*	*Bd (mm)*	*Td (mm)*	*group*
HH76	2864	L	23.7	15.2	48

Table 8.45 Goat – *Capra hircus*, horncore base measurement

code	*find*	*R/L*	*41*	*42*	*group*
HH77	552	R	31.5	22.5	7
HH76	1905	L	28.5	19.6	5

8.2 The antlers and implements made of antler

As with the bones of mammals from the site, the preservation of antler is variable. That which was most deeply buried is generally well preserved, but within the more superficial sediments the antler shows more variable preservation and some is quite severely eroded. Most of the antler found is from the red deer (*Cervus elaphus*) and a few antlers were found from the roe deer (*Capreolus capreolus*), some of which show traces of working or of possible utilisation.

The antler of red deer provides the surviving evidence for the manner in which the ditches and other features were excavated into the chalk bedrock. Antler is tough and resilient and was the strongest organic material that was available within the Neolithic period (MacGregor 1985). It has been shown above that red deer bones were only a small proportion of those identified from the complex. Consequently the red deer that were killed at or near the sites cannot have provided very much of the antler that was used. There is also some evidence that the site was utilised only on occasions, probably in periods during the late summer months. This is the time when red deer stags would be in the process of growing new antlers, which are fully mature only by the autumn season, usually by mid- to late September. Most of the antler was utilised in a 'cast' or 'shed' condition, that state when the antler naturally detaches from the skull of the stag. Such shed antler would have been encountered as a stray find within the deer range, especially during the spring and early summer. Sixty-three antler picks have the base of the antler preserved, and, of these, 76% were made on shed antlers and only 24% came from deer that had been killed or found dead with antlers held on the skull. Obviously most of the antler would have been stored and then transported to the site from considerable distances, whether from animals killed or from stray finds. Only a small part would have been obtained from animals killed at or near the site.

The naming of the various parts of the red deer antler and the manner in which the lower tines (named the brow, bez and trez tines) were cut away to make the familiar antler 'picks' is illustrated by Legge (1981a). At the extremity of the antler, the termination develops two or more tines as the deer matures; where three tines develop to form a cup shape; this is known in deer parlance as the 'crown'. The term 'crown' is used below for all such antler terminals of two or more tines. As was noted by Sandars (1910) the detached crown was also often utilised as an implement that he termed a 'rake', and that term is used below.

The manner in which the antler picks were used is still open to question. In constructing the Overton Down experimental earthwork, the diggers found that the antler picks were effective when swung in the manner of a modern metal pick, though their experimental models were made from very much larger deer than those found at Hambledon Hill (Jewell 1963b). Earlier investigations suggested that other methods of digging may have been used. The results of early experimental trials were published in 1875 by Lane-Fox, who found that the most effective means was to detach the antler tines and then use these as wedges, driving them into the fissured chalk by means of blows from the back of the beam. The 'pick' was thus used both as a mallet to drive in the wedges and as a lever to prise up the loosened blocks. W G Clarke (1915) showed that this results in some battering to the backs of the antler beams, but only a stone hammer used on the beam produced severe battering like that found on the Grime's Graves antler picks. It is possible that percussion caused by using the back of the beam to dress flint blanks would result in similar damage. The tests by Lane-Fox resulted in the removal of 0.48 cu m of chalk per hour of work (given as 1.5 man hours per cubic yard), while the Overton experiment attained 5.9 hours per cubic metre (4.5 hours per cubic yard). However, the manufacture and use of antler implements in excavating the ditches appears to have been of much less standard form at Hambledon Hill than was found at Grime's Graves. None of the detached antler tines showed evidence for having been hammered into the chalk, and of the antler beams, only 44% showed evidence of battering on the burr or on the back of the beam in the 55 specimens where this part was well preserved (Table 8.46). This contrasts markedly with the picks found in one sample at Grime's Graves where 93% were battered (Legge 1981a) or the 91% in another sample from the same site and 68% for Durrington Walls (Clutton-Brock 1984).

8.2.1 The development cycle of antler

Red deer stags grow and cast their antlers in an annual cycle that begins with new antler growth in the early summer. Immature deer develop only small and unbranched antlers, beginning just as a spike. As the animal matures the new antlers will grow larger each year, attaining their full mature size at 6–8 years, by which time many develop a double brow tine. As the deer become more aged the antlers again become smaller in each year. Antler size is very much related to the quality of feeding for the deer; those in parkland and deciduous woodland in southern Britain usually develop the largest 'heads' (sets of antlers), while those in less fertile regions are smaller. Through the summer the growing antlers have a highly vascular skin and by autumn the antlers have grown to their final form. The vascular skin dies and peels away, and the antlers are rubbed clean by the deer in time for the late autumn breeding combat (the 'rut'). Through the winter and into the spring the fully developed antler is carried on the head and antlers designated as 'unshed' below are from animals killed (or found dead) during that time. The deer cause a good deal of abrasion to the antlers during the time that they are carried ('burnishing' in

deer jargon). The new antlers are cleaned by rubbing against trees and other vegetation which may cause abrasion to the surface of the beam. During the rut the antlers may also be used to dig into the ground and there is further damage from direct conflict with other stags. Occasionally antlers are broken during this activity. An examination of antlers from recently culled deer will show that, by late winter, the degree of wear to the tips of the tines may be considerable. In an ancient specimen this could easily be taken as the result of human use and this was considered in determining the degree of human modification made to the antlers in the manufacture of the picks and in their usage.

In the spring a natural process causes the attachment of the antler, a little above the skull, to weaken so that the worn antler is cast and, shortly after this, new antler growth begins. The shed antler will soon be chewed by the deer and other mammals, both wild and domestic, to recover the calcium that it contains, especially in areas of acidic soil conditions, but less so where the ground water and soils are highly calcareous. In the study of the specimens listed below a careful search was made for gnawing by deer and other mammals.

Much of the antler had been fashioned into antler 'picks' – a familiar name used here without implication as to the manner of usage. To make these implements the crown of the antler was usually (but not always) cut away and sometimes other tines were also removed. Antler possesses a hard outer skin, 4 mm or so in thickness with the interior filled with a more spongy, fibrous tissue. The antler was worked by sawing and cutting through the outer skin until it could be snapped through the exposed fibrous core. Where the beam or unwanted tines were removed in this way the antler surface was cut around in a ring until it could be broken. The exposed surfaces were then sometimes smoothed by light charring in a fire, as was commonly found too among specimens from Grime's Graves. However, it must be emphasised that the pattern of manufacture at Hambledon was highly variable and, in general, the individual implements are less carefully fashioned, and to a less standard form, than has been found at flint-mining sites (Legge 1981a). Mining tools were generally fashioned to have the beam cut to 0.30–0.60 m, often with the crown separated at or near the trez tine, which along with the second brow (or bez) tine, where this had developed, was also cut away. The standard form of the flint miners' picks would have been influenced by the need to work in narrow underground galleries, while those made for use at Hambledon were used in the open air.

Forty-three antlers can be identified as formed into the typical 'picks', though a larger number were probably originally made into this form, as evidenced by the frequency of battering on antler beams as shown in Table 8.46. It is easy to determine whether an antler was cast or not where the burr (the base of the antler) remains in fair condition (Table 8.46).

Other specimens were too fragmentary to determine the degree of working or the form of the implement that may have been made, although the burr area was found. Probably most were originally made as picks, or they are fragments of picks that were broken in use. In most cases the side could not be determined. In this category there were a further 17 shed antler burrs and four were unshed. Interestingly, among the latter, two specimens from the Stepleton enclosure (one from phase IV and one from phase VIII/a) were in the early stages of being shed, with evidence of resorbtion of the bone across the base of the pedicel. This shows that the antlers were collected from a deer killed or dying in the spring, though this bears little relation to the season of activity at the site.

It is perhaps remarkable that the antlers from both the central area and the Stepleton spur were mostly rather small (Fig 8.29). Precise measurements from antler are rather problematic through the lack of clearly definable measurement points. The burr area is highly variable in shape so that measurements taken there have an uncertain relationship to antler size. Consequently the measurement most often taken was the circumference of the beam above the brow, or brow/bez, tines, at that point where the antler again becomes roughly cylindrical. This measurement at least has the advantage of comparability of the ancient

Table 8.46 Incidence of battered antler bases at Hambledon Hill

site	*slight?*	*slight*	*medium*	*heavy*	*none*
Main enclosure.	1	0	2	1	5
Cross-dykes	0	0	0	0	0
Central area features	0	2	0	0	2
Shroton spur	0	0	0	0	1
Stepleton enclosure	2	2	3	1	10
Middle Stepleton outwork	0	0	0	3	1
Inner Stepleton outwork	1	0	3	1	6
Outer Stepleton outwork		0	0	0	0
Stepleton spur features	1	0	0	0	2
Hanford spur	0	0	0	1	4
totals	5 (9%)	4 (7.2%)	8 (14.5%)	7 (12.7%)	31 (56.6%)

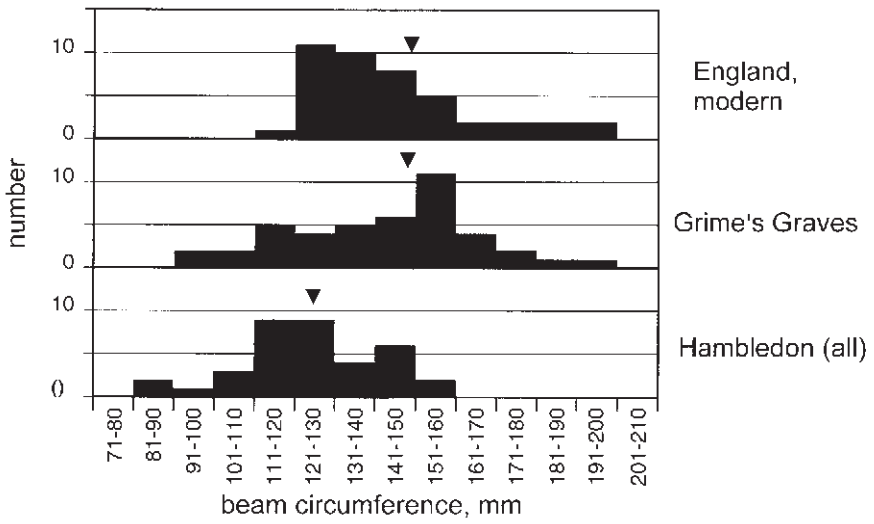

Fig 8.29 Beam circumference in the Hambledon red deer antlers compared with the late Neolithic antler picks from Grime's Graves and a modern sample of trophy specimens. The mean for each sample is indicated by a downward-pointing arrow.

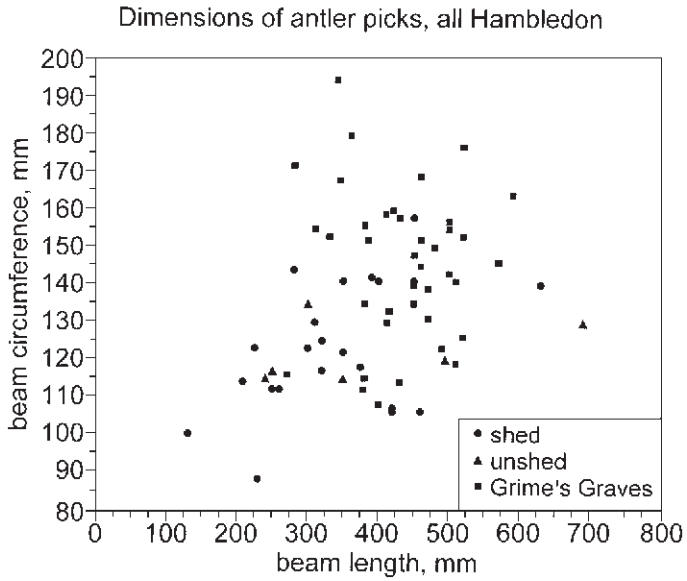

Fig 8.30 Relationship between the length of beam and beam circumference for the antler picks from Hambledon and Grime's Graves.

population with a corpus of modern data. Figure 8.30 shows the range of distribution of the antler beam sizes as circumference in 10 mm size classes. The Hambledon sample is compared with the later Neolithic antler picks from Grime's Graves (Legge 1981a, fig 56) and measurements from modern trophy heads published by Ward (1929). The arrow above each distribution shows the mean dimension. The Grime's Graves antlers are large, and the mean circumference (147.2 mm) is only slightly smaller than that of modern trophy animals (149.5 mm). However, the sample clearly contains more large antlers than could be obtained even by modern rifle hunting. The Hambledon sample has a notably smaller beam circumference (125.0 mm), which is 22 mm less than that found in the deer from Grime's Graves, and smaller even than a sample of modern Scottish red deer that lived in an environment not wholly suited to the development of large antlers (Legge 1981a, fig 56). Clutton-Brock (1984, 25) also found that a sample of Grime's Graves antlers had been carefully selected and that there were few of small size. Further, the Grime's Graves sample was significantly larger than that recovered from Durrington Walls. It would seem that the professional miners were more selective in their raw materials, or possibly could obtain the best materials in exchange for their flint blanks. On the other hand, the people who constructed causewayed enclosures were perhaps less familiar with cutting chalk with antler tools and also utilised smaller antlers that were prepared in a less standardised manner.

The length of the picks used was also less at Hambledon than found at Grime's Graves. Figure 8.30 shows the length of the Hambledon picks, plotted against the beam circumference. This shows a tendency, with a good deal of variation, for the more robust antlers to be made into longer picks. Obviously the larger antlers offered a longer beam segment that was formed as the pick handle. The mean length of the Hambledon antler picks was 319 mm (sample of 36 measurable), while from Grime's Graves the mean length was 434 mm (Legge 1981a, sample of 41) and 437 mm (Clutton-Brock 1984, sample of 244).

Obviously the small size of the Hambledon deer antlers could be explained in a number of ways. Possibly the red deer within the vicinity of the site were poorly nourished. This seems improbable, in that the few bone measurements given above were from deer of large body size. Further, the area is now well suited to both pastoral husbandry and to forest growth and in most of the area chalk is found just below the ground surface. It seems more likely that the red deer antlers found at Hambledon were derived mainly from younger animals, in which antler development had yet

to reach its full potential. This would occur in an area where sustained deer hunting resulted in a population structure with relatively few older adult animals. On the other hand, large antlers from older animals would occasionally be found in such a circumstance, and these are quite absent at Hambledon. The third possibility is that antler was so prized as a raw material that much was taken away from the site after it had been utilised for digging. This is shown by the four specimens that have evidence for the 'groove and splinter' technique of antler working, by which strips have been removed, possibly for the manufacture of small points and needles. It is likely that the larger specimens, even when the tines were broken while being used for digging, would nonetheless have provided large sections of robust beam as a valuable raw material, later carried away from the site rather than abandoned there.

8.2.2 Working on the antler implements

Many of the antler implements show obvious traces of working, both from manufacture and use. These are described below. 'Length' is measured along the axis of the beam from the burr to the extremity and is given where the original length of the implement can be determined.

8.2.3 Catalogue of antler implements

Main enclosure ditch

'Picks'

Segment 9 L7 phase III. HH75 830. An antler pick, made from a left shed antler. Length = 320 mm. The crown was detached by an ancient (?)snap. The brow tine is broken at about its mid-point, probably anciently, but with some recent damage. The short bez tine remains, with the tip worn flat from use. An area on the back of the beam 80 mm long and from the burr upwards is battered from use. Further battering is evident on the medial face of the beam, between the bez and trez tines.

Segment 4 L10 phase III. HH74 401. An antler pick, made from a right unshed antler. Length = 350 mm. The antler had been cut from the skull through the pedicel, and the cut surface of this was heavily battered during use. The crown had been detached above the trez tine probably by ring cutting and a snap, though damage obscures the detail of this. The trez tine and double brow tines were all anciently broken from the beam.

Table 8.47 Incidence of right- and left-side antlers

right side		*left side*		*side not determined*	
shed	*unshed*	*shed*	*unshed*	*shed*	*unshed*
12	5	17	6	2	0

Rakes

Segment 4 L9 phase III. HH74 261. A three-point crown, probably right side, broken from the antler. Length = 323 mm. The tips of the tines are worn flat, with each facet having a different plane showing that use was not consistently in one single direction. A 'rake' following Sandars (1910).

Segment 9 L8 phase III. HH75 1178. A four-point crown, anciently snapped from the beam but with some recent damage at the break. Length = 405 mm. Three tines show tip wear, with flattened points, abrasion and scratching. The tip of the fourth tine had been broken in excavation.

Segment 9 L6 phase VI/b. HH75 582. A three-point crown, possibly cut from the beam by chopping. Length = 325 mm. Two tines show heavy tip wear with abrasion, pitting and cut marks. The third tine was anciently snapped off.

Roe deer antlers

Segment 1 L7 Phase II. HH77 771. A complete, right, unshed roe deer antler, with three small terminal tines the tips of which were broken in excavation. Not worked and apparently not utilised.

Segment 8 D1 L7a Phase III. HH75 312. A left, shed roe deer antler. The burr area shows wear. At the termination of the antler, the small forward tine is broken off, possibly recently. The terminal tine is worn and rounded rather more than would be caused while carried by the deer. A cut is visible on the antler surface at the bifurcation of the terminal tines.

Segment 9 L8 phase III. HH75 1080. A ?left shed roe antler; small, probably juvenile, with a recent break which has removed the distal tines. Possibly some use wear to the very small anterior tine.

Central area features

'Picks'

N F1 L4 HH77 1944. A probable antler pick, made from the upper beam and trez tine, from a left antler. The beam was snapped below the crown and again below the trez tine, leaving this tine with a short length of beam. The broken distal end is smoothed by wear. The tip of the trez tine shows wear that is probably greater than would be caused while carried by the deer. This is a familiar implement from the Hambledon complex and appears to be a second form of pick, made from the upper antler rather than the base and brow tine or tines.

Rakes

N F6 L4 HH77 2042. A right antler crown of four tines. Length = 350 mm. The beam was anciently snapped above the trez tine. The four tines all show wear, an unlikely state to be caused while carried by the deer. Two tines have broken tips, the damage probably ancient. One has a distinct cut mark.

N F6 L4 HH77 2043/2. A left crown of three tines. Length = 160 mm. The crown was broken from the beam above the trez tine. One tine had been broken off, probably anciently. The two remaining tine tips show heavy wear from use.

N F6 L4 HH77 2043/3. A left crown of three tines, showing an ancient greenstick break to the beam above the trez tine.

Length = 160 mm. The three tines all show tip wear. This specimen is similar to HH77 2043/2 above, but the crowns are of very different form and size, indicating that these are not right and left from the same deer.

The same feature and layer produced other fragments of antler: HH77 2043/1 is a segment of antler beam showing ancient breaks with slight charring on the distal end. HH77 2043/4 is a detached brow or bez tine, recently broken, and showing heavy tip wear. HH77 2043/5 is another tine, probably a brow tine, showing tip wear and abrasion for 50–60 mm from the tip.

N F7v HH77 2307. A shed left antler. Length = 195 mm. The brow and bez tines show moderate tip wear. The beam above these is anciently snapped, but with some recent damage. The burr shows some battering damage on its back.

N F22 L6 HH77 1826/1. From the same pit as the specimen described below, a two-point crown anciently broken from the beam. Both tines show heavy wear. After this use two deep, parallel, 'V' shaped burin grooves were cut on the back of the antler though the resulting splint between them was not detached. The cuts extend onto the worn surface of the distal terminal tip, and beyond the ancient break through the proximal part of the beam, showing that this was broken after the burin work.

N F22 L6 HH77 1826/2. A short (100 mm) segment of a slender antler beam with a short tine. The beam is cut above the tine by ring cutting and apparently sawing to give a flat surface. Slight charring and smoothing can be seen on the break below the tine.

B F57 L1 HH75 1330. An almost intact, shed left antler, but with evidence for human use. Length = 420 mm. The brow and bez tines were broken off, probably anciently. The remaining trez tine shows tip wear and damage. The crown is of four tines, all of which show wear, heavy on the tips of three. Two of these pointed to the rear in the deer's life and this presents an unlikely site for 'natural' wear. The burr shows anterior battering and damage.

B F57 L1 HH75 579. From the same pit as that above; a small crown of two tines and one vestigial tine. One tine was broken recently, the other anciently. The crown shows a greenstick break from the beam. The small vestigial tine near the one anciently broken shows heavy wear and battering.

N F7iii L3 surface. HH77 1945. The unshed base of a left antler. The brow and bez tines are broken, the age of which cannot be determined. Some battering is evident on the burr.

Stepleton enclosure

'Picks'

Segment 1 (2B F1) L4A phase II. ST79 2615. A pick made from a large unshed antler, right side. The burr of the antler is heavily worn by battering in use. The double brow tines were broken anciently, presumably in use. The beam is broken through a little above the brow tine and associated beam fragments suggest that this was post-depositional damage.

Segment 1 (2B F1) L4 phase III. ST79 2149. A pick made on the upper beam of a ?right antler. The beam is snapped below the trez tine with slight charring evident, and chopped through below the crown tines, the cut clearly showing multiple chops, presumably from a stone axe. The trez tine shows tip wear extending 100 mm or so along the tine, but much or all of this may be of natural occurrence. An implement, but probably unused or little used.

Segment 1 (2B F1) L4 phase III. ST79 2150 (Fig 8.31). A pick made on the base of a large, unshed left antler, detached from the cranium by snapping through the pedicel. Length = 320 mm. The beam was snapped through above the bez tine. There is damage to the burr and posterior beam, predominantly from gnawing, the nature of which is characteristic of gnawing by a red deer, as was done to recover the calcium during the growth of new antler. From the positioning of the gnawing this probably occurred after the implement was discarded, probably by a domestic caprine. The brow and bez tines are slightly worn, but no more than might be encountered from natural causes. A very small second brow tine has been broken away recently.

Segment 3 U9A L4 phase III ST80 1473. A pick made on the base of a small shed antler. The burr is heavily abraded, probably from use. The single brow tine was broken anciently at the beam, which is broken a little above that tine.

Segment 3 U9A L4 phase III. ST80 1125. The broken base of a pick made on a small, shed left antler, with a heavily battered brow tine. Not well preserved, but the break suggests that the implement was broken while being used for levering.

Segment 3 U9B L1 phase VIII/a. ST80 2250. The base of a probable pick made on a large, but now poorly preserved, unshed antler, the base and beam fragments of which survive. The pedicel shows the early stages of the process of shedding.

Segment 3 U9D L1 phase VIII/a. ST80 1351. A pick made on a shed right antler. Length = 220 mm. The base is undamaged; slight damage to the burr was probably caused post-deposition. The beam is snapped through below the trez tine, with some evidence of ancient percussion at the break. The brow and bez tines are broken away, probably during use.

Segment 3 U11 L6 phase I. ST80 2013. An antler pick, made from the mid beam, probably right side. Length = 240 mm. The beam is snapped through below and above the trez tine, with this forming the working part of the implement. The distal beak – above the trez tine – shows slight charring. The tip of the tine is worn rather more than is usually seen inflicted by the deer.

Segment 3 U10/11 L6 phase I. ST80 1972. An almost entire left, shed antler of six points with a double brow tine, but small for this state of development. The three small crown tines were snapped off anciently. The tips of the brow and bez tines are missing, the brow certainly anciently and the bez possibly so. The tip of the trez tine shows wear and slight scratches, probably inflicted by the deer.

Segment 3 U13A L6 phase I. ST80 1882. A shed left antler, almost intact. Length = 630 mm. The shed base and burr have some damage, probably recent, and are not battered. The brow tine was anciently snapped away. The tip of the bez tine is worn and flattened, probably from human use. The trez tine, a fourth tine and the crown tines all show slight wear, probably from human use supplementing the natural wear.

Segment 3 U13B L6 phase I. ST80 1880. A complete, unshed right antler. Length from burr to tip = 690 mm. Part of the frontal bone remains attached to the pedicel and this shows slight charring, which extends up to the posterior aspect of the burr. The tips of the brow and bez tines are missing from ancient breaks, but wear is evident on the remaining part. The trez tine is unworn. Of the three crown tines, two were broken anciently by percussion. The remaining forward tine is worn and chipped. The undamaged state of this specimen is a fine example of skilled excavation.

Segment 3 U13B L6 phase I. ST80 1879. An antler with the burr area anciently broken away below the brow tine; possibly, therefore, an unshed specimen. Broken through the beam below the crown and with slight charring at the break. The tips of the brow and bez tines are broken away, probably anciently. The trez tine shows slight tip wear, but no more than may occur by natural causes.

Segment 3 U13A L6 phase I. ST80 1886. The terminal part of an antler, fashioned as a pick by snapping below the small trez tine, which was broken away anciently, probably in use. The break to the beam shows smoothing and charring, possibly being ring cut before breaking. Length = 610 mm. The two crown terminals show tip damage, scratching and slight charring on the rear tine.

Segment 4 U6 L2 phase VI. ST80 1132. The base of a small, ?right shed antler. Length = 130 mm. The beam shows fine, longitudinal burin grooves at the break, though without evidence of splinters being detached. The beam is broken across these grooves, having been partially cut to facilitate the break. The small brow tine was snapped anciently, but use damage is apparent on the remaining part.

Segment 4 U7 L6 phase I. ST80 799 (2). A pick formed from a right shed antler. Length = 270 mm. The beam was anciently snapped below the trez tine. The base and the burr are not battered. The brow tine shows slight wear and chipping, probably for human use. The bez tine above is snapped anciently and the broken surface shows slight charring.

Segment 4 U8 L2A phase IV. ST80 1459. The unshed base of a right antler, the beam broken though below the brow tine. The pedicel shows the early stages of the development of shedding. The attached frontal bone has 8–10 fine cuts on the lateral margin, indicative of skinning (for other similar examples, see Binford 1981, 102, fig 4.11a).

Segment 5 U4 L5 phase II. ST80 1081. A pick made on a shed left antler. Length = 225 mm. The shed base and burr are undamaged. The tips of the brow and bez tines are slightly flattened by wear and show scratching and abrasion. The beam was snapped below the burr and the break shows slight charring.

Segment 5 U4 L5 phase II. ST80 1082. A pick made on a shed right antler. Length = 260 mm. The lateral margin of the burr has some damage, probably ancient and there is abrasion at the base of the brow tine on the lateral face. The bez tine was broken away, probably recently. The beam was snapped through at the base of the trez tine.

Segment 5 U4 L5 phase II. ST80 1083. A pick made on a right shed antler. The base is damaged, but probably not from battering. The tips of the brow and bez tines are flattened by wear and abraded. There is slight rodent gnawing on the surface of the brow tine. The beam was snapped through below the trez tine, and the broken end was charred.

Segment 5 U4 L4B phase III. ST80 800 (Fig 8.31) An antler pick made on a right shed antler. The brow tine was broken recently. The bez tine is flattened and abraded at the tip by use. The trez tine was broken away, possibly recently. The beam was ring cut and snapped above the trez tine. There is ancient damage, probably from blows, on the anterior beam between the bez and trez tines.

Segment 10 U1/2 L2 phase VI. ST81 3189/1. A pick made from a left shed antler, now broken. The brow and bez tines are broken, possibly recently. One associated tine fragment shows a moderate degree of tip wear.

Segment 10 U1/2 L2 phase VI. ST81 3189/2. Fragments of a pick, made on a shed antler, but poorly preserved.

Segment 12 U4 L5 phase II. ST81 1259 (Fig 8.31). A pick made from a shed antler. Length = 320 mm. The base of the antler and the burr are heavily battered for *c* 50 mm along the beam. The tip of the brow tine is flattened and abraded by use. The bez and trez tines were snapped away anciently. The beam was ring cut and snapped above the trez tine. Subsequent to this, five grooves were gouged into the back of the beam, parallel to its axis, in the manner of the groove and splinter method of antler working, but the splinters were not removed.

Segment 12 U4 L5 phase II. ST81 1261. A pick made from the upper beam of a right antler. Length = 520 mm. Snapped through the beam below the trez tine with smoothing and slight charring on the break. The tip of the trez tine is scored and worn from use. The two terminal tines show use, one being abraded and worn, the other having tip damage with abrasion and wear on the broken surface.

Segment 12 U4 L4 phase III. ST81 1095. A pick made from a shed left antler. Length = 350 mm. The base and burr are undamaged. The tip of the brow tine is worn flat and is scratched and abraded for 100 mm from the tip. The bez and trez tines were broken anciently and the broken ends were smoothed, probably during use.

Segment 12 U5 L5 phase II. ST81 1342. A probable antler pick, made from a ?left shed antler. Length = 155 mm. The shed base and burr are undamaged. The brow tine shows tip wear and abrasion, probably from human use. The bez tine was broken away, probably anciently. The beam was broken above the bez tine, making a short pick, and with the surface of the break smoothed.

Segment 15 U10 L3A phase III. ST81 357. The base of an antler pick, made on a shed right antler. The burr shows some battering. The brow and bez tines and the beam were broken in excavation.

Segment 15 U9 interface of L4 and L3B phase III. ST81 1318 (L3B) and 1428 (L4). Two fragments of a pick made on a small, shed antler. The base and burr show damage, which may be recent. The tip of the brow tine is worn. The implement has a good deal of surface erosion.

Segment 17 U4 L4 phase III. ST81 2324/5 and 2324/6. A pick made on a shed right antler. The base and burr are heavily

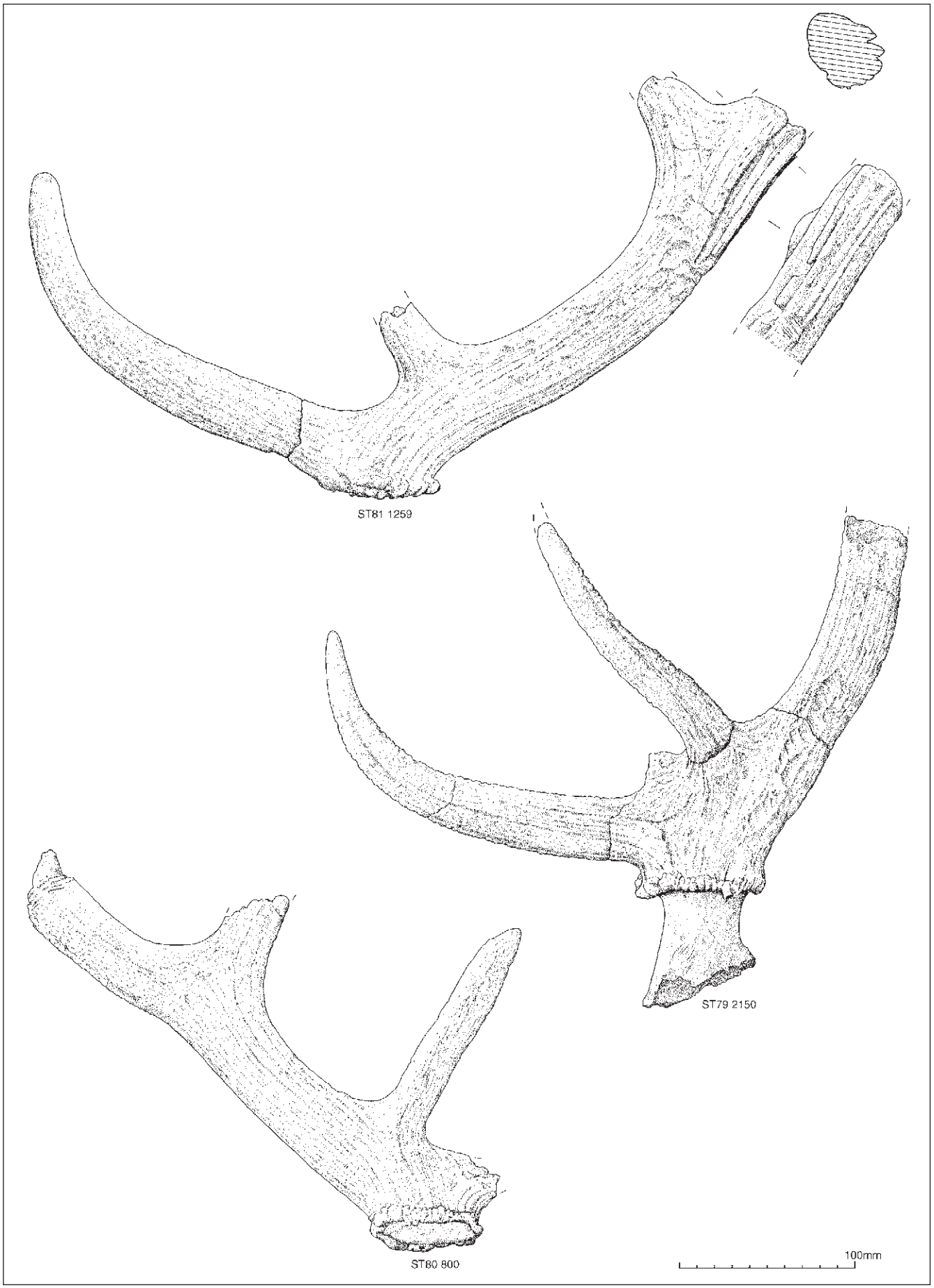

Fig 8.31 Modified and used antlers. Particulars in catalogue.

Table 8.48 Summary of antler distribution

All specimens in the tables are red deer antlers unless otherwise designated. The figures with a query mark are thought to be picks, but due to damage or fragmentation the precise form cannot be exactly determined.
See also Figures 3.62 and 3.126.

site	*phase*	*picks*	*beam frags*	*crowns*	*tines*	*other*
Main enclosure	I					
	II	1+1?		1		1 roe
	III	4		3		1 roe
	IV					
	V	1+1?		1	1	1 roe
	VI	1		2		
	VII					
	VIII					
	totals	6+2?		7	1	
Inner cross-dykes	I			1		
	VI	1	1	1		
	totals	1	1	2		
Outer cross-dykes	I	1?		1		
Long barrow	I				2	
	II					
	III	1?	2			1 unworked
	V				1	
	VI				1	
	?			1	3	
	totals	1	2	1	7	
Central area features	5+1?	2	5	8		
Shroton outwork	I	4			1	
Stepleton enclosure	I–II	12		6	8	
	III	11	4	3	12	
	V		1		2	
	IV		2		2	
	VI	4+1?	2		4	1 roe
	VIII/a	1	1		3	
	Totals	27+1?	9	8	29	
Middle Stepleton outwork	I		1		2	1
	III	3+1?	3	1	2	
	V		3		5	
	VIII/a	1?			5	
	Totals	2+3?	7	1	9	
Inner Stepleton outwork	I	2+1?	2		3	
	III	2+1?	4		6	
	V	4+1?				1 roe
	VII	5	2	1	1	
	VIII/a	1+1?	3		1	
	Totals	14+4?	12	2	13	
Outer Stepleton outwork	III		1		4	
Stepleton features	4	2		1	1 pedicel	
Hanford spur	5+2?	11	2	9		

battered on the posterior surface. The brow and bez tines are heavily worn from use, with rounded tips showing scratches and abrasion. The beam was broken through the base of trez tine, with many fragments suggesting that this was damaged in excavation. With this specimen is a crown of three tines, with tips worn and scored, again with recent damage to the broken beam. One tine has a flake removed from the surface at the tip, probably by a blow, with abrasion and wear spreading over the break. Probably worn from human use; the two parts are likely to be from the same antler.

Rakes

Segment 13 U6 L6 phase I. ST81 1260. A crown of four tines, with the beam showing a smooth or worn surface on the break. Length = 440 mm. The tips of two tines were broken anciently and the two remaining show signs of wear and scratching, probably from human use.

Segment 13 U6 L6 phase I. ST81261. A crown of three tines, the beam broken anciently by snapping at the trez tine. Length = 535 mm. The middle tine of the terminal shows an

ancient break and has its tip missing. The two tines remaining show moderate flat wear, of a form associated with human use.

Segment 3 U13B L6 phase I. ST80 1881. A crown of four points, broken anciently from the beam, with the break surface smoothed. The two forward pointing tines are worn and scratched at their tips. Of the two rear and topmost tines, one shows scratching and abrasion, the second has tip damage.

Segment 14 U7 L5 phase II. ST81 1258. An unshed left antler, with parts of the cranium (frontal, parietal and temporal bones) joined. Length = 495 mm. There are clear skinning cuts around the base of the antler pedicel and on the occipital bone (and see specimen ST80 1459 segment 4 U8 L2A above). The brow tine is heavily worn at the tip, exposing the spongy inner tissues. The bez and trez tines were broken away anciently. The two tines of the terminal crown show damage and wear.

Segment 3 U11 L6 phase I. ST80 1350. A crown of three tines, charred where broken from the beam. The lower tine has a broken tip, but with wear and chipping. The middle tine has a scratched and worn tip and the terminal tine has its tip missing but is worn on the broken surface, showing scraping and abrasion marks.

Segment 3 U13B L6 phase I. ST80 1878. An unusually shaped crown of three points, having very splayed tines. Length = 350 mm. The beam is anciently snapped through above the trez tine. The tip of the forward tine is missing from recent damage, but all show smooth wear. Although consistent in form with a 'rake', a natural origin for the wear cannot be eliminated.

Single tines

Segment 3 U11 L6 phase I. ST80 2181. A tine of oddly sinuous form, the result of damage or injury during growth. Length = 185 mm. Apparent chop marks on the surface are judged to be recent trowel damage. The point of the tine has been enhanced by grinding or smoothing to a finer point than is natural. The point shows slight chipping from use.

Segment 11 U3 L6 phase I. ST81 1134. A single tine, showing flat tip wear with chipping. An area on the anterior surface of the tine is smoothed by wear, possibly from human use as a fulcrum point while levering.

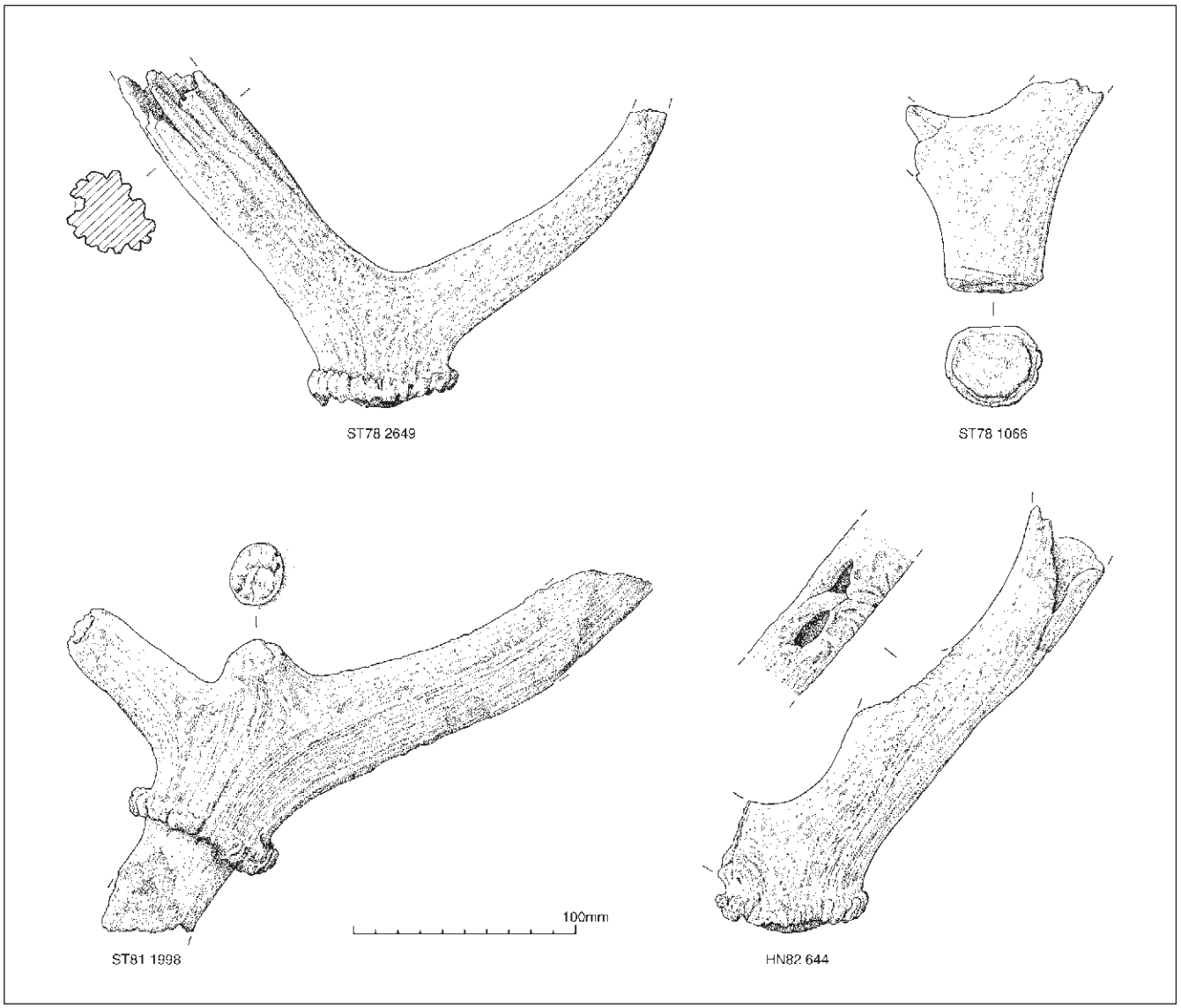

Fig 8.32 Modified and used antlers. Particulars in catalogue.

Miscellaneous illustrated antler

4B F178 ST81 1998 (Fig 8.32). The base of an unshed antler, which was detached from the skull by breaking through the pedicel. The specimen is from a mature deer with two brow tines. The beam was snapped through about 150 mm above the upper tine. The lower brow tine is missing and the cut or broken surface is worn. The base of the upper brow tine clearly shows that ring cutting or sawing was used to allow the tine to be snapped off.

*Inner Stepleton outwork, segment 8 SCT7 L3 phase V. ST78 2649 (*Fig 8.32). The base of a left shed antler. The tip of the single brow tine was anciently broken off. The beam was cut or broken through about 150 mm above the brow tine. The beam was then cut by grooving around its whole circumference, with 14 or 15 separate grooves. The profile of these suggests that different flint tools were used to groove the antler. The technique was again similar to the familiar Mesolithic 'groove and splinter' method of antler working, where the burin cuts follow the natural 'gutters' (the imprints of blood vessels made during antler growth). In this instance the splints do not appear to have been removed. The implement is thus of unusual form for the period. Length = 200 mm.

Hanford 'flint mines' F618 L2. HN82 644 (Fig 8.32). The beam of a shed antler. The brow and bez tines are missing, and the beam was apparently snapped through. The point where the bez tine was removed has been extensively gnawed, either by deer or possibly by a domestic sheep. Length = 235 mm.

Middle Stepleton outwork segment 10, L6. Phase I. ST78 1066 (Fig 8.32). A section of antler from the mid beam, from the point where the upper (bez) tine branches off. Both the upper beam and the bez tine were broken, while the lower beam shows how the antler was purposefully cut. This was accomplished by sawing with a suitable flint tool, the cut surface showing that the saw was applied in a number of places around the circumference of the beam. The saw cuts were made through the hard outer skin of the antler to a depth of 5–6 mm, and down to the porous core, thus allowing the beam to be snapped at the chosen point.

Roe deer antler

Stepleton enclosure segment 3 U12/13 L2 Phase VI. ST80 2179. A small, right, shed antler, in which the brow tine is undeveloped; probably of the first year. Length = 140 mm. There is evidence of tip wear and slight splintering, possibly from use.

8.3 The mammal remains from the hillfort

Most of the mammal bone excavated from the hillfort comes from an early Iron Age house, with a small number of specimens of earlier or uncertain age. In total, 755 post-cranial bones could be identified to the level of species and element, but very few mandibles and loose teeth were found. Most bones were from cattle, caprines, pig and dog, with rare horse and fox bones (Table 8.49). Red and roe deer are absent from the Iron Age sample. The number of identifiable mandibles is exceptionally low in relation to the sample of bones (Table 8.50). For example, from the main Neolithic enclosure ditch, there are about 12 identified caprine bones for each identified caprine mandible, and about 16 pig bones for each identified mandible. From the Iron Age house, there is only one identified caprine mandible and four loose lower teeth could come from, at most, another three mandibles, giving a minimum of 77 bones for each mandible. Three pig mandibles were identified and the two loose teeth probably represent a fourth, giving about 46 bones for each identified mandible.

The numbers of identified post-cranial bones in relation to identified mandibles is unusually high. At Neolithic and Bronze Age sites the ratio of identified caprine bones to identified jaws can be as low as 2:1 (bones:jaws) in harsh conditions of preservation and as high as 30:1 where preservation is excellent (Legge 1992, 40), while for pig bones in good preservation conditions the ratio varies from 13:1 to 36:1. It is thus very probable that the high ratio of post-cranial bones to mandibles in the Iron Age house is due to the domestic nature of the refuse, and the organisation of the place of slaughter and butchery.

The species

Besides the more common bones of cattle, pig and caprines, eleven dog bones, two fox bones and four horse bones were identified. The fragmentation of the bone meant that few measurements could be taken from the Iron Age sample, although it was evident that the bones of cattle, caprines and pig were of small body size as may be anticipated for specimens from this period.

Dog. The dog bones identified were fragments of right and left humerus, left radius, left fibula, right and left metapodial fragments, one phalanx 1, two carpals, and an atlas vertebra. The atlas vertebra showed several fine cut-marks which were orientated at right angles to the axis of the spine, apparently from the decapitation of the carcass. The bones probably represent one individual.

Fox. The fox bones were a proximal left humerus and a left tibia shaft. While possibly intrusive, the bone was not regarded as showing different preservation from the rest of the sample.

Horse. The horse bones were two fragments of proximal left scapula, a shaft fragment of the right distal humerus and one phalanx 3.

Caprines. 307 bones were identified as being caprine, that is, sheep or goat and a further 113 were identified as being from sheep using the customary published criteria for these distinctions. Only a single complete left tibia was definitely identified as being from a goat.

Table 8.49 Hillfort. Most common species

	cattle		*caprines*		*pig*		*dog*	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*
mandibles	0	–	1	–	3	–	0	–
maxillae	0	–	0	–	3	–	0	–
loose teeth	0	–	6	–	2	–	0	–
bones	134	17.7	307	55.8	185	24.5	11	1.5

Table 8.50 Hillfort. Identified mandibles in relation to post-cranial bones

	caprines			*pig*		
site	*identified mandibles*	*identified bones*	*ratio*	*identified mandibles*	*identified bones*	*ratio*
IA house	4	307	77:1	4	185	46:1
Main enclosure ditch (Neolithic)	28	352	13:1	31	516	17:1

Burning, gnawing and cut-marks

Only twelve bones showed traces of burning: one horse bone, one pig bone and eight caprine bones and two unidentified bone fragments. Canine gnawing is more evident, with 18% of the pig bones, 15% of the cattle bones and 9% of the caprine bone showing this. As is usual in domestic assemblages, it is the high density bones with good survival, such as the proximal radius/ulna and distal tibia, which show the highest frequency. The cut-marks observed were those characteristic of carcass butchery and disarticulation. Cuts were most common on the cattle bones (11 were noted), and these include a thoracic and a lumbar vertebra, two scapulae and two distal humeri. Pig bones showed cut-marks on an axis and a thoracic vertebra and a sacrum and some pelvic fragments. Caprine bones had few cut-marks which were observed on a proximal and a distal humerus, an astragalus and a rib fragment. The dog atlas vertebrae, as noted above, had lateral cut-marks indicative of decapitation, though whether this species was eaten cannot be established from the few bones that were present.

The fauna

The fauna of the hill fort occupation is consistent with other assemblages from the region which are dated to the earlier Iron Age. In contrast with the Neolithic fauna in which cattle predominate, this species is now comparatively uncommon and caprine bones make up 56% of those identified, and pig almost 25% (Table 8.50). However, in assemblages that have undergone high levels of attrition by dogs, it is probable that the post-cranial bones alone provide at best an uncertain view of the original faunal composition. The very low mandible counts at the site mean that there is no comparison for the proportions of species derived from the post-cranial bones.

8.4 Everley Water Meadow

Small samples of bones were recovered from a number of contexts.

The middle Bronze Age 'burnt mound'

The old land surface below the mound yielded no identifiable bone fragments and the mound itself produced only a cattle first phalanx and a left caprine navicular-cuboid. A rather larger sample of 27 identifiable bones and five teeth came from gravels derived from the mound, although these incorporated post-Bronze Age artefacts. Of these, five were from pig, thirteen were cattle, and nine were caprine. The body of a cattle navicular-cuboid had the small tarsal fused to it by bone growth. The few associated teeth were loose and fragmentary, but included a right canid P^4, from its size likely to be that of a dog and a right upper molar of a horse, a species that is known more widely in the Bronze Age. Two teeth were from cattle and one from a caprine.

A channel of Iron Age or later date (SMX layer 8) contained the partly charred proximal left coracoid of a corvid (SM82 108). The specimen might be that from the Carrion Crow *Corvus corone corone* or the Rook *Corvus frugilegus*.

Samples post-dating alluviation

Area 2 F5 and Area 3–4 F7/1A. This feature, a channel of the post-medieval water meadow, produced 42 bones, three part tooth rows and four loose teeth.

Horse was represented by an unfused left proximal femur and a single left central carpal. The six pig bones were fragments of the femur, tibia and a first phalanx and of an immature right femur and tibia, while six cattle bones were part of a left ulna, a distal right femur,

a fragment of immature femur, and skull and rib fragments. The 22 caprine bones were probably from one animal as most parts of the body were represented. The identified bones included right and left radius, ulna, innominate, metacarpal and metatarsal, the form of which show that this was a sheep; there were further fragments of right caprine humerus and radius. A left tibiotarsus and a right tarso-metatarsus were identified as the goose *Anser anser*. A left ulna, right coracoid and a left femur were identified as the domestic chicken, *Gallus gallus.*

The mandibles and teeth from this sample included the left M_3 of a horse, an immature left pig mandible, a left cattle M_3, a right cattle mandibular ramus, and a mature left sheep mandible, besides other loose caprine teeth, both upper and lower.

The sample from the possible sluice within F7 consisted of six identifiable caprine limb bone fragments and a distal right bird femur, again identified as the domestic chicken, *Gallus gallus*.

Area 4, F3. This feature contained a bone assemblage which included canid and a number of bird bones. Three bones, consisting of two fragments of right scapula and a right tibia, were identified as dog, while a small and fragmentary metatarsal was identified as the fox, *Vulpes vulpes*. Of the bird bones, a fragmentary proximal metatarsal was referred to *Anser anser*, the greylag goose which, by the medieval period, is likely to have been present as a domestic animal. In addition, one complete left and one broken right femur were identified as from the domestic chicken, *Gallus gallus.* A small left femur was probably from the blackbird, *Turdus merula.* Apart from the dog bones, other domestic mammals were represented only by a fragmentary left caprine innominate. There were no specimens of mammalian dentition.

Unstratified bones

A further sample of identified bones, tooth rows and loose teeth were from unstratified sediments. The identified bones consisted of one from dog, eleven horse, six pig, twenty cattle, nineteen caprine and one red deer – a complete right metatarsal. Of the bird bones, one was identified as goose, three as chicken and one as the mallard duck, *Anas platyrhynchos*. The mandibles and loose teeth were identified as from dog (one), horse (one), pig (one), cattle (nine), and caprine (eleven).

8.5 Bone artefacts

Tools of bone and antler – apart from the 'picks' formed from red deer antlers (8.2) – are few from the Neolithic levels at Hambledon. This points to the somewhat specialised nature of the settlement there. In a wholly domestic setting the frequency of bone tools would probably be higher.

Main enclosure

Segment 7 L10 phase I. HH76 289. (Fig 8.33). Two specimens:

1. An implement made on the shaft of a metatarsal, probably sheep. The shaft was ground to a point at one end and the surface shows striations from scraping and abrasion. Both ends are broken. Surviving length = 76 mm
2. A metatarsal shaft, probably sheep. The bone was grooved by the use of a burin or similar implement, preparatory to its splitting. The bone is broken at both ends and the task was abandoned. This was probably intended as a point similar to HH77 2134 described below

Segment 18, with child burial HH76 1948, phase I or II HH76 2004 (Fig 3.34). Three worked bones from this context appear to be simple beads, either complete or in process of working.

1. A tubular bead, cut from a large bird bone. The surface is polished and smoothed. The specimen agrees well in size and form with the distal tibia of the mute swan, *Cygnus olor*. Length = 39 mm
2. A small segment cut from a large bird limb bone. The surface appears to have been smoothed, but the surface condition of the specimen is now poor. L = 14.7 mm. Numbered TN 36 on the original plan
3. A segment, probably of a mammalian bone, with evidence of ring-sawing as a stage in the preparation of a bead. The specimen agrees well with the mid shaft of a sheep first phalanx. L = 16.0 mm. Numbered TN 37 on the original plan

The south long barrow

Segment 1, LB3 SIII, L21 phase III HH77 2134 (Fig 8.33). The distal, medial condyle of a sheep metatarsal. This is from a bone that was divided lengthways by means of burin cuts on the anterior and posterior surfaces of the bone. After the shaft was thus divided, it was ground to a point, retaining the condyle as a terminal. This is a familiar implement type from prehistoric sites in Britain (see for example Legge 1992, figs 25, 63: A45–A47). The tip of the implement is missing. Remaining length = 50 mm.

Pit in the central area

N F7iii/vii L3 HH77 2150 (Fig 8.33). A complete bone point, made on the metacarpal of a sheep. Although made on the fore limb bone rather than that of the hind, otherwise identical to HH77 2134 above. The bone was divided lengthways by saw cuts and the shaft ground and polished, retaining the distal condyle as a terminal. The specimen has lost only 3–5 mm of the tip broken. Surviving length = 75.0 mm.

Stepleton enclosure

Segment 4 L2 phase VI ST80 900 (Fig 8.33). A bone point made by grinding the tip of an irregular splinter from a robust limb bone. The splinter shows saw or burin cuts at the broader end.

Segment 10 L2 phase VI ST81 395 (Fig 8.33). The distal, medial condyle of the left metacarpal from a roe deer, *Capreolus capreolus*. The shaft has been split lengthways, following grooving by means of a burin on the anterior and posterior shaft

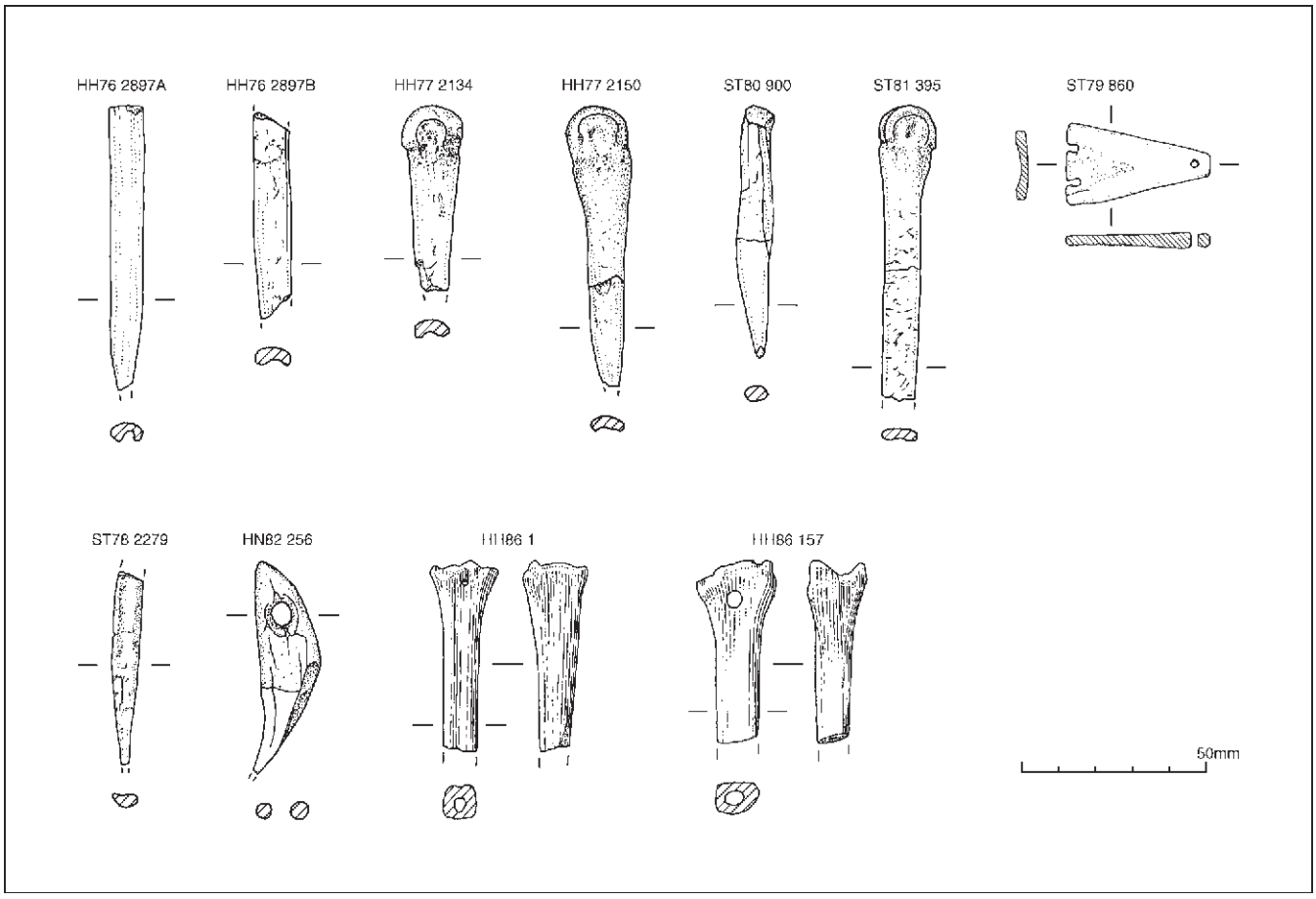

Fig 8.33 Bone artefacts. Particulars in catalogue.

surfaces, in the same manner as specimen 2134 and other specimens described above. In the roe deer, the metacarpal has deep natural grooves on the anterior and posterior surfaces which assist in guiding the burin. The divided shaft was ground and polished to a point. 10–15 mm are missing from the tip of the implement. Surviving length = 78.0 mm.

Inner Stepleton outwork

Segment 6 L2B phase VII/a ST79 860 (Fig 8.33). A small bone (or possibly antler) pendant or bead of triangular form, with dot decoration made by shallow pits drilled in the surface by means of a rotary drill. At the narrow end, a drilled hole of 2.0 mm diameter was for suspension or attachment. Two holes drilled at the wider end appear to have been broken through the margin of the piece, presumably during use. Length = 37.5 mm, width = 21.2 mm.

Features on the Stepleton spur

1A F6 = Saxon grave 12 ST78 2279 (Fig 8.33). Tip of a small bone point, broken in use. Poorly preserved, possibly derived from Neolithic pit 1A F278, which was cut by the grave.

Inner Hanford outwork

Segment 3 L2D Phase VII/a HN82 256 (Fig 8.33). Perforated lower left canine of a canid. The root is pierced by a double V-perforation, made by drilling from each side, and 5.5 mm at its narrowest. The interior of the perforation is highly polished from suspension on a thread or thong, as evidence of long use. The anterior crown enamel of the tooth is chipped away, presumably by accident in wearing. The large size of the tooth, which is greater than that usually found in Neolithic dogs from this or other English sites, suggests that the tooth may be from a wolf, *Canis lupus*. Length = 56.5 mm.

The hillfort

Clearance of hut surface layer HH86 1 (Fig 8.33). The proximal left metatarsal of a sheep. The posterior surface has been pierced by a small hole, about 1.5 mm in diameter.

Trench Extension L2 HH86 157 (Fig 8.33). The distal tibia of a caprine, probably sheep. The shaft has been snapped through. The distal articulation has been pierced by a cylindrical hole, about 4 mm in diameter.

8.6 Marine mollusc shell

Elizabeth Somerville

8.6.1 Method

Samples from the 1979 excavations in segments 5 and 6 of the inner Stepleton outwork were received by the writer. Shell was initially identified to species (Fish and Fish 1989), and weighed. Bivalves were counted as complete right/left valves, right/left and unsidable umbos or as fragments.

Table 8.51 Composition of marine mollusc shell from segments 5 and 6 of the inner Stepleton outwork

u/s = unsided
Only the *Pecten maximus* (scallop) fragments are from a Neolithic context. The phase VIII/a ploughsoils in the tops of both segments contained Roman pottery, and the single fragments of oyster shell in the underlying phase VII fills are likely to have been intrusive from them.

segment	*phase*	*species*	*weight (g)*	*fragments*	*umbos*			*valves*			*MNI*
					u/s	*right*	*left*	*u/s*	*right*	*left*	
5	III	*Pecten maximus*	7.3	4	0	0	0	0	0	0	1
5	VII	*Ostrea edulis*	7.5	1	0	0	0	0	0	0	1
5	VIII/a	*Ostrea edulis*	146	4	1	3	1	0	2	0	5
6	VII	*Ostrea edulis*	0.5	1	0	0	0	0	0	0	1
6	VIII/a	*Mytilus edulis*	5.7	11	2	0	0	0	0	0	2
Unspecified	VIII/a	*Ostrea edulis*	106.8	8	1	1	1	0	1	0	2
		total	273.8	–	–	–	–	–	–	–	–

The maximum length (from umbo to opposite margin) and width (orthogonal to length) were measured for whole oysters. Whole oyster shells were examined for a number of other characteristics, including age and whether the surface bore the marks of infestation by the polychaete worms *Polydora ciliata*, *P hoplura* and the burrowing sponge *Cliona celata*. The shell surface was also examined for calcareous tubes, sandtubes, bryozoans and barnacles, any damage to the shell by predatory molluscs (drillholes) or evidence of the reuse of the shell by people. Because so few whole valves were recovered, the presence/absence of these species and marks were also noted for the right and left umbos. A spreadsheet recording a full description of all identified shell forms part of the project archive.

8.6.2 Results

Shell of three marine molluscs was present – the majority being *Ostrea edulis*, with a small amount of *Mytilus edulis* and fragments from both the left and right valve of *Pecten maximus*. Table 8.51 summarises the quantitative data on the shell by phase. This is a very small assemblage, although the domination by *Ostrea edulis* is clear. However, measurement of shell length was only possible for three *O edulis* right valves (58 mm, 85 mm and 93 mm). A minimum age could be obtained for nine of the eleven umbos and valves and this ranged from three to nine years with a mode at five years. Inspection of the surface of the larger fragments, umbos and valves of the *O edulis* shell revealed some infestation by *Polydora ciliata* on six pieces of shell and by *P hoplura* on one shell.

The largest right valve had been glued back together, although not entirely accurately, and this revealed some evidence for working in the form of a lozenge-shaped hole through it, which appears to have been made by working from the exterior of the shell. The maximum dimensions of the hole are 15 mm along the line of breakage ×10 mm orthogonal to this.

8.6.3 Discussion

The small size of the assemblage precludes any detailed interpretation. The *Ostrea edulis* shell is of a fairly modest size and its morphology is consistent with an uncrowded bed. However, the modal age is older than would be expected for a harvest of a farmed population (Walne 1974), assuming growth conditions similar to the present. The dominance of *P ciliata* as the infesting polychaete indicates the exploitation of a population living in shallow water (Cole 1956; P S Smith 1987; Winder 1992). *Mytilus edulis* is also found in shallow water, and on rocks. *Pecten maximus*, however, is a sublittoral species and would not normally be taken live under the same conditions as the other species, but the dead shell may be found along the channel coast.

9 Pottery and fired clay

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9.1 The pottery from the hilltop excavations of 1974–82

The late Isobel Smith

9.1.1 Earlier Neolithic

A. The total assemblage and its relationships

In total, 850 vessels have been identified, principally by 710 rims; the remaining 140 are represented by body sherds with distinguishing attributes (curvature of cups, necks/carinations of bipartite bowls, decoration) and by detached lugs and cordons (Table 9.1). No vessels were complete.

The two major sub-assemblages comprise 439 vessels from the central area (Table 9.5) and 361 from the Stepleton enclosure, pits and inner outwork (Table 9.6). The remaining 50 come from the middle and outer Stepleton outworks (12), the Shroton outwork (5), the western outwork (6), the Hanford outworks (20); and pits on the Hanford spur (7).

A concordance of pottery illustrations, find numbers, contexts and fabrics concludes this report.

Fabrics

Forty-three sherds chosen to represent the range of fabrics were examined in thin section by T C Darvill; his report on the petrology (9.2) defines eight fabric groups on the basis of raw materials – clays, natural inclusions and additives – and describes his survey of potential sources.

As shown in Table 9.1, three of the groups (7, 6, and 2 in descending order of frequency) account for nearly 90% of the assemblage. The clay matrix of group 7 (47.9%) is closely matched by Kimmeridge clay some 2.5 km west of Hambledon Hill. The flint temper varies widely in particle size and density. The general effect is that of well-shaped vessels with fairly smooth surfaces; also present are a few exceptionally fine and some extremely rough examples.

Fabric group 6 (25.5%) is characterised by numerous small red (iron-rich clay) pellets which, together with a somewhat silty texture, may suggest a riverine origin, possibly in the near vicinity of Hambledon Hill, although Fiona Roe suggests a source area in south-east Dorset (10.1.2). The common temper is flint, but five other additives were occasionally used (9.2). Surface treatment seems usually to have been confined to a perfunctory hand-smoothing, with little attempt to reduce irregularities. Some bowls are markedly asymmetrical and clumsy, and the standard appears low in comparison with products attributed to other fabric groups.

Fabric group 2 (19.0%) comprises six subgroups which probably originate from at least three localities along the Jurassic limestone outcrops to the west and north-west of Hambledon Hill. The subgroups can be distinguished by macroscopic inspection, but the discovery that adjacent coils in a single sherd represent two distinct subgroups (Fig 9.14) shows that raw materials from separate sources were sometimes used together. For present purposes, therefore, all the Jurassic fabrics are treated as one. Calcareous inclusions (ooliths, fossil shell, limestone) have been lost from sherds exposed to weathering. Among the best-preserved pieces are some with unconcealed inclusions, but the overall impression is that these vessels were probably superior in appearance to much of the other pottery.

Fabric 1, gabbroic ware (1.2%) is the smallest of the five minor groups and the most interesting because of its origin on the Lizard Head in south-west Cornwall and distribution eastward as far as north Wiltshire (Peacock 1969; 1988). All the gabbroic feature sherds from Hambledon Hill are illustrated (P1–P10). Even weathered or refired pieces clearly represent pottery of a standard rarely achieved in Wessex and correspond to the 'fine' or 'medium' quality observed in the entirely gabbroic assemblage from Carn Brea (Smith 1981, 162). The best-preserved parts of the two large bowls, P1 and P2, retain burnished red surfaces; P5 and P9 display the smooth black coating present on some of the pottery from Carn Brea (ibid, 170).

Fabric group 8 (4.1%) contains only quartz sand in varying quantities and probably comes, like fabric 7, from the Kimmeridge clay. The sources of the three remaining groups are as yet unlocated: fabric 3 (1.4%), calcite-tempered, usually well-smoothed, occasionally burnished; fabric 4 (1.4%), organic-tempered; and fabric 5 (2.5%), filled with fresh shell and flint that is often coarse and protruding. Cleal has suggested a source in Purbeck for calcite-tempered Neolithic fabrics from Maiden Castle which are similar to fabric 3 (1991a, 173).

The clay on Hambledon Hill itself was apparently not used for pottery, but a sample from a fissure in the Chalk inside the Stepleton spur provides a close match for burnt clay from that site (see 9.2).

Table 9.1 Vessel form:fabric correlations in total assemblage

Figures in *italics* denote decorated vessels

	Fabric groups										
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*subtotals*	*totals*	*% decorated*
Cups	–	14	2	7	1	52	36	14	126		
	–	–	–	–	–	*2*	*6*	*3*	*11*	137	8.0
Carinated cups	–	–	–	–	–	2	1	1	4		
	–	–	–	–	–	–	*1*	–	*1*	5	20.0
Necked cups	–	–	–	–	–	1	1	–	2	2	
Carinated bowls	–	8	1	–	–	1	18	–	28		
	–	*1*	–	–	–	–	*2*	–	*3*	31	9.6
Necked bowls	–	2	–	–	–	1	2	–	5		
	–	–	–	–	–	*2*	*1*	–	*3*	8	37.5
Open bowls	4	6	4	1	–	2	25	–	42		
	–	–	–	–	*1*	–	–	–	*1*	43	2.3
Other bowls:											
rims	5	86	4	3	15	122	250	8	493		
	–	*5*	*1*	–	–	*3*	*14*	–	*23*	516	4.6
decorated body sherds	–	–	–	–	–	*9*	*11*	*1*	*21*	21	100
detached lugs	1	13	–	1	4	18	35	8	80		
	–	–	–	–	–	–	*1*	–	*1*	81	1.2
detached cordons	–	1	–	–	–	2	3	–	6	6	
Totals	10	136	12	12	21	217	407	35		850	
% of assemblage	1.2	16.0	1.4	1.4	2.5	25.5	47.9	4.1		100.0	
% decorated	–	4.4	8.3	–	4.8	7.4	8.8	11.4		7.5	

Vessel forms

All vessels appear to have been round-based. Forms are defined by size and shape. Correlations with fabric groups are given in Table 9.1.

Cups, up to 120 mm in diameter, account for 19.1% of the assemblage. Shapes are generally open (P75) or neutral (P60), occasionally closed (P69). Rims are simple; several cups carry small lugs (see below). Within this size range are also five *carinated cups* (0.6%; P42, P39 with lugs on the shoulder) and two *necked cups* (0.2%; P43, P45).

Carinated bowls (3.6% of the assemblage) display a range of profiles, from sharp carinations and concave necks (P36) to slack, nearly straight-necked examples (P33). Forms are generally neutral; a few are slightly open (P38) or closed (P34). Rims are simple (P38), rolled over (P34) or externally extended (P32, P37). Several bowls carry solid or perforated lugs on the carinations (P31, P34, P37, P38).

Necked bowls (0.9% of the assemblage) are best exemplified by P41 and P57, where the cylindrical necks and rounded bodies are clearly differentiated. The profiles of the other six (P61, P63, P98, P107, P108, P118) are weakly defined.

Open bowls (4.9% of the assemblage) range in shape from conical (P1) to hemispherical (P2). Incurved rims (P2, P12, P18) and trumpet lugs (P2, P3) seem to be specific but not invariable attributes.

Other bowls are represented mainly by 517 rims too fragmentary to indicate vessel shapes. The 63 that are better preserved include a few that may be described as closed (P47, P48); the rest are divided more or less equally between forms that are straight-sided or neutral (P46, P51) and those with slightly contracted rims (P68, P79).

Table 9.1 indicates several disparities in the representation of vessel forms across the three main fabric groups: the high proportion of cups made of fabric 6; the rarity of fabric 6 among the carinated and open bowls; the absolute dominance of fabrics 2 and 7 among the carinated bowls and of fabric 7 among the open bowls.

Rim forms

The morphology and fabric attributions of the 710 rims are set out in Table 9.2. Forms defined are:

Simple, 75.5% of the total, comprising four variants: rounded (eg P55), 33.9%; squared, often with sharp edges (eg P54), 22.6%; pointed (eg P61, P80), 13.1%; irregular, 5.9%.
Rolled over, 11.4% of the total (eg P33, P53).
Incurved, 4.9% of the total, confined to open bowls; rounded exterior drawn inwards to join interior as a thin vertical (eg P2) or slightly overhanging (eg P16) lip.
Externally extended, 3.5% of the total, horizontal (eg P102) or tilted inwards (eg P83).
Enlarged, 2.1% of the total, bulbous (eg P96) or thickened internally (eg P89).

Table 9.2 Rim form:fabric correlations in total assemblage

Figures in *italics* denote decorated vessels

	Fabric groups										
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*subtotals*	*totals*	*% decorated*
Simple											
rounded	3	42	3	3	3	53	122	6	235		
	–	–	–	–	–	–	*4*	*2*	*6*	241	2.6
squared	1	26	3	2	5	48	71	2	158		
	–	–	–	–	*1*	*1*	*1*	–	*3*	161	1.8
pointed	1	7	–	4	–	22	43	13	90		
	–	–	–	–	–	*1*	*2*	–	*3*	93	3.1
irregular	–	2	2	–	1	27	9	1	42	42	
Rolled-over	1	15	1	2	2	15	42	1	79		
	–	–	–	–	–	–	*2*	–	*2*	81	2.4
Incurved	3	4	2	–	–	1	25	–	35	35	
Externally extended	–	5			1	2	11	–	19		
	–	*2*	–	–	–	–	*4*	–	*6*	25	24.0
Enlarged	–	4	–	–	4	1	2	–	11		
	–	–	–	–	–	*1*	*3*	–	*4*	15	26.6
Internally extended	–	–	–	–	–	7	1	–	8		
	–	–	–	–	–	*1*	–	–	*1*	9	11.0
T-shaped	–	4	–	–	–	–	3	–	7		
	–	*1*	–	–	–	–	–	–	*1*	8	12.5
Totals	9	112	11	11	17	180	345	25		710	
% of 710 rims	1.3	15.8	1.5	1.5	2.4	25.4	48.6	3.5		100.0	
% decorated	–	2.0	–	–	5.8	2.2	4.6	8.0		3.6	

Internally extended, 1.3% of the total (eg P86).
T-shaped, 1.1% of the total (eg P87, P91).

Rims of fabric 6, the second largest fabric group, are proportionately over-represented in the 'irregular' subgroup of the 'simple' form and in the 'internally extended' form, and under-represented in the 'incurved' form.

Lugs and cordons

There are 129 classifiable lugs; all surviving pairs are counted as single units. Eleven trumpet lugs comprise: six perforated horizontally and made of fabric 1 (P2, P3, P5 and remnant on P4), fabric 2 (P25), and fabric 7 (not illustrated); one perforated vertically and made of fabric 5 (P105); and four imperforate, made of fabric 6 (P13, P27) and fabric 7 (P26, P28). A single tubular lug with unexpanded ends (not illustrated) is made of fabric 2.

Ten bilobate (or divided) lugs include eight that are imperforate and made of fabric 3 (P11), fabric 6 (P29, P64), and fabric 7 (P30, P97, plus three not illustrated); one perforated horizontally, made of fabric 2 (P19); and one of fabric 7, pierced vertically (not illustrated).

Less distinctive lugs, represented in all fabrics except 1 and 3, include a narrow ring-handle set on a shoulder (P120) and eight of oblong shape perforated horizontally, two of them set on cordons (eg P79, P81). Two of the eleven with vertical perforations are set on shoulders (P34, P37). A further six are too fragmentary to show the direction of perforation. The 81 unpierced lugs are generally oval in shape (eg P65, P66). Variants include round knobs (eg P118) and elongated forms (eg P31, P55, P101). A rectangular version with broad horizontal depression (eg P99) occurs twice.

Lugs were attached by tenons set into holes in the walls (eg P29, P48, P74, P97) and by luting. The pit on the body of P120 may be an unused mortise for the adjacent ring-handle rather than a decorative feature. Reduced versions of round, oval and bilobate lugs were attached to cups (P62, P64, P65, P67, P138). A miniature trumpet lug, only 20 mm across (P28), will also have come from a cup.

Eight bowls (fabrics 2, 6 and 7) carried cordons, on P79–P80 set high on the body. The lugs on P79 and P81 were noted above.

Decoration

Decoration appears on and/or beneath 5.6% of the 710 rims and on 7.5% of the total assemblage if rimless fragments are included (Table 9.1). It was applied sparely to simple and rolled rims, proportionately most often to the forms with expanded surfaces (Table 9.2), and is absent only from vessels of fabrics 1 and 4, necked cups, incurved and irregular simple rims. All decorated pieces are illustrated except one cup and nine body sherds.

Techniques comprise impressions made with points, fingernails and twisted cord, and incisions made with sharp or blunt tools; only two vessels show impressions and incisions in combination (P116, P127). Pattern-burnishing was not observed.

Seven bowls of medium to large sizes carry a line of round pits (eg P117, P121) or pre-firing perforations (eg P118, P119) beneath simple rims. A variant combines pinpricks with irregular impressions (P113). Round pricks or, rarely, stabs (eg P133) occur on eight vessels, once above a carination (P126) and otherwise on cups or small bowls, where they were usually aligned horizontally (eg P127–P129). The fragments of a carinated cup (P124) show a horizontal row inside the rim and vertical rows on the neck. On two examples the impressions seem randomly disposed (eg P123).

Fingernail impressions occur on 13 vessels: on the tops of rims (eg P102, P104, P105) or on the body, where they stand in rows (P140–P142), form part of a curved motif (P146) or are apparently placed at random (P147, P153). Fingertip impressions were applied to two rims (P108, P110) and a body sherd (P152).

Twisted cord impressions are confined to three externally extended rims (P111, P112, P115).

The incised decoration on 20 vessels was made with sharp tools, perhaps flint flakes (eg P114), and with blunt points (eg P103). Transverse or oblique incisions decorate the tops or inner surfaces of rims (P109, P116, P132) and extend vertically over the neck of one carinated bowl (P103). Diagonal incisions on body sherds may have been arranged in zones (as on P150–P151); a single lug carries vertical incisions (P154).

'Thumb-grooves' and allied features

The external hollow beneath the rim of P139 represents the defining characteristic of a 'thumb-groove bowl', a special category in Cleal's (1992) classification of earlier Neolithic ceramic forms. P148, although less typical, may also fall within this category. Six sherds have internal grooves: P145 has a groove close to the rim and a slight external swelling; P144, a deep groove inside a straight wall and pronounced external ridge; on P143 and three others the profiles are incomplete but appear to have been similar to P144. (For comparanda see '*Connections*', below.) The shallow grooves and ridges on the rim sherd P149 appear to have been decorative in intent.

A presence/absence chart (Table 9.3) illustrates the spread of individual decorative techniques and of 'thumb-grooves' across vessels of all fabric groups except the entirely plain 1 and 4.

Black coating

Traces similar to those already noted on two fabric 1 sherds (P5, P9) remain on a few non-gabbroic pieces. They are best preserved on the fragment from a fabric 7 open bowl (P14), where both surfaces are covered.

Repair holes

The secondary holes present on 19 vessels probably represent devices for binding cracks; only one complete pair has survived. The hole on P57 had been started from both faces and abandoned before completion. Drilled holes on four cups (eg P65, P72) show that even these small and easily made containers were worth repairing.

Table 9.3 Presence/absence of individual decorative techniques and of 'thumb-grooves' across vessels of all fabric groups, except the entirely plain 1 and 4

	Fabric groups					
Techniques	*2*	*3*	*5*	*6*	*7*	*8*
Incisions	+	–	–	+	+	+
Fingernail impressions	+	–	+	+	+	+
Fingertip impressions	–	–	–	+	+	–
Irregular impressions	–	–	–	–	+	–
Round/oblique pin pricks	+	–	–	+	+	+
Line of pits/perforations under rim	+	–	–	+	+	–
Twisted cord impressions	+	–	–	–	+	–
Combination of techniques	+	–	–	–	+	–
'Thumb-grooves'	–	+	–	+	+	–

Vessel sizes

The external diameters of the 156 rims that afford reasonably accurate measurements are set out in Table 9.4. Cups, 60–120 mm, are represented in all fabrics except fabric 1 and account for 37% of the total, a much higher proportion than the *c* 5% to 13% recorded in other large assemblages for which equivalent information is available (Abingdon, Avery 1982, table 6; Maiden Castle, Cleal 1991a, table 58; Carn Brea, Smith 1981, 166; Windmill Hill, Smith 1965, 49; Broome Heath, Wainwright 1972, 24). An alternative calculation, based on the figures given in Table 9.1, suggests that cups (including carinated and necked forms) constitute *c* 17% of the assemblage. The three largest bowls, with diameters exceeding 300 mm, comprise P117 (fabric 2), probably from the vicinity of the Jurassic limestone outcrop west or north-west of Hambledon Hill, together with P1 and P2 (fabric 1) from south-west Cornwall.

Connections

The burnished red and black fabric 1 bowls, some of impressive size (P1, P2), attest to direct or indirect transactions with the potters exploiting the gabbroic clay on the Lizard peninsula in south-west Cornwall (area shown by Peacock 1969, fig 1). A charred twig of Cornish heath from the same location (see Austin *et al*, 6.1) is a plausible residue of packing that had protected such vessels in transit and may imply direct deliveries to Hambledon Hill. West Country connections seem deliberately emphasised by the burial of a complete stone axe of Cornish origin beneath the remains of P1 and P2 in a pit inside the main causewayed enclosure (Figs 3.54–55). The significance attached to the imported bowls at this site is also apparent from the

Table 9.4 External rim diameters of 156 vessels in total assemblage

	Fabric groups									
Diameters (mm)	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*totals*	*%*
60–120	–	3	2	4	–	27	15	7	58	37.2
120–180	–	4	–	2	1	5	18	–	30	19.2
180–240	–	14	3	–	1	7	23	–	48	30.8
240–300	–	2	–	–	1	5	9	–	17	10.9
310	1	1	–	–	–	–	–	–	2	1.3
400	1	–	–	–	–	–	–	–	1	0.6
Totals	2	24	5	6	3	44	65	7	156	

concentration of their fragments in the enclosure's internal pits where they constitute 7% of the countable vessels. The proportion is comparable with the *c* 6% of gabbroic ware in the assemblages from the two nearest enclosures – Maiden Castle, Dorset (Cleal 1991a, 171) and Whitesheet Hill, Wiltshire (Cleal 2004). But Cleal has noted at each of those sites a different mode of disposal of this pottery – burial of large pieces deep in the enclosure ditches.

Together with the imports, the greater part of the locally made pottery used at Hambledon Hill adheres to the conventions of the South-western regional style, distributed from Cornwall to north Wiltshire (Whittle 1977, 77–82). The vessel characteristic of this style, consistently found in all but the smallest assemblages, is the plain uncarinated open bowl with simple or incurved rim and horizontally perforated trumpet lugs. At Hambledon Hill half of the gabbroic feature sherds (P1–P5) conform to this specification. The small rim sherds (P6–P10) may come from gabbroic forms less frequently carried to Wessex such as a neutral bowl with trumpet lug from Whitesheet Hill (Cleal 2004), carinated bowls from Maiden Castle (Cleal 1991a, 177–8), or a closed bowl from Windmill Hill, Wiltshire (Smith 1965, 46).

The open bowls made of the local fabrics 2–7 are noticeably smaller than the imports, and several of the trumpet lugs are imperforate, in this respect resembling some gabbroic specimens from Cornwall – at Carn Brea (Smith 1981) and from the Lizard itself (Smith and Harris 1982; G H Smith 1987). There is one departure from the South-western tradition: the expanded ends of the lug on P105 mimic the trumpet form, but it is pierced vertically and set low on the only decorated open bowl in the assemblage. A comparable breach is recorded from Whitesheet Hill: a classic trumpet lug applied to the neck of a locally made closed carinated bowl (Cleal 2004).

The bilobate (divided, double, or notched) lug is also found on open, or occasionally neutral, bowls and may be derived from the trumpet form (cf a compressed lug from Hazard Hill (Houlder 1963, fig 6: 26). Peacock has identified (1969, 146) a possible gabbroic example from Hembury, Devon (Liddell 1935, P332). Other specimens are made of local materials: two from Hembury (Liddell 1931, P84; 1932, P304), one from Maiden Castle (Cleal 1991a, 179), one from Hampshire (Piggott 1937, fig 3: 7), four from Windmill Hill (Smith 1965, P111–P114), and ten (fabrics 2, 3, 6, 7) from Hambledon Hill (eg P11, P19).

Another typical South-western device is the girth-cordon, sometimes surmounted by lugs, on large utilitarian vessels of neutral or closed form. In Cornwall, the only gabbroic examples are from Carn Brea (Smith 1981, 168–70). At Helman Tor, in the east of the county, the combination recurs in a local fabric (Smith 1997). In Devon cordons are reported on similar vessels from Haldon (Willock 1936), Hazard Hill (Houlder 1963) and Hembury (Liddell 1931; 1932; 1935). The lug and cordon combination reappears in Dorset at Maiden Castle (Wheeler 1943, fig 37: 139), and at Hambledon Hill (P79, P81). Farther east, at Windmill Hill and Staines, Surrey, cordons are found on single fragments of neutral jars, more frequently on smaller closed bowls (Smith 1965; Robertson-Mackay 1987); they are absent from other assemblages of the Decorated and Eastern styles.

The burnished black or dark finish added to some South-western pottery is a less durable attribute, vulnerable to weathering or re-firing. At Hambledon Hill it is preserved only on the gabbroic sherds P5 and P9, on the fabric 7 sherd P14 and in small patches on a few other local products. It survives on around a quarter of the all-gabbroic pottery from Carn Brea (Smith 1981, 170–72) and on a sixth of the mixed assemblage from Helman Tor, composed of gabbroic and three local fabrics (Smith 1997). In Devon and Wessex black-surfaced gabbroic bowls are recorded from Hembury (personal observation), Maiden Castle (Cleal 1991a, 181), Whitesheet Hill (Cleal 2004), Robin Hood's Ball (Thomas 1964, 18, pl II: 2, fig 4: 17) and Windmill Hill (Smith 1965, 46, pl XVIIa, top right). A notable series of fine carinated bowls, made of local clays, their surface finishes well preserved in peat, demonstrates that the technique was known to potters in the south-west before the tree-ring date of 3807/3806 BC, when they were discarded along the Sweet Track in the Somerset Levels (Coles and Coles 1990, 218; Smith 1976; Kinnes 1979).

The numerically significant indicators of south-western connections are high proportions of undecorated vessels, here 93%, and of simple rims, 75% – quantities comparable with those calculated by Cleal (1991a, 175) for Maiden Castle and Carn Brea. The 'intrusive' elements of the Decorated style (Whittle 1977, 85) – developed rims, 8%, and ornamented vessels, 7% – were made in all fabrics except 1 and 4. There are no exclusive links between individual fabrics and specific rim forms or methods of decoration. Decorated vessels were evenly spread between the central area and the Stepleton spur (Tables 9.8 and 9.9) and stratification in their ditches indicates that developed rims were present when the earliest surviving deposits were made (section C, below).

This fraction of the assemblage seems to reflect contacts with potters producing the Decorated wares found in the causewayed enclosures on Windmill Hill in north Wiltshire, at Abingdon and Staines in the Thames valley, and at Whitehawk in Sussex. Cord-impressed ornament appears to have been confined to the first three sites – five examples from Windmill Hill (Smith 1965, P223–P227), 23 from Abingdon (Avery 1982, table 7), one from Staines (Robertson-Mackay 1987, P146) – and one more from the West Kennet long barrow near Windmill Hill (Piggott 1962, fig 10: W1). The rims conform closely to a uniform specification: the twisted cord almost always wrapped diagonally across enlarged rounded surfaces. The transverse impressions on P111 and P115 and the short diagonals on P112 have been applied to the broad flat horizontal or tilted surfaces of externally extended rims. This rim form is represented at Hambledon Hill by 22 further examples (eg P37, P83, P102) and rarely elsewhere except at Abingdon where, under the classification 'angular, outturned', 53 examples are recorded (Avery 1982, table 3, fig 14: 2 for the horizontal variant; Leeds 1927, fig 6: 2–3 for the tilted variant). The other 32 developed rims from Hambledon Hill – enlarged, internally extended, T-shaped – are less specific to any single assemblage and can be matched at Windmill Hill (Smith 1965, fig 11) as well as at Abingdon or Staines (Robertson-Mackay 1987, fig 37).

Windmill Hill provides the geographically nearest source of comparanda (Smith 1965, figs 25–27) for the incised and tool-impressed decoration like that of P103, P106, P121, P124, P129. The line of pits and/or pre-firing perforations, not always continuous, beneath rims that are usually simple and undecorated is a minor but recurrent motif in assemblages across southern England from Norfolk (Healy 1988a) to Cornwall (Smith 1997). Two small perforated sherds from a sealed deposit of South-western pottery in a pit known as the Coneybury 'anomaly' indicate a presence in Wiltshire by 4050–3640 cal BC (5050±100 BP; OxA-1402; Cleal 1990, 53; Richards 1990, table 137). As the motif is sparingly represented in most contexts, the presence of seven examples at Hambledon Hill, eg P117–P119, with P113 as an inventive variant, suggests familiarity with the potters who supplied the major concentration of 37 at Windmill Hill (Smith 1965, 52, fig 25). But fingernail and fingertip impressions are rare at that site (ibid, fig 13) and, although reported as the most frequent type of impressed decoration at Staines (Robertson-Mackay 1987, 88), were used there to different effect. The fingernail-impressed pattern on P142 is a close match for that on a bowl from Whitehawk (Ross Williamson 1930, pl IV: 2), where, as described below, a further, more significant, connection involving the use of this technique is also to be found.

'Thumb-groove' bowls like P139 are widely distributed but usually limited to one or two examples in individual assemblages. Seventeen bowls like P139 are known from Windmill Hill, as well as several with lightly drawn internal grooves (Smith 1965, 50, fig 18); the other significant concentration, at Staines (Robertson-Mackay 1987, 74), is differentiated only by flattening of the rims. The sources of the unusual fragments P143 and P144 – their internal grooves drawn within straight walls and raising external ridges – are revealed by a more complete bowl from Staines (ibid, P141) where the external feature, *c* 30 mm beneath the rim, is accompanied by conventional shoulder-zone decoration. The technique seems to have been an alternative to the more usual method(s) of creating bipartite bowls. P145, with groove and raised band close beneath the rim, also has a counterpart at Staines (ibid, P149). Other examples of this technique, all with prominent external ridges, are known from Runnymede Bridge, 1 km south of the Staines enclosure (Longworth and Varndell 1996, NP 69) and from Whitehawk (Ross Williamson 1930, pl XI: 55–56).

Finally, shared peculiarities of form and decoration suggest connections between Hambledon Hill and the nearest enclosures. The only known counterpart to the two necked cups, P43 and P45, comes from Maiden Castle; and one of the few decorated vessels from that site is a cup displaying parallel rows of round impressions like those on P124 (Wheeler 1943, fig 29: 59, fig 28: 34; Cleal 1991a, 179, 181). The curving line of fingernail impressions on P146 is reminiscent of a similar motif on the inner surface of the single decorated bowl from Whitesheet Hill and is, in turn, comparable to ornament on a small carinated bowl from Remenham, Berkshire (Cleal 2004; Holgate and Start 1983–5) and also to the curving lines of oval impressions on the neck of a carinated bowl from Whitehawk (Piggott 1936a, 80, fig 2).

B. Analyses of the sub-assemblages from the two enclosures

The substantial quantities of sherds recovered from pits and ditches in and around each enclosure provide a basis for analysis of variations in modes of disposal and in distributions of vessel forms and fabrics (Tables 9.5 and 9.6). But the loss of unknown proportions of

Table 9.5 Distribution of vessel forms in the central area

Figures in *italics* denote decorated vessels

	Pits	*Main enclosure ditch*	*Inner cross-dykes*	*Outer cross-dykes*	*Long barrow*	*subtotals*	*totals*
Cups	20	39	2	1	6	68	
	5	*3*	–	–	*1*	*9*	77
Carinated cups	–	1	–	–	–	1	
	–	*1*	–	–	–	*1*	2
Carinated bowls	2	8	1	–	1	12	
	–	*1*	–	–	–	*1*	13
Necked bowls	1	3	–	–	–	4	
	–	*1*	–	–	–	*1*	*5*
Open bowls	11	13	–	–	4	28	
	–	–	–	–	*1*	*1*	*29*
Other bowls:							
rims	60	139	11	7	25	242	
	3	*9*	*1*	–	*1*	*14*	256
decorated body sherds	*2*	*5*	–	–	*1*	*8*	8
detached lugs	10	29	3	2	4		48
detached cordon	–	–	1	–	–		1
Totals	114	252	19	10	44		439
% decorated	8.8	7.9	5.3	–	9.0		7.9

Table 9.6 Distribution of vessel forms in the Stepleton pits, enclosure and inner outwork

Figures in *italics* denote decorated vessels

	Pits	*Enclosure ditch*	*Inner outwork*	*subtotals*	*totals*
Cups	22	24	6	52	
	1	*1*	–	*2*	54
Carinated cups	–	3			3
Necked cups	–	1	–		1
Carinated bowls	2	11	–	13	
	1	*1*	–	*2*	15
Necked bowls	2	–	–	2	
	–	*1*	–	*1*	3
Open bowls	6	4	2		12
Other bowls:					
rims	62	121	35	218	
	2	*5*	*3*	*10*	228
decorated body sherds	*4*	9	–	*13*	13
detached lugs	4	16	6	26	
	–	*1*	–	*1*	27
detached cordons	1	4	–		5
Totals	107	202	52		361
% decorated	7.5	8.9	5.7		8.0

the original contents of the pits in both enclosures must be kept in mind when considering the figures in these tables.

Modes of disposal

Pottery was found in 73 pit bases within the central area, but only 38 contained feature sherds, representing in all 108 vessels (the total of 114 given in Tables 9.5, 9.7 and 9.10 includes six feature sherds assumed to have been ploughed out from pits). The highest number of vessels represented in a single pit is eight, and 27 pits yielded only one to three. Weathered or refired sherds frequently occurred together with those that appear to be in fresh condition, and mixtures of vessel and fabric types are the rule when any quantity of pottery is present. Fragments are generally small and few joins were identified. Diameters can be estimated for only eight bowls and three cups. Parts of the same vessel were in no instance recognised in more than one pit. The circumstances may suggest that the sherds, or

some of them, had lain in exposed deposits before transference to the pits. Excavations of the Neolithic midden sealed beneath the Hazleton North long cairn in Gloucestershire (Saville 1990b) and the Bronze Age midden at Potterne, Wiltshire (Lawson 2000) have demonstrated similar fragmentation, dispersal and mixtures of fresh, weathered and refired sherds.

The contents of one pit (B F14) are exceptional in quantity, condition and variety. Impacted on the surface of the basal fill (layer 4) were a substantial portion (about two-thirds) of a roughly finished fabric 7 cup (P58) and an entire axe of Cornish greenstone (Figs 3.54–55). Within the overlying and distinct layer 3 were parts of two restorable gabbroic (fabric 1) open bowls: P1, represented by about one-third of the rim, and P2, with half of the rim surviving as well as a trumpet lug and the full profile. Eroded areas on both bowls suggest partial exposure to weathering, and abrupt colour changes show that some of the conjoining fragments had been refired after the bowls were broken. Layer 3 also contained small feature sherds from five fabric 7 vessels, including the decorated cup P138, and a charred, immature human skull fragment came from an unknown context in the pit.

Three further pits (A F64, A F120, N F11) and one natural feature (B F1) also contained fragmentary human bones as well as pottery. Neither character nor condition distinguishes the sherds from those in other pits.

Pottery was recovered from 71 of the pit bases within and adjacent to the Stepleton enclosure: 41 produced feature sherds representing 97 vessels (the total of 107 given in Tables 9.6, 9.7 and 9.10 includes ten assumed to have been ploughed out from pits). Again, numbers of vessels represented by feature sherds were small: 29 pits yielded one to three and the highest number from a single pit was six. The condition of the material from the majority of pits is similar to that described from the pits within the main causewayed enclosure and suggests that here, too, some of it had been taken from surface deposits.

Conjunctions of human remains and pottery occurred in four features. There was a single sherd in the fill of one grave (1A F70), and the ceramic content of a second grave (4B F712) is identified below as part of the post-conflagration debris used as grave-filling. Two pits contained fragmentary human bones: the pottery from 4B F137 consists of a quantity of mostly very small sherds, some of them weathered; sherds from Feature 1A F57 are nearly all in fresh condition and comprise fairly large parts of five vessels: P17, a fabric 2 bowl; P23 and P24, open bowls of fabrics 7 and 6 respectively; and P118, a fabric 7 necked bowl with a row of perforations beneath the rim and high-set lug(s). In no instance does it seem that any particular significance was attached to the pottery in these features.

The contents of six other pits stand apart because, as in feature 1A F57, the pottery had been freshly broken when deposited; in these pits, however, the sherds represent only one or two vessels. There are also two examples of simultaneous deposition in contiguous pits. Sherds of the bowl P77 had been distributed equally in each of Features 2A F268 and F269. Features 1A F228, F229+F295 and F350 were linked by the presence of sherds from two distinctive vessels, represented by the decorated body sherd P152 and another distinguished by minor peculiarities of fabric, among other fresh and weathered pottery and burnt clay. A slightly higher proportion of relatively large fragments in the Stepleton pits, as compared with those at the main causewayed enclosure, has allowed diameter measurements for twelve bowls and four cups.

At both enclosures the general practice governing disposal of pottery in pits seems to have involved the redeposition of fragments that had accumulated in the open. The occasional associations with human remains appear to have been coincidental. At Stepleton the contents of a few pits deviated from the norm in containing freshly broken pottery.

As discussed in Section C, fragmentation or weathering of pottery in enclosure ditches could reflect disruptions of silt formation rather than the nature of the immediate sources outside the ditches. The recurrence of refired sherds in deposits of all phases in the ditches of the two enclosures, in each instance constituting about 8% of all feature sherds, can be taken as evidence that some of the pottery had been derived, but vessels that may have been freshly broken when deposited are also present. In neither enclosure were parts of the same vessel found to link pits with ditches or one ditch segment with another (except on two occasions among sherds from the upper fills of adjoining segments). Within the limited confines of the south long barrow, however, parts of four individual vessels had been distributed in both ditches, and here nearly 14% of the feature sherds had been refired, including those from three vessels to which unaltered sherds could also be attributed.

The distribution of pottery in ditches seems to be unrelated to the presence or absence of human remains; feature sherds were, for example, rare in the phase I–II 'primary' deposits and in the phase IV 'grey pits' in the ditch of the main causewayed enclosure. On the other hand, the ditches of the south long barrow, not themselves used as places of interment, contained parts of over 40 vessels. Concentrations of feature sherds in individual ditch segments are not entirely explicable in terms of size of segment or the proportion excavated. In the ditches of the south long barrow, 66% of all feature sherds from the phase VI slots came from the south end of the west ditch. In the ditch of the main causewayed enclosure, 22% of feature sherds from Phase VI slots came from segment 3 and 23% from segment 14. In the Stepleton enclosure ditch, 25% of the feature sherds from the phase III and IV fills were in segment 12, as were 18% of those from phase VI. Other phase VI concentrations were 16%

from segment 7 and 26% from segment 8. If segment 8 had originally been a terminal at the side of an entrance to the enclosure, comparison might be made with the high density of pottery in segment VII of the Inner Ditch at Windmill Hill, also on the south side of a putative entrance in the north-west sector (Smith 1965, 5, plan, fig 3).

Observations on a further aspect of disposal in ditches will be found in Section C.

Distributions of vessel forms

Tables 9.5 and 9.6 set out the numbers of vessels, classified by form, from separate context groups within the central area (the pits, enclosure ditch, cross-dykes and south long barrow) and the Stepleton spur (pits, Stepleton enclosure and inner Stepleton outwork). The proportional representations of vessel forms from the three most prolific contexts at each enclosure are summarised in Table 9.7.

Inter-site differences in the relative frequencies of individual vessel types are slight. At the main causewayed enclosure there are 2.5% more cups and 3.1% more open bowls than at Stepleton, where there are 4.3% more unclassified bowls. Distributions of rim forms in the two sub-assemblages do not deviate significantly from the proportions established for the total assemblage (Table 9.2), and the percentages of decorated vessels are virtually identical. Specialised types of lug are, however, noticeably more numerous in the central area, where there were six more or less well-made trumpet lugs and seven bilobate lugs, as against only two of each type from Stepleton. The higher numbers of these (mainly detached) lugs in the central area is probably correlated with the higher frequency there of open bowls. Nine vessels with repair-holes came from the central area and ten from the Stepleton spur; it would seem that damaged vessels were not excluded from use in either context.

The figures given in Table 9.7, showing proportional representations of vessel types in separate contexts, seem to suggest rather surprising conformities of *intra-site* distributions in the pits and in the ditches of the two enclosures. At each site higher percentages of cups and of open bowls came from pits, while carinated bowls were relatively more numerous in ditches. The data may suggest common patterns of selective deposition, but the small numbers of vessels in some categories inhibit confident interpretation. The proportions of decorated vessels from pits and from enclosure ditches provide no evidence for selection (Tables 9.5 and 9.6). Figures for the south long barrow and for the inner Stepleton outwork are included in Table 9.7 for the sake of completeness but the quantities of pottery from these contexts are too limited to support interpretation.

Distributions of fabrics

Tables 9.8 and 9.9 present analyses of vessel form:fabric relationships in the sub-assemblages from the two enclosures. Fabric groups 3–5 and 8, represented at each site by small numbers of vessels, will not be considered here. As described in Section A (above), the remaining four fabric groups can be ranked in descending order of refinement with fabric 1 (gabbroic ware) at the head of the list, followed by the Jurassic wares (grouped together as fabric 2) and the two wares of more local origin – fabric 7, of variable quality, and the relatively crude products made of fabric 6. The following comments on distribution relate to feature sherds – countable vessels – only. Total sherd counts for the relevant fabrics and contexts will be found in Tables 9.12–13.

Inter-site variations in the distributions show a strong bias in favour of fabrics 1, 2, and 7 in the central area. All of the recorded fabric 1 feature sherds (P1–P10) were concentrated there; only a few small body fragments came from Stepleton. Fabric 2 constitutes 20% of the sub-assemblage from the central area and 10% of that from Stepleton. With fabric 7 the discrepancy is greater still: 55% and 37%. Conversely, fabric 6 is dominant at Stepleton, with 44%, but represents only 12% in the central area. Such contrasts may reflect the predominantly ceremonial nature of activities in and around the main enclosure and the perhaps more secular aspect of those at Stepleton.

Table 9.7 Proportional representation of vessel forms in the six most prolific contexts at the two causewayed enclosures

	Central area			*Stepleton spur*		
	Pits	*Enclosure ditch*	*Long barrow*	*Pits*	*Enclosure ditch*	*Inner outwork*
Vessel numbers	114	252	44	107	202	52
Cups	21.9%	16.7%	15.9%	21.5%	12.4%	11.3%
Carinated cups	–	0.8%	–	–	1.4%	–
Necked cups	–	–	–	–	0.5%	–
Carinated bowls	1.7%	3.5%	2.2%	2.8%	6.0%	–
Necked bowls	0.8%	1.5%	–	1.8%	0.5%	–
Open bowls	9.6%	5.2%	11.3%	5.6%	2.0%	3.7%
Other bowls	65.7%	72.2%	70.4%	69.1%	76.7%	84.9%

Table 9.8 Vessel form:fabric correlations in the sub-assemblage from the central area

Figures in *italics* denote decorated vessels

	Fabric groups									
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*subtotals*	*totals*
Cups	–	9	–	2	1	21	26	9	68	
	–	–	–	–	–	*1*	*6*	*2*	*9*	77
Carinated cups	–	–	–	–	–	–	–	1	1	
	–	–	–	–	–	–	*1*	–	*1*	2
Carinated bowls	–	5	–	–	–	–	7		12	
	–	*1*	–	–	–	–	–	–	*1*	13
Necked bowls	–	2	–	–	–	–	2	–	4	
	–	–	–	–	–	*1*	–	–	*1*	5
Open bowls	4	5	3	–	–	–	16	–	28	
	–	–	–	–	*1*	–	–	–	*1*	29
Other bowls:										
rims	5	52	1	2	10	26	141	5	242	
	–	*5*	–	–	–	–	*9*	–	*14*	256
decorated body sherds	–	–	–	–	–	–	*7*	*1*	*8*	8
detached lugs	1	9	–	–	3	2	27	6		48
detached cordon	–	–	–	–	–	–	1	–		1
Totals	10	88	4	4	15	51	243	24		439
% of sub-assemblage	2.3	20.0	0.9	0.9	3.4	11.6	55.4	5.5		
% decorated	–	6.8	–	6.7	3.9	9.5	12.5			7.9

Table 9.9 Vessel form:fabric correlations in the sub-assemblage from the Stepleton spur

Figures in *italics* denote decorated vessels

	Fabric groups									
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*subtotals*	*totals*
Cups	–	4	2	5	–	27	10	4	52	
	–	–	–	–	–	*1*	–	*1*	*2*	54
Carinated cups	–	–	–	–	–	2	1	–		3
Necked cups	–	–	–	–	–	2	1	–		1
Carinated bowls	–	2	1	–	–	1	9	–	13	
	–	–	–	–	–	–	*2*	–	*2*	15
Necked bowls	–	–	–	–	–	–	1	–	1	
	–	–	–	–	–	*1*	*1*	–	*2*	3
Open bowls	–	1	1	1	–	2	7	–		12
Other bowls:										
rims	–	27	3	1	5	93	87	3	219	
	–	–	*1*	–	–	*3*	*5*	–	*9*	228
decorated body sherds	–	–	–	–	–	*9*	*4*	–	*13*	13
detached lugs	–	1	–	1	1	16	5	2	26	
	–	–	–	–	–	–	*1*	–	*1*	27
detached cordons	–	1	–	–	–	2	2	–		5
Totals	–	36	8	8	6	159	134	10		361
% of sub-assemblage	–	10.0	2.2	2.2	1.7	44.2	36.6	2.8		
% decorated	–	–	12.5	–	–	8.8	9.7	10.0		8.0

Patterns of *intra-site* deposition (Table 9.10) show a further anomaly in the distribution of fabric 1 vessels: they constitute 7.0% of all feature sherds from pits within the main enclosure (including here P10, found in ploughsoil in the interior, presumed to derive from a pit) and less than 1% of those from the enclosure ditch (for details see catalogue, P1–P10). The restricted distribution implies that gabbroic bowls were reserved almost exclusively for use within the main enclosure and that disposal of their fragments was deliberately confined to the internal pits. P5 from the phase VI slot is the only feature sherd securely stratified in the ditch; P3, from the topsoil of the bank area on site P1, was unstratified.

C. Stratification and relative chronology

The known series of systematic disruptions of the fill in the ditch of the main causewayed enclosure – virtually complete removal of the initial silts, leaving only a remnant; the digging of the phase IV 'grey pits' into the phase III silts; the cutting of the phase VI slots to varying depths – affected the integrity of all but, if not including, the earliest deposits. A list of recognised displacements of parts of individual vessels offers a sample of the many that must have gone undetected:

P57, necked bowl (4 sherds): segment 9, phases I, III
P12, open bowl (2 sherds): segment 4, phases III, V
P31, carinated bowl (3 sherds): segment 17, phases III, V, VI
P82, bowl with lugs (13 sherds): segment 9, phases III, VI
P19, open bowl (3 sherds): segment 16, phases IV, VI
P114, decorated bowl (6 sherds): segment 3, phases V, VI, VIII/a

This evidence from widely separated parts of the ditch (segments 3, 4, 9, 16 and 17) suggests that during each disturbance the spoil, with contained artefacts, was systematically placed alongside the segment from which it had been removed. Some sherds, possibly further broken and/or weathered, drifted back to be incorporated in subsequent silts. As mentioned above, no instances of inter-segment displacement were noted except two involving sherds from the phase VI slots in adjoining segments. This pattern of confined redistribution may support Mercer's speculation (1980, 36) that the divisions in the enclosure ditch could represent family or clan divisions. It clearly diverges from those observed at Abingdon (Avery 1982, 30–2) and at Windmill Hill (Smith 1965, 14) where sherds of individual vessels had been widely dispersed both horizontally and vertically.

Two instances of vertical distribution were also recorded from the ditches of the Long Barrow:

P38, carinated bowl (4 sherds): W ditch (quadrant LB2), phases I, IV
P51, large bowl (10 sherds): W ditch (quadrant LB3), phases I, III, IV, VI

In these ditches the only recorded disturbances are the phase VI recuts. The circumstances mentioned above, that four vessels are represented in both east and west ditches, may relate to this monument's status as a tomb under unitary control.

On the Stepleton spur, where the fills had accumulated with less disturbance, a case of partial displacement had occurred when the south end of segment 23 of the enclosure was replaced by segment 9 of the inner outwork. One of the two sherds of the distinctive rim P96 had remained *in situ* in the phase III fill in the enclosure; the other was found in the phase VIII/a cultivation horizon in segment 8 of the inner outwork. One sherd of P107 was found in phase VI in segment 11 of the enclosure, and two in phase VIII/a of segment 8. There were also instances of vertical displacement.

Enclosure ditch

P33, carinated bowl (8 sherds): segment 16, in two separate layers within phase III
P69, cup (at least 3 sherds): segment 12, phases III, IV

Outer Stepleton outwork

P95, bowl (3 sherds): segment 4, phases III, VII/a

The few sherds that may be presumed to derive from any pre-construction context in the central area are those retrieved from features beneath the bank of the main enclosure on site P1 and, less certainly, from the truncated soils in which those features were cut, in which intrusive material is more likely to have been present. Treethrow hole P1 F24+F24A contained body sherds in fabrics 2, 6, 7 and 8. Layer 4, the surrounding soil, contained more abundant sherds in the same fabrics, including two simple rims, an expanded rim and a fragment with an applied cordon. F25 and F29, postholes probably contemporary with the construction of the enclosure, contained sherds in fabric groups 2 and 7, including a rolled-over rim.

Pottery recovered from the earliest surviving deposits in the ditches of the south long barrow and the main enclosure includes representatives of both the Decorated and the South-western styles. The stratigraphically earliest ornamented sherds in the ditches of the long barrow (part of P105) are probably from primary contexts (see 3.3.6). In the ditch of the main enclosure, the 16 feature sherds from the remnants of initial silts (phase I) and the 11 from the 'primary' deposits (phase II) include two plain but developed rims characteristic of the Decorated style: an enlarged form similar to P96 and an externally extended form like P37. Actual ornament is first recorded in this ditch on P113, a bowl from phase III. In the inner east cross-dyke, the first decorated sherd (P117) is also from phase III. The only feature sherd among the small amount of pottery from the remnants of initial silts (phase I) in the Stepleton enclosure was an in-turned rim fragment, heavier rims (including P96) appearing among the more abundant material from phase III, and occurring with decoration in phase IV, from which comes P111, the most flamboyant Decorated rim in the entire assemblage – with wide external extension and transverse cord impressions. (Its near counterparts, P112 and P115, came from phase VIII/a.)

Pottery from the ditch of the main enclosure and from the Stepleton enclosure seems to show temporal change in the form of increasing numbers of decorated vessels (Table 9.11). In assessing the evidence, account must be taken of the circumstances of deposition in the late phases of each ditch. Formal deposition in both seems to have ceased with the last placements of phase

Table 9.10 Proportional representation of fabrics in the six most prolific contexts at the two enclosures

	Central area			*Stepleton spur*		
	Pits	*Enclosure ditch*	*Long barrow*	*Pits*	*Enclosure ditch*	*Inner outwork*
Vessel numbers	114	252	44	107	202	52
Fabric group 1	7.0%	0.8%	–	–	–	–
Fabric group 2	14.0%	20.1%	26.7%	7.5%	12.4%	7.7%
Fabric group 3	3.5%	–	–	0.9%	1.9%	3.8%
Fabric group 4	0.8%	1.2%	2.2%	2.8%	1.9%	–
Fabric group 5	4.3%	3.3%	2.2%	–	1.5%	5.8%
Fabric group 6	11.4%	10.5%	26.7%	49.5%	41.8%	32.7%
Fabric group 7	51.7%	57.1%	40.0%	38.3%	37.3%	46.2%
Fabric group 8	7.0%	6.7%	2.2%	0.9%	2.9%	3.8%

Table 9.11 Phased distribution of decorated vessels in the ditch of the main enclosure and the Stepleton enclosure ditches

Main enclosure				*Stepleton enclosure*			
Phases	*All vessels*	*No. decorated*	*Per cent decorated*	*Phases*	*All vessels*	*No. decorated*	*Per cent decorated*
I–II	27	0	0	I–II	3	0	0
III–V	96	5	5	III–V	61	4	6
VI	90	10	11	VI	101	13	13
VIII	25	3	12	VIII	35	3	9

VI, which, although different in character, followed periods of natural silting and stabilisation during which few artefacts entered either ditch, so that some interval will have separated them from the phase I–IV deposits. Earlier Neolithic feature sherds from phase VIII/a presumably comprise material swept into the top of the ditches by natural agencies and/or ploughing. The sherds in question were derived or residual but may, in the circumstances, be taken as representative of the pottery current during the latter stages of earlier Neolithic activity in the vicinity of these ditches.

The material from the outworks is relatively sparse. The replacement of the eastern and southern parts of the Stepleton enclosure by the inner outwork must suggest that some of the pottery recovered from the latter had been derived from the former. The single identified example is provided by the two sherds from the rim P96, one found *in situ* in the enclosure, the other in the top of the outwork, as described above. A total of 52 feature sherds came from the inner outwork (Tables 9.6 and 9.10). Several, all plain, were in place when the burning rampart collapsed, including P60 (fabric 6), P68 (fabric 7) and P85 (fabric 7), which is partly covered with scorched clay (and see description of pottery from pit 4B F712, below). In the east butt of segment 4.2, others, including P47 (fabric 5), would have entered the ditch immediately afterwards. These were represented by relatively large, freshly broken fragments, as were P15 from the rubble fills (fabric 3), and P20 from the phase III/a recut (fabric 7). The remaining feature sherds, including three decorated sherds (P115, P125, P145), came from the chalky silt above the rubble and from post-Neolithic levels. In this ditch no decorated sherd is demonstrably from a primary deposit and fabric 7 feature sherds outnumber those made of fabric 6, a reversal of the relationship in the enclosure (Table 9.10).

Pottery from the time of the destruction of the inner outwork was also found in a grave, Feature 4B F712, where it seems to have been introduced with the material packed around the body. Some of the 35 sherds and crumbs, together with a quern fragment, flints and animal bones, had been exposed to fire and subsequently gathered up with scorched chalk rubble from the inner outwork after the collapse of the rampart. The pottery, all plain, included a small piece from a fabric 2 bowl and a few conjoining sherds from two bowls with simple rims, made of fabrics 6 and 7.

There are only 49 feature sherds from the fills of the middle and inner Stepleton outworks (12), the western and the Shroton outworks (5 and 5), the Hanford outworks (20) and the Hanford pits (7). At these sites contamination from residual material seems improbable except in the Stepleton outworks, where ceramic debris could have been lying about in the vicinity of the enclosure. In these contexts fabrics 3, 4, and 5 are represented by body sherds; among the feature sherds fabrics 2, 6, 7 and 8 account for 24%, 14%, 60%, and 2% respectively. The descending orders of frequency of the three major fabrics – 7, 2, 6 – correspond with those in the ditch of the main enclosure (Table 9.10). The vessels, all plain, include six cups, one necked cup (P43), three

Table 9.12 Summary of pottery from the central area, the Shroton spur, the Stepleton spur and the Hanford spur

Recorded by Rachael Seager Smith. Pottery from Desmond Bonney's excavations of 1958–60 is included in italics, but is not incorporated in Dr Isobel Smith's report

	Neolithic Bowl		*Peterborough Ware*		*Beaker*		*Early/middle Bronze Age*		*Late Bronze/ early Iron Age*		*Mid to late Iron Age*		*Roman*		*Other*	
	No.	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*
Main enclosure	6004	26202			583	1320	5	29	11	100			3	6	43	74
	80	*507*	*1?*	*26*	*9*	*22*										
Inner east cross-dyke	355	1237			518	638										
	6	*96*			*121*	*418*	*11*	*52*								
Outer east cross-dyke	176	918			9	30							5	8		
	10	*23*			*1*	*1*	*2*	*19*					*1*	*4*		
Inner south cross-dyke	593	2260			5	9	4	113					1	4		
	119	*1526*			*3*	*8*	*3*	*19*	*1*	*12*			*1*	*2*	*4*	*3*
Outer south cross-dyke	15	46														
	8	*81*											*1*	*1*	*3*	*2*
Long barrow	1721	7056			28	42	1	12					10	11	17	32
Western outwork	49	302														
Central area Neolithic pits	3822	10957			2	12							1	4	14	41
Central area misc	889	2029	1	3	25	98									17	38
	14	*96*														
Shroton spur	114	395			24	99	10	48							71	140
	10	*63*											*1*	*2*		
Stepleton enclosure	5442	21235	1	14	59	134	16	99	135	891			16	36	17	23
Middle Stepleton outwork	130	321	41	59	62	115	22	50							5	12
Inner Stepleton outwork	1289	5642	1	8	54	178	241	1560	64	212	13	44	783	2649	99	223
Outer Stepleton outwork	187	626			83	513	13	81					10	49	15	23
Stepleton Neolithic pits	3525	10885			1	1	2	2	4	14	1	3	4	53	14	23
Stepleton spur misc	241	609			4	12	28	62	2	28	6	14	17	127	3	5
Inner Hanford outwork	851	2754			6	14	1	3								
Outer Hanford outwork	170	474			18	18	1	10								
Hanford Neolithic pits	130	209														
Hanford 'flint mines'	75	226														
Hanford misc	7	10													9	7
Totals	26032	96785	44	110	1615	3682	360	2159	217	1257	20	61	854	2956	331	646

Table 9.13 Summary of earlier Neolithic pottery fabric groups from the central area, the Shroton spur, the Stepleton spur and the Hanford spur

Recorded by Rachael Seager Smith. Pottery from Desmond Bonney's excavations of 1958–60 is included in italics, but is not incorporated in Dr Isobel Smith's report.
1 = Gabbroic, 2 = Jurassic, 3 = calcite, 4 = organic, 5 = fresh shell and flint, 6 = red pellets, 7 = flint, 8 = sand

Fabric group	*1*		*2*		*3*		*4*		*5*		*6*		*7*		*8*		*other*		*Totals*	
	No.	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt (g)*	*No.*	*Wt(g)*
Main enclosure	9	174	1556	7315	44	263	178	436	50	117	144	574	3546	15654	457	1607	20	62	6004	26202
			17	*108*									*63*	*399*					*80*	*507*
Inner east cross-dyke			36	227			1	4			2	2	283	806	33	198			355	1237
													6	*96*					*6*	*96*
Outer east cross-dyke			119	659			2	4					49	210	6	45			176	918
													10	*23*					*10*	23
Inner south cross-dyke			103	303	2	4					4	20	464	1877	20	56			593	2260
			13	*72*									*106*	*1454*					*119*	*1526*
Outer south cross-dyke			1	3							3	15	11	28					15	46
													8	*81*					*8*	*81*
Long barrow	1	17	103	805	1	1	7	12	49	242	253	1606	1178	4211	28	130	21	32	1721	7056
Western outwork			7	103			1	16			1	3	40	180					49	302
Central area Neolithic pits	154	1218	955	2213	178	762	93	117	66	105	145	416	1782	5118	379	815	70	193	3822	10957
Central area misc	17	83	206	406	7	24	15	57			52	155	397	1051	195	253			889	2029
			1	*8*									*13*	*88*					*14*	*96*
Shroton spur			11	62			2	4					67	246	34	83			114	395
													10	*63*					*10*	*63*
Stepleton enclosure	7	39	473	1673	19	71	137	590	117	521	1979	8164	2517	9540	179	572	14	65	5442	21235
Middle Stepleton outwork			13	45			7	20	3	3	3	6	99	239	5	8			130	321
Inner Stepleton outwork	4	18	80	429	18	90	7	36	2	11	274	1003	864	3900	38	147	2	8	1289	5642
Outer Stepleton outwork	3	7	40	163	5	25	6	12					104	283	28	116	1	20	187	626
Stepleton Neolithic pits	2	15	216	442	1	4	22	68			1199	3629	2003	6576	67	111	15	40	3525	10885
Stepleton spur misc	1	2	4	20							44	94	192	493					241	609
Inner Hanford outwork			35	275	4	36			6	24	4	26	801	2391	1	2			851	2754
Outer Hanford outwork			16	46	8	20	1	2	12	27	9	9	113	340	11	30			170	474
Hanford Neolithic pits			1	2			31	59			22	31	53	102	23	15			130	209
Hanford 'flint mines'			3	7			1	1			6	44	59	172	6	2			75	226
Hanford misc													7	10					7	10
Totals	198	1573	4089	15386	287	1300	511	1438	305	1050	4144	15797	14845	55631	1510	4190	143	420	26032	96785

carinated bowls (eg P40), two open bowls, and less specialised forms (eg P49, P52, P71). There is one T-shaped rim (P88). Lugs include a minute imperforate example of the trumpet form (P28) and one that is bilobate (P97).

And perhaps one decorative technique, distinctive of the Hambledon Hill assemblage, survived to be incorporated in the pottery of a subsequent generation. The next known event in the ceramic history of the site was the deposition, near the top of the phase III fills in the middle outwork at Stepleton, of a substantial portion of the Mortlake bowl P159. The zones of thumb-nail impressions around the lower part of its body are strongly reminiscent of the decoration on the bodies of P116, P142 and P146, all from phase VI slots in the ditch of the main enclosure, and, less specifically, of P147 and P153 from, respectively, phases IV and VIII/a of the Stepleton enclosure. The suggestion finds support in Frances Healy's discussion (1995, 175) of evidence for a comparable transference, involving several attributes, in East Anglia.

9.1.2 Other pottery

Peterborough ware

The remains of five bowls attest sporadic visits by the users of this pottery after the end of the main period of activity. The only restorable and *in situ* bowl (P156) came from the chalky silt of the upper phase III fills of segment 6 of the middle outwork at Stepleton. It is of Mortlake type, with rows of small complex impressions on the rim, neck and upper body, and irregular rows of oblique thumb-nail impressions above the round base. The other four bowls are represented by single small sherds from superficial and widely separated contexts: P157 and a body sherd with whipped cord impressions (not illustrated) from the interior of the main causewayed enclosure; P158 and P159, the latter belonging to a Fengate-style vessel with collar, from the Stepleton spur.

Beakers

Despite the extremely fragmentary condition of most of this pottery, it can be seen to belong essentially to Clarke's (1970) Developed, Late and Final Southern British Beaker groups, S2–S4, and to fall within Steps 6 and 7 of the Lanting and van der Waals (1972) scheme for Wessex. Most of the informative sherds are illustrated as P160–P168. The distribution pattern and the relatively small numbers of sherds from the contexts listed below may suggest a single, probably brief, period of activity on Hambledon Hill. The 1974–82 material thus contrasts with a stylistically early assemblage from segment 4 of the inner east cross-dyke, most of which was excavated by Desmond Bonney in 1960 (see 3.3.3).

In the central area there were a few sherds from the ploughsoil in the interior and from the tops of two or three pits. Ten sherds, apparently from one Beaker, came from shallow pits cut in to the top fill of the east ditch of the south long barrow. All the rest were recovered from ditches on the east side of the site. Segment 8 of the enclosure ditch yielded 60 sherds, including P161, P163–P165, P168, and numerous minute fragments; segment 10 yielded 12 sherds, including P162. Segment 1 of the inner east cross-dyke held 60 small sherds from one unreconstructable Beaker, perhaps similar to P168; 30 sherds came from segment 4, the residue of the assemblage excavated by Bonney, and a few scraps from segment 5. Three sherds came from segment 3 of the outer east cross-dyke.

At Stepleton there was again a very thin scatter from ploughsoil and from the tops of two pits. Some 40 sherds, including P160, P166 and P167, were sparsely distributed in the superficial contexts in the ditch tops.

More interest attaches to three concentrations of pottery. In feature 511, a phase VII/a recut through the first cultivated horizon in segment 2 of the outer outwork, two complete bases of Beakers were found *in situ*, one of them placed in an upright position. Each had been truncated at about 30 mm above the base; the lower wall of one is plain, the other carries part of a typical S2–S3 decorative motif. Also present was part of a third base and an undecorated outbent rim, possibly from a biconical S4 Beaker like one from Wiltshire (Clarke 1970, fig 1036). None of the wall sherds has survived. In segment 5 of the same ditch some 40 sherds represent at least eight Beakers; six display S2–S3 motifs, one is finger-pinched, and one may have been decorated with an all-over herringbone motif impressed with a plain spatula. This group of sherds was stratified partly in a possible recut and partly in overlying phase VIII/a cultivation horizon. In the third instance, 12 sherds seem to have been lying in a recut in segment 9 of the Stepleton enclosure. At least three Beakers are represented: one with an S2–S5 motif, one with finger-pinched decoration and a cordon, and one that may have been plain.

Small and weathered Beaker sherds also came from the ditches of the Shroton and Hanford outworks, three and 24 respectively.

Bronze Age

Biconical Urn

Five weathered sherds, including one from a rim with traces of horizontal twisted cord impressions and three from a flat base, came from phase VIII/a of the main causewayed enclosure ditch. This form may also be represented at Stepleton (see below).

Deverel-Rimbury

Two Globular Urns of Calkin's (1957) type IIa, with furrowed necks, are represented by rim sherds from superficial contexts in segment 1 of the Shroton outwork ditch (P169) and segment 8 of the inner Stepleton outwork (P170). Eighteen small sherds from

the phase VIII/a fills in the same segment carry type IIb decoration, with motifs including concentric arcs, swags, multiple horizontal lines and stab-marks (P171–P174). One sherd (not illustrated) retains part of a lug. Lids, now recognised as components of Deverel-Rimbury assemblages (Tomalin 1982, 235), are represented on the Shroton (P176) and Stepleton spurs (P175) by fragments from the ditch segments that contained the urn sherds. Parts of three similar lids were recovered from other contexts on the Stepleton spur. A coarse ware, distributed over segments 5–8 of the inner Stepleton outwork, consists mainly of featureless fragments. A single sherd from a markedly biconical vessel may suggest a pre-Deverel-Rimbury element, but Bucket Urns may also be represented. The five small rim sherds lack distinctive attributes; base sherds include one that gives a diameter of 160 mm; there are three detached knobs or bosses, all imperforate.

Later Bronze Age

A concentration of some 60 sherds in the phase VIII/a ploughsoils of segments 2 and 3 of the Stepleton enclosure seems to represent a 'plain ware' tradition. The more compact texture and smoother finish distinguish this pottery from the coarse ware discussed above. The rims (P177, P178, P180) may be compared with some of the representative 'plain ware' forms illustrated by Barrett (1980, fig 5: 6 and 8).

A furrowed haematite-coated bowl, surviving as 21 tiny fragments from the rim, shoulder and body, came from a butt of segment 5 in the inner Stepleton outwork.

Romano-British

Apart from sparse surface and ditch-top finds, especially on the Stepleton spur, this pottery was concentrated in Coombe Bottom and Stepleton Lynchet. The small, abraded sherds, consisting largely of Black Burnished ware, are apparently datable to the first century BC–fourth century AD.

9.1.3 Catalogue of illustrated pottery

Entries are arranged thus: drawing number, prefixed with 'P'. Find number(s). Site, context(s), phase(s). Fabric group

In addition to the fabric groups defined in the text, additional ones are employed for the later pottery. These are 9 (grog-tempered) and 12 (grog- and flint-tempered).

Part 1. Earlier Neolithic

P1. HH75 400, 401, 557. Central area, pit B F14, L3. Fabric group 1.
P2. HH75 402–406, 499, 500, 609, 624. Central area, pit B F14, L3. Fabric group 1.
P3. HH77 22. Main causewayed enclosure, site P1 bank area, L2 (topsoil). Fabric group 1.
P4. HH77 1845. Central area, pit N F42, L3. Fabric group 1.
P5. HH76 2914. Main causewayed enclosure, segment 17, L6, phase VI. Fabric group 1.
P6. HH75 250. Central area, solution hollow B F12. Fabric group 1.
P7. HH75 334. Central area, solution hollow B F12, L2. Fabric group 1.
P8. HH75 276. Central area, pit C F3, L1. Fabric group 1.
P9. HH75 273. Central area, pit C F3, L1. Fabric group 1.
P10. HH74 235. Central area, interior, surface. Fabric group 1.
P11. HH77 2184, 2247. Central area, pit N F82, L3–4. Fabric group 3.
P12. HH74 854, 992. Main causewayed enclosure, segment 4, L9, L4, phases III, V. Fabric group 7.
P13. ST79 2223. Stepleton spur pit 2A F134. Fabric group 6.
P14. HH75 2120. Main causewayed enclosure, segment 8, L7A, phase II. Fabric group 7.
P15. ST79 2699. Inner Stepleton outwork, segment 5, C13, L4, phase III. Fabric group 3.
P16. ST82 69, 82, 98, 101. Stepleton spur, pit ST82 F39. Fabric group 7.
P17. ST78 735–6. Stepleton spur, pit 1A F57, L2–3. Fabric group 2.
P18. HH77 1207, 1209, 1626, 1648. Long Barrow, W ditch (segment 1), LB3 SII, L17, L18, L19, phases III, IV, VI. Fabric group 2.
P19. HH76 560, 1726, 2112. Main causewayed enclosure, segment 16, L9A, L6, phases IV and VI. Fabric group 2.
P20. ST79 2585. Inner Stepleton outwork, segment 5, C4, L5A, phase III/a. Fabric group 7.
P21. ST80 1269. Stepleton enclosure, segment 4, U8, L2A, phase IV. Fabric group 7.
P22. HH77 1423, 1560. Central area, pit N F7(i), L3. Fabric group 3.
P23. ST78 703. Stepleton spur, pit 1A F57, L2. Fabric group 7.
P24. ST78 721. Stepleton spur, pit 1A F57, L2 (base). Fabric group 6.
P25. HH77 826, 1424. Central area, pit N F23, L2–3. Fabric group 6.
P26. HH76 1115. Main causewayed enclosure, segment 19, L5, phase VII/a. Fabric group 7.
P27. ST81 1234. Stepleton enclosure, segment 8, L2, phase VI. Fabric group 6.
P28. HN82 698. Hanford spur, pit F854, L2. Fabric group 7.
P29. ST81 966. Stepleton enclosure, segment 14, L2, phase VI. Fabric group 6.
P30. HH76 1311. Main causewayed enclosure, segment 5, L5, phase VI. Fabric group 7.
P31. HH76 2003, 2883, 3000. Main causewayed enclosure, segment 17, L8, L9, L10, phases III, V, VI. Fabric group 2.
P32. ST80 1896. Stepleton enclosure, segment 6, L4, phase III. Fabric group 7.
P33. ST81 2200, 2569. Stepleton enclosure, segment 16, L3B, L3D, phase III. Fabric group 7.

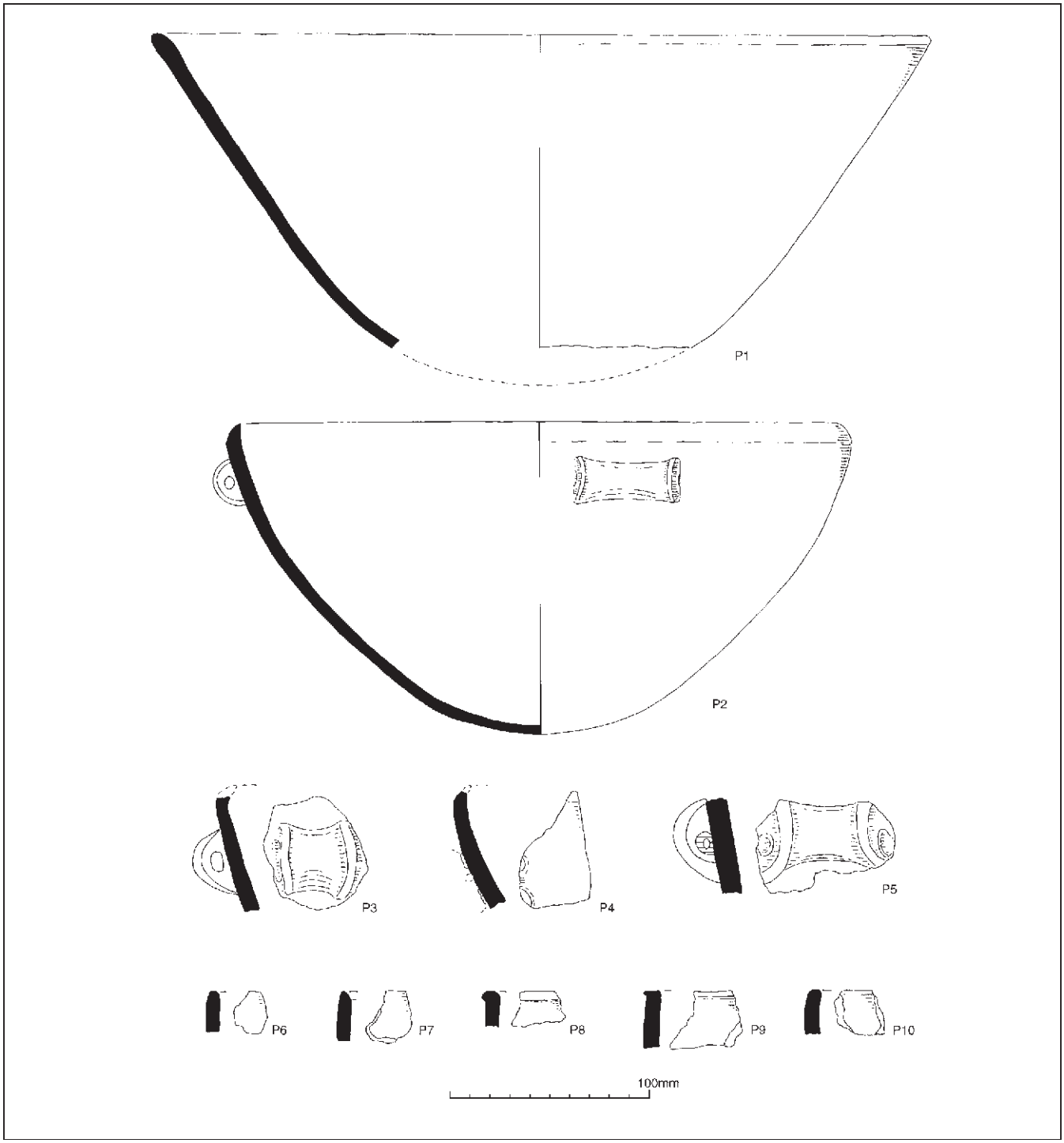

Fig 9.1 Gabbroic vessels and sherds. Particulars in catalogue.

P34. ST80 52, 57. Stepleton spur pit 3A F94. Fabric group 6.
P35. ST81 1851, 2193. Stepleton enclosure, segment 16, L3, phase V. Fabric group 7.
P36. ST81 349, 375, 692, 763, 795, 870. Stepleton enclosure, segment 7, L2, phase VI. Fabric group 7.
P37. HH75 1846, 2013. Main causewayed enclosure, segment 8, L6/7, L7, phase III. Fabric group 7.
P38. HH77 1588, 1591, 1594, 2303. Long Barrow, W ditch (segment 1), LB2 SII, SV, L22, L26, L27, phases I, VI. Fabric group 7.
P39. HH74 1154. Main causewayed enclosure, segment 4, L9, phase III. Fabric group 8.
P40. HN82 299. Inner Hanford outwork, segment 3, L4, phase III. Fabric group 7.
P41. HH77 508, 853. Main causewayed enclosure, segment 1, F7, phase VI. Fabric group 2.
P42. ST81 962, 964–5, 981. Stepleton enclosure, segment 14, L2, phase VI. Fabric group 7.
P43. HN82 45, 113–4, 139. Outer Hanford outwork, segment 2, L3, L3C, L5C, phases I, III, VII. Fabric group 7.

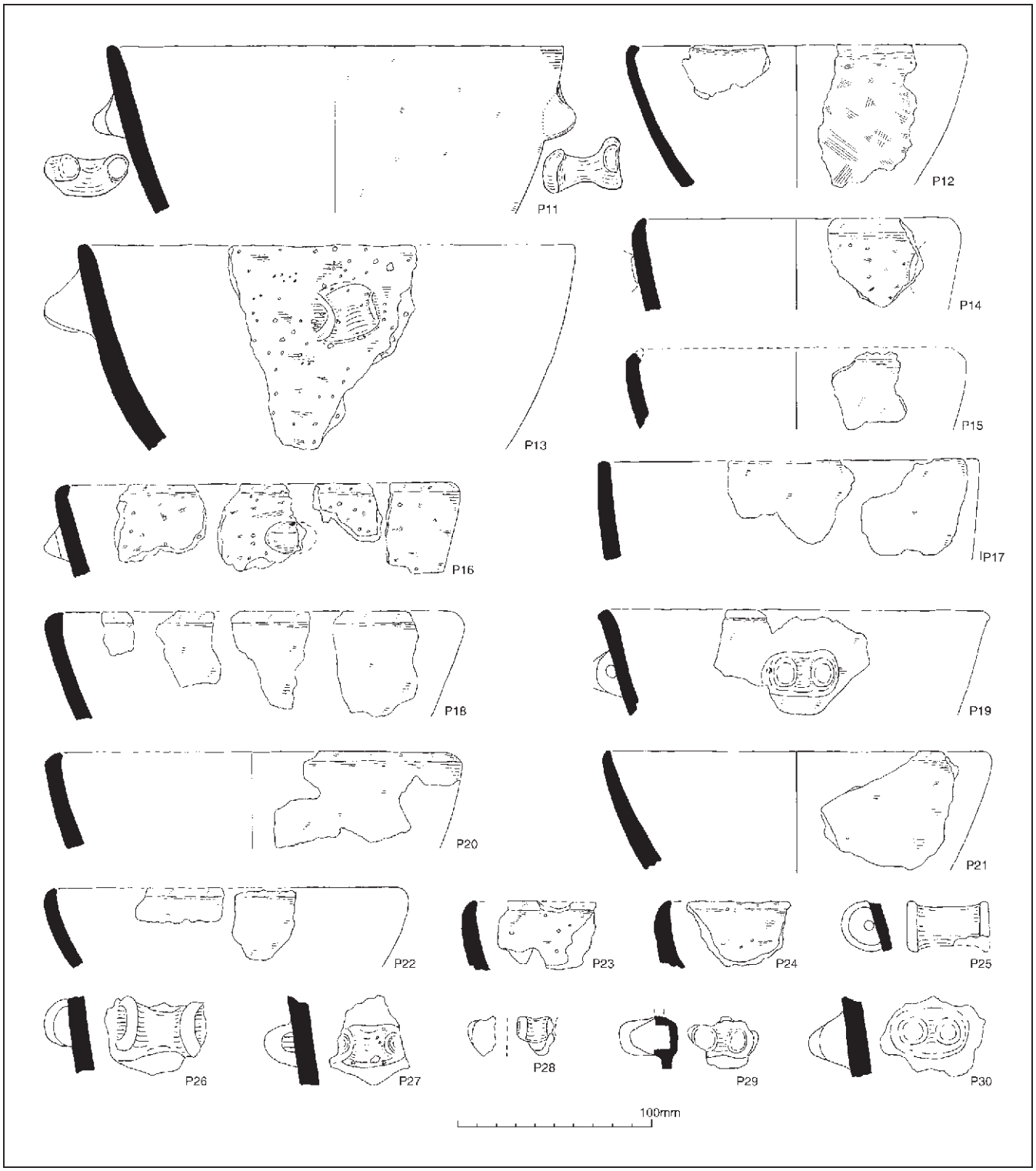

Fig 9.2 Neolithic Bowl pottery. Particulars in catalogue.

P44. ST81 678. Stepleton enclosure, segment 12, L3A, phase III. Fabric group 6.
P45. ST81 193. Stepleton enclosure, segment 10, L2, phase VI. Fabric group 6.
P46. W0WK82 29, 115, 121. Inner south cross-dyke, segment 2, L7, phase VI. Fabric group 7.
P47. ST80 1322, 1337. Inner Stepleton outwork, segment, 4. 2, L4A, phase I. Fabric group 5.
P48. ST81 1265, 1273. Stepleton enclosure, segment 8, U3, L2A, phase IV. Fabric group 4.
P49. ST78 2953. Middle Stepleton outwork. segment 10, L5+L6, phases I–II. Fabric group 7.
P50. ST80 1007. Stepleton enclosure, segment 4, L1, phase VIII/a. Fabric group 6.
P51. HH77 1527, 1922, 2083, 2206, 2208, 2271, 2274, 2292, 2295, 2297. Long barrow, W ditch (segment 1), LB3 L17, L19, L34, L35, L41, phases I, III, IV, VI. Fabric group 6.
P52. HN82 685. Hanford spur, 'flint mines' F618, L2. Fabric group 7.

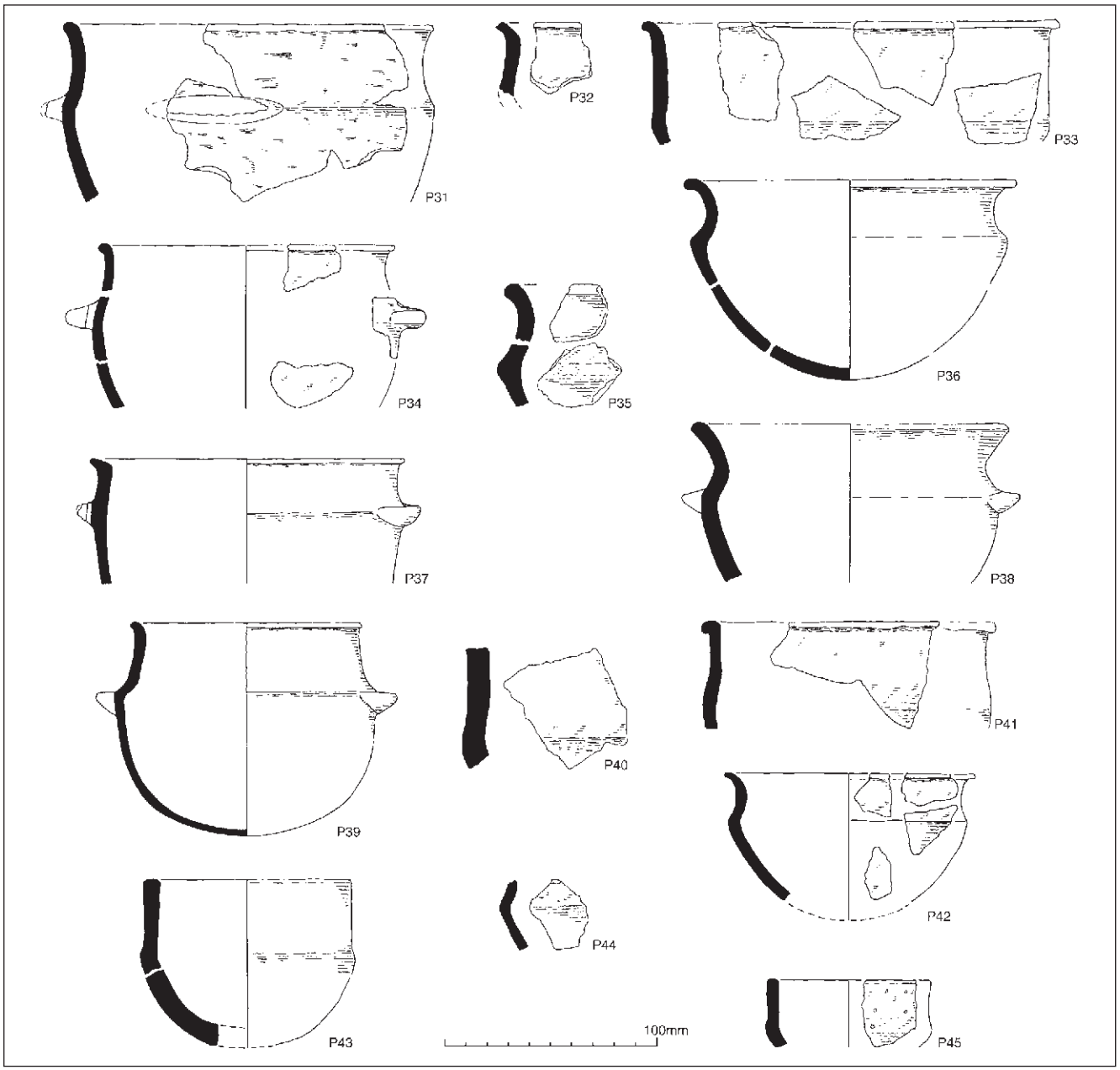

Fig 9.3 Neolithic Bowl pottery. Particulars in catalogue.

P53. ST81 2244, 2249. Stepleton enclosure, segment 17, L3C, phase III. Fabric group 2.
P54. ST81 2393. Stepleton spur pit 4B F80. Fabric group 7.
P55. HH74 751. Main causewayed enclosure, segment 3, L7, phase VI. Fabric group 7.
P56. HH74 569. Main causewayed enclosure, segment 2, L3, phase VIII/a. Fabric group 4.
P57. HH75 852–3, 900, 1169. Main causewayed enclosure, segment 9, L9, L7, phases I, III. Fabric group 7.
P58. HH75 551, 610. Central area, pit B F14, L3–4. Fabric group 7.
P59. ST82 96. Stepleton spur pit ST82 F39. Fabric group 7.
P60. ST79 1015, 1016, 1018, 1019. Inner Stepleton outwork, segment 6, C3, L6 and overlying part of base of L4, phase I/phase III interface. Fabric group 6.
P61. ST79 2564, 2612. Stepleton spur pit 2A F201. Fabric group 6.
P62. ST78 1157, 1189, 1192, 1193. Stepleton spur pit 1A F110 L2. Fabric group 6.
P63. HH77 2089. Central area, pit N F42, L3–4. Fabric group 7.
P64. ST81 279. Stepleton enclosure, segment 8, L1, phase VIII/a. Fabric group 6.
P65. HH76 2995, 2997. Main causewayed enclosure, segment 18, L8, phase VI. Fabric group 6.
P66. HH74 648, 763. Main causewayed enclosure, segments 3 and 4, L5, phase VI. Fabric group 2.
P67. ST81 871. Stepleton spur pit 4A F3. Fabric group 6.
P68. ST79 1016, 1017. Inner Stepleton outwork, segment 6, C3, in base of L4 with some sherds of P60, perhaps already in place when rubble entered ditch, phase I/phase III interface. Fabric group 7.
P69. ST81 1069, 1072, 1073. Stepleton enclosure, segment 12, L3A, L2A, phases III, IV. Fabric group 4.

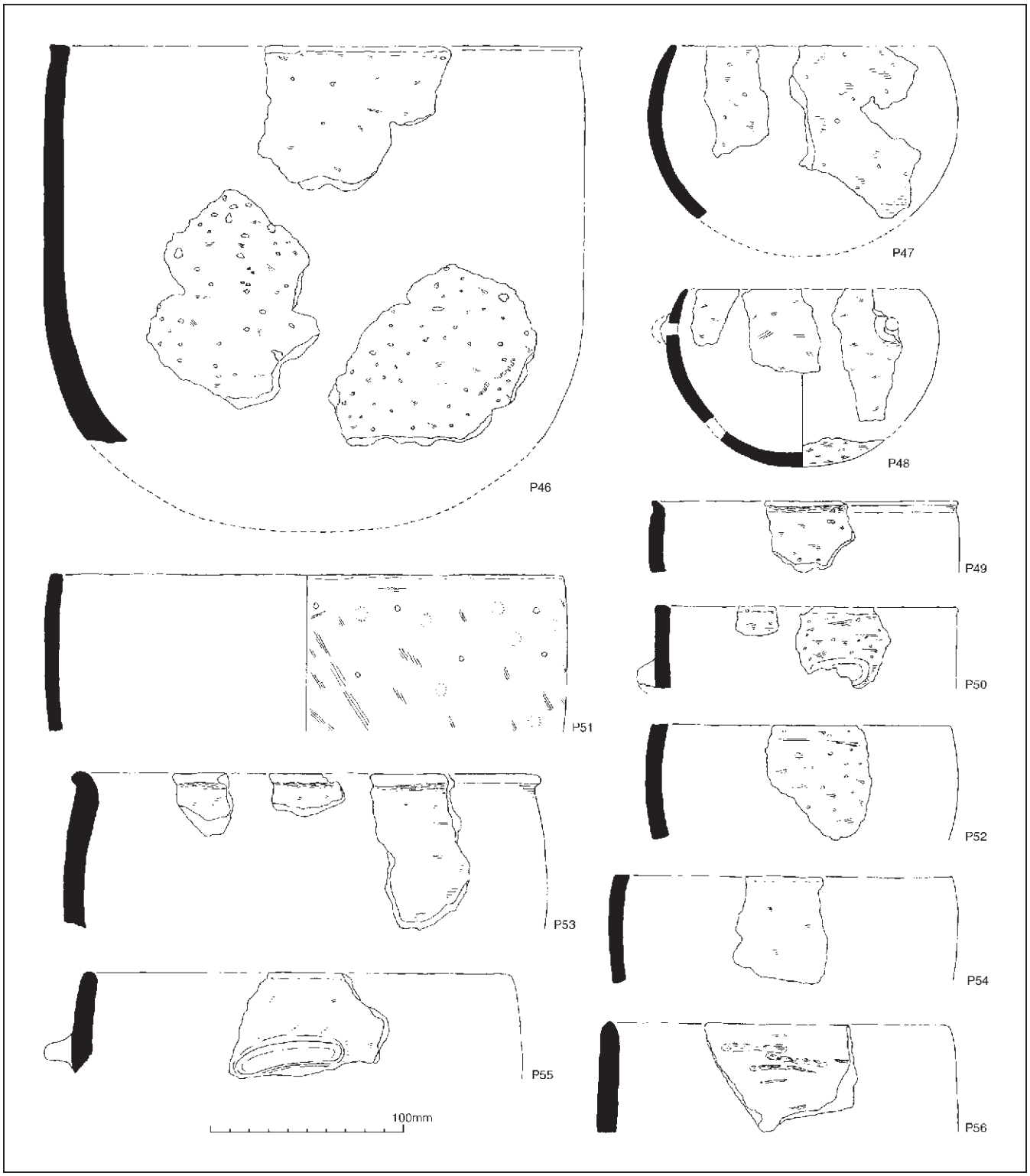

Fig 9.4 Neolithic Bowl pottery. Particulars in catalogue.

P70. ST81 1061. Stepleton enclosure, segment 14, L2, phase VI. Fabric group 3.
P71. HN82 310, 369, 370, 393. Inner Hanford outwork, segment 3, L4, L3C, phase III. Fabric group 7.
P72. HH74 1215. Central area, pit A F120. Fabric group 7.
P73. HH77 2053, 2207. Long barrow, W ditch (segment 1), LB3 SIII L34, phase I. Fabric group 6.
P74. ST79 1659, 2066. Stepleton spur pit 2A F159, L1. Fabric group 7.
P75. HH75 605. Central area, pit B F57A, L1. Fabric group 6.
P76. ST81 646. Stepleton enclosure, segment 12, L2, phase VI. Fabric group 6.
P77. ST79 2001, 2015, 2035, 2509. Stepleton spur pits 2A F268, F269. Fabric group 7.
P78. ST80 954. Stepleton enclosure, segment 5, L1, phase VIII/a. Fabric group 8.
P79. HH77 1924. Long barrow, E ditch (segment 3), LB5 L17, phase I. Fabric group 7.

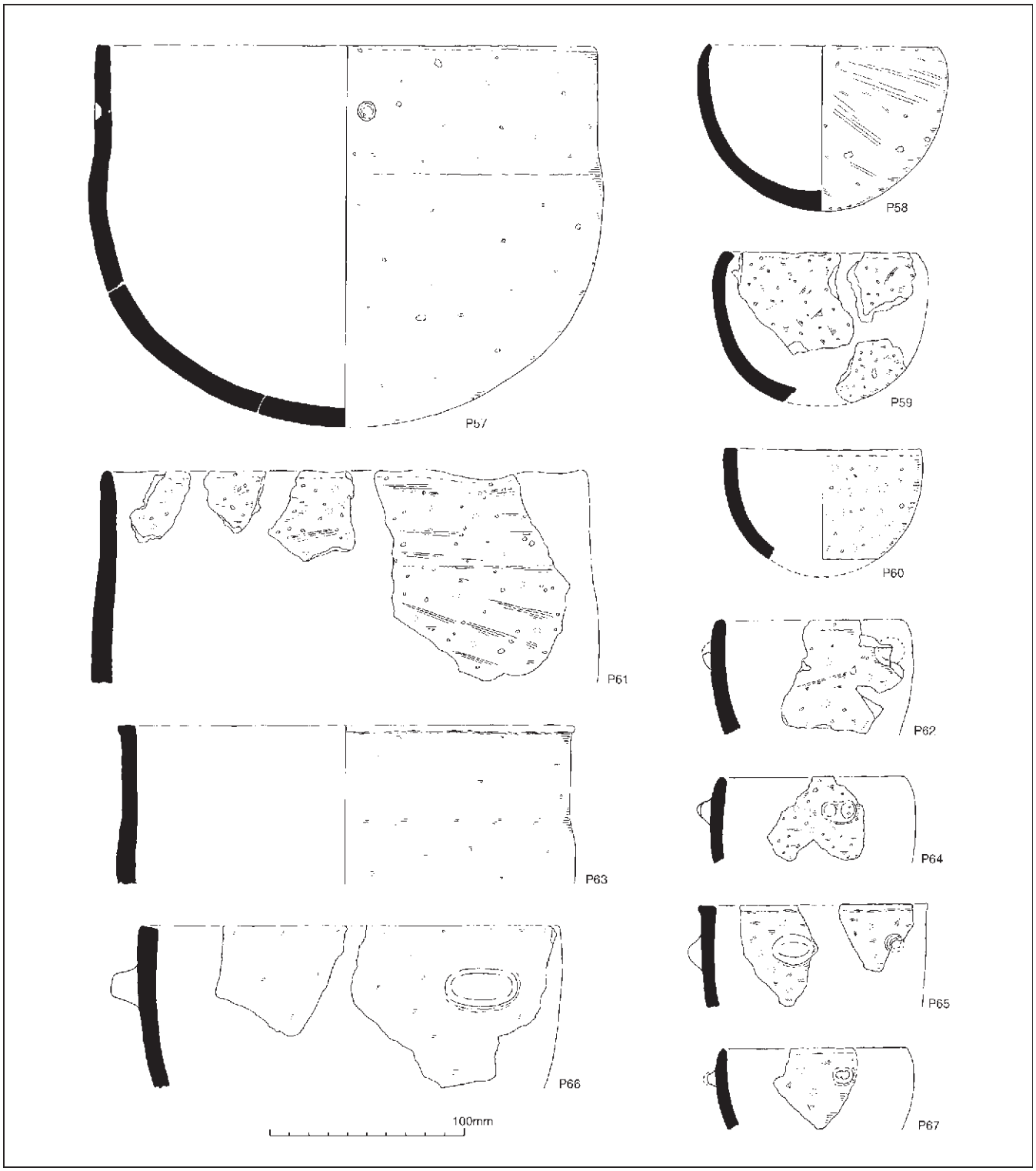

Fig 9.5 Neolithic Bowl pottery. Particulars in catalogue.

P80. HH76 1937. Main causewayed enclosure, segment 9. 1, L7, phase III. Fabric group 7.
P81. ST81 1102. Stepleton enclosure, segment 11, L3B, phase III. Fabric group 2.
P82. HH75 657, 720, 723, 726–9, 734, 755, 789, 902, 903, 905. Main causewayed enclosure, segment 9, L6, L7, phases III, VI. Fabric group 7.
P83. HH75 416, 418, 419. Main causewayed enclosure, segment 9, L3, phase VIII/a. Fabric group 2.
P84. HH75 681. Central area, pit C F3, L2. Fabric group 7.
P85. ST79 1567, 1684, 1685. Inner Stepleton outwork, segment 6, C1, L4A, phase I; pit 4B F137. Fabric group 7.
P86. ST81 880. Stepleton enclosure, segment 14, L3, phase V. Fabric group 6.
P87. HH77 468. Main causewayed enclosure, segment 1, F5, phase VI. Fabric group 2.

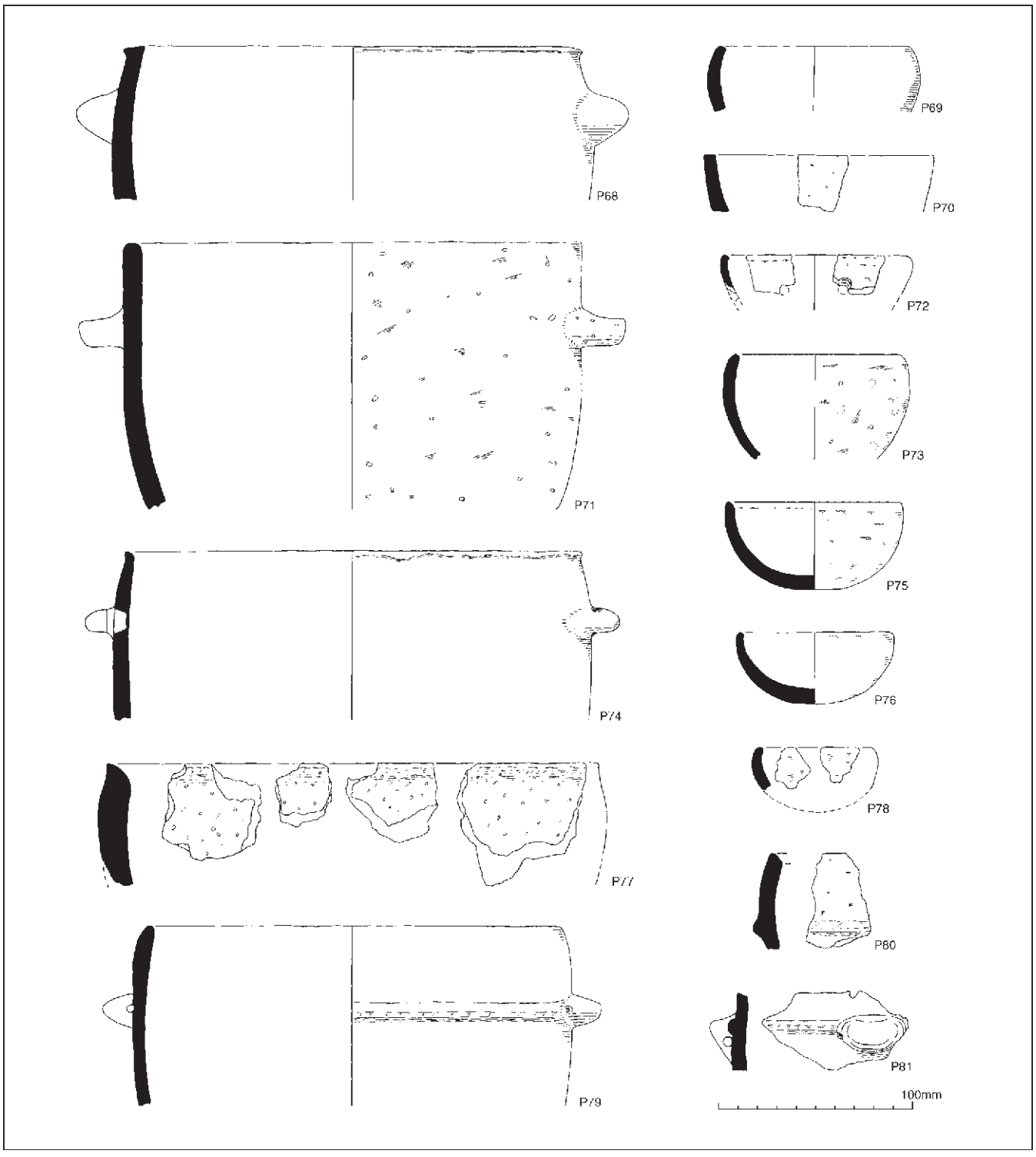

Fig 9.6 Neolithic Bowl pottery. Particulars in catalogue.

P88. HN82 300. Inner Hanford outwork, segment 3, L3C, Phase III. Fabric group 2.
P89. ST81 361. Stepleton enclosure, segment 8, L2, phase VI. Fabric group 5.
P90. HH74 736. Central area, pit A F6. Fabric group 5.
P91. HH77 1490. Central area, pit N F7(i), L3. Fabric group 2.
P92. HH77 1621, 1683. Long barrow, W ditch (segment 1), LB3 SII L17, phase IV. Fabric group 7.
P93. HH76 1397. Main causewayed enclosure, segment 16, L8A, phase VI. Fabric group 7.
P94. HH76 2914. Main causewayed enclosure, segment 17, L6, phase VI. Fabric group 2.
P95. ST80 1610, 1799, 1821. Outer Stepleton outwork, segment 4, L3A, L2A, phases III, VII/a. Fabric group 2.
P96. ST78 2928, ST78 782. Stepleton enclosure, segment 23, phase III, inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 7.
P97. HN82 378. Inner Hanford outwork, segment 3, L3C, phase III. Fabric group 7.
P98. HH74 721. Main causewayed enclosure, segment 4, L5, phase VI. Fabric group 2.

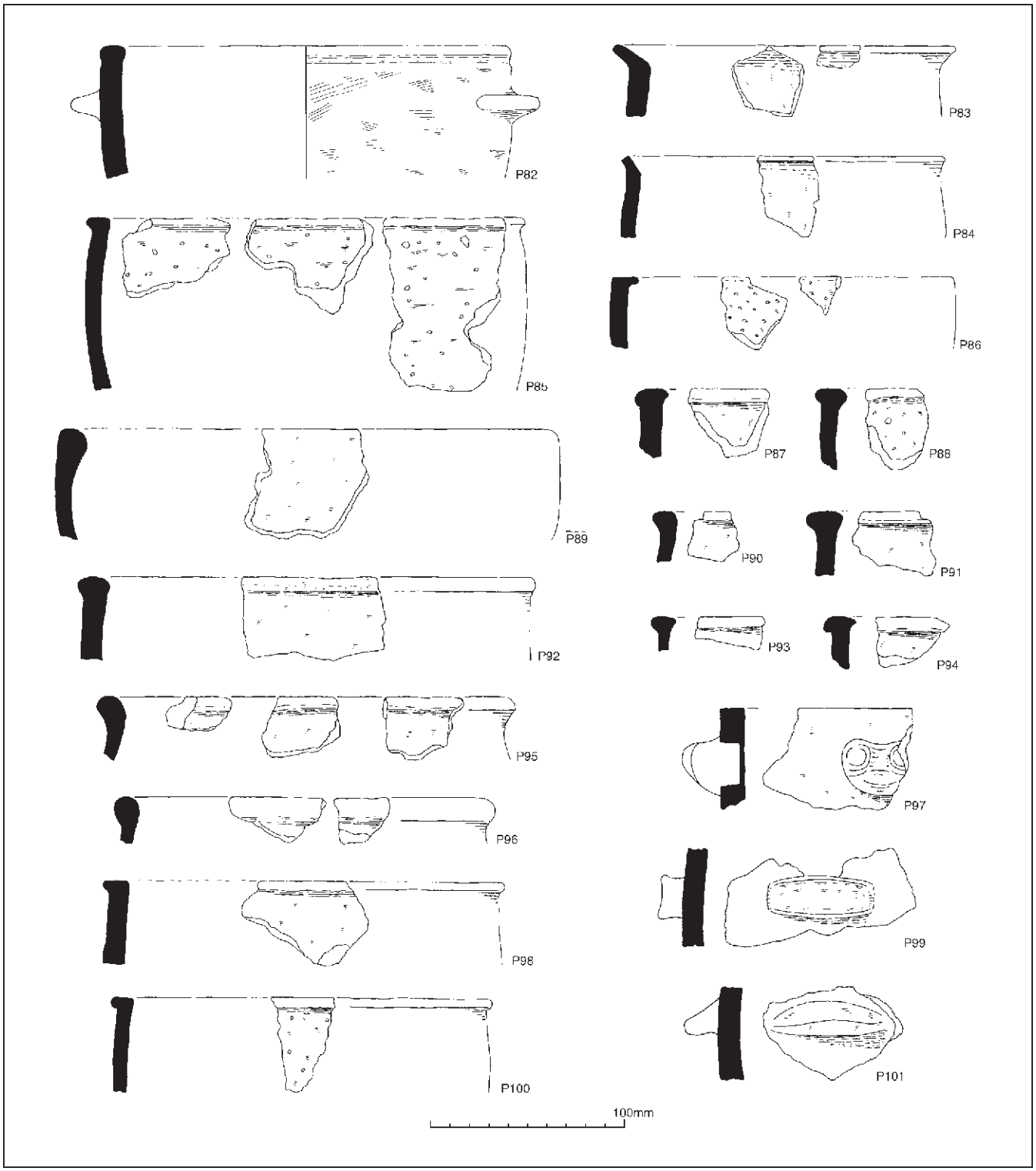

Fig 9.7 Neolithic Bowl pottery. Particulars in catalogue.

P99. HH77 1030, 2274. Long barrow, W ditch (segment 1), LB3, SIV, L19; E ditch (segment 3), LB5 F5, phases III, VII/a. Fabric group 6.

P100. ST81 1173. Stepleton enclosure, segment 7, L2, phase VI. Fabric group 6.

P101. HH77 1015. Long barrow, W ditch (segment 1), LB3 L19, phase III. Fabric group 7.

P102. ST80 119, 569, 946, 1214. Stepleton enclosure, segment 5, L1, phase VIII/a. Fabric group 7.

P103. ST81 1240. Stepleton enclosure, segment 8, U3 L2A, phase IV. Fabric group 7.

P104. HH74 756. Main causewayed enclosure, segment 2, L4, phase VI. Fabric group 2.

P105. HH77 905, 2076, 2158. Long barrow, W ditch (segment 1), LB2, SV, SVII L26; E ditch (segment 3), LB4, F4, phase I in SW ditch, phase VI in NW. Fabric group 5.

P106. HH76 568, 1957, 2221, 2236. Main causewayed

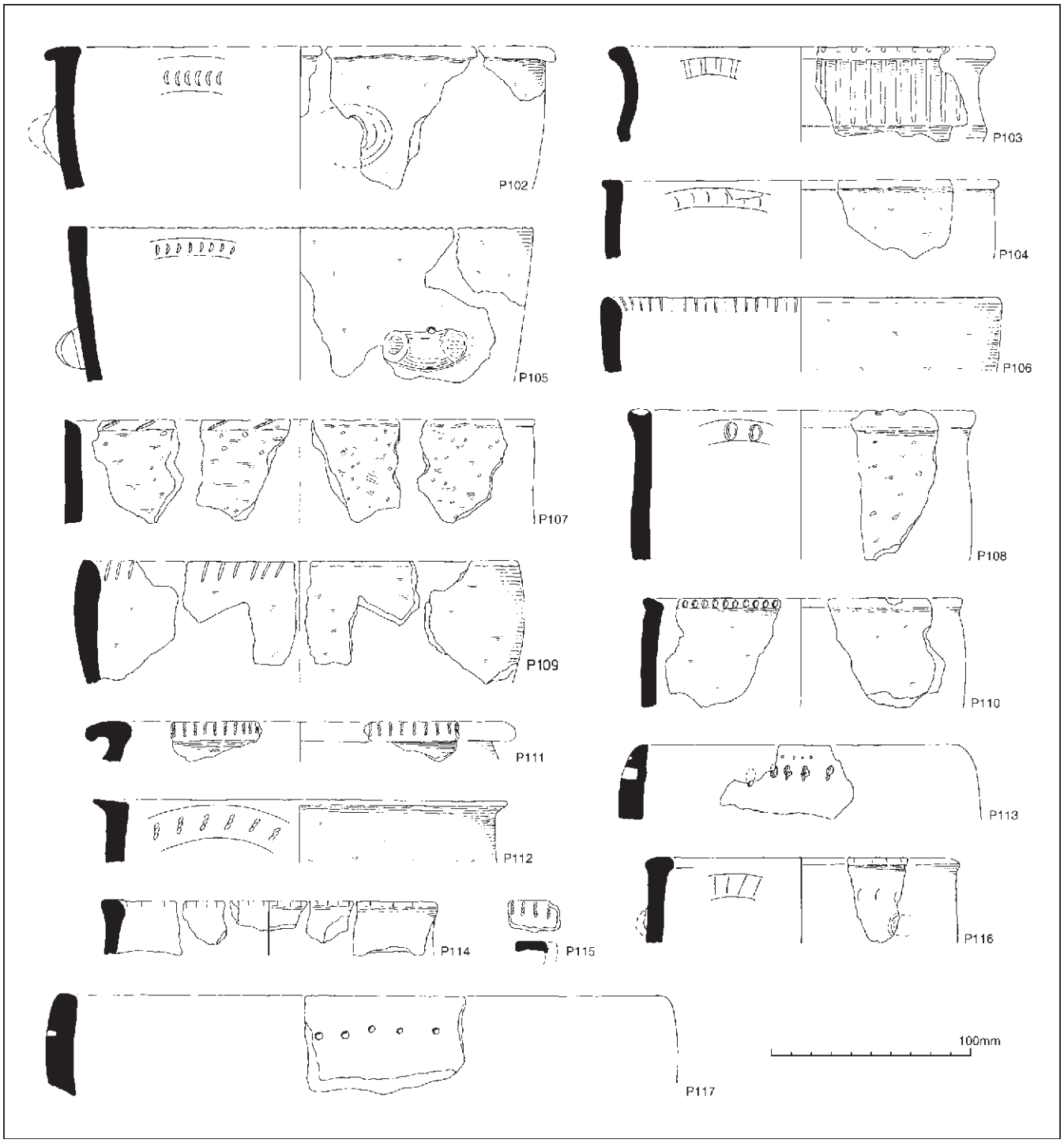

Fig 9.8 Neolithic Bowl pottery. Particulars in catalogue.

enclosure, segment 13, L5, segment 14, L6, L9, phase VI. Fabric group 7.

P107. ST81 142, 160, 607. Stepleton enclosure, segment 8, L1, L2; segment 11, L2, phases VI, VIII/a. Fabric group 6.

P108. HH76 1468. Main causewayed enclosure, segment 16, L9, phase V. Fabric group 6.

P109. ST81 51, 221, 365. Stepleton enclosure, segment 7, L1, L2, phases VI, VIII/a. Fabric group 7.

P110. HH74 1119. Central area, pit A F64. Fabric group 7.

P111. ST80 1210. Stepleton enclosure, segment 2, L3C, phase IV. Fabric group 7.

P112. HH75 421, 424. Main causewayed enclosure, segment 9, L3, phase VIII/a. Fabric group 2.

P113. HH76 1099. Main causewayed enclosure, segment 18, L10, phase III. Fabric group 7.

P114. HH74 187, 481, 528, 580, 610, 613. Main causewayed enclosure, segment 3, L3, L4, L5, phases V, VI, VIII/a. Fabric group 7.

P115. ST79 2305. Inner Stepleton outwork, L2, phase VIII/a. Fabric group 7.

P116. HH74 1049. Main causewayed enclosure, segment 4, L5, phase VI. Fabric group 2.

P117. HH75 2043. Inner east cross-dyke, segment 4, L7,

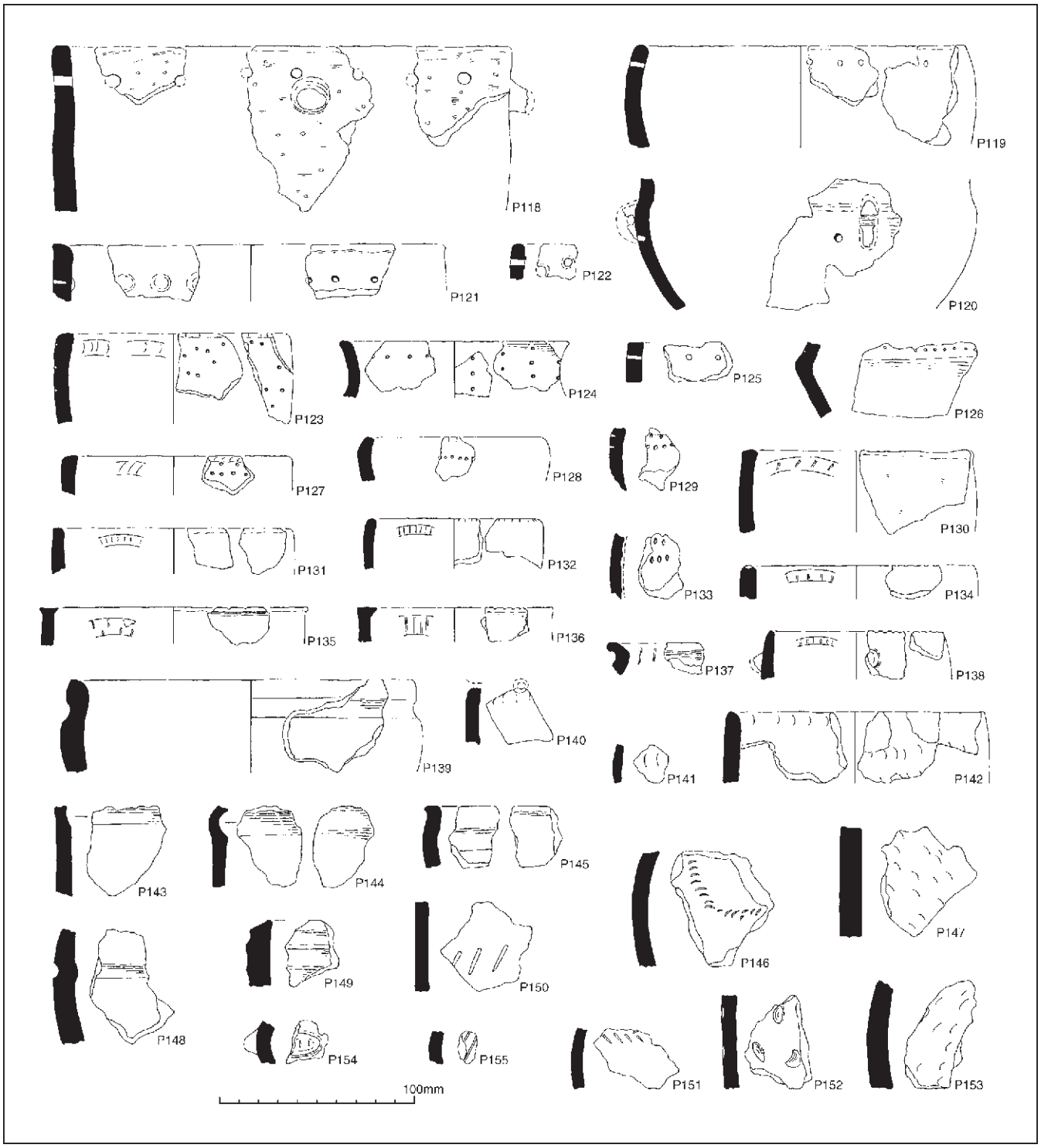

Fig 9.9 Neolithic Bowl pottery. Particulars in catalogue.

phase V. Fabric group 2.

P118. ST78 719, 734, 996. Stepleton spur pit 1A F57, L1, L2. Fabric group 7.

P119. HH77 2101. Long barrow, W ditch (segment 1), SIII, L18, phase VI. Fabric group 2.

P120. ST81 2272. Stepleton spur pit 4B F198. Fabric group 7.

P121. HH75 1461. Main causewayed enclosure, segment 11, L6, phaseVI. Fabric group 7.

P122. HH74 928. Central area, pit A F41. Fabric group 7.

P123. HH74 746. Main causewayed enclosure, segment 3, L5, phaseVI. Fabric group 7.

P124. HH76 990. Main causewayed enclosure, segment 19, L3B, phaseVI. Fabric group 7.

P125. ST79 869. Inner Stepleton outwork, segment 5, C6, L2B, phase VII/a. Fabric group 6.

P126. HH76 2877. Main causewayed enclosure, segment 17, L9A, phase IV. Fabric group 2.

P127. HH74 1167. Central area, pit A F78. Fabric group 7.

P128. HH75 363. Central area, pit B F57, L1. Fabric group 7.

P129. ST79 2456. Stepleton spur pit 2A F24 (upper fill). Fabric group 6.

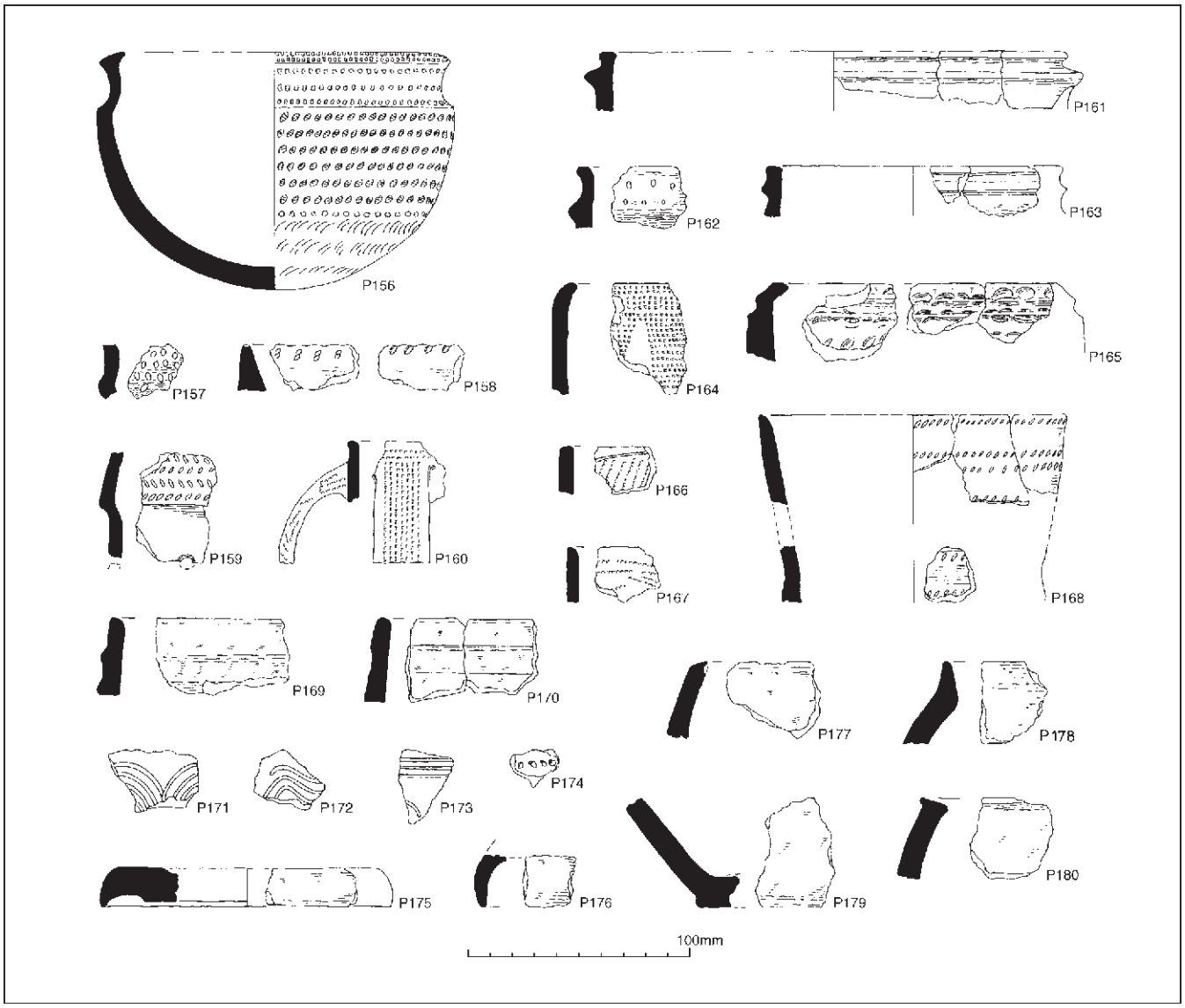

Fig 9.10 Peterborough Ware, Beaker and Bronze Age pottery. Particulars in catalogue.

P130. HH77 975, 1111. Long barrow, W ditch (segment 1), LB3 SI L20, L21, phases III, V. Fabric group 8.
P131. HH75 504. Central area, solution hollow B F12, L2. Fabric group 7.
P132. ST81 1056, 1089. Stepleton enclosure, segment 12, U5, L2A, phase IV. Fabric group 8.
P133. HH74 695. Main causewayed enclosure, segment 4, L7, phase VI. Fabric group 8.
P134. HH75 1232. Central area, recent quarry B F1C, L2. Fabric group 7.
P135. ST81 753. Stepleton enclosure, segment 12, L2, phase VI. Fabric group 6.
P136. ST81 2423. Stepleton spur pit 4B F80. Fabric group 6.
P137. HH75 213. Central area, pit B F2. Fabric group 7.
P138. HH75 557. Central area, pit B F14, L3. Fabric group 7.
P139. HH74 714. Main causewayed enclosure, segment 3, L5, phase VI. Fabric group 7.
P140. HH77 1465. Central area, pit N F6, L3. Fabric group 7.
P141. HH75 416. Main causewayed enclosure, segment 9, L3, phase VIII/a. Fabric group 8.
P142. HH74 969. Main causewayed enclosure, segment 3, L4, phase VI. Fabric group 7.
P143. HH76 2980. Main causewayed enclosure, segment 14, L9, phase VI. Fabric group 7.
P144. ST81 518. Stepleton enclosure, segment 14, L2, phase VI. Fabric group 6.
P145. ST81 2463. Inner Stepleton outwork, segment 4. 1, U2, L3, phase VIII/a. Fabric group 3.
P146 HH75 1697. Main causewayed enclosure, segment 8, L6, phase VI. Fabric group 7.
P147. ST80 1071. Stepleton enclosure, segment 4, U8 L2A, phase IV. Fabric group 6.
P148. HH74 1215. Central area, pit A F120. Fabric group 7.
P149. ST81 1151. Stepleton enclosure, segment 7, L2, phase VI. Fabric group 6.
P150. ST80 506. Stepleton enclosure, segment 2, L1, phase VIII/a. Fabric group 6.
P151 HH77 781. Long barrow, W ditch (segment 3), LB4 F1, phase VI. Fabric group 7.

P152. ST78 1645. Stepleton spur pit 1A F229, L2. Fabric group 6.
P153. ST81 188. Stepleton enclosure, segment 15, U10, L1, phase VIII/a. Fabric group 6.
P154. ST81 711. Stepleton enclosure, segment 8, L2, phase VI. Fabric group 7.
P155. ST81 235. Stepleton enclosure, segment 10, L2, phase VI. Fabric group 7.

Part 2. Peterborough Ware, Beaker and Bronze Age.

P156. ST79 2051. Middle Stepleton outwork, segment 6, C1 L3A, phase III. Fabric group 7.
P157. HH74 551. Central area, interior, surface. Fabric group 7.
P158. ST79 326. Inner Stepleton outwork, segment 6, L1A, phase VIII/a. Fabric group 7.
P159. ST81 746. Stepleton enclosure, segment 7, L2, phase VI. Fabric group 7.
P160. ST78 906. Middle Stepleton outwork, segment 10, L2, phase VIII/a. Fabric group 9.
P161. HH75 1371. Main causewayed enclosure, segment 8, L3, phase VIII/a. Fabric group 9.
P162. HH75 1660. Main causewayed enclosure, segment 10, L6, phase VII/a. Fabric group 9.
P163. HH75 100, 159. Main causewayed enclosure, segment 8, L3, phase VIII/a. Fabric group 9.
P164. HH75 1564. Main causewayed enclosure, segment 8, L6, phase VII/a. Fabric group 9.
P165. HH75 1341, 1356, 1668, 1750. Main causewayed enclosure, segment 8, L3, L3A, phases VII/a, VIII/a. Fabric group 9.
P166. ST79 690. Inner Stepleton outwork, segment 5, C5, L2B, phase VII/a. Fabric group 9.
P167. ST79 2665. Middle Stepleton outwork, segment 8, C3 L1A, phase VIII/a. Fabric group 9.
P168. HH75 1310, 1521, 1570, 1665, 1675, 1676, 1802, 1860. Main causewayed enclosure, segment 8, L3A, L6, phase VII/a. Fabric group 9.
P169. HH76 483. Shroton spur outwork site M (segment 1), L4, phase VIII/a. Fabric group 7.
P170. ST77 136, ST78 171. Inner Stepleton outwork, segment 8, unstratified. Fabric group 9.
P171. ST78 585. Inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 9
P172. ST78 779. Inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 9.
P173. ST 78 781. Inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 9.
P174. ST78 592. Inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 9.
P175. ST78 584. Inner Stepleton outwork, segment 8, L2, phase VIII/a. Fabric group 9.
P176. HH76 91. Shroton spur outwork, site M (segments 1–2), L2, phase VIII/a. Fabric group 9.
P177. ST80 194. Stepleton enclosure, segment 3, L1, phase VIII/a. Fabric group 12.
P178. ST80 495. Stepleton enclosure, segment 2, L1, phase VIII/a. Fabric group 12.
P179. ST80 499, 511. Stepleton enclosure, segment 3, L1, phase VIII/a. Fabric group 12.
P180. ST80 118. Stepleton enclosure, segment 2/3, L1, phase VIII/a. Fabric group 12.

9.2 A petrological analysis of the ceramic fabrics represented among the Neolithic pottery from Hambledon Hill, Dorset

Timothy Darvill

9.2.1 Introduction

A series of 43 sample sherds from the early Neolithic pottery assemblage was studied in thin section with a view to defining fabric groups, identifying likely fabric sources, and assessing the techniques of pottery production. The sample was selected by Dr I F Smith as representative of the range of fabrics distinguished on the basis of preliminary macroscopic inspection. Table 9.14 lists the sherd numbers of the samples studied.

The usual methods of thin section preparation (Tite 1972, 215) were modified to take account of the relatively friable nature of the pottery (Darvill 1983a, 552–62). The samples were sorted into fabric groups on the basis of the nature and the size of the clastic inclusions, and on the mineralogy and texture of the clay matrix. In all, eight groups were defined, some of them divisible into a number of subgroups (see Table 9.14). For convenience, fabric groups are identified in this report by the most diagnostic characteristic used for their definition. The relative abundance of fabric groups across the excavated sites, and through the recorded phases of occupation is discussed above by Dr Smith (9.1).

Six types of clay outcrop within 10 kilometres of Hambledon Hill (Fig 9.11). Five of these were sampled for comparison with the Neolithic fabrics (Figure 9.11 shows the position of four sample points, the fifth, on the Oxford Clay, lies just off the map to the west).

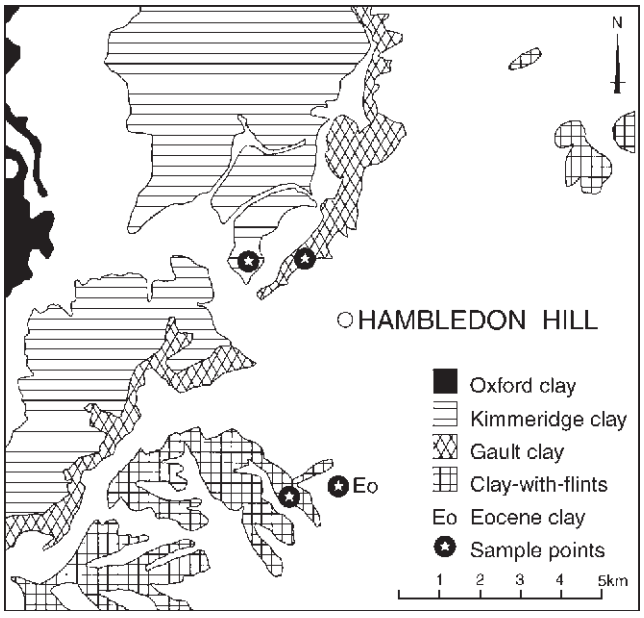

Fig 9.11 The extent of the clay outcrops around Hambledon Hill, and the origin of clay samples used in the analysis.

Table 9.14 Fabric groupings and sample details

The 'thin section no.' column records catalogue numbers in the thin section library of the Department of Archaeology, University of Southampton

Fabric no.	*Principal inclusions*	*Sherds sampled*	*Thin section no.*	*Context*
1	Gabbroic rock fragments	HH74 104	N257	Main causewayed enclosure, segment 4, L1, topsoil
		HH77 1167	N258	Central area, pit N F5, L3
		ST79 2622	N385	Stepleton spur, pit 2A F181
2.i	Ooliths	HH74 427	N221	Main causewayed enclosure, segment 3 or 4, AII L2/3, upper levels
		HH74 581	N259	Main causewayed enclosure, segment 3, AII L4, phase II
		ST79 3242	N375	Stepleton spur, site unstratified
2.ii	Ooliths, fossil shell and calcite	HH74 271	N223	Main causewayed enclosure, segment 4, AIII L5, phase III
		HH74 667	N260	Main causewayed enclosure, segment 2, L4, phase VI
2.iii	Ooliths and flint	HH74 710	N222	Main causewayed enclosure, segment 3, L5, phase VI
		HH74 232	N261	Main causewayed enclosure, segment 3, L4 phase VI
2.iv	Fossil shell and recrystalised ooliths	HH77 595	N263	Main causewayed enclosure, segment 1, F5, phase VI
2.v	Fossil shell and flint	HH74 492	N264	Main causewayed enclosure, segment 3, AI L7, phase V
		ST79 1096	N377	Stepleton enclosure, segment 1, L4
2.vi	Fossil shell and limestone	HH74 533	N274	Main causewayed enclosure, segment 3, AII L3, phase VIII/a
		ST79 1580	N376	Inner Stepleton outwork, segment 7, C15 L4, phase III
		ST79 557	N378	Inner Stepleton outwork, segment 6, C1 L3A, phase V
		ST79 1969	N379	Inner Stepleton outwork, segment 5, C7 L5A, phase III
3	Calcite	HH74 190	N265	Main causewayed enclosure, segment 3, AI L3, phase VIII/a
		HH77 1842	N266	Central area, pit N F22, L3
		ST79 2143	N383	Inner Stepleton outwork, segment 5, C14 L3A, phase V
4	Organic material (chaff or dung?)	HH74 355	N267	Central area, site A, topsoil
		ST79 130	N384	Outer Stepleton outwork, segment 5, L2, phase VIII/a
5	Fresh shell and flint	HH74 270	N262	Main causewayed enclosure, segment 4, AIII L7, phase VI
6	Red pellets (and flint)	ST79 637	N386	Inner Stepleton outwork, segment 6, C1 L1D, phase III
	Red pellets (and snail shell and chalk)	ST79 1963	N387	Inner Stepleton outwork, segment 6, C1 L1F phase III
	Red pellets (and sandstone and flint)	ST79 760	N388	Inner Stepleton outwork, segment 6, C1 L1D, phase III
	Red pellets (and quartz/quartzite)	ST79 1576	N389	Inner Stepleton outwork, segment 6 C3 L2B, phase VII/a
	Red pellets (and flint)	ST79 119	N390	Inner Stepleton outwork bank area, unstratified
	Red pellets (and fresh shell)	ST79 905	N391	Inner Stepleton outwork, segment 5, C4 L3B, phase V
	Red pellets (and flint)	ST79 907	N392	Inner Stepleton outwork, segment 5, C11 L3B, phase V
	Red pellets (and flint)	ST79 1498	N393	Inner Stepleton outwork, segment 6, C3 L3, phase VII/a
	Red pellets (and flint)	ST79 2539	N394	Stepleton spur, pit 2A F189
	Red pellets (and sandstone)	ST79 869	N395	Inner Stepleton outwork, segment 5, C4 L3B, phase V
7	Flint	HH74 1063	N268	Central area, pit A F62
		HH74 603	N269	Central area, pit A F5
		HH74 101	N270	Main causewayed enclosure, segment 2 or 3, L1, topsoil
		HH74 928	N271	Central area, pit A F41
		ST79 2064	N380	Middle Stepleton outwork, segment 6, C1 L4, phase III
		ST79 2655	N381	Inner Stepleton outwork, segment 5, C17 L6, phase I
8	Sand	HH74 973	N272	Main causewayed enclosure, segment 2 or 3, L1, topsoil
		HH74 490	N273	Main causewayed enclosure, segment 3, AI L9, phase III
		ST79 761	N382	Inner Stepleton outwork, segment 6, C1 L1A, phase VIII/a
Burnt clay		ST79 554	N396	Inner Stepleton outwork, segment 6, C1 L1D, phase III

The riverine clay in the valley of the Stour was not sampled, since its present composition is unlikely to be the same as in Neolithic times because of erosion and down-cutting into new deposits. Clay from a fissure within the Stepleton enclosure was also collected and studied. Each clay sample was wedged, made into a brickette, dried and then fired at a temperature of 900–1000°C for three hours.

A thin section was then prepared from each brickette. No simulation of mixed clays was attempted. All the sampled clays, with the exception of the Stepleton fissure type, were used individually for brick-making in recent times (Osborne White 1923, 94). At present, there is no reason to suspect that in Neolithic pottery traditions clays were extensively altered by mixing.

Throughout this report individual thin sections are referred to by their accession number (eg N257) in the thin section library of the Department of Archaeology, University of Southampton.

9.2.2 The fabrics

Fabric group 1 – Gabbroic

This fabric group falls within the general class of gabbroic wares defined by Peacock (1969). Macroscopically it is characterised by a liberal scatter of angular rock fragments. In thin section large angular grains of feldspar, amphibole and quartz can be seen in an optically anisotropic fired clay groundmass. The feldspars are turbid and intensely altered, although some fresh grains of plagioclase are visible (Fig 9.12: A). The amphiboles are green or colourless varieties.

The sample from the Stepleton enclosure (N385) is very similar to those from the Hambledon enclosure, but the rock fragments in the latter tend to be smaller, presumably more completely crushed during manufacture to produce a finer-textured clay. Gabbroic ware vessels in the same fabric occur at Maiden Castle (eg N3) and at Hembury (eg N8), but the gabbroic wares known to the author from Carn Brea, Cornwall (eg N4 and N5), are rather different, having a much coarser fabric. The source of the Hambledon Hill gabbroic ware is probably on the Lizard in Cornwall (Peacock 1969; 1988; Harrad 2004), some 240 km or so away to the south-west.

Fabric group 2 – Oolitic and shelly limestone-tempered wares

This is a large and complex group of fabrics in which six subdivisions can be recognised. All are linked by the presence of Jurassic limestone detritus as the predominant tempering agent.

2.i Oolitic wares

The tempering agents in this fabric are almost exclusively ooliths, with only very occasional admixed fragments of shell. In thin section the ooliths dominate the field of view and display well-defined concentric layering (Fig 9.12: B). About 50% show central nuclei of rounded quartz grains. Most of the ooliths measure less than 0.4 mm across, but a few are up to 0.66 mm. Almost all are single and isolated; only slide N221 contained a rock fragment composed of several ooliths. The ooliths are set within a fine-grained groundmass containing small, subangular to rounded quartz grains up to 0.24 mm across, and a few flecks of muscovite mica up to 0.01 mm long, but these are rare.

An identical fabric has been identified at West Kennet long barrow, Wiltshire (N35 and N36), and at several other sites in central southern England. It is not present among the material known to the author from Maiden Castle, Dorset, to the south, or from Neolithic sites in Gloucestershire to the north. The source of the Oolitic wares probably lies somewhere along the Jurassic outcrops in west Dorset or west Wiltshire.

2.ii Ooliths, shell- and calcite-tempered wares

Although broadly similar to fabric 2.i under the microscope, this fabric contains a wider range of inclusions. In addition to the ooliths there is a light scatter of fossil shell and occasional calcite crystals. The shell is well crushed; fragments rarely exceed 0.75 mm across. The calcite shows well-marked cleavage planes, and occurs as angular crystals up to 3.0 mm across.

A comparable fabric is recorded at Robin Hood's Ball, Wiltshire (N62), and at Windmill Hill, Wiltshire (Smith 1965, p1 xvi: e). The source of this fabric, like that of fabric 2.i, probably lies along the Jurassic outcrops west or north-west of Hambledon Hill, although not necessarily as far north as the Bath–Frome area as suggested by Cornwall and Hodges (1964) or indeed the Bradenstoke area (Darvill 1983b, 97).

2.iii Ooliths and flint-tempered wares

This fabric is macroscopically similar to fabric 2.i, the main difference being that along with ooliths there is also a light scatter of flint fragments. These flints are not common, and in a sherd of about 10 mm^3 only four pieces were found. All were over 1 mm long, but none occurred in the thin section plane. Under the microscope this fabric is very similar to both 2.i and 2.ii, and simply represents a variation in the range of Oolitic wares.

A sample from Robin Hood's Ball (N77) provides a good match for the Hambledon Hill fabric, and somewhat similar wares undoubtedly occur elsewhere in the area. Sofranoff (1976, 56–60) undertook a heavy mineral analysis of sherd HH74 710, and found that the mineral suite was not unlike that of the Bridport–Yeovil–Midford sands which occur extensively along the length of the Jurassic ridge (Boswell 1924). The presence of fragments of flint within the fabric need not alter the proposed source of the Oolitic wares among the Jurassic outcrops since such fragments would have been common wherever flint was worked.

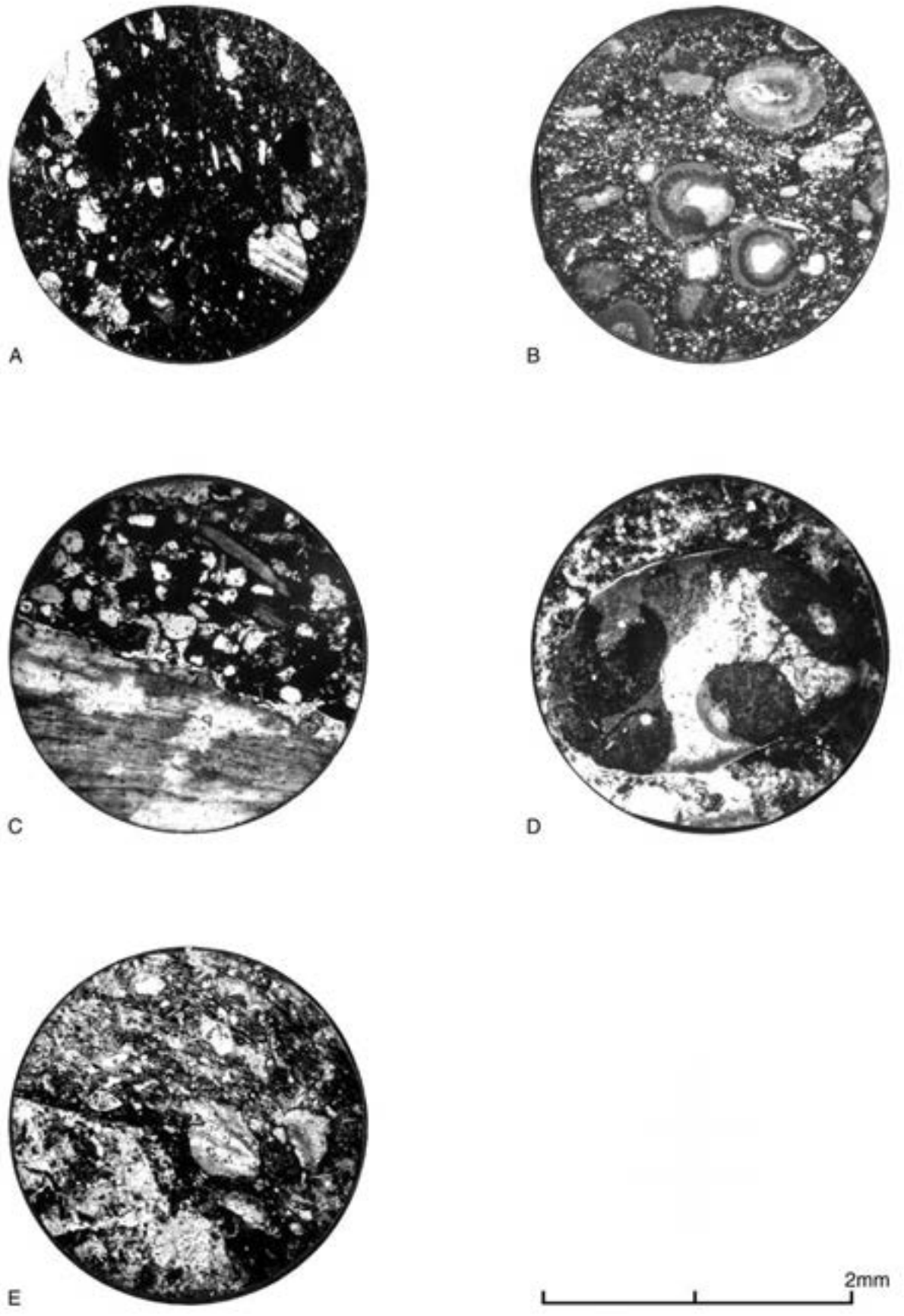

Fig 9.12 A photomicrograph of fabric 1, B photomicrograph of fabric 2.ii, C photomicrograph of fabric 5, D photomicrograph of fabric 2.iv, E photomicrograph of fabric 2.v.

2.iv Fossil shell and re-crystallised oolith-tempered wares

Abundant tempering is visible in the hand specimen, and microscopic examination shows it to consist of a mixture of small shell fragments and rounded pieces of rock containing re-crystallised ooliths. One small chip of flint was noted in the hand specimen, but no pieces were present in the thin section. The shell is well crushed, most pieces being less than 1 mm long. The rock fragments containing re-crystallised ooliths are, in contrast, rounded and up to 3 mm across (see Fig 9.12: D). The calcitic cement in which the ooliths are set is thick and evenly distributed. In addition, a few small pieces of siltstone were observed in the fabric, and one, which was prized out of the surface of the sample sherd, resembled a tiny pebble about 2.0 mm across. The groundmass in which these clasts are set is fine-grained and slightly micaceous. There is a light scatter of quartz fragments, mostly under 0.06 mm across, and a few dried clay pellets not fully mixed into the clay during wedging.

No parallels can be cited at present. A source in the same general area as fabric 2.i–iii is likely, but it is improbable that exactly the same clay and rock outcrops are involved.

2.v Fossil shell and flint-tempered wares

In the hand, specimen fragments of fossil shell and flint can easily be seen with the naked eye. Under the microscope, shell is the dominant element, and occurs in pieces up to 2 mm long, although much of it is rather smaller. Some shell fragments are cemented together, and there is no doubt that this is fossil shell. Flint fragments are not common, and fall within the size range 1.0–1.5 mm across. The groundmass is anisotropic and is practically barren except for the clasts already mentioned and occasional pieces of quartz up to 0.1 mm across (Fig 9.12: E).

No directly comparable fabrics can at present be cited, although many samples from sites in central southern England are broadly similar. Again, a source along the Jurassic outcrops is most likely, although the clay used differs from that in any of the other fabrics in group 2.

2.vi Fossil shell and limestone-tempered wares

This fabric is broadly similar to fabric 2.v in the hand specimen, but does not contain flint. In thin section it can be seen to represent a distinct fabric. The clay matrix is fine-grained and contains a light scatter of angular quartz grains and flecks of muscovite mica. The principal clasts are shell fragments, often fused together with calcitic cement. Foraminifera fossils are also present (Fig 9.13: F). Slight variations in the texture of clasts was noted among the samples studied.

Comparable fabrics have been recorded from Maiden Castle, Dorset (N84), and from fabric group 5 at Cherhill, Wiltshire (Darvill 1983b, 95). It is interesting to note that sherd HH74 667 cross-cut a junction between two coils of clay used in making the pot (see 9.2.3 below). The lower coil was of fabric 2.vi, the upper of fabric 2.ii (Fig 9.14). Thus both fabrics were presumably available in the same place at the same time.

This vivid example of the connections identifiable between fabric groups serves to emphasise the need for further research into the Jurassic-tempered wares. All the fabrics classed here as group 2 probably derive from somewhere along the Jurassic outcrops, but at least three separate sources are probably involved, some perhaps near to Hambledon Hill, others perhaps rather further away. Without more work greater precision is impossible.

Oolith-tempered wares are widely believed to originate from somewhere along the Jurassic Ridge (Cornwall and Hodges 1964). If they did, then the heavy minerals should resemble those of the Bridport–Yeovil–Midford Sands, which stretch from southern Dorset to the Cotswolds. Boswell (1924) analysed these minerals from over 80 samples. He found that the sands were remarkably homogeneous, but that the quantity and variety of minerals increased from north to south. His findings resemble the Hambledon Hill material but more detailed comparisons between the sands and the sherds are necessary before anything definite can be said. If the resemblance to these sands is close enough to assume they are the source of the Hambledon Hill heavy minerals, it would still be possible to include most of the Jurassic Ridge in this category, since the sands are homogeneous. The only indication as to specific source is the inclusion of flint in the clay of the sherd. The point at which oolite, sand and flint outcrop closest to each other is in the Bridport area of southern Dorset. At all other points along the Jurassic Ridge the flint outcrops are further away from the oolite and sands. This sherd does not come from the Kimmeridge Clay or the Portland Sand, as they all contain abundant tourmaline (Boswell 1924).

Fabric group 3 – Calcite-tempered wares

The presence of large angular fragments of calcite up to 4 mm across is a distinctive feature of this fabric in the hand specimen. In thin section the slightly rectilinear crystal form and clear cleavage planes of the calcite fragments can easily be seen. The groundmass is fine-grained, slightly micaceous, and contains angular fragments of quartz up to 0.4 mm across, together with occasional pieces of non-translucent iron ore (Fig 9.13: G). A perfect cube of iron pyrites about 1.1 mm^3 was found in the break of sherd HH74 1842, and a small chip of flint was noted in HH74 190 during macroscopic examination.

Calcite-tempered Neolithic wares comparable to those from Hambledon Hill form a discrete group in Dorset (Sofranoff 1976, fig 16), and accordingly it might be suggested that the Jurassic outcrops provide

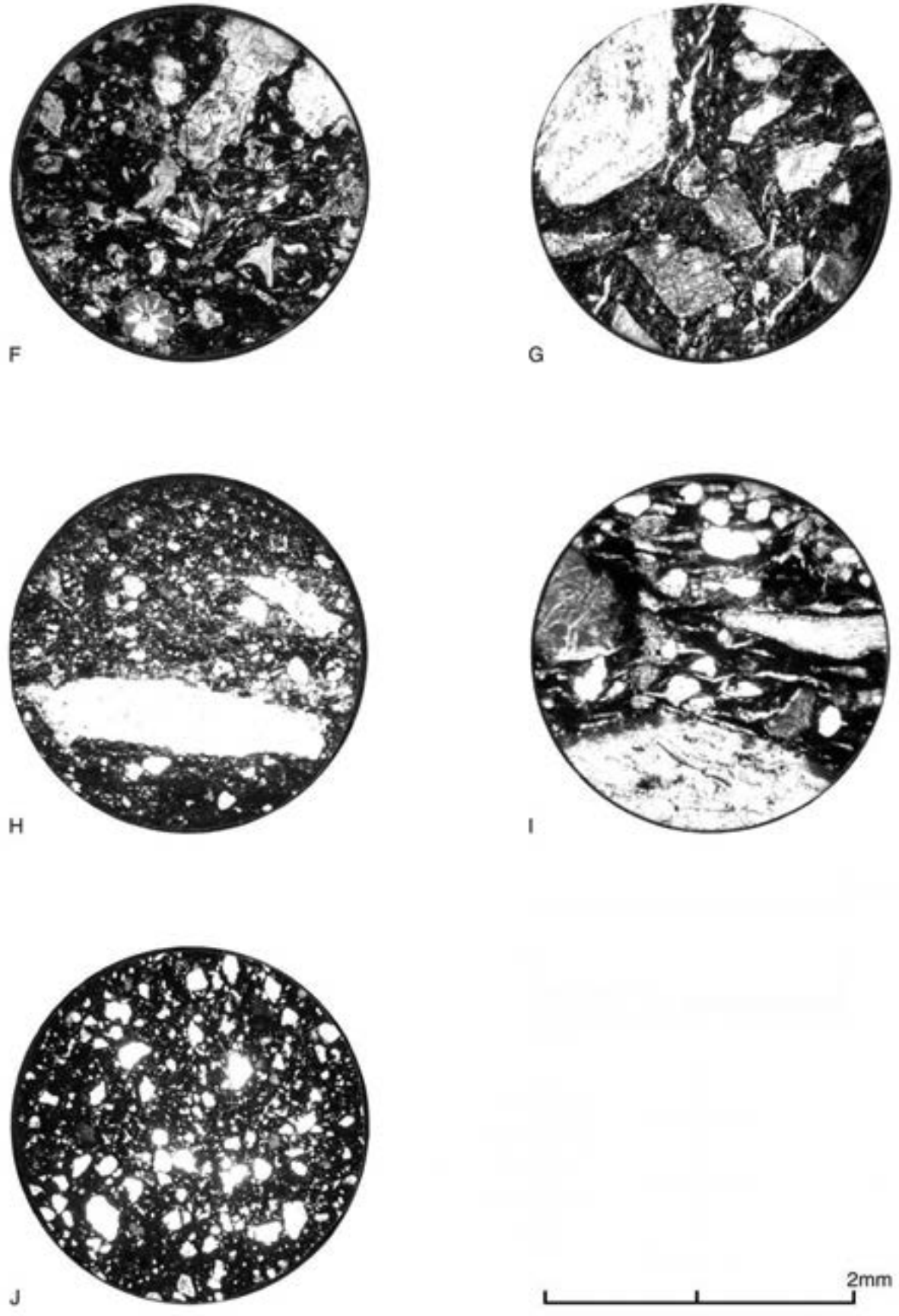

Fig 9.13 F photomicrograph of fabric 2.vi, G photomicrograph of fabric 3, H photomicrograph of fabric 4, I photomicrograph of fabric 7, J photomicrograph of Kimmeridge clay sample.

the most likely source area. However, crystalline calcite outcrops widely in numerous sedimentary formations, and other source areas are equally possible. In support of a Dorset origin for this particular group of calcite-tempered wares is the fact that calcite tempering is not common in Wiltshire (cf Smith 1965, 46), and that, although calcite was heavily used as a tempering agent in many Cotswold potting traditions, the clays are quite different (Smith and Darvill 1990). None of the clays sampled from the vicinity of Hambledon Hill match those used in the manufacture of fabric group 3 vessels. A source in Purbeck has subsequently been suggested for similar Neolithic fabrics from Maiden Castle (Cleal 1991a, 173).

Fabric group 4 – Organic-tempered wares

In the hand specimen this fabric is slightly vesicular with a granular feel. A close examination of the voids showed that many contained carbon residues and this, coupled with the fact that slight striations could be detected on the walls of the voids, led to the conclusion that organic matter had been used as a tempering agent. Latex casts of the voids were made by Mr Francis Green of Southampton University in an effort to identify the material used. Although the resolution of detail on the casts was low, and the voids small, enough could be seen to lead Mr Green to the conclusion that chaff or dung had once filled the voids.

In thin section the angular voids can be clearly seen, surrounded by an anisotropic groundmass (Fig 9.13: H). Within the groundmass is a light scatter of rounded quartz grains up to 0.3 mm across, and a few flecks of muscovite mica.

No exact match for this fabric is known to the author. However, the use of organic tempering agents is widespread in Britain and has been reported from a number of sites including Windmill Hill, Wiltshire (Smith 1965, 46) and Fengate, Cambridgeshire (Pryor 1974, 8). At Gwernvale, Powys, organic-tempered wares represented 76% of the pre-cairn (early Neolithic) assemblage (Darvill 1984, 112). Organic-tempered pottery was also a feature of several British and European Neolithic potting traditions (Darvill 2004; Hulthén 1977, 49).

The source of the clays used for fabric group 4 is not known.

Fabric group 5 – Fresh shell and flint-tempered wares

Macroscopically the dominant component of this fabric is the fresh-looking crushed shell, which ranges in size from 0.75 mm up to 4.5 mm long. Occasional pieces of flint can be seen in the fabric. In thin section the pieces of shell show clear laminar structure and clean edges (Fig 9.12: C). A thorough examination revealed no traces of cement residues on the shell and it must be concluded that it is fresh rather than fossil shell. Intermixed with the shell are fragments of white calcined flint up to, but not exceeding, 0.5 mm across. The groundmass in which these clasts are set is heavily iron-stained and contained numerous angular and sometimes crazed quartz and quartzite grains. These were mostly up to 0.38 mm across, but occasionally over 2.0 mm. Quartz grains dominate the groundmass visible under the microscope (Fig 9.12: C), probably covering 25% (Shvetsov 1955) of the area not covered by the shell.

No fabric match is known to the author, and none of the local clays sampled is in any way similar to this fabric.

Fabric group 6 – red pellet wares

This fabric can easily be recognised in the hand specimen by the presence of small, roughly spherical, red-coloured pellets. A considerable variety of clastic inclusions have been noted in association with this fabric, including flint (samples N386, N390, N392, N393, N394), crushed land mollusc shell and chalk (N387), sandstone and flint (N388), crushed quartz or quartzite (N389), fresh shell (N391) and sandstone (N395). In all cases these inclusions are set within a fine-grained slightly micaceous clay matrix with a light scatter of well-sorted subangular quartz grains up to 0.25 mm across. The red pellets can be seen to be iron-rich clay pellets under the microscope, and iron staining is widespread within the matrix as a whole. Dried clay pellets up to 1.0 mm across betray the fact that the clay was not especially well wedged before use.

No fabric matches can be cited. Although none of the clay samples from the vicinity of Hambledon Hill match that used in this fabric a fairly local source cannot be ruled out; the mineralogy and texture of the matrix hints at a riverine clay source. The eclectic range of inclusions could all have derived from natural deposits or broken-up tools such as would be present among settlement debris. Roe suggests a source area for broadly similar heathstones, red clays, and sandstones in south-east Dorset (see 10.1.2).

Fabric group 7 – Flint-tempered wares

Characterised in the hand specimen by the presence of flint fragments, this fabric group covers a wide range of wares with varying amounts of flint additives. In thin section the density of flint ranges from 7% to 25% of the field of view (Shvetsov 1955), and the fragments themselves range in size from under 0.5 mm across up to 4.0 mm across. Characteristically they are thick and angular. Samples N269 and N271 contain smaller, splinter-like fragments of flint. The clay matrix is anisotropic and contains abundant quartz grains which range in size from 0.08 mm up to 0.25 mm across. There is much iron staining in the fabric resulting from ferrous material in the clay (Fig 9.13: I). Air pockets and a slightly laminar structure betray poor clay preparation.

Many sites in central–southern England have broadly comparable fabrics, although no identical matches could be located among the samples available for study. The specimen of Kimmeridge Clay from about 2.5 km west of Hambledon Hill (Fig 9.11) provides a very close match for the clays used in fabric group 7 (cf Fig 9.13: I and J).

Fabric group 8 – Sandy wares

Of all the fabric groups present, this one is probably the most variable. The clay matrix is anisotropic with a certain amount of iron staining present. It is impossible to determine how much of the quartz present is naturally in the clay and how much has been added. The density of quartz varies greatly between samples; N272 is almost barren of quartz while in N382 the density reaches perhaps 15% (Shevtsov 1955).

In view of such variety in the amount of quartz present, it is difficult to find parallels for this fabric group. There are, however, many similarities with the flint-tempered wares of fabric group 7, and it is very likely that Kimmeridge Clays were also used for making fabric group 8 wares.

Burnt clay

A single sample of burnt clay from the inner Stepleton outwork was examined. The fabric was fine-grained and sandy. In thin section the anisotropic groundmass contained much fine quartz, occasionally in fragments up to 0.9 mm across, and iron specks. There were also occasional rounded pieces of calcareous material, ?chalk. The fabric does not match any of the pottery examined, but is very similar to the clay derived from the fissure on the Stepleton spur, and there can be little doubt that the daub derived from such superficial clay deposits somewhere on the hilltop.

9.2.3 Technology and production

Something of the great range in vessel quality will be evident from the descriptions of individual vessels given above (9.1). Variety also exists in the technology of production exhibited within the assemblage. In general, the clays selected for use were well prepared and thoroughly wedged, but there are exceptions, and the dried clay pellets and laminar structure of several samples designated fabric groups 6 and 7 show that for some classes of ware preparation was less thorough.

Insights into the way pots were made are given by the coil junction in sherd HH74 667 (Fig 9.14). In coil-pot construction long cylindrical 'worms' of clay are rolled out and then set one on top of another to build up the walls of the vessel. As each coil is added the joint is smoothed over with a wet hand or a smooth pebble (Hodges 1964, 26). The use of slightly different clays in the two adjacent coils represented in sherd HH74 667 has been described above, and provides a useful insight into the range of clays available to an

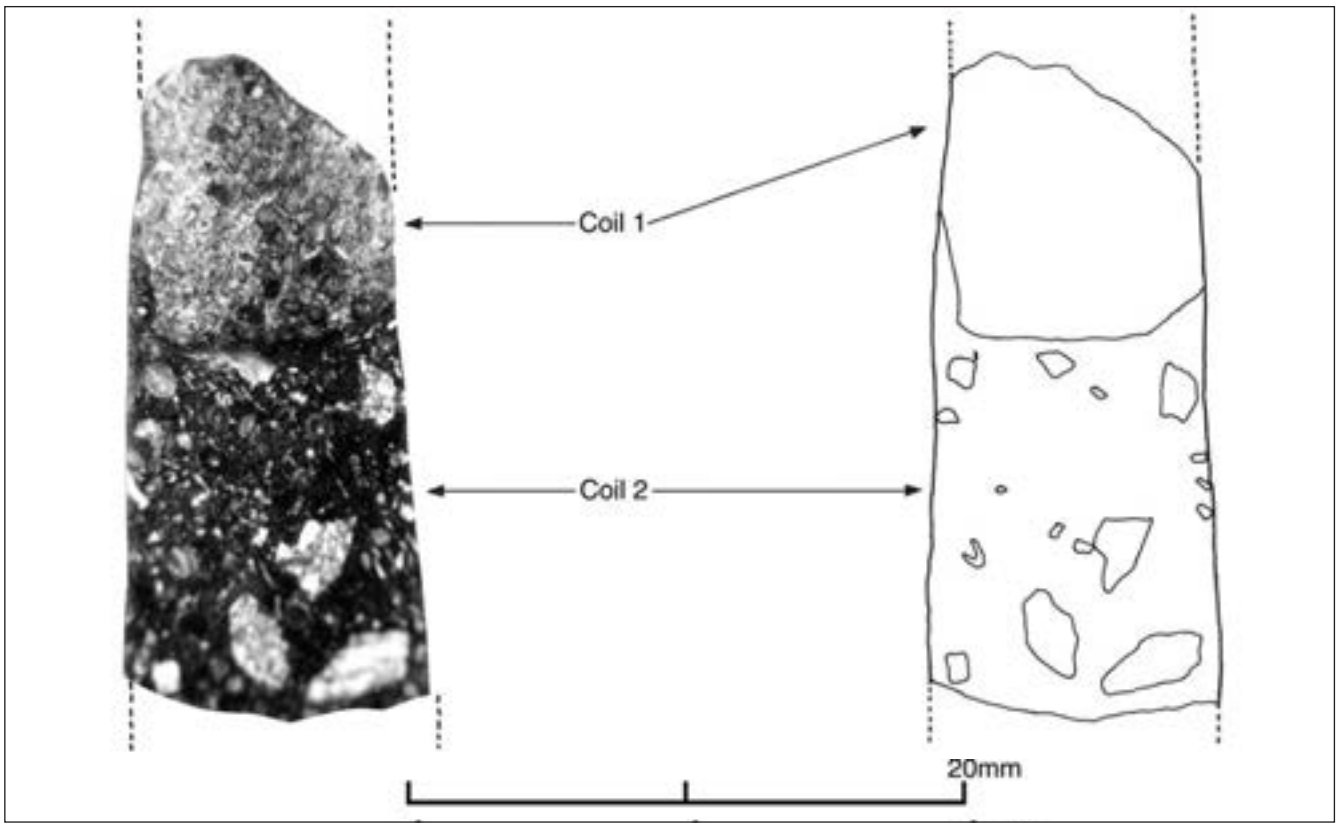

Fig 9.14 Photomicrograph and interpretative drawing of the polished face of sherd HH74 667 showing a coil junction and the contrasting fabrics used for each coil.

individual potter. The technique of coil-building has been observed in other studies of Neolithic pottery (eg Smith 1965, 47; Lynch 1975, 24), and it seems to have been the usual method adopted by Neolithic potters.

Assessing firing temperature is always difficult with prehistoric pottery, and can really only be gauged by the condition of the minerals and clasts in the fabric. Many of the fabrics discussed here retain calcareous inclusions, and this would suggest that temperatures in excess of *c* 750° C were not achieved. Firing atmosphere varied not only between fabrics, but also between vessels of a single fabric group and, sometimes, even over the surface of individual vessels. Only the gabbroic wares (fabric group 1) show consistent firing. Some sherds have reduced inner faces and oxidised outer surfaces, indicating that the pots were either inverted or stacked one inside another during firing. Other sherds are fired the same on both faces, indicating widespread atmospheric conditions during firing. A bonfire or simple clamp kiln, which would leave no trace in the archaeological record, was probably used for firing the vessels represented in the Hambledon Hill assemblage.

9.2.4 Discussion

The fabric composition of the ceramic assemblage from Hambledon Hill is clearly extremely complex. Its overall characteristics accrued over a long period of time, and undoubtedly result from a wide range of activities. Analysis is made difficult by the problems of assigning precise origins to sedimentary rock and clay outcrops, thus making full appraisal of the sources exploited almost impossible. Notwithstanding these difficulties, a number of general points about the assemblage can be made.

A considerable number of separate sources provided clay or vessels for use on Hambledon Hill. The gabbroic wares represent the most clear-cut examples of imported wares, but at least some of the fabrics containing Jurassic limestone inclusions probably travelled a considerable distance to the site. In contrast, fabric groups 7 and 8 almost certainly derive from clays available within a few kilometres of the hilltop and other fabrics may also represent local sources. Almost all the pottery is from areas to the west of Hambledon Hill.

Early and middle Neolithic pottery assemblages frequently display a wide range of fabrics, as at Windmill Hill, Wiltshire (Smith 1965) or the Peak, Gloucestershire (Darvill in prep), but the Hambledon Hill assemblage is the first such group where it is possible to examine intra-site variation. The distribution of fabric groups is described above (Smith, 9.1). There is little evidence for correlations between form and fabric which might imply functional partitioning of the assemblage, although the types of tempering used may have constrained the use of some fabrics. Cooking pots, for example, require resistance to thermal shock and the ability to withstand rapid changes in temperature, whereas containers intended for cooling liquids would need just the right degree of porosity to allow slow evaporation through the vessel walls.

Likewise, there is only limited correlation between fabric and the quality of product. At the fine-ware end of the scale lie the gabbroic wares, while at the opposite extreme lie fabric group 6 wares, which tend to be roughly finished and irregular in shape. In between lie vessels of all qualities made in all fabrics. Cups (diameter 60–120 mm) are found in fabric groups 2–8; open bowls in fabric groups 2–4 and 6–7; carinated bowls in fabric groups 2–3 and 6–7; and less clearly differentiated forms in all fabrics. It is noticeable that half of the fabric group 4 and fabric group 8 vessels are cups. Decoration was applied indifferently to both finely and roughly finished vessels of all sizes, and the same range of decorative techniques is found on vessels of fabric groups 2–3 and 5–8. No heavy-duty storage category vessels can be isolated on the criteria of size, shape or distinctive fabric. Overall, the assemblage comprises small- to medium-sized vessels, and most fabrics are used for the manufacture of the entire range of vessel forms and sizes

Only two fabric groups from Hambledon Hill can be matched by wares from other middle Neolithic sites in Wessex and the south-west of England. These are the gabbroic wares (fabric group 1) and the Jurassic rock-tempered wares (fabric group 2). Together these wares account for over 22% of the pottery from the main enclosure but only about 10% from the Stepleton enclosure. It is possible that the production and distribution of these two classes of pottery was governed by mechanisms distinct from those determining the circulation of other wares. Establishing exactly what processes were involved, however, is a matter for future research.

9.3 Later prehistoric pottery from the hillfort

Lisa Brown

A total of 3217 sherds deriving from 22 contexts was examined and sorted by fabric type (Table 9.15). Examination was undertaken with the aid of a 10× hand lens with the occasional aid of a 20× binocular microscope. A notable feature of this assemblage was the small sherd size and the high degree of abrasion exhibited by the majority of sherds. For this reason, specific identification of vessel forms was often impossible, although rim, basal and decorated sherds were individually quantified.

The following fabric categories were identified:

A. Fine/medium sand

Fine/medium quartz common to abundant up to 0.5 mm, usually well sorted. May have rare inclusions of powdery reddish haematite.

Table 9.15 The hillfort: fabric quantification

Fabric	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Sherds	639	112	1131	891	193	146	105
% total	19.9	3.5	35.2	27.7	6.0	4.5	3.3

B. Large sand

Dominant temper is coarse quartz sand, grains ranging in size from 0.5–1.0 mm. May also contain rare additional inclusions of flint, limestone, quartzite. Category includes Wareham–Poole Harbour fabrics.

C. Flint

C(1) Finely sanded clay containing rare to common quantities of grey and white flint, often calcined, usually below 2.0 mm. Surfaces or whole sherd often oxidised.
C(2) Smooth or lightly sanded clay containing common to abundant ill-assorted fragments of white, grey or reddish non-calcined flint pieces up to 3.0–4.0 mm. May contain additional rare inclusions of haematite and small rounded pellets (unidentified) below 2.0 mm. A much more coarsely tempered and finished fabric than C(1).

D. Oolitic Limestone

Smooth clay or finely sanded paste containing oolites and occasional plates of limestone in sparse to abundant quantities. Other inclusions rare.

E. Shell/fossil shell/limestone/calcite

Smooth or lightly sanded clay containing all or some of the tempers listed above, generally in rare to moderate quantities. The grade of the temper is often fairly coarse and the finish of the vessels is crude.

F. Coarse sand and grit

A coarse textured fabric containing a combination of quartz grains 0.5–1.0 mm and smooth, perhaps water rolled, non-quartz particles 1.0 mm+ in size.

G. Organic temper (briquetage?)

Soapy or finely sanded vesicular fabric. Vesicules indicate original temper of grass, straw or chaff. It is likely most examples are briquetage but the sherds are too fragmentary and abraded for secure identification.

The fabric range was wide, the most common fabric types being flint-tempered and oolitic limestone-tempered wares. Most of the fabrics were likely to have a relatively local source. Calcareous fabric groups D and E probably derived from the Jurassic Ridge and resemble varieties recovered from Maiden Castle (L Brown 1991). The flint-tempered fabrics may have had their source in the Clay-with-Flints capping of the chalk downlands of the region. The sand-tempered wares were more difficult to source, and may have derived from a small variety of local and perhaps non-local sources. Considering the condition of the assemblage and the difficulties of linking fabric to vessel typology, no petrological analysis was undertaken. Among the sand-tempered group, however, 18 sherds were recognised as clear examples of Wareham–Poole Harbour ware. All examples were recovered from contexts relating to the occupation of the hut and all are heavily abraded and of unidentifiable form. Considering the character of the associated ceramics, it is likely that the Poole Harbour ware fragments represent vessels of early Iron Age date rather than later Durotrigian wares. The exploitation of this clay/sand source in the early Iron Age has been demonstrated at Hengistbury Head – fabric H19 (Brown 1987), Rope Lake Hole (Davies 1986) and Maiden Castle. A single sherd from layer 1 of the 'extension' (ie the topsoil) does, however, resemble the post-conquest Black Burnished Ware I type and may indicate a limited Roman presence on the site.

The majority of sherds were classifiable by fabric type only, but rim, basal and decorated sherds were individually recorded. These constituted only a small proportion of the total with rim sherds numbering 240 (7.5% of the assemblage) and basal sherds numbering 119 (3.7%). Most of these could not be assigned to a specific vessel form owing to their small size and poor condition. Complete profiles were absent within the assemblage, and even the occurrence of shoulder regions extant with rims is uncommon. Despite this shortcoming, the combined evidence allows the proposal of a typology and chronology which is reasonably clear and is consistent with several other assemblages within the general region.

Most classifiable sherds belonged to flared-rim tripartite bowls and situlate jars with upright rims. Surviving shoulder profiles of the bowls appeared to be rounded rather than sharply angled and jars were, on the whole, slack-shouldered. Five lug or handle fragments were identified, one in oolitic ware and four in flint-tempered ware. Decoration of any type was uncommon, although a few sherds exhibited a fingertip/nail-impressed design on rim tops and shoulders or, less commonly, slash marks. The occupation layer associated with the hut floor produced a possible fragment of a furrowed bowl (P190) and the double groove below the neck of P188 resembles the decoration on a vessel from an early Iron Age group from Corfe Mullen (Calkin 1965). Thirty-five red-finished sherds were identified, including a small number which preserved traces of genuine haematite slip. More commonly, the red finish had been achieved by the use of burnishing and firing techniques which bring to the surface of the vessel traces of haematite present within the fabric. All red-finished vessels from Hambledon were flared-rim bowls.

The Hambledon Hill assemblage incorporates characteristics of a number of other ceramic groups from the western sector of the Wessex area.

Hambledon Hill's near neighbour, Hod Hill, clearly contained an early Iron Age component within its ceramic assemblage, but most relevant sherds are ill-provenanced within an area of excavation designed primarily to assess the Roman occupation of the site (Richmond 1968). Contexts assigned to period I at Gussage All Saints (Wainwright 1979b) produced a similar range of vessel forms, including a single furrowed bowl, with an equally diverse fabric range. In contrast to Hambledon Hill, however, oolitic limestone-tempered ware was represented by a mere four sherds at Gussage, despite the relative proximity of the two sites. The bipartite bowl form which is characteristic of the period 1 assemblage from Rope Lake Hole on Purbeck, Kimmeridge II (Davies 1936), and is a minor component of the Hengistbury Head assemblage (Cunliffe 1987) is apparently absent at Hambledon, indicating that a date in the earliest Iron Age (eighth–seventh century) is not appropriate for this assemblage. The Hambledon assemblage correlates best with period II at Eldon's Seat (Cunliffe and Phillipson 1968), period 2 at Rope Lake Hole (when flared-rim tripartite bowls become common) and site D at Chalbury Camp (Whitley 1943). The 1985–6 excavations at Maiden Castle produced little pottery for the corresponding period, phase 5, but this small group, taken together with the much larger early Iron Age assemblage from Wheeler's excavations (Wheeler 1943) compares well with the Hambledon assemblage, particularly in the incidence of slack-shouldered jars and the relatively high proportion of oolite-tempered ware.

No middle or late Iron Age pottery was positively identified within the assemblage and, despite the limited scope of the Hambledon Hill excavation, the early Iron Age character of the ceramic assemblage seems consistent with a sixth–fifth-century date, at least for the occupation layer associated with the hut and the features cut into the adjacent chalk bank, the deposits from which the majority of sherds were recovered. The date of 770–400 cal BC (2450±35 BP; OxA-7776) for a bone fragment from the ditch underlying the hut terrace (see Ch 4) combines with the stratigraphy (Fig 3.152) to suggest that the ditch may have been allowed to infill relatively quickly.

Catalogue of illustrated sherds

P181. Flared-rim bowl with haematite slip. Fabric C. Context: Extension to cutting – Layer 1 HH86 115.
P182. Flared-rim bowl, surface heavily abraded. Fabric D. Context: Turf – Layer 1. HH86 9.
P183. Flared-rim bowl, roughly smoothed surface. Fabric C1. Context: Turf – Layer 1. HH86 9.
P184. Flared-rim bowl, roughly smoothed surface. Fabric C1. Context: occupation layer (extension). HH86 218.
P185. Flared-rim bowl, partial burnish. Fabric D. Red-finish. Context: occupation layer (extension). HH86 218.
P186. Flared-rim tripartite bowl, partial burnish. Fabric D. Context: occupation layer, layer 3 (central baulk). HH86 68.
P187. Bowl fragment with burnished chevron decoration on shoulder. Burnished surface. Fabric C1. Context: occupation layer, layer 3 (central baulk). HH86 68.
P188. Bowl with double groove below neck. Fabric C1. High burnish and oxidised but not red finished. Context: occupation layer, south sector. HH86 53.
P189. Bowl fragment with traces of red haematite slip. Fabric E. Context: occupation layer, south sector. HH86 53.
P190. Fragment of a furrowed ?bowl with highly burnished, oxidised surface. Fabric C1. Context: occupation layer, south sector. HH86 31.
P191. Small jar or bowl, roughly finished. Fabric C2. Context: occupation layer, south sector. HH86 31.
P192. Small jar, coarse surface. Fabric C2 with traces of powdery red slip or coat. Context: occupation layer, south sector. HH86 31.
P193. Small jar, coarse finish. Fabric C2. Context: occupation layer, south sector. HH86 53.
P194. Small jar, roughly smoothed surface. Fabric B. Context: hut surface (clearing). HH86 44.
P195. Jar rim, unfinished surface. Fabric A. Context: hut surface (clearing). HH86 44.
P196. Jar rim, roughly smoothed surface. Fabric D. Context: extension overlying second occupation layer. HH86 213.
P197. Large jar rim, roughly smoothed surface. Fabric D. Context: extension to cutting – Layer 1. HH86 115.
P198. Jar rim, roughly smoothed surface. Fabric D. Context: occupation layer, north side. HH86 60.
P199. Jar rim, roughly smoothed surface. Fabric C2. Context: occupation layer (extension). HH86 218. HH86 60.
P200. Jar rim bearing trace of red haematite paste or slip. Smoothed interior. Fabric D. Context: hut surface (clearing). HH86 44.
P201. Jar rim, roughly smoothed surface. Fabric A. Context: occupation layer, south sector. HH86 53.
P202. Straight-sided jar (proto-saucepan pot form), roughly smoothed surface. Fabric C1. Context: hut surface (clearing). HH86 44.
P203. Shoulder fragment with fingernail-impressed decoration, roughly smoothed surface. Fabric E. Context: occupation layer (extension). HH86 218.
P204. Base of small jar, unfinished surface. Fabric F. Context: hut surface (clearing). HH86 44.
P205. Base of large jar, unfinished surface. Fabric C2. Context: occupation layer, layer 3 (central baulk. HH86 68.
P206. Flared-rim bowl, abraded surface. Fabric D. Context: East strip, layer 2. HH86 111.
P207. Flared-rim bowl with smoothed, oxidised surface, but not red finished. Fabric C1. Context: trench extension, layer 2. HH86 160.
P208. Flared-rim bowl, unfinished surface. Fabric C2. Context: trench extension, layer 2. HH86 160.
P209. Small jar with upright rim. Abraded, coarsely finished surface. Fabric D. Context: trench extension, layer 2. HH86 160.
P210. Basal sherd with three perforations produced as modifications to fired vessel. Roughly smoothed surface. Fabric C2. Context: trench extension, layer2. HH86 160.

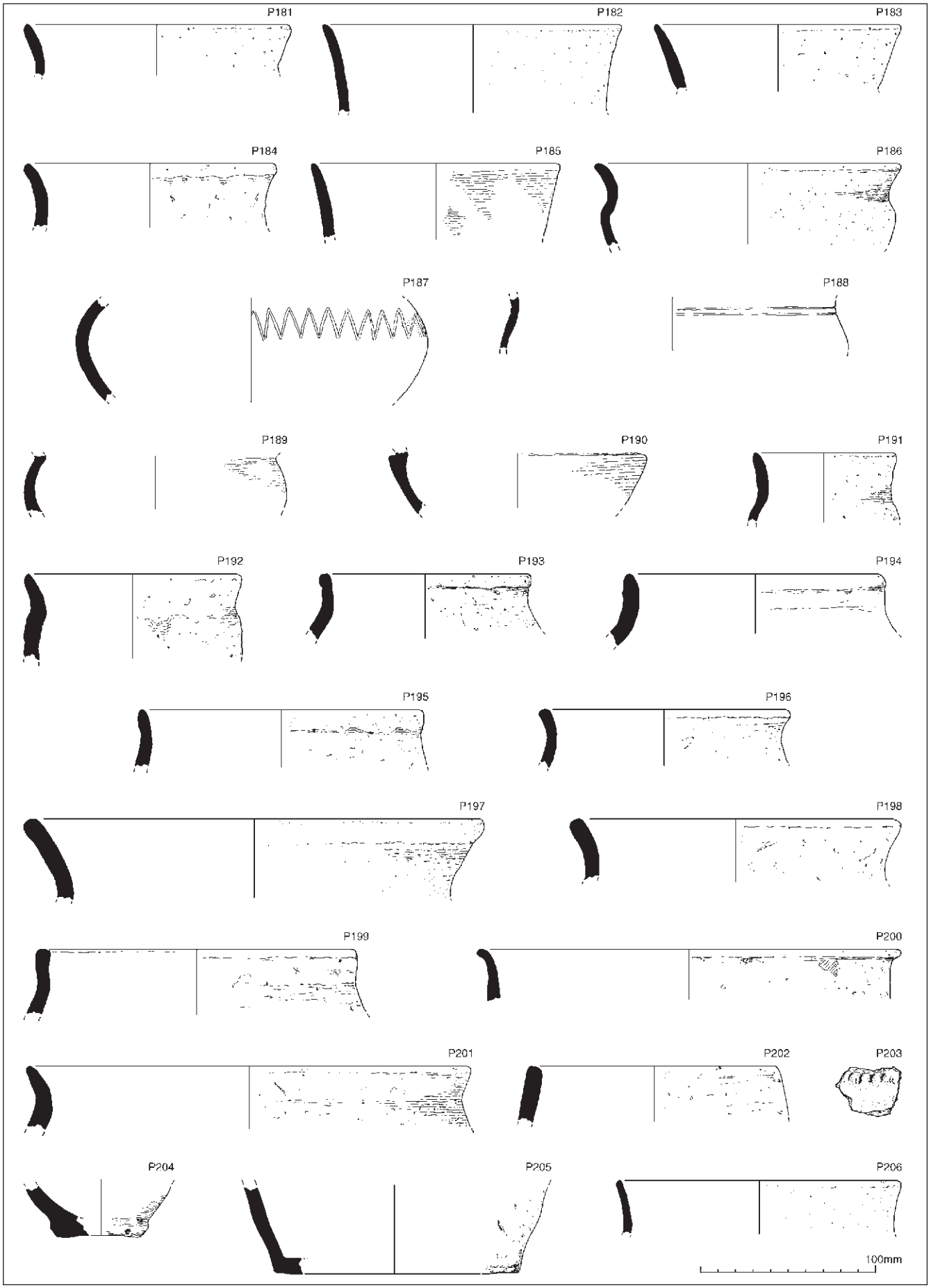

Fig 9.15 Iron Age pottery from the hillfort. Scale 1:3

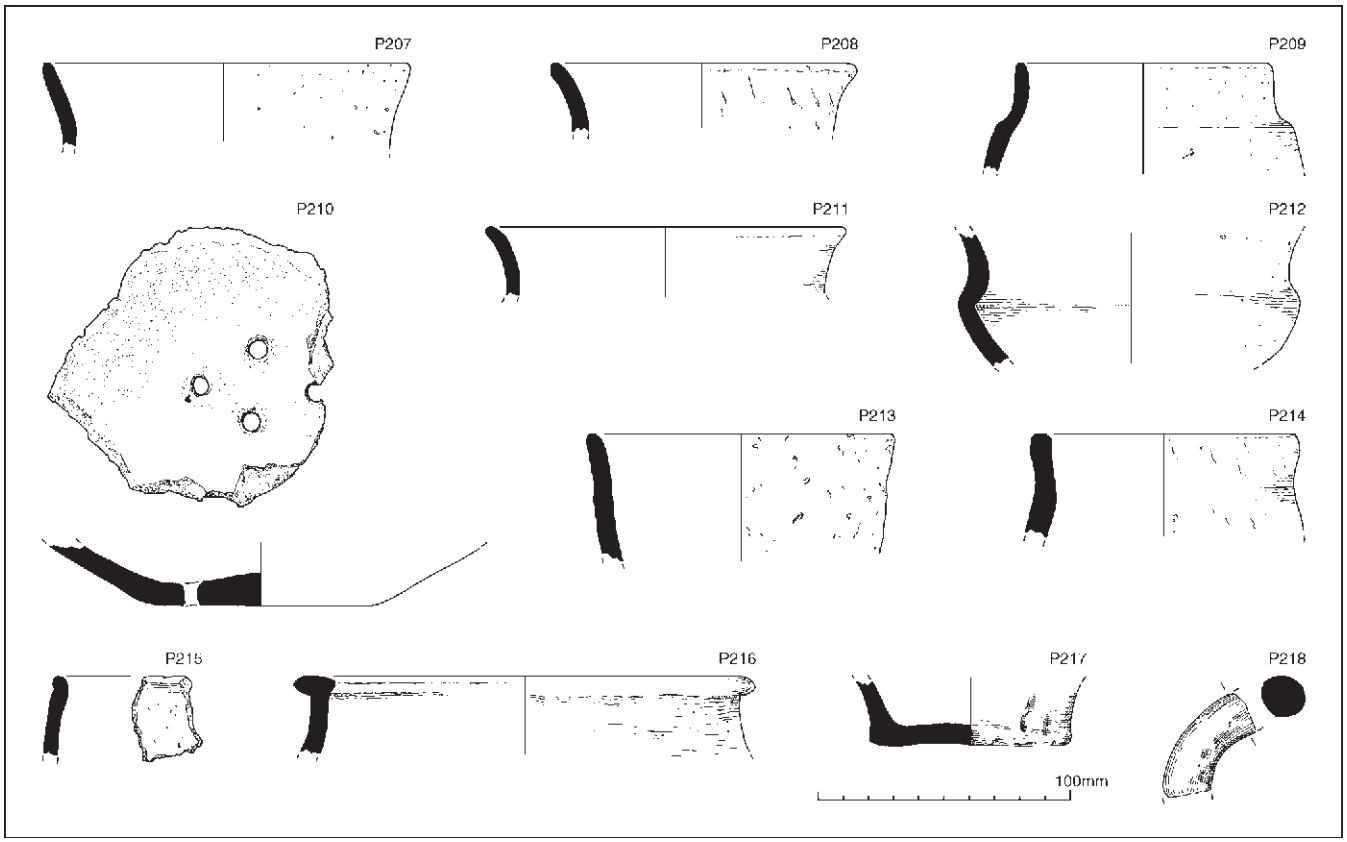

Fig 9.16 Iron Age pottery from the hillfort. Scale 1:3

P211. Flared-rim bowl, smoothed surface with red haematite slip. Fabric D. Context: trench extension, layer 3. HH86 260.
P212. Tripartite bowl fragment, partially burnished, with traces of red haematite slip. Fabric C2. Context: trench extension, layer 3. HH86 260.
P213. Straight-sided ?jar, coarse fabric and finish. Fabric A. Context: trench extension, layer 3. HH86 260.
P214. Small jar with upright rim, streaky, discontinuous burnish. Fabric A. Context: trench extension, layer 3. HH86 260.
P215. Straight-sided ?jar, smoothed surface. Fabric C1. Context: trench extension, layer 3. HH86 260.
P216. Jar with expanded rim, partial burnish. Fabric D. Context: trench extension, layer 3. HH86 260.
P217. Basal fragment of small jar, very coarse finish. Fabric C2. Context: trench extension, layer 3. HH86 260.
P218. Round section handle fragment, abraded surface, oxidised. Fabric C1. Context: trench extension, layer 3. HH86 260.

9.4 Fired clay

Alistair Barclay

9.4.1 Introduction

The assemblage consists of 564 fragments (4641 g) of fired clay. It includes structural clay, loomweights, a crucible fragment and a cup-shaped object. Most of the structural clay has been fired and is thought to derive from the collapsed Neolithic rampart, while the crucible and loomweight fragments belong to the later Iron Age occupation. Fired clay is a good indicator of domestic occupation and a wide range of activities. The loomweights provide direct evidence for textile production and the structural clay provides indirect evidence for ovens built from wattle and clay, and for burnt daub walls, no doubt derived from demolished structures.

Methodology

A quantification of fragments by number and weight is given in Table 9.16. Five fabrics were identified and are listed below. The fired clay was examined for evidence of wattle or other impressions, possible objects and structural pieces.

Fabrics

1 Natural clay with no added inclusions. Rare (<1%) angular flint.
2 Natural clay which is slightly sandy in texture with no added inclusions.
3 Hard fabric with sparse (<7%) medium (1–3 mm) angular flint inclusions.
4 Soft fabric with common (<15%) voids from burnt-out organic matter and sparse (<7%) coarse (over 3 mm) flint inclusions.
5 Clay with coarse burnt-out organic matter (stems).

Table 9.16 Quantification of all fired clay (number of pieces/weight in grammes)

Context group	*Amorphous clay fragments*	*Potting clay*	*Structural clay*	*Objects*			*Totals*
				Misc	*Crucible*	*Loomweight*	
Main causewayed enclosure	1/2 g						1/2 g
Inner east cross dyke				1/2 g			1/2 g
Discrete features in central area	1/3 g	3/32 g					4/35 g
Shroton spur outwork	31/170 g		32/113 g				63/283 g
Stepleton enclosure ditch	9/11 g						8/11 g
Inner Stepleton outwork	94/152 g		168/3427 g	1/2 g	1/2 g		263/3564 g
Discrete features on Stepleton spur	114/208 g		12/22 g				126/ 230 g
Stepleton spur miscellaneous and unstratified	43/59 g						43/59 g
Outer Hanford outwork	2/3 g						2/3 g
Hanford spur, pit F864	9/3 g						9/3 g
Hillfort	2/23 g			*		32/366 g	34/389 g
Coombe Bottom	2/4 g						2/4 g
Stepleton Lynchet	6/13 g						6/13 g
Everley Water Meadow	1/24 g						1/24 g
Totals	314/675 g	3/32 g	212/3562 g	2/4 g	1/2 g	32/366 g	564/4641 g

* A fragmentary spindle whorl and what appears to be a fired clay bead were missing when this report was written. There are photographs of both

Most structural clay is in fabrics 1 and 2. Fabric 1 may be a less sandy version of fabric 2 and both may derive from the same source. A sample of fabric 2 was thin-sectioned and compared with a sample taken from the fissure outcrop on the Stepleton spur by Timothy Darvill, who concluded that the sample derived from this or a similar deposit of superficial clay (9.2). Fabrics 3 and 4 both contain angular flint inclusions, and it is suggested that they may represent potting clay. The organic-tempered fabric 5 is rare and may not be of Neolithic date.

9.4.2 Description

Amorphous clay fragments including potting clay

Most of the fired clay examined can be described as amorphous, with no visible surfaces or diagnostic features. The majority of this material consists of oxidised reddish-brown lumps. It may, however, derive from a variety of sources, including burnt daub and hearths, and as such is an indirect indicator of domestic occupation. Nearly all of this material was in fabrics 1–2 with the exception of a small number of fragments in the flint-tempered fabrics 2–3. These pieces were in some cases too large to be considered as very worn pottery sherds and it is suggested that they represent potting clay of Neolithic date.

Structural clay

Most of the structural clay was recorded from the 1979 excavations on the Stepleton spur, and the majority of this comes from the rampart which had collapsed into segment 6 of the inner outwork ditch (Tables 9.17–18).

A few fragments with wattle impressions were noted from various contexts and these are listed in Table 9.18. One fragment (HH76 1414) has both vertical sail and horizontal rod impressions, while a number of fragments (HH76 1509, ST78 244, ST79 297 and 1490, ST81 980) have less diagnostic wattle impressions. HH76 1414 was the only piece to have both vertical sail and horizontal rod impressions and came from a superficial layer over the protected chalk of the Shroton outwork. The impressions on HH76 1509 were more ambiguous, and they could represent finger-moulding rather than actual wattle impressions. The early Neolithic pit 1A F228 contained 12 fragments (ST78 1305) of fired clay in fabric 1, including one with a concave surface possibly made by a wattle. In addition three fragments (ST78 244) one of which had a single wattle impression, were recovered from a shallow depression (1A F5, possibly a pit base) in the same area. A single fragment (ST81 980) in fabric 2 had two wattle impressions. It was recovered from phase VI deposits in segment 14 of the Stepleton enclosure which also contained much Bowl pottery. A further fragment (ST79 297) was recovered from tertiary fills of the inner outwork that contained a range of pottery, including Romano-British.

The highest concentration of fired clay was in segment 6 of the inner Stepleton outwork, where the ditch cut through a localised natural outcrop of Clay-with-Flints. Here the rampart was thought to have been constructed out of clay dug from the ditch, and much of the fired clay is assumed to have derived from the collapse of the bank (Fig 3.99, Pls VIII–IX). Over 3.3 kg of fired,

Table 9.17 Fired clay from the inner Stepleton outwork by segment and phase (number of pieces/weight in grammes)

Phase		*Segment 4.2*	*5*	*6*	*8*	*5 or 6*
I	Amorphous clay fragments			29/391 g		
	Structural clay			115/2946 g		
III	Amorphous clay fragments			46/107 g		
V	Amorphous clay fragments			3/8 g		
VII/a	Amorphous clay fragments		1/1 g	14/22 g		
VIII/a	Amorphous clay fragments	2/12 g	1/1 g	55/78 g	4/14 g	6/14 g
	Structural clay			1/19 g		
	Crucible		1/2 g			
	Miscellaneous object		1/2 g			
Upper levels and unstratified	Amorphous clay fragments					9/24 g

Table 9.18 Structural clay (number of pieces/weight in grammes)

Context	*Find*	*Number/ weight*	*Fabric*	*Comment*
Main causewayed enclosure, segment 17, L9A, phase IV	HH76 1509	6/24 g	1	Impressions probably from wattles but could be from finger-moulding
Shroton outwork, site M, bank area, L2	HH76 1414	32/113 g	1	With sail and rod impressions
Stepleton enclosure, segment 14, U7, L2, phase VI	ST81 980	1/24 g	2	Has two wattle impressions
Inner Stepleton outwork segment 6, cutting 1, L4A (phase I)	ST79 1557	27/495 g	1	As above. One fragment has an impression from a split oak timber
Inner Stepleton outwork segment 6, cutting 1, L4A (phase I)	ST79 1585	28/390 g	1	Some fragments have one lumpy surface
Inner Stepleton outwork segment 6, cutting 1, L4A (phase I)	ST79 1609	64/1060 g	1	Some fragments have one lumpy surface. There is a single ?wood impressions, but this is less convincing than ST79 1557
Inner Stepleton outwork segment 6, cutting 1, L4A (phase I)	ST79 1896	24/1391 g	1	Some fragments have one lumpy surface. Some fragments are baked rather than fired, while others (some with surfaces) are unfired
Inner Stepleton outwork segment 5, cutting 11, L2 (phase VIII/a)	ST79 297	1/2 g	1	This fragment has either a wattle impression or a broken perforation
Inner Stepleton outwork segment 6, cutting 1, L1A (phase VIII/a)	ST79 1490	1/19 g	1	Impression possibly made from the end of a wattle
Possible feature 1A F5	ST78 244	3/8 g	2	Includes one fragment with wattle impression
Early Neolithic pit 1A F288	ST78 1305	12/22 g	1	Possible fired daub fragment with one concave edge

baked and unfired clay were recovered from this segment. No fragments with wattle marks were identified, although a number of pieces retained their original surfaces and two had impressions made from split timber (ST79 1557 and 1609). The fragment from ST79 1557, although small in size, has fresh breaks indicating that it was once part of a larger fragment. One impression can be clearly identified as that of a radially split piece of oak (Dr Mark Robinson, pers comm; Fig 9.17). Such an impression could have been made if the plastic clay was pressed against a split oak timber.

Cup-like disc

A small and incomplete disc of clay (HH75 1075) in fabric 1 has been pinched into a cup and fired. This object was recovered from a layer of the inner east cross-dyke that contained much Beaker pottery. The disc is similar in manufacture to the bowl end of some earlier Neolithic clay spoons, but much smaller in size (Anon 1934, 423). Piggott notes that the spoons from Glenluce and the Sun Hole, Mendip, were found alongside Beaker material (1954, 75).

Fig 9.17 Impression of radially split oak on fired clay fragment ST79 1557 from the inner Stepleton outwork. Scale in centimetres

Crucible fragment

The phase VIII/a fill of segment 5 of the inner Stepleton outwork contained a single crucible fragment (ST79 500) weighing 2 g. The same deposit contained pottery of mixed date that included Romano-British. The sherd contains no readily identifiable inclusions, is 9 mm thick and has a vitrified black glassy interior surface. It is probably no earlier than late Iron Age in date (Dr Peter Northover, pers comm).

Loomweight fragments

Two contexts in the hillfort excavations contained small fragments (HH86 188 and 266) of probably triangular loomweights of Iron Age date. The largest fragment is from the corner of a triangular loomweight with a broken perforation.

Spindle whorl

A fragmentary clay spindle whorl (HH86 25) was found during the hillfort excavations. It is missing (2003) and known only from a photograph.

Bead?

A small perforated clay object, perhaps a bead (HH86 158), also from the hillfort excavation, is similarly missing.

9.4.3 The distribution of fired clay across the site

The main causewayed enclosure ditch

Segments 3 and 17 of the main causewayed enclosure ditch produced single finds of fired clay. The fragment (HH74 712) from a phase VI deposit in segment 3 was small and amorphous, while the six fragments (HH76 1509) from a phase IV deposit in segment 17 carried impressions made either by wattles or by finger moulding.

The inner east cross dyke

The only find of fired clay from the inner east cross dyke was a cup-like disc (HH75 1075).

Features in the central area

Four features within the main causewayed enclosure contained fired clay. Small quantities of probable potting clay were recovered from pits B F56 and B F57, while pit N F11 contained one or two tiny fragments of amorphous fired clay, as did probably recent quarry B F1A, which cut a treethrow hole containing Neolithic and Beaker material.

The Shroton spur outwork

Seventy-three fragments (168 g) of fired clay were recovered, almost all from site M, where nine tiny crumbs (4 g) were recovered from the fill of posthole 7, part of the gate structure (Fig 3.75). A further 128 fragments came from superficial contexts in the bank area, including a fragment of daub with sail and rod impressions. The remaining 16 fragments came from the phase VIII/a fills of the ditch.

The Stepleton enclosure

Phase VI produced two fragments of fired clay, one of which is an amorphous crumb (ST 81 252). The other (ST81 980) is a fragment of structural clay with two wattle impressions. Phase VIII/a, the tertiary fills, produced only small amorphous fragments of fired clay (ST80 142, 228, 247).

The inner Stepleton outwork

Almost all the fired clay came from cutting 1 in segment 6 (Table 9.17). The burnt layers on and near the base of the ditch contained 146 fragments (*c* 3.4 kg) of burnt and unburnt clay in fabric 1. A number of these fragments have lumpy surfaces, while a further two fragments have impressions of split oak timbers. The phase VIII/a fills in segment 5 contained a crucible fragment of probable late Iron Age date.

Discrete features on the Stepleton spur

Most of the fired clay (154 pieces/251 g) comprised amorphous fragments. Notable concentrations occurred in pits 1A F206, F228 and F350, all on the clay-filled fissure. Probable daub fragments were recorded from early Neolithic pit 1A F228 and from possibly early Neolithic pit 1A F5.

The Hillfort

Loomweight fragments and two fragments of amorphous fired clay were recovered from the area of Iron Age occupation excavated in 1986. The loomweight fragments are relatively small and include pieces with one or more flat surfaces, corners and at least one perforation.

9.4.4 Discussion

Little structural clay has been recorded from earlier Neolithic sites, and it is notably absent from other causewayed enclosures (Bradley 1994, appendix 2). It is difficult to judge whether this general absence really indicates a lack of the use of clay for daub walls and other less substantial structures or, in fact, whether it reflects the general absence of domestic structures. Certainly the presence of fired clay on sites of later prehistoric date (eg hillforts) often reflects the scale, range and nature of domestic settlement. At Hambledon the presence of at least a small quantity of fired clay in Neolithic contexts other than the collapsed, burnt inner Stepleton outwork bank, may be taken as an indicator of structures and more permanent occupation. Bamford notes possible potting clay of earlier Neolithic date from the Briar Hill causewayed enclosure, and a single fragment of structural clay, albeit from a Mortlake Ware-associated pit deposit (Bamford 1985, 118). At Hazleton North, Gloucestershire, a single piece of fired clay daub with a wattle impression was recorded from the pre-cairn midden deposit (Saville 1990c, 181). At Padholme Road, Fengate, Cambridgeshire, 143 g of burnt daub was recorded from the wall slots of a probable Neolithic house (Pryor 1974, 8).

10 Lithics

10.1 Stone 630
10.2 The flint and chert artefacts *by Alan Saville* 648

10.1 Stone

10.1.1 Stone axes

The late Isobel Smith

Petrological information about the stone axes and axe fragments, numbered Sl–S21 for the purpose of this report, is based on the results of microscopic examination of thin sections removed from each specimen. The individual identifications, provided by the Implement Petrology Survey of the South-West, the corresponding county survey numbers, and site contexts will be found in the catalogue below and are summarised in Table 10.2. R V Davis was responsible for 17 identifications; the other four were undertaken by W Campbell Smith (S3), Hilary Howard (S20, S21) and Fiona Roe (S19).

The assemblage consists of six relatively complete implements (five axes, one adze; Fig 10.1) and 15 fragments, representing altogether 17 tools made of 14 varieties of rock. Eight varieties are represented by single items attributable to three petrological groups (IV, VI, VIII) and to five ungrouped rocks: nephrite (S3), jadeite (S11), amphibolite (S21), banded tuff, and siltstone. Two implements are made of greenstone 'similar to' and 'near' Group XVII (S6, S19). One axe, complete when found (S1), and a fragment from a second, belong to Group XVI. Parts of two axes made of rocks not recorded elsewhere on Hambledon Hill come from the south-west ditch of the long barrow. One is represented by two fragments of altered gabbro, S15 from phase I and S16 from phase III. The two pieces of group I rock come respectively from phase I (S14) and from the recent turf and topsoil preserved under bulldozed mound material (S17). The three parts of an axe of altered amphibolite (S4, S5, S10), another rock with a restricted distribution on the site, were found in phase III deposits in the opposed ends of segments 8 and 9 of the main enclosure ditch and in the phase V silts at the north end of segment 10. The two flakes of undifferentiated greenstone, one from a probable treethrow hole in the central area (S2), the other from the Stepleton spur (S20), are presumed to derive from two axes. Representation of axes within the two main sites is uneven: 14 from the central area, three from the Stepleton spur.

Among the axes ascribed to recognised petrological groups, five are of Cornish origin – Group I, Mount's Bay area, near Penzance (S14, S17); Group IV, Balstone Down, Callington (S8); and Group XVI, Camborne area (S1, S7). A further two are 'similar to' or 'near' the Group XVII rock from sources at St Austell and St Erth (S6, S19). One flake (S12) derives from a Group VI axe of Lake District origin and another (S13) is of Group VIII rock from south-west Wales (David and Williams 1995). A fragment made of banded tuff (S9) could have belonged to an axe carried from Wales or from the Charnwood Forest area of Leicestershire.

Hambledon Hill stands at the eastern limit of the effective distribution of axes of Groups IV and XVI (Clough and Cummins 1988, maps 5, 15), and at the south-western limit of the effective distribution of axes of Group VI (ibid, map 6). Group VIII axes are more thinly dispersed (ibid, map 8). The representation of the four groups on this site is therefore unremarkable. But the site also stands within the area of southern England in which Group I axes constitute the largest individual group (ibid, map 2), and it is here that, for the first time outside Cornwall, an axe of this group has been found stratified in an earlier Neolithic context (S14 from the primary silt in the west ditch of the long barrow).

The two axes of continental origin, S3 (nephrite) and S11 (jadeite), were recovered from ploughsoil, but there is no reason to dissociate them from the main period of Neolithic activity. In the list of eight nephrite axes from the British Isles compiled by Jones *et al* (1977, 293) S3 is the sole example found in a significant context. S11 also adds to the small number of jadeite axes with useful associations; these include an unstratified fragment from the earlier Neolithic site at High Peak, Sidmouth, Devon, loosely associated with the radiocarbon date of 4000–3100 cal BC (4810±150 BP; BM-214), and the splendid ceremonial axe found beside the Sweet Track in the Somerset Levels (Coles *et al* 1974), now with a tree-ring date of 3807–3806 BC (Coles and Coles 1990).

S11 was analysed in September 2007 as part of Projet Jade, an international research project focusing on Neolithic axeheads of jadeitite and other Alpine rocks. Non-destructive mineralogical analysis using spectroradiometry, undertaken by Dr Michel Errera, confirmed that the rock is indeed likely to have originated in the Italian Alps. Its precise composition differs slightly from the jadeitites used for numerous Neolithic axeheads, although it compares with a few artefacts from Italy. Its main constituent is probably jadeite and the rock may be a jadeitite from an unknown occurrence or an altered jadeite.

Catalogue of stone axes (Fig 10.1)

Note. Each entry includes the petrological survey county number (eg DO 133) and the find number (eg HH75 550), except for casual finds S3 and S21.

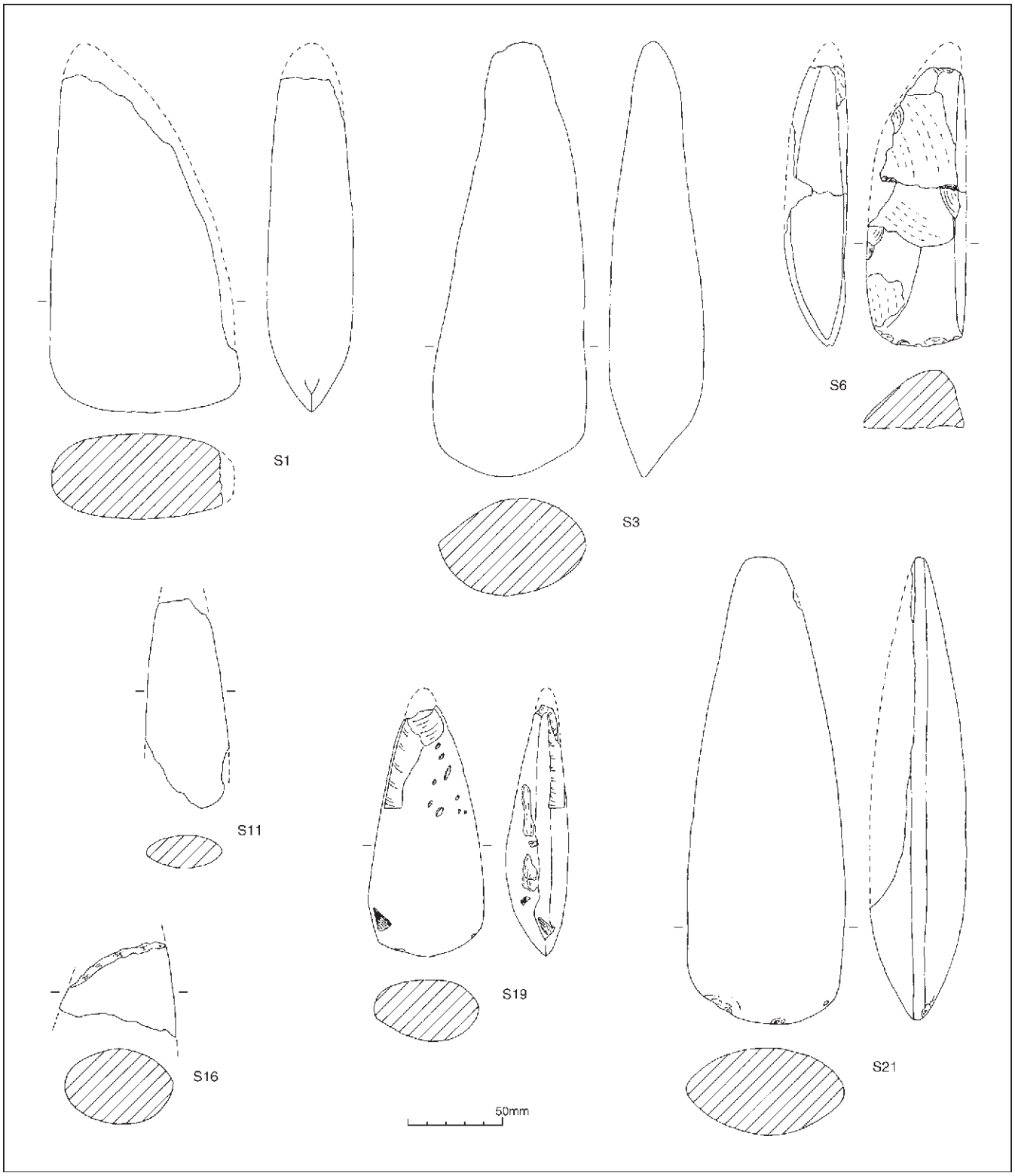

Fig 10.1 Stone axes. SI, Group XVI. S3, nephrite. S6, greenstone, similar to Group XVII. S11, jadeite. S16, altered gabbro. S19, greenstone, near Group XVII. S21, amphibolite. Particulars in catalogue. Scale 1:3

Main causewayed enclosure

S1. Axe: Group XVI. DO 133. HH75 550. Intact when uncovered (Figs 3.54–5), now partly disintegrated. Pit B F14, on surface of layer 4 together with the larger part of plain cup P58. Two gabbroic ware bowls (P1, P2) in layer 3, together with fragments of other vessels, including a decorated cup (P138).

S2. Small flake: Greenstone. DO 126. HH74 597. Top of A F2 (probably a treethrow hole, containing Neolithic pottery and struck flint and cut by Neolithic pit A F5)

S3. Axe: nephrite. DO 93. Ploughsoil, 1963, 'about 50 yards within the main enclosure ditch at SE'. Found and owned by Mr L E A Burd of Shroton. Drawing based on sketch on implement petrology record card.

Campbell Smith 1965, 31: no. 12b; Evens *et al* 1972, 270; Jones *et al* 1977, 293: no. 2.

S4. Disintegrating pieces, probably from butt of axe: altered amphibolite. DO 137. HH75 307. Main enclosure ditch, segment 8, layer 7, phase III. Probably from same axe as S5 and S10.

S5. Disintegrating fragments, possibly from a butt: altered amphibolite. DO 138. HH75 815. Main enclosure ditch, segment 9, layer 8, phase III. Probably from same axe as S4 and S10.

S6. Adze: greenstone, similar to Group XVII. DO 134. HH75 1440 + 1677. Main enclosure ditch, segment 10, layer 6B, phase VI. The two conjoining pieces were found *c* 0.50 m apart; all damage is due to impact. Butt and large portion of upper face missing.

S7. Fragment from cutting edge of large axe: Group XVI. DO 124. HH74 442. Main enclosure ditch, segment 3, layer 4, phase VI.

S8. Flake from face of large axe: Group IV. DO 125. HH74 1050. Main enclosure ditch, segment 4, layer 5, phase VI.

S9. Weathered fragment from middle of axe with rounded side: banded tuff. DO 143. HH76 923. Main enclosure ditch, segment 7, layer 4, phase VI.

S10. Fragment from middle of large axe: altered amphibolite. DO 136. HH75 2165. Main enclosure ditch, segment 10, layer 4, phase V. Probably from same axe as S4 and S5.

S11. Incomplete axe, severely weathered: jadeite. DO 135. HH75 950. Main enclosure ditch, segment 8, ploughsoil, phase VIII/g. Jones *et al* 1977, 290, 292: no. 104; pl 22.

East cross-dykes

S12. Small flake: Group VI. DO 140. HH75 1008. Inner east cross-dyke, segment 4, cutting IV, layer 2, phase VIII/d.

S13. Small flake: Group VIII. DO 139. HH75 1995. Outer east cross-dyke, segment 5, layer 4, phase VI.

Long Barrow

S14. Small fragment: Group I. DO 147. HH77 2228. LB3, SIII, layer 26, phase I. Probably from same axe as S17.

S15. Small flake: altered gabbro. DO 145. HH77 1984. LB3, SIII, layer 40, phase I. Probably from same axe as S16.

S16. Fragment from middle of axe with oval cross-section: altered gabbro. DO 144. HH77 2035. LB3, SIII, layer 21, phase III. Probably from same axe as S15.

S17. Small fragment from side of axe: Group I. DO 146. HH77 699. LB3, SII, layer 7, phase VIII/d. Probably from same axe as S14.

S18. Small flake: siltstone. DO 148. HH77 829. LB4, unstratified.

Stepleton Spur

S19. Axe: greenstone, near Group XVII. DO 162. ST78 2545. Stepleton enclosue, segment 23, ST1, at interface of layers 2 and 3, 'hard onto chalk at ditch edge', probably phase V. Intact except for small part of butt; some original flake scars unobliterated.

S20. Flake: greenstone. DO 149. ST79 1720. Inner outwork segment 5, C8S, layer 2B, phase VII/a.

S21. Axe: amphibolite. DO 160. Found 1981 in ploughsoil 30 m south-west of Stepleton enclosure. Property of Sturminster Newton High School. Cutting edge blunt and chipped, large flake missing from one face.

10.1.2 Worked stone other than axes

Fiona Roe

Introduction

This report describes over 400 finds, made from 12 varieties of stone, summarised in Tables 10.1 and 10.3 and selectively illustrated in Figure 10.2. The worked stone from secure Neolithic contexts amounts to 196 finds, of which 65 are recognisable artefacts, an altogether larger collection than is usually available from sites of the period. It includes 46 fragments from saddle querns or grain rubbers that retain signs of working, as well as 86 fragments of quern materials that no longer show working traces, although all would have been imported to the site. Most of the material from later and superficial contexts in the central area and on the Shroton, Stepleton, and Hanford spurs is likely to be of Neolithic date, a probability enhanced by the similar range and balance of stone types from Neolithic and other contexts in each area (Table 10.3). Small collections came from mainly Iron Age and Roman contexts on the hillfort spur and on sites around the hill (Table 10.1).

An unexpected result of the work was the recognition that at least two of the quern materials had been transported to the site from some distance, and were concentrated in different parts of the complex. Mendip Old Red Sandstone had been brought from some 40 km away and occurred mainly in the central area; Dorset heathstone came from a distance of at least 20 km and was found mainly on the Stepleton spur.

Four materials were used for the Neolithic querns: greensand, sarsen, heathstone and Old Red Sandstone. Since these are all reasonably coarse-grained rocks, they have been examined using a hand lens only. Calculations can only be approximate, owing to the fragmentary nature of the material.

Materials

Upper Greensand

The local greensand was extensively used for grinding equipment, accounting for around one-third of the Neolithic quern materials (Fig 10.3). It seems to have been marginally preferred over Old Red Sandstone in the central area, where it amounts to about 40% of the utilised stone.

The excavated greensand always contains glauconite, but is otherwise varied in character, reflecting the variations in lithology found in the district (Bristow *et al* 1995, 98). None of the upper greensand found on Hambledon Hill need have been transported further than 13 km or so, as useable stone outcrops in a band between Hambledon Hill itself and Shaftesbury (Bristow *et al* 1995, fig 2). The nearest occurrence of greensand is in fact just north of the hillfort (Bristow *et al* 1995, 105), where there are several pits at ST 844 134. Some of the greensand here is sandy and friable,

and so was probably little used, though one Neolithic rubber (HH74 1166, from A F78) is made from this variety of stone. A hard, gritty greensand, containing a scattering of larger quartz grains, but only rare fossil shells, was often used, and this could have been obtained from the same area on the edge of Child Okeford, or from Shaftesbury, where similar greensand was seen in the Wilderness quarry at ST 866 225 (Osborne White 1923, 51). A harder and more cherty greensand containing fossil sponge spicules was used for a number of querns and rubbers, and similar stone was seen in a quarry south-west of Melbury at ST 875 201 (Bristow *et al* 1995, 102). This cherty greensand is probably the stone used for quern or rubber fragments excavated in 1960 in Bonney's trench L, described as glauconitic quartzite (Evens *et al* 1972, 273). One (DO 106) was in a phase VII/a pit in the inner east cross-dyke with Early-style Beaker pottery; several fragments, one of which was identified (DO 107), lay together at the tail of the inner east cross-dyke bank. A pebble-hammer of similar stone is also recorded as a surface find from the hill (DO 57, Evens *et al* 1972, 266).

Upper Greensand was used almost exclusively for querns and rubbers (eg S24). It was also found suitable for making a few smaller items, such as two stone balls (S30 and HH76 2872) from the phase VI slot in segment 2 of the inner east cross dyke and from N F82, a small cylindrical object (HH76 1395) from a phase V layer in segment 16 of the main enclosure, and a point sharpener (HH77 1857) from N F90. An incompletely perforated object, possibly a spindlewhorl (HH76 139), from a hollow on site G, is of uncertain date.

Sarsen

Sarsen was the least exploited of the four quern materials, although it was well suited to use for saddle querns. It amounts to only about 15% of the worked stone from Neolithic contexts. At other sites, in areas where sarsen was available, it was much utilised from the Neolithic onwards. There were concentrations of 'grey wethers' in particular in north Wiltshire and south-west Dorset (Bowen and Smith 1977, 188, fig 1). It may be that only small quantities of sarsen were to be found in the area around Hambledon Hill, although elsewhere in Dorset it could have been obtained quite readily. It occurs, for instance, in the area of the Deverel barrow (Bowen and Smith 1977, 189) only some 13 km away. Surviving areas of sarsen boulders are also known around Broadmayne (Arkell 1947, 241) at a distance of 28 km, and in the Valley of the Stones, Littlebredy (Nash *et al* 1998, 241) some 35 km from Hambledon.

Two main varieties of sarsen were utilised. Most of the fragments have a medium-grained, saccharoidal texture, consisting of almost pure quartz grains, this being the most typical form in which sarsen occurs. A finer-grained saccharoidal variety was used for an axe-polisher (S26). There is also a more cherty variety of sarsen (Arkell 1947, 241), and this was utilised for one (HH77 2180) of two quern fragments from the primary silts of the south-west long barrow ditch. Sarsen was also used for a hollowed object, perhaps a small mortar (S28), which may have formed part of the packing of a vestigial posthole in the Shroton spur outwork bank (Fig 3.78), although the ploughed-down state of the earthwork makes the date of its introduction uncertain.

Heathstone

Heathstone accounts for 20% of the Neolithic quern materials, rising to more than 40% on the Stepleton spur (Fig 10.3, Table 10.1), although the attraction of this gritty and friable ironstone is not immediately apparent. Heathstone is a Tertiary sandstone, and was collected from quite different areas from those that might have supplied the other quern materials. There are Tertiary Bagshot Beds in south-east Dorset, between Wareham and Poole Harbour, and here a dark red to purple, iron-rich, variable sandstone can be found, occurring typically on today's heathlands (Arkell 1947, 355). It contains angular quartz grains together with clasts of other rocks, notably flint. The nearest locality to Hambledon Hill where stone could be obtained is probably at Sturminster Marshall, some 20 km to the south-east, down the river Stour. This river could have provided an easy passage for quern material right up to the base of the hill. However, the best quality stone may have been found nearer to the coast.

This sandstone has not survived well, and there are only two identifiable quern fragments, one (HH77 2314) from the phase VI slot in the west ditch of the long barrow, and one (ST81 794) from the phase VI deposits in the Stepleton enclosure ditch, the remainder consisting of small fragments without grinding surfaces.

Old Red Sandstone

Old Red Sandstone from the Mendips was used almost exclusively to make saddle querns and rubbers and accounts for some 25% of the Neolithic quern materials, rising to 40% in the central area (Fig 10.3, Table 10.1), where it may have been even more abundant, since several sandstone fragments, some from Neolithic contexts, were discarded during the 1974–7 excavations. The only other artefact is a small cylindrical object resembling a weight (S27). The quern fragments, unlike those made from heathstone, have survived relatively well (eg S22, S23, S25).

The Old Red Sandstone found at Hambledon Hill is a hard feldspathic sandstone, slightly micaceous and buff to light pink in colour, having been somewhat bleached by weathering. It outcrops in four separate areas of the Mendips (Green and Welch 1965, 10), so that it is not possible to pinpoint any particular source, but a minimum journey of around 40 km would have been needed to reach an outcrop.

Other utilised stone

Chalk artefacts include a possible spindlewhorl fragment (S33), from a lens of charcoal and ash interleaved with the phase III chalk rubble fills of the Shroton spur outwork; a ball (S31) from the phase III fills of segment 9 of the main enclosure, a puddled chalk object (S32) from the same segment, another ball (HN82 801) scattered in three pieces with two echinoids in a deposit that had probably underlain the inner Hanford outwork bank, and two grooved, bun-shaped objects behind the head of a child burial inserted into segment 17 of the main enclosure (HH76 3046, Fig 3.34). Further finds from Hanford consist of two perforated fragments (S34a and b) from the primary silts of segment 2 of the outer Hanford outwork and a striated fragment (HN82 800) from 'flint mine' F848. Another ball, this time of chert from the Upper Greensand, was found in the phase VI slot in segment 5 of the outer east cross-dyke (HH75 2026).

Quartzite and flint pebbles are most prominent in the early Iron Age assemblage from the hillfort spur, where 122 flint beach pebbles and four quartzite ones seem to have served as slingstones, and were probably brought from Chesil Beach, some 40 km to the south-west, where the pebbles are mainly of flint. The pebbles on Chesil Beach are graded in size from west to east, ranging from ones the size of peas at Bridport to large cobbles at Chesilton (Arkell 1947, 338). It would therefore have been a simple matter to visit the section of the beach where pebbles of the right size for slingstones could be collected.

Both also occurred in Neolithic contexts, sometimes utilised, sometimes unmodified. Quartzite pebbles make good hammerstones, and there are 12 of these from the central area, with a further one from the Shroton spur. Nine, including two of the three from Neolithic contexts, may have come from Chesil Beach. Flint beach pebbles, both unmodified and used as hammerstones, were also found in the central area (Fig 3.69; see Saville, 10.2), eleven of them in Neolithic contexts. A quartzite polisher, with one smoothly worn side, came from the primary silts of the west ditch of the long barrow (HH77 2248). The only other quartzite artefact is a possible small rubber or weight, which was a surface find (HH76 2686).

There is only one unmodified quartzite pebble from the Stepleton spur, where there were no utilised ones and no flint beach pebbles. Where non-beach pebbles are concerned, the discrepancy may reflect immediate availability. Unmodified pebbles, whether retained or discarded (the latter largely unidentified), amounted to around 20 on the Stepleton spur in contrast to over 300 in the central area, where they came predominantly from natural or superficial contexts, which suggests that they were naturally present there, although not on such a scale as to be readily visible in the present ploughsoil. One source could be the Clay-with-Flints, although it contains only up to 10% pebbles of varied materials (Bristow *et al* 1995, 140) and is also present on the Stepleton spur. Another possible source could be shallow Palaeogene or other deposits now incorporated in topsoil (Ch 1).

Shale or jet from Neolithic contexts was confined to a bead, now missing (2003), found near the base of the phase VI slot in segment 3 of the outer east cross-dyke. The nearest and most likely source is the Kimmeridge shale beds of Purbeck, some 30 km to the south. Shale finds from later contexts comprised armlet fragments from Everley Water Meadow (S37) and Stepleton Lynchet (S36) and unworked scraps from Everley Water Meadow (SM82 23) and the phase VIII/a ploughsoils in the top of segment 10 of the main enclosure (HH75 1307).

Limestone fragments were few, unworked, and generally unstratified. Neolithic finds are confined to a shelly Jurassic limestone pebble from a phase II deposit in segment 11 of the main enclosure (HH75 1969), two small fragments of indeterminate limestone from pit N F7i (HH77 1978), and another from the slow silts of the Stepleton enclosure (ST80 408). A fragment from a possible smoother of Jurassic limestone was found in early Iron Age deposits on the hillfort spur (HH86 219).

Three further varieties of stone, all imported, relate only to post-Neolithic activity. A late Bronze Age axe mould fragment of syenite from Wales or the south-west is described and discussed by Stuart Needham below (10.1.4). A whetstone fragment of Kentish Rag (S35) from the relict ploughsoils in the top of the inner outwork ditch on the Stepleton spur may date as late as the Roman pottery which is the most abundant in these deposits. A Roman date also seems likely for weathered fragments of Niedermendig lava from the south area in Everley Water Meadow, where they were found in gravels containing nails, brick, and samian pottery (EWM83 98, 204 and 310).

Artefacts

Querns and quern materials

The querns are nearly all very fragmentary, the largest Neolithic piece, made from Old Red Sandstone, being only about one-quarter complete (S22). Grinding equipment from Neolithic contexts amounts to 12 finds of saddle quern fragments, identified by concave grinding surfaces, seven probable rubbers, with convex grinding surfaces (eg S23, S25), 30 finds of quern or rubber fragments, and 79 finds of quern materials without grinding surfaces. From other contexts there are eight finds of quern fragments, five of rubbers or rubber fragments (eg S24), 33 of quern or rubber fragments, and 70 of quern materials. Useable querns were

not left on the site. Exceptionally, 14 small matching pieces of Old Red Sandstone from segment 6 of the inner outwork on the Stepleton spur appear to have come from the same artefact; the earliest came from a Neolithic level, most from relict post-Neolithic ploughsoils. Quern materials were sometimes burnt as well as fragmented: numerous burnt sarsen fragments from N F23, one retaining a grinding surface, may derive from a single artefact.

The Neolithic saddle querns were probably all relatively small, with correspondingly small rubbers. Iron Age querns seem sometimes to have been a good deal larger, as for instance at Allard's Quarry, Marnhull, Dorset, where the saddle querns measured up to 0.53 by 0.25 m (Williams 1950, 61), and at Gussage All Saints, Dorset, where a rotary quern of Old Red Sandstone weighed over 25 kg (Buckley 1979, 91). The largest surviving Neolithic fragment at Hambledon (S22) measured at most 0.35 m by 0.33 m when complete. The fact that this quern had to be brought from the Mendips may well have influenced the size of the slab that was selected. There is a saddle quern of comparable size built into the long cairn at Burn Ground, Hampnett, Gloucestershire (Grimes 1960, 75), which would originally have measured about 0.37 × 0.19 m, and was made from stone that had been transported a similar distance, in this case of May Hill sandstone, from May Hill itself (Roe 1999, 416). Further earlier Neolithic querns of modest size are known from Gwernvale, Powys (Britnell and Savory 1984, 134). By contrast, the sarsen saddle querns from Windmill Hill, Wiltshire, are a good deal thicker (Smith 1965, fig 52), and weigh 9.80 kg or more, although not necessarily greater in surface area. These substantial querns reflect the availability of quantities of sarsen only about 1.5 km from the site (Smith 1965, 120). Saddle querns may have remained small until wheeled transport was available in the late Bronze Age or the Iron Age.

The quern materials from Hambledon Hill demonstrate that varieties of good grinding stone were identified early on. Once recognised, the same varieties of stone continued to be used first for saddle querns and then for rotary querns, and even sometimes millstones, into the Roman period and beyond. At the time of writing (1999), the use of Mendip Old Red Sandstone at other Neolithic sites in Dorset remains unconfirmed, although there was a small Old Red Sandstone saddle quern in a pit with earlier Neolithic pottery at Camerton, Somerset (Wedlake 1958, 19, 244; Saunders 1998, 207). Greensand was used for middle Bronze Age saddle querns from Cranborne Chase, both from the bottom of the Angle Ditch, and from South Lodge (Pitt Rivers 1898, 37, pl 242: 10, 108, pl 263: 5), and for another of the same date from Rowden, Winterbourne Steepleton (Cox 1991, 95). There is also some Hembury Ware from the Angle Ditch (Cleal 1991b, 134), so there is a possibility that this quern is in fact earlier.

Two complete saddle querns probably of heathstone have been recorded from a cluster of early Neolithic pits at Pamphill, Dorset, although one came from a pit without other finds and the other from a pit which contained a possibly intrusive Bronze Age sherd as well as better preserved fragments from a single Neolithic Bowl (Addison 1989, 18–27). Another, probably of middle Bronze Age date, was found at Bestwall Quarry, Wareham (Ladle 1996, 144). Sarsen saddle querns are attested in the causewayed enclosure ditch at Maiden Castle, Dorset (Laws 1991, 230; Wheeler 1943, 322) and in internal features at Whitesheet Hill, Wiltshire (Rawlings *et al* 2004).

At Hambledon, the early Iron Age quern fragments from the hillfort are mainly of local Upper Greensand with some Old Red Sandstone, both materials, as can now be seen, that had already been in use for querns for almost 3,000 years, as had heathstone. Dorset examples include greensand and heathstone querns from Hog Cliff Hill, Maiden Newton (Ellison and Rahtz 1987, 247) and from Gussage All Saints, where there were also a few Mendip Old Red Sandstone rotary querns (Buckley 1979, 89–90). Further greensand examples from the early Iron Age include saddle quern fragments at Heron Grove, Sturminster Marshall (Valentin 1993, 68), and Allard's Quarry, Marnhull (Williams 1950, 61). There were also numerous greensand quern fragments from Hod Hill (Ellis 1968, 135), where they must date either to later in the Iron Age or to the Roman period. Mendip Old Red Sandstone was extensively used for querns at South Cadbury (Roe 2000, 263).

Weathered fragments of Niedermendig lava from Everley Water Meadow can perhaps be interpreted as the last surviving traces of a water-mill on the river Iwerne, which could have served the Roman fort on Hod Hill or the Roman site at Iwerne (Hawkes 1947). Niedermendig lava querns and millstones are widespread, although the greatest concentrations are probably in south-east England (Black 1987, 117), while there is a good number of finds from eastern England and the Thames Valley (Peacock 1980, 50). Further finds have nevertheless been recorded in Dorset from Poundbury (Green 1987, 105), and some even reached Exeter (Bell and Bradshaw 1983).

Spindlewhorl?

Spindlewhorls are not, as a rule, recorded from Neolithic sites, and yet a broken, perforated, chalk fragment from a phase III deposit in the Shroton spur outwork (S33) would be seen as a spindlewhorl of disc type if found in an Iron Age or Roman context. The most certain evidence for weaving in Neolithic Britain comes in the form of textile impressions on earlier Neolithic pottery found at Rowden (Crowfoot 1991, 99). A fired clay fragment retaining part of a perforation, from a posthole of the southern circle at Durrington Walls, has been reconstructed as a spindlewhorl (Wainwright and Longworth 1971, 188, fig 82).

Table 10.1 Summary of stone finds by area, artefact class, and rock type

	Axeheads and flakes	*Querns and rubbers*	*Perforated objects*	*Cylindrical objects*	*Balls*	*Axe polisher*	*Hammerstones*	*Miscellaneous*	*Total artefacts*	*Unworked*	*Totals*
CENTRAL AREA											
Igneous and metamorphic rocks	14								14		14
Upper Greensand		13	1	1	2			point sharpener?	18	32	50
Sarsen		8				1			9	10	19
Heathstone		3							3	7	10
Old Red Sandstone		24[1]		1					25	23	48
Chalk					1			2 grooved objects at head of child burial HH76 3046 subcylindrical object, apparently modelled from puddled chalk	4	many	4
Quartzite				1			11	polisher	13	many	13
Chert					1				1	some	1
Sandstone								rubber or smoother	1	some	1
Limestone										3	3
Kimmeridge shale								bead	1	1	2
Central area totals	*14*	*48*	*1*	*3*	*4*	*1*	*11*	*7*	*89*	*>76*	*>165*
SHROTON SPUR											
Upper Greensand										1	1
Sarsen								mortar?	1		1
Heathstone		1							1	1	2
Old Red Sandstone		1							1	2	3
Chalk			1						1	some	1
Quartzite							1		1		1
Shroton spur totals		*2*	*1*				*1*	*1*	*5*	*4*	*9*
STEPLETON SPUR											
Igneous and metamorphic rocks	3								3		3
Upper Greensand		3							3	22	25
Sarsen		2							2	4	6
Heathstone		12							12	35	47
Old Red Sandstone		9[2]							9[2]	7[3]	16
Kentish Rag								whetstone fragment	1		1
Limestone										2	2
Stepleton spur totals	*3*	*26*						*1*	*30*	*70*	*100*

HANFORD SPUR											
Sarsen		1							1	1	2
Heathstone										1	1
Old Red Sandstone		1							1	1	2
Chalk			2		1			striated piece	4		4
Hanford spur totals		*2*	*2*		*1*			*1*	*6*	*3*	*9*
HILLFORT SPUR											
Upper Greensand		8							8	22	30
Old Red Sandstone		4							4	2	6
Quartzite										4 (slingstones)	4
Flint beach pebbles									122 (slingstones)		122
Hillfort spur totals		*12*							*12*	*150*	*162*
STEPLETON LYNCHET											
Upper Greensand										1	1
Limestone										4	4
Kimmeridge shale								armlet fragment	1		1
Stepleton Lynchet totals								*1*	*1*	*5*	*6*
EVERLEY WATER MEADOW											
Upper Greensand								worked fragment	1	3	4
Heathstone										1	1
Niedermendig lava										3	3
Kimmeridge shale								armlet fragment	1	2	3
Limestone										1	1
Syenite								axe mould fragment	1		1
Everley Water Meadow totals								*3*	*3*	*10*	*13*
COOMBE BOTTOM											
Oolitic limestone										1	1
ROLF'S WOOD											
Heathstone										1	1
Overall totals	*17*	*90*	*4*	*3*	*5*	*1*	*12*	*14*	*146*	*>320*	*>466*

1 Two joining fragments of Old Red Sandstone rubber from L10 and L5 in segment 4 of the main enclosure (S25) are counted as one
2 Eight fragments of Old Red Sandstone quern from L3 and L1A in cutting 1 of segment 6 of the inner Stepleton outwork apparently belong to the same piece of stone and have been counted as one
3 Two fragments of Old Red Sandstone from L1A in cutting 1 of segment 6 of the inner Stepleton outwork apparently belong to the same piece of stone and have been counted as one

Evidence for Neolithic textile manufacture in Britain remains slight. Remains of flax are rare before the Bronze Age (Vanessa Straker, pers comm), but seed impressions are in fact known from Windmill Hill (Helbaek 1952, 197), and it is also known from the Neolithic in Holland (Jessen and Helbaek 1944, 57), and from waterlogged deposits of the Cortaillod culture in Switzerland, where quite sophisticated weaving techniques were being employed (Vogt 1937).

Cylindrical objects

There are three small cylindrical objects with diameters of about 50 mm, all from the central area, made of greensand (HH76 1395), Old Red Sandstone (S27) and quartzite (HH76 2686). On an Iron Age site these might be identified as small weights, as at South Cadbury (Roe 2000). Similar artefacts of sarsen are also known from Windmill Hill (Smith 1965, 123, fig 52: S22, S23).

Balls

The presence of greensand and chert balls as well as chalk ones is exceptional. At other sites where similar balls have been found, they have almost invariably been made of chalk, although there is an unstratified sandstone example from Stonehenge, as well as chalk ones from primary and later levels (Cleal *et al* 1995, 394–402, figs 216, 219, 221). The tradition seems to have been a long-lasting one, with finds both from causewayed enclosures and henge monuments. Thirty chalk balls were found at Windmill Hill, in all levels (Smith 1965, 132). In the Dorchester area, at the Flagstones enclosure, a chalk ball came from the primary chalk rubble fill of one of the segments, dated to the late fourth millennium cal BC (Smith *et al* 1997, 129), and third millennium examples came from Mount Pleasant and Maumbury Rings (Wainwright 1979a, 167; Bradley 1976, 25, fig 7; Bradley and Thomas 1984).

Axe-polisher

The axe-polisher (S26) is made from a finer-grained variety of sarsen than that used for querns. Both faces have been worn hollow, with distinctive, highly polished surfaces. Two other pieces may have had similar uses. One (HH77 2248) from the primary silt of the long barrow is a quartzite pebble with one side worn to a glossy surface, the other (HH75 450) from phase III deposits in segment 8 of the main enclosure is a worn pebble of grey sandstone, classed as a rubber in Table 10.1.

Portable axe-polishers from causewayed enclosures include examples from the Trundle, Sussex, Etton, Cambridgeshire (Edmonds 1998, 266), and Briar Hill, Northampton (Bamford 1985, 93, fig 48). A highly polished fragment of sarsen from the ditch of the round barrow at Windmill Hill may have been of Neolithic origin (Smith 1965, 124). Sarsen seems to have been well suited to this particular use. A sarsen axe-polisher somewhat similar to S21 formed part of the pavement of the mortuary structure under the primary mound at Wayland's Smithy, Berkshire (Whittle 1991, 70, 87, fig 11:9), and a massive, fixed, sarsen axe-polisher was incorporated in the chamber of the West Kennet Long Barrow (Piggott 1962, 16). A large portable axe-polisher with similar wear to S21 was built into the Gwernvale long cairn, Powys (Britnell and Savory 1984, 132 and fig 60).

Slingstones

The Chesil Beach pebbles from early Iron Age contexts on the hillfort spur correspond to the large numbers of the pebbles taken to Iron Age hillforts in the region, such as South Cadbury (Roe 2000), Maiden Castle (Laws 1991, 232) and Ham Hill (Adkins and Adkins 1991, 93). Some of the apparently imported beach pebbles from Neolithic contexts at Hambledon may also have been used as slingstones (10.1.3). Their transport inland is echoed in Cranborne Chase, where Pitt Rivers reported 'seashore pebbles' from Neolithic and Bronze Age sites such as Handley Hill, Wor Barrow and Martin Down (1898, 50, 67, 200).

Whetstone

Whetstones of Kentish Rag, like the fragment from the Stepleton spur (S35) are frequent on Roman sites, including further finds in the West Country (Roe 2001). It is likely to relate to the contemporary cultivation of the spur.

Miscellaneous

A missing shale or jet bead from the inner east cross-dyke (HH75 1358) is remembered as grey and dull in colour, disc-shaped, approximately 25 mm in diameter and less than 5 mm thick, with a central hourglass perforation. Proximity to Purbeck makes it likely to have been of shale. Several earlier Neolithic shale beads are known, including examples from causewayed enclosures (Piggott 1962, 51). They tend, however, to be larger than this example and are often elongated. The least dissimilar forms may be the longitudinally perforated discoidal beads from burials in the Severn–Cotswold tombs at Eyford and Notgrove, both in Gloucestershire (Clarke *et al* 1985, illus 7.2, 7.3) and some of the smaller beads among those from the rather later blocking of the West Kennet Long Barrow, Wiltshire (Piggott 1962, fig 18; Clarke *et al* 1985, illus 2.9).

The objects behind the head of child burial 3046 (Fig 3.32) are likely, from their size and position, to have had hair wound around them in a bun, a possibility supported by their smoothed, worn state. They are difficult to parallel, even among the diverse Neolithic chalk objects reviewed by Varndell (1991, 105–6).

Catalogue of illustrated stone artefacts other than axeheads

S22. Part of saddle quern: Old Red Sandstone. ST81 3140. Stepleton spur, 4B F712, layer 2, overlying inhumation

S23. Rubber: Old Red Sandstone. HH74 1114. Central area, Pit A F64

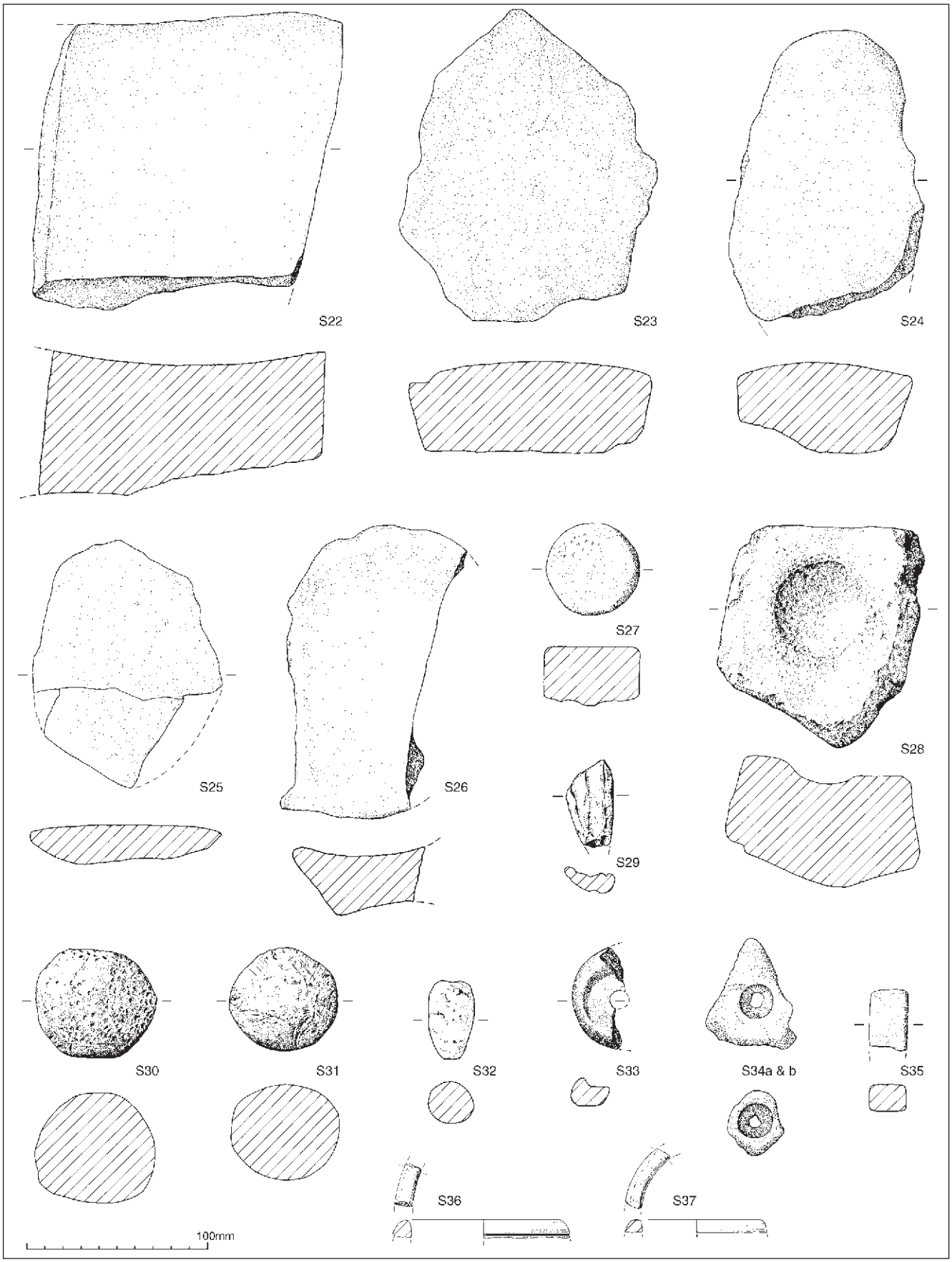

Fig 10.2 Stone artefacts. S22, quern fragment. S23–S25, grain rubbers. S26, axe-polisher. S27, cylindrical object. S28, mortar. S29, point-sharpener. S30–S31, balls. S32, puddled chalk object. S33. ?Spindlewhorl. S34a, S34b, perforated plaques. S35 ?hone. S36–S37, armlet fragments. Particulars in catalogue. Scale 1:3

S24. Part of rubber: Greensand. HH76 2016. Central area, surface, within main causewayed enclosure.
S25. Rubber: Old Red Sandstone. HH74 1043+1057. Central area, main enclosure ditch, segment 4, 1057 layer 10, phase III; 1043 layer 5, phase VI.
S26. Axe-polisher: fine-grained sarsen. HH74 735. Central area, A F6
S27. Cylindrical object: Old Red Sandstone. HH75 1479. Central area, inner east cross-dyke, segment 5, layer 6, phase VI.
S28. Mortar: sarsen. HH76 2992. Shroton spur, K F4, layer 2
S29. Point-sharpener? Upper Greensand. HH77 1857. Central area, N F90, layer 3
S30. Ball: Greensand. HH77 2178. Central area, N F82, layer 3
S31. Ball: Chalk. HH75 775. Central area, main enclosure ditch, segment 9, layer 7, phase III
S32. Subcylindrical object. Puddled chalk. Apparently complete, with smoothed surface and base, HH75 867. Central area, main enclosure ditch, segment 9, layer 8, phase III.
S33. Spindlewhorl?: Chalk. HH76 1042. Shroton spur outwork, site K, layer 6, phase III. Found while sieving sample from area of charcoal and ash.
S34a, Perforated plaques: Chalk. HN82 101. Outer Hanford
S34b. outwork, segment 2, U9, layer 5, horizon HN2/6. Found together.
S35. Hone: Kentish Rag. ST79 316. Stepleton spur, inner outwork, segment 5, C11/12, layer 2, horizon ST2/22
S36. Armlet fragment. Shale. SL82 89. Stepleton Lynchet. Probably lathe-turned, internal diameter 100 mm, 7% surviving, broken horizontally, perhaps below median groove
S37. Armlet fragment. Shale. EWM83 temporary number 15/9/83 26. Everley Water meadow area 1, section 1, layer 1, spit 2. Armlet fragment, probably lathe-turned, internal diameter 80 mm, 15% surviving, broken horizontally

10.1.3 Chronology and distribution

The late Isobel Smith, Fiona Roe and Frances Healy

Chronology

Individual artefacts

Table 10.4 lists radiocarbon determinations on samples from contexts containing stone axeheads. Given the durability of the artefacts, the relation to them of even the most satisfactory dates remains uncertain, although the certainly early date of Group I and ungrouped altered dolerite axe fragments from the primary silts of the long barrow is noteworthy. The finds most convincingly associated with radiocarbon dates are from burials. The illustrated Old Red Sandstone quern fragment (S22) was placed in a pit with a young male, the two dates on whose skeleton have a mean of *3630–3580 cal BC (22%) or 3535–3495 cal BC (20%) or 3460–3375 cal BC (53%)* (4711±19 BP; UB-4311, OxA-7818), in agreement with another of *3640–3550 cal BC (23%) or 3540–3360 cal BC (72%)* (4700±45 BP; OxA-7843) made on one of the charred hazelnut shells spread over the skeleton. Burnt clay, chalk and flint from the burial strongly indicate a connection with the destruction of the inner outwork bank, which would have rapidly followed its construction, for which a date of *3620–3520 cal BC* is estimated (Ch 4). In the main enclosure, two chalk objects behind the head of a young juvenile burial in the upper fills (Fig 3.32) should be close in age to the skeleton itself, the measurements for which have a mean of *3380–3320 cal BC* (4557±42 BP; OxA-7039, -7040). On less certain ground, the salvage of the upper skeleton of an adult female from just below the phase VI deposits in the Stepleton enclosure ditch entailed the recovery of a sarsen quern fragment, a heathstone fragment, and Old Red Sandstone fragments (all ST81 3184). The juxtaposition suggests association, although this cannot be demonstrated. The skeleton is dated to *3530–3390 cal BC* (4680±30 BP (OxA-7814).

The overall pattern

Phasing is summarised in Tables 10.2–3, and Figure 10.3 shows the incidence of axe and quern materials. The only axe materials from the lower (phase I–III) fills of any ditch in the central area were Group I (S14), altered amphibolite (S4, S5) and altered gabbro (S15, S16), all from the south-west. In the upper (phase V–VI) fills there were also implements of Groups IV (S8), VIII (S13) and XVI (S7), a rock similar to Group XVII (S6), and an ungrouped banded tuff. These include rocks from sources outside the south-west, Group VIII from Wales and the banded tuff perhaps from the midlands. A flake (S12) from a Group VI axe was from a post-Neolithic context.

Stratified stone was most abundant in pits and in the upper ditch fills, the single most prolific context groups being the phase VI slots of the central area ditches and the Stepleton enclosure, as with other cultural material. The bias towards pits and upper ditch fills is particularly marked in the central area (Fig 10.3) where it corresponds to the packing of slots and pit-tops with flint nodules and other rocks. This raises the possibility that some or all of the artefacts in these contexts may have been already present and were gathered up with the rest of the flint and stone when the slots and pits were filled.

Distribution

Central area

Distributions do not, on the whole, suggest any particular patterns of disposal, except for a preponderance of finds in the pits in the north of site N, where most of the sarsen occurred. This is more circumscribed than the generally larger quantities of cultural material in pits near the crown of the hill, which, where other materials are concerned, extends to pit group I on site B (Figs 3.62–66, 3.68). There is, however, one unusually dense concentration within the relatively confined space of sections SII and SIII in the south-west ditch of the long barrow, where a large quantity of pottery and other

Table 10.2 Stone axeheads and fragments by material and context
Fragments of a single artefact are counted as one

	Phase	*Jadeite/ nephrite*	*I*	*IV*	*VI*	*VIII*	*XVI*	*cf XVII*	*Greenstone*	*Amphibolite*	*Altered amphibolite*	*Altered gabbro*	*Banded tuff*	*Siltstone*	*Totals*
CENTRAL AREA															
Main enclosure	III										2 (S4, S5)[1]				1
	V										1 (S10)[1]				
	VI			1 (S8)			1 (S7)	1 (S6)					1 (S9)		4
Outer E cross-dyke	VI					1 (S13)									1
Long barrow	I		1 (S14)[2]									1 (S15)[3]			2
	III											1 (S16)[3]			
Neolithic pits							1 (S1)								1
Unstratified and miscellaneous		2 (S3, S11)	1 (S17)[2]		1 (S12)				1 (S2)					1 (S18)	5
Central area totals		*2*	*1*	*1*	*1*	*1*	*2*	*1*	*1*		*1*	*1*	*1*	*1*	*14*
STEPLETON SPUR															
Stepleton enclosure	V?							1 (S19)							1
	VII/a								1 (S20)						1
Unstratified and miscellaneous										1 (S21)					1
Stepleton spur totals								*1*	*1*	*1*					*3*

1 probably fragments of one implement
2 probably fragments of one implement
3 probably fragments of one implement

Table 10.3 Summary of stone finds other than axes and axe fragments from the central area, Shroton spur, Stepleton spur and Hanford spur by rock type, context group and phase

	Phase	*Upper Greensand*	*Sarsen*	*Heathstone*	*Old Red Sandstone*	*Chalk*	*Quartzite*	*Flint beach pebbles*	*Chert*	*Sandstone*	*Limestone*	*Kentish Rag*	*Kimmeridge shale*	*Totals*
CENTRAL AREA														
Main enclosure	I/II				2						1			3
	III	2			2	2		2		1				9
	IV	1												1
	V	3			3									6
	VI & ?post-VI	13	2	2	4	2	2							25
Inner E cross-dyke	V	1			1			1						3
	VI				2									2
Outer E cross-dyke	VI	1	1						1				1	4
Long barrow	I		2				1							3
	III			1										1
	V				1									1
	VI			1										1
Western outwork	I						1							1
Neolithic pits		12	13	1	13						1			40
	Central area Neolithic totals	*33*	*18*	*5*	*28*	*4*	*4*	*3*	*1*	*1*	*2*		*1*	*100*
Beaker/EBA (VII/a)		1		1	3									5
Relict ploughsoils (VIII/a)		5		2	5		3	1					1	17
Unstratified & miscellaneous		11	1	2	12		9	3			1			39
	Central area remaining contexts totals	*17*	*1*	*5*	*20*		*12*	*4*			*1*		*1*	*61*
SHROTON SPUR														
Outwork ditch	III					1								1
	Shroton spur Neolithic totals					*1*								*1*
Relict ploughsoils (VIII/a)		1		1	2									4
Unstratified & miscellaneous			1	1	1		1							4
	Shroton spur remaining contexts totals	*1*	*1*	*2*	*3*		*1*							*8*

STEPLETON SPUR										
Stepleton enclosure	Chalk rubble and related fills (phase III)	3	1	1						5
	Upper Neolithic levels (phases IV, V, VI)	3	1	9	6			1		20
Middle outwork	Chalk rubble fills (phase III)	1								1
Inner outwork	Chalk rubble and related fills (phase III)	1		1						2
	Slow silts (phase V)	2								2
Neolithic pits		5	2	9	1					17
	Stepleton spur Neolithic totals	*15*	*4*	*20*	*7*			*1*		*47*
All Stepleton ditches	Beaker/EBA (phase VII/a)	2		1	3			1		7
	Relict post-Neolithic plough-soils (phase VIII/a)	6	2	19	3				1	31
Unstratified & miscellaneou		2		7	3					12
	Stepleton spur remaining contexts totals	*10*	*2*	*27*	*9*			*1*	*1*	*50*
HANFORD SPUR										
Outer Hanford outwork	Basal silts (phases I–II)					2				2
Neolithic pits				1		1				2
	Hanford spur Neolithic totals			*1*		*3*				*4*
'Flint mines'						1				1
All Hanford ditches	Beaker/EBA (phase VII/a)				1					1
	Relict post-Neolithic plough-soils (phase VIII/a)		1		1					2
Unstratified & miscellaneous			1							1
	Hanford spur remaining contexts totals		*2*		*2*	*1*				*5*

Table 10.4 Radiocarbon determinations associated with stone axeheads

In the case of the long barrow, the estimated date is the estimated construction date for the monument. Further information is to be found in Chapter 4

Rock type	*Drawing*	*Sample*	*BP*	*Cal BC (95% confidence)*	*Estimated date (Ch 4)*	*Comment*
Group I and altered gabbro	S14, S15	Cattle metatarsal from primary silt of W ditch of long barrow	4950±55 BP (OxA-7848)	3940–3640	*3680–3640 cal BC*	Estimated date for construction of barrow
		Cattle scapula fragments from primary silt of W ditch of long barrow	4875±40 BP (OxA-8846)	3710–3540	as above	as above
		Cattle phalanx from primary silt of W ditch of long barrow	4835±45 BP (OxA-8847)	3710–3520	as above	as above
		Indeterminate animal bone fragment from primary silt of W ditch of long barrow	4760±50 (OxA-8848)	3650–3370	as above	as above
		Red deer antler crown with two terminal tines embedded in natural chalk in base of E ditch of long barrow	4870±35 BP (OxA-8845)	3710–3540	as above	as above
Group XVI	S1	Oak, hazel & hawthorn-type charcoal, not twiggy, from same pit as S1	4830±80 BP (HAR-9167)	3780–3370	*3780–3490 cal BC (84%) or 3460–3370 cal BC (11%)*	Presence of oak charcoal means that measurement may pre-date context
cf Group XVII	S6	Articulated cattle tibia & astragalus from same layer as S6	4810±50 BP (OxA-8850)	3700–3380	*3670–3510 cal BC (90%) or 3420–3380 cal BC (5%)*	Sample likely to be close in age to context and to deposition of S6
Altered Amphibolite	S4, S5	Articulating dog metacarpals and phalanx from same layer as S4	4865±33 BP (mean of OxA-7097–8)	3710–3540	*3710–3630 cal BC (88%) or 3560–3530 cal BC (7%)*	Sample may have been redeposited
		Articulated cattle radius-ulna and carpals from silty chalk rubble (L8A) grading laterally into chalk and flint rubble (L8) containing S4	4712±42 BP (mean of OxA-7015–6)	3640–3370	*3460–3360 cal BC*	Sample likely to be close in age to context and deposition of S4

artefacts had also been deposited (Fig 3.50). Here were four fragments (S14–S17) from probably two stone axes, as well as fragments from sarsen and heathstone querns, an Old Red Sandstone fragment, a quartzite polisher, a flint beach pebble hammerstone and a quartzite pebble fragment. It is important to note that these items were not all deposited at one time; they represent a gradual accumulation, spread throughout the entire sequence of fills from phase I upwards. This would appear to attest a deliberate practice, maintained over a considerable period of time. It may relate to an entrance to the main enclosure to the west of segment 1, the use of which would have entailed walking along the side of the west ditch of the long barrow, on the way to and from the Stepleton spur (3.5.2, 3.5.6).

Another possible entrance, between segments 8 and 9 in the east of the main enclosure, also showed a distinctive pattern of stone finds. Fragments from the same altered amphibolite axe (S4, S5) occurred in each of the opposed butts in phase III, during which a greensand quern or rubber fragment and a sandstone rubber or smoother were deposited in the north butt of segment 8, together with two flint Chesil Beach pebbles, one of them used as a hammerstone; there was no stone from the rest of the segment in this phase. Phase III in segment 9 saw the deposition of a chalk ball (S31), a puddled chalk object (S32) and two Old Red Sandstone fragments, as well as three flint Chesil beach pebbles, two of them used as hammerstones. The two finds that were precisely located (the puddled chalk object and one hammerstone), came from the south butt, like the axe fragment. In subsequent levels, stone finds accumulated along the whole length of segment 8, together with two further flint beach pebble hammerstones. The jadeite axe (S11) came from the ploughsoil over segment 8. Stone finds were less abundant in segment 9, but included a quartzite hammerstone, while a further flint beach pebble came from the ploughsoil of site D, overlying segment 9 and the north butt of segment 8.

Seven of the 17 flint beach pebbles from the site were found in the immediate area of this possible entrance, as were two hammerstones of nodular flint and two quartzite hammerstones. The coincidence of entrance, beach pebbles, and hammerstones may reflect their use as missiles, perhaps slingstones, in the fourth millennium. A further possible entrance, between segments 13 and 14, corresponds to a slighter concentration of stone finds, this time starting in phase V. Here there were two flint beach pebbles, one used as a hammerstone (HH76 1045) and one unutilised (HH76 693), as well as a discarded beach pebble of unspecified material, two sandstone pebbles, and at least 12 further pebbles discarded at the time of excavation.

More speculatively, the naturally spherical pebbles may have been seen as analogous to the artificially spherical chalk ball. The elongated puddled chalk object (S32), unique on the site, may have been phallic, given the presence of chalk balls and phalli in some

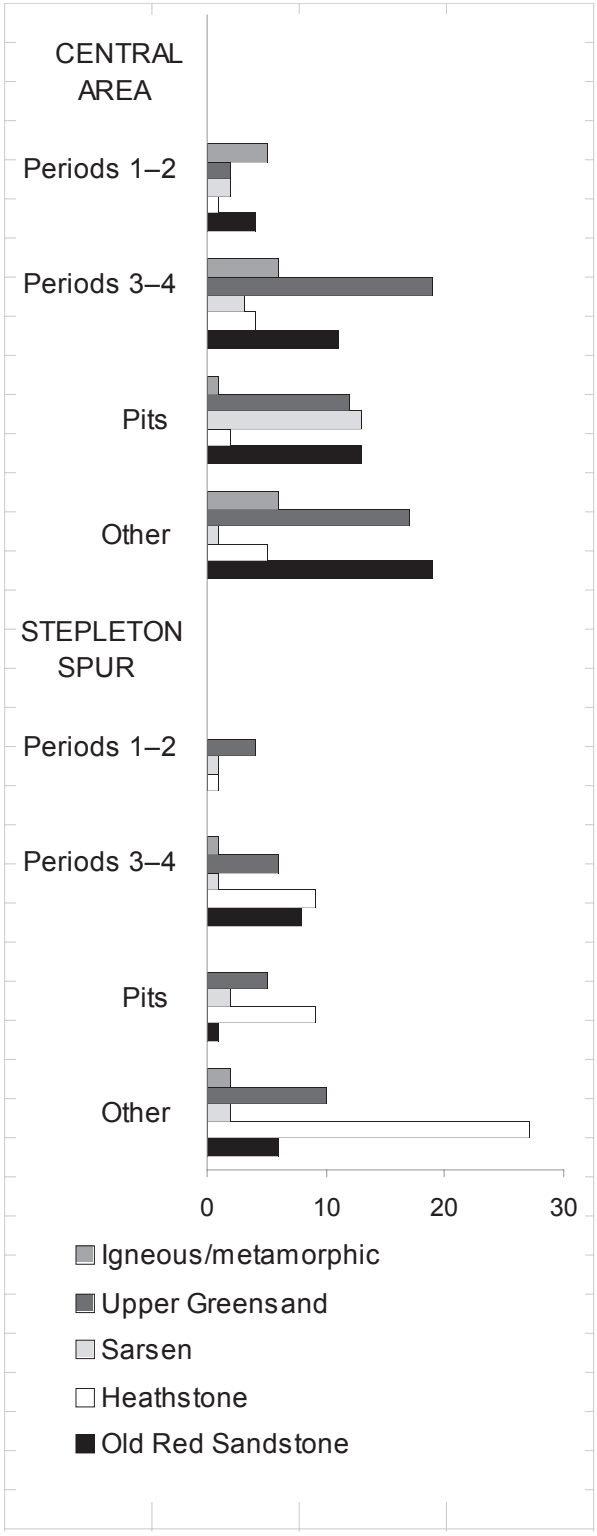

Fig 10.3 Principal stone types from earlier and later ditch fills and other contexts in the central area and on the Stepleton spur. Ditch fills included in periods 1–2 are south long barrow phases I–III, main enclosure phases I–III, Stepleton enclosure phases I–III middle Stepleton outwork phases I–III, and inner Stepleton outwork phases I–III. Ditch fills included in periods 3–4 are main enclosure phase IV, western outwork phase I, main enclosure, south long barrow and cross-dykes phases V and VI, Stepleton enclosure phases IV–VI, inner Stepleton outwork phases V–VII.

causewayed enclosures (Smith 1965, 132, fig 57; Varndell 1991, 105), and of what may be a fired clay phallus from the same context as a fired clay ball at Etton (Kinnes and Pryor 1998, fig 241). If so, S32 is distinctly unnaturalistic.

Stepleton spur

Most stratified stone came from the Stepleton enclosure ditch itself, rather than from the substantial excavated length of the inner outwork (Table 10.1). It was concentrated in the west and north of the circuit, with no finds at all in segments 16 to 23. The high proportion of stone from unstratified and miscellaneous contexts on the spur (Fig 10.3) may reflect more intense Bronze Age and later activity than in the central area. It certainly reflects the large size of the inner outwork ditch, the top of which provided a bigger trap for later ploughsoils and the artefacts they contained than did the other ditch-tops. The scarcity of stone finds in its Neolithic levels suggests that those in the relict ploughsoils were derived from the interior.

Contrasts between the two main areas

The subassemblages of stone implements and imported stone from the central area and the Stepleton spur differ substantially (Tables 10.1–10.3, Fig 10.3). There are only one-third as many stone artefacts from the Stepleton spur as from the central area, despite a more equal balance of total stone finds (Table 10.5). This may reflect the poor preservation of the heathstone which was frequent on the Stepleton spur and which occurred mainly as fragments which had lost any modified surfaces (Roe, 10.1.2). Differential preservation of quern material may also partly account for the very narrow range of stone artefact types from the spur, where (disregarding a post-Neolithic hone) there are only axeheads and quern or rubber fragments. In the central area these were augmented by a variety of other objects (Table 10.3). Many of the types lacking from Stepleton are, however, made of quern materials, notably a sarsen axe-polisher (S26), cylindrical objects of greensand and Old Red Sandstone (eg S27), a greensand point-sharpener (S29), and greensand balls (eg S30, S31). If equivalent forms had been made of heathstone they might no longer be recognisable. This consideration cannot, however, account for the complete absence from Stepleton of worked chalk, especially as examples were recovered in far less extensive excavations on the Shroton and Hanford spurs (eg S33, S34).

Striking variations in the numbers of both stone axes and quartzite hammerstones are reduced when flint examples are also taken into consideration, although axeheads remain more prevalent in the central area (Table 10.5). The contrast in materials remains, emphasised by the fact that some of the flint hammerstones from the central area are beach pebbles which must have been imported. This dichotomy mirrors that between the quern materials preferred in the two areas (Fig 10.3), as well as differences in pottery fabrics.

It is difficult not to see implications of territory, or at least of catchment, in these patterns. The Cornish greenstones, Old Red Sandstone, Chesil Beach pebbles and occasional limestone fragments of the central area combine with pottery from a range of Jurassic sources and with small quantities of gabbroic ware (see Smith, 9.1; Darvill, 9.2) to point to a resource base lying in a south-west to north-west arc. The heathstone prevalent on the Stepleton spur derived from the south-east, where red clays interbedded with the sandstones (Bristow *et al* 1991, 23–32) may have provided the raw material for pottery of fabric group 6 (see Darvill, 9.2), also prevalent on the spur. The overall

Table 10.5 The relative frequency of stone finds and other materials in the central area and on the Stepleton spur

	Central area	*Stepleton spur*	*Ratio*
Total stone finds	165	100	1.7:1
Total stone artefacts	89	30	2.9:1
Number of Neolithic stone artefact types	14	2	7:1
Stone axeheads and fragments	14	3	5.3:1
Flint axeheads and flakes (including four from 1958–60 excavations)	20	14	1.4:1
All axeheads and flakes/fragments	*34*	*17*	*2:1*
Quartzite hammerstones	12	–	–
Flint hammerstones	15 (some beach pebbles)	25 (no beach pebbles)	0.6:1
All hammerstones	*27*	*25*	*1.1:1*
For comparison:			
Neolithic Bowl pottery	13,870 sherds/53.35 kg	10, 814 sherds/39.32 kg	1.3:1
Struck flint (excluding hammerstones and unclassified burnt flint)	23,895	40,055	0.6:1
Fully identified animal bone specimens (excluding teeth)	3347	1520	2.2:1

scarcity of sarsen, which could have been obtained at no greater distance than heathstone, may be a negative image of territory.

The stone materials also differ in quality. Stone axe materials from remote sources were, like gabbroic clays, used to produce expertly made and finished artefacts of some rarity in their final environment and, to a modern eye, of some aesthetic appeal. Old Red Sandstone made durable, hard-wearing grinding equipment (Roe, 10.1.2), and pots from Jurassic sources were well made and well finished (see Smith, 9.1). Heathstone was of lower quality than Old Red Sandstone, and vessels of fabric group 6, possibly from the same area, were roughly made and summarily finished (see Smith, 9.1). There are connotations of function and status as well as of catchment.

10.1.4 The Everley Water Meadow stone mould

Stuart Needham
with contributions by H Howard and M Cowell

A fragment of stone mould valve (SM82 132; Fig 10.4) was excavated from SMX L15, gravels laid down in the Roman period at the earliest, since they contained nails, brick and pottery recorded as samian, as well as one sherd in an early or middle Bronze Age fabric and three in late Bronze Age or early Iron Age fabrics (see 5.3.3).

The mould has the characteristic neat shaping of most stone moulds of final early Bronze Age (Arreton) date onwards. The bottom end would have been D-shaped when complete, the maximum breadth being 34 mm. Just over half survives, retaining a V-carved transverse groove perpendicular to the flat contact face and approximately central to the end. Such grooves are commonly found on stone moulds and are regarded as registration aids (eg Needham 1981, 28). The length of the fragment is 68 mm and the extant side is gently bowed. The corner of a matrix 57 mm long is cut into the flat face of the block. The matrix is evidently for an axe blade, which tapers in profile to a small bevelled step at the bottom and has a fairly crisp body angle in cross-section.

For material identification the mould was examined and core-sampled by Hilary Howard for the South-Western Implement Petrology Committee (DO 161). On macroscopic inspection Howard described 'a pinkish-brown coarse-grained rock with pinkish felspar crystals clearly visible'. Under the microscope it appeared as 'a coarsely crystalline rock composed in the main of plagioclase and potash felspar. Grains of the latter show partial alteration to sericite. Mafic minerals have all been altered to chloritic substances. Brown mica is present. Acicular apatite is common'. Howard identified the rock as syenite, which is a coarse-grained variety within the keratophyre petrological suite known to have been used for other Bronze Age moulds (Needham 1981, 26–7). The origin of this material is likely to be in south Wales or the south-west peninsula.

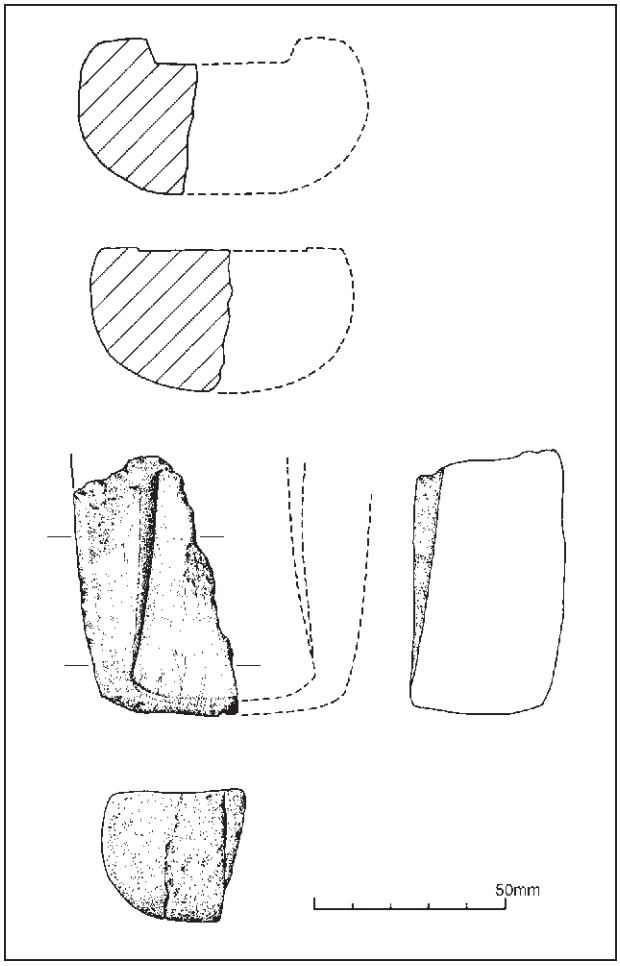

Fig 10.4 The stone axe-blade mould (SM82 132). The possible reconstruction of the full width is based on assumed symmetry about an axial line through the basal groove. Scale 1:2

The mould was also examined by X-ray fluorescence (non-destructive) by Mike Cowell of the British Museum's Department of Conservation, Documentation and Science, to look for metal traces. The matrix surface, where evidence of casting material might be expected, was analysed, but also a broken edge as background control. Elements normally associated with stone such as iron, calcium, silicon, titanium, potassium, strontium and zirconium were detected in both areas. However, the face of the mould alone also contained substantial amounts of lead. Although sought, copper and tin were not detected. The survival of lead alone does not necessarily imply the casting of a lead object in the mould, since experimental work by Barnes (1984) and other analytical results (Needham and Hook 1988) suggest that alloy constituents may be differentially preserved on matrix surfaces. It does, however, suggest that leaded bronze was cast into the mould, which is consistent with a late Bronze Age date.

There is little in the surviving fragment to characterise the type of bronze axe cast. Assuming that the basal groove is roughly central and that the slightly

curved base was perpendicular to the original long axis, a fairly gently expanding blade is suggested: about 45 mm wide at the cutting edge and 42 mm wide at the upper break. This shape is more consistent with certain socketed axe blades than with any other form of axe. This deduction, in conjunction with petrology and location, suggests that the mould is likely to belong to the Bulford–Helsbury group, of which three previous examples, from Wessex and the Thames Valley, have similar petrological identifications. The predicted blade shape of the Everley matrix certainly falls within the range known for the Stogursey axe type produced in Bulford–Helsbury moulds. It should be noted, however, that although keratophyre is only known in association with the Bulford–Helsbury group, a few other late Bronze Age stone moulds from southern Britain remain to be identified.

Stogursey axes, otherwise known as South Welsh axes, probably span much of the Late Bronze Age, perhaps from the 11th to the 9th centuries BC. Their production appears to have been widespread across southern England and south-east Wales.

10.2 The flint and chert artefacts

Alan Saville

10.2.1 Introduction

The excavations at Hambledon Hill produced a collection of over 89,000 struck lithic artefacts (weighing over 900 kg), almost entirely of flint (Table 10.6). Surprisingly, these artefacts exhibit little obvious sign of cultural, typo-chronological admixture. There are virtually no flint artefacts of pre-Neolithic character from the hilltop (except one core – ST79 2120 from Neolithic pit 2A F142 – which is almost certainly Mesolithic, and another core – HH76 2210 from phase VIII/a deposits in segment 12 of the main enclosure – which might be), and the only diagnostic indicators of any later Neolithic or Bronze Age activity on the hill are an oblique arrowhead (Fig 10.15: 142) and a tanged arrowhead (Fig 10.15: 143). Even from the hillfort cutting, nothing other than the burnt flints was considered likely to be post-Neolithic. A possible gunflint (RW82 15) from Rolf's Wood (Table 10.60) is the only hint of post-prehistoric flint use.

Table 10.6 Basic composition of the total collection of struck lithic artefacts from the hilltop

Category	*Number*	*%*	*Weight (g)*	*%*
Unretouched flakes	65111	94	617115	72
Core pieces	1108	2	193148	22
Retouched pieces	2766	4	53107	6
Subtotal	68985	100	863370	100
Unretouched flakes	65111	73	617115	68
Core pieces	1108	1	193148	21
Retouched pieces	2766	3	53107	6
Unclassified burnt pieces	20302	23	46722	5
Grand total	89287	100	910092	100

In essence, therefore, the hilltop collection can be regarded as belonging, on diagnostic typological grounds, to the early/middle Neolithic period, representing tools and knapping debris produced during the main period or periods of the construction and occupation of the hilltop enclosure complex in the fourth millennium cal BC. (There are some instances of artefacts with two-phase cortication, showing the reworking of material struck long enough previous for the retouch to have a different state of cortication to that of the blank, but these are relatively rare and not usually from well-stratified contexts.)

In this report the lithic artefact collection is discussed within the framework of the major subdivisions of the site. This is followed by a consideration of the typology involved, an account of the refitting exercise, and then a final discussion of the overall implications. Artefacts collected during excavations on the hillfort and off the hilltop, and during the surface survey of the fields around Hambledon Hill, are considered in sections 10.2.9–10. The artefacts from Neolithic pits in the central area and on the Stepleton spur are respectively in the feature catalogues in sections 3.3.7 and 3.5.6. These provide the data for assessment of the lithic artefacts most closely linked to the life of the two enclosures in terms of presumed internal activities during and after construction during the Neolithic. Detailed data on the lithic artefacts from all other contexts, beyond the level of the tables accompanying this report, will be found in the site archive.

It will be clear from the accounts of the excavations and the other finds, especially the pottery, that the chronological range of activity on the hilltop extends beyond the early/middle Neolithic and that some of the context groups relate wholly to late Neolithic and Bronze Age activity. While the flint assemblage does not appear to reflect this typologically, these later contexts do frequently contain large amounts of flint. This is an inevitable consequence of the virtual indestructibility of flint and its propensity to occur as a residual element in all contexts subsequent to its initial deposition (Saville 2002). This is especially so since the production and discard of struck flint on the hilltop in the earlier phases had been so intense and widespread. The ramifications of this, and the possibility that post-middle Neolithic indicators might be present but smothered, will be considered in the discussion.

This report follows convention in the application of typological analysis to British later prehistoric flint assemblages, as exemplified initially by Clark *et al* (1960) and Smith (1965). The terminology used is well established, the designations of artefact and implement types being self-explanatory or adequately described in previous literature (see especially Saville 1981a and 1981b). Any subdivisions of particular

types or classes are described when they are analysed, and the meaning of the symbols used in the artefact illustrations is explained in Figure 10.5.

Unclassified burnt pieces in this collection are only rarely of 'pot-boiler' type. The burnt fragments appear for the most part to be the product of fortuitous burning, comprising the remains of former artefacts, which are no longer identifiable as such, probably as well as some wholly unstruck flint shattered by heat. They are usually present in relatively small numbers, but an exception is provided by the flint assemblage from the Stepleton spur, with a massive number of burnt pieces, including 'pot-boiler' flints, from the southern part of the excavated area, especially in the post-Neolithic upper fills of the inner outwork, which evidence an extraordinarily high concentration (Table 10.18).

The designation 'flaked lumps' is used here as a convenient term for pieces or nodules of flint which show evidence of some human modification or testing, but where this is limited usually to just a few removals from one or more irregular platforms. These pieces show insufficient overall regularity and usage to be classed as cores. In the case of one subassemblage, from the Romano-British hollow way through the gateway of the inner Stepleton outwork, it was necessary to introduce the additional designation 'abraded lump', to describe relatively small pieces of flint which had been modified radically by a non-knapping process, probably wear underfoot by humans and animals (there were 51 of these abraded lumps, weighing in total 670.5 g; they are not otherwise included in the lists and totals).

The methodology of the post-excavation analysis is simply described. Following preliminary sorting (and washing and marking where feasible) and the discarding of all 'natural', unstruck flint, an initial inspection was made of the whole collection. At this stage every artefact was classified, counted, and weighed (unretouched flakes with the same find number were usually weighed in groups, not individually), to produce a basic catalogue of the collection, organised by excavation season and subsite (eg HH74, site A). Selected artefact types (eg scrapers) and groups of artefacts (eg from the internal features of the main enclosure) were then studied in more detail.

Trial re-analysis of selected groups has suggested that the initial rapid analysis will have failed to identify a proportion of the implements, especially such types as fragmentary serrated-edge flakes, unretouched flakes with edge-gloss, and flakes from polished axeheads on which the remaining polished area is small. Re-analysis also indicated a likelihood of some incorrect classification, especially in the case of serrated-edge flakes and unretouched flakes incorrectly catalogued as edge-trimmed flakes. Confirmation of the identification or otherwise of these types often required examination beneath a 10× binocular microscope, which was not used to study every piece during the initial analysis. It is impossible to offer any kind of correction factor for the whole collection to allow for this likely under-identification of implements, but it needs to be emphasised that the figures quoted will accordingly never be exact, though the writer is confident that any errors will not materially affect the general trends and proportions reported. Refitting was not a normal part of the analysis, and was systematically undertaken only in the case of two groups of artefacts from the Stepleton ditches, which the preliminary analysis suggested would be particularly susceptible to this technique. Use-wear analyses were not attempted, but would almost certainly have been impracticable in view of the condition of most of the flints in the collection (see below). The location of flint artefacts on site was generally recorded only by area and context, not by coordinates, so that no detailed reconstruction or plotting of flint artefact distributions is normally possible. The exception concerns certain ditch fill contexts on the Stepleton spur, for which some large-scale drawings of flint artefact-rich deposits were made.

The excavated flint artefacts vary considerably in condition depending on context. Flints from superficial horizons are heavily corticated (Shepherd 1972, 115) and dense white or cream in colour, sometimes with crusty, vesicular surfaces, and can often be extensively abraded and iron-stained. Flint artefacts from protected horizons in the fills of pits or ditches are far less corticated, commonly having a light grey/grey-white or blue-grey/white discolouration, while from some lower ditch fills, particularly where a ditch cut a Clay-with-Flints patch, the artefacts can be totally uncorticated and not discoloured. The stratified flints are in a relatively sharp and unabraded condition, though calcium carbonate encrustation on flints from the lower ditch fills is a common phenomenon.

The condition of the artefacts from the superficial horizons is such as to hamper their analysis considerably. Damage and breakage caused by ploughing have probably inflated the number of miscellaneous retouched pieces, while edge-modified flake-tools like serrated-edge flakes and edge-gloss flakes from superficial contexts are particularly susceptible to damage, which obscures their typology, rendering them unclassifiable as implements. In fact, however, the normal method of initial excavation, involving mechanical stripping of the topsoil, has meant that many of the flint artefacts from superficial deposits have been discarded, only a small proportion (inevitably biased towards larger specimens), being retained. Thus estimates of the true densities of struck flint distribution on the hilltop would be difficult to ascertain, and it must be remembered that the present total assemblage is only a sample.

As a general rule, all flint recovery during excavation depended on immediate visual observation on the part of individual workers, with sieving rarely undertaken. From small hand-excavated features the recovery of most or all of the extant flint artefacts during excavation was probably the norm, though this was not specifically tested for, while from the ditch fills it is clear that a bias did exist against the recovery of smaller

flint artefacts and that, although the quality of recovery inevitably varied, total recovery from the larger ditch contexts was never achieved.

Some post-excavation analysis of the flint collection was carried out in the 1970s, each season's finds being deposited with the writer, who was then based at Cheltenham Art Gallery and Museum. However, the bulk of the primary analysis, cataloguing, and refitting on which this report is founded was undertaken in the year 1983–84, when the writer was seconded to the Hambledon Hill Project for this purpose. The illustrations of the lithic artefacts were completed by Joanna Richards in 1984–86, and sporadic further work towards compilation of this report took place until 1989, when the writer moved to Edinburgh. A brief interim report giving a perspective on the Hambledon flint assemblage as it seemed in 1987 was published at this time (Saville 1990a). Arrangements for the housing of the substantial flint collection were concluded in 1994, with its removal from Cheltenham to the Dorset County Museum at Dorchester. The final stage of work on the flint report, including a complete reworking of the previous phasing, began in 1997 and continued intermittently until 2000, when the report was completed.

The objective from the beginning was a formal characterisation of the complete assemblage. It was regarded as important to examine, catalogue, and quantify everything recovered, since, on the one hand, the assemblage was likely to be the biggest and best indicator available of lithic production and use at British Neolithic sites of this category, and, on the other, it was realised that, despite its size, the assemblage would still only be a partial sample of the struck flint from the hill.

An essentially 'broad-brush' approach seemed the appropriate one for analysis to match site circumstances and excavation strategy. It must be appreciated that the Hambledon collection as a whole cannot be compared to high-integrity assemblages recovered from knapping-floors on earlier prehistoric sites (Pettitt 1997), where there is potential for interpretation in terms of the output of individual knappers or actual activity events. The Hambledon flints are likely to have been jumbled in various ways before (and perhaps after) final deposition in their Neolithic contexts. Cultural meaning cannot be extracted from them (except in rare instances of refitting) at the level of the individual producer or user or the event, only at a broader, more generalised technological level. The collection will not necessarily reflect the totality of activities involving flint manufacture and use on the hilltop, but it is likely to reflect the most common of these, and inferences about the implications of the flint assemblage will be made on this basis.

10.2.2 Raw material

Hambledon Hill is an outlier of the Upper Chalk, which extends over its highest, central parts, with the underlying Middle Chalk exposed on the lower slopes, including almost all of the excavated part of the Stepleton spur (Fig 1.2). Flint is present on the hilltop in the Upper Chalk and on its weathered surface, and in extensive pockets of Clay-with-Flints. Indeed, until the ploughing of the main enclosure in 1960, that part of the hilltop was pock-marked with depressions resulting from the grubbing-up of flint for building/roadstone during recent centuries (Fig 2.3; Mercer 1980, 18–19). Some of the hilltop flint nodules, particularly those from the Clay-with-Flints, were suitable for knapping, and were almost certainly the source of some of the raw material used during the Neolithic period. The flint used at Hambledon Hill is all of good quality and was undoubtedly in a fresh condition when knapped. It would seem probable that many nodules were unearthed in the course of the extensive ditch-digging which the Neolithic occupants undertook across the hilltop. The intensification of knapping debris in precisely those areas of the hilltop where ditch-digging coincided with patches of Clay-with-Flints points to ready exploitation of this local resource.

The flint nodules and natural flint debris present in the topsoil and uppermost horizons of the chalk are today largely 'rotten' and quite unsuitable for knapping or for any kind of exploitation, other than the *ad hoc* use of a naturally sharp edge or point. While superficially occurring flint may have been marginally less 'rotten' in the Neolithic period, prior to the intervening millennia of cultivation and erosion, it is unlikely that this ever represented a significant resource for knapping. This is equally the case with the *in situ* bands of tabular flint within the upper few metres of the chalk, as exposed in the edges of the large irregular pits on the Hanford spur (3.6.3). This tabular flint is very distinctive in general character and would be easy to recognise had it been used for knapping, because the cores would be equally distinctive. No such cores are present. The only observed instance of used tabular flint from the hilltop was a hammerstone (ST81 1160) from a phase III context in the Stepleton enclosure ditch.

The question of how much flint was imported to Hambledon Hill in the form of raw material is difficult to resolve. The illustrations of refitted flint nodules (Figs 10.21, 10.23, 10.26, 10.29–34, 10.37, 10.40–41) give a clear picture of the kind of raw material involved. Some of these nodules have wholly cortex-covered exteriors, others have part of their surfaces exposed by thermal action. The nature of some of these nodules, particularly those with more 'chalky' cortex and/or relatively fragile prominent projections which remain intact, raises questions about where exactly on the hilltop they could have originated. There are also a few artefacts recorded during analysis as having a thicker, unabraded cortex than the majority (eg core ST78 1574 from a phase III context in the inner Stepleton outwork ditch) and these must have been imported. Similarly, a very few instances of smooth, presumably water-worn, cortex were noted. One of these pieces,

Table 10.7 Incidence of chert artefacts, typology and location

Context group	*Artefact type*	*Location*	*Weight in grams*
2	Unretouched flake	Main enclosure bank area, posthole P1 F29	0.2
5	Misc retouched piece	Main enclosure ditch, segment 17 L9A phase IV	42.1
6	Edge-trimmed flake	Main enclosure ditch, segment 7 L5 phase V	4.5
7	Unretouched flake	Main enclosure ditch, segment 2 AI L4 phase VI	0.5
11	Unretouched flake	Main enclosure ditch, segment 4 L1 – recent ploughsoil	3.0
11	Unretouched flake	Main enclosure ditch, segment 8 L1 – recent ploughsoil	2.5
11	Unretouched flake	Main enclosure ditch, segment 8 L1 – recent ploughsoil	0.5
11	Unretouched flake	Main enclosure ditch, segment 8 L1 – recent ploughsoil	2.0
14	Unretouched flake	Inner east cross-dyke ditch, segment 5, L5 phase V	1.0
18	Misc retouched piece	Inner east cross-dyke ditch, segment 5 L2 — recent turfline	2.6
22	Unretouched flake	Outer east cross-dyke ditch, segment 5, L4 phase VI	15.0
23	Unretouched flake	Outer east cross-dyke ditch, segment 4, L3 phase VIII/a	0.5
25	Unretouched flake	Pit P2 F14	0.1
25	Unretouched flake	Pit P2 F14	0.3
25	Unretouched flake	Pit P2 F14	0.3
25	Leaf-shaped arrowhead	Pit P2 F14	0.6
25	Leaf-shaped arrowhead	Pit P2 F14	0.2
25	Leaf-shaped arrowhead	Pit P2 F14	0.7
41	Unretouched flake	Long barrow ditch LB5 L1 – recent turf and topsoil	2.5
1	Unretouched flake	Pit A F64	0.5
1	Unretouched flake	Pit or treethrow hole E2 F1 L1	0.5
1	Unretouched flake	Pit or treethrow hole E2 F1 L1	0.5
1	Unretouched flake	Pit N F6	0.5
1	Unretouched flake	Pit N F7i	1.5
1	Unretouched flake	Pit N F7v	4.0
1	Unretouched flake	Pit N F23	0.5
1	Edge-trimmed flake	Pit N F7iii	29.6
1	Edge-trimmed flake	Pit N F17	4.9
1	Leaf-shaped arrowhead	Pit A F41	0.5
1	Leaf-shaped arrowhead	Pit N F42	2.4
46	Unretouched flake	Site E2 – recent ploughsoil	0.5
46	Unretouched flake	Site N – recent ploughsoil	6.0
46	Unretouched flake	Site B – recent ploughsoil	1.0
46	Leaf-shaped arrowhead	Site A – recent ploughsoil	2.0
46	Misc retouched piece	Natural hollow N F12	5.4
65	Unretouched flake	Inner Stepleton outwork, segment 7 L3A phase V	3.0
65	Unretouched flake	Inner Stepleton outwork, segment 7 L3A phase V	4.0
67	Unretouched flake	Inner Stepleton outwork, segment 6 L3 phase VII/a	1.0
67	Unretouched flake	Inner Stepleton outwork, segment 6 L3 phase VII/a	23.0
	Total		170.4

from the main enclosure ditch, was a primary flake (HH76 1045, from phase VI), suggesting the import of a cobble for knapping (or use as a hammerstone). Other probable beach pebbles without clear signs of use or used only as hammerstones were noticed (eg HH77 1386 from a superficial context on site N; HH77 807, from phase VI in the south long barrow). Fiona Roe (10.1.2) has identified several of the flint hammerstones as being Chesil Beach pebbles (eg HH77 2286 from Neolithic pit N F7iv and HH75 294 from phase III in the main enclosure ditch).

Almost all the artefacts were made on flint, the exception being 39 chert artefacts, mostly comprising unretouched flakes (Table 10.7). Chert does not occur naturally at Hambledon, nor in any quantity in the immediate vicinity. The chert was almost all of matt appearance, except for one flake of 'quartzy' type, resembling greensand chert, and an arrowhead of crystalline character and grey-brown colour. The colours of the 37 pieces of matt chert were recorded as follows: grey/blue (1); medium grey (7); medium/dark grey (6); dark grey (15); grey/black (6); black (2). All of these matt pieces can be matched within the variability of 'Portland' chert, and an ultimate source from the Dorset coast in the Portland Bill area is possible, though they could perhaps have been acquired as Portland 'erratics' from other locations within a wider surrounding zone (cf Sharples 1991, 254).

There are no chert cores from the site, and most of the flakes are small or fragmentary, though one of the unretouched flakes (HH77 1519 from the topsoil on site N), a complete example, 33 mm long, does raise the possibility of the knapping of this raw material on site. Otherwise, the importation of prepared implements

and/or blanks is more probable. This must especially be the case with the chert leaf-shaped arrowheads. That six of the 42 leaf-shaped arrowheads from Hambledon should be of chert (Table 10.51), together with the fact that one of the leaf-shaped arrowheads (HH76 683 from phase VIII/a in segment 7 of the main enclosure) is of an unusual, and presumably non-local, variegated (red/white) flint, suggests, in view of their overall low numbers at Hambledon, that these implements were primarily 'exotic', and not made on site.

However, this does not appear to be the case with the flint axeheads. These are made of a raw material which cannot be distinguished from that of the general run of artefacts on the site, and therefore they cannot necessarily be seen as imported implements. Since the chert artefacts constitute an insignificant percentage of the collection, it would appear that, apart perhaps from the arrowheads, there was no attempt to organise its importation. This would further imply, since chert would not have been difficult to obtain, that this raw material was perhaps not in general seen to have any practical or symbolic advantage.

On the other hand, the distribution of chert artefacts is strongly weighted towards the central area, with only four chert flakes from Stepleton and none from Hanford. There is a 'concentration' in the fills of Neolithic features of the central area but, given the overall low presence of chert artefacts, it is difficult to attach any specific importance to this other than perhaps in the case of the arrowheads.

Table 10.8 Incidence of flint hammerstones and hammerstone fragments

Note: this table includes flint hammerstones identified by Fiona Roe, for which weights are not available
For the central area see also Figure 3.69

Context group	*Find*	*Location*	*Burnt*	*Weight in grams*
4	HH75 294	Main enclosure ditch, segment 8 L7 phase III		
4	HH75 851	Main enclosure ditch, segment 9 L7 phase III		
4	HH75 1004	Main enclosure ditch, segment 9 L8 phase III		
5	HH76 2746	Main enclosure ditch, segment 17 L9A phase IV	yes	60.4
7	HH75 204	Main enclosure ditch, segment 8 L6 phase VI		272.4
7	HH75 1601	Main enclosure ditch, segment 8 L6 phase VI		
9	HH75 1366	Main enclosure ditch, segment 8 L3A phase VII/a		
9	HH75 1705	Main enclosure ditch, segment 8 L3A phase VII/a		
28	HH77 1397	Inner south cross-dyke ditch, segment 1 L9 phase VI	yes	33.6
29	HH77 273	Inner south cross-dyke ditch, segment 1 L5 phase VII/a		115.0
37	HH77 967	Long barrow ditch, LB4 L13 phase III		182.5
37	HH77 1151	Long barrow ditch, LB5 L13 phase III		326.3
38	HH77 679	Long barrow ditch, LB4 L9 phase VI		180.0
1	HH77 2286	Pit N F7iv		
46	HH74 29	Central area, unstratified		171.2
53	ST80 1938	Pit 3A F66		400.0
53	ST81 1660	Pit 4B F130		250.0
53	ST81 1963	Pit 4B F153		445.0
53	ST81 2408	Pit 4B F198		225.0
55	ST80 1160	Stepleton enclosure, segment 2 L5B phase II		220.0
55	ST80 1160	Stepleton enclosure, segment 2 L5B phase II		310.0
55	ST80 1992	Stepleton enclosure, segment 3 L6 phase I		117.0
56	ST80 2468	Stepleton enclosure, segment 3 L4C phase III		580.0
56	ST80 2468	Stepleton enclosure, segment 3 L4C phase III		600.0
56	ST81 386	Stepleton enclosure, segment 15 L4B phase III		470.0
56	ST81 818	Stepleton enclosure, segment 15 L3A phase III		208.5
56	ST81 824	Stepleton enclosure, segment 12 L3B phase III		400.0
56	ST81 1160	Stepleton enclosure, segment 7 L3A phase III		290.0
56	ST81 1292	Stepleton enclosure, segment 12 L3A phase III		197.0
60	ST79 871	Stepleton enclosure, segment 1 L2A phase VIII/a	yes	189.7
60	ST81 412	Stepleton enclosure, segment 14 L1, phase VIII/a	yes	162.6
71	ST78 1087	Middle Stepleton outwork, segment 10 L6 phase I		370.0
62	ST78 2902	Inner Stepleton outwork, bank area, posthole 1B F11		275.0
62	ST80 2442	Inner Stepleton outwork bank area, pit 3B F435	yes	275.0
64	ST78 2772	Inner Stepleton outwork, segment 7 L4 phase III		194.0
64	ST81 2573	Inner Stepleton outwork, segment 4 L3B phase V		222.4
68	ST78 380	Inner Stepleton outwork, segment 8 L2 phase VIII/a		280.0
68	ST78 1354	Inner Stepleton outwork, segment 7 L2 phase VIII/a		510.0
68	ST79 1035	Inner Stepleton outwork, segment 5 L2 phase VIII/a		360.0
85	HN82 387	Inner Hanford outwork, segment 3 L5 phase I		226.6

10.2.3 Technology

Direct information on knapping methods and procedures comes from two sources, the flint artefacts themselves and the recovery of hammerstones. In the former category, by far the most significant information comes from the refitting exercise undertaken on some of the Stepleton material (10.2.6) and to a lesser extent from analyses of the cores and the unretouched flakes, which are also relevant to the observation of reduction strategies (10.2.3).

From the examination of artefacts throughout the collection, it was concluded, albeit impressionistically, that hard-hammer flaking was far more prevalent than soft-hammer flaking, but it also has to be admitted that the smaller debitage from finer retouching has not generally been recovered, introducing a significant bias into this conclusion.

Hard hammers of flint were present in the numbers shown in Table 10.8. These were mainly spherical or subspherical pieces of flint (or parts thereof) with abraded, crush-marked surface areas of various extents. Cores reused as hammers were counted as hammerstones somewhat arbitrarily on the basis of the extent of the crushing, so that some cores exhibiting only minor traces of hammering, with the core class still obvious, were classified as cores rather than as hammers. However, this only applies to about ten cores in the whole collection.

The total of 40 hammerstones seems fairly substantial given that these tools are generally regarded as highly curatable personal gear (Saville 1990b, 176). If the fragmentary, damaged, and perfunctorily used examples are excluded, however, only a few 'classic' spherical flint hammers are present (eg ST79 871; ST80 1938; ST81 824). To these, however, must be added the quartzitic cobble hammerstones discussed by Fiona Roe (see 10.1.2).

The distribution of the flint hammerstones does not correlate especially well with concentrations of knapping debris. For example, one might expect more hammers from the phase VIII/a fills of the inner Stepleton outwork, to equate with the mass of cores and flakes found there (Fig 3.131); or from segments 12–14 of the main enclosure rather than the less flint-rich segments 8 and 9 (Figs 3.68–69). This lack of correlation may reinforce the interpretation of hammerstones as curated items.

10.2.4 Distribution

The main enclosure ditch

(context groups 3–11; Tables 10.9–11)

The complex stratigraphy of the ditch infills not only made precise allocation of finds to contexts difficult during excavation, but the recutting episodes, natural weathering and silting, and any backfilling or bioturbation, have all combined to ensure the probability of a high degree of residuality and mixture among the ditch assemblages, especially the upper ones. Only the basal silts and the primary chalk rubble (Table 10.11) can be relied on to provide a relatively uncontaminated sample of early/middle Neolithic activity, and these, unfortunately for the flint analysis, are among the least flintiferous horizons. Other horizons, though chronologically subsequent in formation, will inevitably contain residual earlier flints as well (potentially) as artefacts contemporary with their formation. The pottery evidence makes this clear (see Smith, 9.1), but whereas it is relatively easy to distinguish potsherds chronologically by means of form, fabric, and style, this is not the case with the lithic artefacts, save in rare diagnostic cases. The masses of flint artefacts in the upper horizons must be regarded as a completely mixed bag, of little interest other than in gross terms of quantity and typological representation.

The phase I–II basal silts (context group 3) were fairly vestigial contexts and unsurprisingly contained little flint. This assemblage is of some interest in that the presence of the serrated-edge flakes and the axehead fragment confirms the primary context of these two types. However, the assemblage is too small for the absence of other types, such as leaf-shaped arrowheads and 'laurel-leaf' bifacials, to be used as negative evidence. One refit was noted, between an unretouched secondary flake and a core fragment, both from segment 13.

Implements from the phase III chalk rubble fills (context group 4) are slightly more numerous than from the basal silts, but they serve only to confirm the nature of that assemblage, adding no new types apart from the piercer. Primary knapping debris of unretouched flakes and cores dominates this material, the cores alone representing a significant part of the whole assemblage (25% by weight).

The phase IV 'grey pits' (context group 5) produced a small assemblage which sees the first occurrences in the ditch infills of a leaf-shaped arrowhead, a chert artefact, and an unclassified bifacial piece. It also contains the only implement classified as a splintered piece from the hilltop. This is a flake (HH76 1460) from segment 16 with bifacial retouch at the base and removals across the ventral surface at the distal end, presumably as a result of use. The arrowhead (HH76 1934), also from segment 16, is a broken tip only.

The phase V silts (context group 6) have proportionally fewer core pieces and more retouched items than group 4, and in particular a high representation of serrated-edge flakes, predominantly from segment 7, which had 13 examples. Segment 13 contained three distinctive flakes obviously struck from the same nodule, but they did not refit.

The phase VI 'slots' (context group 7) are very flint-rich deposits, containing almost as many pieces as all the underlying horizons together. The trend is continued from group 6 towards fewer core pieces and increased numbers of implements. One refit was noted between an unretouched tertiary blade and a core, both from segment 12.

Table 10.9 Central area. Summary of struck lithic artefacts

b = burnt. Weights are in grams, rounded to the nearest gram

		Main enclosure					*Inner E cross-dyke*				*Outer E cross-dyke*				*Inner S cross-dyke*			*Outer S cross-dyke*		*Western outwork*				*Long barrow*							
		Phases I–III	*Phase IV*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phases R & VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phase VIII*	*Phases I–III*	*Phase IV*	*Phase V*	*Phase IV*	*Phases VII–VIII*	*Pits*	*Remainder*	*Totals*
Unretouched flakes	no.	1720	193	1025	2558	4462	120	41	71	186	11	113	156	102	45	36	64	13	51	1	11	141	33	770	22	202	880	2020	2858	3756	21661
	wt	*18673*	*836*	*8063*	*19822*	*35088*	*718*	*273*	*567*	*1627*	*169*	*930*	*735*	*797*	*412*	*265*	*755*	*89*	*666*	*15*	*141*	*257*	*459*	*8861*	*111*	*2212*	*9426*	*17934*	*13320*	*22196*	*165417*
Unretouched flakes, chert	no.				1	4		1					1	1														1	7	7	23
	wt				*1*	*8*		*1*					*15*	*1*														*3*	*8*	*9*	*46*
Unretouched flakes, burnt	no.	2	8	4	5	23		1					1	2		1								2	13	1	3		82	34	182
	wt	*14*	*29*	*15*	*27*	*108*		*7*					*2*	*4*		*16*								*6*	*45*	*5*	*17*		*316*	*151*	*762*
Cores	no.	31		3	28	32	2	2		2			3		1							2		13		1	31	6	25	13	195
	wt	*7308*		*469*	*3529*	*3003*	*211*	*194*		*150*			*243*		*113*							*178*		*2760*		*41*	*6271*	*435*	*1836*	*1224*	*27965*
Core fragments	no.	9		1	6	6				1														4			4		6	5	42
	wt	*1290*		*118*	*535*	*436*				*170*														*321*			*577*		*441*	*330*	*4218*
Flaked lumps	no.	13		3	5	3		1																3			15	3	3	1	50
	wt	*3719*		*375*	*459*	*354*		*70*																*542*			*2779*	*363*	*152*	*83*	*8896*
Serrated-edged flakes	no.	10	9	20	55	23	3	3	5	5	1	2	3	1										4			3	1	160	35	343
	wt	*73*	*73*	*142*	*473*	*138*	*42*	*30*	*27*	*41*	*8*	*10*	*18*	*6*										*35*			*28*	*5*	*1073*	*233*	*2455*
Unretouched flakes with edge-gloss	no.			1	1																							5	1	8
	wt			*6*	*14*																							*25*	*10*	*55*
Edge-trimmed flakes (class A)	no.	2			9	10							1				1		1							2	1	1	22	12	62
	wt	*22*			*184*	*130*							*30*				*7*		*7*							*20*	*15*	*5*	*237*	*107*	*764*
Edge-trimmed flakes	no.	22	7	15	55	64		2	7	3	1	3	10	2	1	1								4	1		7	3	81	59	348
	wt	*195*	*116*	*151*	*529*	*640*		*34*	*90*	*22*	*7*	*37*	*99*	*4*	*23*	*12*								*88*	*24*		*96*	*29*	*741*	*620*	*3557*
Edge-trimmed flakes, chert	no.																											2		2
	wt																											*35*		*35*
Scrapers	no.	16		9	49	72		1	4	16	1	3	3	3	2	7							2	7		4	15	20	43	72	349
	wt	*444*		*260*	*1524*	*1757*		*18*	*112*	*285*	*49*	*119*	*47*	*35*	*66*	*152*							*81*	*225*		*99*	*447*	*445*	*1038*	*1664*	*8867*
Piercers	no.	2	1	3	7	21			3	3			2											2			2	5	12	21	84
	wt	*32*	*9*	*33*	*81*	*257*			*70*	*18*			*18*											*19*			*17*	*89*	*140*	*267*	*1050*
Leaf-shaped arrowheads	no.		1	1	4	3			2	1			1																5	5	23
	wt		*1*	*1*	*6*	*5*			*5*	*3*			*1*																*8*	*7*	*37*
Leaf-shaped arrowheads, chert	no.																											2	4	6
	wt																											*3*	*4*	*7*
Oblique arrowhead	no.					1																								1
	wt					*2*																								*2*

		Main enclosure					*Inner E cross-dyke*				*Outer E cross-dyke*				*Inner S cross-dyke*			*Outer S cross-dyke*		*Western outwork*				*Long barrow*							
		Phases I–III	*Phase IV*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phases R & VIII*	*Phases I–III*	*Phase V*	*Phase VI*	*Phase VIII*	*Phases I–III*	*Phase IV*	*Phase V*	*Phase IV*	*Phases VII–VIII*	*Pits*	*Remainder*	*Totals*
‘Laurel leaf’ bifacial pieces	no.					2																						1		3
	wt					*33*																						*14*		*47*
Polished axeheads & fragments	no.	1			2									1														2		6
	wt	*36*			*191*									*112*														*223*		*562*
Flakes from polished axeheads	no.	1	1		1																			1				3	3	10
	wt	*36*	*7*		*2*																			*5*				*31*	*14*	*95*
Knives	no.				1	5																							1	7
	wt				*18*	*100*																							*10*	*128*
Picks/roughouts	no.				1	1							1																	3
	wt				*117*	*146*							*57*																	*320*
Unclassified bifacial pieces	no.		1[b]	1	1	3				2			1																2	11
	wt		*25*	*16*	*37*	*70*				*12*			*50*																*41*	*251*
Rods	no.					1							1		1													1		1	5
	wt					*36*							*17*		*91*													*40*		*13*	*197*
‘Fabricators’	no.					2																								2
	wt					*48*																								*48*
Saw	no.																												1	1
	wt																												*10*	*10*
Splintered piece	no.		1																											1
	wt		*14*																											*14*
Miscellaneous retouched pieces	no.	23	4	14	34	111	1	1	6	12		5	8	3		1					2		1	7		3	10	27	53	112	438
	wt	*758*	*142*	*334*	*1051*	*2171*	*53*	*14*	*60*	*129*		*78*	*147*	*79*		*7*					*42*		*14*	*241*		*47*	*210*	*495*	*840*	*1465*	*8377*
Misc retouched piece, chert	no.																												1	1
	wt																												*5*	*5*
Unclassified burnt pieces	no.	6	57		56	71							5	1		2							1	2	234	1	3	4	597	147	1187
	wt	*83*	*91*		*105*	*375*							*21*	*1*		*44*							*14*	*3*	*400*	*4*	*66*	*97*	*2991*	*794*	*5089*
Totals	no.	1858	283	1100	2879	4920	126	53	98	231	14	126	197	116	50	48	65	13	52	1	13	143	37	819	270	214	974	2092	3969	4293	25054
	wt	*32683*	*1343*	*9983*	*28705*	*44905*	*1024*	*641*	*931*	*2457*	*233*	*1174*	*1500*	*1039*	*705*	*496*	*762*	*89*	*673*	*15*	*183*	*435*	*568*	*13106*	*580*	*2428*	*19949*	*19940*	*23472*	*29257*	*239276*

The bulk of the flints in the phase VII/a 'Beaker' deposits (context group 9) derives from two segments: segment 8 with 65 pieces, and segment 10 with 184 pieces. The oblique arrowhead (Fig 10.15: 142), which is from segment 10, is a late Neolithic type, but otherwise the assemblage appears residual from the main activity, with no other obvious clues of admixture and certainly no flints which are transparently 'Beaker' period.

The extensive upper fills of the ditches (context groups 10–11) predictably contain a mass of flint artefacts. These add nothing to the enclosure inventory apart from the three knives from segment 8 (see below) and the 'fabricator' (HH74 113) from segment 4, an atypical flat-flake example (cf Saville 1973, 15), which is perhaps most likely to post-date the main activity, but could post-date it very considerably, since it is not necessarily prehistoric.

Table 10.10 gives a breakdown of the whole ditch assemblage of 11,040 artefacts by segment and context grouping. These figures are of course biased by the size of each segment and the extent of excavation in each. Even so, the facts that 48% derives from segment 13, and that segments 12–15 together produced over 69% of the whole ditch assemblage, are noteworthy. A plausible explanation for this concentration is provided by the location of these segments in a zone of Clay-with-Flints. It seems highly probable that the flint nodules derived from the excavation of the ditch in this area were used in the immediate vicinity for knapping, the debris remaining local and becoming incorporated through different episodes as indicated by the context groupings. This seems to be supported by the character of the material from these segments, which comprises 74% of all unretouched flakes and 69% of all cores from the ditches, but only 23% of the scrapers and 20% of the serrated-edge flakes. Thus this material has a predominantly industrial character, much more so than that from the other excavated ditch areas of the main Hambledon enclosure.

This was investigated further by looking more selectively at the stratigraphic make-up of the assemblages from the ditch segments. Phases I–III were taken together as an indicator of the material most closely related to spatially patterned activities associated with the early period of enclosure construction and use (Table 10.11). From these phases, 82% of the artefacts derive from segments 12–13, which includes most

Table 10.10 Main enclosure ditch: numbers of lithic artefacts by phase and segment

Segment X – artefacts in this row could be allocated to specific phases, but not to segments

Ditch segment	*Phases I–II*	*Phase III*	*Phase IV*	*Phase V*	*Phase VI*	*Phase VII*	*Phase VII/a*	*Phase VIII/a*	*Miscellaneous and unstratified*	*Total no.*	*Totals %*
1	18		63	4	75	76		14	40	290	2.6
2	10	5			51			35	3	104	0.9
3	2	3		30	65			29	101	230	2.1
4	3	29	1	19	89			47	231	419	3.8
5	5			1	14			2		22	0.2
6		1	1		18					20	0.2
7	3	2		73	56			20		154	1.4
8	8	31		16	80		65	99	178	477	4.3
9	26	36		16	1			30		109	1.0
10					50		184	18	13	265	2.4
11	12	8		2	26		3	11	71	133	1.2
12		289		62	231			60	292	934	8.5
13	82	1145		702	1263			1878	226	5296	48.0
14	8	36			627			106	83	860	7.8
15	2	67			2			1	9	81	0.7
16		7	137	126	13		1	20	10	314	2.9
17		2	77	25	62			15		181	1.6
18		2	3	1	47		2	21	21	97	0.9
19	10	1			92		2	99		204	1.8
X		5	1	23	17			3	801	850	7.7
Total no.	189	1669	283	1100	2879	76	257	2508	2079	11040	
Total %	1.7	15.1	2.6	10.0	26.1	0.7	2.3	22.7	18.8		

Table 10.11 Main enclosure ditch. Lithic artefact types from phases I–III combined, subdivided by ditch segment

X – artefacts in this column could be allocated to specific phases, but not to segments
No artefacts from segment 10 were attributed to these phases

	Segment																			
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*X*	*Total no.*	*Total %*
Unretouched flakes	16	10	5	26	5	1	4	24	39	19	273	1182	40	57	5	1	2	8	5	1722	92.7
Cores							1		2		7	17	1	1				2		31	1.7
Core frags.											1	7	1							9	0.5
Flaked lumps											4	9								13	0.7
Serrated		1						3	1		1		1	1	1			1		10	0.5
Edge-trimmed				3				3	3		1	5	1	7		1				24	1.3
Scrapers	2			3				3	6					1	1					16	0.9
Piercers									1			1								2	0.1
Axe/pick										1										1	0.1
Axe flake									1											1	0.1
Misc ret.								5	9		2	5		2						23	1.2
Uncl burnt		4						1				1								6	0.3
Total no.	18	15	5	32	5	1	5	39	62	20	289	1227	44	69	7	2	2	11	5	1858	
Total %	1	1		2				2	3	1	16	66	2	4				1			

of the cores and all the core fragments and flaked lumps. By contrast, only 19% of the retouched pieces from these phases come from these segments.

The east cross-dykes

The excavated inner east cross-dyke ditch segments (context groups 12–18; Table 10.9) produced about half the total number of artefacts as the adjacent Hambledon enclosure ditch segments on Sites J1, D1, and E1 (ie 508 compared to 1180). However, they share the same assemblage profile, with a relatively high proportion of retouched pieces. Two of the leaf-shaped arrowheads are illustrated (Fig 10.15: 129–30).

The outer east cross-dyke ditch fills (context groups 19–24; Table 10.9) contained slightly fewer artefacts than the inner east cross-dyke ditch in total, though this varies between segments, with more from the outer than the inner on Site E2. A far smaller percentage is derived from the primary fills, however, suggesting little flint production or use in this area in the initial stages. The assemblage profile is similar, but with proportionally fewer retouched pieces.

The south cross-dykes

Of the total of 925 artefacts from the inner south cross-dyke bank area (context group 25), 347 come from general contexts, the rest from features. The three features with struck flints were: P2 F8 (25 artefacts); F9+F12 (35 artefacts); and F14 (518 artefacts). The last, dug into the surface under the inner south cross-dyke bank, contained an interesting sealed assemblage (Table 10.12), with three chert unretouched flakes and three fragmentary chert leaf-shaped arrowheads.

Table 10.12 Lithic artefacts from the fill of pit P2 F14 in the area of the bank of the inner south cross-dyke

	Number	*Weight in grams*
Unretouched flakes	431	648.7
Unretouched flakes, chert	3	0.7
Unretouched flakes, burnt	5	9.5
Cores	2	481.5
Flaked lump	1	83.1
Edge-trimmed flake	1	6.4
Scraper	1	32.4
Leaf-shaped arrowheads, fragmentary, chert	3	1.5
Flake from a polished flint axehead	1	10.0
Miscellaneous retouched piece	1	24.8
Unclassified burnt pieces	69	154.5
Total	518	1453.1

The assemblage from the inner south cross-dyke, ditch fills (context groups 26–31; Table 10.9) is a small one, with the artefacts fairly evenly spread between the phases. Most of them derive from the cross-dyke ditch on Site P2, with only 25 artefacts from the ditch terminal sampled in 1982 on the WOWK4 area, from context groups 28 and 31. This terminal was where Desmond Bonney found three polished flint axeheads in a primary context (3.3.4). These implements were described as '3 chipped & polished flint axes within a few inches of one other', but are apparently now lost.

Only a minimal scatter was present through the fills of the outer south cross-dyke ditch (context groups 32.2–35; Table 10.9), composed almost exclusively of unretouched flakes, as was the material from the adjacent bank area.

The western outwork (Table 10.9)

Very little struck flint was recorded from the ditch. The basal silts and the chalk rubble fills together contained only a single flint flake. This is a small assemblage with virtually no implements of note, apart from a tiny flake from a polished flint axehead from the topsoil of the bank area in WOWK 2.

The south long barrow

Overall the ditches of the long barrow (context groups 36–41; Table 10.9) produced a sizable but restricted assemblage of a largely industrial nature corresponding to the local presence of Clay-with-Flints. The paucity of serrated-edge flakes from this area is noticeable, but seems to reflect a pattern on this part of the hilltop. Only the phase IV 'grey pit' deposit (LB3 L17) is anomalous in containing so many unclassifiable burnt pieces (and burnt unretouched flakes). These dominate the burnt categories from the long barrow ditches, giving a somewhat skewed picture when the overall figures are considered.

The major part of the concentration of cores, core fragments, and flaked lumps in phase VI derives from a single context, LB4–5 F4, a pit cut into the north butt of the east ditch. The raw material represented is local to the hilltop and it seems probable that it was derived from the long barrow ditches when originally dug. The flint was probably exploited on the spot, then the residues incorporated into the long barrow mound, to eventually erode back into the ditch.

Material from the phase VII/a pits cut into the silted east ditch (context group 39.1) is dominated by unretouched flakes and contains no implements that are in any way distinctive. The flint is likely to be entirely residual rather than contemporary with the more recent pottery from these contexts.

Discrete early/middle Neolithic features in the central area (context group 1) (Tables 10.9, 10.13–16)

A collection of 3969 artefacts was recovered from these features, and this represents one of the most significant subassemblages, in terms of lithic implement use assumed to be contemporary with the main phase of activity at the main enclosure. Table 10.13 gives the typological detail of this collection, while the contents of each feature are listed in the catalogue which concludes section 3.7 of Chapter 3. The overall typological and structural characteristics of the collection will be considered in the subsequent discussion, since these elements derive significance from comparison with the collections from other context groups and other sites. Some points can be made on occurrence and distribution, however.

Table 10.13 Struck flint from Neolithic features in the central area (context group 1) and on the Stepleton spur (context group 53)

	Central area				*Stepleton spur*			
	No.	*No. %*	*Weight in grams*	*Wt %*	*No.*	*No. %*	*Weight in grams*	*Wt %*
Unretouched flakes	**2858**	72	13320.4	57	**2159**	72	11554.5	55
Unretouched flakes, chert	**7**		8.0					
Unretouched flakes, burnt	**82**	2	315.5	1	**155**	5	612.9	3
Cores	**25**		1835.9	8	**20**	1	3666.4	17
Core fragments	**6**		440.9	2	**3**		187.5	1
Flaked lumps	**3**		152.0		**4**		478.0	2
Serrated-edge flakes	**160**	4	1073.1	5	**62**	2	499.7	2
Unretouched flakes with edge-gloss	**5**		25.0		**7**		28.7	
Edge-trimmed flakes (class A)	**22**		237.4	1	**5**		65.7	
Edge-trimmed flakes	**81**	2	740.9	3	**44**[1]	2	824.0	4
Edge-trimmed flakes, chert	**2**		34.5					
Scrapers	**43**	1	1038.2	4	**24**	1	601.6	3
Piercers	**12**		140.2		**3**		42.9	
Leaf-shaped arrowheads	**5**		7.6					
Leaf-shaped arrowheads, chert	**2**		2.9					
Polished flint axeheads & fragments	**2**		223.0	1	**2**[2]		134.6	1
Flakes from polished flint axeheads	**3**		31.3		**3**		10.4	
'Laurel-leaf' bifacial piece	**1**		13.5		**1**		13.0	
Rod, burnt					**1**		71.6	
Miscellaneous retouched pieces	**53**	1	840.4	4	**22**[3]	1	778.7	4
Unclassified burnt pieces	**597**	15	2991.1	13	**468**	16	1630.6	8
Totals	**3969**		23471.8		**2983**		21200.8	

1 2 of these, weighing 8.3 g, are burnt
2 1 of these, weighing 5.1g, is burnt
3 1 of these, weighing 4.5g, is burnt

Table 10.14 Quantification of lithic artefacts (including unclassified burnt pieces) from features in the central area (context group 1) and the Stepleton spur (context group 53), expressed in ranges of total numbers per feature

	1–10 artefacts per pit	*11–50 artefacts per pit*	*51–100 artefacts per pit*	*>100 artefacts per pit*	*Total number of pits*
Central area	18	29	14	10	71
Stepleton spur	48	31	5	9	93
Totals	66	60	19	19	164

Table 10.15 Central area Neolithic pits (context group 1) containing more than 100 lithic artefacts

Flakes etc = all unretouched flakes, including chert and burnt; cores etc = all core pieces, including fragments and flaked lumps; serrated flakes = all serrated-edge flakes including unretouched flakes with edge-gloss; edge-trimmed = all edge-trimmed flakes, including class A; others = all other specific implement categories; misc ret pieces = all miscellaneous retouched pieces; uncl burnt pieces = all unclassified burnt pieces

Feature		*Flakes etc*	*Cores etc*	*Serrated flakes*	*Edge-trimmed*	*Scrapers*	*Piercers*	*Others*	*Misc ret pieces*	*Uncl burnt pieces*	*Totals*
A F 41	no.	200	2	3	1	2	4	3	4	321	540
	%	37		1			1	1	1	59	
A F 64	no.	101	1		1	6	1			21	131
	%	77	1			4	1			16	
B F2	no.	137	1	8	4	1	1		3		155
	%	88	1	5	2	1	1		2		
N F6	no.	124		7						23	154
	%	81		4						15	
N F7i/ii	no.	255	13	11	7	3		1	2	15	307
	%	83	4	4	2	1			1	5	
N F 11	no.	109		4				1	4	14	132
	%	83		3				1	3	11	
N F 22	no.	127		7	4				1	18	157
	%	81		4	2				1	12	
N F 23	no.	149		18	5		2		1	17	192
	%	78		9	3		1			9	
N F 25	no.	144		7	10	2	1		2	9	175
	%	83		4	6	1			1	5	
N F 90	no.	92	2	2	7					13	116
	%	79	2	2	6					11	
All features	no.	1438	19	67	39	14	9	5	17	451	2059
above no.	%	70	1	3	2	1			1	22	
Total group 1	no.	2947	34	165	105	43	12	13	53	597	3969
	%	74	1	4	3	1			1	15	

A total of 71 features, which for convenience can all be regarded as pits, contained struck lithic material within their fills. The numerical range, which varied between a minimum of one item and a maximum of 540 pieces, is summarised in Table 10.14 This shows that the majority of pits have less than 50 artefacts and that few pits have more than 100 artefacts. Potential lithic content is obviously linked to the actual size of each pit and, if this is taken into account, there would appear to be no especially significant concentrations or clusters of lithic finds in features within the excavated areas. Searching for patterning in this way would anyway be problematic, since it cannot be known which features are precisely contemporary with each other. No conjoins were noted between lithic artefacts from different features during analysis, though this was not rigorously tested. The contents of the ten most prolific pits have been listed together and shown in percentage terms (Table 10.15) to examine for any divergence from the overall norm.

In general there is a recurrent pattern of the contents being dominated by unretouched flakes, with low numbers of core pieces and relatively high numbers of implements, especially serrated-edge flakes. Nevertheless, some feature contents stand out as unusual. The most obvious is A F41, which contained the highest total of lithic artefacts, 59% of which were unclassified burnt pieces. Site records indicate that a

further 'bucket of burnt flint' came from this feature, but was not kept. For the collection from the 71 features as a whole, the representation of burnt flints is 15% or, expressed another way, feature A F41 contained more than 53% of all the unclassified burnt pieces from this context group. Adjacent features A F27 and N F90 do not share a predominance of burnt pieces, so there has been some specificity about the accumulation of the assemblage in A F41.

Another unusual collection comes from pit cluster II, on site N, near the centre of the enclosure, in that it contains the largest proportion of cores. On the other hand these are relatively large features, which altogether contain 489 artefacts or 12% of the whole collection from context group 1 (17% by weight). If the figures for this cluster are combined with those from the adjacent features N F5, F6, F10, and F11, then the totals are 899 artefacts representing 23% of context group 1 (24.5% by weight). This concentration near the centre of the enclosure is of potential interest, especially in view of the almost total absence of features with struck flint from the adjacent excavated areas (Fig 3.68).

Pit N F23 has an unusual assemblage in terms of the relatively large number of serrated-edge flakes, proportionally twice as numerous as in the combined totals for context group 1. This feature and the adjacent N F22 have 15% of all serrated-edge flakes from the group, which may hint at a particular focus in this part of the enclosure.

A central question in considering the pits in the central area is whether the lithic assemblages within them have any specific meaning, either in themselves, or in relation to the features in which they occur. The writer has no information to suggest that any patterned placement of lithic items in the features was observed during excavation. Thus analysis is reliant on the typology itself, and on any patterning within the typological data, for any clues which might indicate non-randomness. This does not seem to be the case.

One of the largest assemblages from a single feature (N F7i) was examined in detail to investigate any potential for refitting within a single feature, since in this instance both cores and flakes were present (Table 10.16) There were no refits, and the varied cortex on the secondary flakes and cores indicated derivation from many different nodules, probably from different sources. The flakes also had a varied range of cortication and discolouration, which strongly suggests they did not all arrive in the feature in a fresh condition or at the same time. The conclusion is that the assemblage from this pit represented mixed, general debris and not the product of a nearby knapping event or a cache.

It can be noted that small numbers of unclassified burnt pieces and burnt artefacts occur in most features, pointing to a general spread of burnt material across the area of the enclosure, also seen in the widespread presence of charcoal. These burnt pieces are always in association with unburnt artefacts, which clearly suggests the lithic contents of the features do not derive directly from a single source, in which flints would either be burnt or unburnt. The formation processes from which the contents of each pit derive are unknowable, but they probably varied and are regarded here as unlikely to reflect purposeful deposition. If it is accepted that the contents of each feature do not reflect single acts of deposition, then the individual feature assemblages are of little import.

Table 10.16 Lithic artefacts from the fill of pit N F7i (context group 1) in the central area

	Number	*Weight in grams*
Unretouched flakes, primary	10	61.3
Unretouched flakes, secondary	162	1138.6
Unretouched flakes, tertiary	73	205.7
Unretouched flake, chert	1	1.5
Unretouched flakes, burnt	5	32.0
Cores	7	484.6
Core fragments	3	119.5
Flaked lumps	3	152.0
Serrated-edge flakes	11	93.9
Edge-trimmed flakes	7	70.8
Scrapers	3	80.2
Flake from polished flint axehead	1	6.3
Miscellaneous retouched piece	1	17.0
Unclassified burnt fragments	15	35.0
Total	302	2498.4

The only complete flint axehead (Fig 10.17: 152) from any of these features (A F71) is not an implement in pristine condition and is unlikely to have been cached for future use or ritually buried. It is damaged through use at the cutting edge and probably has been discarded. It could, theoretically, have been rechipped and/or reground, but the morphology suggests this may have already been the case and that, in view of the size and asymmetric profile, further exploitation may not have been cost-effective. The other axehead (HH74 980) from an internal feature (A F41) is a medial fragment, disfigured by burning. The seven arrowheads are all fragmentary or damaged (the most complete are illustrated: Fig 10.15: 128, 134, 136, 138, and 141). Only the well-preserved 'laurel-leaf' bifacial (Fig 10.16: 145), from pit N F5, could perhaps be used to argue a case for pre-discard condition, but loss is just as probable.

Miscellaneous and unstratified finds from the central area

Struck flint from natural features and from superficial or otherwise unstratified recoveries comprises a substantial collection of over 3000 pieces of knapping debris and implements which complements and bulks up the assemblages from the central area features and the ditches. Although this collection does not add to

Table 10.17 Shroton spur. Summary of struck lithic artefacts

Weights are in grams, rounded to the nearest gram

		Bank area	*Phases I–II*	*Phase III*	*Phase V*	*Phase VIII/a*	*Remainder*	*Total no.*	*Total wt*
Unretouched flakes	no.	12	3	63	23	119	97	317	
	Wt	*180*	*26*	*718*	*292*	*1032*	*1014*		*3262*
Cores	no.					1	1	2	
	Wt					*160*	*121*		*281*
Serrated-edged flakes	no.	1					3	4	
	Wt	*12*					*17*		*29*
Edge-trimmed flake	no.						1	1	
(class A)	*Wt*						*2*		*2*
Edge-trimmed flakes	no.	1		3			2	6	
	Wt	*13*		*62*			*14*		*89*
Scrapers	no.			2	1	1	3	7	
	Wt			*76*	*42*	*15*	*80*		*213*
Piercers	no.					1	2	3	
	Wt					*14*	*21*		*35*
Leaf-shaped arrowheads	no.			2		1	1	4	
	Wt			*3*		*4*	*1*		*8*
Polished flint axeheads	no.	1					1	2	
and fragments	*Wt*	*252*					*580*		*832*
Flakes from polished	no.					5		5	
flint axeheads	*Wt*					*21*			*21*
Miscellaneous retouched	no.			1	2	6	2	11	
pieces	*Wt*			*26*	*16*	*81*	*35*		*158*
Unclassified burnt pieces	no.			2		12	7	21	
	Wt			*26*		*50*	*38*		*114*
Totals	no.	15	3	73	26	146	120	383	
	Wt	*457*	*26*	*911*	*350*	*1377*	*1923*		*5044*

the repertoire already defined, it is of interest in reinforcing the strong association of certain types, especially serrated-edge flakes and leaf-shaped arrowheads, with the enclosure.

The Shroton spur

The assemblage is small in total (context groups 47–52; Table 10.17), but of some interest because of the relatively high number of implements, which include two axeheads and four leaf-shaped arrowheads. The implements were in general not concentrated, coming almost equally from the ditch segments on sites K/L and M, and mostly from different horizons. All the leaf-shaped arrowheads, however, came from the ditch on site K/L, two from the phase III infill (HH76 745, HH76 975), one (HH76 299) from the phase VIII/a fill, and the other (HH76 588) from a superficial horizon. One of the axeheads (HH76 2975, a surface find from site K/L) is complete, with some rechipping subsequent to grinding. The other example (HH76 81, from posthole M F1 in the bank area – Fig 3.76), is the pointed butt end of a completely polished flint axehead, which is burnt and shattered, and has been reconstructed to its present form by the refitting of nine flakes and chips to the butt stub. Five further polished axehead flakes found with it are almost certainly from the same axehead, moreover ten unclassified burnt fragments probably also come from this axehead, but none can be refitted.

The Stepleton enclosure ditch

(context groups 55–61; Tables 10.18–20)

As with the main enclosure ditch assemblage, the struck flint from the Stepleton enclosure is presented in tables which give the overall breakdowns by type and context group, by context group and ditch segment, and by type and ditch segment for the material from the lower ditch infills.

The most flint-rich segments were numbers 2, 3, and 8. Unusually, the most productive horizon was the chalky phase III infill, particularly in segments 3 and 8. In artefact terms, there is a contrast between these segments, in that segment 3, like segments 2 and 22, has a significant number of core pieces, whereas segment 8 is wholly dominated by unretouched flakes. One aspect which is striking about the fills of this ditch is the scarcity of burnt lithic material.

The number of core pieces is significant for the phase I and II silts (context group 55). In fact many of the pieces (257) derive from a single segment (segment 2, where most of them formed a compact deposit on the surface of the primary silt in one butt – Fig 3.84: L5B).

Table 10.18 Stepleton spur. Summary of struck lithic artefacts

Weights are in grams, rounded to the nearest gram

		Stepleton enclosure					*Middle outwork*			*Inner outwork*			*Outer outwork*				
		Phases I–III	*Phase IV*	*Phase V*	*Phase VI*	*Phases VII–VIII*	*Phases I–III*	*Phase V*	*Phase VIII*	*Phases I–III*	*Phase V*	*Phases VII–VIII*	*Phases I–III*	*Phases VII–VIII*	*Pits*	*Remainder*	*Totals*
Unretouched flakes	no.	2627	571	297	974	1238	1058	248	354	3995	1986	18193	2277	1140	2159	3952	41069
	wt	*29708*	*5367*	*2727*	*10164*	*15592*	*11402*	*4837*	*4578*	*42962*	*25479*	*190652*	*23357*	*11086*	*11555*	*45284*	*434750*
Unretouched flakes, chert	no.										2	2					4
	wt										*7*	*24*					*31*
Unretouched flakes, burnt	no.	10	80	2	10	6				11	1	33		1	155	23	332
	wt	*83*	*78*	*10*	*47*	*42*				*136*	*8*	*270*		*2*	*613*	*85*	*1374*
Cores	no.	50	3	2	5	6	13	10	1	62	29	279[1]	22	7	20	54	563
	wt	*17403*	*659*	*197*	*455*	*1014*	*4232*	*2619*	*113*	*10357*	*4085*	*41831*	*4977*	*1434*	*3666*	*6063*	*99105*
Core fragments	no.	3	1	1			3	2		3	1	35[2]			3	5	57
	wt	*1090*	*27*	*92*			*415*	*337*		*670*	*58*	*2987*			*188*	*555*	*6419*
Flaked lumps	no.	33	1	1				2		10	3	95	9	7	4	16	181
	wt	*16480*	*480*	*190*				*860*		*2616*	*350*	*12885*	*4716*	*899*	*478*	*1573*	*41527*
Serrated-edged flakes	no.	8[3]	20	1	22	10				2	2	4			62	15	146
	wt	*70*	*117*	*13*	*179*	*72*				*15*	*8*	*62*			*500*	*164*	*1200*
Unretouched flakes with edge-gloss	no.		2	2	6	1			1			1			7	5	25
	wt		*11*	*24*	*54*	*5*			*1*			*3*			*29*	*64*	*191*
Edge-trimmed flakes, class A	no.						1			2		1			5	1	10
	wt						*24*			*19*		*12*			*66*	*15*	*136*
Edge-trimmed flakes	no.	14	14	3	15	23	2	2	1	7	3	12	1	2	44[4]	31	174
	wt	*172*	*196*	*25*	*336*	*400*	*47*	*37*	*13*	*104*	*48*	*148*	*11*	*57*	*824*	*363*	*2781*
Scrapers	no.	9	5	2	13	14	2		2	8	7	115		6	24	33	240
	wt	*311*	*99*	*69*	*469*	*414*	*118*		*117*	*272*	*307*	*2799*		*81*	*602*	*938*	*6596*
Piercers	no.	1			4	1			1	1		25		3	3	10	49
	wt	*41*			*30*	*38*			*61*	*92*		*606*		*51*	*43*	*232*	*1194*
Leaf-shaped arrowheads	no.	1	1			1	1			1		2	1			1	9
	wt	*2*	*1*			*1*	*2*			*2*		*2*	*2*			*1*	*13*
Tanged arrowhead	no.															1	1
	wt															*2*	*2*
'Laurel leaf' bifacials	no.										2				1		3
	wt										*31*				*13*		*44*
Polished axeheads & fragments	no.			1		1				1		1			2[5]	1[6]	7
	wt			*113*		*101*				*156*		*156*			*135*	*120*	*781*

Flakes from polished axeheads	no.	1		1											3	1	6
	wt	*9*		*2*											*10*	*3*	*24*
Knives	no.											4					4
	wt											*152*					*152*
Pick/roughout	no.	1										1					2
	wt	*123*										*135*					*258*
Unclassified bifacial pieces	no.											3				1	4
	wt											*69*				*29*	*98*
Rods	no.													1	1	2	4
	wt													*42*	*72*	*126*	*240*
'Fabricators'	no.											1				1	2
	wt											*26*				*21*	*47*
Backed flake	no.										1						1
	wt										*13*						*13*
Miscellaneous retouched pieces	no.	6	2	1	5	14	3	3	6	16	4	151	5	6	22[7]	42	286
	wt	*371*	*135*	*2*	*178*	*246*	*53*	*124*	*219*	*638*	*84*	*5738*	*199*	*211*	*779*	*1251*	*10228*
Unclassified burnt pieces	no.	20	31	14	38	11		1	26	1772	103	16054	2	14	468	535	19089
	wt	*272*	*67*	*1512*	*451*	*573*		*30*	*275*	*5845*	*2264*	*24388*	*367*	*292*	*1631*	*3512*	*41479*
Totals	no.	2784	731	328	1092	1326	1083	268	392	5891	2144	35012	2317	1187	2983	4730	62268
	wt	*66135*	*7237*	*4976*	*12363*	*18498*	*16293*	*8844*	*5377*	*63884*	*32742*	*282945*	*33629*	*14155*	*21204*	*60401*	*648683*

1 includes 2 burnt cores, weighing 420 g and 69 g
2 includes 2 burnt fragments, weighing 203 g
3 1 of these, weighing 11 g, is burnt
4 2 of these, weighing 8.3 g, are burnt
5 1 of these, weighing 5.1 g, is burnt
6 burnt
7 1 of these, weighing 4.5 g, is burnt

Table 10.19 Stepleton enclosure: numbers of lithic artefacts by phase and segment

Ditch segment	*Phases I–II*	*Phase III*	*Phase IV*	*Phase V*	*Phase VI*	*Phase VIII/a*	*Miscellaneous and unstratified*	*Totals no.*	*Totals %*
1		218				27		245	3.9
2	257	95	123	4	151	135	24	789	12.6
3	59	403	25		124	249	2	862	13.8
4	5	17	12		40	138		212	3.4
5	48	208			33	217		506	8.1
6	46	47		9	115	154		371	5.9
7	44	124	102	27	171	14		482	7.7
8	26	723	195	2	142	94		1182	18.9
9	19	5		23	5			52	0.8
10					14			14	0.2
11	2	25	26		4	5		62	1.0
12	6	37	213	3	244	11		514	8.2
13		1		5	4			10	0.2
14		2		9	14	1		26	0.4
15		19		1	10	8		38	0.6
16	5	87		60	11			163	2.6
17	2	8	24	37				71	1.1
18		1		20				21	0.3
20	4	11		15				30	0.5
21	4	1		64				69	1.1
22	50	135	11	31				227	3.6
23		40		18			77	135	2.2
X*					10	170		180	2.9
Total no.	577	2207	731	328	1092	1223	103	6261	
Total %	9	35	12	5	17	20	2		

* artefacts listed in this row could be allocated to specific phases, but there was uncertainty over the segment from which they derived.
There were no artefacts from Segment 19.

The phase III assemblage (context group 56), the most prolific from the enclosure, continues the trend of phases I–II, with an emphasis on core pieces and waste flakes rather than implements. Segment 2 (95 artefacts) is no longer the most productive, however, since segments 1 (218), 3 (403), 5 (208), and especially 8 (723) have far more artefacts. These figures may nevertheless indicate complementarity rather than contrast, assuming there could have been some difficulty in the classification of finds as coming from either the lower chalk rubble or the basal silts. Segment 3 contained numerous refitting pieces (Figs 10.21–25).

The combined figures for phases I–III make clear that, on the basis of the core pieces, there is an industrial element, which is focused on segments 2, 3, and 22. Segment 3 is the largest segment, but since the largest assemblage comes from segment 8, which is much smaller, the concentration of core pieces in segment 3 still seems of significance. The phase V silts (context group 57) are the least productive of all the fills of this ditch except the most superficial, although the assemblage includes a polished flint axehead fragment from segment 16 (Fig 10.17: 154).

Surprisingly, perhaps, there are more serrated-edge flakes from the phase IV recuts (context group 58) than from earlier contexts. This results from an anomalous concentration in segment 12, where 15 serrated-edge flakes and eight edge-trimmed flakes are present within a total assemblage of 213 pieces. There is a leaf-shaped arrowhead from segment 2 (Fig 10.15: 131).

A relatively high presence again in the upper fills, including the phase VI deposits (context group 59), of serrated-edge, edge-trimmed, and edge-gloss implements reflects a more equitable distribution between segments than with group 58. However, minor peaks occur in segment 8 (6 serrated; 2 edge-trimmed) and segment 12 (7 serrated; 4 edge-trimmed; 2 edge-gloss), the latter suggesting some overlap between contexts with context group 58, thus reinforcing the anomalous character of the segment 12 fill.

The middle Stepleton outwork

(context groups 71–75; Tables 10.18, 10.21)

The normal pattern of occurrence is apparently reversed in this ditch fill, since the basal silts (context group 71) contained the largest assemblage of all the horizons, with significant core presence and a leaf-shaped arrowhead from segment 5 (Fig 10.15: 140). As Table 10.21 shows, however, this is entirely due to the situation in a single segment (10), where 36% of the whole middle outwork assemblage was contained

Table 10.20 Stepleton enclosure. Lithic artefact types from Phases I–III combined, subdivided by ditch segment

	Segment																					
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*11*	*12*	*13*	*14*	*15*	*16*	*17*	*18*	*20*	*21*	*22*	*23*	*total no.*	*total %*
Unretouched flakes	208	322	427	19	254	89	161	739	24	27	34		2	17	75	8		14	5	168	34	2627	94.4
Unretouched flakes, burnt		3		1								1			5							10	0.4
Cores	1	11	17			1	3	3												10	4	50	1.8
Core fragments			1		1															1		3	0.1
Flaked lumps	1	12	13					2							1					4		33	1.2
Serrated-edge flakes			1								3			1	2	1						8	0.3
Edge-trimmed flakes	1	1			1	1	1	1			5			1	1						1	14	0.5
Scrapers	1	1		1			2				1				1			1		1		9	0.3
Piercers								1														1	
Leaf-shaped arrowhead																					1	1	
Axe/pick				1																		1	
Flake from polished axehead								1														1	
Miscellaneous retouched pieces		2	2													1	1					6	0.2
Unclassified burnt pieces	6		1			2	1	2							7					1		20	0.7
Total no.	218	352	462	22	256	93	168	749	24	27	43	1	2	19	92	10	1	15	5	185	40	2784	
Total %	8	13	17	1	9	3	6	27	1	1	2			1	3					7	1		

Table 10.21 Middle Stepleton outwork: Lithic artefact types from phases I–III combined, subdivided by ditch segment

	Segment								
	3	*4*	*5*	*6*	*8*	*10*	*11*	*total no.*	*total %*
Unretouched flakes	7	152	126	33	115	620	5	1058	97.7
Cores					1	12		13	1.2
Core fragments					1	2		3	0.3
Edge-trimmed flakes, class A		1						1	0.1
Edge-trimmed flakes			1			1		2	0.2
Scrapers			1			1		2	0.2
Leaf-shaped arrowhead			1					1	0.1
Misc retouched pieces		2	1					3	0.3
Total no.	7	155	130	33	117	636	5	1083	
Total %	0.7	14.3	12.0	3.1	10.8	58.7	0.5		

Table 10.22 Inner Stepleton outwork. Lithic artefact types from phases I–III combined, subdivided by ditch segment

	Segment								
	3	*4*	*5*	*6*	*7*	*8*	*9*	*totals no.*	*totals %*
Unretouched flakes	70	239	2163	875	345	66	237	3995	67.8
Unretouched flakes, burnt		1	3	3	6			13	0.2
Cores	3	1	32	6	6		14	62	1.1
Core fragments			2		1			3	0.1
Flaked lumps			9				1	10	0.2
Serrated-edge flakes	1				1			2	
Edge-trimmed, class A				1			1	2	
Edge-trimmed flakes			4		1		2	7	0.1
Scrapers	1	1	2	2	1		1	8	0.1
Piercers		1						1	
Leaf-shaped arrowhead					1			1	
Axe/pick			1					1	
Misc retouched pieces		5	2	7	1		1	16	0.3
Unclassified burnt pieces		12	105	1642	10		1	1770	30.1
Total no.	75	260	2323	2536	373	66	258	5891	
Total %	1.3	4.4	39.4	43.1	6.3	1.1	4.4		

in the basal silt (Fig 3.131). There is no obvious explanation for this, although segment 10 was extensively excavated and therefore the amount of basal silt sampled was proportionately greater than in many other segments. The secondary and tertiary ditch fills are by contrast impoverished, which is particularly noteworthy since the adjacent inner outwork fills were so rich in flint. Thus the richness of segments 5 and 6 of the inner outwork does not find an echo in 6 and 8 of the middle outwork, although it should be noted that the latter ditch segments were subject to limited excavation only.

The inner Stepleton outwork

(context groups 63–69; Tables 10.18, 10.22)

A high proportion of the sizable collection from the inner outwork bank area derives from the features (mainly postholes) allocated to context group 62. A total of 61 features contained flints: 45 contained between one and ten pieces; 14 between 11 and 50 pieces; one contained 59 pieces; and one contained 240 pieces. Thus most features contained just a few flints, among which the burnt pieces were well dispersed. The most prolific feature (1B F12, possibly a posthole) produced a balanced sample quite in character with the early/middle Neolithic pattern.

The inner outwork ditch is by far the single most productive part of the whole Hambledon Hill lithic assemblage in terms of numbers of pieces, even taking into account the distortion produced by the huge number of unclassified burnt pieces in phase VIII/a.

The phase I–II silts (context group 63) contained predominantly unretouched flakes, the majority found in two adjacent segments (5 and 6). From the phase III fills (context group 64) a large assemblage is dominated by unretouched flakes and unclassified burnt pieces, with a significant presence of core pieces. Each of these categories was clustered. Segment 5 had an assemblage with 1576 unretouched flakes, 32 cores,

Table 10.23 Outer Stepleton outwork. Lithic artefact types from phases I–III combined, subdivided by ditch segment

	Segment								
	2	*3*	*4*	*5*	*7*	*8*	*9*	*total no.*	*total %*
Unretouched flakes	4	202	1888	14	78	72	19	2277	98.3
Cores			19		1	2		22	1.0
Flaked lumps			9					9	0.4
Edge-trimmed flake	1							1	
Leaf arrowhead			1					1	
Misc retouched pieces		1	3			1		5	0.2
Unclass burnt pieces			1		1			2	0.1
Total no.	5	203	1921	14	80	75	19	2317	
Total %	0.2	8.8	82.9	0.6	3.5	3.2	0.8		

one core fragment, and eight flaked lumps, but this was easily the most substantial of the segments in terms of size and proportion excavated. The adjacent segment 6 had 1642 of the unclassified burnt pieces. A further 14 cores were in segment 9. The implements include a leaf-shaped arrowhead from segment 7 (Fig 10.15: 139).

The phase V silts (context group 65) contain a significant presence of core pieces, which derive exclusively from the adjacent segments 5 (15 cores, 2 flaked lumps), 6 (8 cores, 1 core fragment, 1 flaked lump), and 7 (6 cores). Both 'laurel leaf' bifacials are from this group in segment 7 (one is illustrated: Fig 10.16: 147).

Similarly in the phase VII/a fills (context group 66), the bulk of the assemblage and especially the core pieces come from segments 5 (11 cores), 6 (14 cores, 5 flaked lumps), and 7 (4 cores, 1 core fragment, 1 flaked lump). The 'midden' (context group 67) is only present in segment 5 and the adjacent terminal of segment 6. It is the tertiary and superficial fills (context groups 68–69) which produced an absolutely massive assemblage, inflated by the remarkable number of unclassified burnt pieces, most of which, at least some 14,739, are from segment 5. The number of unretouched flakes and cores represents a very substantial assemblage in its own right. Implements include a leaf-shaped arrowhead (Fig 10.15: 133), a flint axehead (Fig 10.18: 157), a 'fabricator' (Fig 10.20: 163), three knives from segment 7, a pick, two unclassified bifacial pieces and a 'fabricator'. On the other hand serrated-edge flakes, edge-gloss and edge-trimmed flakes are present in only very small numbers.

Segment 5 is both the largest and the deepest of the inner outwork segments, so the fact that it contains 50% of all the flints from the ditch is perhaps not surprising. This makes it all the more interesting that, when only the lower infill horizons are considered, the much smaller segment 6 contains slightly more flints than segment 5. This is entirely because of the amount of burnt material in segment 6, whereas it is segment 5 and, to a lesser extent, segment 9 that have the core pieces.

The outer Stepleton outwork
(context groups 77–81; Tables 10.18, 10.23)

The outer outwork fills were far more productive of lithic artefacts than those of middle outwork, though the pattern of occurrence is more normal, in that it is the secondary fills rather than the basal silts which contain the most flints. Again, however, this is because of a single prolific segment (4), which produced over 60% of the assemblage from the ditch and is the segment that produced the most extensive sequences of refitting from anywhere on Hambledon Hill (Figs 10.29–40). The outer outwork assemblage, like that from the middle outwork, includes a leaf-shaped arrowhead from the basal silts (segment 3; Fig 10.15: 132) and, also like the middle outwork, contained hardly any burnt flints. This contrasts so dramatically with the situation in the inner outwork as to emphasise a very divergent history for the formation processes of their respective fills.

Discrete Neolithic features on the Stepleton spur
(context group 53; Tables 10.13–14, 10.18, 10.24)

In total, 2983 artefacts were recovered from 93 features, the contents of which are itemised individually in the catalogue which concludes section 3.5.6. These artefacts, deriving as they do from Neolithic pits, form an assemblage directly comparable with that from the pits at the main enclosure (context group 1) and for that reason are listed in the same table. Despite the larger number of pits and the near-complete excavation of the enclosure, the Stepleton assemblage is considerably smaller in number (if not in weight). However, the character of the assemblages is quite remarkably similar in some respects in terms of artefact categories and their proportional presence. The Stepleton assemblage could be characterised as more 'industrial', in that cores are twice as common and serrated-edge flakes only half as common, but otherwise the main differences are the absence of any leaf-shaped arrowheads or chert from the Stepleton pits.

Table 10.24 Stepleton spur features (Context Group 53) containing more than 100 struck lithic artefacts

Flakes etc = all unretouched flakes, including chert and burnt; cores etc = all core pieces, including fragments and flaked lumps; serrated flakes = all serrated-edge flakes including unretouched flakes with edge-gloss; edge-trimmed = all edge-trimmed flakes, including class A; others = all other specific implement categories; misc ret pieces = all miscellaneous retouched pieces; uncl burnt pieces = all unclassified burnt pieces

Feature	*Flakes etc*	*Cores etc*	*Serrated*	*Trimmed*	*Scrapers*	*Piercers*	*Others*	*Misc ret*	*Uncl burnt*	*Total*
ST78 1A F228 no.	181	2	10	8	2		1	1	3	208
%	87	1	5	4	1		0.5	0.5	1	
ST78 1A F229 no	133	6	1	1	2			1		144
%	92	4	1	1	1			1		
ST78 1A F295 no.	97	1	2	2	1				1	104
%	93	1	2	2	1				1	
ST78 1A F350 no.	376	6	12	16	14	1		5	66	496
%	76	1	2	3	3			1	13	
ST79 2A F154 no.	104			2			1		1	108
%	96			2			1		1	
ST79 2A F159 no.	176		9	1				3	76	265
%	66		3					1	29	
ST81 4B F129 no.	73			1			2		41	117
%	62			1			2		35	
ST81 4B F130 no.	145		2				1			148
%	98		1				1			
ST81 4B F137 no.	50		2						70	122
%	41		2						57	
All features above no.	1335	15	38	31	19	1	5	10	258	1712
%	78	1	2	2	1			1	15	
Total group 53 no.	2314	27	69	49	24	3	7	22	468	2983
%	77	1	2	2	1			1	16	

The numerical range of artefacts per pit is shown in Table 10.14, the maximum in any feature being 376 and the minimum one. Proportionately more pits from the Stepleton enclosure contain only a few flints, but it is also the case that the Stepleton features are, on average, smaller in size than those at the main enclosure (Fig 3.52). None of the Stepleton feature contents can be described as particularly unusual or irregular. They are characterised by repetitious waste material more than anything else. Included, however, are a 'laurel-leaf' bifacial from 2A F154 (Fig 10.16: 150), a polished flint axehead from 1A F228 (Fig 10.18: 156), and a rod-type implement from 4B F712 (Fig 10.20: 162).

The contents of the most productive features are listed in Table 10.24 and may be compared with Table 10.15 for the data from the central area pits. The composition of these pit contents is recurrent, the only significant fluctuation, in both areas, being caused by the amount of unclassified burnt material present.

Miscellaneous and unstratified finds from the Stepleton spur (context group 82)

This random collection of artefacts encompasses all the struck flint from natural features and from superficial or otherwise unstratified recoveries. As with the comparable context group 46 material from the central area, it represents a substantial collection of knapping debris and implements, which in general matches the stratified assemblages in character. This includes the presence of a leaf-shaped arrowhead, a type not actually present in any of the Stepleton features, serrated-edge and other edge-modified flakes and surprisingly low numbers of scrapers and miscellaneous retouched pieces. However, this group does include the only tanged arrowhead from the hilltop (Fig 10.15: 143), one of the few rods (Fig 10.19: 161), a 'fabricator', and one of the unclassified bifacial pieces (Fig 10.16: 146).

The Hanford spur
(context groups 83–93; Table 10.25)

The total assemblage from the excavations in this area is small and of no particular note. The implement categories match those from elsewhere on the hilltop and suggest that the area is simply receiving a relatively small sample of the general early–middle Neolithic flint discard. As mentioned elsewhere, a significant point is that the flint from the tabular seam dug through in the 'flint-mines' was not used for the artefacts found here, which utilise the same raw material as elsewhere on the hilltop.

Table 10.25 Hanford spur. Summary of struck lithic artefacts

Weights are in grams, rounded to the nearest gram

		Inner outwork				*Outer outwork*								
		Phases I–II	*Phase III*	*Phase V*	*Phases VII–VIII*	*Phases I–II*	*Phase III*	*Phase V*	*Phases VII–VIII*	*Neolithic pits*	*'Flint mines'*	*Remainder*	*Total no.*	*Total wt*
Unretouched flakes	no.	71	79	26	33	1091	17	63	72	6	13	54	1525	
	wt	*779*	*797*	*368*	*258*	*6704*	*197*	*763*	*932*	*14*	*60*	*680*		*11552*
Unretouched flakes, burnt	no.									1	1		2	
	wt									*8*	*10*			*18*
Cores	no.	1	1		2	6		1				2	13	
	wt	*99*	*99*		*497*	*1541*		*330*				*184*		*2750*
Core fragment	no.	1											1	
	wt	*101*												*101*
Flaked lumps	no.				1	1						2	4	
	wt				*1500*	*240*						*146*		*1886*
Serrated-edged flakes	no.		4		1					1			6	
	wt		*42*		*22*					*5*				*69*
Unretouched flakes with edge-gloss	no.							1			1		2	
	wt							*5*			*2*			*7*
Edge-trimmed flakes	no.								2			2	4	
	wt								*35*			*48*		*83*
Scrapers	no.								5			5	10	
	wt								*188*			*130*		*318*
Flakes from polished axeheads	no.	1			1								2	
	wt	*21*			*3*									*24*
Miscellaneous retouched pieces	no.		1					2			1	5	9	
	wt		*31*					*95*			*34*	*173*		*333*
Unclassified burnt pieces	no.				1					3		1	5	
	wt				*23*					*13*		*4*		*40*
Totals	no.	74	85	26	39	1098	17	67	79	11	16	71	1583	
	wt	*1000*	*969*	*368*	*2303*	*8485*	*197*	*1193*	*1155*	*40*	*106*	*1365*		*17181*

10.2.5 Typology

Assemblage composition (Table 10.6)

The overall composition of the lithic collections is conventional insofar as it is dominated by unretouched (waste) flakes, which numerically are overwhelmingly significant, though proportionally less so when considered by weight, since, as expected, this aspect highlights the importance of the core pieces. The unclassified burnt pieces are listed separately since they constitute such a large part (over 20% numerically) of the overall collection, but in fact, as previously commented, most of the burnt pieces are almost certainly unretouched flakes. If this assumption is made and the burnt pieces are added to the total of unretouched flakes, this would increase their numerical percentage within the whole collection to 96% and the percentage by weight to 73%.

The divergences from these means have been shown by the analyses of the subassemblages, and can be characterised crudely as more 'industrial' or more 'domestic' depending on the proportions of the components shown in Table 10.6. The divergence is most marked in the case of the assemblages from features (groups 1 and 53) which have a 'domestic' character, with higher values for retouched pieces and lower for core pieces, whereas the ditch assemblages tend to reverse this.

In the following sections the typology of the individual components of the major assemblage subdivisions are examined.

Unretouched flakes

As with the cores, these were primarily recovered from the enclosure peripheries and ditches, creating the impression that most knapping took place there. This may be somewhat misleading because of the erosion affecting other contexts, the removal by machine during excavation of flints from superficial horizons within the enclosures, and the absence of very many, or any very large, internal features. Nevertheless, it is clear from those internal features that were excavated that they do not contain the remains of complete knapping episodes.

Table 10.26 Composition of samples of complete unretouched flakes from selected internal features

	N/F7i				*1A/F350*			
Flake type	*No.*	*%*	*Wt*	*Mean wt*	*No.*	*%*	*Wt.*	*Mean wt*
Primary	8	6	52.3g	6.5g	5	4	58.2g	11.6g
Secondary	91	65	767.6g	8.4g	95	66	918.9g	9.7g
Tertiary	40	29	150.7g	3.8g	43	30	115.8g	2.7g
Totals	139		970.6g	7.0g	143		1092.9g	7.6g

Table 10.27 Length ranges of complete unretouched flakes from the fill of features N F7i and 1A F350

	N F7i				*1A F350*			
Length in mm ranges	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*
0–9.9		1	1	0.7				
10–19.9	17	11	28	20.1	7	11	18	12.6
20–29.9	28	13	41	29.5	20	13	33	23.1
30–39.9	30	8	38	27.3	34	17	51	35.6
40–49.9	13	6	19	13.7	22	2	24	16.8
50–59.9	6		6	4.3	13		13	9.1
60–69.9	4		4	2.9	2		2	1.4
70–79.9	1	1	2	1.4	2		2	1.4
Totals	99	40	139		100	43	143	

Table 10.28 Maximum thickness ranges of all complete flakes longer and/or broader than 20 mm from the fill of features N F7i and 1A F350

	N F7i				*1A F350*			
Thickness in mm ranges	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*
0–4.9	25	11	36	30	16	14	30	23
5–9.9	41	18	59	49	45	14	59	46
10–14.9	13	2	15	12	23	5	28	22
15–19.9	8		8	7	10		10	8
20–24.9	1		1	1				
25>	1		1	1	1		1	1
Totals	89	31	120		95	33	128	

Table 10.29 Length/breadth index values of all complete flakes longer and/or broader than 20 mm from the fills of features N F7i and 1A F350

	N F7i				*1A F350*				
L/B index	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*	*Primary and secondary*	*Tertiary*	*Total no.*	*Total %*	*Shape*
0.0–0.5	3	1	4	3.3		1	1	0.8	Very broad
0.6–1.0	32	12	44	36.7	24	6	30	23.4	Broad
1.1–1.5	31	10	41	34.2	47	16	63	49.2	Medium/broad
1.6–2.0	15	6	21	17.5	17	7	24	18.8	Medium/narrow
2.1–2.5	7	1	8	6.7	4	1	5	3.9	Narrow
2.6>	1	1	2	1.7	3	2	5	3.9	Very narrow
Totals	89	31	120		95	33	128		

Table 10.30 Composition of samples of complete unretouched flakes from selected horizons within the fill of segment 13 of the main enclosure ditch

	Phase III				*Phase V*				*Phase VI*			
Flake type	*No.*	*%*	*Wt*	*Mean wt*	*No.*	*%*	*Wt*	*Ave wt*	*No.*	*%*	*Wt*	*Mean wt*
Primary	123	24	2149.9g	17.5g	41	20	429.8g	10.5g	60	22	766.5g	12.8g
Secondary	296	58	3488.3g	11.8g	117	56	1205.6g	10.3g	167	60	1465.8g	8.8g
Tertiary	90	18	345.3g	3.8g	50	24	188.5g	3.8g	49	18	218.4g	4.5g
Totals	509		5983.5g	11.8g	208		1823.9g	8.8g	276		2450.7g	8.9g

Table 10.31 Length ranges of all complete unretouched flakes from phases III, V and VI in segment 13 of the main enclosure ditch

	Length in mm ranges	*Primary*	*Secondary*	*Tertiary*	*Total number*	*Total %*
Phase III	10–19.9	1	9	10	20	4
	20–29.9	8	52	39	99	19
	30–39.9	31	101	25	157	31
	40–49.9	39	67	12	118	23
	50–59.9	18	40	4	62	12
	60–69.9	20	19		39	8
	70–79.9	4	5		9	2
	80–89.9	2	2		4	1
	90–99.9		1		1	
	Totals	123	296	90	509	
Phase V	10–19.9	2	4	10	16	8
	20–29.9	8	30	20	58	28
	30–39.9	7	50	14	71	34
	40–49.9	17	16	5	38	18
	50–59.9	3	9	1	13	6
	60–69.9	3	5		8	4
	70–79.9	1	2		3	1
	80–89.9					
	90–99.9		1		1	
	Totals	41	117	50	208	
Phase VI	10–19.9	1	14	6	21	8
	20–29.9	13	44	19	76	28
	30–39.9	26	47	13	86	31
	40–49.9	13	31	9	53	19
	50–59.9	5	24		29	11
	60–69.9		3	1	4	1
	70–79.9	1	3	1	5	2
	80–89.9	1	1		2	
	90–99.9					
	Totals	60	167	49	276	

In other words, it does not appear that knapping took place next to open pits/holes into which the waste flakes were collected directly. The occurrence of unretouched flakes in the internal features is apparently a much more fortuitous affair, and it is not to be expected that these contexts will be very informative about reduction strategies and preferences.

As a test, two collections of unretouched flakes from internal features were studied in detail. The first consisted of 249 flint flakes from the fill of N F7(i) within the main enclosure (3.3.7). Of the 249 flakes, 139 were complete. The second sample comprised the 344 flint flakes from the fill of 1A F350 (3.5.6) within the Stepleton enclosure. All levels of the feature fills were considered together in order to obtain a sufficient sample of 143 complete flakes. The composition of the two samples, which both had overall average flake weights of approximately 7 g, was essentially similar (Table 10.26). All the flakes from both samples had plain, pronounced and unlipped striking-platforms, except one faceted-butt tertiary flake from 1A F350, and are probably hard-hammer products. Two flakes in each sample were core rejuvenation flakes.

The samples were examined further in terms of flake size and shape by analysing length, thickness, and length/breadth index (Tables 10.27–29) The figures in these tables characterise the samples as lacking many very small flakes or chips, as dominated by flakes in the 20–40 mm length ranges and 5–10 mm thickness ranges, and as predominantly broad in shape. The absence of small flakes or chips, from contexts where recovery will have been good, indicates that this material is not the product of individual knapping events or sequences. This is confirmed by the condition of the flakes in the sample, since they exhibit a range of cortication-related discolouration effects. In the case of the F350 assemblage, however, the appearance of the flakes suggests that about half the overall total of 344 could have derived from a single nodule or flaking event. Even so, no refitting could be achieved, suggesting that only a partial sample of the residue from the knapping event (and minus the chips and spalls) found its way into the feature fill. The flakes from both features are essentially the product of general nodule preparation and core reduction and include few, if any, flakes which are suitable blanks for implement production. As with

Table 10.32 Maximum thickness ranges of all complete unretouched flakes longer and/or broader than 20 mm from phases III, V and VI in segment 13 of the main enclosure ditch

	Thickness in mm ranges	*Primary*	*Secondary*	*Tertiary*	*Total number*	*Total %*
Phase III	0–4.9	3	42	40	85	17
	5–9.9	47	129	31	207	42
	10–14.9	41	95	9	145	29
	15–19.9	23	20	1	44	9
	20–24.9	7	6		13	2.5
	25>	2	1		3	0.5
	Totals	123	293	81	497	
Phase V	0–4.9	7	19	21	47	23
	5–9.9	17	66	20	103	51
	10–14.9	14	22	3	39	19
	15–19.9	3	5		8	4
	20–24.9		5		5	3
	25>					
	Totals	41	117	44	202	
Phase VI	0–4.9	2	31	21	54	21
	5–9.9	28	80	20	128	49
	10–14.9	24	31	3	58	22
	15–19.9	3	11	1	15	6
	20–24.9	1	3		4	2
	25>	1			1	
	Totals	59	156	45	260	

Table 10.33 Length/breadth index values of all complete unretouched flakes longer and/or broader than 20 mm from phases III. V and VI in segment 13 of the main enclosure ditch

	L/B index	*Primary*	*Secondary*	*Tertiary*	*Total number*	*Total %*	*Shape*
Phase III	0.0–0.5		1		1		Very broad
	0.6–1.0	28	63	25	116	23	Broad
	1.1–1.5	61	148	26	235	47	Medium/broad
	1.6–2.0	24	58	15	97	20	Medium/narrow
	2.1–2.5	6	15	9	30	6	Narrow
	2.6>	4	8	6	18	4	Very narrow
	Totals	123	293	81	497		
Phase V	0.0–0.5			1	1		Very broad
	0.6–1.0	7	31	15	53	26	Broad
	1.1–1.5	19	56	19	94	47	Medium/broad
	1.6–2.0	11	22	6	39	19	Medium/narrow
	2.1–2.5	2	8	1	11	5	Narrow
	2.6>	2		2	4	2	Very narrow
	Totals	41	117	44	202		
Phase VI	0.0–0.5						Very broad
	0.6–1.0	16	31	9	56	22	Broad
	1.1–1.5	32	75	23	130	50	Medium/broad
	1.6–2.0	8	37	8	53	20	Medium/narrow
	2.1–2.5	2	9	2	13	5	Narrow
	2.6>	1	4	3	8	3	Very narrow
	Totals	59	156	45	260		

the flint contents of all the feature fills, the impression gained is that the flakes represent haphazard, arbitrary accumulations.

As a comparison for these flake samples from internal features, analyses were made of the prolific material from the fill of segment 13 of the main enclosure ditch, which included a total of some 5156 unretouched flakes from phase I upwards (context groups 3–11). The lowest stratified sample of any size was from phase III, the chalk rubble fills, which comprised a total of 1106 flakes. Other numerically significant samples comprised 688 flakes from phase V (context

Table 10.34 Mean weights of unretouched flakes in different context groups (chert and burnt flakes are excluded from these totals)

Context group	*Number*	*Weight (g)*	*Mean weight*
Main enclosure ditch	9958	82482	8.3
Inner east cross-dyke ditch	418	3185	7.6
Outer east cross-dyke ditch	382	2631	6.9
Inner south cross-dyke ditch	205	2090	10.2
Western outwork ditch	186	872	4.7
Long barrow ditches	3894	38544	9.9
Neolithic pits in the central area	2858	13320	4.7
Miscellaneous contexts in the central area	3756	22196	5.9
Shroton spur	317	3262	10.3
Stepleton enclosure ditch	5707	63558	11.1
Middle Stepleton outwork ditch	1660	20817	12.5
Inner Stepleton outwork ditch	24174	259093	10.7
Outer Stepleton outwork ditch	3417	34443	10.1
Neolithic pits on the Stepleton spur	2159	11555	5.4
Miscellaneous contexts on the Stepleton spur	3952	45284	11.5
Hanford spur	1525	11552	7.6
Totals	64568	614884	9.5

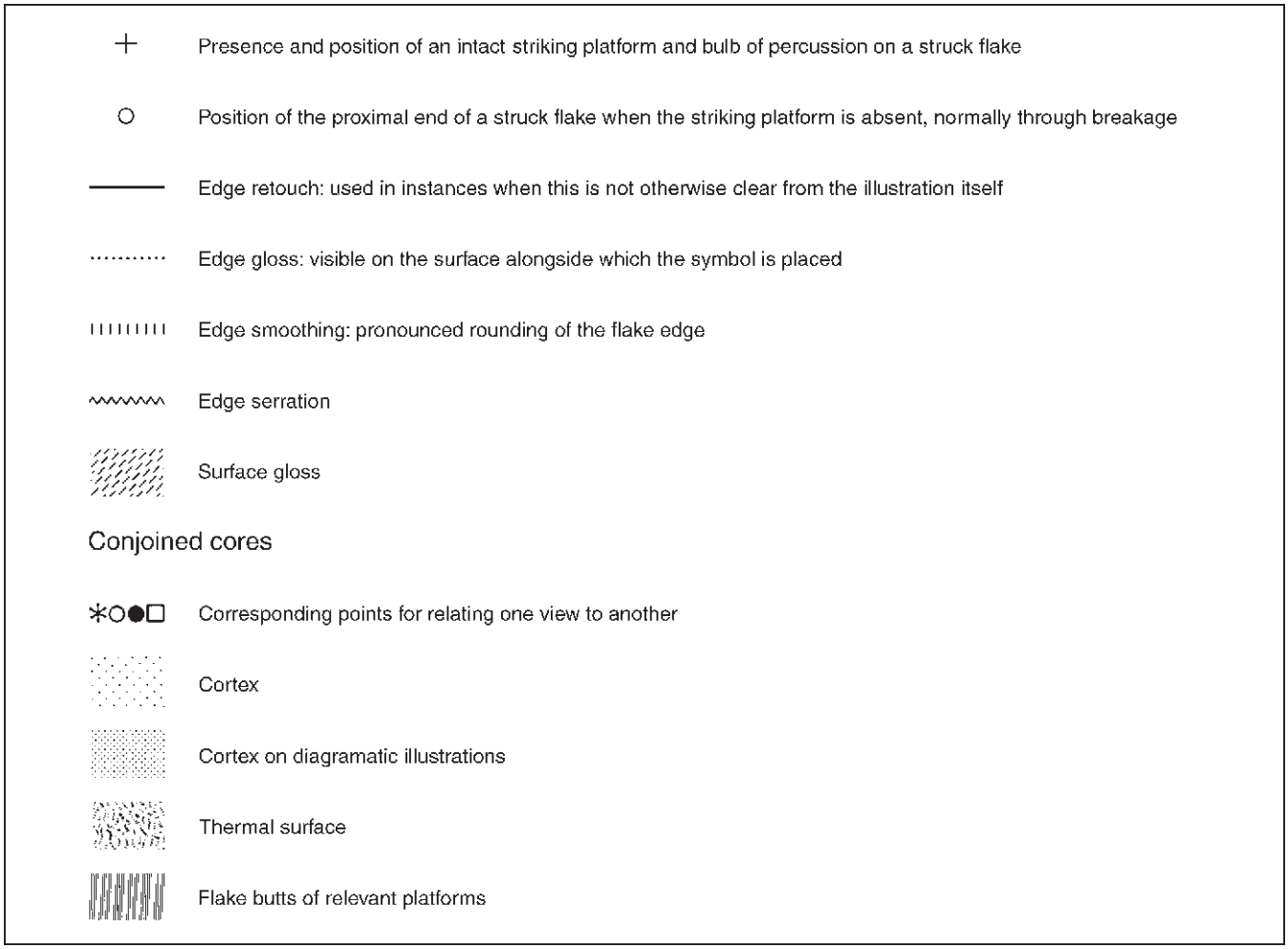

Fig 10.5 Key to the symbol and shading conventions used in the flint artefact illustrations. Note that 'American projection' (Martingell and Saville 1988, 4) is not used consistently in the following figures, so that the juxtaposition of different views or profiles of the same artefact may vary in each case.

group 6) and 1227 from phase VI (context group 7). The composition of the decreasing proportions of complete flakes from these contexts is shown in Table 10.30, and the contrast with the two pit samples (Table 10.26) is striking, because of the prevalence in the ditch of heavy, primary flakes. The contrast is further demonstrated by considering the lengths, thicknesses, and length/breadth indices of the flakes (Tables 10.31–33).

This 'industrial' nature of the assemblages from segment 13 and adjacent segments where the ditch cuts through Clay-with-Flints has already been noted. This is confirmed by the unretouched flake data, which show a predominance of heavy, cortical flakes, the number of primary flakes indicating the importance of initial nodule reduction. Only one flake (secondary) from phase III had a faceted striking platform, two flakes (one secondary, one tertiary) from phase V, and none from phase VI. Two of the phase III flakes were from core rejuvenation, three from phase VI and none from phase V.

The samples are notable for the low numbers of tertiary flakes and the high proportion of primary ones, and for the lack of tiny flakes (only 20 flakes, 3.9% of the total, were shorter than 20 mm). Inevitably, there are always more small flakes among tertiary ones than among cortical flakes, hence the low representations of tertiary flakes and small flakes are interrelated. This absence of small flakes may reflect an excavation bias against the recovery of small flakes from ditch contexts, and gravitational selection may to a certain extent have favoured the deposition of larger flakes in the fill. The knapping strategies in this area may also have had some influence, since it is clear that a lot of the flakes do reflect primary trimming of nodules and core preparation, and that this was the most significant element in the creation of the debris. Nevertheless, it is the case that all flaking inevitably produces small flakes and chips. The ditch samples show a remarkable consistency between the phases although, given the residuality effect, there may be little or no chronological difference between the flakes in these horizons.

An overview of the average weight of unretouched flakes from different context groups (Table 10.34) emphasises the distinction between the flakes from features and other contexts, especially the Stepleton ditches. This overview is inevitably 'broad-brush', not least because it takes no account of the proportion of incomplete flakes in each sample, but it probably does provide statistics which reflect the greater number of primary and cortical waste flakes in the context groups with higher average weights.

While it is clear that non-cortical or partially cortical flakes were the most significant product used for the common tools (Figs 10.7–14), a few primary and many extensively cortical flakes were used as blanks for scrapers. It is equally clear that the choice of flake blanks for implements was highly selective. The abandoned flakes involved in the conjoin groups (Figs 10.21–41) include many examples which are superficially very similar to those used on site for edge-trimmed and serrated flakes, scrapers and piercers, yet which were not actually selected for use at all.

Cores (Fig 10.6)

The cores from the interiors of both enclosures were analysed in terms of their type (Clark *et al* 1960), maximum dimension, and weight, and the maximum length of surviving flake scars, and compared on this basis with those from other selected context groups, six of them 'early' context groups (1, 53, 71, 4, 37, and 64) and four of them 'later', more potentially mixed, context groups (7, 38, 10/11, and 68; Tables 10.35–38). Although not especially marked, there is perhaps an overall contrast in that cores from the lower ditch fills are larger and heavier and have longer surviving flake scar lengths. This could correlate in relevant areas with less intensive use of nodules when first obtained from the digging of the ditch segments – the cores then becoming 'lost' by incorporation in the lower ditch fills – and the more intensive use of nodules away from the ditches.

Allowing for relatively low numbers in the groups analysed, the core types are similar throughout, with the simple A2 (Fig 10.6: 10) and B2 classes of single- and double-platform cores predominant, and multi-platform cores (Fig 10.6: 12) surprisingly infrequent. It should be noted, however, that many of the class A and B cores retained truncated flake scars indicative of previous flaking from other platforms (Fig 10.6: 10), and that their present forms tend to be residual ones. The only class E cores came from the main enclosure interior and the inner Stepleton outwork, while class D cores (Fig 10.6: 11), again few in number, were more widely dispersed. An overall contrast is that those cores from the internal features and upper ditch fills tend to be smaller and lighter, but the numbers available from each context group are admittedly rather low for this kind of comparison.

The refitting study (see 10.2.6 below) throws considerably more light on the cores and their methods of reduction. The normal pattern is for the nodule to be opened by using a convenient projection or flat surface for the initial blow(s), leading to rapid establishment of a platform. Further reduction utilises the flaking face of the core as the next platform, and so on until the core is either exhausted or abandoned. Such alternate flaking involves simple rotation of the core as successive core faces become platforms and vice-versa. While there is some trimming and abrasion of the leading edge of the platforms to facilitate flake removals, there is no structured preparation of the platform as such.

Implements

Some 2766 artefacts were identified during analysis as having obvious modification consistent with their classification as implements (Table 10.39). This modification can be the result of use, as with the edge-gloss

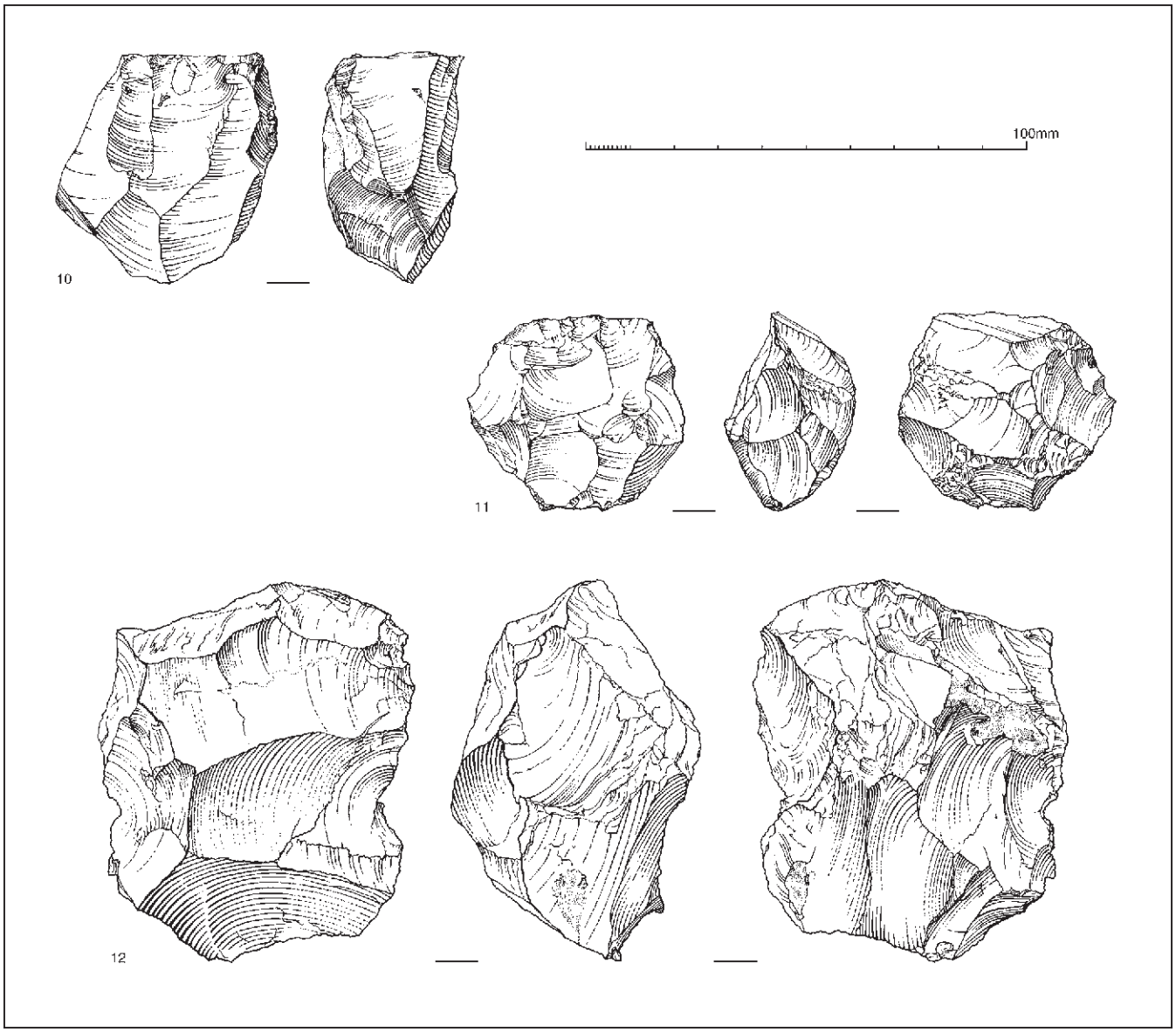

Fig 10.6 Cores, all from the main enclosure ditch on site H. Particulars in catalogue.

flakes and some of the edge-trimmed flakes, but in the main it arises from deliberate retouch which has resulted in recurrent, typologically recognisable tool-forms. Most of these artefacts can be categorised into a restricted range of formal types (eg scrapers) well known from the British Neolithic (Piggott 1954, 75–80), even if, as with the 'laurel-leaf' bifacials for example, their role and function remain obscure. The implements are dominated by scrapers, piercers, and edge-modified flakes, which comprise 68% by number (or 90% if the miscellaneous retouched pieces are excluded from the calculation), and 56% (or 87%) by weight.

The distribution across the hilltop is summarised by context group for the major implement categories in Table 10.40. The concentrations of implements correlate on the whole with the distribution of the total collection from the hilltop, but there is a certain amount of variability within the implement distribution itself. This is best exemplified by the percentage comparison between the implements from the internal features and elsewhere (Table 10.41). The only context groups containing sufficient implements for this comparison are either superficial ones or ones with relatively low numbers of implements, but, insofar as it goes, the contrast is quite marked and recurrent. The pits (context groups 1 and 53) produce much higher values for edge-modified flakes and lower values for scrapers, piercers, and miscellaneous retouched pieces.

Taken as a whole, edge-modified flakes are by far the most common tool-type in the assemblage and in reality were probably originally more common. This is because of the problems of identification. On the one hand the modified edges are very susceptible to damage and will frequently escape identification for that reason, and on the other hand the nature of the modification, such as short zones of serration, often requires examination under magnification to be detected.

Table 10.35 Core types from selected 'early' and 'later' context groups

The following information applies to Tables 10.35–10.38
'Early' context groups: 1 Neolithic features in the central area; 53 Neolithic features on the Stepleton spur; 71 middle Stepleton outwork, phases I–II; 4 main causewayed enclosure phase III; 37 long barrow phase III; 64 inner Stepleton outwork, phase III
'Later' context groups: 7 main causewayed enclosure phase VI; 38 long barrow phase VI; 10/11 main causewayed enclosure phase VIII/a and superficial levels; 68 inner Stepleton outwork phase VIII/a. The last two groups are liable to be of mixed chronological origin
Note: the group 64 and 71 totals are from the 1978 excavation season only

'Early' groups	*Core type*	*Group 1*	*Group 53*	*Group 71*	*Group 4*	*Group 37*	*Group 64*	*Total no.*	*Total %*
	A1	1			1			2	1.8
	A2	9	11	5	9	6	13	53	46.9
	B1						1	1	0.9
	B2	9	4	5	7	3	3	31	27.4
	B3	1		1	1			3	2.7
	C(3)	2	4	1	6	3	2	18	15.9
	C(4)				1			1	0.9
	D	1			1			2	1.8
	E	2						2	1.8
	Total	25	19	12	26	12	19	113	
'Later' groups		*Group 7*	*Group 38*	*Groups 10/11*	*Group 68*				
	A1	2		1				3	1.5
	A2	11	16	10	57			94	48.2
	B1			1				1	0.5
	B2	7	10	10	34			61	31.3
	B3		1	1	4			6	3.1
	C(3)	6	4	2	9			21	10.8
	C(4)	1			1			2	1.0
	D	1		3	2			6	3.1
	E				1			1	0.5
	Total	28	31	28	108			195	

Table 10.36 Maximum dimensions of cores from selected 'early' and 'later' context groups

'Early' groups	*Range i n mm*	*Group 1*	*Group 53*	*Group 71*	*Group 4*	*Group 37*	*Group 64*	*Total no.*	*Total %*
	30–39.9	1						1	1
	40–49.9	7	4		2			13	12
	50–59.9	7	1	2	3	1	1	15	13
	60–69.9	6	3	1	2	2	4	18	16
	70–79.9	3	5	1	6	4	6	25	22
	80–89.9	1	2	1	7	4	7	22	20
	90–99.9		2	2	2		1	7	6
	100–109.9			1	3			4	4
	110–119.9		2	3	-	1	-	6	5
	120 >			1	1			2	2
	Total	25	19	12	26	12	19	113	
'Later' groups		*Group 7*	*Group 38*	*Groups 10/11*	*Group 68*				
	30–39.9			2				2	1
	40–49.9	1		6	3			10	5
	50–59.9	8	5	7	16			36	18
	60–69.9	9	8	2	38			57	29
	70–79.9	6	6	7	20			39	20
	80–89.9	3	5	2	21			31	16
	90–99.9		3	1	6			10	5
	100–109.9	1	3	1	4			9	5
	110–119.9		1					1	1
	Total	28	31	28	108			195	

Table 10.37 Maximum surviving flake scar lengths on cores from selected 'early' and 'later' context groups

'Early' groups	*Length range in mm*	*Group 1*	*Group 53*	*Group 71*	*Group 4*	*Group 37*	*Group 64*	*Total no.*	*Total %*
	10–19.9	3	1				1	5	4
	20–29.9	6	3		3	2	1	15	13
	30–39.9	12	5	2	8	3	6	36	32
	40–49.9	2	5	4	5	2	5	23	20
	50–59.9	2	3	5	6	5	4	25	22
	60–69.9		2	1	4		1	8	7
	70>						1	1	1
	Total	25	19	12	26	12	19	113	
'Later' groups		*Group 7*	*Group 38*	*Groups 10/11*	*Group 68*				
	10–19.9			2				2	1
	20–29.9	10	2	10	16			38	20
	30–39.9	11	16	7	43			77	40
	40–49.9	5	6	6	28			45	23
	50–59.9	2	5	3	18			28	14
	60–69.9		2		2			4	2
	70>				1			1	1
	Total	28	31	28	108			195	

Table 10.38 Weights of cores from selected 'early' and 'later' context groups

'Early' groups	*Weight range in grams*	*Group 1*	*Group 53*	*Group 71*	*Group 4*	*Group 37*	*Group 64*	*Total no.*	*Total %*
	0–49.9	9	3		2		1	15	13
	50–99.9	8	3	2	3	1	3	20	18
	100–149.9	8	6		5	6	2	27	24
	150–199.9		3	1	3	1	8	16	14
	200–299.9		1	3	5	2	5	16	14
	300–399.9			1	4			5	4
	400–499.9		1	1	1	1		4	4
	500–999.9		2	4	2	1		9	8
	1000>				1			1	1
	Total	25	19	12	26	12	19	113	
'Later' groups		*Group 7*	*Group 38*	*Groups 10/11*	*Group 68*				
	0–49.9	3		8	10			21	11
	50–99.9	9	6	9	29			53	27
	100–149.9	8	8	5	31			52	27
	150–199.9	5	7	4	14			30	15
	200–299.9	1	4	2	21			28	14
	300–399.9	2	4		1			7	4
	400–499.9		1		2			3	2
	500–999.9		1					1	1
	Total	28	31	28	108			195	

Table 10.39 Total collection of retouched artefacts from the hilltop

	Number	*No. %*	*Weight in grams*	*Wt %*
Serrated-edge flakes	499	18	3747.0	7
Unretouched flakes with edge gloss	35	1	253.4	1
Edge-trimmed flakes (class A)	72	3	892.0	2
Edge-trimmed flakes	534	19	6542.3	12
Scrapers	608	22	16048.2	30
Piercers	138	5	2285.7	4
Leaf-shaped arrowheads	42	2	64.4	
Other arrowheads	2		3.1	
Laurel-leaf bifacials	6		90.9	
Polished flint axeheads (& fragments)	15	1	2174.1	4
Flakes from polished flint axeheads	23	1	164.3	
Knives	11		279.0	1
Picks/roughouts	5		577.6	1
Unclassified bifacial pieces	15	1	349.0	1
Rods	9		436.6	1
Fabricators	4		94.8	
Splintered piece	1		13.8	
Saw	1		10.3	
Backed flake	1		12.6	
Miscellaneous retouched pieces	745	27	19067.6	36
Total	2766		53106.7	

Thus the number of these flakes in the assemblage is probably an underestimate, in contrast to the next most prolific type, the scraper, which has distinctive traits which make non-identification less likely. The edge-modified flakes are divided into three major categories: serrated-edge flakes (Figs 10.7–9), edge-trimmed flakes (Figs 10.9–11), and unretouched flakes with edge-gloss.

Serrated-edge flakes

These flakes, sometimes known as microdenticulates (Bocquet 1980), have one or more zones of fine denticulation, the number of near-microscopic serrations per 10 mm varying within the same ranges recorded on other English Neolithic sites (Healey and Robertson-Mackay 1983, 5; Smith 1965, 91). As the illustrations show, there is considerable flexibility in the length and positioning of the serrated zones in relation to the available edges on the flakes selected, and in whether the serrated zone is convex, concave, straight, or a mixture. For more detailed analysis, the wholly complete examples were selected from four subsamples, comprising the pits in the central area (context group 1), the main enclosure ditch fills (context groups 3–11), the pits on the Stepleton spur (context group 53), and the Stepleton enclosure ditch fills (context groups 55–60) (Table 10.42).

The length, thickness, and length/breadth data for the 260 complete serrated-edge flakes are presented in Tables 10.43–45. Of the total 260, 198 (76%) are secondary flakes with some cortex. Only 5 flakes (2%) have faceted platforms. The figures indicate that flakes between 40–60 mm in length and 5–10 mm in thickness were preferred, with a distinct bias towards the selection of narrower, more blade-like shapes.

Looked at from the dorsal surface with the platform at the base, 127 flakes have the serrations on the right edge, 96 on the left edge, 14 on both edges, and one broad flake has serrations on its distal edge (Fig 10.7: 22). Overall, 161 flakes (62%) have clear signs of edge gloss in addition to the serrations.

The position of gloss was only recorded for the flakes in the samples from context groups 53 and 55–60. Of the 82 complete flakes, 50 have edge gloss. Forty-two of these have a single serrated edge with the gloss on the serrated area; seven are flakes with two serrated edges, and in four cases the gloss is only on one edge and in three cases on both (total = 49; details of one of the 50 were not recorded).

Ancillary retouch or serration is rarely found in combination with another tool form. There is one case of serrations and edge gloss on the right-hand edge of a flake, which is also an end scraper (HH76 820 from a phase VI deposit in the main enclosure); another with serrations and edge gloss on the left-hand edge of a flake which also supported a distal, bilaterally formed piercer (HH76 531 from a phase VIII/a deposit in the main enclosure). Three flakes which are serrated on the left-hand edge have blunting retouch down the opposite edge (HH76 1510 from a phase V context in the main enclosure); HH77 1844 and 2167 from pits in the central area), and one serrated-edge flake is on a flake from a polished flint implement, presumably an axehead (HH76 873 from a phase VI context in the main enclosure). Only one of the serrated-edge flakes from the measured sample is burnt.

Unretouched flakes with edge-gloss

The only modification observable on the 35 flakes in this category is the presence of pronounced gloss (Jensen 1994, 50–68; Saville 1981a, 126–32) on one or, in three instances, both edges. In four cases it was noted that there are possible traces of former serrations, now worn and/or damaged to the extent that they could not be positively identified. It seems probable that many of the flakes in this category are actually serrated-edge flakes on which the serrations have been damaged or otherwise obscured. Others, if not originally serrated, are likely to be related to the serrated-edge flakes in terms of function. Some 23 of these flakes, weighing 197 g, are complete, and analysis of their dimensions and shape shows them to be closely comparable to the serrated-edge flakes. More subjectively, they include some flakes of striking appearance, including some very elongated blades, and general appearance may have been a factor in being able to

Table 10.40 Occurrence of implements by major area subdivisions

Implement type	*Central area pits*		*Stepleton pits*		*Main enclosure ditch*		*Stepleton ditches*		*Long barrow ditches*		*Unstratified and miscellaneous*		*Remainder*		*Total*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
Serrated-edge flakes	160	41	62	36	117	17	69	11	8	6	38	9	45	15	499	18
Unretouched flakes with edge-gloss	5	1	7	4	2		13	2			4	1	4	1	35	1
Edge-trimmed flakes (class A)	22	6	5	3	21	3	4	1	4	3	11	3	5	2	72	3
Edge-trimmed flakes	83	21	44	25	163	23	99	15	15	11	76	19	54	18	534	19
Scrapers	43	11	24	14	146	21	183	28	46	35	94	23	72	24	608	22
Piercers	12	3	3	2	34	5	36	6	9	7	27	7	17	6	138	5
Leaf-shaped arrowheads	7	2			9	1	8	1			6	2	12	4	42	2
Other arrowheads					1						1				2	
'Laurel-leaf' bifacials	1		1		2		2								6	
Polished flint axeheads	2	1	2	1	3		4				1		3	1	15	1
Flakes from polished axeheads	3	1	3	2	3		2		1	1	2		9	3	23	1
Knives					6	1	4	1			1				11	
Picks					2		2						1		5	
Unclassified bifacial pieces					6	1	3				3	1	3	1	15	1
Rods			1		1		1		1	1	2		3	1	9	
'Fabricators'					2		1				1				4	
Splintered piece					1										1	
Saw													1		1	
Backed piece							1								1	
Misc retouched pieces	53	14	22	13	186	26	223	34	48	36	141	35	72	24	745	27
Total	391		174		705		655		132		408		301		2766	

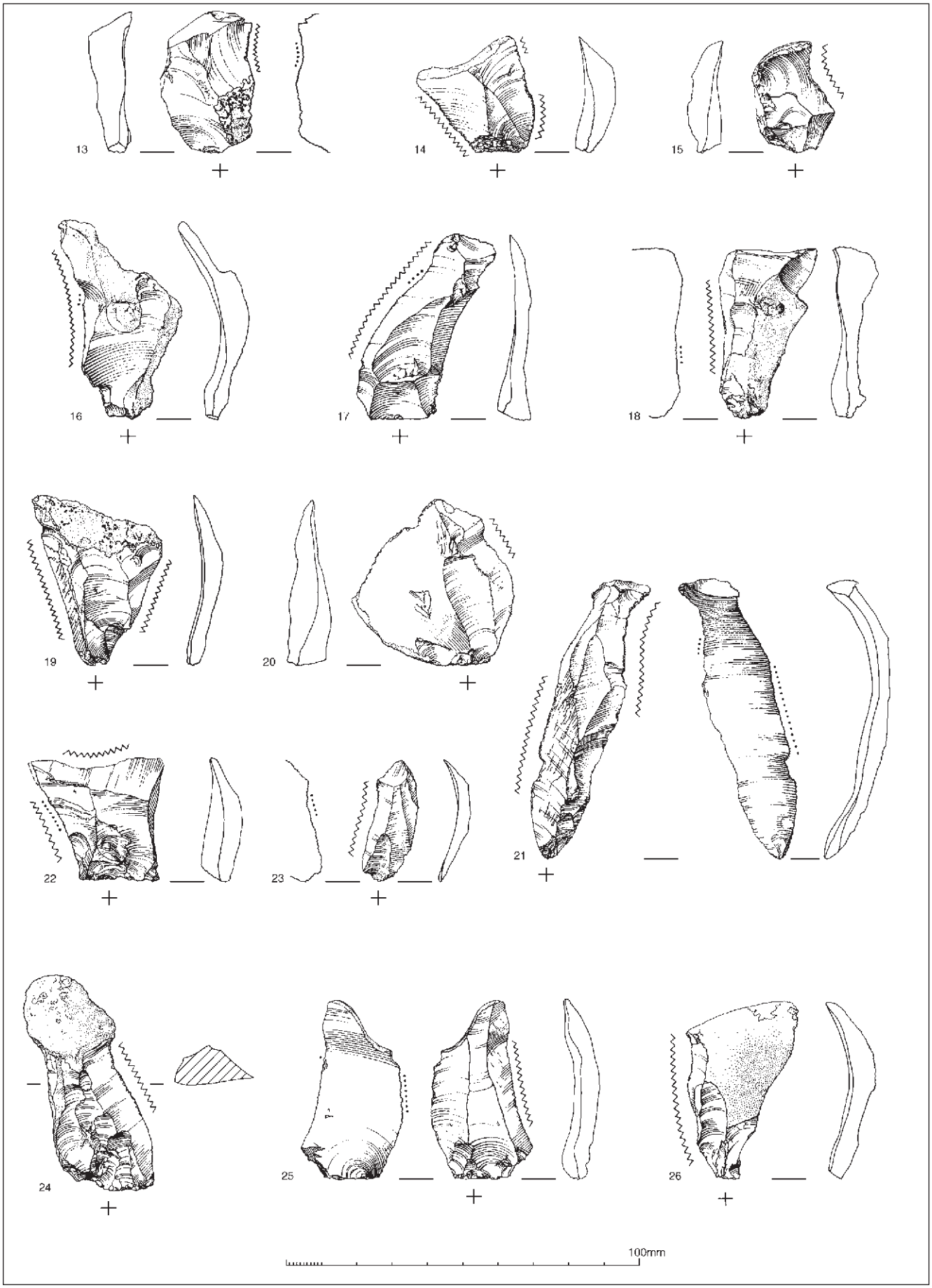

Fig 10.7 Serrated-edge flakes. All the illustrated examples are from Neolithic features on site N. The symbols on the illustrations (keyed in Fig 10.5) show the presence and position of edge gloss as well as the serrations; the symbols for gloss are placed against the dorsal or ventral surface as appropriate. Particulars in catalogue.

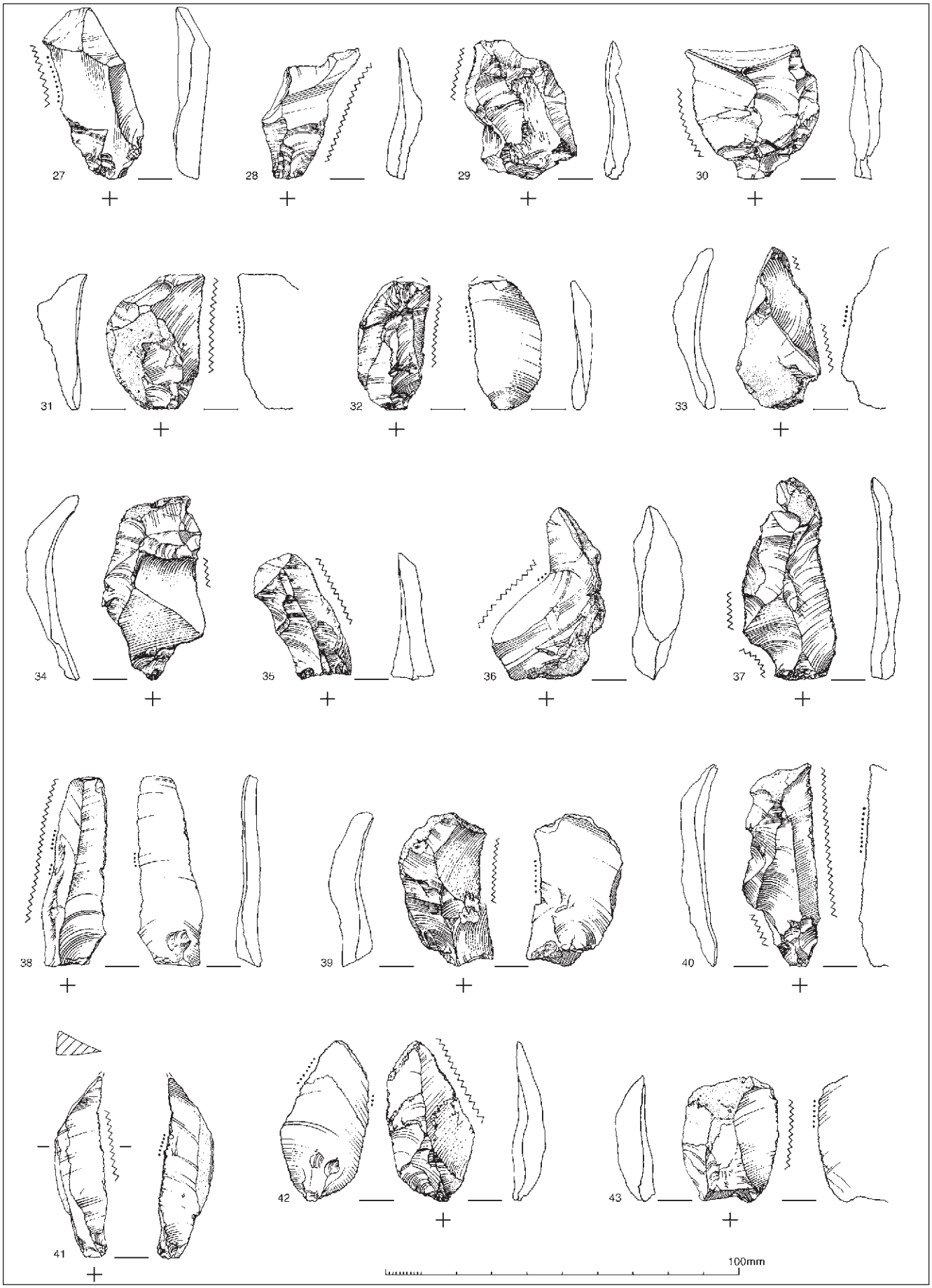

Fig 10.8 Serrated-edge flakes. All the illustrated examples are from Neolithic features on site N. The symbols on the illustrations (keyed in Fig 10.5) show the presence and position of edge gloss as well as the serrations; the symbols for gloss are placed against the dorsal or ventral surface as appropriate. Particulars in catalogue.

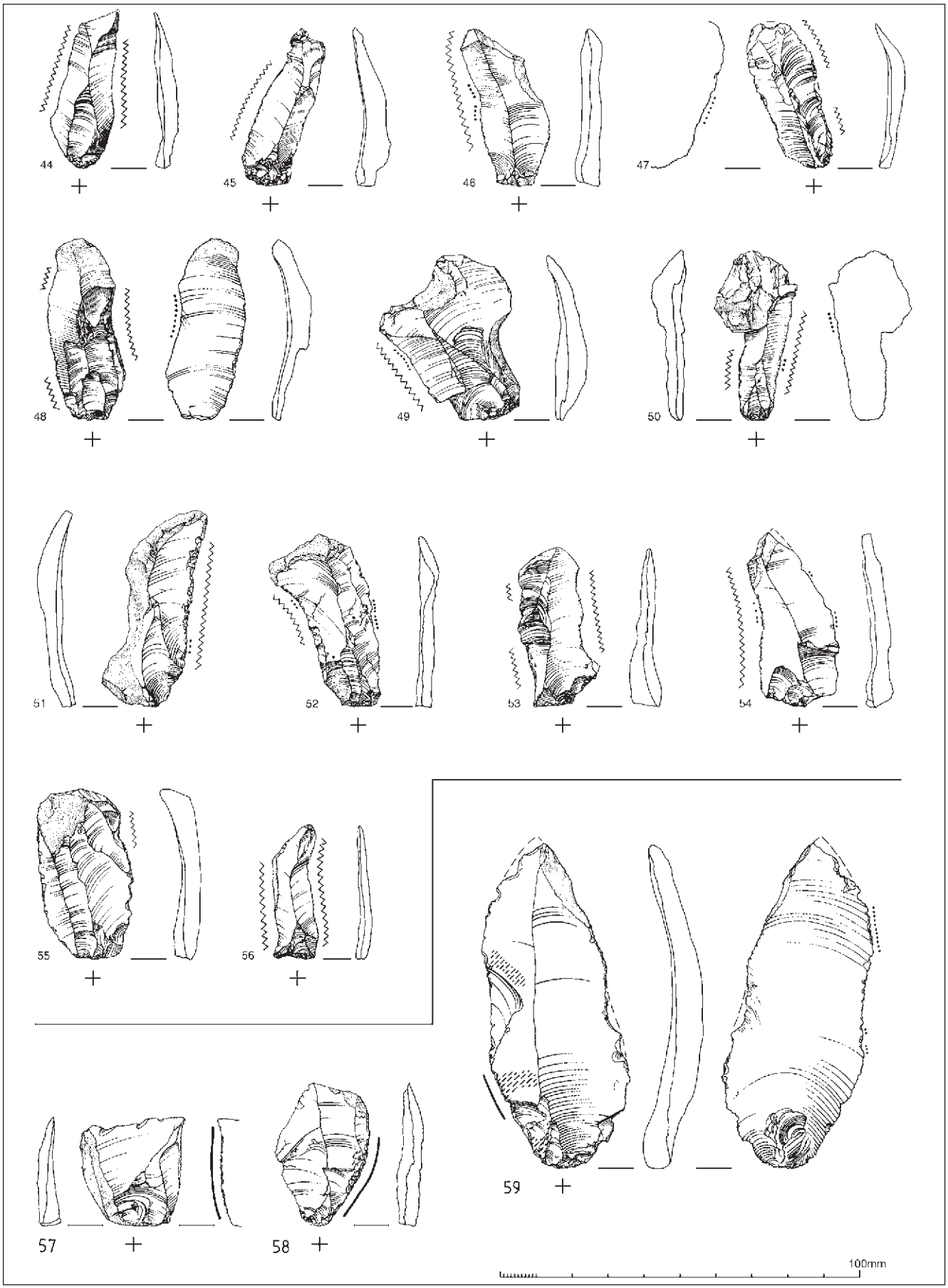

Fig 10.9 Serrated-edge flakes (44–56) and edge-trimmed flakes (57–59). All the illustrated examples are from features on site N. The symbols on the illustrations (keyed in Fig 10.5) show the presence and position of edge gloss as well as the serrations; the symbols for gloss are placed against the dorsal or ventral surface as appropriate. Particulars in catalogue.

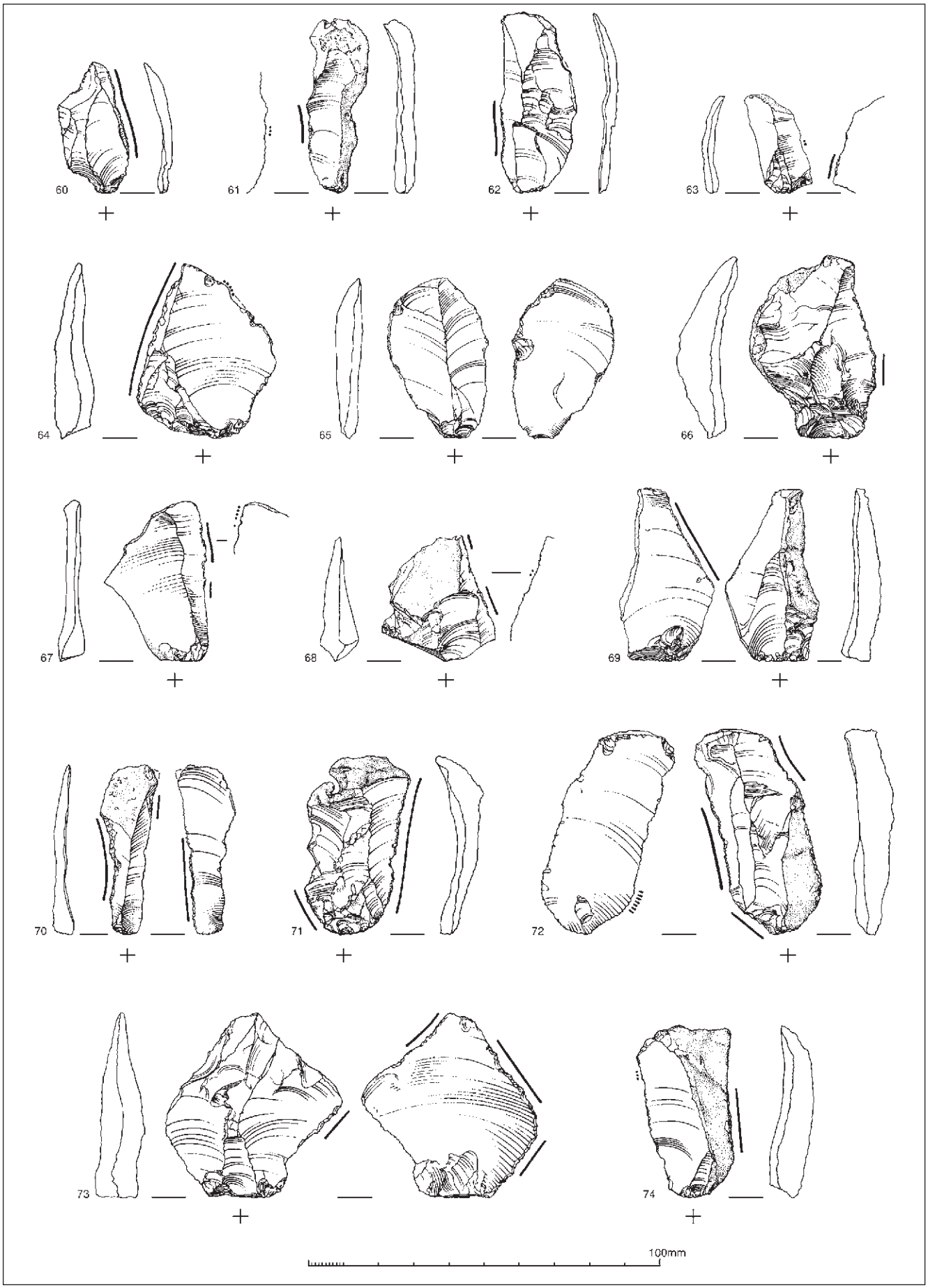

Fig 10.10 Edge-trimmed flakes. All the illustrated examples are from features on site N. Particulars in catalogue.

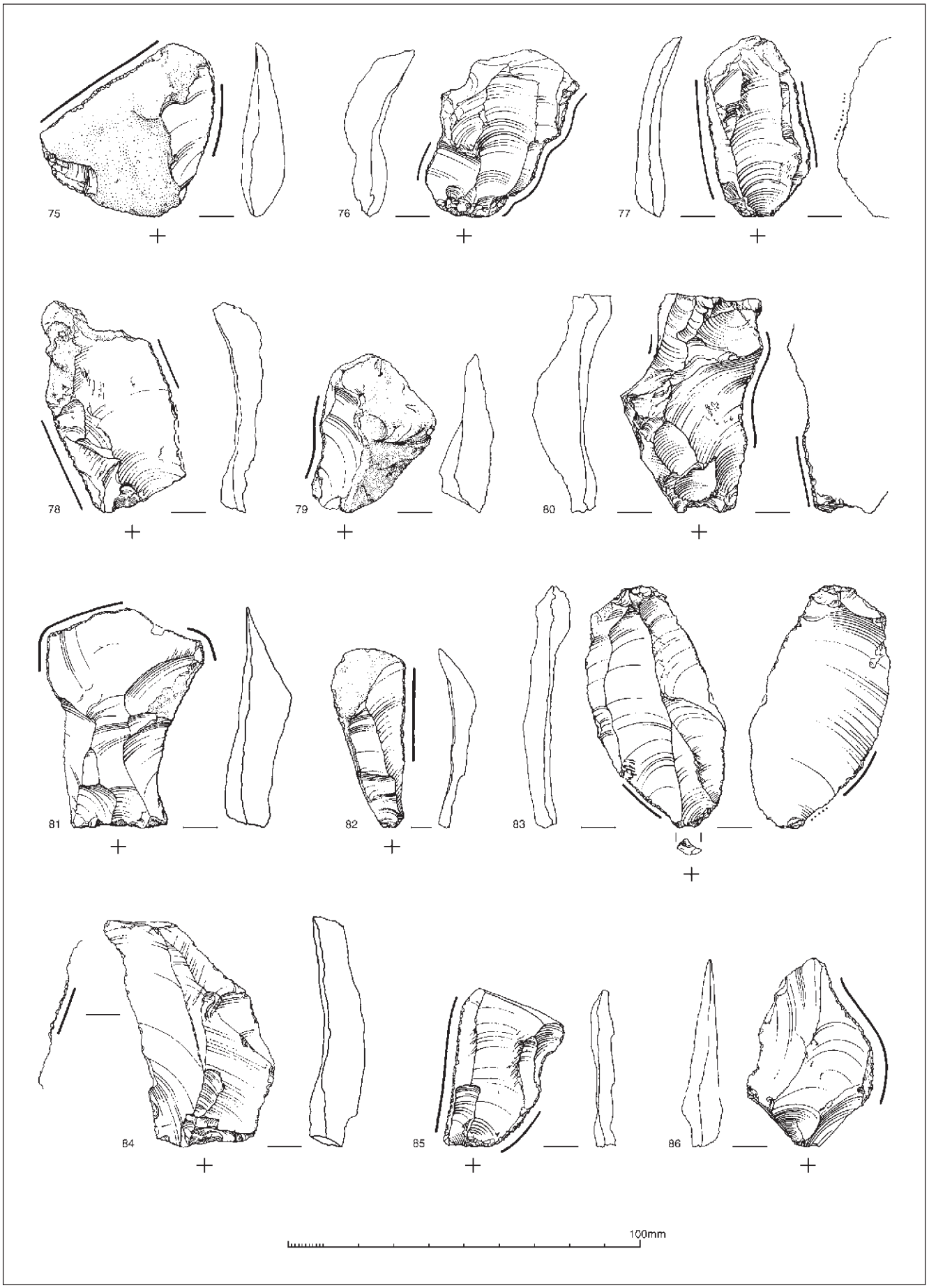

Fig 10.11 Edge-trimmed flakes. All the illustrated examples are from features on site N. Particulars in catalogue.

Table 10.41 Comparison by percentages of the major implement categories in those context groups with sixty or more artefacts in these categories

Group	*Serrated-edge and edge gloss*	*Edge-trimmed*	*Scrapers*	*Piercers*	*Misc retouched*	*Total number*
1. Central area features	44%	28%	11%	3%	14%	378
4. Main enclosure phase III	13%	33%	18%	3%	32%	60
6. Main enclosures phase V	34%	23%	15%	5%	23%	62
7. Main enclosure phase VI	27%	31%	23%	3%	16%	210
10. Main enclosure phase VIII/a	11%	31%	17%	7%	35%	101
11. Main enclosure unstratified and miscellaneous	5%	21%	27%	8%	39%	168
46. Central area unstratified and miscellaneous	11%	22%	24%	6%	37%	288
53 Stepleton spur features	41%	29%	14%	2%	13%	167
59. Stepleton enclosure phase VI	43%	23%	20%	6%	8%	65
60. Stepleton enclosure phase VIII/a	18%	38%	21%	2%	21%	61
68. Inner Stepleton outwork phase VIII/a	2%	4%	40%	8%	46%	250
82. Stepleton spur unstratified and miscellaneous	11%	22%	25%	8%	34%	103
Mean	22%	24%	22%	5%	27%	

Table 10.42 Serrated-edge and edge-trimmed flakes from selected context groups and the sample sizes of wholly complete examples (weights in grams)

Group 1 Neolithic features in central area, groups 3–11, main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–60 Stepleton enclosure ditch

	Serrated-edge flakes				*Edge-trimmed flakes*			
	Total no.	*Total weight*	*Complete no.*	*Complete weight*	*Total no.*	*Total weight*	*Complete no.*	*Complete weight*
Group 1	160	1073	100	775	103	978	52	589
Groups 3–11	119	921	78	700	184	1965	106	1328
Group 53	62	500	39	363	49	890	33	689
Groups 55–60	63	450	43	376	69	1129	44	876
Total	404	2944	260	2214	405	4962	235	3482

distinguish these pieces during analysis from the mass of unmodified flakes. Such bias is a standard analytical problem and need not be over-emphasised here, except that this is a difficult tool category to identify and the bias may have operated variably through the sorting process and influenced the apparently unusual distributional pattern. The fact that more of the flakes in this category come from contexts outwith the main enclosure may be because these contexts were analysed at a later stage of the post-excavation process when greater familiarity with the assemblage was achieved.

Edge-trimmed flakes

These are flakes which exhibit distinct edge-modification to a lesser or greater extent, ranging from regular edge-retouch (normally non-invasive) to edge-damage assumed to be consistent with use. A fuller definition has been given elsewhere (Saville 1981a, 126) but some further discussion is necessary in view of the unavoidably subjective element of the definition. Those with experience of lithic analysis will appreciate the difficulties. Irrespective of the fact that the Hambledon Hill flints are not in a condition to respond to microwear studies, it would not be practical to undertake such detailed examination of the 608 artefacts in this grouping. The typological approach is here being used as a compromise, which attempts to deal with the observation that so many flakes exhibit edge modification and that this recurrent trait has meaning in terms of the production and use of flakes at Hambledon Hill.

A proportion of the flakes in this category have quite regular, semi-blunting trimming (eg Fig 10.9: 58; Fig 10.10: 60, 69, 71; Fig 10.11: 75–80, 82, 85), equating them with what have previously been described as ‘class A utilised’ flakes (Smith 1965, fig 39). These 72 pieces are listed separately in most of the tables and in all the archive records, but there is no hard and fast subdivision between them and the other edge-trimmed flakes and they should not be regarded as a distinct type so much as at one end of a spectrum.

The same context groups as for the serrated-flakes were used to obtain subsamples of the edge-trimmed flakes (Table 10.42). The length, thickness, and

Table 10.43 Length ranges of complete serrated-edge and edge-trimmed flakes from selected context groups

Group 1 Neolithic features in central area, groups 3–11, main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–60 Stepleton enclosure ditch

	Serrated-edge flakes						*Edge-trimmed flakes*					
Length in mm ranges	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*
20–29.9	2			1	3	1	5	1	1		7	3
30–39.9	26	8	2	6	42	16	7	17	3	3	30	13
40–49.9	42	36	14	17	109	42	19	37	7	9	72	30
50–59.9	23	23	18	11	75	29	16	31	15	14	76	32
60–69.9	6	6	2	6	20	8	4	17	4	10	35	15
70–79.9		5	3	2	10	4	1	1		2	4	2
80–89.9	1				1				2	5	7	3
90–99.9								2	1	1	4	2
Total	100	78	39	43	260		52	106	33	44	235	

Table 10.44 Thickness ranges of complete serrated-edge flakes and edge-trimmed flakes from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–60 Stepleton enclosure ditch

	Serrated-edge flakes						*Edge-trimmed flakes*					
Thickness in mm ranges	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*
00–4.9	12	11	4	3	30	12	8	9	4	2	23	10
05–9.9	70	52	27	30	179	69	31	62	16	25	134	57
10–14.9	15	13	8	9	45	17	12	31	7	12	62	26
15–19.9	3	2	–	1	6	2	–	2	3	4	9	4
20–24.9							1	2	3	1	7	3
Total	100	78	39	43	260		52	106	33	44	235	

Table 10.45 Length/breadth index values of complete serrated-edge flakes and edge-trimmed flakes from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–60 Stepleton enclosure ditch

	Serrated-edge flakes						*Edge-trimmed flakes*						
L/B index	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–60*	*Total no.*	*Total %*	*Shape*
0.6–1.0	6	3	1	4	14	5	3	10	3	2	18	8	Broad
1.1–1.5	27	14	14	6	61	23	23	38	17	19	97	41	Medium/ broad
1.6–2.0	45	33	13	17	108	42	18	41	10	16	85	36	Medium/ narrow
2.1–2.5	15	20	9	10	54	21	6	14	3	3	26	11	Narrow
2.6>	7	8	2	6	23	9	2	3		4	9	4	Very narrow
Total	100	78	39	43	260		52	106	33	44	235		

length/breadth data for the 235 complete flakes are presented in Tables 10.43–45. Of the total 235, 177 (75%) are secondary flakes with some cortex. Only ten flakes (4%) have faceted platforms. The figures indicate that flakes between 40–60 mm in length and 5–10 mm in maximum thickness were preferred, with shapes predominantly in the medium/broad, medium/narrow ranges.

The positioning of the edge-trimming was only consistently recorded for flakes from Neolithic pits on the Stepleton spur and from the Stepleton enclosure ditch, comprising 77 cases: 23 have trimming on the right edge; 26 on the left edge; 21 on both lateral edges; one on a broad distal edge; two on the right edge and the distal edge; two on the left edge and the distal edge; and two on both lateral edges and the distal edge. Overall, 49 flakes (21%) have clear signs of edge gloss in addition to the trimming.

The edge-trimmed flakes present some contrasts with the serrated-edge flakes. The average weights for the complete examples of 14.8 g for edge-trimmed, 8.5 g for serrated-edge, and 8.6 g for edge-gloss, indicate that, in general, larger and/or chunkier flakes are used for the edge-trimmed. Twenty-two per cent of the edge-trimmed flakes are longer than 60 mm, as opposed to only 12% of the serrated flakes and 33% have a maximum thickness greater than 10 mm, as opposed to only 19% in the case of the serrated-edge flakes. The proportion of true blades used as blanks for the serrated flakes (30%) is double that for the edge-trimmed ones (15%). The blanks used for these edge-modified flakes may also be compared to the samples of unretouched flakes analysed in the previous section, from which it is clear, as might be expected, that on the whole it was larger and narrower flakes which were selected for modification.

The illustrated edge-trimmed flakes (Figs 10.9–11) are all from the central area, mostly from the fill of Neolithic features.

Scrapers

In total 608 scrapers are present in the whole assemblage, with a fairly even distribution, relatively speaking, throughout the context groups (Tables 10.40–41). Any apparent accumulation of scrapers in miscellaneous and superficial contexts is probably to some degree a factor of the relative indestructibility and ease of recognition of this tool type.

For analysis a subset of 386 scrapers was selected using context groups shown in Table 10.46. Typologically, this category is dominated by simple end scrapers with a convex scraping edge at the distal end of a bulbar flake. Blanks are normally plain apart from the scraping edge, but occasional ancillary retouch does occur (Fig 10.12: 92). Extended-end scrapers are variants where, largely as a result of the morphology of the flake blank, the retouch of the scraping edge extends down one or both lateral edges to a lesser or greater extent. End-and-side scrapers (Fig 10.13: 104) are similar, but have a more pronounced angle between the distal and lateral retouch, while remaining basically end scrapers rather than side scrapers.

Table 10.46 Scrapers from selected context groups and the sample sizes of wholly complete, measured examples (only complete scrapers on bulbar flakes with intact platforms were measured); weights are in grams

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–61 Stepleton enclosure ditch, groups 63–69 inner Stepleton outwork ditch

	Type	*Group1*	*Groups 3–11*	*Group 53*	*Groups 55–61*	*Groups 63–69*	*Total no.*	*Total %*	*Total wt*	*Mean wt*
Total scrapers	End	33	100	18	22	62	235	61		
	Extended end	2	23	4	18	41	88	23		
	Double end	1	1			1	3	1		
	End & side(s)	3	6		1	4	14	4		
	Double end & side					1	1			
	Side	2	9		2	12	25	6		
	Side & base		1				1			
	Disc		1			2	3	1		
	Unclassified	2	5	2		7	16	4		
	Total	43	146	24	43	130	386			
Complete scrapers	End	19	80	15	18	42	174	61	4588	26
	Extended end	2	20	3	17	33	75	26	2112	28
	End & side	2	4		1	2	9	3	300	33
	Side	1	8		1	10	20	7	545	27
	Disc					1	1		4	
	Unclassified		3	1		2	6	2	170	28
	Total number	24	115	19	37	90	285			
	Total weight	494	3111	523	1201	2390			7719	27

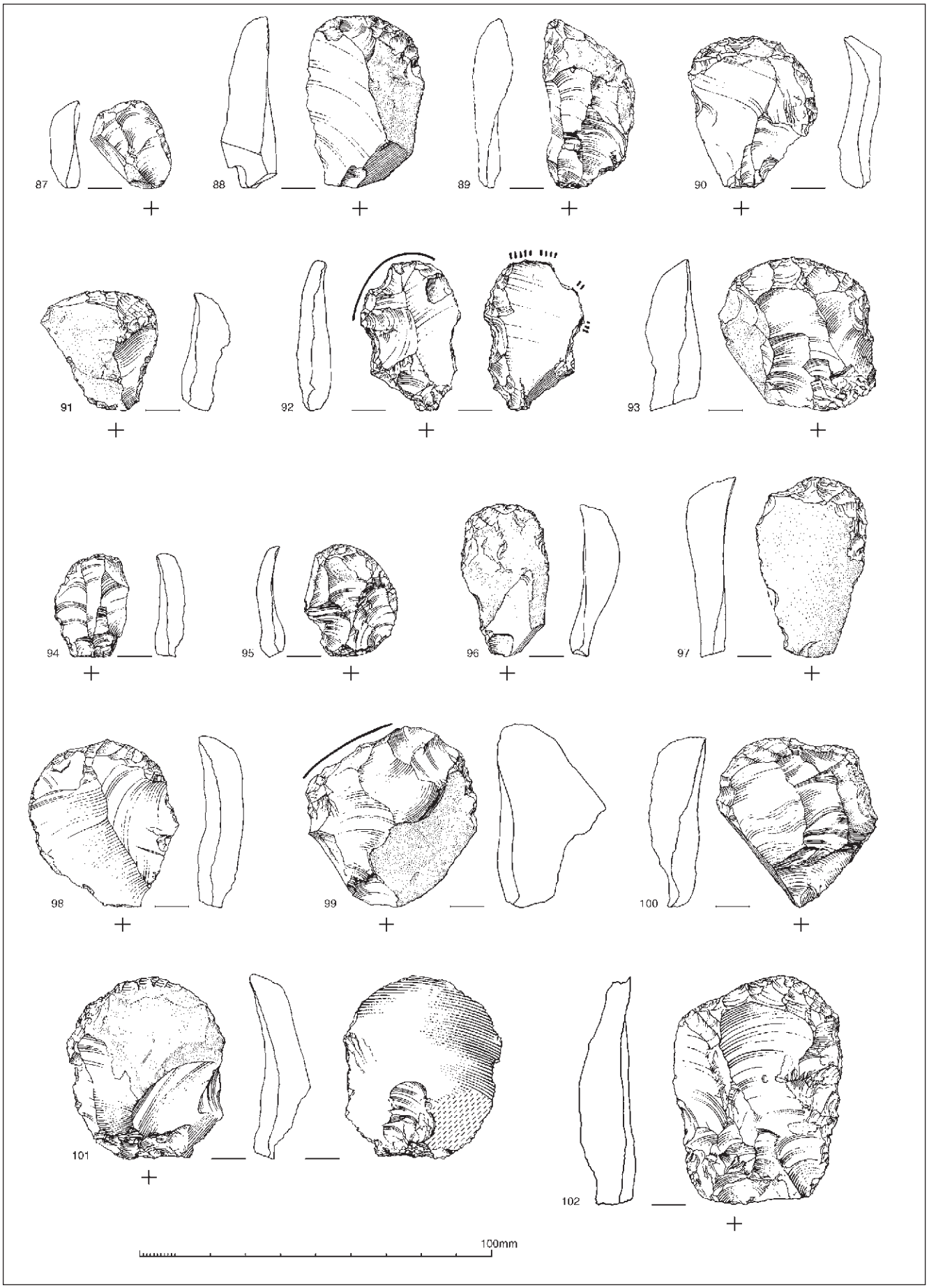

Fig 10.12 Scrapers. All the illustrated examples are from features on site A. Particulars in catalogue.

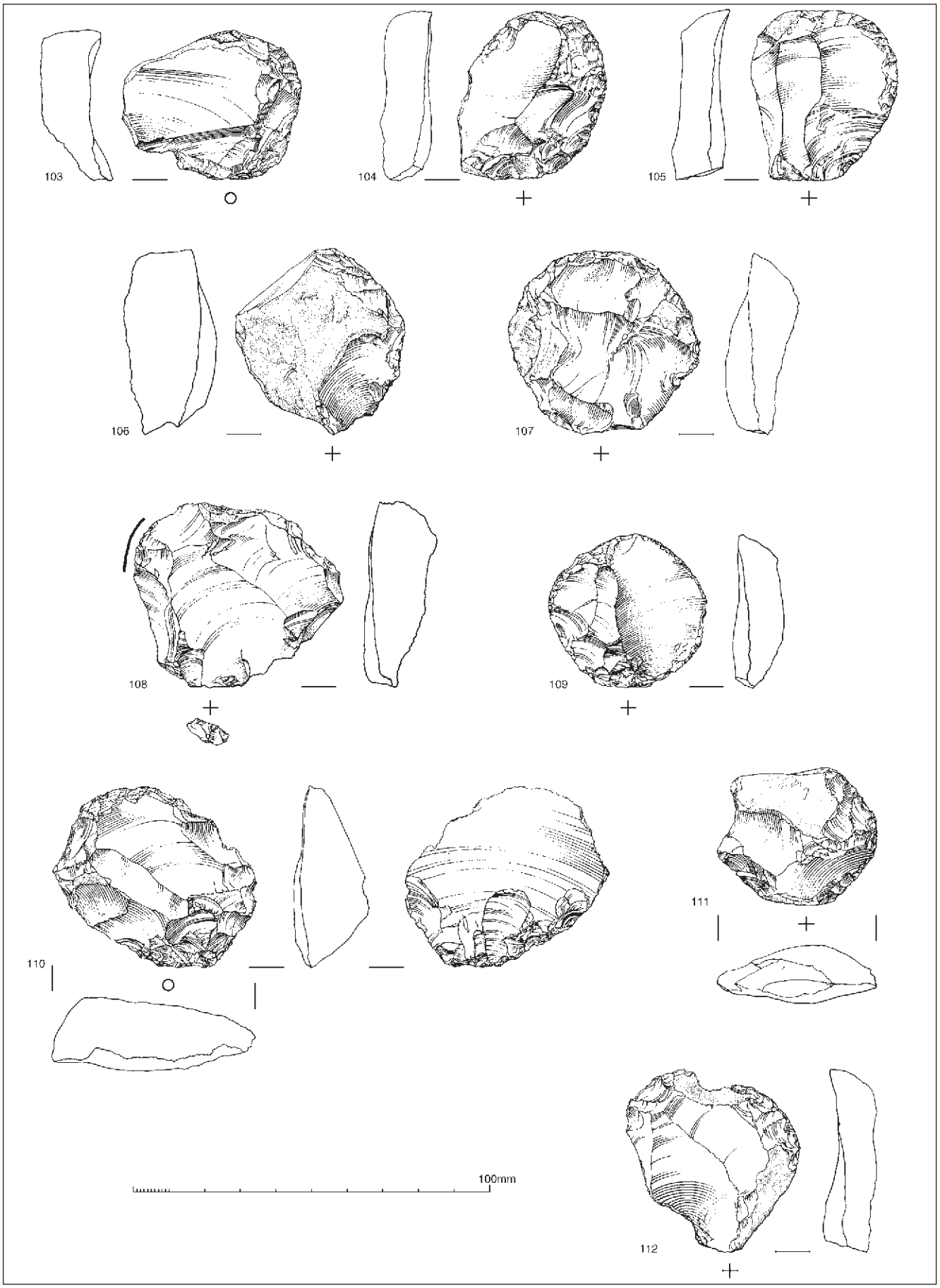

Fig 10.13 Scrapers. 104, 107 and 103 are from features on site A, the remainder are from the main enclosure ditch. Particulars in catalogue.

Table 10.47 Length ranges of complete scrapers from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–61 Stepleton enclosure ditch, groups 63–69 inner Stepleton outwork ditch

Length in mm ranges	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–61*	*Groups 63–69*	*Total no.*	*Total %*
20–29.9	2	3			5	10	4
30–39.9	2	12	2	3	16	35	12
40–49.9	13	48	8	11	29	109	38
50–59.9	6	34	5	17	26	88	31
60–69.9	1	14	2	1	10	28	10
70–79.9		4	2	1	2	9	3
80–89.9				4	2	6	2
Totals	24	115	19	37	90	285	

Table 10.48 Thickness ranges of complete scrapers from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–61 Stepleton enclosure ditch, groups 63–69 inner Stepleton outwork ditch

Thickness in mm ranges	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–61*	*Groups 63–69*	*Total no.*	*Total %*
05–9.9	7	32	4	4	28	75	26
10–14.9	11	50	8	19	41	129	45
15–19.9	6	22	5	11	10	54	19
20–24.9		9	2	2	9	22	8
25>		2		1	2	5	2
Total no.	24	115	19	37	90	285	

Table 10.49 Length/breadth index values of complete scrapers from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–61 Stepleton enclosure ditch, groups 63–69 inner Stepleton outwork ditch

L/B index	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–61*	*Groups 63–69*	*Total no..*	*Total %*	*Shape*
0.6–1.0	4	35	4	10	25	78	27	Broad
1.1–1.5	14	59	10	23	53	159	56	Medium/broad
1.6–2.0	5	21	4	4	12	46	16	Medium/narrow
2.1–2.5	1		1			2	1	Narrow
Total	24	115	19	37	90	285		

Double-end scrapers are a further variant with a convex scraping edge at the proximal as well as the distal end. Taking all these categories together, they represent 88% of all the scrapers in the subset.

Other types are side (Fig 10.13: 106, 108 and 111) and rare disc scrapers, and those scrapers which are otherwise atypical or unclassifiable. The latter include an incomplete scraper on a flake from a polished flint axehead (ST81 3004 from the phase III fills of the inner Stepleton outwork) and five scrapers on what appear to be thermal rather than struck flakes, but which are otherwise conventional convex-edge types. Scrapers with denticulated edges, ie basically convex end scrapers but with pronounced undulation between flake scars (Saville 1981b, 9), are rare and are included in the atypical category: ST78 2633 from a pit on the Stepleton and ST78 372 and 621 and ST79 410 from the phase VIII/a fills of the inner Stepleton outwork. Other oddities include a side-and-base scraper (Fig 10.13: 103), a scraper with a straight and pointed edge (HH74 461 from the phase VIII/a fills of the main enclosure) and what appears to be a scraper with a slightly concave edge (ST78 134 from the phase VIII/a fills of the inner Stepleton outwork). Apart from the pointed scraper just mentioned, only three have retouched edges which are straight rather than convex, and these are all catalogued as end scrapers rather than truncated flakes, because of the invasive rather than blunting nature of the retouch.

Twelve scrapers have prepared bases, in the sense of post-flake modification to flatten the bulb or otherwise thin the flake at the butt end. These comprise an

Table 10.50 Scraping-edge angles of all scrapers with complete scraping edges from selected context groups

Group 1 Neolithic features in central area, groups 3–11 main enclosure ditch; group 53 Neolithic features on Stepleton spur, groups 55–61 Stepleton enclosure ditch, groups 63–69 inner Stepleton outwork ditch

Angle range in degrees	*Group 1*	*Groups 3–11*	*Group 53*	*Groups 55–61*	*Groups 63–69*	*Total no.*	*Total %*
20–40°					1	1	
20–50°		1				1	
30–40°		2	1		4	7	2
30–50°		6		1	3	10	3
30–60°		1				1	
30–90°		1				1	
40–50°	3	10	4	7	9	33	10
40–60°	4	15	6	5	22	52	16
40–70°	1	7			2	10	3
40–80°		5			1	6	2
50–60°	4	17		5	16	42	13
50–70°	7	19	3	8	25	62	19
50–80°	2	11		1	5	19	6
50–90°		4				4	1
60–70°	1	5	2	3	3	14	4
60–80°	7	10	3	7	12	39	12
60–90°	4	5			1	10	3
70–80°		3			1	4	1
70–90°	2	2				4	1
Total	35	124	19	37	105	320	

end-and-side scraper (HH75 616 from a pit in the central area; one end scraper (Fig 10.13: 110) from phase III in the main enclosure ditch and one side scraper (HH76 871) from a superficial context in the same ditch, extended-end (ST81 1304), one end-and-side (ST81 779, and one side scraper (ST81 2440) from phases IV, VI and III in the Stepleton enclosure ditch, and, from the inner Stepleton outwork, an end scraper (ST79 845) from phase V, another (ST79 2111) from phase VIII/a), two extended-end scrapers (ST79 2033, ST78 1613) from phases V and VIII/a, one side scraper (ST78 914) from phase VII/a , and one atypical scraper or denticulate (ST79 410) from phase VIII/a. On the last of these the 'prepared base' flaking is through the original cortication.

The extended-end scrapers include five which could be classed size-wise as 'thumb' scrapers, short stumpy scrapers with extensive lateral retouch, all of which come from the phase VIII/a fills of the inner Stepleton outwork (ST78 784, 785, 2527, 2529 – all segment 8 – and ST78 1136 – segment 6), though quite small, short, end scrapers could occur in most contexts (eg Fig 10.12: 87 and 94). None of these small scrapers has the regular, shallow, invasive retouch typical of classic 'Beaker' scrapers (Clark 1933, 272; Smith 1965, 107), although the five 'thumb' scrapers are on relatively thin flakes and do have comparatively shallow angles. There are also two scrapers which have two-phase cortication, that is the scraper-edge retouch considerably post-dates the production of the flake blank, from a superficial context in the main enclosure (HH76 861) and phase VIII/a in the inner Stepleton outwork (ST78 1613).

For metrical purposes all the complete scrapers on bulbar flakes with intact platforms were isolated as in Table 10.46. One of the disc scrapers is included in this group of 285 because the retouch was, unusually, all inverse, and so only affected the dorsal surface of the butt, leaving the bulb and platform otherwise intact. Tables 10.47–49 show the preferred length for the scrapers as 40–60 mm, the preferred thickness as 10–15 mm, and the preferred shape as medium/broad.

From the selected sample of 386 complete scrapers a total of 330 have intact striking platforms, only seven of which (2%) are faceted. Four of the 386 scrapers are burnt, and five are on thermal rather than struck flakes. Of the measured sample of 285 scrapers, 227 (80%) are on flakes retaining some cortex.

320 of the scrapers have a scraping edge intact enough for a calculation of the scraping-edge angle (Table 10.50), using a series of overlapping angle-ranges (Saville 1981b, 9). These data demonstrate a broad spread of scraping-edge angles without any dominant preference, although scrapers with basically low angles (50° or less) are rather few (*c* 15%), while scrapers with steeper angles (50° or more) are much more common (*c* 60%). The contexts of the 52 low-angled scrapers were investigated and found to belong to the following context groups (numbers of scrapers in brackets): Neolithic pits in the central area (3);

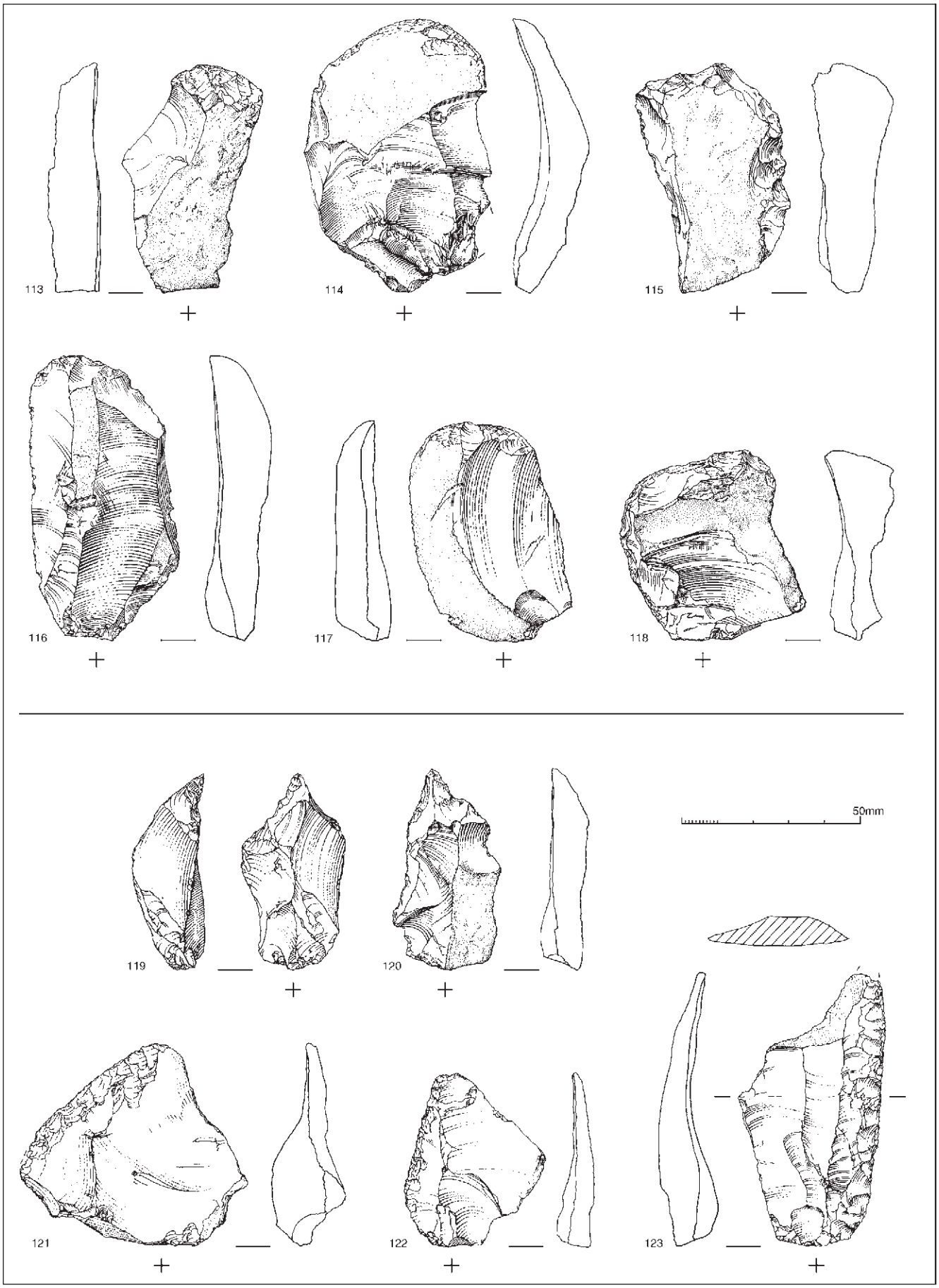

Fig 10.14 Scrapers. 115 and 118 are from features on site A, the remainder are from the main enclosure ditch. Piercers (119–20) and knives (121–3). Particulars in catalogue.

phases I–II in the main enclosure ditch (1); phase III in the main enclosure ditch (2); phase V in the main enclosure ditch (1); phase VI in the main enclosure ditch (7); phase VII/a in the main enclosure ditch (3); phase VIII/a in the main enclosure ditch (2); superficial contexts in the main enclosure ditch (3); Neolithic features on the Stepleton spur (5); phase V in the Stepleton enclosure (1); phase IV in the Stepleton enclosure (2); phase VI in the Stepleton enclosure (3); phase VIII/a in the Stepleton enclosure (2); phase V in the inner Stepleton outwork (1); phase VII/a in the inner Stepleton outwork (3); and phase VIII/a in the same outwork (13). Thus at Hambledon it appears unlikely that this trait can be correlated in any straightforward fashion with any trend towards lowering of scraper-edge angles through time.

The illustrated scrapers (Figs 10.12–14) are all from the central area, either from the Neolithic features or from the main enclosure ditch fills (mainly phase VI).

Piercers

These are implements with one or more pointed projections formed by deliberate modification. They are normally on flake blanks. In many cases the modification by trimming or by more pronounced retouch enhances a natural projection on the blank. The very nature of the tool makes it vulnerable to damage and hence potential non-recognition. The total of 136 piercers may therefore under-represent the importance of this tool-type, with other examples hidden within the miscellaneous retouched pieces or the incomplete unretouched flakes. Normally there is little sign of obvious wear, but three piercers have points which were worn smooth or more noticeably abraded (HH76 509 from phase VI in the main enclosure; HH77 864 from a natural feature in the central area; and ST78 1616 from a Neolithic feature on the Stepleton spur).

The Hambledon piercers are overwhelmingly of the simple, distally pointed type, with the point formed by unilateral or bilateral retouch on the dorsal face. The two illustrated examples (Fig 10.14: 119–120) are both distal piercers with bilaterally retouched points. These two have quite pronounced retouch on relatively thick flakes, producing robust points. Other examples may have much more restricted retouch and thinner points. A few examples have additional inverse retouch at the point and several have ancillary trimming elsewhere on the blank. One of the distally pointed piercers has the point formed by the oblique truncation of a blade (HH75 309 from phase VI in the inner east cross-dyke) and another has a double-pointed distal end (HH74 997 from a Neolithic feature in the central area).

Apart from the simple, distal piercers, there are occasional examples with a point formed on a lateral flake edge (HH74 979 from a Neolithic pit in the central area; HH75 1107 from phase VII/a in the main enclosure; HH77 1661 from the topsoil over the long barrow); or at the proximal end of a flake (ST79 929 from phase VIII/a in the inner Stepleton outwork).

There are six instances of true borers, with alternate retouch at the distal point (HH76 34 from phase VIII/a in the main enclosure; HH76 234 from a recent quarry in the central area; HH76 947 from a superficial context in the main enclosure; ST78 804 from the topsoil on the Stepleton spur; ST79 1035 from phase VIII/a in the inner Stepleton outwork and ST79 2328 from the bank area of the inner Stepleton outwork). One piercer has a triangular-sectioned point worked on all three faces (ST81 2619, unstratified on the Stepleton spur). There are five instances of 'spurred' piercer types (Smith 1965, 105), with a short, pointed projection from a zone of scraper-like retouch (ST78 1707 and ST79 12 from phase VIII/a in the inner Stepleton outwork; ST80 300 from phase VIII/a in the Stepleton enclosure; ST80 476 from a superficial context in the inner Stepleton outwork; and ST80 2119 from phase VI in the Stepleton enclosure ditch).

A small group of seven piercers, almost all from Stepleton, resemble or approach the classic late Neolithic/Bronze Age forms (Saville 1978 and 1981b, 9), with elongated, thick points (HH76 2017 from phase III in the main enclosure; ST78 372, ST79 63, ST79 480 and ST79 929 all from phase VIII/a in the inner Stepleton outwork; ST78 1277 from Saxon grave 12; and ST79 1518 from phase VII/a in the inner Stepleton outwork).

One piercer is formed on a core (ST78 609 from phase VIII/a in the inner Stepleton outwork); one on a flaked lump (ST79 480 from the same context group); one on a thermal lump (ST79 1727 from phase VIII/a in the outer Stepleton outwork); three on thermal flakes (HH75 890 from a superficial context in segment 8 of the main enclosure; HH77 493 from phase VII/a in the same segment; ST80 635 from phase VIII/a in the inner Stepleton outwork); and two on flakes from polished flint axeheads (HH76 5 from a superficial context on site G; ST80 300 from phase VIII/a in the Stepleton enclosure. Two piercers are formed on large, heavy flakes, and almost verge on the pick category, including one which is bifacially retouched (HH77 864 from a natural hollow on site N).

Finally, three piercers have the retouch forming the points struck through the surface discolouration of flakes which were being reused at a much later date (HH74 460 from phase VIII/a in the main enclosure; ST78 64 unstratified, and ST78 188 from phase VIII/a in the inner Stepleton outwork).

Leaf-shaped arrowheads

Only 42 of these distinctive projectile points were found (Table 10.51). Few are wholly complete and several are represented only by small segments. No conjoining segments were noted among those recovered, but in many cases the missing broken fragments would have been too small for recovery without sieving.

The eleven most intact examples (Table 10.51) have relatively minor edge damage or slight breaks at the distal and/or proximal tips so that the existing

Table 10.51 Provenance of all leaf-shaped arrowheads (weights in grams), with dimensions (in mm) of those complete enough for measurement

Arrowhead class after Clark *et al.* (1960, 220) and Smith (1965, 100); arrowhead type after H S Green (1984, 21). Illustration number refers to Figure 10.15

Find	*Group*	*Location*	*Material*	*Wt*	*Illus no.*	*L*	*B*	*Th*	*Class*	*L×B*	*L÷B*	*Type*
HH74 978	1	Pit A F41	Chert	0.5								
HH74 1221	1	Pit A F113	Flint	0.9								
HH77 1253	1	Pit N F11	Flint	1.7	134							
HH77 1539	1	Pit N F42	Chert	2.4	141							
HH77 1586	1	Pit N F1	Flint	1.4	138	38.5	18.5	3.0	B	712	2.1	3B
HH77 1587	1	Pit N F1	Flint	2.6	128	45	18	3.0	B	810	2.5	3C
HH76 1934	5	Main enclosure, segment 16 L9A phase IV	Flint	0.8								
HH76 1401	6	Main enclosure, segment 16 L8 phase V	Flint	1.0								
HH76 668	7	Main enclosure, segment 13 L5 phase VI	Flint	2.5								
HH76 811	7	Main enclosure, segment 17, L6 phase VI	Flint	1.0	124	35	17	2.5	A	595	2.1	3B
HH77 534	7	Main enclosure, segment 7, L4A phase VI	Flint	1.5								
HH77 2622	7	Main enclosure, segment 6, 1 L5A phase VI	Flint	1.2	126							
HH74 570	10	Main enclosure, segment 2, L3 phase VIII/a	Flint	1.0								
HH76 434	10	Main enclosure, segment 17, L3 phase VIII/a	Flint	2.6	125	49	22	3.0	A	1078	2.23	2B
HH77 683	10	Main enclosure, segment 7, L3B phase VIII/a	Flint	1.5								
HH75 1124	15	Inner east cross-dyke segment 4, L6 phase VI	Flint	2.5	129	39	17.5	3.5	B	683	2.23	3B
HH77 606	15	Inner east cross-dyke segment 1, L5A phase VI	Flint	2.6								
HH75 1290	17	Inner east cross-dyke segment 5, L3 phase VIII/a	Flint	3.0	130	37	19.5	4.0	B	722	1.9	3B
HH75 1711	22	Outer east cross-dyke segment 5, L4 phase VI	Flint	0.7								
HH77 558	25	Inner south cross-dyke bank area L4	Flint	1.2								
HH77 1988	25	Pit P2 F14	Chert	0.2								
HH77 2164	25	Pit P2 F14	Chert	0.6								
HH77 2333	25	Pit P2 F14	Chert	0.7								
HH75 6	46	Site C, unstratified	Flint	0.5	127							
HH74 596	46	Site A, unstratified	Chert	2.0								
HH76 117	46	Site H, unstratified	Flint	1.6								
HH77 1498	46	Recent pit N F44	Flint	1.0	136							
HH77 532	46	Site N, unstratified	Flint	0.9	135	28	15	3.0	A	420	1.9	4B
HH77 803	46	Central area, unstratified	Flint	2.6	137							
HH76 745	49	Shroton outwork, segment 3, L6 phase III	Flint	1.1								
HH76 975	49	Shroton outwork, segment 3, L6 phase III	Flint	1.8								
HH76 299	51	Shroton outwork, segment 3, L3, phase VIII/a	Flint	3.5								
HH76 588	52	Shroton outwork, segment 3, superficial feature A	Flint	1.3								
ST78 2834	56	Stepleton enclosure, segment 23, L4 phase III	Flint	1.7		34	15	4.0	A	510	2.27	3C
ST80 1234	58	Stepleton enclosure segment 2 L5A phase IV	Flint	1.2	131	27	16	4.0	B	432	1.69	4A
ST80 398	60	Stepleton enclosure, segment 6 L1 phase VIII/a	Flint	0.8								
ST78 2730	64	Inner Stepleton outwork, segment 7 L4 phase III	Flint	2.1	139							
ST79 1570	66	Inner Stepleton outwork, segment 7 L3 phase VII/a	Flint	1.2								
ST79 1867	68	Inner Stepleton outwork, segment 5 L2 or L2B, phase VII/a or VIII/a	Flint	1.3	133	31	16	2.5	A	496	1.94	3B
ST80 1425	71	Middle Stepleton outwork, segment 5, L6 phase I	Flint	2.3	140							
ST80 1877	77	Outer Stepleton outwork, segment 3, phase I	Flint	2.1	132	43	15.5	3.0	B	666.5	2.77	3C
ST78 2710	82	Site 1A, Clay-with-Flints	Flint	1.3								

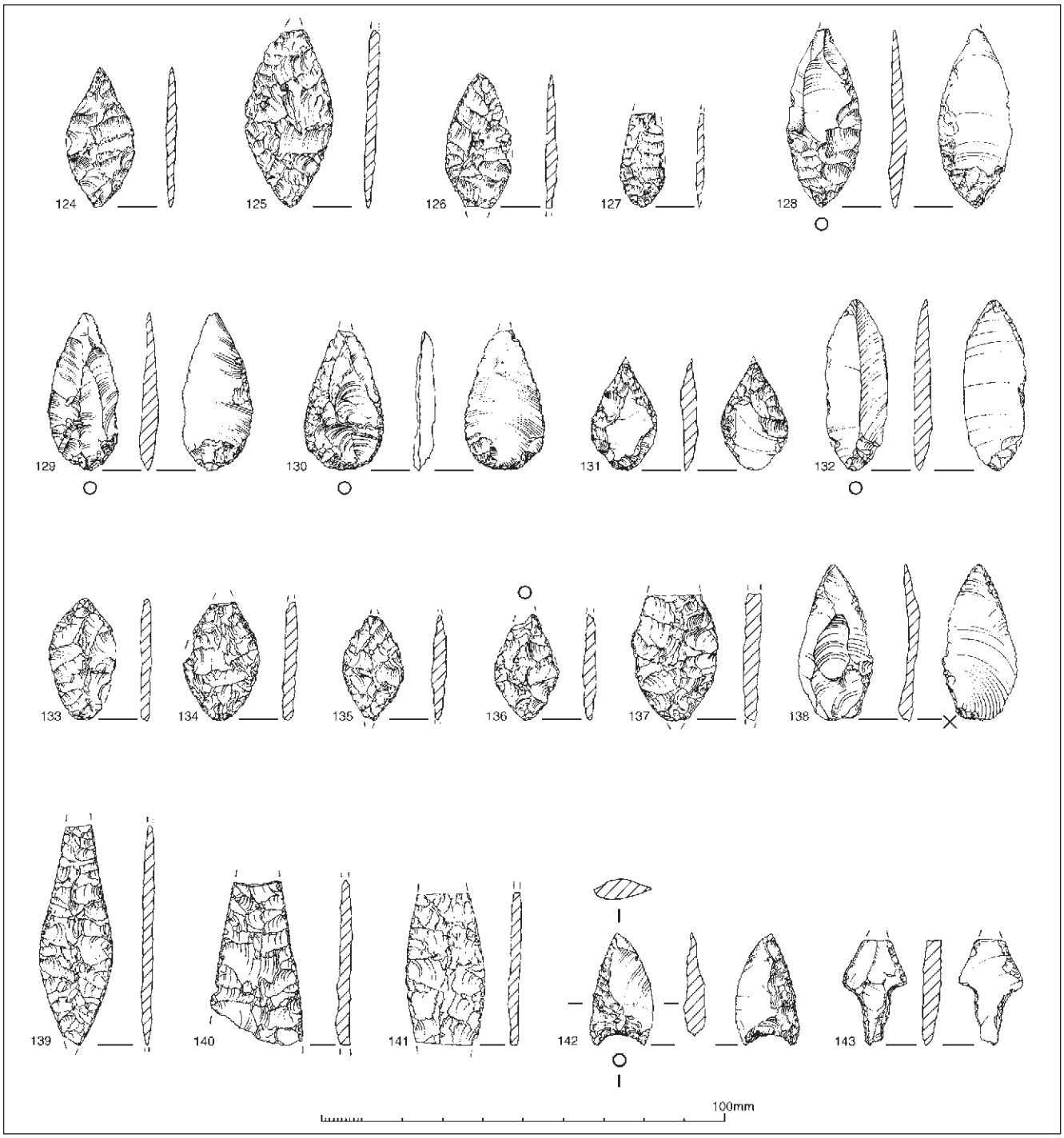

Fig 10.15 Leaf-shaped arrowheads (124–41), oblique arrowhead (142) and tanged arrowhead (143). Particulars in catalogue.

dimensions can be taken as representative of the original size and shape. Medium types (ie type 3B in Green's (1984) terminology) are the most common, but there are also one large (type 2B), three slender (type 3C), and two small (type 4A/B) examples. Two have an ogival character (Fig 10.15: 124 and 131), but they are both cases of 'attenuated points' rather than being ogivals proper (cf Green 1984, 21). One example (ST78 2834 from phase III in the Stepleton enclosure) is the distal fragment of a larger arrowhead, which has been retouched at the base after breakage to form the present arrowhead, and another example may have been modified at the tip after breakage in a similar way (Fig 10.15: 133).

That these intact examples do not encompass the variability of the arrowheads from Hambledon is clear from the fragments, such as those illustrated (Fig 10.15: 127, 139–141). One extreme is shown by the basal segment of a small, slender type (127), another by an unusually elongated ogival arrowhead (139), which is broken at both ends but is still, at 54 mm, longer than any other arrowhead in this collection.

The maximum thickness of this arrowhead is only two millimetres, making it a wafer-thin and quite exceptional piece of prehistoric craftwork. Because of the almost uniform thickness throughout this arrowhead, it is not clear which is the tip and which the base.

While the majority of the arrowheads are of class A, with complete bifacial pressure-flaking, a relatively high proportion (11 examples) are of class B. The latter range from those with partial bifacial pressure-flaking (Fig 10.15: 128 and 131) to those with only peripheral trimming (129–130), which can sometimes be minimal (132 and 138). The flake origin of some of the arrowheads is obvious (128, 129, 130, 132) and in one case part of the original faceted platform of the parent flake remains (138). Examples like these (especially 129, 130, 138) are sometimes regarded as typologically borderline arrowheads (Green 1984, 20).

Six of the arrowheads are of chert (Table 10.51), and one fragmentary example (HH76 683 from phase VIII/a in the main enclosure ditch) is of unusual red and white particoloured flint. This significant use of 'exotic' raw material is exclusive to this category of artefact at Hambledon Hill, and is restricted to the vicinity of the main enclosure. Two of the chert arrowheads come from features (A F41 and N F42) within the enclosure, three are from a feature (P2 F14) on the inner south cross-dyke bank area, and the sixth is a surface find. The group of three chert arrowheads from P2 F14, which was almost certainly under the inner south cross-dyke bank, is noteworthy; they are all fragmentary but from separate implements.

In all there are seven leaf-shaped arrowheads from features within the main enclosure, two from the same feature, and nine from various segments of the main enclosure ditch. Three segments – 7, 16, and 17 – produced two arrowheads each, but all from different horizons of the fill.

Four arrowheads are from the Shroton spur outwork and eight from various ditch segments of the Stepleton enclosure, though none of these 12 examples is of obviously exotic raw material. Those from the Shroton spur comprise three class B and one class A. The latter (HH76 975) is a fragment of a very fine specimen, which must have been of exceptional size (current dimensions: L >46 mm × B >19 mm × Th 2.5 mm). All four are from segment 3 (site K/L), but only two are from the same infill horizon (phase III) and were not found close together.

Two arrowheads, both from the Stepleton enclosure ditch, were found in direct association with human skeletons. One (Fig 10.15: 132) is a minimally retouched class B type from among the ribs of a young male in segment 3 of the outer outwork (Fig 3.105), the other is the elongated ogival example (Fig 10.15: 139) from segment 7 of the inner outwork. The latter was found in the rib-cage of a complete young male skeleton (Figs 3.102 and 3.104). It is of interest to note Green's comments (1980, 87) on similar examples, especially their apparent high frequency in funerary contexts. Green suggests that the two elongated examples from the Shoscombe I, Somerset, burial chamber could be special funerary items, but the evidence from the Stepleton ditch could be more consistent with the arrowheads being the cause of death rather than being grave-goods. It is not possible to be certain about this, however, especially since the bones of the two skeletons do not show any damage by projectile point nor do they retain any broken tips of arrowheads. Another possibility would be that the persons involved had the arrowheads with them, as personal possessions, at the time of death.

Other arrowheads

Two arrowheads not of leaf-shaped type were recovered during the excavation. One is an oblique arrowhead (Fig 10.15: 142) of later Neolithic type (Class F; Clark 1934) from a phase VII/a horizon in segment 10 of the main enclosure ditch. The other is a tanged arrowhead (Fig 10.15: 143 from the topsoil on the Stepleton spur) formed by blunting retouch throughout, except for a small area of invasive scalar trimming on the ventral surface of the blade. Its form resembles Bronze Age arrowhead types, but the retouch is more in character with Mesolithic flintwork, so as a type it is somewhat enigmatic. A somewhat similar example was found in a middle Neolithic ditch context at Etton causewayed enclosure, Cambridgeshire (Middleton 1998, 234 and fig 228: 134).

'Laurel-leaf' bifacial pieces

Six of these bifacially retouched points (Clark *et al* 1960, 223) are present. In many respects reminiscent of leaf-shaped arrowheads, they are distinguished by their greater size and weight. They have a near-symmetrical shape in plan, lenticular cross-section, pointed terminals, a slender and regular profile, and usually complete bifacial surface flaking. Their function remains unproven, but one possibility is they are for hafting as spear- or lance-tips. It can be the case, however, that the terminals lack sharpness, which makes an alternative explanation as elaborate knives rather than projectile points more plausible. One of the present group is relevant here (Fig 10.16: 148) since, although now damaged and shattered at several places along one edge and at the terminals, and presumably a discard after use, it also has a naturally blunted area (at the upper RHS of the left planview in the illustration). This has been used as a platform for retouch but not thinned, and it would have impeded any use of the piece as a projectile point.

The illustrations (Fig 10.16: 144–145, 147–148, 150) and the dimensions given in Table 10.52 give an indication of the appearance, size, and weight of these implements. One (Fig 10.16: 150), which has only peripheral ventral retouch, gives an insight into the type of blank selected, in this case clearly a very broad flake, on which the implement is formed transverse-fashion. This may be unusual, however, since another

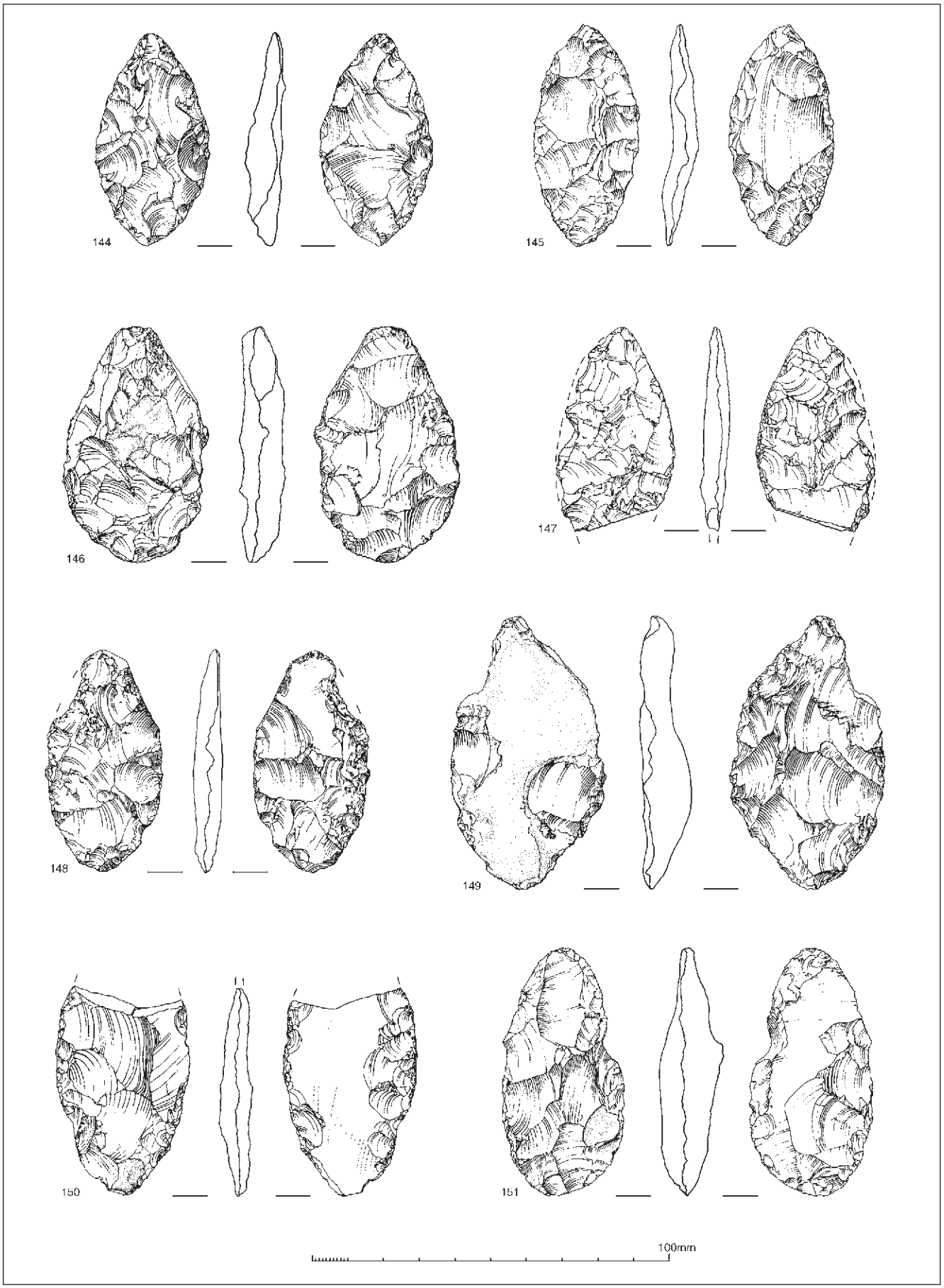

Fig 10.16 Laurel-leaf bifacial pieces (144–5, 147–8, 150) and unclassified bifacial pieces (146, 149, 151). Particulars in catalogue.

Table 10.52 Provenance of 'laurel-leaf' bifacial pieces (dimensions in mm are given for the complete and near complete examples)

Note: illustration numbers refer to Figure 10.16

Find	*Group*	*Location (and dimensions)*	*Weight in grams*	*Illus no.*	*L*	*B*	*Th*
HH77 1517	1	Pit N F5	13.5	145	65	29	7
HH76 26	11	Main enclosure, segment 13, L1, ploughsoil	15.9	144	60	32	9
HH76 1335	11	Main enclosure, site G, unstratified	17.5	148	62	33	8
ST79 1973	53	Pit 2A F154	13.0	150			
ST79 1569	65	Inner Stepleton outwork, S butt of segment 7, L3A, phase V	10.0	147			
ST79 1571	65	Inner Stepleton outwork, S butt of segment 7, L3A, phase V	21.0	Not illus	76	40	8

example with only peripheral ventral trimming (ST79 1571 from phase V in the inner Stepleton outwork) is formed longitudinally to the flake's bulbar axis.

Two of the 'laurel-leaf' bifacials were found in the fills of Neolithic pits, one within the main enclosure (Fig 10.16: 145), the other on the Stepleton spur (Fig 10.16: 150), two came from post-Neolithic levels in the main enclosure, and two from phase V contexts in the south-west butt of segment 7 of the inner Stepleton outwork. Given the rarity of this implement type at Hambledon Hill this is a significant association at the macro-level, but the excavation records indicate that they were found 3.20 m apart horizontally and 0.30 m apart vertically, so they cannot be described as closely associated at the micro-level. One of these has extensive edge-damage (Fig 10.16: 147), as well as being broken, so was most probably a discard.

Polished flint axeheads (Table 10.53)

There is only one polished axehead (Fig 10.17: 152) which is essentially complete with no obvious modification by reflaking, though even this may have been reground. Then there are three complete axeheads with polished cutting-edges, which have been modified on the body by reflaking. Otherwise there are fragments of polished axeheads and numerous flakes from polished flint axeheads, which demonstrate a more significant presence for this tool type than the complete examples would indicate, and also support the interpretation of their use and reworking on site.

The axehead (Fig 10.17: 152) from an internal feature of the main enclosure is complete apart from chips and flake-scar damage from use at the cutting edge. It is polished all over but deeper scars remain visible on the butt. The lateral edges are bevelled and only truly flat-faceted at the butt on one side. The profile is asymmetric due to heavier, more prolonged grinding of the cutting-edge on one face, effected subsequently to the polish of the cutting edge on the opposite face. It is impossible to be certain, but this could well indicate regrinding of the cutting-edge after previous damage or even, given its present relatively small size, a significant break.

The three axeheads with reflaking include two rather similar examples (Fig 10.17: 155 and Fig 10.18: 156), where only the original cutting-edge end of a polished axehead remains after reflaking the (presumably broken) body to give a kind of tanged support. The reflaked areas have not been ground at all. In their present form these implements are assumed to be complete tools. The third example (HH76 2975, a surface find from the Shroton outwork) is a substantial polished axehead, still 172 mm long, which retains a conventional axehead shape and profile after less extensive reflaking through the polished surface down both edges and at the butt. This is the only flint axehead from Hambledon which has the kind of mass (580 g) normally associated with the heavy wood-working implements of this class, though many of the fragmentary examples could have derived from similar-sized tools. The complete or near complete examples (Table 10.53) are otherwise all small in size.

The other fragments of polished axeheads comprise three cutting-edge ends or fragments thereof (Fig 10.17: 153; and ST79 794; ST79 2349), five medial segments (Fig 10.17: 154; and HH74 980; HH75 1870; ST79 1036; ST80 72), two small segments from at or close to the butt (HH75 1824; ST79 2582), and the major part of an axehead lacking its cutting-edge (HH76 81). There is also the butt-end of a partly ground flint axehead found in Desmond Bonney's excavation, from the phase III chalk rubble fill of segment 8 of the main enclosure ditch (3.3.2).

Some of these axehead fragments have been comprehensively reflaked after breakage, but more usually in a fairly desultory way (eg Fig 10.17: 153–4) rather than attempting to recreate a working edge or exploiting their full potential as cores, except in one case (ST80 72), which is extensively flaked as a core and only recognisable as originating from an axehead because of a small surviving area of a polished side facet. There could of course be other instances where all trace of former polished areas has been removed, since the raw material selected for axehead manufacture is not obviously dissimilar to that used for the rest of the assemblage. A strong hint that local nodular flint is being used is given by the fact that six of the axeheads (Table 10.53) retain patches of cortex, in several cases with the cortex area fully ground-over.

Seven of the axehead fragments are burnt to a lesser or greater extent (Table 10.53). In one case (HH76 81) a substantial polished axehead fragment, minus its

Table 10.53 Provenance of all polished flint axeheads, axehead fragments, and flakes from polished flint axeheads

Dimensions in mm are given for the complete or near complete axeheads
Illustration numbers refer to Figures 10.17–18

Group	*Find*	*Class*	*Location*	*Weight in grams*	*Illus no.*	*L*	*B*	*Th*	*Cortex*	*Burnt*
1	HH74 980	Axehead fragment	Pit A F41	60					yes	yes
1	HH74 1147	Axehead	Pit A F71	163	152	104	51.5	26	yes	
1	HH74 1016	Flake	Pit A F41	12.7						
1	HH74 1213	Flake	Pit A F114	12.3						
1	HH77 1462	Flake	Pit N F7i	6.3						
3	HH75 1824	Axehead fragment	Main enclosure, segment 11, L11 phase II	36.2						yes
4	HH75 1081	Flake	Main enclosure, segment 9, L7 phase III	35.6						
5	HH77 580	Flake	Main enclosure, segment 1, F9, phase IV	6.5						
7	HH75 1870	Axehead fragment	Main enclosure, segment 10, L6 phase VI	109.1					yes	yes
7	HH77 505	Axehead	Main enclosure, segment 1, F5 phase VI	82.3	155	79	47	27		
7	HH76 757	Flake	Main enclosure, segment 13, L5 phase VI	1.8						
22.1	HH75 151	Axehead fragment	Outer east cross-dyke segment 2, L4 phase VII/a	111.9	153				yes	
25	HH77 2333	Flake	Inner south cross-dyke bank, pit P2 F14	10						
37	HH77 1553	Flake	W long barrow ditch, LB3 L35 phase III	5						
42	WOWK 82 17	Flake	Western outwork bank area WOWK2 L1 – topsoil	2.1						
46	HH75 517	Flake	?treethrow hole C F26	2.3						
47	HH76 81	Axehead fragment and 5 flakes	Shroton outwork bank area, posthole M F1	272.8						yes
52	HH76 2975	Axehead	Shroton Spur surface	580		172	74	37		
53	ST80 1300	Axehead	Pit 1A F228	129.5	156	89	51	31		
53	ST79 2349	Axehead fragment	Pit 2A F321	5.1						yes
53	ST81 1880	Flake	Pit 4B F129	2.2						yes
53	ST81 2111	Flake	Pit 4B F129	2.4						yes
53	ST81 1514	Flake	Pit 4B F130	5.8						
56	ST81 2431	Flake	Stepleton enclosure, segment 8, L3A phase III	8.8						
57	ST81 1859	Axehead fragment	Stepleton enclosure, segment 16, L3 phase V	113.1	154					
57	ST81 125	Flake	Stepleton enclosure, segment 15, L3 phase V	2.1						
60	ST80 72	Axehead fragment	Stepleton enclosure, segment 2, L1 phase VIII/a	100.7						
64	ST79 2582	Axehead fragment	Inner Stepleton outwork, segment 5, L5A phase III/a	156.1					yes	
68	ST79 1036	Axehead fragment	Inner Stepleton outwork, segment 5, L2 phase VIII/a	155.5						yes
82	ST79 794	Axehead fragment	Area 2B L1 – ploughsoil	119.8					yes	yes
82	ST78 1005	Flake	Area 1A – Clay-with-Flints	3.3						
85	HN82 388	Flake	Inner Hanford outwork, segment 3 L5 phase I	20.9						
88	HN82 161	Flake	Inner Hanford outwork, segment 3, L2C phase VII/a	3.2						

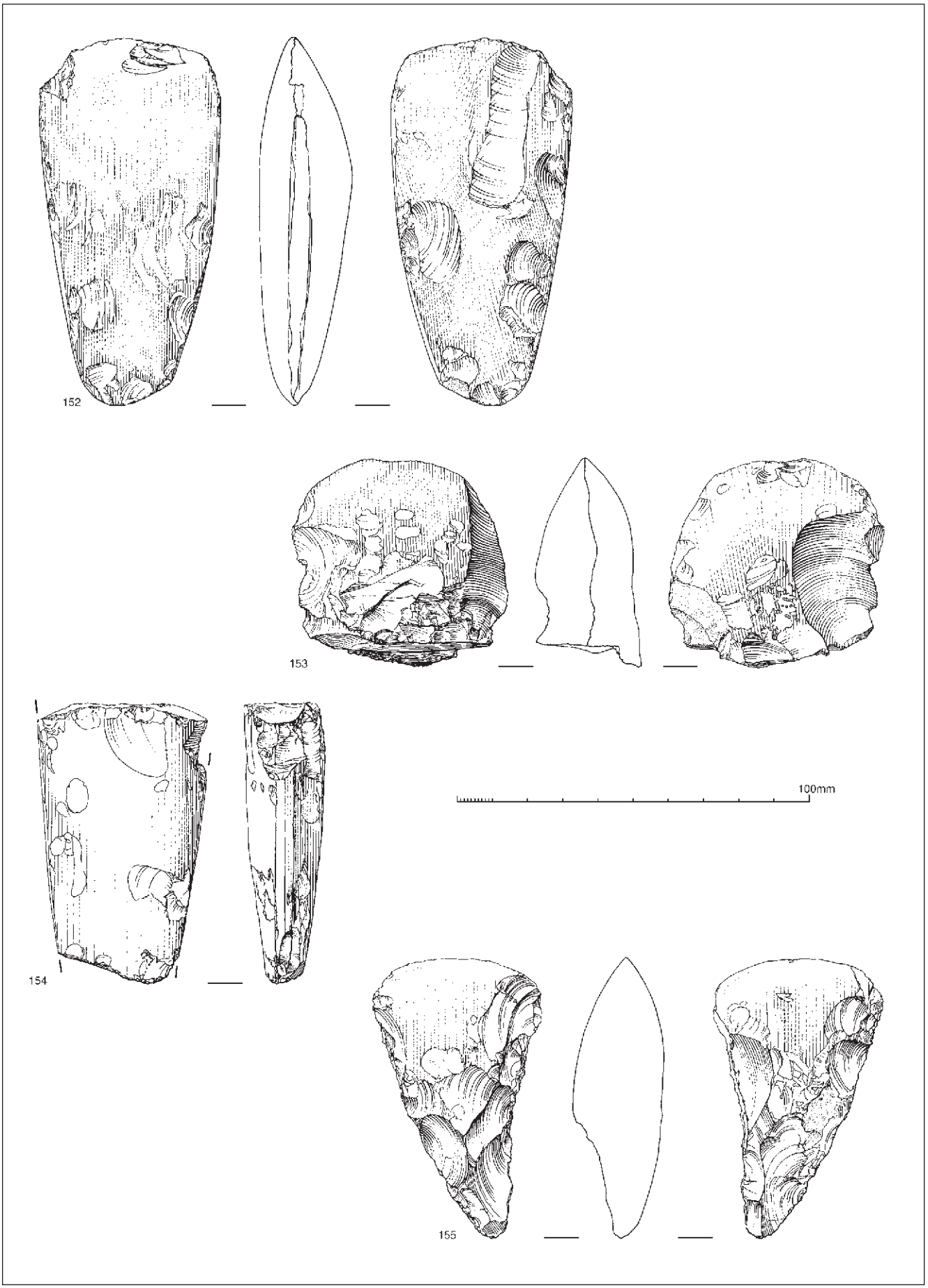

Fig 10.17 Polished flint axeheads and axehead fragments. Particulars in catalogue.

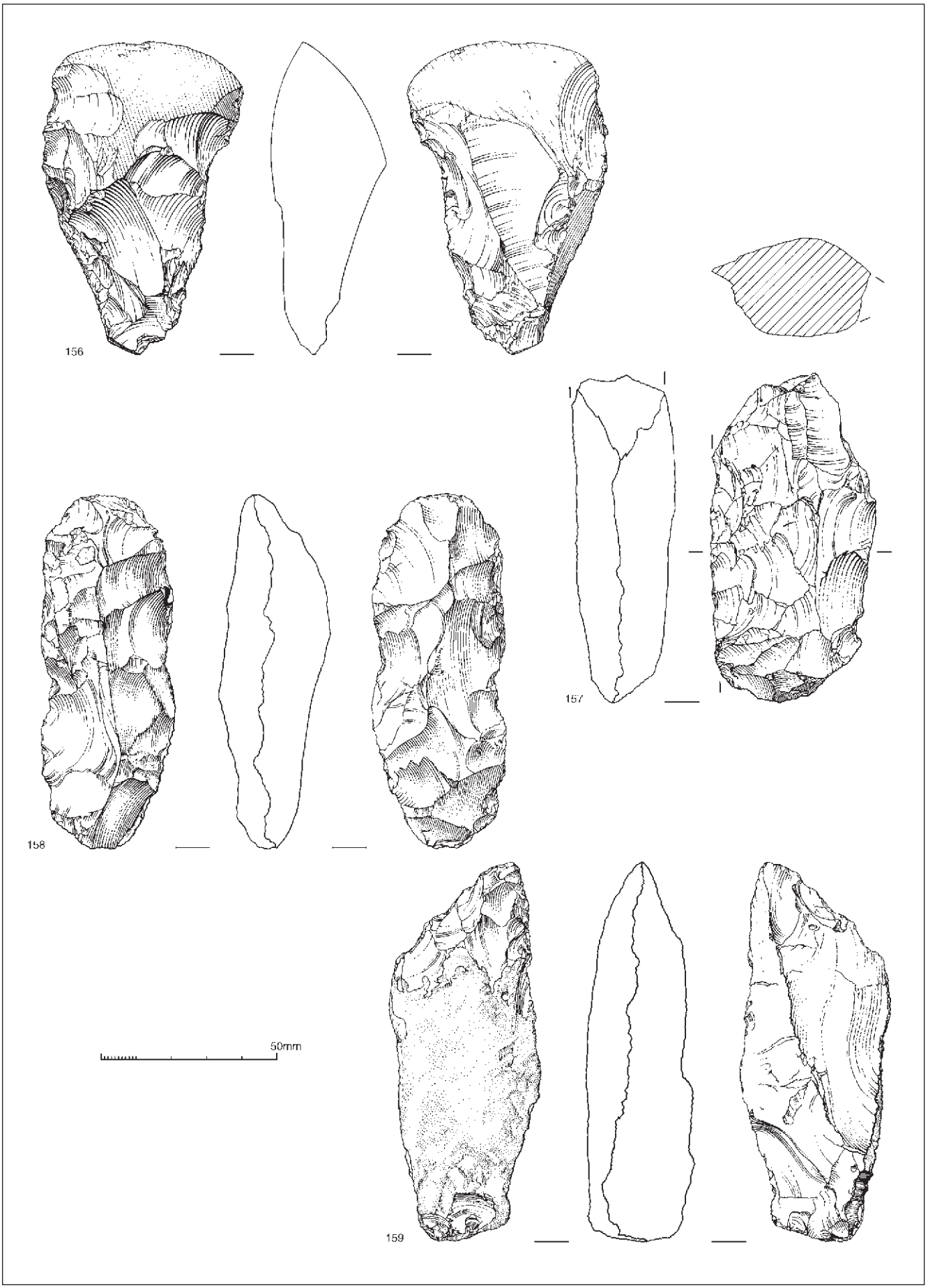

Fig 10.18 Polished flint axeheads and axehead fragments (156–7) and picks (158–9). Particulars in catalogue.

cutting edge, was extensively burnt and nine burnt fragments found with it could be refitted to it (and are included in the weight of 252 g). Five burnt flakes (weight 21 g) retaining polish came from the same posthole and, although they do not refit, they almost certainly came from the same axehead, as did a further ten small unclassified burnt fragments (weight 9 g). Two fragments (HH75 1870 and HH75 1824) that are only slightly burnt share some traits, which, although they do not refit, suggest they could derive from the same axehead, despite coming from different contexts in adjacent ditch segments of the main enclosure. The smallest axehead fragment (ST79 2349), which is part of a cutting edge, is extensively burnt and is probably a thermally produced fragment, rather than being burnt after breakage, something which in most cases is impossible to assess.

Contextually (Table 10.53), four of the axeheads are from the fills of Neolithic pits (two at each enclosure) and one from the primary fill of the main enclosure ditch. It should also be mentioned that the '3 chipped & polished flint axes within a few inches of one other', found during Desmond Bonney's excavation (3.3.4) were in the basal fill of the inner south cross-dyke ditch, an area otherwise devoid of axehead finds apart from a flake from a polished axehead from the bank area.

Flakes from polished flint axeheads

The presence of a polished surface allowed 23 flakes to be identified as originating from polished flint axeheads (Table 10.53), even though they are uninformative about the kind of axehead from which they derive. Apart from the five flakes (HH76 81) already mentioned, it was not possible to link these flakes to any of the identified axehead fragments, though one (ST81 1514) has a very similar character, on both its polished and unpolished surfaces, to one of the axeheads (Fig 10.18: 156). Both it and the axehead come from features on the Stepleton spur, and it is just possible that the flake could be one of the early reshaping flakes, which does not now conjoin. Two of the flakes (ST81 1880 and 2111) are small thermal 'pot-lid' spalls that conjoin and represent successive spalls from an axehead surface, but apart from these the other polished axehead flakes are unburnt.

The largest polished piece in this group is a broad flake (HH75 1081) with some non-specific retouch. It might have functioned as a crude scraper. Other polished flakes which have been converted into classifiable tools are incorporated in their respective sections, and comprise a scraper (ST81 3004 from phase VIII/a in the inner Stepleton outwork), a serrated-edge flake (HH76 873 from phase VI in the main enclosure), and a piercer (HH76 2 from a superficial context in the main enclosure).

The contexts of the flakes from axeheads echo those of the polished axeheads in including three each from the main enclosure and Stepleton enclosure pit fills. One is from the same enclosure pit as one of the burnt fragmentary axeheads, but does not appear to be from the same implement and is itself unburnt.

Knives

These 11 implements are defined chiefly by the attribute of at least one sharp, shallow-angled, invasively retouched edge. This retouched edge is usually straight rather than markedly convex, as in the case of scrapers, though a precise cut-off point between a knife and a shallow-angled scraper can be difficult to define.

One of this group (HH76 2212) was originally listed separately as a knife/scraper and the retouched areas on it may have had separate functions, the distal end being an end scraper and the lateral edge a knife. The three illustrated examples (Fig 10.14: 121–3) are complete or virtually complete, and exhibit the kind of extensive, invasive, and continuous retouch, which so clearly distinguishes the knives from the edge-trimmed flakes. The retouched edge is normally a lateral one, but in one case (ST79 756) a broad flake has the retouch on its wide distal edge. The supports are mainly flakes, only one of the knives being on a blade (HH76 30).

None of the knives is from a firm Neolithic context, and the precise chronological horizon of this type, sometimes thought of as more relevant to the late Neolithic/early Bronze Age, must be somewhat uncertain for Hambledon Hill. In one case (HH76 30) the retouch of the knife-edge is through the earlier cortication of the blade blank, so this must be a 'late' item, but it is from an unstratified superficial context. Some clear distributional grouping of the knives is apparent: three are from segment 8 of the main enclosure ditch, where there was a concentration of Beaker pottery; and three are from segment 7 of the inner Stepleton outwork, where there was plain, grog-tempered Beaker or early Bronze Age pottery. The precise proximity of these finds within their contexts is not recorded, but such clustering is unlikely to be by chance.

Picks (and ?axehead roughouts)

Five tools are grouped together under this category, though only two are complete and wholly classifiable. One (Fig 10.18: 158) is an elaborate, quadrangular-sectioned core-tool with complete bifacial retouch. It lacks a distinct cutting- or working-edge, but one terminal (at the top as illustrated) is abraded as though through use. This implement resembles Mesolithic core-tools but its appearance and condition, which match the other artefacts from the same and adjacent contexts, indicate it should be regarded as Neolithic. The other complete pick (Fig 10.18: 159) is a large thermal flake with a cortical exterior, retouched bilaterally, but asymmetrically and essential unifacially, to form a strong point. The opposite, butt end has some abrasion marks, possibly caused by hammer-blows.

The other three tools are fragmentary and are either picks or unpolished, flaked axeheads, or axehead roughouts. The most substantial of these is the medial

segment of a bifacially flaked core-tool (Fig 10.18: 157), which has had some reflaking after breakage. Another (ST80 1841), also bifacially flaked, is the pointed butt-end of a core-tool. The third tool (HH75 1577) is on a flake, possibly thermal, and is complete except for damage at the tip, around which there are also signs of smoothing from wear.

None of the specimens in this category are burnt.

Unclassified bifacial pieces

The 15 items included here are a total mixture of types, grouped for convenience by the common trait of bifacial retouch and separated by this from artefacts in the miscellaneous retouched category.

In a few cases these pieces resemble the 'laurel-leaf' bifacials, but are either too fragmentary (HH75 154; HH76 2014) or too irregular and/or chunky to be classified as such. In the latter category, Fig 10.16: 146 is one of the most symmetric and most extensively retouched, but is very thick, lacks pointed terminals, and is irregularly edged. Another (Fig 10.16: 149) is perhaps closer to a 'laurel-leaf' bifacial, despite the minimal flaking across the cortical dorsal surface, and it does have pointed terminals, but it is otherwise heavy, thick, and asymmetric.

Four pieces are quite small and somewhat arrowhead-like. Two resemble transverse arrowheads, though one (HH75 1267) is too fragmentary for certainty and the other (HH75 16), which is complete, seems too thick (8 mm) and too heavy (6.6 g). Two resemble leaf-shaped arrowheads but in both cases (HH75 1379; ST78 2361), at 8.2 and 8.6 g respectively, they seem too heavy.

A further example is an elaborately retouched tool, similar in dimensions and planform to the 'laurel-leaf' bifacials, but thick and relatively heavy (Fig 10.16: 151). It is more reminiscent of a small axehead/pick type of implement, though it is unclear which terminal would have formed a working edge. Two other bifacial tools are somewhat axehead- or pick-like in character. One (HH75 1577) is fashioned on a (possibly thermal) flake, with a wedge-shaped cross-section. The thick lateral edge is bifacially retouched and the thin lateral edge unmodified, while the distal terminal is pointed. The other (HH76 2100) is a short chunky piece, with extensive flaking but without an obvious working-edge terminal.

In terms of provenance none of these are from Neolithic features and most are from superficial horizons. The only example from an early context (HH76 2911) is burnt and fragmentary and typologically inexplicit, and the latter also applies to the piece (ST79 2643) from the phase VII/a deposit in the inner Stepleton outwork.

Rods

There are nine examples of these robust, normally prismatic, tools with steep unilateral or bilateral retouch (Saville 1981b, 10). At least two of them are on thermal flakes (HH75 754; HH77 1095). The three illustrated examples are on bulbar flakes and demonstrate some of the variability within this classification. Figure 10.19: 160 has a naturally blunted, cortical lower left-hand edge and steep blunting retouch on the lower right. The distal tip is pointed and the lateral retouch becomes more invasive as the flake thins distally. Figure 10.19: 161 has steep bilateral blunting retouch, with some bulbar thinning, and a broad distal edge, which has some modification by damage but no deliberate retouch. Figure 10.20: 162 has only one steep, blunted edge, the opposite edge being sharp. Another example (HH77 569) has steep lateral retouch combined with a convex, scraper-like, retouched distal edge.

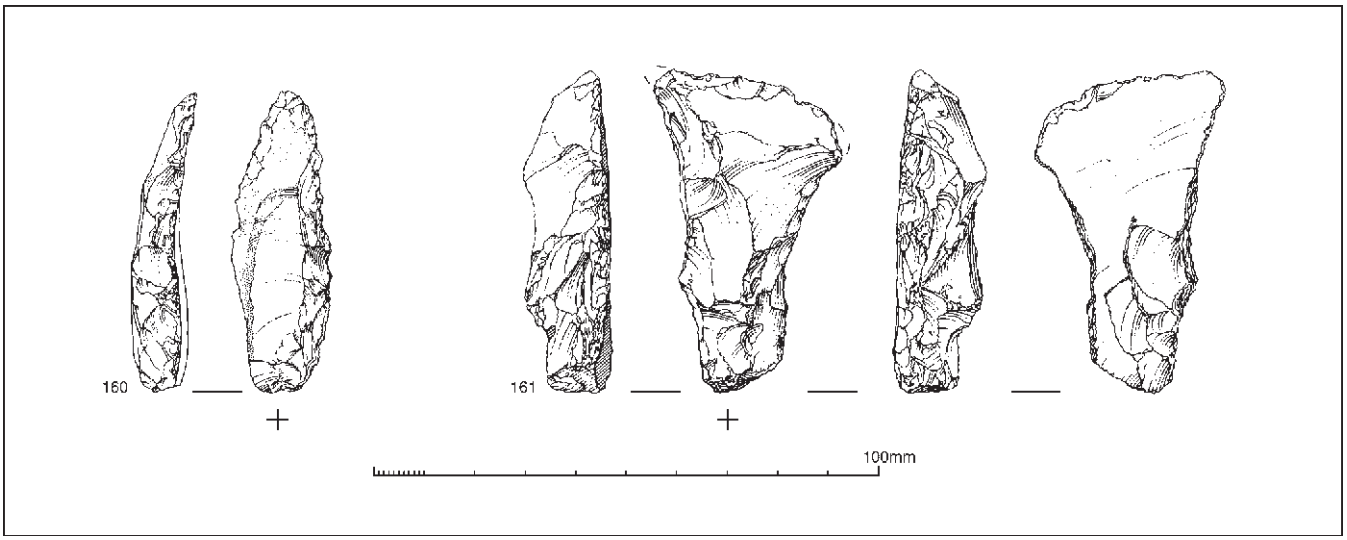

Fig 10.19 Rods. Particulars in catalogue.

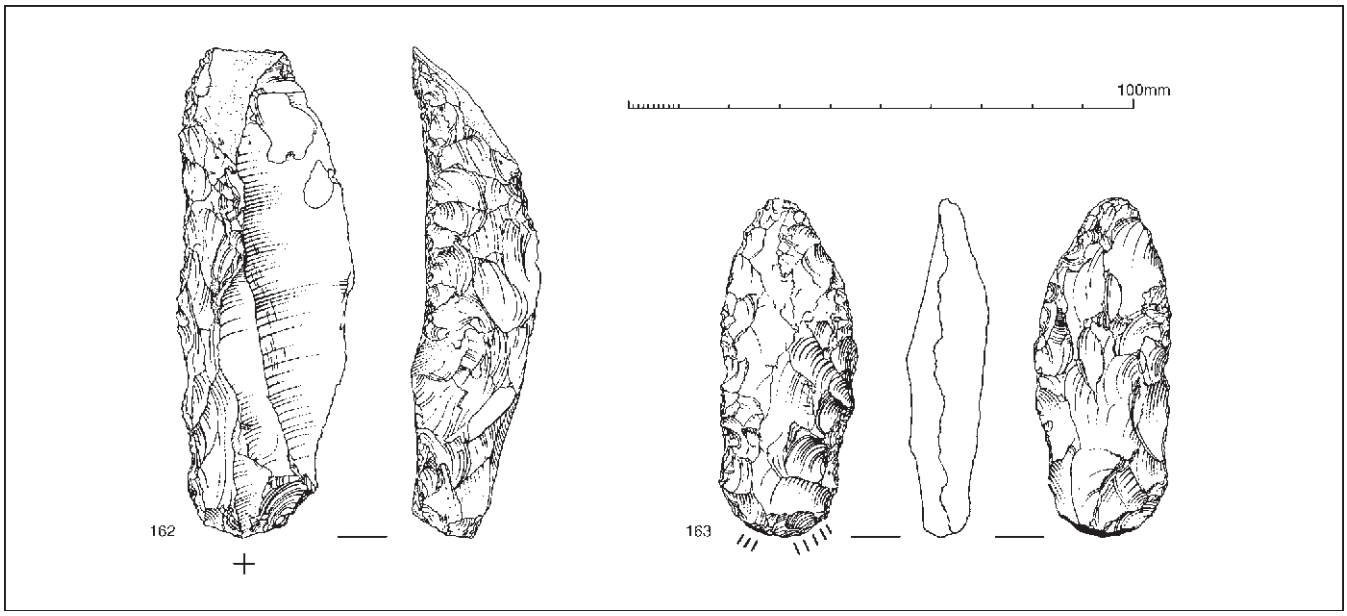

Fig 10.20 Rod (162) and 'Fabricator' (163). Particulars in catalogue.

Figure 10.20: 162, which is the only burnt example, is also the only rod from a firm Neolithic context, being within the fill of grave 4B F712 at the Stepleton enclosure. Otherwise, apart from HH77 569 from the chalk rubble fill of the inner south cross-dyke, the rest are from more superficial horizons.

There has been some debate about the chronological position of this tool form at its *locus classicus* of Grimes Graves, Norfolk (Herne 1991; Saville 1991), but using the kind of broad definition of the type as here, it would seem to be an implement with a range from early Neolithic to middle Bronze Age.

'Fabricators'

'Fabricators' often share with rods a prismatic form, but their distinguishing feature is pronounced wear, manifest by abrasion, smoothing, and/or rounding at one or more terminals. This is the case with Fig 10.20: 163, which has the wear at the proximal terminal of a completely bifacially flaked blank. Two of the other examples are prismatic, while the third (HH74 113) is a flat flake, with abrasion along the edges of the blank as well as at the base, where some parts are worn completely smooth.

Since none of the 'fabricators' is from a well-stratified context, and since as a type they occur elsewhere in contexts of diverse periods, it is unclear if they relate to the Neolithic use of the site.

Splintered piece

A leaf-shaped flake (HH76 1460 from phase IV in segment 16 of the main enclosure) has bifacial modification at its base and some removals across the ventral surface at the distal tip, accompanied by traces of abrasion but no smoothing. The splintered effect seems to result from use, rather than as a by-product of bipolar anvil flaking, and may be secondary to the blank, since the modified areas are slightly differently discoloured. Apart from one other artefact (HH75 19 from the topsoil in the main enclosure) with less pronounced modification of this type, which is included in the miscellaneous retouched category, this is a one-off and not specifically attributable to the Neolithic activity.

Saw

A broad flake with coarse but regular denticulation on the transverse distal edge was classified as a saw (HH77 1899) with the indentations more deeply notched and more widely spaced than on the serrated-edge flakes. It is from a layer in the bank area of the inner south cross-dyke which contained Beaker or early Bronze Age sherds as well as Neolithic ones.

Backed flake

This is a bulbar flake, damaged at the tip, with blunting retouch down the whole of the left-hand edge (ST79 653). The right-hand edge is unretouched and sharp, but with no obvious signs of use. Although blunting retouch does occur on other implements, such as some in the edge-modified flake categories, in this case the nature and extent of the retouch is sufficient to justify discrete classification. While this type of blunting is unusual on Neolithic implements, the general appearance of this piece is in character with the rest of the Stepleton assemblage, and it is not thought residual from an earlier period, though its position in phase V of the inner Stepleton outwork means that it is not well stratified.

Miscellaneous retouched pieces

The 743 artefacts in this category exhibit some, apparently deliberate, secondary retouch but are unclassifiable to formal tool types. Over half of them are fragmentary and undoubtedly include many broken

tools, particularly scrapers and piercers, which do not retain sufficient of the retouched edge to be fully diagnostic. In other cases there must remain some uncertainty as to the intentional nature of the retouch, particularly with examples from superficial contexts where the retouch is differentially discoloured from the blank on which it is located (eg HH74 8, HH75 1929, HH76 1432 from Neolithic features in the central area; HH75 6, HH76 308, HH77 886 unstratified in the central area; ST77 6, ST78 137 from phase VIII/a in the inner Stepleton outwork). This is also the case with pieces with areas of irregular denticulate-type retouch, which tend to be disproportionately from superficial contexts and could in some cases result from plough damage, though there are occasional instances from Neolithic features and lower ditch fills (eg HH75 335 from phase III in the main enclosure ditch, HH77 603 from pit N F11).

This category is intentionally broad and inclusive and therefore can have little analytical potential, other than to provide an indication that the numbers of implements included in the formal tool groups are not finite. It is unlikely, however, that the miscellaneous retouched pieces represent a residue which would markedly distort the relative proportions of the formal tool categories.

As Table 10.41 shows, while miscellaneous retouched pieces are present in Neolithic contexts, it is in the superficial and unstratified context groups that they come to dominate. This is such a consistent pattern, however, that it could reflect either a chronological or a taphonomic factor, or perhaps a combination of the two.

10.2.6 Refitting

During excavations on the Stepleton spur, several groups or concentrations of struck lithic debris within ditch infills were noted and recorded in detail as likely to represent discrete deposits. These included the south butts of segments 2 and 3 of the enclosure and the west butt and the centre of segment 4 of the outer outwork. The flints from segment 2 were on the surface of the phase II silts (Fig 3.84), the others were from phase III deposits – the chalk rubble secondary silts. Two of these groups when examined during post-excavation had obvious potential for refitting and considerable time was devoted to the isolation of conjoinable sequences from them, with the results described below.

Stepleton enclosure, segment 3

The south-east butt end of this segment, referred to during excavation as unit 13, contained a concentration of knapping debris within the secondary chalk rubble infill (context group 56). This concentration (recorded as layer 4C), covered a horizontal area *c* 2.10 by 0.90 m, aligned along the longitudinal axis of the segment (Fig 3.85). Within the overall concentration were denser clusters, mainly towards the south end, and the maximum vertical differential between the flints was approximately 200 mm. The concentration did not appear to continue northwards into the baulk left across the ditch during excavation.

The flints from this horizon, listed in Table 10.54 suggest a very 'industrial' deposit, with a substantial core component and large, mainly cortical flakes, with an above-average mean weight (17.5 g). This concentration also contained several unretouched flint nodules (not recorded here but the nodules are retained in the archive) and an antler tine.

The refitting analysis of this material isolated three main conjoin groups, and these are described individually below. In addition there were: three cores with single conjoining secondary flakes; one core with two conjoining secondary flakes; a further core with one tertiary and two secondary flakes conjoining; a group of three conjoining secondary flakes; three groups of two conjoining secondary flakes; and one group of two conjoining tertiary flakes. Two separate flakes which had split longitudinally by Siret fracture could be reassembled.

This scatter within the chalky rubble was plotted in detail on three successive drawings as excavation proceeded and flints were uplifted. The positions of all the elements of conjoin group 1 were recorded, showing them to be contained within a small area approximately 0.35 m east–west by 0.2 m north–south. Of conjoin group 2 the position of nine of the ten flakes are known, but not that of the core itself. The nine flakes lay close together in an area 0.3 m north-west/south-east by 0.15 m north-east/south-west. All the elements of conjoin group 3 were plotted, mostly forming a

Table 10.54 Main components of the artefact clusters from which the refitting groups derive

	*Stepleton enclosure segment 3**		*Outer Stepleton outwork segment 4*	
Type	*Number*	*Weight in grams*	*Number*	*Weight in grams*
Unretouched flakes	288	5040	509	9204
Cores	14	7270	17	4450
Flaked lumps	12	8305	7	3811
Total	314	20615	533	17465

* This cluster also included two flint hammerstones, weighing together 1180 grams

compact scatter some 0.25 m north–south by 0.2 m east–west, except for one flake detached from this group some 0.3 m to the east. Conjoin groups 2 and 3 were in exactly the same location at the same horizon, as though deposited or infilled together, comprising most of the content of the scatter at the north end. Group 1 on the other hand was at the epicentre of the whole scatter, which, apart from the lesser conjoins already mentioned, contained no other long refitting sequences.

Considering all the evidence for refitting, there remain six cores to which no flakes could be conjoined, and 237 flakes which could not be refitted to other flakes or to cores. Assuming both recovery in the field and the refitting analysis to have been thorough, then this deposit is clearly a rather incomplete sample of a knapping episode (or series of episodes).

As an introduction to the series of illustrations by Joanna Richards of the refitted cores (Figs 10.21–39), it is necessary to explain that two separate techniques were used. With conjoin groups 1, 2, and 4, in addition to drawings of the reassembled cores or nodules, there are exploded views to show how the flakes refit and separate outline drawings of all the flakes. The purpose of the latter was to illustrate a good sample of the kind of unretouched flakes being produced to provide a comparison with the flake blanks used for the implements shown in the other illustrations. The exploded views demonstrate the sequence and 'nesting' of the flakes, but are only feasible for the relatively simple reduction sequences. The technique used for the other conjoin groups has been to show the core at each of its major platform stages. As an aid to following a core through its reduction sequence, symbols – dots, asterisks, squares – have been placed at appropriate points. These points are constant within each sequence and thus should assist comparison and orientation through the stages. Various types of tone have been used to indicate cortex, thermal fracture surfaces, and the striking platforms of flakes.

Conjoin group 1 (Figs 10.21–22)

This simple single platform (A2) core (ST80 2468/41) has a maximum dimension of 105 mm, a maximum surviving flake scar length of 65 mm, weighs 490 g, and has a 'chalky', unweathered cortex. There are 12 flakes and two chips which conjoin, creating a still incomplete nodule in the form of a larger A2 core with a maximum dimension of 122 mm and weighing 754 g. One of the projecting knobs of the nodule has been battered, but not in any obvious attempt to create another striking platform. The original nodule was of knobbly shape, with one face formed by a thermal fracture, giving a matt black surface rather than cortex in this area.

The initial large primary flake detached from the nodule to create a platform is absent, as are at least two primary or near primary flakes and several chips from the flaking face. Thereafter, flaking proceeded in successive, unidirectional removals from a single platform down one face of the core to a point at which the core was abandoned. The final three removals, flakes 1o, 1n, and 1m (Fig 10.22) have all hinged out and the core would have required rejuvenation, but in fact relatively little depth remained.

At the very end of the reduction sequence there are the negative scars on the core face of several short, hinged-out flakes, less than 40 mm in length, which are absent. Otherwise, the only major absence from the flake sequence occurs between flakes 1j/k and 1l, and would have been a blade-like flake some 70 mm long and 30 mm broad.

Conjoin group 2 (Figs 10.23–25)

Another simple single platform (A2) core (ST80 2468/95) with a maximum dimension of 112 mm, maximum surviving flake scar length of 72 mm, and weighing 920 g. The internal flint is distinctively mottled or speckled and the unworn external cortex is less 'chalky' than core 1, with some brown staining. Ten flakes refit to the core to produce a near complete, roughly spherical nodule with several knobbed projections and a circular hollow 30 mm across and 50 mm deep. Maximum dimension of the reconstructed nodule is 132 mm and the weight 1320 g.

Initial preparation involved removal of a primary flake (2a) by a blow against a broken projection on the nodule surface. This created a temporary platform from which near-primary flake 2d was detached, in turn creating the platform for the detachment of flake 2b in the same direction and plane as the first flake (2a). This removal created a working platform for all the subsequent detachments, starting with 2c and 2e (hinged). The next two removals (2f and 2g) are small flakes with vestigial platforms and may have been detached at the same time as flake 2c. Several small flakes and chips, none larger than flake 2e, are absent at this point, before the three final removals – flakes 2h, 2i, and 2j – at which point the core was abandoned. None of the final three flakes is hinged. There are no significant flakes missing from the reduction sequence, the largest absent flake being 27 mm long.

Conjoin group 3 (not illustrated)

Another single platform (A2) core (ST80 2468/87), which has a maximum dimension of 114 mm, a maximum surviving flake scar length of 48 mm, and weighs 670 g. It has eight refitting flakes and chips, which conjoin to form an almost intact nodule – maximum dimension 139 mm and weight 838 g – of knobbly form and with an unweathered 'chalky' cortex.

One projecting knob of the nodule has two flakes removed (not present) and may have been an attempt to initiate a platform but was not followed through. The actual reduction sequence began with blows against another projecting knob, detaching impact chips (not present) which provided a percussion point

for the removal of the first main, near-primary flake, which created a small platform. From this were struck a near-primary flake and a chip, creating a platform from which the remaining flakes were removed unidirectionally from one face of the nodule and the core was then abandoned. The final flake from the core face is absent, but was a stubby hinged-out tertiary flake 36 mm long and 30 mm broad. Otherwise, apart from various chips and spalls, the only absent flakes were three small internal tertiary flakes of maximum lengths 16, 32, and 35 mm respectively.

Outer Stepleton outwork, segment 4

The west butt end of this segment (unit 2), contained a concentration of knapping debris within a horizon of the secondary, phase III, chalk rubble, ditch infill (recorded as layer 3B). This concentration was contained within an area 1.65 m east–west by 1 m north–south in plan, the longer axis being aligned with the longitudinal axis of the segment (Fig 3.105). There is a strong probability that this scatter continued eastwards into the baulk left across the segment during excavation, perhaps even linking with the scatters recorded in units 3 and 4 of the segment. The vertical thickness of this deposit was not recorded but can be inferred to have been less than 200 mm.

The flints from this concentration (Table 10.54), as with those from segment 3 of the enclosure, have an 'industrial' character, lacking any implements, and the flakes have an equally higher than average mean weight (18 g). It is not recorded if there were any unretouched nodules associated with this scatter.

The refitting analysis demonstrated a large number of significant conjoin groups (described below), mostly involving cores but also some nests of flakes without cores. The scatter was plotted on two successive drawings, but only 185 of the total 533 artefacts from the concentration have their locations recorded. This has the result that too few from each conjoin group are plotted to permit any definitive conclusions about patterning within the concentration. What can be said derives from the conjoin groups with the most flakes plotted, which were as follows:

Conjoin group 5: core and eight flakes plotted – maximum area *c* 0.6 m east–west, 0.4 m north–south
Conjoin group 7: core and ten flakes plotted – maximum area *c* 0.6 m east–west, 0.5 m north–south
Conjoin group 9: core and fourteen flakes plotted – maximum area *c* 0.85 m east–west, 0.7 m north–south
Conjoin group 10: core and six flakes plotted – maximum area *c* 0.6 m east–west, 0.3 m north–south
Conjoin group 14: core and eight flakes plotted – maximum area *c* 0.6 m east–west, 0.3 m north–south
Conjoin group 15: ten flakes plotted – maximum area *c* 1.0 m east–west, 0.5 m north–south
Conjoin group 17: eleven flakes plotted – maximum area *c* 0.35 m east–west, 0.35 m north–south

The most compact cluster on the basis of these data is group 17, the most dispersed groups 9 and 15, though there can be no guarantee that the unplotted elements of any of these conjoin groups lay within the same confines. Even so, the plotted artefacts are all within the main part of the concentration and jumbled, without any suggestion of placement in discrete heaps. After all the refits had been obtained, there remained only four cores, seven flaked lumps, and 46 unretouched flakes which could not be conjoined to or with anything else. This very high level of refitting among the flakes and cores gives a strong indication of immediacy about the deposit and its origin in perhaps a single session of knapping. However, there is no hard evidence on the question of precise superimposition of artefacts or the interleaving of chalk rubble within the scatter and therefore it is difficult to come to any conclusion about the probable formation process of the deposit(s).

Conjoin group 4 (Figs 10.26–28)

A single platform (A2) core (ST80 2415/156) of maximum dimension 105 mm, maximum surviving flake scar length 33 mm, and weight 298 g, with 25 refitting flakes which conjoin to form a complete nodule. The nodule, of maximum dimension 139 mm and weighing 515 g, is of irregular shape with projections and has a mixed exterior surface. This is part cortex, somewhat weathered and stained brown, and part thermally fractured surface, of matt black appearance with some orange staining.

The reduction process has been simple in two main stages. Firstly, using the partly flat and partly curved surface provided by the thermal fracture as the initial platform, flakes 4a–k have been successively removed across the top of the nodule. There are only a few chips and spalls missing from this sequence of removals, which has been of a preparatory nature. The negative scar surface left by these removals has provided the platform for the second stage of knapping, perpendicular to the first, without any additional preparation whatsoever.

This second sequence of removals produced the flakes 4l–y. This sequence is almost intact save for chips and spalls and the butt ends of flakes 4n, 4p, and 4q. There is only one substantial absent flake, a tertiary example, immediately subsequent to flakes 4r and 4s, approximately 40 mm long by 40 broad and with a slightly hinged-out termination.

After the final removals this core is essentially residual with no real potential for further exploitation.

Conjoin group 5 (not illustrated)

A single platform (A2) core (ST80 2399/211) of maximum dimension 76 mm, maximum surviving flake scar length 43 mm, and weight 195 g has 25 refitting flakes through four reduction stages to form a partially intact nodule, from which preliminary removals in three directions are absent. The nodule is irregular

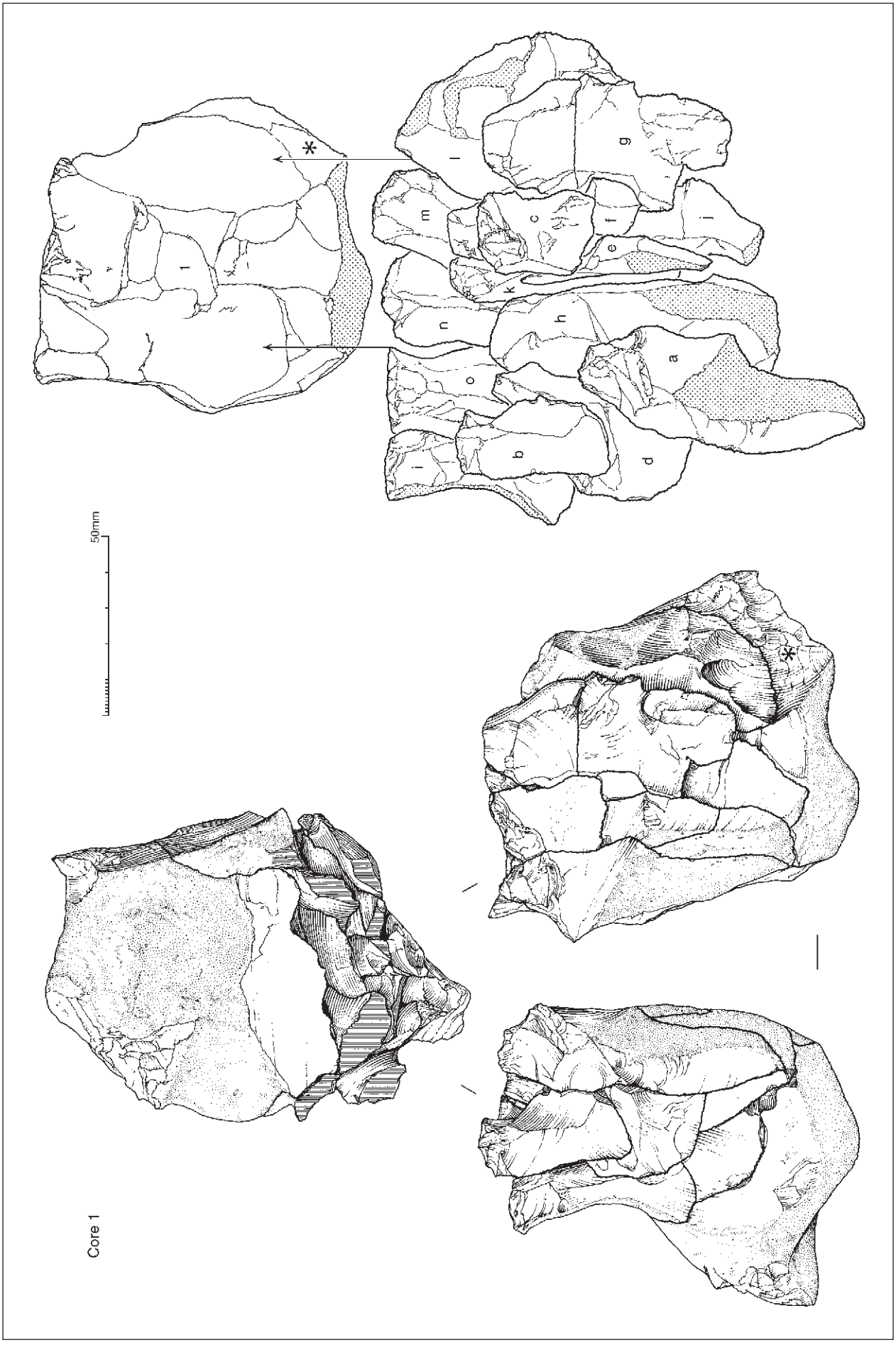

Fig 10.21 Core/flake conjoin 1 (context group 56 – Stepleton enclosure, segment 3, Unit 13A/B, Layer 4c, phase III; find nos: ST80 2099, 2406, 2414 and 2468). Left: three views of the core with all conjoining flakes refitted; right: schematic exploded view of core and refitting flakes.

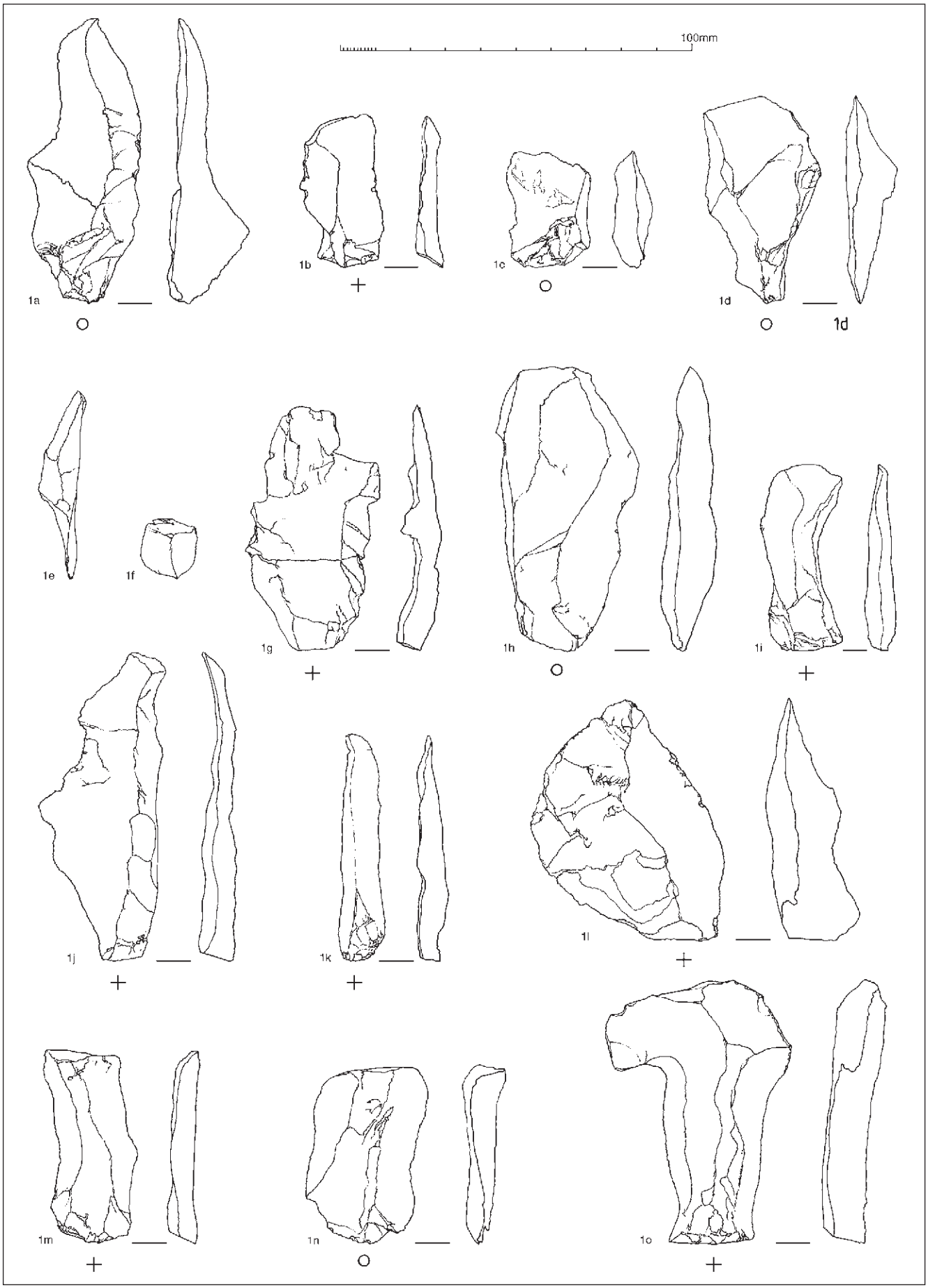

Fig 10.22 Core/flake conjoin 1: outline drawings of all the refitting flakes (see Fig 10.21).

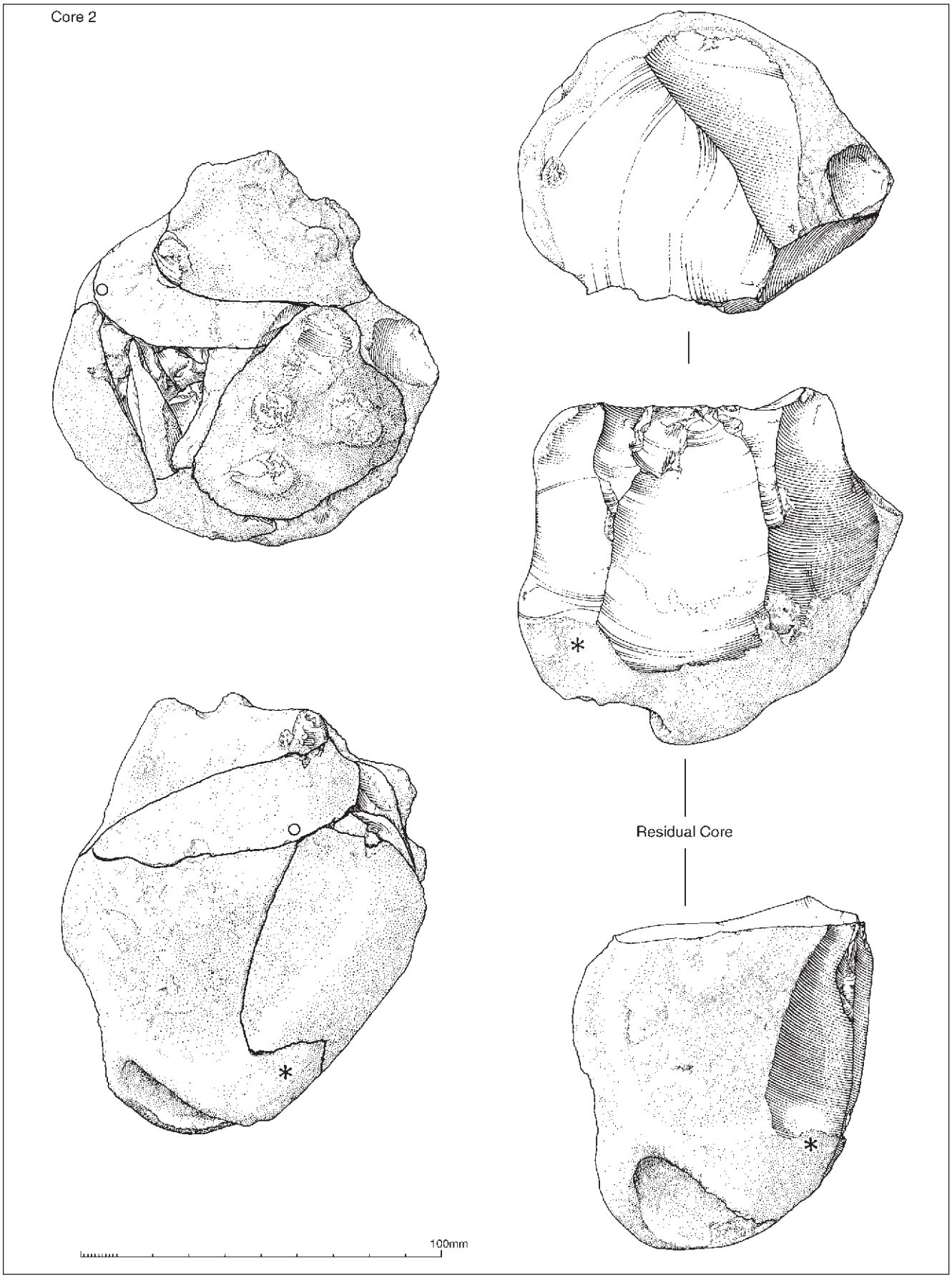

Fig 10.23 Core/flake conjoin 2 (context group 56 – Stepleton enclosure, segment 3, Unit 13A/B, Layer 4c, phase III, find nos: ST80 2099, 2406, 2414 and 2468). Left: two views of the near complete reconstructed nodule with all conjoining flakes refitted; right: three views of the residual class A2 core.

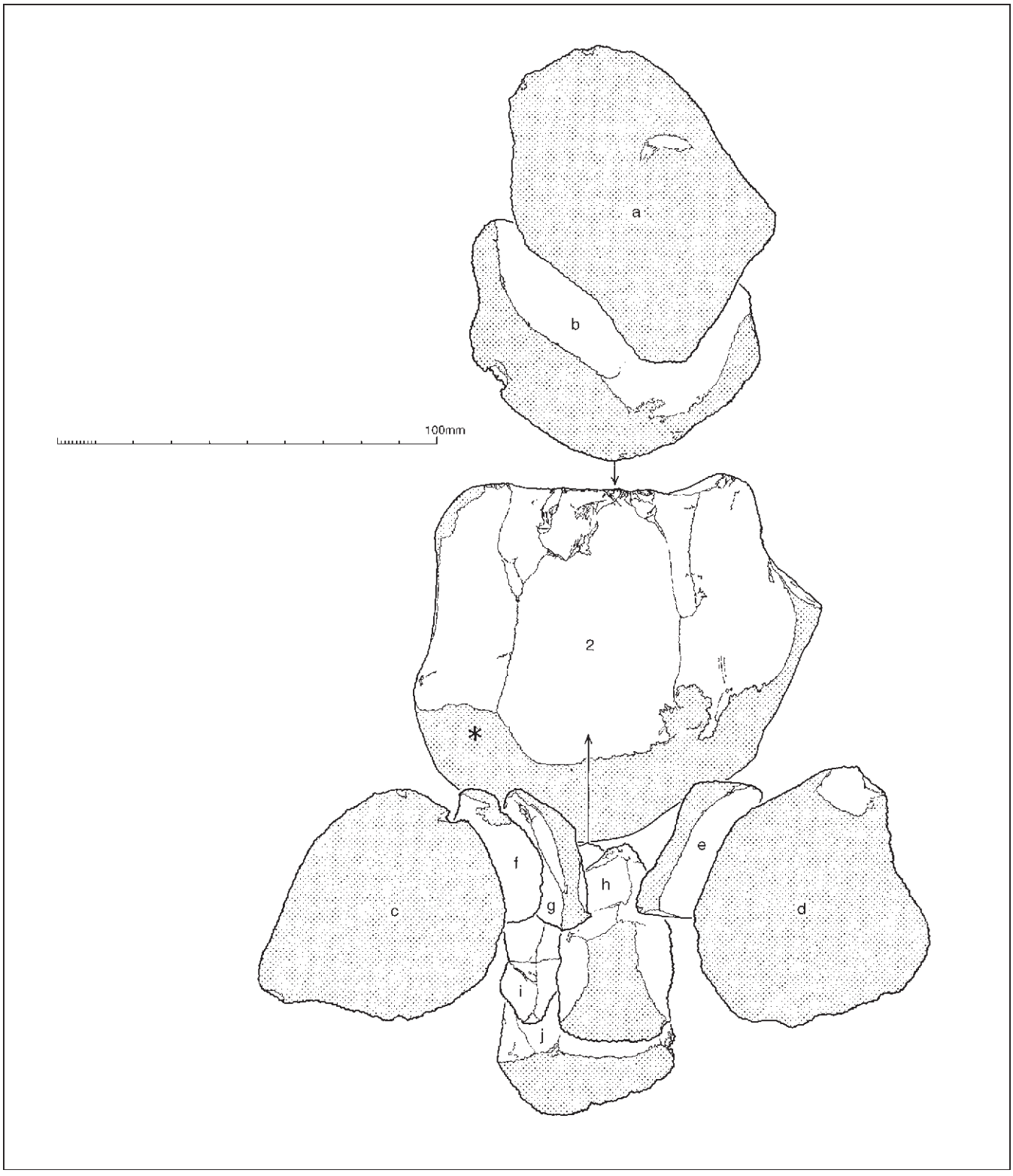

Fig 10.24 Core/flake conjoin 2: schematic exploded view of core and refitting flakes (see Fig 10.23).

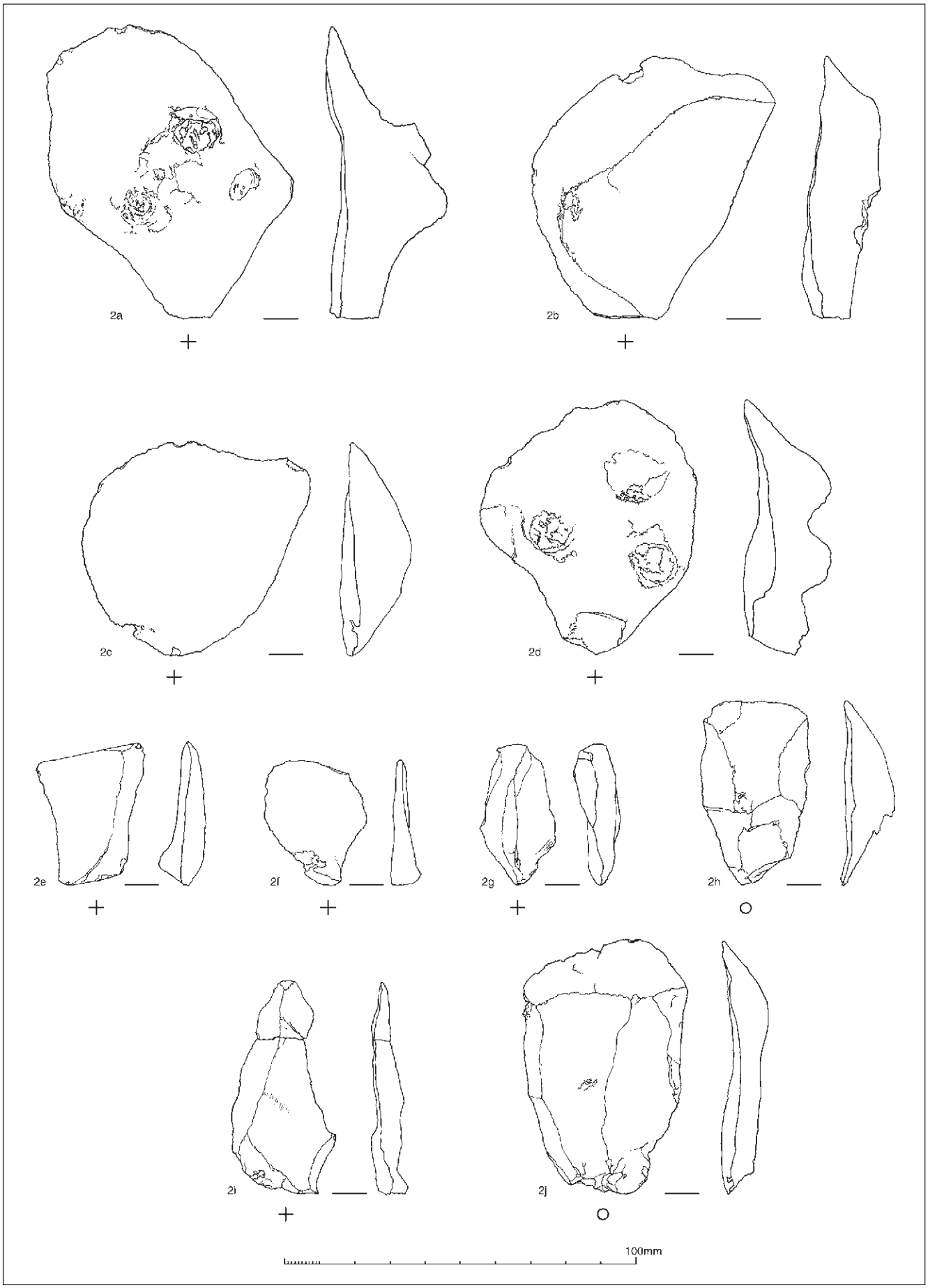

Fig 10.25 Core/flake conjoin 2: outline drawings of all the refitting flakes (see Figs 10.23–4).

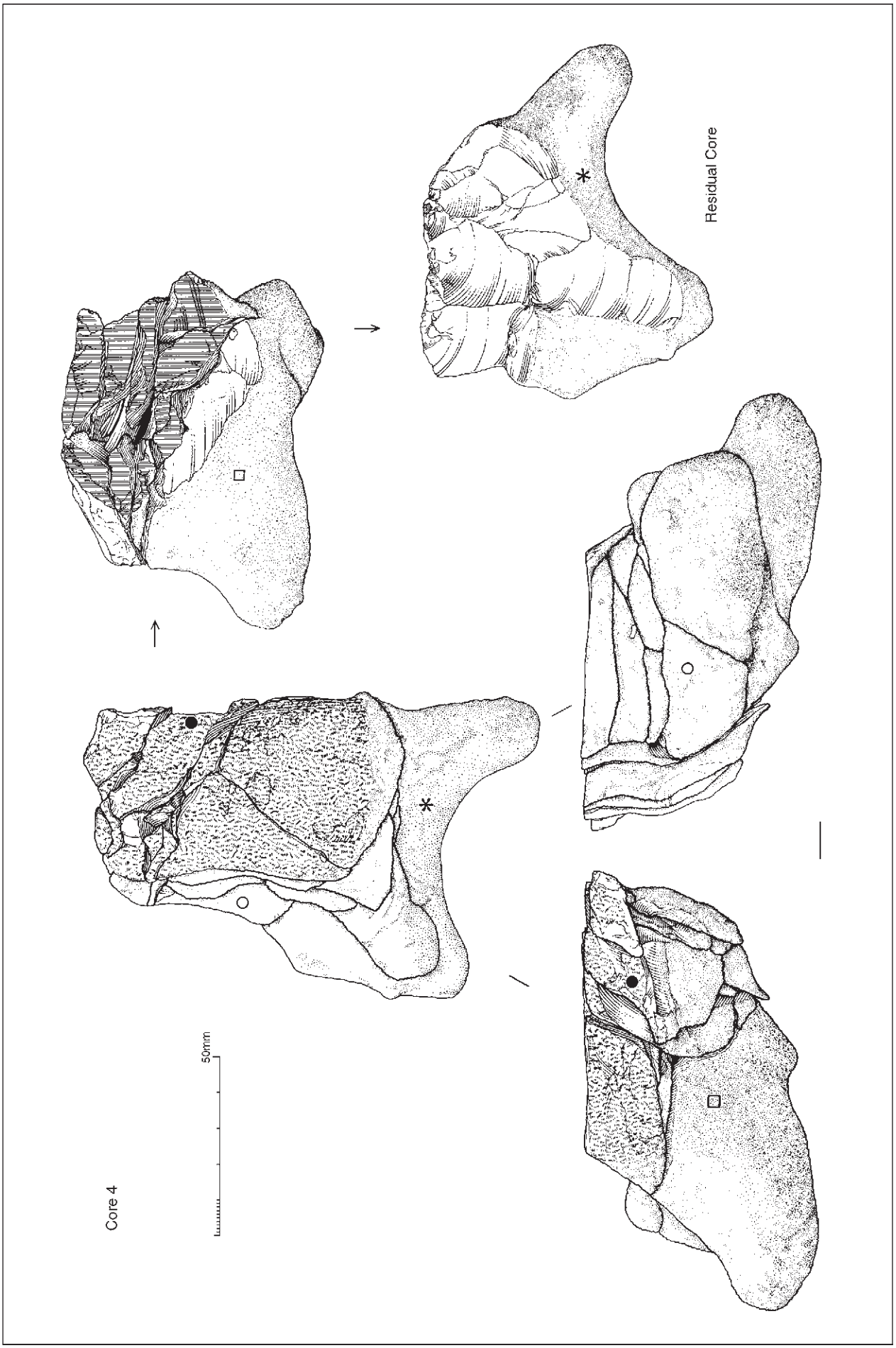

Fig 10.26 Core/flake conjoin 4 (context group 78 – outer Stepleton outwork, segment 4, Unit 2, Layer 3b, phase III; find nos: ST80 2395, 2415 and 2467). Left: three views of the near complete nodule with all conjoining flakes refitted; upper right: main platform viewed from above with covering flakes omitted; lower right: residual class A2 core.

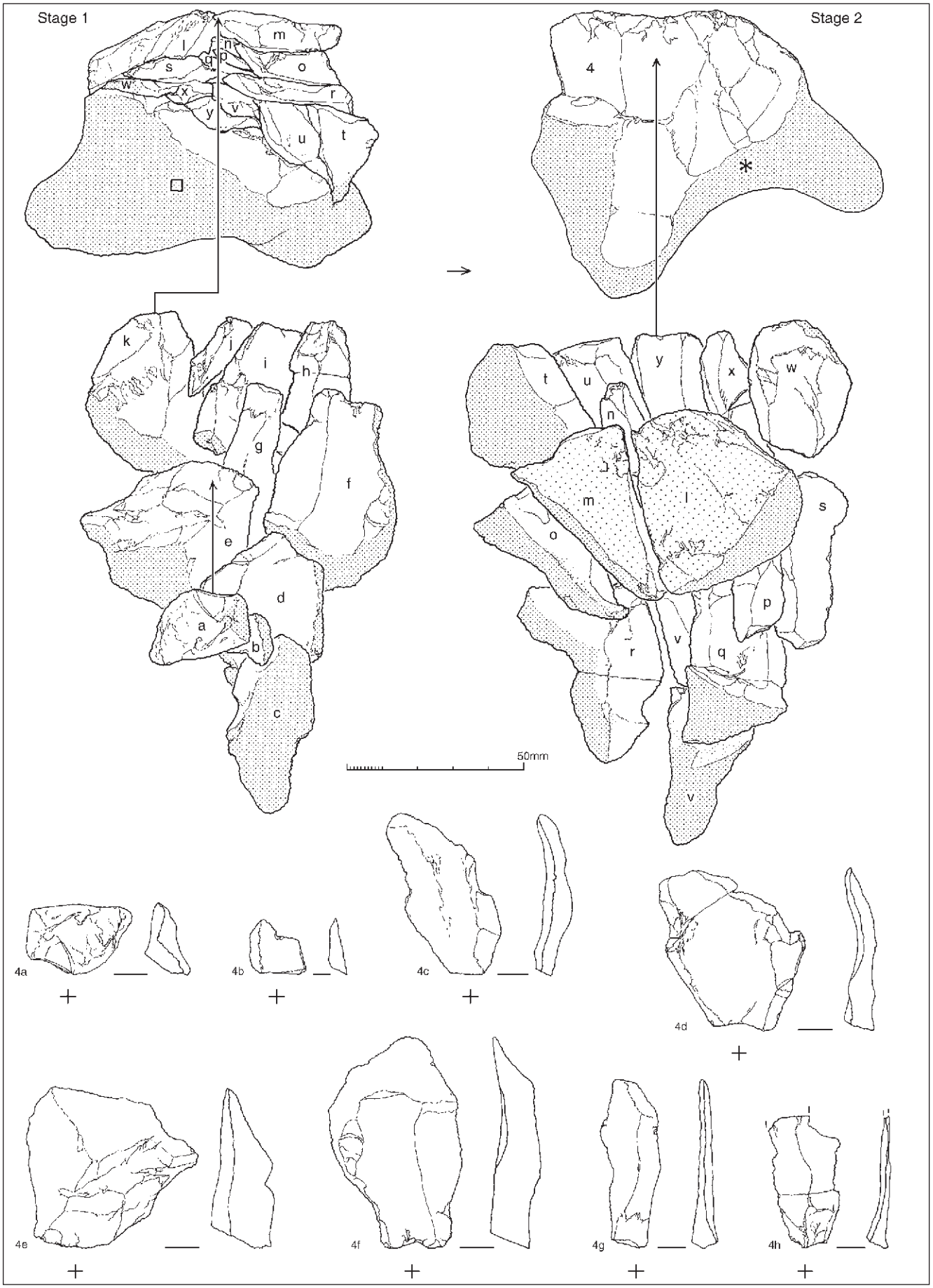

Fig 10.27 Core/flake conjoin 4. Upper: schematic exploded views of the core and refitting flakes at the two main platform stages; lower: outline drawings of refitting flakes a–h (see Fig 10.26).

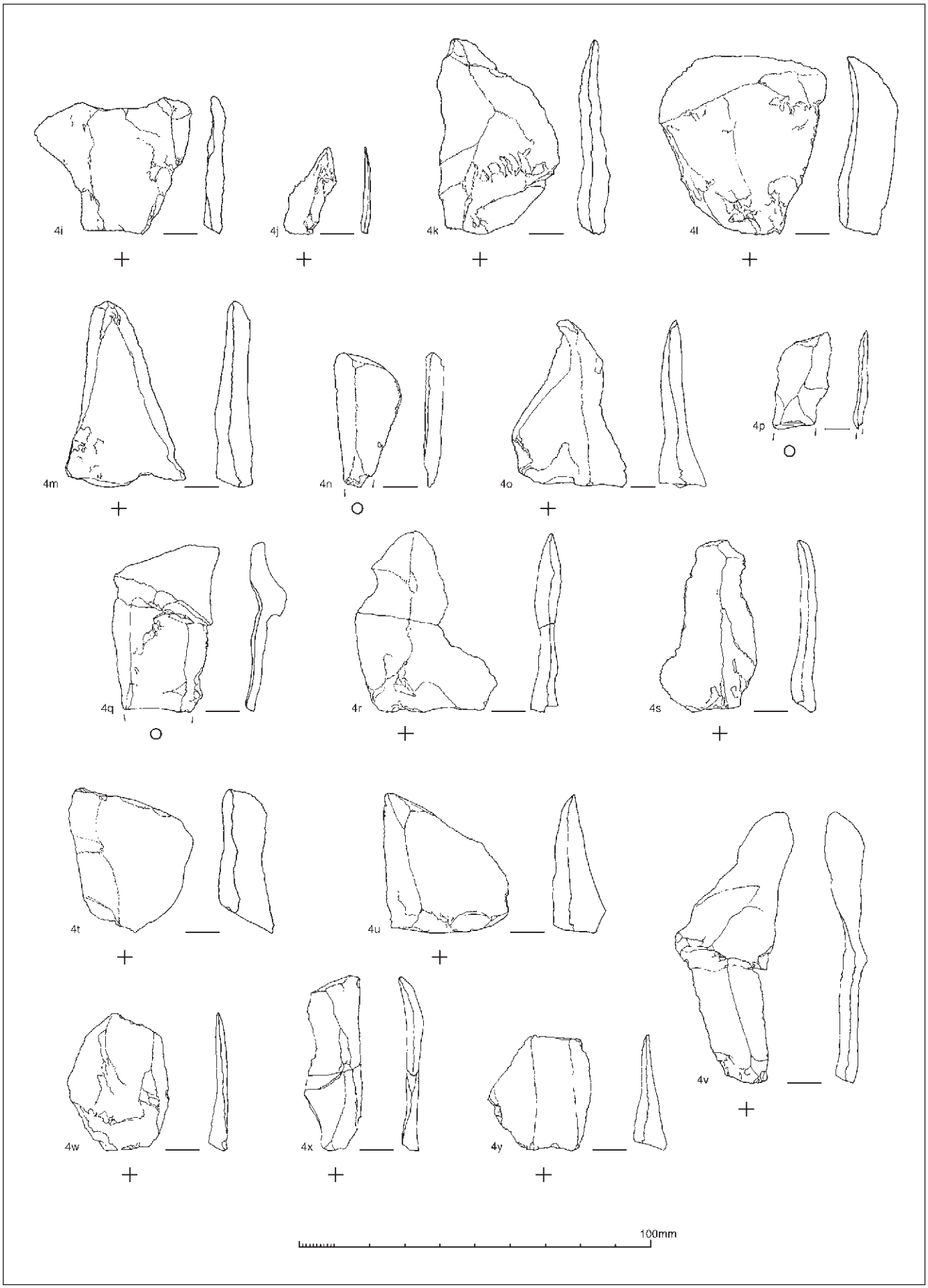

Fig 10.28 Core/flake conjoin 4: outline drawings of refitting flakes i–y (see Figs 10.26–7).

with knobs, and has a largely unabraded cortex with some brown staining. With all flakes refitted the core is 124 mm in maximum dimension and weighs 734 g.

The first stage of reduction represented by the refits involves a single very chunky flake which is the final removal in a sequence not otherwise present. The negative scar of this flake provides the platform for the second stage removal of 12 flakes, from the middle of which sequence a single secondary flake, 50 mm long, is absent. After this the third stage comprises a very substantial rejuvenation flake struck from the side, wholly removing the previous platform and creating the final stage platform. This final stage has 11 refitting flakes with only one substantial missing tertiary flake some 52 mm long.

Conjoin group 6 (Fig 10.29)

A residual single platform (A2) core (ST80 2399/234), maximum dimension 88 mm, maximum surviving flake scar length 31 mm, weight 207 g, has 28 refitting flakes conjoining to produce an incomplete nodule of 134 mm maximum dimension and a weight of 606 g. The cortex is unabraded with some brown staining, and one terminal of the nodule is formed by a thermal fracture surface. This naturally flat surface has served as the platform for one major removal (absent) but was not continued with.

Fig 10.29 Conjoin group 6: the refitted nodule. Maximum dimension 134 mm. Photo: National Museums of Scotland

The major flaking began at the opposite pole of the nodule with the removal of a single primary flake (absent) to create an initial platform from which four flakes were struck. These are all present but three of them are fragmentary. The negative scars of these removals provided the platform for the main sequence of removals, of which 21 flakes could be refitted. There are several minor flakes and spalls absent in this sequence and at one point several larger flakes are absent, which obscures the precise order of detachment within this series. Altogether there are at least three major flakes absent, of which the longest was 58 mm. The penultimate removal from this platform is a massive plunging flake, which has effectively ruined the core. An attempt was made to rejuvenate by two removals to create a final platform, from which only one short hinged-out flake was detached and then the core abandoned.

Conjoin group 7 (Figs 10.30–32)

This single platform (A2) residual core (ST80 2399/212), maximum dimension 78 mm, maximum surviving flake scar length 69 mm, weight 201 g, has 42 refitting flakes which conjoin to form a near complete nodule, maximum dimension 148 mm and weighing 665 g. The compact nodule has an unabraded cortex with some brown staining.

The single primary flake struck from one pole to form the first platform is absent. From this first stage platform were struck the five refitting flakes a, aa, b, bb, and c. This sequence lacks several spalls, one small flake, and the final flake struck from this platform, a tertiary flake 33 mm long. The flake scar surface left by these removals formed the platform for the next stage involving the removal of five refitting flakes cc, d, dd, e, and ee. Absent from this sequence are a secondary flake 30 mm long and 25 mm wide between cc and d, a secondary flake 74 mm long and 45 mm wide between dd and e, and a secondary flake about 20 mm long between e and ee.

The third stage platform was formed by the negative scars of the second stage flakes, and from this 16 refitting flakes – f to mm (and two not visible on the stage 3 illustration) – were struck in a sequence with several gaps: two secondary flakes, one 30 mm the other 15 mm long are missing after g and gg; between k and l there are an absent tertiary flake 25 mm long and a secondary flake 50 mm long; between m and mm there is a major absence of one or more tertiary or secondary flakes, of which one is 76 mm long; and from the final face of this stage there is the negative scar of an absent small tertiary flake 17 mm long.

The penultimate, fourth stage platform is again formed by the negative scars from the previous sequence. There are only two main removals, nn and o, which are both chunky, broad, secondary flakes, designed to create the final platform. The other removal at this stage, n, is a chip which probably spontaneously detached at the same time as nn or o.

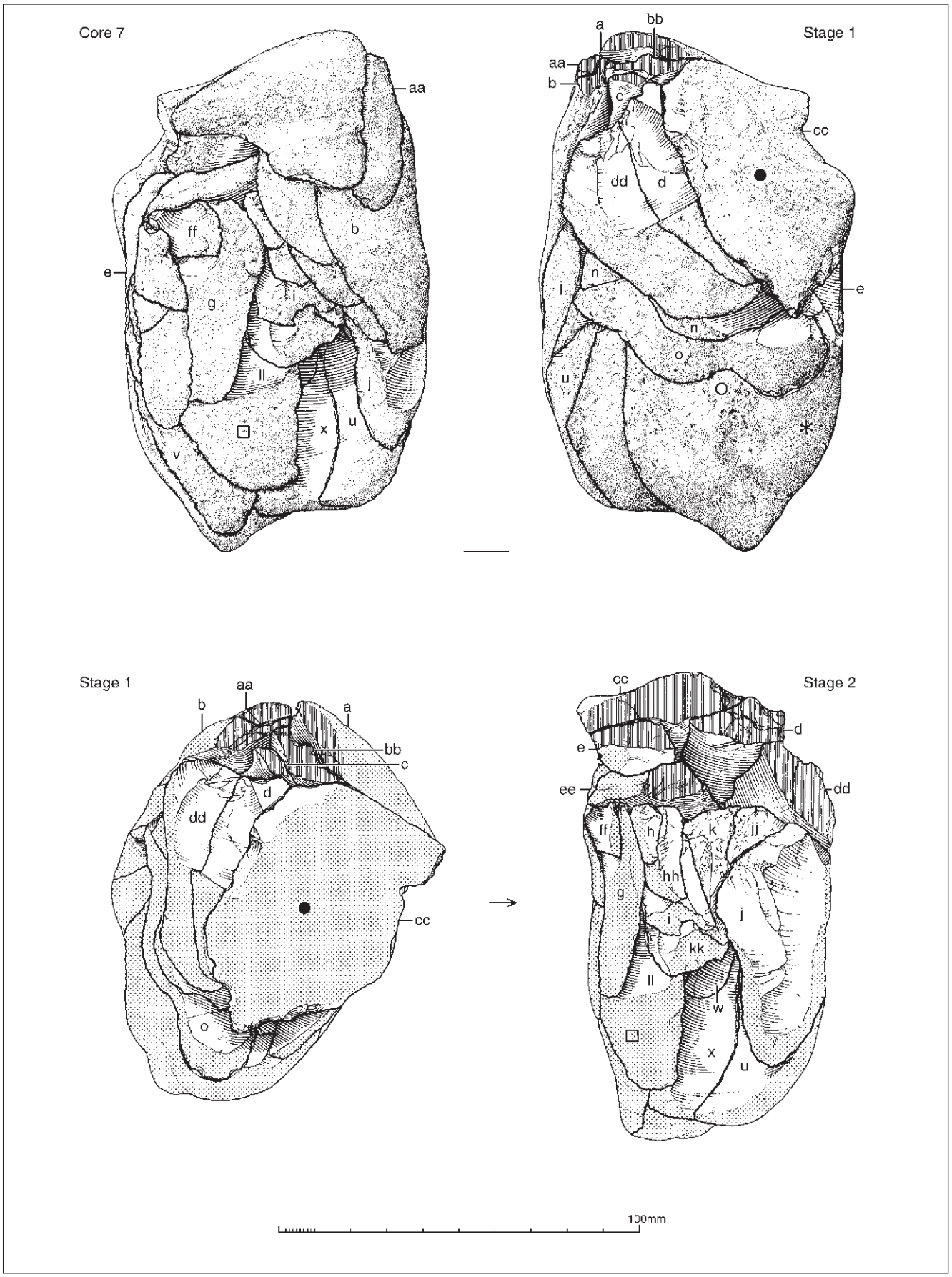

Fig 10.30 Core/flake conjoin 7 (context group 78 – outer Stepleton outwork, segment 4, Unit 2, Layer 3b, phase III; find nos: ST80 2395, 2399 and 2467). Upper: two views of the near complete nodule with all conjoining flakes refitted; lower: first and second stages of the reduction sequence.

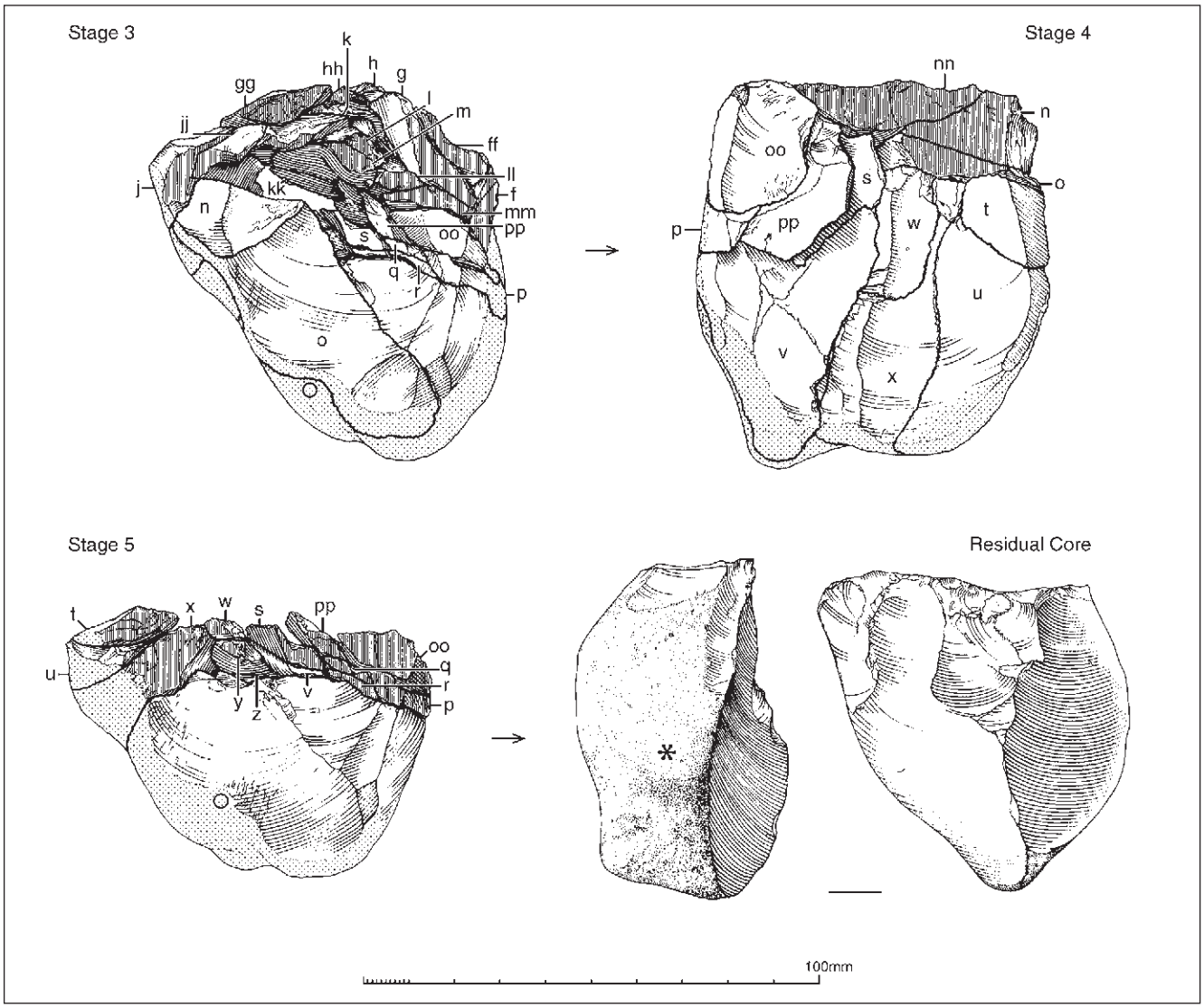

Fig 10.31 Core/flake conjoin 7: third, fourth, and fifth stages of the reduction sequence, with two views of the residual class A2 core (see Fig 10.30).

The final platform, back in the same plane as the third stage platform, has thirteen refitting flakes, oo to z. The only significant absences from this sequence occur between pp and q, where a tertiary blade 55 mm long by 15 mm broad and a small tertiary flake are missing, and right at the end where the tertiary flakes which created the scars in the middle of the face of the residual core are absent.

Conjoin group 8 (Figs 10.33–36)

A residual (type D) core (ST80 2399/231) with a bifacial platform along a keeled edge, maximum dimension 79 mm, maximum surviving flake scar length of 54 mm, and weight 160 g, has 69 refitting flakes, which conjoin to form a near complete nodule of maximum dimension 178 mm and weight 930 g. The nodule is of elongated, waisted form, with several knobbed projections and two areas of early truncation where the exterior surface is a matt thermal one rather than cortical. The cortex is largely unabraded with large areas of brown staining.

The lengthy reduction sequence begins with a few small spalls struck from one of the thermally exposed poles, followed by the nodule being opened by a single primary flake (a) which removed the flat thermal surface at this end from the side. A second flake (aa) is then removed in the same plane but from a different side to create at this third stage the first proper platform. From the reduction of this platform thirteen refitting flakes aaa–eee are present, without any significant absences in the sequence, though the proximal ends of flakes aaa, bb, and eee are missing.

The negative surface from the removal of flake eee forms the fourth stage platform, from which there are eight refitting flakes f–hh. The only major absence in this reduction sequence is at the end, where the flaked face has the scar of a missing tertiary flake 50 mm long.

The fifth stage platform also uses the previous negative surface and has twelve refitting flakes hhh–ll. Within this sequence of removals there are numerous gaps: between hhh and jj are several absences, including

Fig 10.32 Conjoin group 7: two views of the refitted nodule. Maximum dimension 148 mm. See Figs 10.30–31. Photo: National Museums of Scotland

a secondary flake up to 60 mm in length; between jj and kkk a tertiary flake 54 mm long is absent; between iii and kkk a tertiary flake 21 mm long is absent; and between kkk and ll a secondary flake 71 mm long and a tertiary blade 65 mm long by 25 broad are absent.

The sixth stage again has a platform at right-angles to the previous, struck direct from the negative flake scars, and has six refitting flakes lll–nn. Only three are the result of separate blows, the other three resulting from breaks during detachment. There is an initial flake before mm absent from this sequence, and three or more small flakes missing from the end of this sequence after mm, n, and nn with a maximum length of 30 mm.

The seventh stage platform at right-angles to the sixth and in the same plane as the fifth, has just four refitting flakes nnn–ooo, with no significant absences. One of these flakes is large (oo – weight 65 g) and this represents a substantial rejuvenation stage.

At right-angles to the previous flaking direction, the eighth stage platform has two removals p–pp, with flake p a large example in three separate pieces, weighing together 53 g. Flake pp has hinged out and the core was subsequently turned again for the ninth platform stage. There are six refitting flakes ppp–rr, with no absences of significance.

The tenth, eleventh, and twelfth stages are all part of the sequential exploitation of a keeled edge in the final stages of the core reduction. Stage 10 has six refitting flakes s–uu with some small flakes absent between s and t; two tertiary flakes, one only 13 mm long, the other 33 mm long, absent between u and uu; and a tertiary flake 28 mm long absent between uu and the final flaking face. Stage 11 has just the two refitting flakes v–vv, while the final stage 12 has eight refitting flakes w–zz, with among the sequence about four missing flakes, of lengths 13, 17, 21, and 50 mm respectively. The latter was a blade 15 mm broad.

Conjoin group 9 (Figs 10.37–39)

A residual single platform (A2) core (ST80 2399/169), maximum dimension 95 mm, maximum flake scar length 79 mm, and weight 165 g, has 42 refitting flakes which conjoin to form a near complete nodule. The residual core was initially classified as a flake, because the surface subsequently seen to be a thermal exterior was regarded as a flake surface. This confusion arose because there are two kinds of thermal fracture surface present on this nodule. One type, forming the flat base of the core as positioned in Figure 10.37, is the conventional one resulting from early fragmentation, probably in geological context, where the surface has a matt character and has resisted cortication. The other type, which may result from a more recent fragmentation, has acquired a mainly grey-white discolouration only marginally different to that of the surfaces of the refitting flakes and the negative scars on the residual core. Without refitting, this differential character of the original nodule would not have been apparent. It is the thermal breakage which gives the nodule its distinctive angular form. The remaining cortex is stained brown in places, and is somewhat weathered.

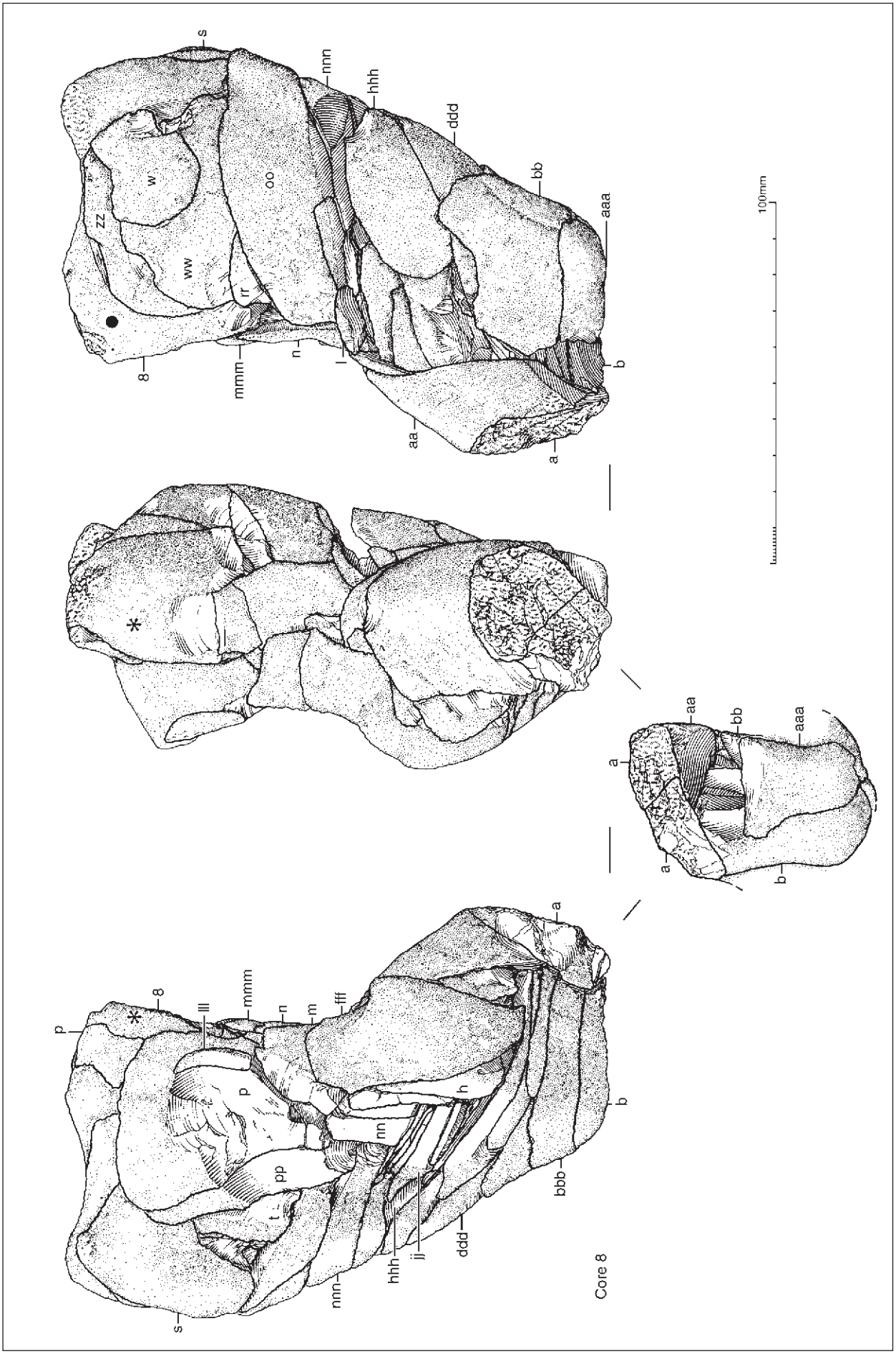

Fig 10.33 Core/flake conjoin 8 (context group 78 – outer Stepleton outwork, segment 4, Unit 2, Layer 3b, phase III; find nos ST80 2395, 2399 and 2467). Three views (and inset detail) of the near complete nodule with all conjoining flakes refitted.

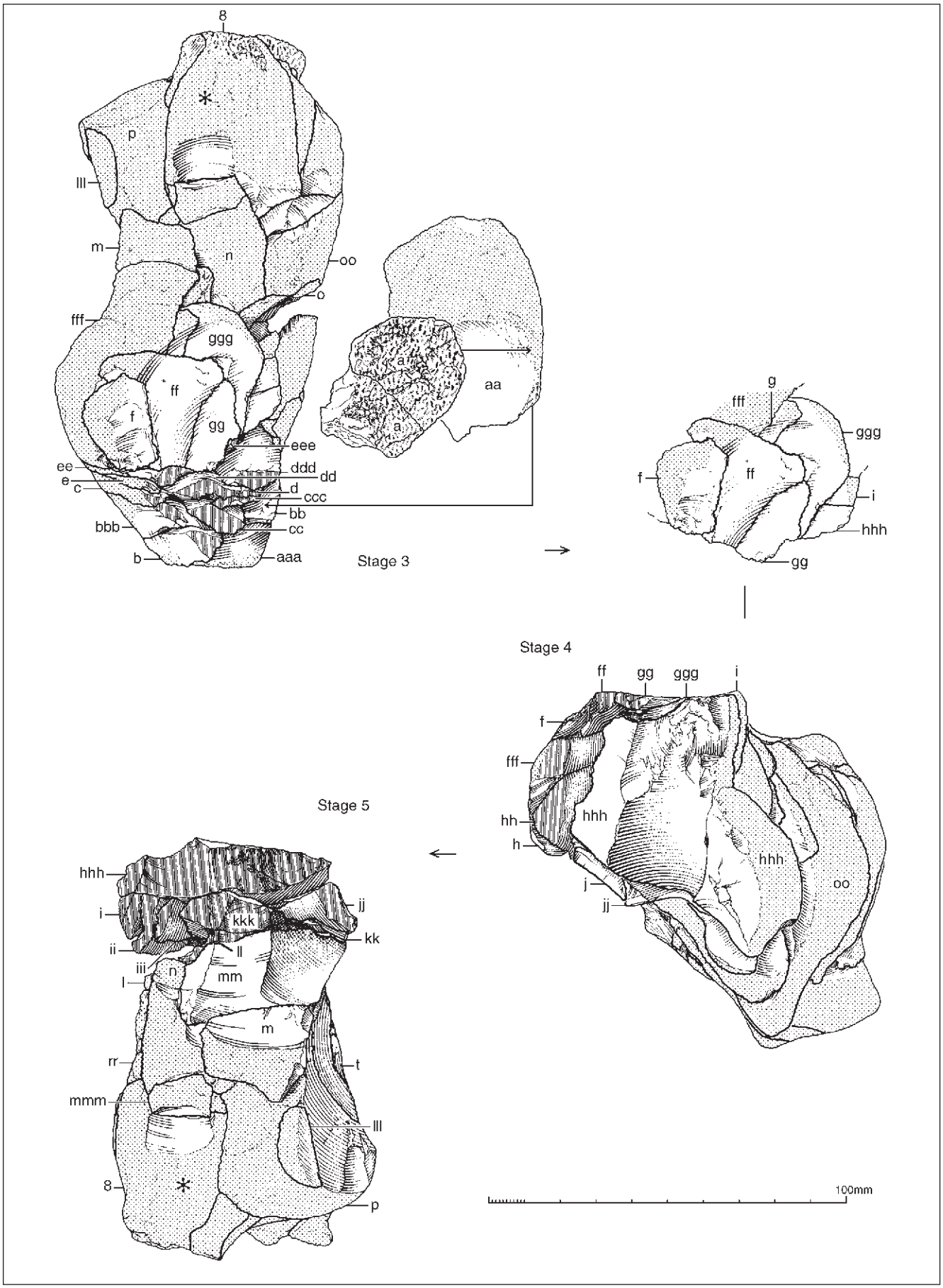

Fig 10.34 Core/flake conjoin 8: third, fourth, and fifth stages of the reduction sequence, with the single removals of the first and second stages shown adjacent to the third stage and an inset detail between the third and fourth stages (see Fig 10.33).

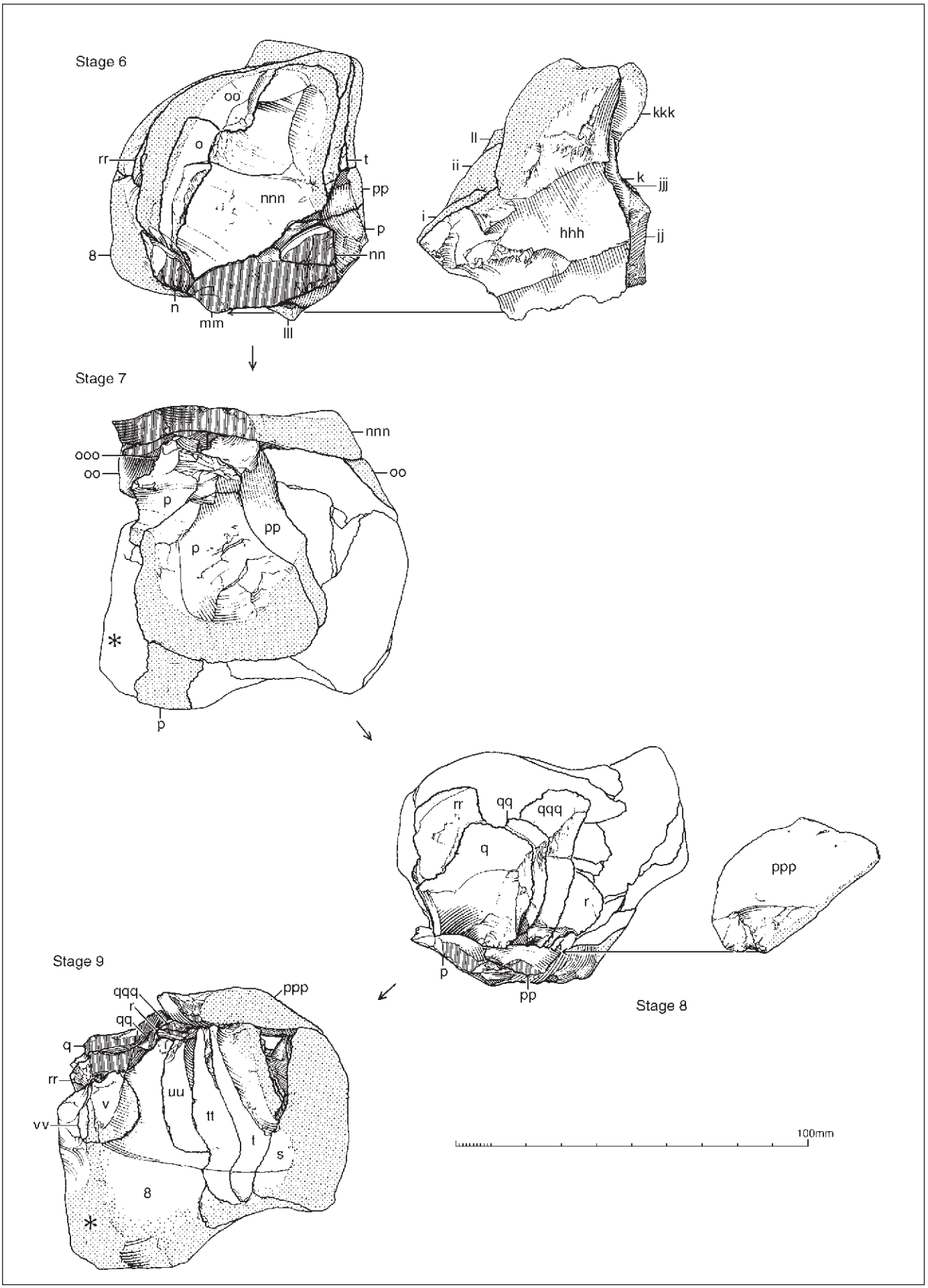

Fig 10.35 Core/flake conjoin 8: sixth, seventh, eighth, and ninth stages of the reduction sequence (see Figs 10.33–4).

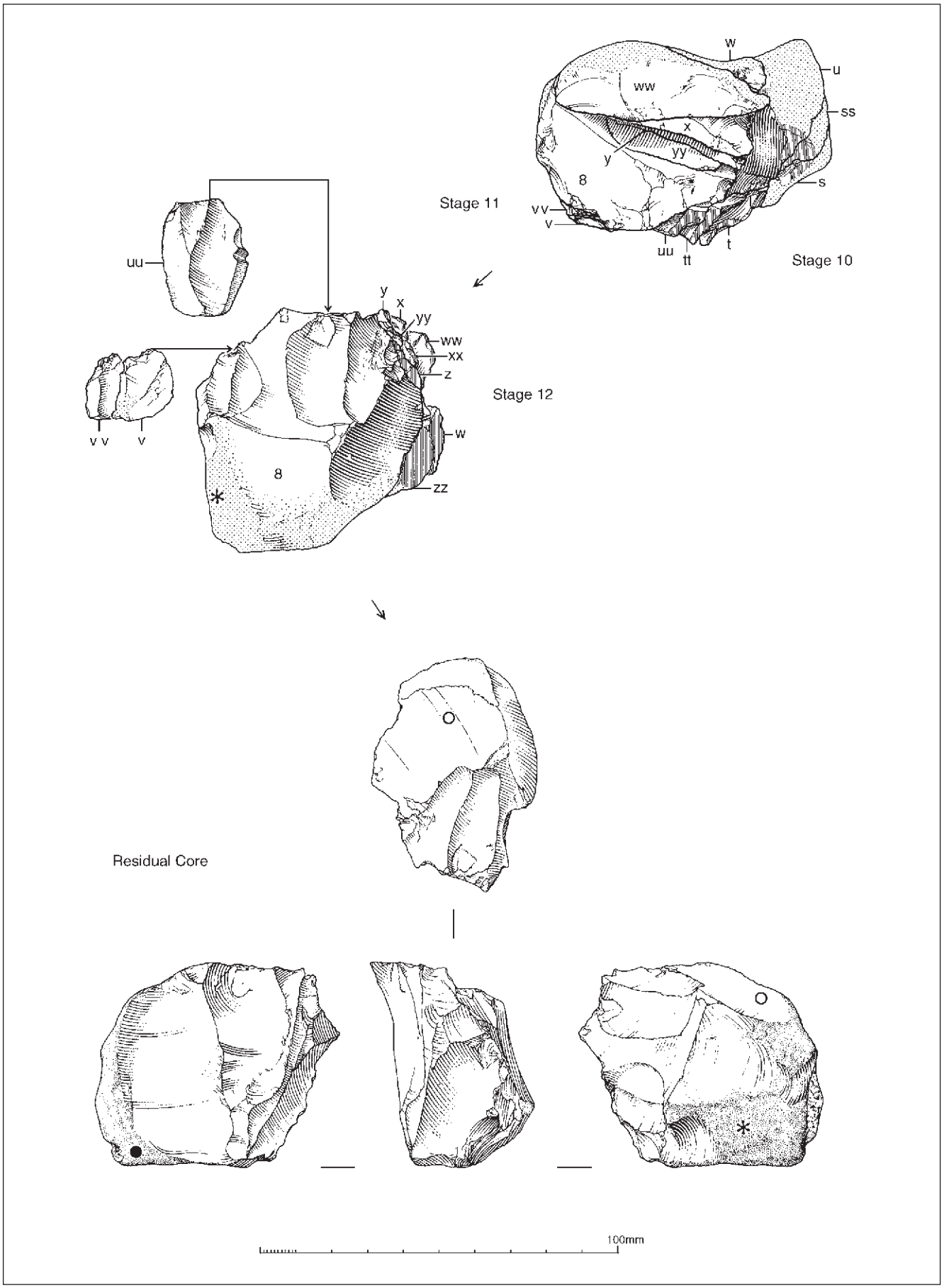

Fig 10.36 Core/flake conjoin 8. Upper: tenth, eleventh, and twelfth reduction stages; lower: four views of the class D residual core (see Figs 10.33–5).

Fig 10.37 Core/flake conjoin 9 (context group 78 – outer Stepleton outwork, segment 4, Unit 2, Layer 3b, phase III; find nos: ST80 2395, 2399, 2415 and 2467). Three views of the near-complete nodule with all conjoining flakes refitted.

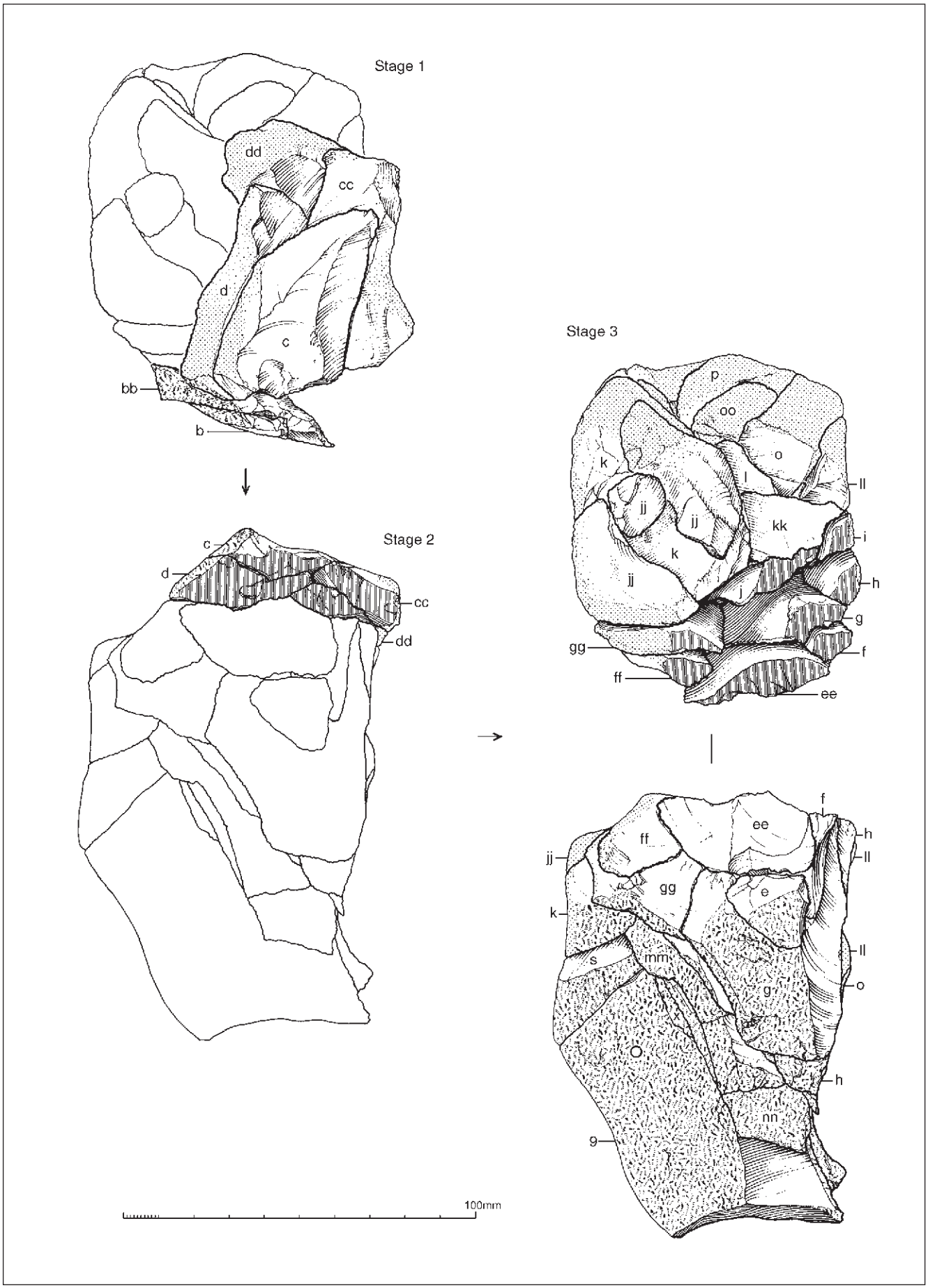

Fig 10.38 Core/flake conjoin group 9: first, second, and third stages of the reduction sequence (see Fig 10.37).

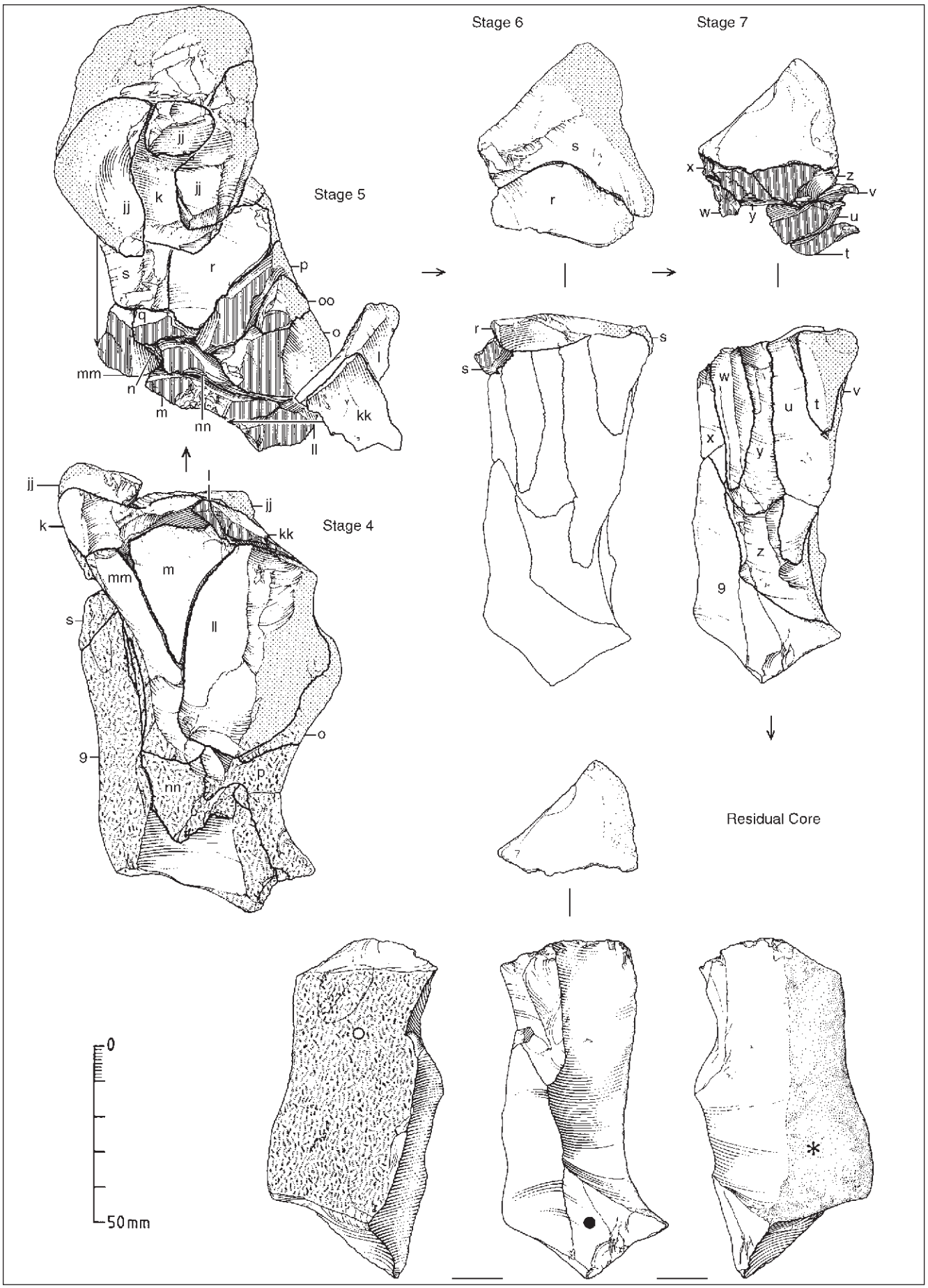

Fig 10.39 Core/flake conjoin group 9. Upper: fourth, fifth, sixth, and seventh stages of the reduction sequence; lower: four views of the class A2 residual core (see Figs 10.37–8).

The initial opening of the nodule in stage one is by the removal of two flakes b–bb. Parts of the proximal and distal portions of flake b are absent. The middle view of Figure 10.37 shows clearly how the more substantial flake bb creates the platform for the second stage removals. One flake about 30 mm long is absent after bb. The four refitting flakes c–dd from the second stage lack the initial flake or flakes to fit the negative dorsal scar on flake c, and a flake 57 mm long is absent between cc and d.

The third stage platform uses the negative flake scars of the previous flaking. The eleven refitting flakes e–j from this stage include a fragmented flake (e/ee) and two flakes (hh and ii) which lack their proximal ends. The sequence has a gap between flakes h–hh, where one or more flakes up to 55 mm in length are absent.

Stage four is in the same plane as the second stage and is a rejuvenation of the third stage platform. The four refitting flakes jj–l include one (jj) in three incomplete segments and a small secondary flake is absent after kk.

The fifth stage platform has ten refitting flakes ll–q, of which pp lacks its proximal end. There are several minor absences in this sequence, the largest being a secondary flake about 23 mm long.

Stage six is again a rejuvenation, continuing the same sequence of planes, with two refitting flakes r–s. An absent flake precedes these two, but they provide the surface for the seventh and final stage platform, to which there are seven refitting flakes t–z. Between flakes u and v/w there is an absent flake 60 mm long.

At some stage prior to the detachment of flake q, which lacks its distal terminal, two flakes a–aa were detached at right-angles to each other from the base of the core as shown in Fig 10.37, but no further flaking was undertaken from that end of the nodule.

Conjoin group 10 (Fig 10.40)

A two platform (type B2) core (ST80 2415/132), maximum dimension 108 mm, maximum flake scar length 61 mm, and weighing 400 g, has 39 refitting flakes which conjoin to create a near complete nodule, of maximum dimension 164 mm and weight 1120 g. There is also a further small flake which could be positively identified as from this nodule, but which did not refit.

The flaking at one end of the core, involving removal of a primary cortical flake to create a platform, from which two main flakes and some spalls have been struck, has proceeded no further, and none of the flakes are present. This abandoned platform could relate to knapping simply to facilitate handling of the nodule or perhaps to a previous, exploratory knapping episode.

The nodule itself is thermally split, probably in original geological context, and has a broad non-cortical thermal external surface, discoloured to a matt grey-cream. The cortical part of the nodule has three projecting knobs, each truncated in geological time.

Fig 10.40 Conjoin group 10: the refitted nodule. Maximum dimension 164 mm. Photo: National Museums of Scotland

The cortex has some brown staining and calcareous accretion and some signs of weathering. A prominent fossil remains on the cortical part of the residual core.

Creation of the initial platform involved the removal of a single large flake (112 g) struck from the flat thermal external surface. The second stage has four refitting flakes, one of which has the proximal end missing. The only absent flake from this sequence is a secondary flake 55 mm long. The third stage reverts to flaking from the original thermal exterior surface, from which eight refitting flakes and chips are present. There are only minor absences of small flakes and spalls from this sequence. The fourth and final platform utilises the negative flake surface left by the previous removals. Twenty-five refitting flakes belong to this stage, in a sequence which has some small flakes missing from outer face, then only minor absences apart from three flakes, respectively 40 mm, 50 mm, and 60 mm in length.

Conjoin group 11 (not illustrated)

A single platform (A2) core (ST80 2415/158), maximum dimension 97 mm, maximum flake scar length 64 mm, weight 275 g, which has three refitting flakes that conjoin to make a complete nodule of maximum dimension 111 mm and weight 392 g. The complete nodule is actually just one fragment of a larger nodule, split in geological context so that it has a large, flat, thermal, non-cortical, matt grey-white facet. The rest

of the exterior is very irregular, with three intact projecting knobs and one truncated one. There is some brown staining and some abrasion of the cortex.

This has not been a successful or productive core. There is only one platform, formed by the thermal external surface, knapped to remove two flakes on one side, and one flake on the other. There are no absent flakes.

Conjoin group 12 (not illustrated)

A two-platform (B2) core (ST80 2415/157), maximum dimension 124 mm, maximum flake scar length 73 mm, weight 750 g, with seven refitting flakes which conjoin to form a nodule with two areas where cortical primary flakes are absent. The nodule has fractured thermally on two faces, one thermal surface having a matt grey-white discolouration, the other a matt mixture of grey-white and the original black. The latter area has served as the platform for the removal of seven or more flakes, none of which are present, so this may represent an entirely previous episode of flaking. The cortex area has some brown staining and calcareous accretion.

Flaking in the sequence to which the refitting flakes belong appears to have begun on part of the nodule exterior marked by a depression formed by fossil inclusion. Flakes from at least two preliminary stages are absent, before the first refitting flake (weight 131 g) – and a non-bulbar spall – have been detached to create what is perhaps the fourth stage platform. This again has only a single large removal (weight 87 g), which is similarly preparatory of a further platform. This final platform has four refitting flakes, with just one absent flake about 70 mm long.

The residual core is still a substantial chunk of flint.

Conjoin group 13 (not illustrated)

This is a refitting nest of 24 flakes (weight 392 g), lacking the small residual core to which they would conjoin. The nest allows the form of the original nodule to be reconstructed. It is one end of a larger nodule, split off by thermal fracture leaving a flat thermal surface with a matt grey-white discolouration and some iron staining. The cortex areas have some orange-brown staining and some limited abrasion.

The initial stage of flaking uses the thermal external surface as the platform. There are 12 refitting flakes from this stage, from which no substantial but several minor flakes are missing, as is the distal segment of one of the larger primary flakes. Subsequent to these removals the next stage is a single massive rejuvenation flake (weight 220 g), which removes over half of the remaining core. The scar bed of this flake provides the platform for the final stage of removals, in the same plane as the first, and from this sequence eleven refitting flakes are present. Two of these lack their proximal ends, and another lacks its distal end, and there are an unknown number of flakes absent altogether.

Conjoin group 14 (not illustrated)

A two-platform (B2) core (ST80 2415/127), maximum dimension 81 mm, maximum flake scar length 73 mm, weight 210 g, has 18 refitting flakes, which conjoin to form an incomplete nodule portion with three thermal surfaces, of maximum dimension 140 mm and weight 616 g. The cortex has brown staining and two knobbed projections.

The initial reduction phases are obscure, but there is the distal portion of one primary flake which truncates one of the matt thermal surfaces and which might have been removed at an early stage. The first identifiable stage for which there are refits involves use of one of the flat thermal surfaces as a platform, from which there are four refitting flakes and several absent small flakes. The second stage is the removal of a large chunk at right-angles to the previous platform, which is a partially successful rejuvenation. This leads to the third stage with ten refitting flakes. In this sequence at least one large flake and one blade are absent. The final platform is on the opposite site of the remaining core, to which two substantial secondary blades refit, though one is incomplete.

Conjoin group 15 (not illustrated)

A single platform (A2) core (ST80 2467), maximum dimension 79 mm, maximum flake scar length 54 mm, weight 131 g, with 33 refitting flakes, which conjoin to form a near complete nodule portion, of maximum dimension 127 mm and weight 472 g. The portion is an almost tabular segment of a nodule which has thermal surfaces on both faces and cortex around the intervening periphery.

The first stage flaking is represented only by the final flake of the sequence, the negative scar surface of which provided the second stage platform. Three refitting flakes are present from the reduction of this platform, with one 33 mm long flake and a small spall absent. The third stage is another single removal following the same plane as the initial stage, simply rejuvenating the second stage platform for the fourth stage, which has a single refitting flake, and an absent flake and several absent spalls.

The fifth stage of reduction moves to a separate part of the nodule, with two refitting flakes struck from the naturally flat platform provided by one of the thermal surfaces. Only a couple of small flakes are missing from this sequence. The sixth stage returns to the previously worked side of the core and involves the removal of a single large rejuvenation flake (weight 69 g), to form the final seventh stage platform from which 22 refitting flakes were struck. Apart from spalls, there would seem to be only one large tertiary flake missing from this sequence.

In addition to the flakes itemised, there are two refitting spalls from the exterior surface which probably detached spontaneously during knapping.

Conjoin group 16 (not illustrated)

A single platform (A2) core (ST80 2395/52), maximum dimension 111 mm, maximum flake scar length 70 mm, weighing 330 g, with 13 refitting flakes that conjoin to

form a part nodule, of maximum dimension 112 mm and weight 443 g. The residual core has some abrasion at one pole, probably from casual use as a hammerstone, which must post-date the final stage of flaking. The part nodule is the elongated and knobbed end of a nodule, with unweathered brown-stained cortex, and has split from the rest of the nodule thermally. The flat surface from this split provides the platform for the first stage flaking at two points. In one place a single refitting flake has been removed without further development, in another there are three refitting flakes, the initial one of which has a Siret fracture and only one half is present. The latter removals have provided the platform for the second stage flaking, from which there are three refitting flakes and an absent blade 60 mm long. The third stage flaking is rejuvenation in the same plane as the first stage, and only one of the two flakes from this stage is present. The fourth stage flaking, in the same plane as the second, has the main removals, all five flakes of which are present. A final fifth stage of rejuvenation flaking has no refitting flakes and has not led to any further removals.

Conjoin group 17 (not illustrated)

A group of 28 flakes (in two nests of 12 and 16 flakes; total weight 445g), which conjoin to form an almost complete nodule, lacking the residual core, which must have been small, in the region of 70 mm in maximum dimension. The nodule has an unabraded, 'chalky' cortex with one sharply pointed knobbed protrusion and one anciently broken projection, the break surface of which is discoloured dense white.

The primary flake struck to form the second stage platform is absent. From this platform there are 12 flakes which refit in a sequence lacking numerous small flakes and spalls but no substantial flakes are absent. The negative flake bed of these removals becomes the third stage platform with flakes removed in a plane at right-angles to the previous one. Fifteen flakes refit in a sequence from which several minor flakes and spalls and two tertiary flakes about 50 mm long are missing. Another small refitting flake on this nest, from the exterior of the nodule, is probably a spontaneous product during knapping.

Conjoin group 18/19 (Fig 10.41)

A group of 21 flakes (in two nests of 10 and 11 flakes; total weight 225 g), which conjoin to form a partial nodule with an absent core. The nodule has a cortex which is partly white and partly brown-stained.

The first nest of eleven flakes lacks any of the flakes from the first stage (or stages) of opening the nodule. The negative flake beds from this flaking form the platform for the second stage removal of a single refitting flake, thus rejuvenating the previous platform, from which seven refitting flakes are present. One of these third stage flakes is a distal tip only, two others lack their distal tips, and some small flakes/spalls are absent. The fourth stage is a repeat rejuvenation with a single refitting flake in the same plane as the second stage. This creates the fifth stage platform which has two refitting flakes, which in fact are also by way of rejuvenation of the core since it is the broad bed of the

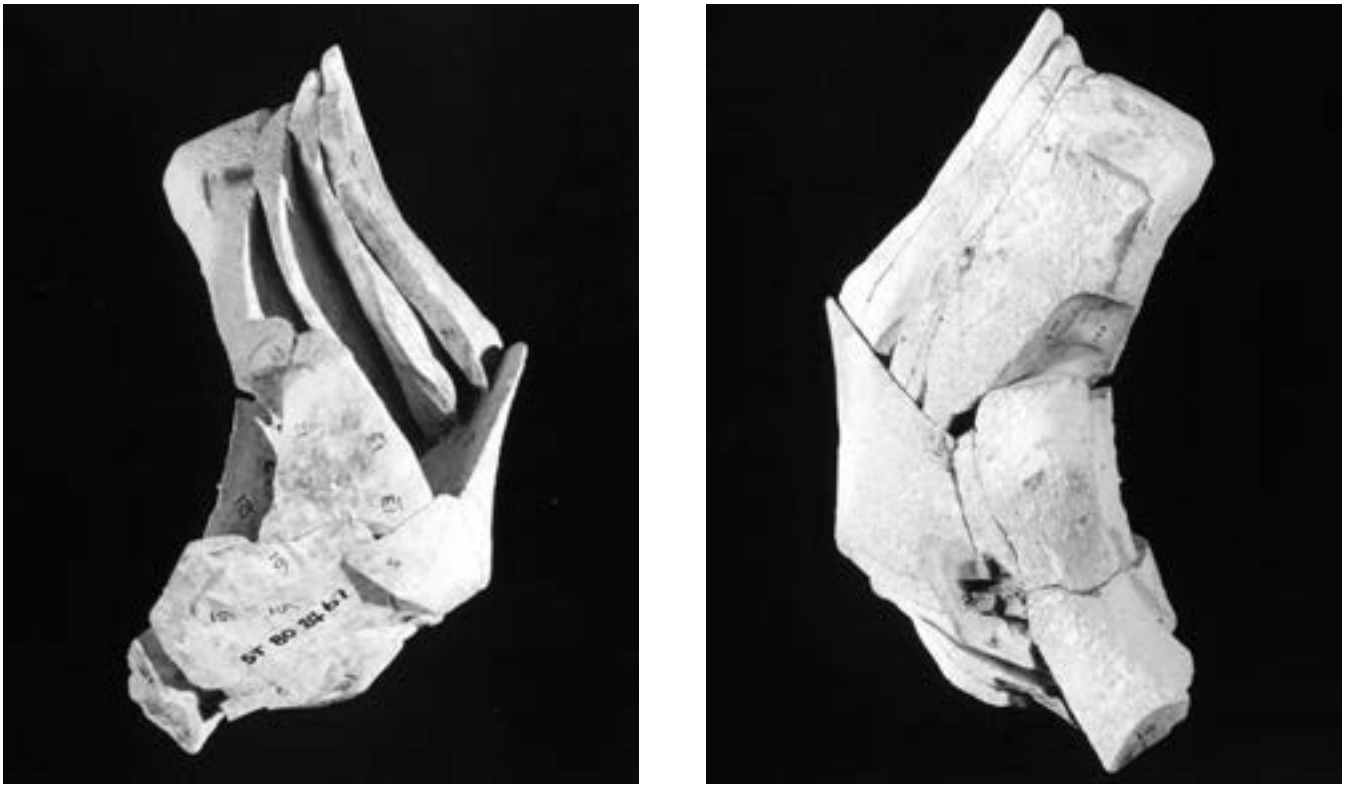

Fig 10.41 Conjoin group 18/19: two views of the refitted flake clusters. Maximum dimension 115 mm. Photo: National Museums of Scotland

final of these two which provides the platform for the sixth and last stage of removals, involving the second nest of ten refitting flakes. This is a very partial sequence with flakes from one side of the flaking face of the core entirely absent.

Only four of the flakes from this conjoin group appear on the plans of the scatter in the west butt of the segment. These lie a maximum of 0.30 m apart and are towards the east edge of the scatter, so the missing flakes could well be within the unexcavated baulk (Fig 3.105).

Conjoin group 20 (not illustrated)

A nest of 13 refitting flakes (weight 56 g) all struck from a single platform, which conjoin to form part of the exterior of what would have been an almost cylindrical nodule (or portion of one). The cortex is largely stained brown and closely resembles in character the cortex on conjoin group 18/19. Only one of the flakes from this group was plotted, but it lies immediately adjacent to one of the plotted flakes from group 18/19. While the two groups do not quite refit, they do obviously derive from the same core and the relative positioning on the original nodule is apparent. It is of some interest to note that this nodule would have been quite small, slender, and in part cylindrical, and not an obvious choice for knapping. There are no substantial flakes missing from the sequence, though some of those present lack either their distal or proximal ends.

Conjoin group 21 (not illustrated)

A nest of 11 refitting flakes (weight 182 g) from the early stages of core reduction, the core itself being absent. The flakes conjoin to form one end of a nodule with a very 'chalky' cortex and some iron staining. The pole of the nodule has an ancient thermal break, giving a flat surface with matt grey discolouration. This surface is used as the first platform for removing an initial primary flake, which is present, as is a second primary flake removed at right-angles to it. The bed of this flake has provided the platform for the third and final stage of flaking, to which the remaining nine refitting flakes belong. There is one flake 40 mm long absent from this sequence.

Conjoin group 22 (not illustrated)

A single platform (A2) core (ST80 2415/131), maximum dimension 98 mm, maximum flake scar length 62 mm, and weight 330 g, with 17 refitting flakes, which refit to form a larger A2 core, of maximum dimension 143 mm and weighing 640 g. The refitted core comprises the main part of a knobbly nodule with cortex partially stained brown. The first stage (or stages) of removals are entirely absent, as are the initial removals of the second stage at right-angles to the first. Sixteen of the refitting flakes are from this second stage, the 17th flake being a spall from the cortical exterior removed during this sequence but from a different direction. Within the main sequence of removals, apart from small flakes and spalls, at least two substantial secondary blades are absent, one 88 mm long the other 96 mm.

Conjoin group 23 (not illustrated)

A set of four refitting flakes (weight 253 g) from the exterior of a nodule, reflecting the preparatory trimming of the nodule prior to any productive flaking. The core is absent. The parent nodule has brown staining of the white cortex. The first primary flake is struck direct against the side of a projecting cortical knob on the nodule exterior. This provides the platform for the next removal, a chunky flake which is dorsally entirely cortical, and the negative scar of this flake forms the platform for the third stage to which two similarly dorsally cortical flakes refit.

Discussion of the refitting results

The evidence from the conjoining groups indicates the employment of very simple, straightforward reduction strategies. These principally involve a single, continuous knapping sequence per nodule, rather than complex sequences starting from different parts of the same nodule. Platforms tend to alternate at approximate right-angles to each other, following a simple turn of the nodule in the knapper's hand. Flaking is by hard hammer and is without preparation, the unmodified negative flake scars of the previous removals providing the platform beds. The recurrently absent spalls from the proximal dorsal edges of flakes probably indicate that platform edges were regularly refreshed before each flake was struck, but this is not the same as extensive pre-trimming.

While the reduction strategies may be simple, they are certainly not without skill. The knappers have carefully studied the available nodules and then exploited them in a remarkably successful fashion, especially given the unprepossessing shape of many of the nodules. This statement judges success in terms of the ability to reduce a nodule through a continuous series of stages down to a small residual core.

Assessment of whether the reduction was successful in the provision of useful blanks is harder to judge. The absent flakes from each conjoin group have been noted above, but it is impossible to say whether they are absent because they have been removed for (potential) use, whether they were present somewhere in the ditch deposits but not recovered archaeologically, or whether they were not recognised during the refitting process. The latter is regarded as rather unlikely and the explanation probably involves both of the former. Potential use would apply most particularly to absent flakes longer than 40 mm, which analyses have shown (Tables 10.43 and 10.45) to be the preferred size for implements. That so few of these flakes are absent from the reduction sequences need not occasion surprise. Superficially, knapping is by nature a very wasteful process, and knappers tend to be highly selective

about their products, especially if the supply of raw material is not an overriding concern. Comparison of the illustrated flakes left behind from the reduction sequences (Figs 10.22, 10.25, 10.27, 10.28) with those used for flake tools (Figs 10.7–14) shows that they include examples of precisely the same general nature.

The refitting analyses have also shown the routes by which residual single platform cores – characteristic of the Hambledon Hill assemblages and of the early/middle Neolithic period in general (Healy 1988a, 46) – are created. The technology in evidence here is comparable to that shown by the refitting sequences from the phase 1 early Neolithic causewayed ditch of the Amesbury 42 long barrow, Wiltshire (Harding 1990, figs 68–9), by at least one of the refitting groups from the early Neolithic site at Rowden, Dorset (Harding 1991, fig 41), and by the refitted nodule from the late Neolithic ring ditch in Firtree Field, Down Farm, Dorset (A G Brown 1991, fig 6.1). In the case of Firtree Field, it was concluded that the refitting scatter in the ditch represented symbolic, non-utilitarian deposition (Brown 1991, 106), whereas the knapping at Amesbury 42 and Rowden is implicitly accepted as utilitarian.

At Amesbury 42 long barrow the disposition of the refitting scatter over an area *c* 0.4 m by 0.3 m in the butt of a ditch segment is in many ways analogous to the situation of those in the Stepleton ditches. Harding (1990, 104) concluded these resulted from *in situ* knapping in the shelter of the ditch and not from dumping or silting, because: the refitting groups were probably superimposed; there were similar spatial relationships between types of individual pieces within each group; there was near total presence; and a complete range of small flakes and chips. The Stepleton data are insufficient to allow comparison on all these points, so it remains uncertain whether the refitting deposits could represent *in situ* knapping or dumped deposition from knapping elsewhere. However, the incomplete nature of the refitting sequences from segment 3 of the enclosure argues more strongly for dumping (or even erosion into the ditch), while the near complete sequences from segment 4 of the outer outwork could be suggested to be more compatible with *in situ* knapping.

10.2.7 Discussion

Table 10.6 (p 648) indicates the fundamental character of the assemblage. Manufacture has taken place on site, leaving behind a substantial residue of cores, core fragments, tested nodules, and unretouched flakes. The distribution of this material across the hilltop appears universal, insofar as it is reflected by the ditches and other features which have acted as catchments for it. Concentrations within these catchments occur, and a parsimonious explanation has been sought, which relates the concentrations to the patterning of raw material availability, in particular as produced by the patches of Clay-with-Flints. Patterning which may be rather more cultural than this can perhaps be seen in the relative proportions of the major assemblage elements from the internal features of the enclosures and the lower fills of the encompassing ditches (Table 10.55). This is a crude measure, but it suggests that retouched pieces are a more significant part of the feature fills than the ditches, and that cores – more so at Stepleton than the main enclosure – are characteristically part of the ditch fills. There are various ways in which this might be interpreted, but two factors that may well have influenced the pattern could be preferential use (and discard) of implements within the enclosure and preferential knapping and/or waste disposal towards the edges. This could be characterised as a more 'domestic' aspect to the material from the enclosure interiors and a more 'industrial' aspect to that from their perimeters.

It can be hypothesised that, in the normal course of events, most of the waste debris from knapping would be kept clear of other activities, either by accumulation in flint waste-heaps or general middens, or put in convenient exposures, such as ditches. In the latter case it does not necessarily follow that creation of the waste had to occur close to a ditch. However, the evidence of the refits from two of the Stepleton ditches where these were clustered, indicated that, at least in these two instances, knapping did take place close by, otherwise the individual reduction sequences would have become more widely scattered.

The distribution of burnt material is perhaps one of the most patterned elements of this data-set. Comparison of Table 10.6 with Table 10.18 indicates

Table 10.55 Struck lithic artefacts from pits and lower ditch fills of the main and Stepleton enclosures, expressed by number and percentage

Type	*Central area pits no.*	*Central area pits %*	*Main ditch no.*	*Main ditch %*	*Stepleton pits no.*	*Stepleton pits %*	*Stepleton ditches no.*	*Stepleton ditches %*
Unretouched flakes	2944	87	1722	93	2314	92	6643	97
Cores etc	34	1	53	3	27	1	161	2
All retouched	391	12	77	4	174	7	79	1
Total	3369		1852		2515		6883	

that 88% of all unclassified burnt pieces come from the inner Stepleton outwork, mostly from the upper infill and mostly from segment 5. A similar, far less marked, but nevertheless locally significant circumstance is the concentration of unclassified burnt pieces in one of the features inside the main enclosure (A F41). In both cases this patterning must represent unusual events or situations, but presumably not ones which are specifically relevant to the production and use of stone tools. Otherwise there is a slight but persistent presence of burnt pieces in most of the context groups.

The content of individual features has been analysed for both enclosures (Table 10.14) and it is clear that in most cases the number of struck lithic artefacts per pit is small – 40% have ten or fewer artefacts; 77% have 50 or fewer artefacts. The largest pit groups (Tables 10.15, 10.24) do not have a composition which diverges significantly from the overall norm for the pit groups, other than the large number of unclassified burnt pieces from pit A F41. The two pit assemblages examined in more detail (Tables 10.12, 10.16) confirmed the overall impression that these assemblages were mixed in origin and probably in time, since they contained the products of different nodules, they contained artefacts in different conditions, they had both burnt and unburnt artefacts, and they did not have any refitting reduction sequences.

It can be argued that the collections from Neolithic pits in the central area and on the Stepleton spur do have some distinctive characteristics, but that these are distinctive mainly in relation to the ditch collections, and relate to the overall way in which lithic material was produced and used within and around the enclosure. The pits have preserved samples of the lithic material produced and/or used in association with the activities taking place, but only after the artefacts have been discarded, abandoned, or lost. The pits thus acted as traps for the essentially random accumulation of these samples and there is little to suggest any specific intentionality about this.

On the assumption that the pits groups with low numbers of artefacts could perhaps be more indicative of specific deposition or placement, the composition of all pits with ten or fewer artefacts was analysed (Table 10.56). Of the 66 pits involved, 34 contained only unretouched flake(s), one contained two serrated-edge flakes, one contained a single scraper, and another had only an unclassified burnt fragment. It is noteworthy that so many of the Stepleton pits contained only unretouched flakes, but this probably relates to the far higher proportion of Stepleton pits with less than ten artefacts. The remaining 29 pits had unretouched flake(s) in combination with one or more common unretouched artefact types or implements. These combinations in each pit reflect the general distribution of artefact types within the pits (Tables 10.15, 10.24) and offer no obvious indications of structured deposition or placement. It is also the case that presence within the same feature does not necessarily imply precise contemporaneity. In the absence of refits, this would apply even if there were detailed information about the disposition and relationship of the artefacts within each pit.

It is the overall, repetitious content of the pit assemblages which is perhaps the most significant aspect. By far the most common items, as from all other contexts, are unretouched flakes and burnt fragments. This is waste material *par excellence* and of an entirely unremarkable nature. It is extremely improbable that the

Table 10.56 Frequency of occurrence of types of struck lithic artefacts from the fills of features containing ten or fewer artefacts

Artefact type(s)	*Central area pits*	*Stepleton spur pits*	*Total*
Unretouched flake(s) only	7	27	34
Serrated-edge flakes only		1	1
Scraper only	1		1
Unclassified burnt piece only		1	1
Unretouched flakes & core		1	1
Unretouched flakes & flaked lump		1	1
Unretouched flake(s) & unclass burnt piece(s)	1	6	7
Unretouched flake(s) & unretouched flake(s) burnt & unclass burnt piece(s)		2	2
Unretouched flake(s) & serrated-edge flake	2	4	6
Unretouched flakes & serrated-edge flake & cores		1	1
Unretouched flakes & serrated-edge flake & unclass burnt piece	1		1
Unretouched flakes & edge-trim flake		1	1
Unretouched flakes & edge-trim flake & scraper	1		1
Unretouched flakes & edge-trim flake & leaf arrowhead & unclass burnt piece	1		1
Unretouched flakes & edge-trim flake & misc retouched piece		1	1
Unretouched flake burnt & edge-trim flake & unclass burnt pieces	1		1
Unretouched flake & unretouched flake burnt & scraper	1		1
Unretouched flake(s) & misc retouched piece	2	2	4
Total pits with ten or fewer artefacts	18	48	66

presence of this material in the features reflects any special intentionality. Serendipity is the most likely explanation for the presence of the unretouched flakes and, by extension, all the other items as well.

Looking at the overall representation of implements within the whole Hambledon Hill assemblage (Table 10.39), it can be argued that the pattern is very much what might be expected from any early/middle Neolithic site in southern England. This pattern does not vary much across the hilltop (Table 10.40), the main contrasts being in actual numbers and density of implements in different locations rather than any contrast in assemblage character. Attention could be drawn to presence/absences, such as the lack of flint axeheads from the south long barrow ditches, or to relative presence, such as the lower number of leaf-shaped arrowheads from the Stepleton spur, but it is hard to avoid the conclusion that the overall profile of implements throughout is essentially similar.

Where there is contrast, as Table 10.40 makes clear, is between the pit assemblages from both enclosures and all other contexts. The contrast lies essentially in the higher proportions of serrated-edge flakes (and to a lesser extent other edge-trimmed flakes) from the pits, and the correspondingly lower proportions of scrapers, piercers, and miscellaneous retouched pieces. It is tempting to link this to the functional 'domestic'/'industrial' distinction drawn between the enclosure interior and the periphery on the basis of the non-retouched component. The contrast probably cannot be explained wholly in terms of the better preservation of the delicate serrated-edge forms in the interior features, though this may be a significant factor in their low representation from superficial contexts.

A crucial question to be addressed at this point is whether the assemblage is, in reality, all early/middle Neolithic or not? A definitive conclusion on this would require greater chronological precision over typological assessment than current data can bear, but one approach is to look at the occurrence of those implement types which are conventionally early/middle Neolithic and those which could be later Neolithic/Bronze Age. The distribution within context groups is shown for the major implement categories in Table 10.41.

The generally accepted criteria for early/middle Neolithic implement assemblages (eg Healy 1988a, 46; Richards 1990, 18) would be a restricted range of implements to include leaf-shaped arrowheads, scrapers (not normally scale-flaked), serrated-edge flakes, piercers (not normally elongated), and polished flint axeheads, of which scrapers and serrated-edge flakes would be the most numerous. 'Laurel-leaf' bifacials of regular form are also a classic earlier Neolithic type (Clark *et al* 1960, 226; Smith 1965, 100). Later Neolithic/early Bronze Age collections would include a wider range of retouched forms, including transverse and barbed-and-tanged arrowheads, more extensively retouched and scale-flaked scrapers, scale-flaked knives (including plano-convex types), more elongated piercers, saws, and rods, with serrated-edge flakes less common and 'fabricators' more common (Healy 1988a, 46; Richards 1990, 18). Also later Neolithic/early Bronze Age are ground-edge knives of various shapes, a whole variety of 'rough, heavy artefacts' (Gardiner 1991c, 62) including picks, Y-shaped implements, and other core tools. More subjectively, heavier utilisation indicated by abrasion and by use-polish on scrapers and piercers, are sometimes cited as later Neolithic traits (Gardiner 1991c, 64).

These criteria reinforce the identification of the collections from the pits as the most representative 'early' assemblages from Hambledon Hill. 'Early' types like serrated-edge flakes, leaf-shaped arrowheads, and 'laurel-leaf' bifacials do predominantly occur in 'early' contexts, but they also occur in 'later' ones in which they could be residual. Perhaps the strongest correlation occurs in the case of the potentially 'later' types: picks, rods, 'fabricators', and knives. Apart from one rod (Fig 10.20: 162) from a grave on the Stepleton spur, none of these types occur in the 'early' contexts represented by pit fills and lower ditch silts. On typological grounds a case could be made for most of the rods being 'later' types, especially one of the unstratified examples (Fig 10.19: 161). Similarly with the scale-flaked knives (Fig 10.14: 121–3), which occur only in 'later' or unstratified contexts. These types occur in very small numbers, however, so their occurrence could be misleading, as with the saw (another potentially 'later' type), of which there is only one example. On the other hand, the clustering of the knives – three from 'late' horizons in segment 8 of the main enclosure ditch where there was a concentration of Beaker pottery, and three from a 'late' horizon in segment 7 of the inner Stepleton outwork, where there was Bronze Age pottery – argues for a non-random pattern which could be compatible with later deposition.

Typo-chronological assessment of the more common implement types other than the serrated-edge flakes is difficult, but subjective judgement would suggest that few 'later' types occur among the piercers and scrapers. Certainly there are only a few which can be compared with the archetypal later kinds of elongated and robust piercers (Saville 1981b, 61), and these are from late or unstratified contexts. As for scrapers, the present author (Saville 1981b, 59) suggested some time ago that, other than in the case of small 'Beaker' scrapers, metrical data are unlikely to produce meaningful distinctions irrespective of the raw material exploited. More recently the notion that scraper thickness decreased through the Neolithic, and therefore could provide a chronometric indicator has been revived by Riley (1990; cf Bradley 1970, 357). Table 10.57 gives the mean thicknesses for intact flake scrapers from selected context groups. There seems little evidence here to suggest trends in any direction and one must conclude again, as recently has Pollard (1999, 335), that it is really only the 'thumbnail' scrapers,

Table 10.57 Mean thickness values for complete scrapers on struck flakes from selected context groups

Group 1 Neolithic features in central area, groups 3–4 main enclosure ditch phases I–III, groups 6–9 main enclosure ditch phases V–VII/a, groups 10–11 main enclosure ditch phase VIII/a and superficial levels, group 53 Neolithic features on Stepleton spur, groups 55–56 Stepleton enclosure ditch phases I–III, groups 57–59 Stepleton enclosure ditch IV–VI, groups 60–61 Stepleton enclosure ditch phase VIII/a and superficial levels, groups 63–64 inner Stepleton outwork ditch phases I–III, groups 65–67 inner Stepleton outwork ditch phases V–VII, groups 68–69 inner Stepleton outwork ditch phase VIII/a and superficial levels

Groups	*Total no. in sample*	*Total thickness value in mm*	*Mean thickness in mm*
1	24	282.0	11.8
3–4	14	167.5	12.0
6–9	56	757.5	13.5
10–11	45	552.5	12.3
53	19	250.5	13.2
55–56	8	125.0	15.6
57–59	18	240.0	13.3
60–61	11	137.0	12.5
63–64	6	98.0	16.3
65–67	10	140.0	14.0
68–69	74	888.0	12.0
Samples combined	285	3638.0	12.8

small and with shallow invasive flaking, that are chronologically and culturally diagnostic. The fact that this type of scraper is absent from Hambledon Hill is in itself of course a pointer to the non-existence there of any 'Beaker' flint industry as such, as is the lack of transverse arrowheads to the absence of any significant late Neolithic presence. Similarly, the only scraper type with a convincing Bronze Age pedigree when common, the denticulate scraper (Harding 1991, 85; Saville 1981b, 58), is also virtually absent at Hambledon Hill.

It might be objected that the miscellaneous retouched pieces are being overlooked. These pieces certainly do have a much higher profile in 'later' or unstratified contexts than the regular tool forms and could conceivably be regarded as a product of some 'later' activity which was less concerned with formal implements. However, many of these miscellaneous pieces appear to be broken examples of regular tools, which are disproportionately common in superficial contexts because those contexts are the ones most likely to contain broken tools. Also there may be other taphonomic factors involved in this pattern, such as the probable higher incidence of miscellaneous pieces created by plough-damage or other natural processes in the 'later' and superficial contexts. Explanations along these lines are more satisfactory than the notion of a 'later' phase of activity on Hambledon Hill being dominated by the use of irregular and otherwise unclassifiable retouched pieces. Since a significant element of the miscellaneous retouched pieces must be residual from the 'early' contexts (13–14% even in the pit fills), their proportions in the 'later' contexts in no way approach the levels observed in some middle/late Bronze Age assemblages (Harding 1991, 85).

This is perhaps rather inconclusive, but the general impression gained is that, while there may be some indicators of 'later' implement types, any such 'later' presence was not significant in terms of implement discard and the composition of the implement assemblage as a whole. The entire Hambledon Hill assemblage stands out in this regard in comparison to those from other causewayed enclosures, in particular from Windmill Hill, Wiltshire, where late Neolithic/early Bronze Age activity on that hilltop left a clearly recognisable implement component of small scale-flaked scrapers, flake tools with polished edges, elongated piercers, and transverse and barbed-and-tanged arrowheads (Smith 1965, 103–9).

If the implement component does not support much chronological differentiation, what about the waste material? In terms of core types in southern England, while simple single and double platform cares are omnipresent, there does appear to be a trend during the Neolithic and into the Bronze Age for multi-platform, discoidal, and keeled cores to increase proportionately, and for platform preparation to be applied more frequently (Saville 1981b, 47–48). At Hambledon Hill simple single and double platform cores dominate throughout and multiplatform cores, always small in number, are if anything more common in the 'early' contexts (Table 10.35). Platform preparation is virtually absent and no other potentially chronological trends emerged from analysis. Near-identical reduction sequences to those of the refitted cores at Stepleton, using alternate flaking without other platform preparation, have been published by Harding (1990, fig 69; 1991, fig 41) and by A G Brown (1991, fig 6.1). These are early–middle Neolithic except in the case of the refitted nodule from the late Neolithic Firtree Field ring-ditch, Down Farm, Dorset (A G Brown 1991).

Collections of unretouched flakes have been shown to exhibit a general trend from predominantly narrow, more blade-like characteristics towards broader flake

Table 10.58 Breadth:length ratio values for complete unretouched flakes 20 mm or more in length and/or breadth from selected contexts

Range	*Main enclosure, fill of pit N F7i*		*Stepleton enclosure, fill of pit 1A F350*		*Main enclosure ditch, segment 13 phase III*		*Main enclosure ditch, segment 13 phase V*		*Main enclosure ditch, segment 13 phase VI*	
	No.	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*	*No.*	*%*
1:5–2:5	2	2	6	5	20	4	4	2	9	4
2:5–3:5	26	22	19	15	80	16	40	20	40	15
3:5–4:5	22	18	50	39	172	35	60	30	102	39
4:5–5:5	29	24	30	23	140	28	58	29	67	26
5:5–6:5	23	19	18	14	55	11	24	12	26	10
>6:5	18	15	5	4	30	6	16	8	16	6
Total nos	120		128		497		202		260	

types during the course of the Neolithic and Bronze Age (Ford 1987; Pitts and Jacobi 1979; Saville 1981b). This trend has been seen to have some reality and applicability, even given all the problems of isolating truly comparable samples and the use of different analytical methodologies. A problem at Hambledon Hill, given the lack of sealed stratified samples and the omnipresent residuality, is that there is little scope for looking at potential change through time. The only relevant samples for which metrical data have been recorded are those from segment 13 of the main enclosure ditch. Comparison of the length/breadth index values (Table 10.33) shows very little difference in flake shape between the lower and higher fills of the ditch. Even the higher percentage of primary flakes in the lower ditch fills cannot be shown to bias the figures unduly and the conclusion must be that there is no trend here to which any chronological interpretation could be attached. Some subassemblages which were not investigated metrically, but which have good later ceramic associations (such as the upper levels of segments 8 and 10 of the main enclosure or of segment 1 of the Shroton spur outwork), might provide data for investigating chronological aspects of flake-shape trends further.

It is of interest, however, to contrast the shape of flakes from Hambledon Hill with those from other sites to investigate any abnormalities. Length/breadth index values as used in this report are preferable as a measure (Saville 1980; 1981a, 147) but since most previous analysts have relied on breadth:length ratios it is convenient by way of comparison to give these for the Hambledon Hill samples as well (Table 10.58). Each of the Hambledon Hill samples exhibits a comparable range between 19 and 24 per cent of flakes narrower than 3:5, and between 41 and 58 per cent broader than 4:5. Although blades are obviously present, these statistics show that the Hambledon Hill samples lack blades as an especially significant element and in theory this situates them chronologically with the later Neolithic (Saville 1981b, 43–44). The most relevant and most striking contrasts are provided by Windmill Hill, Wiltshire, where from the primary levels 41% of waste flakes are 3:5 or narrower, and only 35% broader than 4:5 (Smith 1965) and Maiden Castle, Dorset, where from the Neolithic enclosure ditches 58% are narrower than 3:5 and only 20% broader than 4:5 (Edmonds and Bellamy 1991, 217). The proportions from the Staines enclosure, Surrey (Healey and Robertson-Mackay 1983), fall mid-way between the two, while those from Etton (Middleton 1998, fig 218) appear rather closer to Hambledon Hill. In retrospect one would wish for different and larger measured flake samples from Hambledon Hill. However, Ford (1987) has drawn attention to the overlap in shape ranges between earlier and later Neolithic flake populations and it is clear that the trend towards broader flakes during the Neolithic period cannot be treated quite as simplistically as has previously been the case using this statistic (Saville 1981b).

Table 10.39 gives the overall representation of implements within the hilltop collection, and all the expected types for a Neolithic assemblage are present. This is a consistent picture for assemblages from causewayed enclosures in England (Table 10.59) and in itself need occasion no surprises. Indeed, there is a case for saying this picture is completely standard and that the differences apparent in this table are more likely to reflect inconsistencies in compilation of the data rather than in the data themselves.

I have discussed elsewhere what can be deduced from the presence of different lithic implement types at causewayed enclosures (Saville 2002) and here it is only appropriate to mention a few aspects. A crucial point is the predominance of serrated-edge and other edge-modified flakes. Much attention has been paid to serrated-edge flakes, which have long been recognised as quintessential accompaniments of causewayed enclosures (Curwen 1937, 87). They are also found at Neolithic enclosures throughout Europe, but they are not a phenomenon exclusive to causewayed enclosures so much as a commonplace tool of the early/middle Neolithic (Saville 2002). The work of Jensen (1988a; 1988b; 1994) in particular has shown conclusively that serrated-edge flakes were not harvesting tools, but rather were used in some manufacturing or maintenance process involving silicious plant material, perhaps vegetable fibres.

Table 10.59 Total numbers of selected flint implement types from Hambledon Hill and other causewayed enclosures in England

Numbers are derived from the following sources: Etton from Middleton (1998), Windmill Hill from Smith (1965), Briar Hill from Bamford (1985), Staines from Healey and Robertson-Mackay (1983; 1987), Abingdon from Avery (1982), Maiden Castle from Edmonds and Bellamy (1991) and Wheeler (1943)

Type	*Hambledon Central area*	*Stepleton*	*Etton*	*Windmill Hill*	*Briar Hill*	*Staines*	*Abingdon*	*Maiden Castle*
Scrapers	351	240	253	1399	181	377	166	421
Edge-trimmed flakes	411	184	410	457	x	x	370	x
Serrated-edge flakes	343	146	219	627+	83	195+	272	188
Piercers	86	49	58	68	34	160	5	17
Leaf arrowheads	29	9	29	132	18	34	17	28
Axeheads, etc	19	15	18	90	3+	21	11	49
'Laurel-leaf' bifacials	3	3	5	25	1	66(?)	5	2
Knives	7	4	1	84+	11	104(?)	10	12
'Fabricators'/rods	7	6	9	2+	2	12	2	4

Leaf-shaped arrowheads are significant for their relative scarcity at causewayed enclosures. Finds of leaf-shaped arrowheads embedded in human bones (H S Green 1984, 35) make it clear that the bow-and-arrow was a practical anti-personnel weapon, whether or not it was also used in hunting. The evidence from two Neolithic enclosures, Crickley Hill, Gloucestershire (Dixon 1988), and Carn Brea, Cornwall (Mercer 1981a), where extremely high numbers of leaf-shaped arrowheads were found – at Crickley Hill in highly significant association with the enclosure entrances – demonstrates the reality of armed conflict at this period.

Thus the low frequency of such arrowheads at Hambledon Hill and other causewayed enclosures indicates that attack and defence were not a regular part of their history or rationale. Even at Windmill Hill, which has one of the largest numbers of arrowheads of all the causewayed enclosures, the absolute total is insignificant in proportion both to their presence at Crickley Hill and Carn Brea and to the huge size of the overall Windmill Hill assemblage. In fact the only causewayed enclosure where the proportion of leaf-shaped arrowheads does seem very high is Hembury, Devon, where excavations in the 1930s produced over 140 examples (Liddell 1935, 162). The precise significance of arrowheads at Hembury is difficult to assess because of limited documentation of the rest of the assemblage, but it is perhaps too soon to dismiss warfare at this enclosure altogether as Brown (1989) has done. Caution is required since the total of 140-plus leaf-shaped arrowheads from Hembury is clearly of a different order of magnitude to the 42 at Hambledon Hill, which is a much larger site and assemblage, especially given the recovery and analytical procedures at Hembury, which can be expected to have resulted in an under-representation of broken arrowheads. Absence of information about the precise sequence of activity at Hembury allows for the possibility that, as at Crickley Hill, the arrowheads may belong to a post-causewayed enclosure phase of the site's history.

At Hambledon Hill, the close association of arrowheads with two skeletons does of course raise the strong possibility of individual acts of aggression; these could be isolated events with no necessary implication for the overall character of the two enclosures or they could, bearing in mind the earlier burning of one and probably two outworks, point to a more overtly bellicose context.

Axeheads, with justification, are seen as implements with the potential for special symbolic significance in Neolithic society (Bradley and Edmonds 1993), but they can also be workaday tools and there seems little doubt that much of the axehead evidence from causewayed enclosures points to the latter. This is particularly so in the way they exhibit evidence for use and reuse, a circumstance repeated at most Neolithic enclosures (Fouéré 1990, fig 20; Smith 1965, 103) and not something necessarily with chronological overtones (Gardiner 1991c, 62–64).

Evidence for structured deposition of axeheads at Hambledon Hill is restricted principally to the lost group of three axeheads found in the west terminal of the inner south cross-dyke ditch. However, this group, and the other cases of axehead 'hoards' known from Combe Hill, Sussex (Drewett 1994, figs 11–12), and Maiden Castle, Dorset (Wheeler 1943, fig 39, 8–9), could be explained as unrecovered caches rather than ritual placements. There might be better grounds for suggesting special treatment in the way that axeheads appear to become preferentially burnt, which could involve a ritual process of some kind (Larsson 2000). Seven of the fifteen axeheads at Hambledon Hill are burnt, which is a higher proportion than for any other tool category and thus unlikely to have arisen naturally.

Ritual practice, however, is not something normally discernible with any ease from collections of lithic artefacts. Indeed, the presence of lithic waste alongside other artefacts deemed in some way special may counteract such an interpretation. For example, a pit from the main enclosure at Hambledon Hill, which has a

complete stone axehead, a plain ceramic cup, and large parts of two gabbroic bowls, also has 66 struck lithic artefacts (56 unretouched flakes, 1 burnt unretouched flake, 5 serrated-edge flakes, 3 edge-trimmed flakes, and 1 unclassified burnt piece). It is not easy to see why in such a case the pit should be regarded as ritual just because it has some whole artefacts (*pace* Andersen 1997, 321). Patterns of selection and placement, which are then interpreted as evidence of ritual and ceremonial structured deposition (Pryor 1998, 362), cannot be said to be revealed by the lithic artefact data at Hambledon Hill or elsewhere in any obvious fashion. Such interpretations are inevitably an intellectual imposition (A G Brown 1989, 49) and in a sense abuse the potential of the lithic artefact evidence.

10.2.8 Conclusion

As explained in the introduction, this report has been a long time in gestation and it is inevitably in some ways a victim of the passage of time. Writing the discussion in 2000, using data amassed largely by 1984, one is bound to have some regrets about aspects of what have, and what have not, been included in the analysis. The report has, however, made its antecedents clear and its quantifications and analyses are relevant within the conventions of the study of lithic artefact collections from comparable sites in the second half of the twentieth century. Thus, at least within the canon of reports on lithic artefacts from causewayed enclosures – from Windmill Hill (Smith 1965) to Etton (Middleton 1998) – it will be intelligible in those terms.

That the framework of my own research on lithic artefacts here and elsewhere involves a 'processual economic imperative' (Brown 1995, 29) may to a certain extent be true, but whether that in itself constitutes a useful criticism of lithic studies is open to debate. In fact my own position has shifted somewhat, in part in reaction to the particular emphasis on context of post-processual writers such as A G Brown (1991), by becoming ever more cautious about the level of interpretation which the lithic artefact evidence will support. My advocacy in this report of a 'broad-brush' approach reflects a concern that the complexities of taphonomy and the formation process at Neolithic enclosures have not been, and perhaps cannot be, fully appreciated. This applies to all material culture residues, but especially to those of flint and stone because of their durability and hence inevitable propensity for residuality.

I have considered the question of residuality and other biasing factors more fully elsewhere (Saville 2002). Taken together, these considerations dictate caution in view of the limited potential which lithic artefact assemblages can have for answering specific questions about the meaning and significance of causewayed enclosures. For example, this report has shown that the Hambledon assemblages, like those from other enclosures, do not exhibit the specialised production or higher craft skill which might suggest these sites were centres of social power (Olausson 1997). The lithic artefacts do carry signatures relevant to function, but these are difficult to decipher and anyway relate mostly to the kind of maintenance activities embedded in Neolithic life irrespective of site type (Jensen 1994, 166).

That the lithic artefact evidence can contribute to interpretation is obvious in the case of the third millennium BC Hanford 'flint-mines'. The fact that the tabular flint from this location was not present at all in the flaked artefact assemblage showed that, whatever the function of the quarrying was, it was not to obtain flint for knapping on site. Similarly, unless the view is taken that significant data have been lost with the ploughsoil, the excavated assemblages indicate that any later use of the hilltop did not involve the production, use and discard of flaked lithic artefacts to anything like the same extent as during the early/middle Neolithic period.

The parameters of this production, use and discard associated with the Hambledon Hill enclosures remain frustratingly indefinite, but as this report has shown, I am not persuaded that any of this activity can responsibly be explained in terms of ritual and structured deposition. Even if it were suggested that artefacts from the Neolithic pits and lower ditch fills were in some way ritually deposited, these artefacts are qualitatively no different from those forming the vast bulk of the hilltop collection, which is without primary context. One would have to imagine a great number of archaeologically unrecoverable contexts to accommodate the original deposition of these artefacts in a structured fashion.

Moreover, the flaked lithic assemblages from causewayed enclosures are at base not qualitatively different from those from other contemporary sites. In terms of cultural explanation they are signifying the importance and relevance of the mundane and diurnal. Therefore, my own interpretation of the lithic residues from Hambledon Hill – both the waste and the implements – is that they are the natural concomitant of reasonably intensive normal technological and social activity in association with the construction and use of the enclosures. Had these residues not been present then there would be justification in seeking an interpretation involving the exclusion of everyday activities; as it is, the opposite must be the case.

Such an interpretation, that the residues are essentially the outcome of 'domestic' occupation, has of course been advanced by many excavators of causewayed enclosures (eg Avery 1982, 40; Bamford 1985, 134; Sharples 1991, 253–7), and does not by itself stand in contradiction to the concept of ritual deposition. So my final point would be to emphasise that the inclusion of flaked lithic residues within a cosmological construct of the ritualisation of all depositional activities at causewayed enclosures (Whittle and Pollard 1999) is not, and cannot be, validated as such by the artefacts described here from Hambledon Hill.

10.2.9 Minor assemblages from excavations away from the main Neolithic areas

The hillfort spur

The hillfort trench produced a small assemblage of 192 pieces of flint (Table 10.60) which is dominated by unclassified burnt pieces. These are mostly of 'potboiler' type and derive in the main from contexts directly associated with the Iron Age occupation. Only one of the pieces from other categories, an unretouched flake (HH86 162), was burnt.

The struck flint, irrespective of context, appears largely uniform in character and condition with that from the adjacent Neolithic enclosure, though there are no individually diagnostic pieces in the absence of any classifiable implements. One of the miscellaneous retouched pieces (HH86 171) could be regarded as a denticulate-type scraper, another example of which (HH77 1524), came from a superficial context adjacent to the main causewayed enclosure.

The relatively high weight of the miscellaneous pieces is due to the inclusion of a single large flake (HH86 64; weight 199 g), which has a 'bruised', bifacially spalled edge, of the type often associated with chopping bone or antler (Barton 1986). This piece was from an Iron Age occupation context and, in the absence of any parallels from the Hambledon or Stepleton enclosures, could perhaps indicate some later prehistoric *ad hoc* usage.

Everley Water Meadow

The typology of the 332 struck lithic pieces recovered from this location is given in Table 10.60. These pieces are subdivided into those from the south area, the north area, and from fieldwalking in the 1982 season. The only significant contexts, both of middle Bronze Age date, are F10 in the south area and the burnt mound and its underlying soil in the north area. Neither of these contexts is prolific in terms of struck lithic artefacts nor do they provide any diagnostic implement types. All the pieces are of flint except one chert scraper (SM82 155).

The most distinctive find is the chisel arrowhead (EWM83 351; from trench 1, layer 16), of approximate late Neolithic date (Green 1984). The arrowhead (Fig 10.42: 164) is in sharp condition, uncorticated, and

Table 10.60 Lithic artefacts from the hillfort spur, Rolf's Wood, Coombe Bottom, Stepleton Lynchet, and Everley Water Meadow

Weights are in grams, rounded to the nearest gram

						Everley Water Meadow					
		Hillfort	*Rolf's Wood*	*Coombe Bottom*	*Stepleton lynchet*	*South area F10*	*North area burnt mound*	*South area general*	*North area general*	*Field-walking*	*Total*
Unretouched flakes	No.	72	1	28	2	3	22	42	53	12	132
	Wt	*581*	*12*	*249*	*24*	*8*	*262*	*431*	*409*	*202*	*1312*
Cores	No.		1	1			1	3		3	7
	Wt		*78*	*54*			*39*	*134*		*238*	*411*
Core fragment	No.	1					1				1
	Wt	*45*					*35*				*35*
Flaked lumps	No.								1	1	2
	Wt								*84*	*68*	*152*
Edge-trimmed flakes	No.			2			1				1
	Wt			*30*			*11*				*11*
Scrapers	No.						3	4*	2		9
	Wt						*47*	*91*	*64*		*202*
Piercers	No.			3		1		1		1	3
	Wt			*15*		*14*		*9*		*43*	*66*
Chisel arrowhead	No.							1			1
	Wt							*4*			*4*
Flake from pol. axehead	No.								1		1
	Wt								*9*		*9*
?Gunflint	No.		1								
	Wt		*9*								
Misc retouched	No.	5	3	2			4	14	7	3	28
	Wt	*302*	*33*	*92*			*20*	*211*	*134*	*29*	*394*
Unclass burnt	No.	114	43		1	25	24	90	5	3	147
	Wt	*1339*	*1385*		*27*	*256*	*208*	*1391*	*32*	*106*	*1993*
Total	No.	192	49	36	3	29	56	155	69	23	332
	Wt	*2267*	*1517*	*440*	*51*	*278*	*622*	*2271*	*732*	*686*	*4589*

* one of these scrapers is of chert

Note: Total refers to Everley Water Meadow only

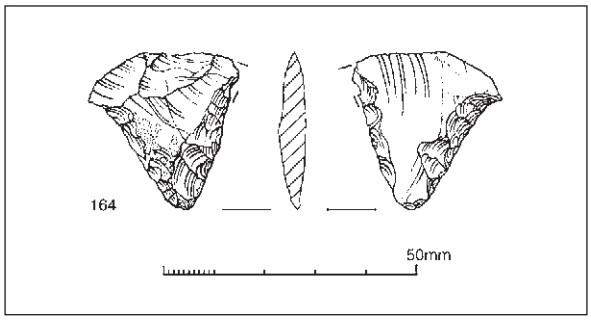

Fig 10.42 Chisel arrowhead (EWM83 353, Everley Water Meadow, Trench 1, layer 16).

intact, save for damage at one upper corner, possibly the result of impact spalling. Isolated arrowheads are particularly liable to be chance finds and there is nothing else in this assemblage to which it need obviously relate. The only parallel from the whole of the Hambledon Hill flint collection is the oblique arrowhead from the main enclosure ditch (Fig 10.15: 142), also likely to be of late Neolithic date and also a possible casual loss during hunting, not necessarily related to settlement or other activity in the immediate vicinity.

The nine scrapers include at least one example (EWM84 229), a large end scraper on a cortical flake from the north area, which would comfortably fit the hilltop assemblage. Two of the scrapers have interesting features. One, an end scraper on a blade (EWM83 400), from beneath the burnt mound, has elaborate trimming on both lateral edges; the other, a broad end scraper (EWM83 394), from the burnt mound, has notching either side of the base, removing the platform and creating a stubby tang.

The small flake from a polished flint axehead (EWM84 18) is abraded, with secondary edge damage, and is clearly residual. One of the miscellaneous retouched pieces (EWM84 254), from the north area, is a possible gunflint, though not regular enough for positive identification.

At least one implement, a scraper (SM82 51) from the south area, has its retouch through a corticated flake surface and there are other signs of the exploitation of previously struck flint. Another of the scrapers (EWM84 317), from the burnt mound and itself burnt, and one of the miscellaneous retouched pieces (SM82 49), from the south area, are on natural, thermally produced flakes. There is also some use of 'gravel'-type raw material, as well as of irregular nodules, such as the cylindrical nodule used for one of the cores (EWM83 384) from the south area.

In addition to the flints described here, over 180 kg of burnt flint was recorded from the burnt mound but not kept. This is likely to have comprised unclassified burnt material of 'potboiler' type. Despite this apparent abundance of burnt flint, of the struck material only a relatively few pieces showed signs of burning (five unretouched flakes; one scraper; and one miscellaneous retouched piece).

This assemblage is, on the basis of typology and condition, likely to be of mixed chronology and is anyway, if the unclassified burnt pieces are excluded, so restricted that it could not be a helpful indicator of activity or site function. The small number of core pieces suggests that knapping was not especially significant at or near the areas excavated. Of the artefacts which are in any way distinctive, apart from the arrowhead, some could relate to the same time frame as the Neolithic hilltop activity. There is no specific element of the assemblage, other perhaps than the (largely unretained) burnt flint, which is readily assignable to the middle Bronze Age in association with the pottery from this location. On the other hand there is almost certainly a post-Neolithic representation within the struck flint, and it is entirely possible that some of the less heavily corticated flakes could belong to the same phase as the pottery.

10.2.10 Flint artefacts recovered from surface survey

Surface surveys were undertaken around Hambledon Hill between 1976 and 1982 (most intensively in 1976–77) as part of a study of the local prehistoric settlement patterns. All available ploughed fields within an approximate radius of 4 km around Hambledon Hill were surveyed. The survey involved linear traverses at 20 m intervals, with total recovery of surface artefacts within a scan-range of about 1 m to each side of the traverse, thus producing an approximate ten per cent sample (Ch 2).

This surface recovery produced a collection of over 7000 flints (weighing over 171 kg), of which virtually all, except for two post-medieval gunflints, were indicative of prehistoric activity (Table 10.61).Three major concentrations were located, and the typological breakdown in Table 10.61 isolates these from the remainder. Several caveats need to be entered about the typology, because of the often rather poor condition of these surface flints. For example, it is surprising that even one serrated-edge flake could be identified, since this kind of delicate retouch is highly vulnerable once the implement is incorporated in ploughsoil. The same applies to edge-trimmed flakes in general, which are unlikely to survive in easily identifiable form as surface finds. Scrapers on the other hand are highly resilient in the sense of remaining identifiable, because of their compact, robust morphology. The normal criteria for identification of miscellaneous retouched pieces cannot be applied to this material because of the prevalence of removals which could be either retouch or damage. Only those pieces on which the removals appear regular and relatively continuous are classified as retouched. The implement illustrated in Fig 10.43: 165 demonstrates some of these problems: the outline drawings show the extent of obvious modern damage on this very robust tool. Implements with thinner, sharper edges would obviously be even more vulnerable.

Table 10.61 Hambledon environs survey: flint artefact totals and major concentrations

Type	*Shroton Spur*	*Boyne's Lane*	*Smuggler's Lane*	*Remainder*	*Total*
Unretouched flakes	1070	1705	944	2244	5963
Cores	49	47	24	71	191
Core fragments	4	8	2	6	20
Flaked lumps	8	29	2	23	62
Abraded lumps				2	2
Hammerstones				2	2
Serrated-edge flake				1	1
Scrapers	41	77	61	169	348
Piercers	3	52	11	22	88
Transverse arrowheads		2	1	1	4
Barbed-and-tanged arrowheads		1	1		2
Flake from polished flint axehead			1		1
Knives				2	2
Pick		1			1
Unclassified bifacial pieces	1	1			2
Rods		1		1	2
Combination tool			1		1
Gunflints				2	2
Miscellaneous retouched pieces	18	180	42	156	396
Unclassified burnt pieces				25	25
Total	1194	2104	1090	2727	7115

The Shroton spur concentration contained material which in terms of typology, technology, and raw material is indistinguishable from the excavated Hambledon assemblages, and points to a continuation of the Neolithic activity on this area of the hilltop. In so doing it also reinforces the picture of virtually exclusive Neolithic flint production and use on the hilltop, without obvious contamination from artefacts of earlier or later periods. As might be expected, the surface flints from the area of the Hambledon hilltop extending between the Hanford and Stepleton spurs, which comprised a collection of 772 artefacts, also matched the excavated assemblages very closely.

The two other concentrations occurred in the east of Iwerne Stepleton parish at Boyne's Lane (ST 891 125) and Smuggler's Lane (ST 880 116), where they probably formed part of what was in reality a single extensive settlement or industrial area, exploiting the local deposits of Clay-with-Flints (Fig 2.2). The collections from these areas are in marked contrast to the hilltop assemblage and on typological grounds can be classed as mainly late Neolithic/early Bronze Age. They are characterised by a predominance of scrapers, piercers, and miscellaneous retouched pieces, as well as by the presence of more culturally diagnostic forms such as the three transverse and two barbed-and-tanged arrowheads. The pick and the elaborate rod (Fig 10.43: 165) perhaps also relate to this time-frame, though the latter is more heavily discoloured than most of the assemblage. The scatter is given greater archaeological significance by the presence within it of a ploughed-out round barrow at ST 887 119 and a cropmark enclosure system centred on ST 891 126. Clearly this location around Everley Hill Farm could be of considerable importance for the study of later prehistoric settlement in the Hambledon area. This location may also possibly have been the source of the late Neolithic 'heavy flint' industry from Stourpaine parish mentioned by Piggott (1954, 280–3), although this cannot now be ascertained with certainty (F Healy, pers comm.).

Other distinctive assemblages among the surface collections were rare. An exception was a group of 66 flints centred on ST 890 133, which, although comprising only knapping debris without any diagnostic implements, could be regarded as Mesolithic in character and may well correlate with the Iwerne Minster Mesolithic site identified by Summers (1941). Otherwise the collections of flints from individual areas were too small, too mixed, or too characterless for any typo-chronological assessment, other than to say that indications of earlier Neolithic flintworking resembling the excavated assemblages were not visible away from the hilltop. This situation requires archaeological explanation, but there are at least two potentially biasing factors to be considered. Firstly, the survey was rather too restricted in area for its results to be conclusive. The dictation of the study areas by the availability of ploughed fields introduced a non-random bias which could have weighed against the discovery of preferred foci of earlier Neolithic settlement or activity. Secondly, post-depositional factors such as colluviation could bias the relative visibility of earlier Neolithic as opposed to later scatters. In this regard the propensity for surface-recovered flintwork to reflect predominantly later activity on sites where excavation has shown both earlier and later activity to be present, should be considered (Healy 1983; 1987; 1988a).

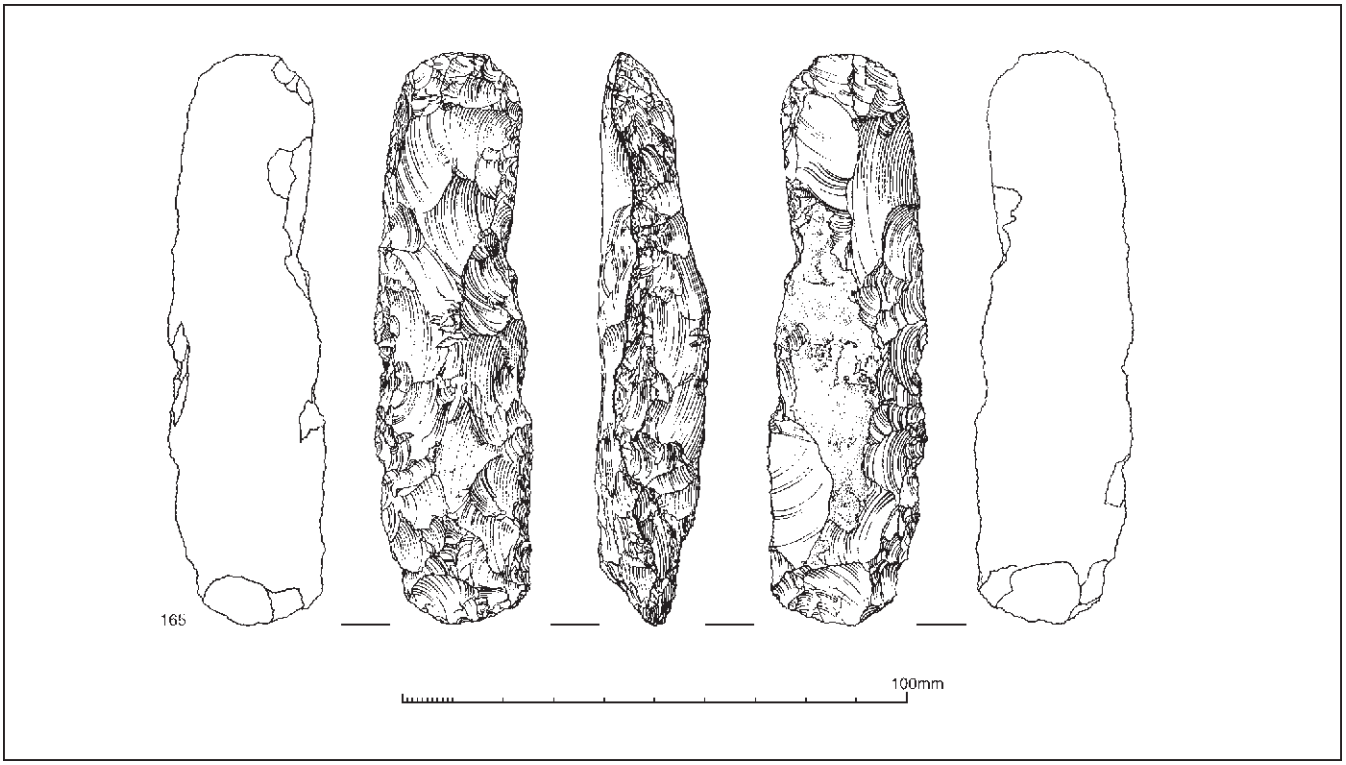

Fig 10.43 Rod (HHS 76, Hambledon survey, surface find from NGR ST 891 125). The outline drawings show the extent of the modern damage affecting this piece.

Alternatively, the survey results could be taken at face value to suggest the existence of intensive early/middle Neolithic settlement and lithic exploitation only on the Hambledon hilltop, with later settlement and exploitation primarily away from the hilltop. Such a hypothesis, of mutually exclusive zones through time, could be of general importance in assessing the socio-economic dimension to prehistoric settlement in the area, and might confirm the existence of particular historical conditions for the apparently unusual use of the highest ground during the earlier Neolithic. Whatever the conclusion, it is of considerable interest that the overall pattern of lithic material produced from this survey matches that obtained in a wider survey of Cranborne Chase (Barrett *et al* 1991).

10.2.11 Catalogue of illustrated struck lithic artefacts

Cores

10 HH76 2110, class A2, main enclosure, segment 14, L11, context group 7, phase VI
11 HH76 2166, class D, main enclosure, segment 15, L7, context group 4, phase III
12 HH76 2613, class C3, main enclosure, segment 12, L11, context group 4, phase III

Serrated-edge flakes

13 HH77 1770, Neolithic pit N F7i, L3, context group 1
14 HH77 1974, Neolithic pit N F10, L3, context group 1
15 HH77 1489, Neolithic pit N F42, L3, context group 1
16 HH77 1562, Neolithic pit N F6, L4, context group 1
17 HH77 1879, Neolithic pit N F25, L3, context group 1
18 HH77 2133, Neolithic pit N F7iii, L3, context group 1
19 HH77 1974, Neolithic pit N F10, L3, context group 1
20 HH77 1762, Neolithic pit N F7i, L3, context group 1
21 HH77 1819, Neolithic pit N F7i, L3, context group 1
22 HH77 2133, Neolithic pit N F7iii, L3, context group 1
23 HH77 1921, Neolithic pit N F7iii, L3, context group 1
24 HH77 1745, Neolithic pit N F25, L4, context group 1
25 HH77 1929, Neolithic pit N F6, L5, context group 1
26 HH77 1493, Neolithic pit N F7i, L3, context group 1
27 HH77 2133, Neolithic pit N F7iii, L3, context group 1
28 HH77 2132, Neolithic pit N F10, L3, context group 1
29 HH77 2024, Neolithic pit N F82, L4, context group 1
30 HH77 2133, Neolithic pit N F7iii, L3, context group 1
31 HH77 2133, Neolithic pit N F7iii, L3, context group 1
32 HH77 1729, Neolithic pit N F82, L3, context group 1
33 HH77 1605, Neolithic pit N F22, L3, context group 1
34 HH77 1879, Neolithic pit N F25, L3, context group 1
35 HH77 1493, Neolithic pit N F7i, L3, context group 1
36 HH77 1486, Neolithic pit N F7i, L3, context group 1
37 HH77 1844, Neolithic pit N F22, L3, context group 1
38 HH77 2217, Neolithic pit N F7iii, L4, context group 1
39 HH77 2037, Neolithic pit N F7i, context group 1
40 HH77 1970, Neolithic pit N F22, L4, context group 1
41 HH77 2265, Neolithic pit N F7iii, L3, context group 1
42 HH77 1438, Neolithic pit N F10, L3, context group 1
43 HH77 2265, Neolithic pit N F7iii, L3, context group 1
44 HH77 2133, Neolithic pit N F7iii, L3, context group 1
45 HH77 2265, Neolithic pit N F7iii, L3, context group 1
46 HH77 1562, Neolithic pit N F6, L4, context group 1
47 HH77 1672, Neolithic pit N F42, L3, context group 1
48 HH77 1462, Neolithic pit N F7i, L3, context group 1
49 HH77 1754, Neolithic pit N F42, L3, context group 1
50 HH77 2265, Neolithic pit N F7iii, L3, context group 1

51 HH77 1605, Neolithic pit N F22, L3, context group 1
52 HH77 1389, Neolithic pit N F6, L3, context group 1
53 HH77 1489, Neolithic pit N F42, L3, context group 1
54 HH77 2265, Neolithic pit N F7iii, L3, context group 1
55 HH77 1489, Neolithic pit N F42, L3, context group 1
56 HH77 2107, Neolithic pit N F25, L4, context group 1

Edge-trimmed flakes

57 HH77 2301, Neolithic pit N F7iv, L3, context group 1
58 Class A HH77 1879, Neolithic pit N F25, L3, context group 1
59 HH77 2283, Neolithic pit N F93, context group 1
60 Class A HH77 2296, Neolithic pit N F7vi, L3, context group 1
61 HH77 1605, Neolithic pit N F22, L3, context group 1
62 HH77 1605, Neolithic pit N F22, L3, context group 1
63 HH77 1484, Neolithic pit N F22, L3, context group 1
64 HH77 1462, Neolithic pit N F7i, L3, context group 1
65 HH77 2283, Neolithic pit N F93, context group 1
66 HH77 2265, Neolithic pit N F7iii, L3, context group 1
67 HH77 2201, Neolithic pit N F7v, L3, context group 1
68 HH77 1762, Neolithic pit N F7i, L3, context group 1
69 Class A HH77 1879, Neolithic pit N F25, L3, context group 1
70 HH77 1729, Neolithic pit N F82, L3, context group 1
71 Class A HH77 1879, Neolithic pit N F25, L3, context group 1
72 HH77 1958, Neolithic pit N F25, L3, context group 1
73 HH77 1974, Neolithic pit N F10, L4, context group 1
74 HH77 2296, Neolithic pit N F7vi, L3, context group 1
75 Class A HH77 1438, Neolithic pit N F10, L3, context group 1
76 Class A HH77 1970, Neolithic pit N F22, L4, context group 1
77 Class A HH77 1904, Neolithic pit N F90, L3, context group 1
78 Class A HH77 2301, Neolithic pit N F7iv, L3, context group 1
79 Class A HH77 1891, Neolithic pit N F42, L3, context group 1
80 Class A HH77 1730, Neolithic pit N F90, L5, context group 1
81 HH77 1614, Neolithic pit N F19, layer 3, context group 1
82 Class A HH77 1974, Neolithic pit N F10, L3, context group 1
83 HH77 1729, Neolithic pit N F82, L3, context group 1
84 Chert HH77 2265, Neolithic pit N F7iii, L3, context group 1
86 HH77 2245, Neolithic pit N F90, L4, context group 1
85 Class A HH77 1983, hollow N F7, context group 46

Scrapers

87 HH74 1143, Neolithic pit A F64, context group 1
88 HH74 1111, Neolithic pit A F64, context group 1
89 HH74 1123, Neolithic pit A F57, context group 1
90 HH74 1184, Neolithic pit A F116, context group 1
91 HH74 1165, Neolithic pit A F78, context group 1
92 HH74 1214a, Neolithic pit A F120, context group 1
93 HH74 1059, main enclosure ditch, segment 4, AII L6, context group 7, phase VI
94 HH74 307, main enclosure ditch, segment 4, AIII L8, context group 7, phase VI
95 HH74 342, main enclosure ditch, segment 4, AIII L9, context group 4, phase III
96 HH74 653, main enclosure ditch, segment 4, AII L5, context group 7, phase VI
97 HH74 1149, Neolithic pit A F74, context group 1
98 HH74 1131, Neolithic pit A F64, context group 1
99 HH74 895, main enclosure ditch, segment 4, AIII L7, context group 7, phase VI
100 HH74 896, main enclosure ditch, segment 4, AIII L7, context group 7, phase VI
101 HH74 1071, Neolithic pit A F62, context group 1
102 HH74 652, main enclosure ditch, segment 4, AII L5, context group 7, phase VI
103 HH74 574, main enclosure ditch, segment 4, AII L5, context group 7, phase VI
104 HH74 951, Neolithic pit A F45, context group 1
105 HH74 659, main enclosure ditch, segment 3, AII L5, context group 7, phase VI
106 HH74 1048, main enclosure ditch, segment 4, AII L5, context group 7, phase VI
107 HH74 1207, Neolithic pit A F105, context group 1
108 HH74 608, main enclosure ditch, segment 3, AII L5, context group 7, phase VI
109 HH74 1026, main enclosure ditch, , segment 4, AII L5, context group 7, phase VI
110 HH74 1081, main enclosure ditch, segment 4, AII L10, context group 4, phase III
111 HH74 898, main enclosure ditch, segment 4, AIII L7, context group 7, phase VI
112 HH74 586, main enclosure ditch, segment 3 or 4, AII L4, context group 6, phase V
113 HH74 899, main enclosure ditch, segment 4, AIII L7, context group 7, phase VI
114 HH74 770, main enclosure ditch, segment 4, AIII L9, context group 4, phase III
115 HH74 1213, Neolithic pit A F114, context group 1
116 HH74 666, main enclosure ditch, segment 2, AI L4, context group 7, phase VI
117 HH74 605, main enclosure ditch, segment 4, AII L5, context group 7, phase VI
118 HH74 1214, Neolithic pit A F120, context group 1

Piercers

119 HH77 925, site N, ploughsoil context group 46
120 HH77 1788, Neolithic pit N F25, L4, context group 1

Knives

121 HH75 1438, main enclosure ditch, segment 8, L1, context group 11, phase VIII/g
122 HH75 1749, main enclosure ditch, segment 8, site F L3, context group 10, phase VIII/a
123 HH74 454, main enclosure ditch, segment 4, L2, context group 11, phase VIII/b-g

Leaf-shaped arrowheads

124 HH76 811, main enclosure ditch, segment 17, L6, context group 7, phase VI
125 HH76 434, main enclosure ditch, segment 17, L3, context group 10, phase VIII/a
126 HH76 2622, main enclosure ditch, segment 6.1, L5A, context group 7, phase VI
127 HH75 6, Site C, ploughsoil, context group 46
128 HH77 1587, Neolithic pit N F1, L3 context group 1
129 HH75 1124, inner east cross-dyke ditch, segment 4, L6, context group 15, phase VI
130 HH75 1290, inner east cross-dyke ditch, segment 5, L3, context group 17, phase VIII/a
131 ST80 1234, Stepleton enclosure, segment 2, L5A, context group 58, phase IV

132 ST80 1877, outer Stepleton outwork, segment 3, L5, context group 77, among ribs of young adult male skeleton
133 ST79 1867, inner Stepleton outwork, segment 5, cutting 7, L2, context group 68, phase VIII/a
134 HH77 1253, Neolithic pit N F11, L3, context group 1
135 HH77 532, site N, ploughsoil, context group 46
136 HH77 1498, recent pit N F44, L3, context group 46
137 HH77 803, site N, ploughsoil, context group 46
138 HH77 1586, Neolithic pit N F1, L3, context group 1
139 ST78 2730, Inner Stepleton outwork, segment 7, quadrant 4, L4, context group 64, phase III
140 ST80 1425, Middle Stepleton outwork, segment 5, unit 5, L6, context group 71, phase I
141 chert, HH77 1539, Neolithic pit N F42, L3, context group 1

Oblique arrowhead

142 HH75 1233, main enclosure ditch, segment 10, L6, context group 9, phase VII/a

Tanged arrowhead

143 ST78 1, Stepleton spur, ploughsoil, context group 82

Laurel-leaf bifacial pieces

144 HH76 26, main enclosure ditch, segment 13, L1, context group 11, phase VIII/g
145 HH77 1517, Neolithic pit N F5, L5, context group 1
147 ST79 1569, inner Stepleton outwork, segment 7, cutting 15, L3A, context group 65, phase V
148 HH76 1335, area of main enclosure ditch, site G, unstratified, context group 11
150 ST79 1973, Neolithic pit 2A F154, context group 53

Unclassified bifacial pieces

146 ST81 2760, Stepleton spur, Area 4E, unstratified, context group 82
149 HH76 516, main enclosure ditch, Site H, context group 10, phase VIII, segment 13, L2
151 HH77 862, Site N, ploughsoil, context group 46

Polished flint axeheads and axehead fragments

152 HH74 1147, Neolithic pit A F71 context group 1
153 HH75 151, outer east cross-dyke ditch, segment 2, L4, context group 22.1, phase VII/a
154 ST81 1859, Stepleton enclosure, segment 16, unit 12, L3, context group 57, phase V
155 HH77 505, main enclosure ditch, segment 1, F5, context group 7, phase VI
156 ST78 1300, Neolithic pit 1A F228, L2, context group 53
157 ST77 25, Inner Stepleton outwork, context group 68, segment 8, L2.

Picks

158 HH75 2029, main enclosure ditch, segment 8, site F L6, context group 7, phase VI
159 HH76 1977, main enclosure ditch, segment 14, L3, context group 10, phase VIII/a

Rods

160 HH74 1104, Hambledon enclosure, Site N, hollow N F7, L3, context group 46
161 ST78 18, area 1A, ploughsoil, context group 82
162 ST81 3023, grave 4B F712, L1

'Fabricator'

163 ST78 1137, inner Stepleton outwork segment 6, L2, context group 68, phase VIII/a

Chisel arrowhead

164 EWM83 351, Everley Water Meadow, trench 1, L16.

Rod

165 HHS76, Hambledon survey, surface find from NGR ST 891 125. The outline drawings show the extent of the modern damage affecting this piece.

11 In conclusion …

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It now remains to draw together the various strands of information, interpretation, and reconstruction that have emerged from the different archaeological and other analytical processes that have been directed at the massive accrual of data resulting from the twelve seasons of excavation (very largely funded by English Heritage or its predecessor bodies) at Hambledon Hill between 1974 and 1986. During that time some 102 weeks of excavations were conducted seasonally in July–September, employing many hundreds of (often, but by no means always) young excavators under a dedicated, but necessarily changing, team of supervisors. The cost of the excavation programme is difficult to express in terms that mean very much to a financial view operating in the year 2006. Every effort was made to limit costs and much help in kind was received locally, from the School of Signals, Blandford, and from Edinburgh University. Put into 2006 money terms, each full season cost in the order of £50,000 (1974–82) with 1983–84 and 1986 costing a fraction of that sum. Added to this was a research associate post from 1975–1986 to secure the excavation record and to manage post-excavation demands (in 2006 terms *c* £15,000 pa). In 1996 English Heritage agreed to fund a publication/further analysis programme totalling some £200,000. The timescale that brings an excavation to publication some thirty years after it was commenced and nearly twenty after its completion is a matter of embarrassment, but it can honestly be said that work has never ceased upon the project, that much of that work has been achieved at very low cost and, most importantly, that this prolonged maturation has led to the exploitation of a number of routes of enquiry that would have been unimaginable in 1974 (or indeed 1986). It is a matter of considerable relief, and some shared pride, that at no stage has the excavation record been found inadequate to those unforeseen demands made upon it.

The aim and objectives of the excavation as undertaken in 1974 and elaborated thenceforward have been set out in section 1.7 of Chapter 1. It now remains to draw together the evidence accrued from all sources towards a conclusion.

11.1 The nature of Neolithic enclosure construction at Hambledon Hill

Roger Mercer

It is the intention of this section to examine, first of all, the nature of the enclosive works at Hambledon – what form did they take? – and having reached, hopefully, some persuasive conclusions upon that point, to discuss how they were constructed and something of the ergonomics of that task. This is undertaken in the face of considerable difficulties posed by the extremely damaged nature of this site and the virtual absence of evidence for earthwork construction other than the secondary evidence of the filling of the quarry ditches, whence the material for the construction of the earthworks was extracted.

The evidence that there were earthworks at all takes two forms. First and almost universally the phenomenon termed during the excavation 'protected chalk' – a term retained in this publication. This comprised a band, usually very clearly discernible and easily traced and measured, that almost universally ran behind the excavated causewayed ditches, usually with a berm of 'non-protected' highly eroded chalk in between, as in Figure 3.9. This band of protected chalk, often scored by recent ploughing, was homogeneous, usually solid, in contrast to the 'compacted rubble' effect of natural chalk elsewhere on the site, and often of a far purer whiteness than the brown-stained broken chalk surface surrounding it. Usually the surface of this band of 'protected chalk' was elevated by up to 0.20 m over the corrupted chalk surface around it and this 'hump' was reflected in the surface profile of the turf prior to excavation. This visible 'hump' constantly provoked the hope that structural bank material might survive *in situ*, but there are no certain instances where this proved to be the case. In rare instances where such material *might* have survived it was so disturbed by root, animal, and agricultural action as to be evidentially uninformative, as on site P (3.3.2, 3.3.4). It seems to be the only reasonable conclusion that this consistently located band of protected chalk was the 'shadow' or 'footprint' of the bank construction, whatever form that took, within the interior of the quarry-source causewayed ditches. The questions of course remain: how did this 'footprint' come about and to what degree does this 'footprint' represent the actual extent of the original bank?

To answer the first of these questions is very difficult, and some suggestions are all that can be made. Upon those suggestions will depend the answer to the second question. The band of protected chalk will not, presumably, be so obliging as to represent the precise or nearly precise outline of the original bank erected within, and with material obtained from, the ditch.

This obstacle will have eroded and decayed relatively early in its life, spreading its contained bulk, both inwards towards the interior and outwards towards the quarry ditch. It is in this rapidly arrived at, decayed, state that it will have settled down to create the 'footprint' which we have recognised – a process involving many centuries, even millennia, of probably complex and ill-understood interactions. The decayed earthwork would still have presented a considerable obstacle to agricultural and other human activity, if not to the less dramatic forces of solution and decomposition. However, a cuspal point will have been reached when erosive forces began to eat back into the protective cladding of the collapsed obstacle – thus slowly diminishing the extent of the protected chalk surface. It is likely, however, that this invasive process began quite (in relative terms) recently. Furthermore, judging by the damage inflicted on this band of hard chalk by a very recent episode of punitive ploughing, this diminishing effect will have been very slow. It is therefore the *opinion* of this close observer of the site that, if anything, this protected band will generally retain a width somewhat greater than the original, constructed width of the obstacle (or bank). This view is supported by the fact that, in those very few instances over the site as a whole where the groundfast remains of external cladding for such an obstacle survived, they were almost always located *within* the protected chalk band. If we accept that the protected chalk, where it survives in coherent masses on the site, represents something slightly greater than the width of the original, now vanished, earthwork obstacle then, if the assumption is made that all of the material dug from the ditch was incorporated to construct this obstacle, certain conclusions follow. Figure 11.1 shows, to scale, a typical ditch cross-section, located beside the requisite width of protected chalk 'platform'. There is drawn, conventionally, as much of the content of the ditch as would fit onto the 'platform' at the maximum angle of stability for chalk rubble, 45° (McConnell, 1919, 93). It should be noted at this stage that the Overton Down experimental earthwork (to which we shall return) was piled at 30°, although the maximum angle of repose was found to be 37.5° (Jewell 1963b, 37) – the comparison is made all the more telling by the construction of the obstacle at Hambledon on a varying but consistently present slope.

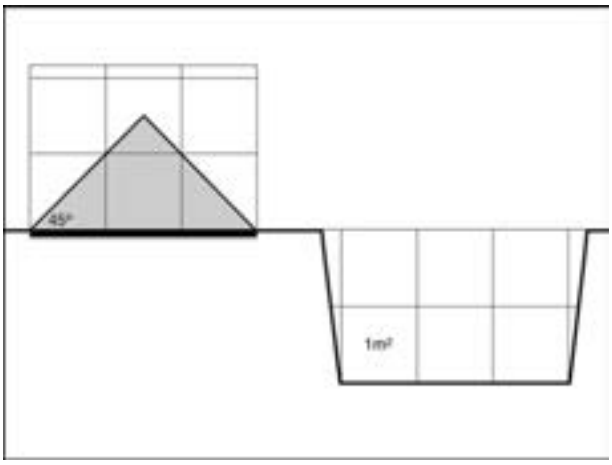

Fig 11.1 Diagram to show a ditch with a volume of 6.5 cu m per linear metre with reconstructions of a 'dump' rampart (at a 45° angle of rest) and a box frame rampart, both set over a 3 m-wide band of protected chalk. The illustration shows that a vertical frame is necessary if 6.5 cu m are to be piled onto the 3 m-wide base.

In this diagrammatic representation no account has been taken of the expansion factor brought about by the conversion of solid chalk bedrock to rubble by the process of digging. The reason for this is the difficulty of establishing a figure. During the Overton Down experiment the expansion factor on digging and dumping was ascertained to be 1:1.42 or 42%. McConnell, without much explanation, suggests (1919, 93) that 15 units of dug solid chalk will furnish 16 rubble units in embankment, an expansion factor of only 7% – although there is a hint in the text that this may reflect ramming of material. In sum, it will be seen that this exercise was conducted using the maximum conceivable angle of rest and with no allowance for an uncertain but inevitable expansion factor. These elements, which will, of course, tend to underestimate the volume of the bank, will be, to some extent, mitigated by the existence of un-dug causeways – themselves possibly reflecting the lack of necessity for further dug material to furnish a bank of the required stature.

Comparing volume extracted against the width of protected chalk as a two-dimensional exercise, it is apparent that a bank built 'dump' fashion from the entire contents of the ditch would oversail the available width. If the interpretation of the 'protected chalk' as a relict reflection of bank width is accepted, this observation would appear to the writer to reflect an uncomfortable superfluity of dug material for the available bank space – if dump construction obtained. In the same figure a reconstructed 'box-rampart' configuration is set out, again two-dimensionally, reflecting the maximally efficient profile of such a structure, near-square in section. Such a reconstructed structure will sit comfortably within the width of the protected chalk at all points, allowing some space for initial lateral dilapidation, as discussed above. This exercise would suggest a 'wall' 1.5–4 m wide and 1.5–3 m high.

The difficulty in pressing this model of obstacle construction lies, of course, in the general, but not total, lack of evidence for the earthfast, chalk-cut postholes that would be the *sine qua non* of such a structure. Yet this is, perhaps, an objection that can be overcome. Colluvial erosion, agricultural destruction and dissolution of the chalk surface have been massive at Hambledon. The truncated fillings of features in the interior of the main causewayed enclosure suggest the loss of up to 0.50 m of bedrock surface (see 1.3). It is likely that such a degree of erosion would eliminate, or,

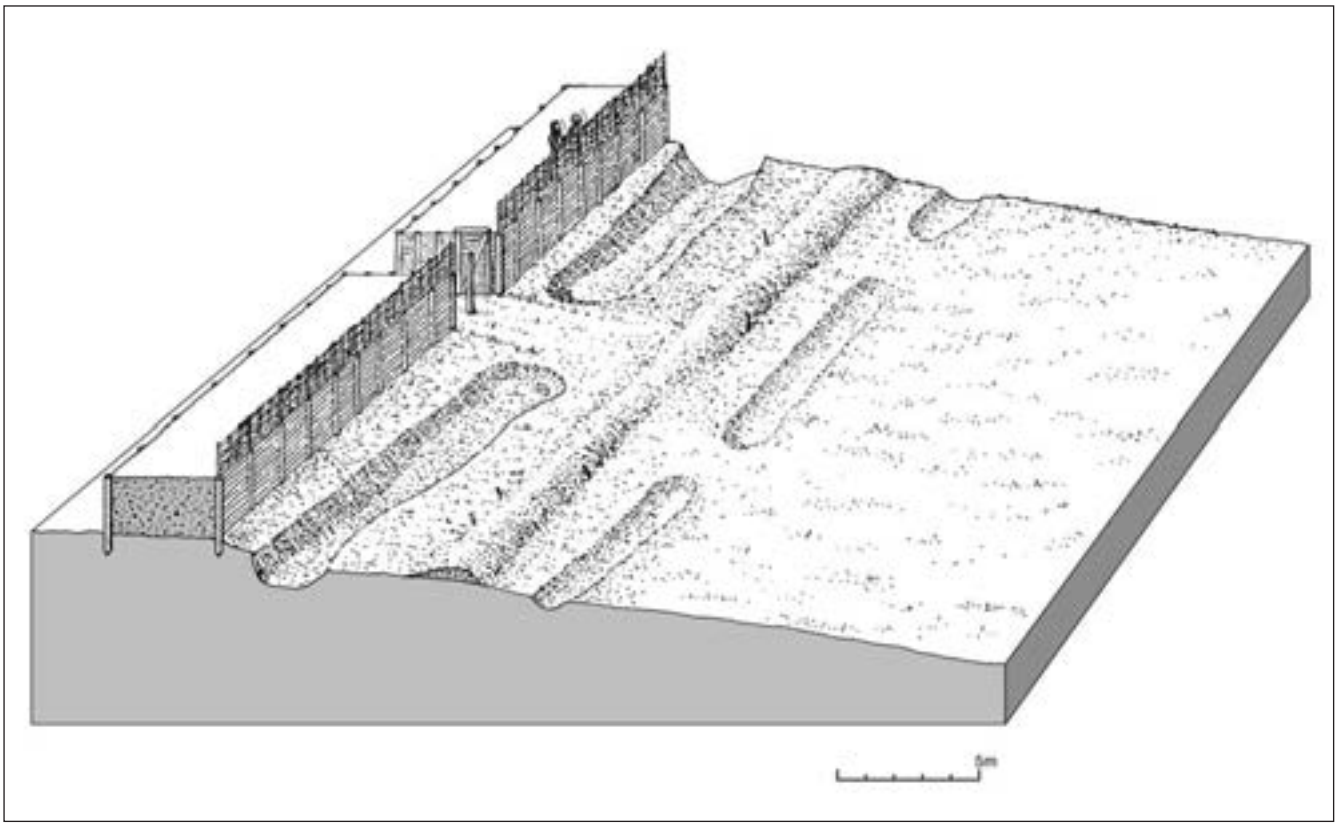

Fig 11.2 Reconstruction of the gateway in the inner Stepleton outwork.

at least, render unrecognisable the sockets of such posts. That such structures did exist on the site is not in doubt. The inner Stepleton outwork is in every way the most massive construction on the site. It seems likely that surviving remnants of its structure are due to this enhanced stature and to its partial protection beneath the head lynchet of a later prehistoric field system. Set within (by a margin of about 1 metre both at rearward and forward edges) the band of protected chalk would appear to be two constructional phases of a box-frame rampart. The earlier was a substantial construction 4 m wide. The later (which may have pertained only to this gateway area) was the slighter of the two, somewhat, less than 3 m in width. The position of the surviving sockets would suggest that the preferred interval was about 1.5 m centre-to-centre at both front and rear of the 'wall' (Fig 3.111). Reconstruction of this length of earthwork (Fig 11.2) would indicate that, from the known scale of the ditch at this point and the known width of the rampart, the height of the obstacle would be approximately 3 m. Those familiar with the 'ten foot wall' on assault courses will need no convincing of how daunting an obstacle this can be. This height may, of course, have been augmented by some form of breastwork.

Further indication of the nature of this particular structure emerged some 80 m to the east in segment 6, where a bank deposit occurred in the bottom of the ditch that would appear to represent elements of timber framework predominantly executed in hazel (Fig 3.99, Pls VIII–IX). At this point only one or two post-sockets survived within the protected chalk – the slightest of evidence for any wall structure. This deposit is, however, more easily interpreted as some sort of hurdling panel that, set between timber uprights, would have performed the necessary retentive function for the rubble wall-filling and may, of course, have been carried on upwards as a breastwork structure. A similar structure is evidenced in the more limited investigations of the Shroton spur outwork (see 3.4; Figs 3.75–6, 3.78, Pl IV). Vestigial postholes furthermore survive in the less well-preserved areas of protected chalk flanking some of the other earthworks: the main enclosure (Fig 3.6), the inner east cross-dyke (Figs 3.37–8), the inner south cross-dyke (Fig 3.42), the western outwork (Fig 3.45), the middle and outer Stepleton outworks (Fig 3.81), and both Hanford outworks (Fig 3.136).

One further line of enquiry remains to us in pursuit of the evanescent bank structure at Hambledon. This comprises the nature and structure of the ditch fillings which may tell a story about how this structure collapsed. If we compare these fillings with those accumulating within the ditch of the Overton Down experimental earthwork, ie from a dump earthwork set behind a ditch of similar scale, their structure is very different. It must immediately be pointed out that four factors preclude direct comparison between the two:

1. At Overton the earthwork was constructed on, to all intents and purposes, level ground while at Hambledon an element, more or less, of slope must enter into the equation.
2. At Overton the ditch was left to silt without intervention, while at Hambledon consistent disturbance of ditch fillings was the rule, not the exception.
3. At Overton a particularly wide berm was deliberately left, to ensure that the silting of the ditch could be observed without 'interference' from the bank. It is impossible to determine the original width of the berms at Hambledon. They may, however, have been significantly narrower than the Overton one.
4. At Overton, the ditch was proportionately wide, dug with a depth:width ratio in the chalk (excluding the topsoil) of 1:1.6 (Jewell and Dimbleby 1966, fig 1), which had weathered to 1:3.4 over 32 years (Bell *et al* 1996, fig 7.6). Many of the Hambledon ditches were narrower. The equivalent ratios for the extensively excavated ones, where large numbers of sections should provide representative proportions, ranged from 1:1.7 for the Stepleton enclosure to 1:3.1 for the outer Stepleton outwork, with a mean of 1:2.4. If the Hambledon ditches were proportionately narrower after more than five millennia than the Overton Down one was after 32 years, then their proportions would have been even narrower than Overton's when they were first dug. In consequence, the erosion of their sides will have filled the lower parts of the ditches more rapidly than the same process has at Overton.

This is evident from the extent to which the chalk rubble filling is symmetrically derived from both sides, a feature most marked in the ditch of the Stepleton enclosure, corresponding to its narrow proportions and the relatively gentle slope of the ground on which it lay (Figs 3.84–5, 3.88, 3.90–2). Any excess over symmetry at the inner edge must be derived from the banks, accelerated by slope, in a manner precluded at Overton by the width of the berm and the level ground. This is most marked in some of the sections through the inner Stepleton outwork (Figs 3.92, 3.94–102). In some parts of this ditch, the lower fills show a similar pattern to that observed at Overton Down, modified by the greater bulk and the asymmetry discussed above: varying amounts of chalk rubble become progressively smaller, less angular and more concreted from bottom to top and are frequently interleaved with finer silts, suggesting that the sides and bank weathered gradually into the ditch (eg all the sections except KK–KK' in Fig 3.94, Fig 3.95, Fig 3.96: section TT–TT'). Some idea of the timescale of this process is provided in segment 7 by dates for an articulated skeleton underneath the chalk rubble fills and another near the top of those fills, of, respectively, *3600–3490 cal BC (80%)* or *3440–3380 cal BC (15%)* (4738±28 BP; UB-4242) and *3500–3420 cal BC (31%)* or *3390–3320 cal BC (64%)* (mean of 4598±40 BP for OxA-7044 and -7045; Figs 3.100–4; Fig 4.6: *UB-4242*, *R_Combine ST78 2755A*). In other parts of the same ditch, however, the vast bulk of the fill had arrived quite quickly from the interior as clean, unweathered chalk rubble. The most striking instance of this is on the east side of the gateway, in the west butt of segment 5 (Fig 3.96: section RR–RR'). Others can be seen elsewhere (eg Fig 3.92, Fig 3.94: section KK–KK', Fig 3.96: section VV–VV', Fig 3.98). Such massive fresh rubble collapse would appear to the writer to witness a fundamentally unstable 'bank' structure which is only answered by the structural diagnosis arrived at early by volumetric calculation and indeed, by archaeological witness albeit only in isolated locations on the site.

Thus the writer, despite the problems posed by the very antiquity of the site and the degree of erosion to which it has been subject, is confident that the causewayed ditch quarrying on the site took place to furnish sufficient (and no more) material for the filling of a box-frame construction wall. He is certain that this wall varied in stature at various points to reflect its differing functions – simply enclosive in the main and Stepleton enclosures; systematically definitive in the cross-dykes and the western and Hanford outworks; and designedly defensive in the Stepleton and Shroton outworks. Even within these broad categories it is likely, indeed it is probably in evidence, that gateway areas were enhanced in otherwise slighter constructional elements in order to reinforce likely points of attack or indeed simply to add greater impact on the eye to those parts of the enclosive complex that were most likely to be seen.

It is therefore suggested that all parts of the Hambledon Hill complex were defined by a causewayed quarry ditch behind which stood a timber- and hurdling-reinforced, chalk rubble-filled wall. It is suggested that this wall varied in scale between *c* 2 m and 4 m in width and 2 m and 3 m in height (plus the height of any breastwork). These suggestions are based upon the evidence of:

a existing archaeological evidence on the site.
b The volumetric calculation of chalk rubble production and its standing *vis à vis* the phenomenon of 'protected chalk' still surviving to a more or less damaged extent on the inner side of the quarry ditches.
c The uneven and massive fresh rubble content of some of the ditch fillings.

11.1.1 The material required

Having thus established a model for enclosure construction at Hambledon Hill which satisfies all the requirements of the evidence, it now remains to examine the material requirements of such a model and then

to examine its ergonomic implications. It will be apparent that one of the essential components of box-frame construction is that its strength resides in lateral as well as vertical members and in their joining. It is evident from the limited evidence available that uprights at about 1.50 m centre-to-centre were a preferred basis for this system. This frame will not, of course, retain the rubble infill – it simply supplies the strength for that retention by screens. In the Neolithic construction such screens were probably not only applied along the front and rear of the construction but also *through* the body of the wall to induce lateral as well as frontal stability, like hurdles in the South Street and Beckhampton Road long barrows, in Wiltshire (Ashbee *et al* 1979), and the long mound at Raunds, Northamptonshire (Harding and Healy forthcoming), or like stone-built partitions in the Hazleton long cairn, Gloucestershire (Saville 1990b, figs 46–58) and within the walls of the outer enclosure at Carn Brea in Cornwall (Mercer 1981a, 63). For a truly effective box structure the front and rear uprights must be linked by at least two jointed cross members 2–4 m in length. In turn each such 'frame' will require to be limited laterally by at least two members of 1.5 m (but actually preferably 3 m) to the neighbouring frame(s). This is the minimum requirement to induce a stable structure. Hurdling screens will, of necessity, have to be applied to the whole rear and front length of the frame, and it has been suggested on parallel evidence from other sites of the period across the system from time to time. It will immediately be apparent that a box-frame of the required degree of stability will actually need relatively little in the way of groundfast support, which simply provides anchorage. Hence the relatively shallow postholes that, after five millennia, have proved so elusive at Hambledon.

11.1.2 The ergonomic requirement

It will immediately be seen that the calculation of any ergonomic input to the process of construction of such an obstacle is both complex and, consequently, uncertain. It nevertheless seems appropriate to attempt such a calculation, not to be conducted in any sense of precision, but only to give some impression of the impact of the effort to construct such a site as Hambledon Hill, over the period it was constructed, upon the subsistence farming communities that engendered it. To this end no precise figures will be used, quite deliberately, lest their use be seen as offering some spurious accuracy to the outcome. The objective is, quite simply, to offer an 'order of magnitude' to the problem. It may well be that, when placed against the great longevity of the site in its total conception that these figures will not be so very surprising for the reader.

It is proposed to examine each element of the construction of the enclosure complex in terms of its ergonomic implications on the basis of the information given above. While it is clear that earthwork construction was episodic, and the scale and date of some elements are well defined, others come less clearly into focus, while yet others remain speculative (Chs 2–4). The exercise follows the provisional periodisation of Table 4.4 and Figure 1.9. The calculations are quite deliberately maintained at a minimum likely level (2 m width and 2 m–3 m height of wall – while evidence might suggest greater dimensions, at least in places. The intention is to provide, based upon the argued nature of these earthworks, some estimate of the timber and other organic requirements likely to be required in their construction. This will, at the least, enable a readily appreciable comparison between the requirement of different components of the site and may also serve to illustrate in a simplistic, and probably minimalist, way, the actual requirements of site construction. It must be remembered that the stages listed below took place over a period of some 400 years. Nevertheless, for those who like numbers the following calculations have been made.

Timber and hurdling

Calculations have been made as follows, taking the inner Stepleton outwork as an example, and employing the figures set out in Table 11.1.

The earthwork displays a length of at least 300 m, and possibly much more (3.5.1). The minimum length would have called for:

(300÷1.5) × 6 timbers 2–3 m long = 1200 timbers = 2400–3600 linear metres
and
(300÷1.5) × 2 screens of hurdling = *c* 400 screens of 3m² each = *c* 1200 m² of hurdling

Iversen points out (1956) that, during an experiment mounted in young oak forest in Jutland, Denmark, in which flint axes were used to fell oaks of less than 35 centimetres, each tree was felled in *c* 30 minutes, and 500 m² of oak forest cleared by three men in four hours. On this basis, assuming 25 trees per 500 m², one man could clear 0.2 ha in a week. Iversen further states that in Upper Canada in the eighteenth century, *c* 0.4 ha could be cleared by one man in a week using steel axes. In another experiment Semenov

Table 11.1 Minimum material requirements for the construction of a 1.50 m length of a box-framed wall

Material	*Approximate dimensions*
2 uprights	*c* 2 m–3 m
2 cross members	*c* 2 m–4 m
2 lateral members	*c* 1.5 m (or possibly 2 m × 3 m every other length of 1.50 m)
2 hurdling screens	2 m–3 m × 1.50 m
1 hurdling screen	2 m–4 m × 2 m–3 m

(1964, 130) suggested that a pine tree *c* 0.25 m in diameter could be chopped down in *c* 20 minutes with polished axes of nephrite.

N D James in *The Forester's Companion* states (1966, 201) that oak weighs 45 lb per cubic foot (= 720 kg per m^3). The evidence available from post sockets at Hambledon Hill suggests that large poles 0.10–0.20 m in diameter were in evidence (see 3.5.4). If the length above ground is 2–3 m (say 2.5 m), then it is argued (Mercer 1981b, 149–51) that a ratio (average) of 1:3.5 for post length below and above ground is indicated on the basis of excavated timber postholes where a ramp-approach for raising the timber is in evidence. Thus for a 2.5 m length the probable socket depth would be 0.55 m and for a 3 m length 0.66 m. This information may help to suggest the loss of at least 0.3 m of subsoil surface around postholes relating to this outwork: 0.55 m was in fact the maximum depth to which any postholes survived, their mean depth being only 0.17 m. This series of calculations, of course, takes no account of the time spent in managing oak forest in a manner that allowed the creation of the poles, probably over a period of 40–50 years.

The volume of each pole @ 3 m × 0.20 m diameter = $\pi r^2 h = \pi(0.1 \times 0.1) \times 3 = 0.09$ cu m (= 3.18 cubic feet). At 45 lb per cubic foot (=720 kg per m^3), each timber would weigh 64 kg (141 lb).

An approximate total of four hours of labour per timber length might be made up of half an hour to fell, half an hour to prepare, an hour to hitch and drag to site, another hour to dig the earthfast socket and a final hour to erect and joint the timber.

To these considerations must be added the time taken for hurdling/scantling preparation. Observation of modern hurdle makers by Coles and Darrah (1977, 32–8) indicates that to make a hurdle 2.9 m long × 1.1 m high with 60–70 rods and 5–6 sails would take two craftsmen 10 hours. Experiment by the same authors in the production of a hurdle modelled on a Neolithic example from Walton Heath in the Somerset Levels produced an altogether faster production rate, again for a team of two, of approximately two hours, including cutting and cleaning the poles. This was for a hurdle 2.9 m long and 1.1 m high, weighing 30 kg. Allowing an additional 30 minutes for transport to site and fixing, it is therefore taken that 3.5 m^2 of hurdling could be produced in 2.5 hours × 2 =5 worker hours.

Ditch-digging

In order to estimate the volume of excavated material for each ditched structure, it is necessary to calculate the proportion of ditch to causeway on the basis of the (sometimes minimally known) sample excavated. Then it is necessary to suggest on impressionistic but informed grounds the average ditch depth and width. This suggestion must be tempered by an understanding that the depth of ditches will have been reduced and their width increased by weathering. In the absence of any relevant information, however imprecise, it has been assumed that for the purposes of this exercise these factors broadly cancel each other out. The accepted loss of *c* 0.50 m of subsoil surface (1.3) and the reconstruction of original ditch form on the basis of basal profile suggest that this may well have been (approximately) the case.

To calculate the implication of ditch digging we may use the following figures, drawn from McConnell (1919):

15 cubic ft (0.4247m^3) = 1 ton (1.016 tonnes) of grey chalk would be quarried by a team of three diggers, one filler, one wheeler (barrow) in a day's work of 10 hours (ibid, 92).
3 cubic yards (2.5 m^3) in the quarry amount to about 4 cubic yards (3 m^3) in rubble (ibid, 92).
4 cubic yards (3 m^3) of 'soft stone easily parted' could be quarried in a day's work (ibid, 91).
'A man accustomed to the work will build 7 cubic yards (5.25 m^3) of dry rubble wall in a day' (ibid, 94).

The above are, of course, twentieth-century figures with an array of post-Neolithic provisions attached to them, including the use of modern technology (steel tools, the wheel) and twentieth-century concepts of 'work'.

We also have the Overton Down experimental earthwork work study (Jewell 1963, 50–8). While the McConnell figures are clearly exaggerated in terms of prehistoric work capacity, it is also clear that the workforce at Overton was not particularly experienced, and, while this writer admires their work and achievement, he suspects that in the event of a play-off between the Overton Delvers (late second millennium AD) and Hambledon Howkers (early fourth millennium BC) there might have been a certain amount of 'ragging' by the latter in the pavilion both before and after the event.

The Overton figures are nevertheless full of interest – based upon an optimum working team of three (picker, shoveller and basketer) and the premise that 1 cubic foot of chalk (0.02832 m^3) = 1 cwt (50.8 kg).

A day-long rate of 15 cwt (762 kg) per person per hour was judged appropriate for modern workers – that is digging, carrying, and dumping on the angle-of-rest bank designed at Overton – with modern tools. With ancient tools the 'Stakhanovite' shift managed to work for a relatively short period (40 minutes) at a rate of 8.3 cwt (422 kg) per hour (dug, transported and dumped), ie in Overton terms 8+ cubic feet (*c* 400 kg). A more typical average for the exercise was *c* 4.5–5 cwt (229–254 kg) per hour.

The chalk at Hambledon Hill is, and almost certainly in the Neolithic was, more rotten, fissured, and corrupted than that at Overton. Given this fact, this writer is prepared to estimate a rate of 10 cwt (508 kg) or 10 cubic feet (0.2832 m^3) per hour for a prehistoric

Table 11.2 Elements of the complex for which material and ergonomic requirements have been estimated

Period (s)	*Earthwork*	*Considerations*	*Notes*
1A	Main enclosure		
1A	Long barrow		No estimate made for timber or hurdles
?1A	Hillfort long barrow	Considered an early element by analogy with the excavated long barrow and other long barrows	No estimate made for timber or hurdles. Width of ditches and lengths of segments and causeways taken from earthwork survey of E ditch, where they are fairly clear (Fig 2.14). Depth taken from S ditch of South Street long barrow (the deeper of the two; Evans 1979a, fig 24)
1A, 3, ?3, 4, ?4	Cross-dykes	Built progressively on the evidence of radiocarbon dates for east cross-dykes and inner south cross-dyke. Others undated. North cross-dykes inferred from topography and symmetry. A vestige of them may be visible emerging beneath the SW gateway annexe of the hillfort (2.4.2, Fig 2.8)	Lengths of segments and causeways for S and N cross-dykes taken from E cross-dykes. Width and depth of inner S cross-dyke are based on only two sections and may not be representative. Widths and depths of N cross dykes are used for outer S cross dyke, the original form of which was destroyed by a probably Iron Age recut, and for the inferred N cross-dykes
1B	Stepleton enclosure		
1B	Shroton outwork	The possibility of a second, outer earthwork here remains open (3.4)	Lengths of segments and causeways taken from earthwork survey (Fig 3.73)
1B	Middle Stepleton outwork	Taken provisionally to be one of two earthworks running from the Stepleton enclosure to a point roughly 200 m W of it, where a change of course may mark new construction (2.4.2, 3.5.1)	
2	Inner Stepleton outwork	Taken conservatively to end approximately 150 m W of the Stepleton enclosure, between sites 4G and 4F, but may extend much farther (2.4.2, 3.5.1)	Lower sectional area than for Shroton spur outwork reflects disparity between massive segments in E and centre of excavated area and slighter ones in W
3	Outer Stepleton outwork	Taken provisionally to be one of two earthworks running from the Stepleton enclosure to a point roughly 200 m W of it, where a change of course may mark new construction (2.4.2, 3.5.1)	
?3	Inner and outer Hanford spur works	May have been built before more extensive earthworks linked them to the Stepleton spur (2.4.2, 3.6, 4.7.7). Respectively equivalent to segments 1–3 of the inner Hanford outwork and 1–2 of the outer	
4	Western outwork	Remains little known. Much of its length obscured by Iron Age hillfort	Extent of earthwork employed here corresponds to that shown in Figure 1.9. Segment and causeway lengths taken from earthwork survey (Fig 2.9). Width and depth known from only two sections, which may not be representative
?4	Inner and outer Stepleton–Hanford outworks	Apparently linking Stepleton outworks and Hanford spurworks. Respectively equivalent to segment 3 of the inner Hanford outwork and segment 4 of the outer	Lengths of segment and causeways taken from outer Stepleton outwork. Mean width and depth for inner outwork taken from outer because the only excavated part of the inner was an expanded butt which is unlikely to be representative

'specialist' population, bearing in mind McConnell's estimate of 15 cwt. This estimate for digging, transport and dumping may have been constrained somewhat by the additional effort required of tipping appropriately within a box-frame. Nevertheless, if only for the purpose of suitable approximation, we will use the figure of 10 cubic ft (0.2832 m^3) – taken as 0.28 m^3 per hour for a team of three.

It now remains to calculate the volume of chalk removed from the various components of the Hambledon complex. This is not, of course, a simple task. We are not dealing with ditches of even form – nor, even, are we dealing with continuous digging. Complex volumetric calculations would be possible which would only serve to furnish exactitude where it does not exist. The calculations have been made as follows, again using the inner Stepleton outwork as an example. The sectional area of each ditch has been taken as the product of the mean surviving depth and width on the grounds that (1) decrease in the former is likely to be balanced out by increase in the latter, as discussed above, and (2) the ditches are likely to have been flat-bottomed and steep-sided, on the evidence of the surviving, unweathered bases of their profiles:

Total ditch length (excavated and unexcavated): at least 300 m.
Total known length of excavated or exposed segments: 200.10 m.
Total known length of excavated or exposed causeways: 37.20 m.
Known length of segments as % of known length = (200.10 × 100) ÷ (200.10+37.20) = 84.32%.
Estimated total segment length (excavated and unexcavated) = 84.32% of 300 = 252.97.
Mean depth of excavated sections: 1.50 m.
Mean width of excavated sections: 3.75 m.
Estimated total volume = 1.50 × 3.75 × 252.97 = 1422.96 cu m (3350.5 tonnes).
Estimated total hours of work for a team of three = 1422.96 ÷ 0.28 = 5082.
Estimated total worker days = (5082 ÷10) × 3 = 1524.6.

The estimates achieved by this means and assembled in Table 11.3 and Figure 11.3 are based on varying levels of supposition as to the dimensions, extent and chronology of the earthworks. Those for the two enclosures, the inner east and south cross-dykes and the Shroton spur outwork are the most surely founded in all three respects. The extent of all the Stepleton outworks remains problematic (see 2.4.2, 3.5.1) and conservative, minimum lengths are employed here. Both the dates and dimensions of the hillfort long barrow, the north cross-dykes and the outer south cross-dyke are inferred from other earthworks (Table 11.2). The western outwork is the greatest enigma. It was built late in the sequence, and, on the evidence of field survey, extended along the entire west side of the hillfort spur. It is impossible to judge whether it extended farther than this or, indeed, whether it was built in a single operation.

The picture that emerges from these notional calculations is, naturally, an uncertain one. If 100 people were set to the task of creating the main enclosure between mid-September, after harvest, and the end of November, when conditions might become difficult, they would have 80 working days. The monument could have been created in under two years, and the Stepleton enclosure in another month. The cross-dykes, progressively constructed works of definition, could each have been built in three weeks or less. The defensive outworks, at the minimum extents used in these calculations and given the same number of people working over the same period, would, with one exception, each require a single two-month 'off season'. The exception is a signal one. The western outwork would have had the highest resource budget of all, calling for more input than the main enclosure, although still falling within the 'two season' limit of feasibility.

Our chronological information would suggest that the early Neolithic use of the hill took place over a period of 300–400 years, with the construction of the main enclosure modelled at *3680–3630 cal BC* and that of the western outwork at *3510–3360 cal BC* (Table 4.2). The reader will immediately appreciate the range of possibilities that lies before us. A total of 41,760 worker days spread over 400 years could, for example, amount to 20 days of work by five people each year or one of the 80-day periods of work by 100 people proposed above every 80 years. The writer believes in the notion of critical mass as a determinator of any human project. He does not believe that anyone, ever, would attempt the task of building Hambledon Hill with five people. He is convinced that the building of Hambledon Hill was, anyway, an expression of the social and economic command of the hierarchy that conceived and put together the project. The writer therefore prefers the '100 person' model. With 200 (or 500) people then it is clear that all phases of the 'Neolithic' Hambledon project' could have been completed within an 'off season' of one or two years of well-organised labour (the writer has allowed 10% time for this 'well organised' as part of the suggested social commitment), not a major undertaking for a population of 1000 (100 families) who thought that it was important enough.

In sum, the initial construction of the main enclosure may, on a very reasonable basis, have taken two years, and most subsequent episodes one year. The western outwork, even in its imperfectly known state, seems to have been on a different scale from the rest. It was also of different construction, since its segments are much shorter than those of the other outworks, with a mean length of only *c* 9 m in contrast to 11 m for the Shroton spur outwork and 25 m for the completely exposed segments of all three Stepleton outworks; the excavated segments on the Hanford spur

Table 11.3 Estimated material and ergonomic requirements for the construction of the elements of the complex

Commissariat is estimated as 10% of worker days, a day is estimated as 10 hours. Totals are rounded.

Period	*Earthwork*	*Earthwork length (m)*	*Estimated total segment length (m)*	*Average sectional area (sq m)*	*Volume (cu m)*	*Excavation (worker days)*	*Hurdles*	*Hurdling (worker days)*	*2–3 m timbers (no.)*	*Timber (worker days)*	*Subtotal worker days*	*Commissariat (worker days)*	*Total worker days*
1A	Main enclosure	1000	870	4.4	3830	4105	1335	670	4000	1600	6375	640	7015
1A	Inner E cross-dyke	280	265	1.6	425	455	375	190	1120	450	1095	110	1205
1A	Long barrow	57	55	3.35	185	200				0	200	20	220
?1A	Hillfort long barrow	140	115	8.75	1010	1080				0	1080	110	1190
1B	Shroton outwork	290	200	8.3	1660	1780	390	195	1160	465	2440	245	2685
1B	Stepleton enclosure	375	290	2.5	725	780	500	250	1500	600	1630	165	1795
1B	Middle Stepleton outwork	500	445	2.3	1025	1100	670	335	2000	800	2235	225	2460
2	Inner Stepleton outwork	300	250	5.65	1415	1520	400	200	1200	480	2200	220	2420
3	Inner S cross-dyke	170	160	3.7	590	630	225	110	680	270	1010	100	1110
3	Outer Stepleton outwork	500	435	3.2	1390	1490	670	335	2000	800	2625	260	2885
?3	Inner N cross-dyke	140	130	1.67	220	235	190	95	560	225	555	55	610
?3	Inner Hanford spur work	160	115	2.93	340	365	215	110	640	255	730	75	805
?3	Outer Hanford spur work	140	110	2.42	270	290	190	95	560	225	610	60	670
4	Outer E cross-dyke	280	250	2.09	525	560	375	190	1120	450	1200	120	1320
4	Western outwork	1650	995	3.75	3730	4000	2200	1100	6600	2640	7740	775	8515
4	Outer Stepleton–Hanford outwork	500	430	2.58	1110	1190	665	335	2000	800	2325	230	2555
?4	Outer S cross-dyke	170	150	3.75	560	600	225	115	680	270	985	100	1085
?4	Outer N cross-dyke	140	125	2.09	260	280	185	95	560	225	600	60	660
?4	Inner Stepleton–Hanford outwork	500	430	2.58	1110	1190	665	335	2000	800	2325	230	2555
	Totals	7292	5820		20,380	21,850	9475	4755	28,380	11,355	37,960	3800	41,760

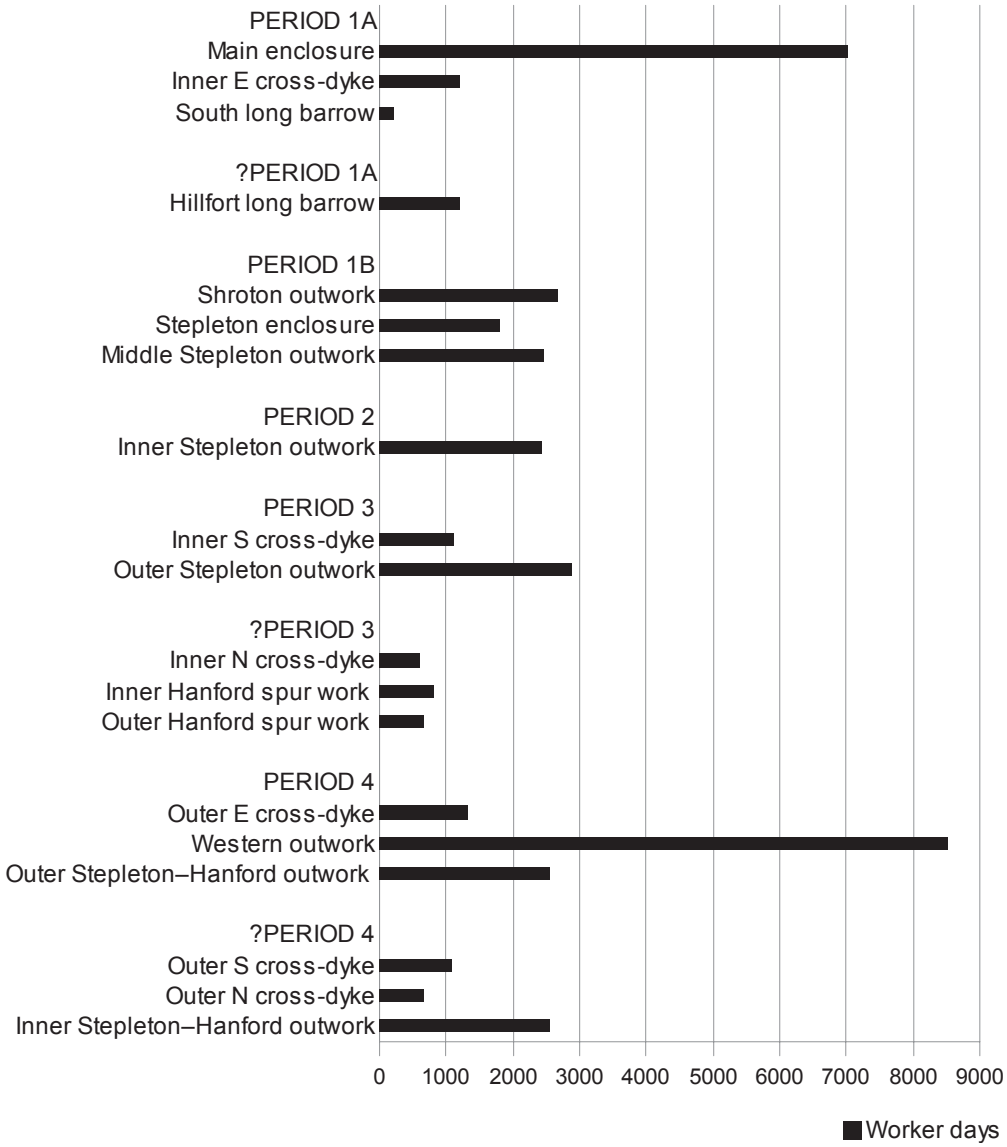

Fig 11.3 Estimates of the material and ergonomic requirement for the construction of the Hambledon earthworks.

were also clearly longer, although none was fully exposed (compare Figure 2.9 with Figures 3.73, 3.81 and 3.134). Could shorter segments reflect the simultaneous participation of larger numbers of kin groups in this large-scale construction than in smaller ones, as well as a lower 'wall'?

11.2 The Neolithic uses of the complex

11.2.1 How many and who?

The whole hilltop was encompassed by Neolithic activity as well as by Neolithic earthworks. Not only was there a massive long barrow on the hillfort spur, the relatively small quantity of struck flint found during the excavation of a section across the first millennium north cross-rampart within the hillfort was overwhelmingly early Neolithic in character (see Saville, 10.2.9), and sherds of Neolithic Bowl pottery have been found in a rabbit scrape in the hillfort (RCHME 1996, 95–96). On the Stepleton spur, artefacts and food remains were often at least as abundant in fills entering the ditches from the exterior as from the interior, and some charcoal-rich fills in the middle and inner outworks derived from the exterior (Tables 3.10–11), as did some particularly rich deposits, notably the fill of a recut in the east butt of segment 5 of the inner outwork, and refitting knapping debris in phase III of segment 4 of the outer outwork (3.5.8). There were pits outside the Stepleton enclosure, between the cross-dykes surrounding the main enclosure, and on the Hanford spur away from both enclosures. There were early Neolithic flint scatters north-west of the Stepleton enclosure, and east of the Shroton spur outwork (Figs 2.2, 3.73; see Saville, 10.2.10). All this suggests that those visiting the complex may have lived, however temporarily, outside the earthworks, although not ubiquitously: features outside the Stepleton enclosure were concentrated in the north

Table 11.4 Estimated total assemblage, spread over time

Totals for the north cross-dykes are based on those for the south cross-dykes and totals for the hillfort long barrow are based on those for the excavated long barrow, adjusted for different lengths. Unworked burnt flint is not included.

	% excavated	*Bowl pottery sherds*		*Struck flint and chert*		*People (minimum numbers)*		*Identified post-cranial animal bones*		*Cattle (minimum numbers)*	
		Actual	*Estimated*	*Actual*	*Estimated*	*Actual*	*Estimated*	*Actual*	*Estimated*	*Actual*	*Estimated*
Main enclosure	18	6084	34149	10850	60900	30	168	4271	23973		
Inner E cross-dyke	14	361	2552	507	3585	1	7	225	1591		
Long barrow	90	1721	1908	4125	4574	5	6	310	344		
Hillfort long barrow			3990		9564		12		719		
Shroton outwork	12	124	1051	383	3246	3	25	138	1169		
Stepleton enclosure	45	5442	12121	6147	13691	5	11	164	365		
Middle Stepleton outwork	13	130	1029	1716	13588	2	16	68	538		
Inner Stepleton outwork	48	1289	2697	25118	52548	9	19	507	1061		
Inner S cross-dyke	5	712	15189	161	3435	2	43	54	1152		
Outer Stepleton outwork	9	187	2199	3488	41008	3	35	54	635		
Inner N cross-dyke			12341		2791		35		936		
Inner Hanford spurwork	9	851	9787	206	2369	1	12	145	1668		
Outer Hanford spurwork	17	170	1005	161	952	3	18	58	343		
Outer E cross-dyke	12	186	1566	448	3771	2	17	108	909		
Western outwork	1	49	9751	180	35820			20	3980		
Outer S cross-dyke	4	23	575	69	1725			29	725		
Outer N cross-dyke			288		863				363		
Inner Stepleton–Hanford outwork	1			19	2476			6	782		
Outer Stepleton–Hanford outwork	4	2	53	1089	28906			20	531		
Central area, features, etc	15	4725	31500	7518	50120	2	13	93	620		
Stepleton spur, features, etc	90	3766	4184	6710	7456	3	3	118	131		
Hanford spur, features, etc	100	212	212	23	23	1	1	283	283		
Unexcavated areas excluding ditches and enclosure interiors (20% of sum of other estimated totals)			29630		68682		88		8563		
Actual totals		26034		68918		72		6671		63	
Estimated totals			177777		412090		528		51380		522
Per annum over 400 yr (rounded)			**440**		**1030**		**1**		**130**		**1**
Per annum over 300 yr (rounded)			**600**		**1370**		**2**		**170**		**2**

and north-west, and the Stepleton and Shroton flint scatters were localised. Similar practice may be reflected by an earlier Neolithic element in a flint scatter outside the Abingdon causewayed enclosure, Oxfordshire (Bradley 1999), in an extensive scatter on the southern slope of Windmill Hill, below the enclosure, where earlier Neolithic pits were also found (Whittle *et al* 2000), in an earlier Neolithic flint scatter and pit cluster outside Robin Hood's Ball, Wiltshire (Richards 1990, 61–65), and in numerous pits outside the Etton causewayed enclosure in Cambridgeshire (Evans and Hodder 2006).

Hambledon's episodic history of construction and recutting over three to four hundred years reinforces Chris Evans' contention that building and reworking were an inherent part of the use of causewayed enclosures (1988). Numerous strands of evidence combine to indicate that use, as well as construction, was intermittent. To the end of the Neolithic use of the site, mollusc samples from the hill reflect the vicinity of mature shady habitats in an environment dominated by varying degrees of woodland (see Bell *et al*, 5.2). This is not the vegetation that would be expected in an area habitually used by people and livestock, and contrasts with the development of more open conditions by this time in some areas of Cranborne Chase (11.5.2). There are similar contrasts between the fourth millennium vegetation of the Maiden Castle causewayed enclosure (Evans and Rouse 1991b), and the Dorchester area to the north (Allen 1997a) and between the fourth millennium vegetation of Windmill Hill and the nearby long barrows (Fishpool 1999). It seems that, at least on the southern chalk, causewayed enclosures were built at the edges of more habitually used areas, and visited only occasionally (Evans *et al* 1988), while the successor monuments were built in occupied areas.

An intermittent human presence is also reflected in the interplay between natural silting and human intervention in the ditch fills. The pottery shows a prevalence of small bowls and cups, suitable for cooking and eating, and a scarcity of larger vessels suitable for storage (see Smith, 9.1.1, Table 9.4). The cattle butchered on the hill were predominantly females between one and a half and four years of age (ie subadults and young adults), with notably lower proportions of younger and older animals and of males. This does not reflect the complete cull of a sustainable herd, which, whether reared primarily for dairy products or for meat, would include more calves and more mature, breeding-age females. The animals killed at Hambledon were thus selected from their herds for a combination of cultural preferences and practical considerations and brought there to be consumed (see Legge, 8.1). With the exception of a single large deposit of charred emmer spikelets, the charred cereal consists almost entirely of cleaned grain, with very little chaff or weed seeds, and was probably brought to the hill already processed (see Jones and Legge, 6.2).

If people visited the complex occasionally, in what numbers did they do so? The scale is to some extent defined by the labour requirements calculated above, which would have a workforce of a hundred working on the construction of the main enclosure hill for two months in late summer/early autumn. Episodes of consumption may have involved larger numbers. One of the young cows that dominate the faunal remains would have provided some 300 kg of meat, offal and fat, yet some of the phase VI recuts in the central area, which seem to have been cut and filled in single events, contained the remains of two or three such animals (see Legge, 8.1). This points to gatherings of hundreds – many hundreds if several such consumption events took place simultaneously. The events in question may have included the building of some of the later earthworks. But the recutting of a ditch segment or the digging and filling of a pit could have been the work of a handful, and visits to the hill may have been made by groups of every size, in circumstances of many kinds. The seasons in which Hambledon was visited remain elusive. A hint comes from a small sample of immature caprine mandibles, which fall into two groups, one of less than three months of age and another of 6–9 months of age. Assuming spring-time birth, this could reflect a human presence in early summer and in autumn (see Legge, 8.1).

The intervals at which the hill was frequented are equally elusive. A human presence, even a substantial one, need not have left any material trace, and the extent to which such traces were left may have varied over time, as discussed below. With these severe limitations the surviving material *could* be compatible with distinctly infrequent use. Projecting the density of the excavated assemblage onto the totality of the uninvestigated Neolithic archaeology is beset with problems. While it is possible to guess the total content of detectable ditches and of enclosure interiors where areas of pits have been excavated, it is impossible to guess how many pits and artefact scatters exist on the rest of the hill. For this reason the estimated totals for ditches and enclosure interiors have been increased by an arbitrary 20% (Table 11.4). If the notional totals so arrived at are spread over the 300–400 years for which the complex was in use, the numbers per year become low, of the order of some bones from one or two people, 440–600 pot sherds, 1030–1370 pieces of struck flint, and the remains of one or two cows. The abiding impression is that the site was little used, and that, when it was used, it was for occupation for short periods, at specific seasons, for short-term *ad hoc* activities involving feasting and building. Enclosure creation appears to be an end quite as important as enclosure use. In their analysis of the Haddenham enclosure, in Cambridgeshire, Evans and Hodder (2006) conclude from a total assemblage even more thinly spread than that at Hambledon that there may have been no large gatherings other than those relating to construction. This remains a possibility for Hambledon too.

11.2.2 Actions, artefacts and food remains

Isobel Smith was among the first to recognise that deposits in causewayed enclosure ditches may have had 'a special, even sacramental, significance', that there was '... no doubt whatever that the mass of this material was deliberately thrown or placed in the hollows' (1965, 7, 20). Pattern is everywhere at Hambledon. At a gross level, the two enclosures and the areas around them were used in myriad different ways, some of which are summarised in Table 11.5. The unexcavated areas of the hill, including the ditches of the hillfort long barrow, could have equally distinctive signatures. But there are also variations between ditches and, on a more intimate scale, between individual pits and ditch segments. In the central area the frequency of ditch recutting and, generally, the density of cultural material were at their highest in the main enclosure, lower in the cross-dykes, and at their lowest in the western outwork. The ditches of the south long barrow were also recut and rich in cultural material, and its location at an entrance to the main enclosure is reflected in preferential deposition in the west ditch, the side along which those walking between the two enclosures would have passed (Fig 3.5). This provides a hint of the extent to which movement about the complex may have been channelled and directed, a practice vividly evidenced by the fenced and metalled paths within the Crickley Hill enclosure (Dixon 1988), by screens, a central fence and changing gateway arrangements at Etton (Pryor 1998, 98–109, 366–69, figs 102–3, 115), the entrance structure at Orsett (Hedges and Buckley 1978, fig 6), and lengths of probably Neolithic palisade in the interior of the Staines enclosure (Robertson-Mackay 1987, fig 12).

The introduction to the site of non-local objects and materials, including pottery and querns as well as axeheads from remote sources, was long-lived. The south long barrow was one of the earliest elements of the complex (Figs 1.9, 4.25), and the artefacts from the primary silts of its ditches included a fragment from a Group I axehead from the south-west peninsula, a sherd of gabbroic ware from the same region, others of clays characterised by iron-rich red pellets, possibly originating in south-east Dorset, and still others of clays containing fossil shell from the limestone to the west and north-west, more of which was in the primary silts of the main enclosure and in a treethrow hole under its bank.

What changed was the frequency with which all kinds of cultural material were placed in the ditches. At both Hambledon enclosures, by far the largest assemblages came from the upper ditch fills. In the central area these were shallow phase VI 'slots' cut, sometimes repeatedly, into the largely silted ditches of the main enclosure, its cross-dykes, and the south long barrow, like the stone-packed finds-rich recuts retrospectively recognised at Hembury (Smith 1971, fig 15), the 'black triangles' in the inner circuits at the Trundle and Whitehawk, in Sussex (Curwen 1929; 1931; 1936; Ross Williamson 1930), the 'midden' in the inner ditch at Abingdon, Oxfordshire (Avery 1982, 16–17), or the phase 1C recuts at Etton (Pryor 1998, 13–51). In the Stepleton enclosure there were less structured but equally rich phase VI deposits, rarely in recuts, and comparable with successive 'midden' layers in the inner ditch at Maiden Castle (Sharples 1991, 50–51), or with the concentration of artefacts and animal bone in spit 3 of the inner ditch at Windmill Hill (Smith 1965, 9, 12, fig 6); Whittle *et al* 1999, 105–10). While these deposits may have accompanied the construction of the later outworks, they are unlikely to reflect the gathering of more people than before, since at least equally large numbers must have been needed for the initial episodes of construction (11.1), when little was deposited. It must reflect a change in practice, and one which extended, at least in some regards, from East Anglia to the south-west peninsula.

At Hambledon, this change in practice followed a lull in the use of both enclosures, during which relatively finds-poor silts accumulated. The phase VI deposits give the impression of increased standardisation. Until then individual segments, even adjacent ones, had had very different depositional histories, histories of the kind which prompted Pryor to see each segment of the Etton enclosure as the preserve of a single kin group, encapsulating its needs, rites and beliefs (1998, 367). But with slot-cutting and midden-deposition all the segments were treated in much the same way, repeatedly so in the case of slot-cutting. The artefacts and food remains in the phase VI deposits at Hambledon seem to have been freshly introduced rather than reworked from earlier contexts. Decoration and heavier rims are more frequent there than in the underlying layers (see Smith, 9.1.1), as are the main non-local pottery fabrics (Figs 3.67, 3.130). In the central area these deposits often included articulated animal bone. Indeed, the numerous unworked flint nodules and fragments which characterise these deposits may have protected them against predators – canid gnawing was more frequent on animal bone on the Stepleton spur, where flint was not piled among and over the phase VI deposits (Fig 8.1).

Some usages, however, remained constant across time. On a large scale, many of the numerous differences between the deposits in the ditches of the two enclosures persisted throughout their use (Table 11.5). These are discussed in greater detail below. In essence, formal – arguably ceremonial – deposits, recutting, and objects – some of them fine and rare – from remote sources were all far more frequent in the main enclosure than in the Stepleton enclosure. On a more intimate scale, there are suggestions that the uses of particular segments were remembered, as Whittle *et al* suggest for recurrent deposits in single segments at Windmill Hill (1999, 368). The south butt of the west ditch of the long barrow at Hambledon contained a

Table 11.5 Some of the distinctions between the Neolithic uses of the central area and the Stepleton spur

Main enclosure and central area	*Stepleton enclosure and spur*
Recutting frequent and complex, with a measure of regularity around enclosure, many pits also recut	Recutting of ditch less frequent and less regular, pits rarely recut at all
Upper, linear recuts ('slots') in enclosure and cross-dyke ditches, and recuts in pits both often packed with unworked flint nodules and fragments	Only one flint-packed recut in an enclosure segment, close to entrance giving onto route to main enclosure
Human remains placed in ditches from first	Human remains placed in ditches only after some fill had accumulated
Deer bone (as distinct from antler) rare	Deer bone (as distinct from antler) less rare
Articulated animal bone most abundant in final linear recuts ('slots') made in almost fully silted ditch, which were the ditch contexts richest in bone and other cultural material	Articulated animal bone rarer than in main enclosure and virtually absent from final midden-like deposits made in almost fully silted ditch, although these were the ditch contexts richest in bone
Material in 'slots' often placed in discrete piles	Little obvious placement of material in midden-like upper deposits
Antler implements concentrated in pits in interior	Antler implements concentrated in enclosure ditch throughout sequence
Almost no refitting knapping debris	Clusters of refitting knapping debris on ditch floors and higher up sequence
Almost all of the 39 chert artefacts from the site, including 6 leaf arrowheads; also 1 leaf arrowhead of variegated red/white flint	Almost none of the 39 chert artefacts from the site; no chert or coloured flint arrowheads
Hammerstones include beach pebbles	No beach pebbles
Many axeheads and fragments of rocks from remote sources	Almost all axeheads, and fragments, of flint
Most frequent non-local quern material Old Red Sandstone from Mendips	Most frequent non-local quern material heathstone from between Wareham and Poole, in south-east Dorset
Gabbroic vessels from south-west peninsula concentrated in pits in interior	Gabbroic ware extremely rare
Most abundant non-local pottery well made and finished and derived from limestone ridge to north-west and west	Most abundant non-local pottery roughly made and finished and possibly derived from same area as heathstone

number of fragmentary stone artefacts, and 'It is important to note that these items were not all deposited at one time; they represent a gradual accumulation, spread throughout the entire sequence of fills from phase I upwards. This would appear to attest a deliberate practice, maintained over a considerable period of time' (Smith *et al* 10.1.3; Fig 3.49). It would have been a practice that marked arrival at or departure from the main enclosure, the south entrance to which was along this side of the barrow (3.3.4). Its eastern counterpart, the probable entrance giving onto the Stepleton spur between segments 8 and 9 of the main enclosure, was also marked by a concentration of stone objects, this time from phase III upwards rather than phase I, and with a higher proportion of hammerstones and unworked beach pebbles (see Smith *et al* 10.1.3; Fig 3.69). Despite the later start, this too must result from a pattern of behaviour spanning generations. In the north-west of the main enclosure, articulated animal bone, especially feet, was recurrently deposited in segments 16–18 from phase III to phase VI. The most striking recurrence occurs in this same part of the circuit: the only two articulated child burials in the central area lay in adjacent segments, one at the beginning of the sequence and one at the end (Figs 3.27, 3.29–30, 3.32–5; Fig 4.12: *R_Combine HH76 1948*, *R_Combine HH76 3046*). Both children were accompanied by personal accoutrements (Fig 3.34) and both suffered from premature fusion of some of the sutures of the skull, which would probably have affected their appearance (see McKinley, 7.1). It was not simply thought appropriate to bury children at this location, on two occasions 200–300 years apart, it was thought appropriate to bury children with the same abnormality, who, if this was hereditary, may have come from the same kin group.

The overall incidence of the main pottery fabrics more or less corresponds to that documented for Neolithic Bowl pottery in Wessex by Cleal (1995), with potentially local flint- or flint- and sand-tempered wares accounting for just over half the total, and shell and other calcareous tempers for a substantial proportion of the rest. But the distribution of fabric groups is far from even across the hill (see Smith, 9.1.1), whether between the two main excavated areas (Fig 3.72) or between the components of each (Figs 3.67, 3.130).

There seems to have been a sense for what kinds of vessel should be deposited where (Healy 2006). Flint or flint- and sand-tempered fabrics were most frequent in cross-dykes and outworks, rising to almost 90%, and least frequent, at 40–50%, in the two enclosures, their associated pits, and the south long barrow. Non-local wares varied according to location. Gabbroic wares, a tiny minority of the total, were concentrated in pits in the interior of the main enclosure (Fig 3.64). Most of the non-local wares in the central area were of fabric group 2, tempered with a range of Jurassic material, generally including fossil shell. On the Stepleton spur, the Jurassic inclusions were equally diverse, but more often included ooliths, while the wares containing them were out-numbered by fabrics containing the red clay pellets described above. The ditches of the south long barrow, outside the main enclosure and on the way to and from the Stepleton spur, are the only features in the central area to contain a substantial proportion of this fabric group (Fig 3.66).

Apparently utilitarian distributions appear less so on closer inspection (*pace* Saville, 10.2.7). In the central area, knapping debris is concentrated in areas with deposits of Clay-with-Flints, which provides flint superior to the degraded material from the Upper Chalk of the hill, which was not used in the Neolithic (see Saville, 10.2.2). But the distribution of hammerstones bears little relation to this, concentrating instead around what was almost certainly an entrance in the east side of the main enclosure, where other stone artefacts were clustered (Figs 3.68–69). This brings into focus the notion of a hammerstone as a curated, personal item (see Saville, 10.2), perhaps to be deposited on entering or leaving the circuit. This view of hammerstones as personal equipment accords with the burial of a quartzite example near the left hand of an articulated male skeleton also accompanied by a flint core at Hazleton, Gloucestershire (Saville 1990b, 103–4, fig 115).

The Middle Chalk of the Stepleton spur contains no flint, and Clay-with-Flints there is confined to a single fissure, with no indication in the composition of the feature fills of formerly more extensive coverage. Yet here there are numerous clusters of refitting knapping debris, sometimes including hammers of both flint and antler. Most were well removed from the Clay-with-Flints (Fig 3.131), and all of them were originally sizeable nodules of good quality, although not pristine, chalk flint (see Saville, 10.2; Figs 10.29, 10.32, 10.40–1). They could not have been extracted during the excavation of the ditch segments in which the results of their reduction were deposited. They must have been brought to these locations, probably from at least a few kilometres away. Just as causewayed enclosures may have been foci for the exchange of stone implements, so they may have been foci for the exchange of flint (Smith 1971, 105). The extent to which flint from the chalk was transported westwards has been explored many times, with some disagreement as to the scale of this activity, but none as to its reality (Saville 1982; Healy 1988b; Tingle 1998, 89–98). It may have been moved in greater bulk than any other material in the fourth millennium. It occurs in Neolithic assemblages throughout the south-west, including the Mendips (Bond 2004) and the Somerset Levels where it is present from the early fourth millennium onwards, notably at the Sweet Track (Coles *et al* 1973, 289–90, pl XXXIX; Coles and Orme 1979, fig 40). Hambledon's location at the interface of the chalk and the non-flint-bearing geology of the south-west, and the probability that some (many?) of those who came to the hill came from the west, argue for a role for the complex in flint exchange. Paradoxically, the burial of some of this material and of some stone axeheads at the site may emphasise its significance in the dissemination of both.

The distribution of antler at Hambledon is uneven. While antler implements were probably used to excavate all of the ditches, they were found regularly in only some of them. In the central area, antler was concentrated in pits near the centre of the main enclosure, and was found only occasionally in the ditches, mainly those segments of the main enclosure and the inner east cross-dyke which flanked the eastern entrance. There was something of a concentration of antler fragments, but not implements, in the west ditch of the long barrow. Where antler implements did occur in ditches, they were often in upper fills with no direct relation to ditch-digging or recutting (Fig 3.62). If they are to be related to episodes of excavation, they may have entered the ditches after some time on the surface, or have been used in the excavation of later earthworks or pits. In the Shroton spur outwork there were four antler picks on the base of the only substantially excavated segment (3.4). On the Stepleton spur, antler implements were scarce in primary and subsequent levels in outwork ditches and in pits. They were instead concentrated in the segments of the enclosure, where they were far more frequent than in the larger outwork ditches. Here, many were indeed on the ditch floor, often carefully placed in pairs or larger groups. But they were spread very unevenly among the segments, with marked concentrations in the north and south-west of the circuit and none in many of the segments to the west. Here too, many were in the upper fills with no direct relation to ditch-digging or recutting (Fig 3.126). At least three implements had not been abandoned immediately after use, since they had undergone groove-and-splinter working (see Legge, 8.2). The deposition of antler implements was a matter of choice, rather than the routine abandonment of worn or damaged implements at the end of a task. It may be that it was appropriate to leave the implements used to dig some segments of some ditches *in situ*. Given, however, that antlers were much used both as digging implements and as raw material for smaller artefacts, they are likely to have been exchanged and curated (Smith 1965, 20). As well as being brought to the site, many

may have been carried away from it, a scenario frequently entertained for other kinds of artefact and raw material at enclosures.

11.2.3 Mortuary practice

The question of who frequented the complex may perhaps be entertained through the imperfect proxy of those whose largely disarticulated remains were deposited there. These seem to have been drawn from an entire population. They were demographically balanced, unlike the livestock, the excavated sample comprising a minimum of 35–36 children and 40–41 adults of whom only 10 females and 17 males could be sexed (see McKinley, 7.1). They furthermore ranged from those who may have obtained almost all of their dietary protein from animal sources to those whose diet had included both animal and plant protein (see Richards, 7.2; Richards 2000). This last observation might reflect variations in status (especially as those from the south long barrow had all consumed comparably high levels of animal protein) or the deposition of the remains of members of several communities, with different dietary habits.

Alternating frequentation and abandonment would have had a particular impact on the condition of the human and animal bone at the site. Both were exposed to canids and rodents, and the former may have been largely responsible for the under-representation of the less robust bones of all species. Human remains, however, tend to be more severely weathered and otherwise degraded than those of animals (see McKinley, 7.1; Evans 2000), as they do at Etton (Armour-Chelu 1998b), suggesting that the process of excarnation, which almost all had undergone, had entailed prolonged exposure. Bones normally entered ditches or pits after total excarnation and disarticulation, as when femurs from two individuals were placed crossed over each other in a ditch butt beside an entrance to the main enclosure (Fig 3.21). In these cases the bones could have been brought from elsewhere. Evidence for intermediate stages in the process, however, shows that at least some excarnation took place on the hill. It is possible to envisage corpses left in the open, their bones buried at a later date in enclosures, pits, cross-dykes and outworks. Instances include *c* 50% of the disarticulated bones of a juvenile placed together in segment 6 of the middle Stepleton outwork ditch; and *c* 40% of the bones of an older juvenile built into a flint cairn on the base of segment 6.2 of the main enclosure ditch, in both cases as if they had been gathered up while still undispersed. Excarnation on the hill is even more probable for the two still-articulated half skeletons, one of them in segment 6.1 of the main enclosure (Figs 3.15–17), the other in segment 10 of the Stepleton enclosure (Fig 3.88).

Excarnation was not, however, left entirely to time, carnivores and the elements. Cut marks have been identified on the remains of 23 individuals and, given the weathered condition of the bone and the faintness of the cuts, this is likely to be a minimum. The cuts contrast with the butchery practised on the animal bone from the site and seem to have resulted from not-very-systematic excarnation. They range from over a hundred more-or-less transverse cuts on the anterior surface of one femur to two parallel cuts on a mandible. Some had been made with a scraping rather than a cutting motion. They were found on articulated skeletons as well as on disarticulated bone (see McKinley, 7.1; Evans 2000). Comparable cuts have been noted on the human remains from the West Tump long barrow, Gloucestershire (Smith and Brickley 2004), and the Haddenham long barrow, Cambridgeshire (Evans and Hodder 2006). As at Hambledon, these marks are compatible with defleshing rather than butchery, leaving the possibility of contemporary cannibalism a remote but not totally excluded one. There are also so far unspecified traces of dismemberment with lithic implements at the chambered tombs of Coldrum in Kent and Eyford in Gloucestershire (Wysocki and Whittle 2000). Manipulation of the fleshed human corpse, as well as of defleshed bones, may have been far more prevalent than it has so far appeared.

Once disarticulated, human bone could have been retained among the living or moved from one burial context to another (Smith 1965, 137). Burial contexts can, to some extent, be identified, most obviously in pits and long barrows on the Wessex Chalk and in long barrows and caves in the Mendips. Indeed, the marking of otherwise inconspicuous burials with posts may, among other functions, have facilitated future exhumation, although this did not always take place. On Crichel Down in Cranborne Chase two successive posts were set at the feet of an articulated adult (Piggott and Piggott 1944, 51–52, fig 22, pl XIII); and on Handley Hill, not far from Wor Barrow, a feature reinterpreted by Piggott as a large posthole of early Neolithic date contained human remains perhaps not long out of articulation, since the pelvis remained complete, although the accompanying skull and mandible were separated, as were the humerus and ulna (Pitt Rivers 1898, 49–50, 54–56, pl 245; Piggott 1936b). Similar practice may be echoed at Hambledon by two vestigial postholes at the head and feet of a crouched child burial at the centre of the Stepleton enclosure (Fig 3.113: 1A F70). In the main enclosure, the insertion of a stake into at least one pit and its subsequent removal before the pit was recut (3.3.7, Fig 3.59: N F10) may perhaps have related to the temporary burial of human remains.

But above-ground contexts may have figured significantly. Diverse histories for the disarticulated remains on Hambledon are evidenced by small numbers of fragments (mainly skull) which were charred when already dry; others which, though not charred, showed dark staining not always attributable to their final burial environment; and others marked by a distinctive pattern of fissuring, characteristic of rapid drying, perhaps in

intense sunlight following soaking (see McKinley, 7.1). Foot and toe bones found in apparent articulation in the rubble fills of the Shroton spur outwork ditch (Fig 4.9: *OxA-7102*) were older than antler picks and an articulated dog which lay beneath them on the base of the same segment (Fig 4.9: *R_Combine HH76 2864*, *UB-4148*, *UB-4149*, *UB-4150*). This may apply to all of the larger group of jumbled human remains (from at least two individuals) of which the dated bones formed a part, and in which a radius and a fibula had been placed side-by-side, giving the impression of a complete forearm (Fig 3.79). It would be no surprise if the defleshed skulls placed on the bases of several of the ditches were already old when deposited. None has yet been dated, because the dating programme focused on articulated samples likely to be coeval with their contexts. Skulls, however, tend to be particularly weathered and worn, and McKinley concludes that most of them were subject to greater exposure to the elements than the rest of the human remains (7.1).

Hambledon confirms that a minority of individuals were buried fully articulated in the earlier fourth millennium. Three were in single graves. The earliest (Fig 4.6: *OxA-7835*) was a possible male of 45 or more, very tightly contracted in a small pit in the protected chalk of the ploughed-down inner Stepleton outwork bank (Fig 3.113: 2A F200). The burial had taken place before the construction of the outwork bank. The location and the maturity of the subject, although not other aspects of the burial, recall the interment of an adult male beneath the outer bank of Windmill Hill (Whittle *et al* 1999, 79–81, 344–6). An almost equally early child burial, on or near the base of the main enclosure ditch (Fig 4.12: *R_Combine HH76 1948*), includes personal accoutrements, in the form of three bone beads in the head area (Fig 3.34). There were distinctions even among the few who were singled out for this exceptional treatment, notably between two men who may both have died when the inner Stepleton outwork burnt down, one of whom was buried in a pit some way away and the other of whom was placed, or left, in the ditch (Figs 3.100–1, 3.113: 4B F712). Barring cremation, the gamut of earlier fourth millennium funerary practice is represented on the hill. The treatment of human remains was at least as diverse as the roles which individuals may have filled in life. This and the varying sources of dietary protein may point to the existence of hierarchy in what has often been seen as an egalitarian society.

11.2.4 Fire and arrows

Although the Hambledon outworks were built sequentially (Fig 1.9), they appear to accumulate to form a systematic defensive design, as if a plan were brought slowly, when feasible, to fruition. The most obviously defensive is the most massive of them, the inner Stepleton outwork with its timber reinforcement and massive gateway (Fig 3.111). This outwork showed signs of hasty construction and of abandonment in an incomplete state. The ditch was the most irregular on the hill, and was cut in such a way as to maximise speed and minimise effort. Unlike the more regular pre-existing middle outwork, which ran outside the Stepleton enclosure, part of the inner outwork followed the enclosure ditch, where the existing bank could be incorporated in the larger new one and the ditch fills would have been easier and quicker to excavate than solid chalk. Where the outwork was cut in solid chalk, some of the irregularity seems to have been due to the use of natural fissures as starting points for excavation. On the north-east side of the enclosure, its surviving depth dropped abruptly from 1.20 m to less than 0.20 m, its line continuing as a slight depression outside the enclosure ditch for a further 60 m, suggesting that this part was never finished (Figs 3.91–2). To the west of the enclosure, depth and width diminished, although not to the same extent (Figs 3.94–5), and there is a 22 m-wide causeway less than 50 m west of the timber-lined gateway where the ditch was at its widest and deepest (Fig 3.81). If it was intended as a defensive work, it has an unfinished aspect. It is as if the outwork's construction was begun in response to a perceived threat and abruptly abandoned when that threat materialised. After primary silt had accumulated and, in some segments, been cleaned out, the earthwork was burnt for 200 m (Pls V–IX), in an episode that probably entailed the deaths of two men. While the stratigraphic position of the burnt deposits indicates that destruction followed soon after construction, some of the charcoal from on or close to the ditch base and from postholes in the bank shows signs of decay, interpreted as showing that the rampart had stood for some time (see Austin *et al*, 6.1). The contradiction can be resolved by adopting those authors' second option: that poles and posts might have been stockpiled, or even reused. This would be compatible with the hasty construction suggested above and with a degree of prefabrication that would in any case be likely.

Charcoal from the postholes of the inner outwork bank was almost exclusively oak, and, where charcoal from burnt deposits on or near the ditch bottoms has been identified, it is predominantly of oak and hazel, with small quantities of other species – some of it altered in such a way as to suggest that it was burnt at temperatures over 700°C (see Austin *et al*, 6.1). The predominance of oak and hazel accords with the oak in the postholes of the rampart structure and with the criss-cross pattern of the charred timbers at one point in the ditch (Fig 3.99, Pl VIII), which suggests that the screening of the rampart was made of hurdling, for which hazel has been the material of choice from at least the early Neolithic (Coles *et al* 1988; Coles and Darrah 1977) to the present day. It contrasts with the more diverse composition of the charcoal from most other Neolithic contexts on the hill, whether ditches or pits.

The only other place where the charcoal is so dominated by oak and hazel is the Shroton spur outwork, where there was also a massive gateway (Figs 3.75–6). Excavation here was more restricted than on the Stepleton spur, but the combined results from work in 1976 and from trenches cut by Desmond Bonney in 1960 indicate that there were posts, some of them burnt, in the bank area, and that charcoal and other burnt material entered the ditch from the inner edge along a distance, if the process was continuous, of 140 m. Burnt material was densest on the surface of the primary silt, although it also occurred at higher levels (3.4). Here too, a rampart may have burnt shortly after its construction, and here too there is a hint of rebuilding in a posthole in the probable gateway, oak charcoal from which is considerably younger than the earthwork (Fig 4.9: *HAR-2368*). It is surely pertinent that the Shroton and Stepleton spurs provide the easiest approaches to the hill (Fig 1.4, Pl I). In the light of this observation, the burning of oak timbers in a slot forming part of a gateway on the Hanford spur, which afforded relatively easy access to the hill from the west, may also reflect assault, but here there is no comparable input of burnt material into the ditches (see 3.6).

The destruction of the inner Stepleton outwork was, however, far from the end of activity on the spur. Shortly afterwards, a setting of sherds and animal bone was placed on the surface of the burnt material in the ditch base at one side of the gateway (Fig 3.95); the overlying fills of the outwork ditch contained newly deposited artefacts, including compact clusters of knapping debris, and animal bone, some of it articulated; a recut which removed the burnt material from the butt of one segment contained a particularly rich deposit of artefacts and animal bone; and the richest deposits in the enclosure ditch were yet to be made. The gateway seems to have been rebuilt, on the evidence of the replacement of at least one burnt post with an unburnt one (Fig 3.112: F601). This may have occurred at the same time as the construction of the third and final outwork on the spur. This too coincided with a violent event: the body of a young man with a leaf arrowhead among his ribs was placed in a natural cavity in the butt of one segment as soon as it was excavated (Figs 3.105–6). It is impossible to tell if his death formed part of larger-scale hostilities, but it could have coincided with that of a second young man with an arrowhead in his rib cage, found prone in the fill of the partly silted inner outwork (Figs 3.102–4; Fig 4.6: *UB-4243*, *R_Combine ST78 2755A*). These deaths by arrowshot are not unique in the area. There was a leaf arrowhead among the ribs of the Crichel Down 13 burial mentioned above (Piggott and Piggott 1944, 51, 75, fig 23: 3), and another among those of an individual buried in the Wor Barrow ditch (Pitt Rivers 1898, 63). The wider evidence for the use of arrows with leaf-shaped tips against human targets is summarised by Green (1980).

Whatever the nature of these events at Hambledon, they were different from other apparently hostile encounters of the period, reconstructed on the basis of the evidence excavated at Crickley Hill, Gloucestershire, and Carn Brea, Cornwall, where hundreds of flint-tipped arrows were shot (Dixon 1988; Mercer 1981a; Saville 2002, 96–98). Arrowheads were scarce at Hambledon, totalling 42 out of a flint and chert assemblage of 89,287, and they were thinly spread in time and space (see Saville 10.2, Tables 10.40, 10.51). It is also worth remembering that non-defensive early Neolithic structures were burnt, apparently in the course of ceremony rather than of conflict, although the practice was rare in the south of England, where the firing of the forecourt structure of the Nutbane long barrow on the Hampshire chalk (Morgan 1959) echoes events more frequent in the north and east (Kinnes 1992, 93).

The addition of defensive elements to an originally ceremonial focus began early in the history of the complex, the middle Stepleton outwork and the Shroton spur outwork being built at most a century after the main enclosure and probably less (Fig 4.25). It is possible to speculate as to the reasons for this transformation. The gathering of otherwise scattered populations could provide opportunities for hostilities on a scale otherwise impossible, and could prompt the construction of defences. The scale of the Hambledon complex and, by implication, its importance and the numbers of people associated with it, could have made its users particularly conspicuous and vulnerable. The ecotonal – even frontier – location of the site may have made it more of a theatre for conflict than many other enclosures. Furthermore, the construction of defensive works continued intermittently for another three hundred years. Within that period, the two burnt ramparts at Hambledon probably reflect two episodes of conflict and two deaths by arrowshot may reflect one or two more. The attendant deaths and destruction would not only have deprived the community of some of its members but undone the work of many more. Yet these would have been three or four violent events in as many centuries. However great their impact, defence was only one function of a complex which encapsulated multifarious aspects of contemporary life of which conflict, on whatever scale, was one.

11.2.5 How did the complex function?

It is argued above that people came to the hill for short periods, sometimes in early summer or autumn, sometimes up to a few hundred at a time, sometimes in smaller numbers. They came from distances of up to 45 km away to the south, and perhaps as much as 80 km away to the north-west. They brought with them already disarticulated human remains, wheat, barley, hazelnuts, red deer antler, occasionally venison, grinding equipment and pots from the areas where they lived, a few pots and axeheads exchanged from farther to the south-

west, and livestock on the hoof, especially cattle. These last may have done double duty as beasts of burden and as meat for consumption. While on the hill, people carried on the everyday activities of life, but also did everything that a scattered population would do when gathered together. There is tangible evidence of feasting – of meat-consumption on a level clearly not usual for at least some of the population. Some gatherings equally tangibly included construction of new earthworks and maintenance of existing ones; a few were occasions of attack; and carefully placed deposits were made in both pits and ditches, some of them reopened for the purpose. The rest can only be guessed at: exchange not only of artefacts but of knowledge, skills, marriage partners; sacrifice; ceremony; dance; song ... As Isobel Smith wrote of Windmill Hill (1965, 19):

> '... the enclosure may be seen to have served as a centre or rallying-point for the population of a fairly wide area.
>
> Such rallying-points play an essential role in the lives of some contemporary communities living in a comparable stage of economic and technological development ... Assembly of the scattered families of tribal units takes place at one or more intervals during the year, at the slack periods in the agricultural and/or stock-tending cycle, and affords opportunities for the transaction of the necessary business of tribal life. In addition to those matters which may come within the political field in its broadest sense, such other matters can be attended to as the holding of initiation ceremonies, match-makings and weddings, the exchange of stock and seed corn and perhaps of more durable goods. Rites and ceremonies are performed to ensure the fertility of the flocks and herds and the growing of the corn, and finally to celebrate the harvest. Communal feasts are an inevitable accompaniment of such occasions, and some industrial activities may be undertaken, either because they are less tedious when performed to the accompaniment of a lively exchange of news and gossip, or because there is insufficient time at other seasons.'

This picture is instantly recognisable in interpretations of more recently excavated enclosures like Etton in Cambridgeshire (Pryor 1998), in the reworking of the Windmill Hill record by Whittle *et al* (1999), and in the vivid semi-fictional narrative of Edmonds (1999, 106–8, 130–2), because it continues to fit an expanding body of evidence.

At first sight, the numerous differences between the two enclosures and their related features might suggest the expression of the identities of two principal social groups, in terms of their practices, the areas from which they came, and the extent of their access to goods from remote sources (Table 11.5). It is even arguable that the composition of pottery fabrics and the way in which pits were left to silt on the Hanford spur, where a gateway provided access to those approaching the complex from the west, ally it more to the central area than to the Stepleton spur (3.6.4). But the picture is more complex. There are pointers to movement between the two enclosures at either end of the route between them: in the high frequency in the south long barrow ditches of fabric group 6, the main non-local ceramic of the Stepleton spur (Figs 3.66–7), and in the location of the only flint-packed slot in the Stepleton enclosure in segment 8, at its north-west entrance (Fig 3.88). The source areas of the materials deposited in the two parts of the complex do not fall into two groups, but overlap and interweave (Table 11.5). The most abundant non-local quern materials from the Stepleton spur came from south Dorset, near the coast, and the most abundant non-local ceramics may have done the same, as may a couple of scallop shells. Yet beach pebbles are confined to the central area, which also has most of the 'Portland' chert, from the same general zone whether obtained from Portland itself or from the Carstens series soils of the Dorchester area (Woodward and Bellamy 1991, 31). Gabbroic pottery and stone axeheads from the south-west peninsula are strongly concentrated in the central area. But charred fragments of Cornish Heath (*Erica vagans*), now native in Britain only on the Lizard peninsula and in the north-west of Ireland, came from a pit on the Stepleton spur. Another pit on the Stepleton spur yielded a grape pip dated to the mid-fourth millennium (see Jones and Legge, 6.2; Jones and Legge 1987). Yet the only charred grape vine fragment so far identified is from the main enclosure (see Austin *et al*, 6.1).

Etton in fact provides a model for the interpretation of the differences between the two enclosures at Hambledon. There, in a single circuit much the size of the Stepleton enclosure, there were contrasts of a comparable order but different nature between the east and west sides. Pryor's view of this dichotomy as reflecting spheres in which different kinds and scales of ceremony were enacted and different kinds of deposit were made (1998, 363–8) would fit the Hambledon record. It is even possible to envisage individuals or crowds proceeding from one to the other. The topography ensures that, for most of the gentle ascent from the Stepleton spur to the central dome of the hill, the main enclosure and the surrounding earthworks remain out of sight, bursting into view quite suddenly at a late stage of the approach. This effect would have been heightened by the largely wooded conditions inferred from the molluscs. Its impact on those who knew the significance of the earthworks and at least the general nature of what was to take place inside them can only be guessed at. Expressions of group, even individual, identity are perhaps more likely to lie in the distinctions between deposits in ditch segments, pit groups, or individual pits.

The evidence from Hambledon is similar to that from other causewayed enclosures, not only in outline, but in the minute details of ditch recutting and of the assembly of deposits, irrespective of location or topography. This bespeaks beliefs and traditions shared over a large tract of territory, as Pryor emphasises (1998, 374–7). Furthermore, usage in north-west Europe seems to draw on the same common pool of practice: repeated recutting, carefully placed deposits in ditches and pits, emphasis on axeheads, emphasis on the skull and on cattle, intermingling of human and animal (especially cattle) remains, are all to be found in the Sarup enclosures on Fünen, and in the other enclosures reviewed by Andersen in the same volume (1997). The Hambledon complex stands out by its so far unparalleled scale. The proximity of other enclosures (Whitesheet Hill at 22 km, Maiden Castle at 30) raises the question of the relationships between populations and monuments. The recurrent clustering of causewayed enclosures (Oswald *et al* 2001, fig 1.1) suggests significant areas in which several communities each maintained a ceremonial focus, and that there may have been a hierarchy among those foci. Such a hierarchy may even be reflected in the apparent catchments of different enclosures.

11.3 The Neolithic subsistence base

Hambledon provides a wealth of evidence for contemporary subsistence, although this must be interpreted in the light of its undoubtedly special functions. The starting point must be Richards' demonstration (7.2) that dietary protein was terrestrial and that, while most adults derived most of their protein from meat and/or milk rather than plant sources, the proportions derived from animal and plant sources varied from person to person. McKinley correspondingly notes (7.1) that low levels of dental disease suggest a diet high in animal protein, and that there is little dental hypoplasia, an indicator of nutritional stress. Meat consumption is directly evidenced on the hill, and Legge's preferred interpretation of the cattle slaughtered there as the surplus adults from dairy herds (8.1) is reinforced by the frequency of milk lipids in a sample of sherds from the site (see Copley *et al*, 7.3; Copley *et al* 2003). Milk or its derivatives may have been the normal day-to-day source of animal protein, with the kind of meat-eating which took place at enclosures reserved for special gatherings. More than a quarter of orbital vaults, however, show signs of *cribra orbitalia*, which is generally thought to result from childhood iron deficiency anaemia, although other factors may be involved (see 7.1).

Two sources of plant protein are directly represented: grain (especially wheat) and hazelnuts. Some 50,000 emmer spikelets in a pit outside the Stepleton enclosure are so far the largest deposit of charred grain from the period in Britain, and small quantities of grain were retrieved wherever flotation was practiced on pit fills (see Jones and Legge, 6.2). These authors argue persuasively that the apparent scarcity of Neolithic cereals in Britain is the compound result of the recovery methods previously practised and of the destructibility of straw and chaff, which are likely to burn to ash and may be used as animal fodder, in contrast to nutshells which are far more robust and durable and likely to survive recognisably in the charred state.

The exploitation of hazelnuts certainly does not imply a significant reliance on wild plant foods. They were an economic resource in Cranborne Chase in the market economy of historical times, as recounted by John Aubrey in the seventeenth century (Britton 1847, 56):

> 'the nutts of the Chase are of great note, and are sold yearly beyond sea. They sell them at Woodbery Hill faire &C.; and the price of them is the price of a buscell of wheate'.

This trade long remained important, as recorded by Chafin (1818, 62–3):

> 'The Woods consist chiefly of hazel, which produce nuts in great profusion, to the relief and benefit of all the hamlets and villages for miles around it [the Chase]. It is their second harvest; for when all the corn hath been got in, and the leasing in the fields at an end, the inhabitants betake themselves to the woods; whole families from distant places flock to the Chase ... and make their abode there for whole weeks at a time if the weather will permit ... The neighbouring towns, particularly the seaports, are a sure and ready market for their wares, and the price is generally on a par with wheat.'

This harvest was from stands of coppiced hazel, which provided poles for various local industries and fodder for livestock (ibid, 64–9), while also affording the relatively light, open conditions which favour nut-production. Coppicing may have been practised more frequently in the fourth millennium than before, in line with increased use of hurdles and other structural elements, and this may in turn have promoted nut production and consumption (cf Gale 2004; Hinton 2004).

The presence of a fragment of grape vine charcoal as well as a charred grape pip indicates that grapes were growing nearby in the fourth millennium, and are likely to have been a Neolithic introduction. The innovations of the fourth millennium probably included mind-altering substances as well as food crops, monuments and artefacts. The identification of opium poppy seeds in a waterlogged sample from near the base of an early fourth millennium long barrow ditch at Raunds, Northamptonshire (Campbell and Robinson forthcoming), is now echoed by a further identification in a previously unanalysed sample from the Etton causewayed enclosure (Robinson in prep).

11.4 The local context

11.4.1 Hambledon Hill's place in the landscape

Any discussion of Hambledon Hill and its sequence of function and activity must focus upon its location both in terms of its immediate surroundings and of its wider context in south-west England, revisiting topics briefly introduced in Chapter 1. In every aspect of this consideration will be found paradox as unsatisfying to the modern geographically and spatially conditioned scholar as it may have been profoundly necessary to early farming people with their necessarily completely different understanding and perception of 'the landscape' (that which you can see at once) and 'the world' (that which you know of).

From a close perspective, from all but one direction Hambledon is not a striking eminence. It squats as a three-spurred hummock separated from Cranborne Chase only by the deeply incised valley of the river Iwerne. Because of the gentle convexity of the Chase and similarity in general height, Hambledon does not become visible to eyes directed from the east, south-east or north-east until those eyes are situated well onto the forward (western) slope of the Chase, within a distance of 2 to 4 km. To eyes approaching from the south-east along the valley of the river Stour, the hill is effectively concealed behind Hod Hill and, turning into the Iwerne valley, one could proceed several kilometres north before realising that Hambledon was even there, and then only from the north. As from Cranborne Chase, so to the south-west the gentle convexity of the downs and the similarity of height again lead to a lack of any consciousness of the mass of Hambledon until the eyes are situated well onto the forward slope, at a distance of no more than, again, 2 to 4 km. From three cardinal points Hambledon is a well-kept secret in terms of its visibility over distances greater than 2 to 4 km and, even when it is visible, its form and structure are scarcely apparent.

If the eyes, however, approach from an arc from the north-west around to the north the impression is very different. In this direction, across what are now the meadows of the Vale of Blackmoor, the broad floodplain of the river Stour and its sluggish tributaries, Hambledon is visible to more-or-less its whole extent from distances in excess of 15 to 20 km. The hill proclaims itself as the dominant feature on the skyline with its form readily apparent. Not a secret place, therefore, but three-quarters of a secret place. Hambledon Hill may have been something of an island, partly secluded but partly of a high profile, an Avalon among its local populations in the fifth and fourth millennia BC.

Yet, once access was gained to the hill, the extension of the 'world', as opposed to the 'landscape' was enormous. 'On a good day' (but how, in memory, seldom!), the eyes of an observer standing on Hambledon and looking to the south-east would skim across the summit of Hod Hill to a clear view of the Isle of Wight and Ryde harbour. To the north-west, again with good visibility, those eyes would perceive the Mendip Hills – a vast swathe of south-west England. This is a paradox indeed; a secret place and an isolated place from which one could perceive the 'world'. Yet an obvious and notable place in terms of its own stature and its perception from one cardinal direction.

11.4.2 Before the Hambledon complex was built

There is an abundance of Mesolithic lithics in Cranborne Chase, some dating back to the early Holocene, and all, regardless of period, concentrated on the Clay-with-Flints, which caps the higher ground and provided the best locally available flint for artefact manufacture (Barrett *et al* 1991, 29–30; Arnold *et al* 1988; Green 2000, 20–28). On Hambledon Hill, on the other hand, an excavated collection of some 89,000 pieces of struck flint includes one, possibly two, Mesolithic artefacts (see Saville, 10.2). Yet pine charcoal from two posthole-like features on the hill is dated to the eighth millennium cal BC (see 3.2). Given the lack of contemporary lithics, the hill seems to have been a vantage point rather than a living, or even a hunting, place. Both features were in break-of-slope positions, where posts set in them or fires lit close to them would have been conspicuous, especially if the surrounding landscape included areas of calcareous grassland, as pollen analysis in the Allen valley in the occupied chalkland of Cranborne Chase, suggests (Scaife 2003). They would not, however, have been visible from this direction, since both were on the west side of the hill (Fig 3.2). They would instead have commanded and been visible from the open vista to the north-west. Those who generated the eighth millennium pine charcoal on the hill seem to have looked to this region, where contemporary activity is evidenced not in the adjacent Blackmoor Vale, but beyond it on the Mendips and Quantocks and in the Somerset Levels (Jacobi 1982).

In the later Flandrian period, Simmons (1996) has argued, on the basis of locations where peat has survived in sufficient depth to be a source of evidence, that a consistent pattern can be observed throughout the British Isles for the alteration of the forest environment by hunting communities using fire as an instrument of intentional clearance. In so doing they created conditions that favoured the successful hunting of ungulates by encouraging the development of a limited and defined forest grazing environment. He suggests that, in terms of the locations where such activity can be studied today, the most likely situations for such activity would appear to be near lakes, in the zone between hilltops and the spring line, and near to the spring line, especially just above it (Simmons 1996, 107). The area around Hambledon Hill, on the junction of Chalk and Greensand and at the confluence of two rivers, would have been an ideal situation in which to encourage the density of ungulate populations further and would also

have furnished abundant and diverse small game (including beaver), fish, and plant foods. In all likelihood it saw relatively intensive exploitation. Such exploitation may have included the managed running of ungulate herds in a forest margin environment exploiting clearings and areas of natural meadow in the river valleys. Relatively open conditions would have favoured the flowering and fruiting of hazel trees.

Mesolithic activity in Cranborne Chase continued up to the adoption of Neolithic traditions. The principal evidence for this comes from the remarkable sequence of dated deposits preserved in a natural swallow-hole, the Fir Tree Field shaft, in Gussage St Michael parish, some 15 km east of Hambledon Hill (Allen and Green 1998; Allen 2000a; Allen 2002). The excavated deposits went back to the Boreal (the period of the possible post-holes on Hambledon Hill), but had mainly accumulated during the late fifth and early fourth millennia cal BC. The deposits had two main components: rapidly accumulated rubble fills, but including the skeletons of two roe deer, overlain by soil fills which had silted into the weathering cone at the top of the shaft. Hazel charcoal from the topmost rubble fill is dated to 4330–4040 cal BC (5355±45 BP; OxA-8011). Above this layer, in the lowest soil fills, were seven microliths in fresh condition, clustered as if they had formed part of a spearhead or other composite implement, as well as other Mesolithic lithics and bones of red deer and ?aurochs, dated to the late fifth or earliest fourth millennium. The molluscs from the sequence indicate closed but light forest in the early fifth millennium, giving way to denser woodland, which was the subject of a short-lived clearance at the time the microliths were deposited, only to regenerate thereafter (Allen 2000a, 42).

Stratified above these layers was a hearth associated with Neolithic Bowl pottery. Ash wood charcoal from it is dated to 4050–3790 cal BC (5150±45 BP; OxA-8010) and charred clematis roots from nearby to 3960–3710 cal BC (5045±45 BP; OxA-8009). The sequence is most readily interpreted as reflecting a fairly rapid transition from one tradition to the next, with only a short period of co-existence. Its chronology is furthermore compatible with the dendrochronologically precise construction dates of 3807/3806 BC for the Sweet Track and of 3838 BC for its predecessor, the Post Track, in the Somerset Levels (Coles and Coles 1990, 218), which make it clear that Neolithic artefacts (pottery, single-piece arrowheads, and a jadeite axehead brought from the Alps) were already current at the beginning of the fourth millennium, and that the surrounding woodland was managed and, to some extent, cleared, grazed and cultivated (Coles and Coles 1986; Caseldine 1984). Elsewhere in Britain the possibility of a rapid transition is reinforced. Dates reliably associated with Mesolithic artefacts extend into the early fourth millennium (eg Spikins 2002, 43); and some Neolithic monuments, including long barrows and cairns, were being built from *c* 3800 cal BC on the evidence of radiocarbon measurements on the contained human remains, including some of those listed by Richards and Hedges (1999). Dietary change at this time seems to have been abrupt (Richards 2003). The potential for the adoption of Neolithic lifeways within a couple of generations becomes a real one, with connotations of the persuasive power of new beliefs as well as new practices (Richards 2003; Thomas 2003; Mercer 2004; Harding and Healy forthcoming).

11.4.3 During Hambledon's *floruit*

The evidence for fourth millennium activity in the surrounding areas is uneven and diverse. To the east, despite the extent of excavation and surface collection in Cranborne Chase, the sum of early Neolithic artefacts recovered is small. The total collection of Neolithic Bowl pottery is outnumbered many times over by that from Hambledon (Table 11.6). The lithics reflect a similar picture. They are scarce, and some are from monumental or funerary rather than settlement contexts (Gardiner 1991b). The only apparent living sites, both exiguous and almost certainly short-lived, lie on the surface beneath the Thickthorn Down long barrow and by the hearth in the Fir Tree Field shaft. Lithics collected in the course of the Hambledon Hill Survey similarly give the impression that early Neolithic activity was confined to the hill (see Saville, 10.2.10). Yet people and their animals seem to have had more of an impact on the vegetation here than on Hambledon Hill where their artefacts and food remains are so abundant. Hambledon remained at least partly wooded throughout its Neolithic use (see Bell *et al*, Ch 5); while there were local clearances around the early fourth millennium hearth in the Fir Tree Field shaft (Allen in prep) and the perhaps rather later Handley Down mortuary enclosure (Allen 2000a, 43–4). Established open grassland, on the other hand, already obtained in the areas of the Thickthorn Down long barrow and another long barrow on Gussage Cow Down by the time they were built (French *et al* 2003, 229). Expanding clearance in the Chase is suggested by the large tract of grassland which surrounded the Monkton-up-Wimborne 'temple', built during the second half of the fourth millennium, and by the mosaic of scrub and lightly grazed grassland through which the Dorset cursus was built in the same period (Allen 2002, 61–63). The Chase was indeed occupied, but not intensively.

Evidence for earlier Neolithic settlement is markedly more abundant on the coastal plain to the south and south-east than in Cranborne Chase. Hambledon and the Chase are linked to this area by the rivers Stour and Avon and, on the lower reaches of both, where they approach Christchurch harbour, there is a long record of finds of early Neolithic lithics and pottery, often from pits, with only one apparently contemporary monument. This raises the possibility of a less sparsely occupied coastal zone for which Hambledon and the Chase together formed a ceremonial focus and possibly a boundary zone (Barrett *et al* 1991, 31–4).

Table 11.6 Summary of Neolithic and Beaker pottery from Cranborne Chase and Hambledon Hill

The numbers given for Cranborne Chase in the first row for each tradition are taken from the quantification of Cleal (1991b). They are followed in the second row by notes of subsequent finds.

	Cranborne Chase totals	*Hambledon Hill totals*
Neolithic Bowl	>56 sherds – minimum 13 vessels Plus 1 sherd from Handley Hill mortuary enclosure (Green 2000, 55) and a few sherds from the Fir Tree Field shaft (Allen 2000a, 41)	26,032 sherds – minimum 850 vessels
Peterborough Ware	324 sherds – minimum 59 vessels Plus sherds from Monkton-up-Wimborne 'temple' (Green 2000, 78) and Fir Tree Field shaft (Allen 2000a, 40), scraps from Wyke Down henge 2 (Green 2000, 87)	44 sherds – minimum 5 vessels
Grooved Ware	>507 sherds – minimum 36 vessels Plus substantial assemblages, including semi-complete vessels, from subsequently excavated pits and structures (Green 2000, 71–6) and Wyke Down henge 2 (ibid, 86–9)	–
Beaker	>540 sherds and 3 complete vessels – minimum 132 vessels Plus substantial settlement assemblage from over and around the Fir Tree Field shaft (Green 2000, 100–1) and sherds from Monkton-up-Wimborne 'temple' (ibid, 101)	1615 sherds – minimum no. of vessels not calculated

The Neolithic, indeed the prehistoric, record of the Blackmoor Vale is virtually null. Along the Jurassic ridge beyond it, however, there is a scatter of early Neolithic sites and finds, including plausible settlement traces in the form of pottery, struck flint including leaf arrowheads, animal bone, and charcoal, some in pits, at Cadbury Castle, just 25 km from Hambledon across the Vale (Alcock 1980, 665; Barrett *et al* 2000, 53–4, 86–8). Beyond this again lie the prodigiously and innovatively explored Somerset Levels, crossed as the period progressed by more and more wooden tracks linking uplands and islands (Coles and Coles 1986), flanked by the Mendips and the Quantocks, the first of these, especially, rich in multi-period flint scatters, and caves, some occupied or used for burial in this period, as well as long barrows and long cairns (Minnitt 1982; Bond 2004).

The earliest elements of the Hambledon complex, the main enclosure, the south long barrow and the inner east cross-dyke, are estimated to have been built in *3690–3620 cal BC (95% probability*; Table 4.2; Fig 1.9*)*. They seem quite deliberately to turn away from the 'grand vista' to the north and north-west. The main enclosure with the partial outer circuit formed by the cross-dyke is eccentrically sited on the summit of the hill, and slightly 'tipped' to the south-east (Fig 1.4), so as not (and only just not) to be visible from the Vale of Blackmoor. Here in these initial stages we may see the affirmation of the 'secret place' aspect of this chosen site. The subsequently built earthworks, the Shroton spur outwork, the Stepleton enclosure, the middle Stepleton outwork and its successor the inner Stepleton outwork, all emphasised this original orientation (Fig 1.9), the Stepleton enclosure sited on the crown of the spur overlooking low-lying ground to the south and east. The only possible exception here is the massive, undated hillfort long barrow (Fig 2.14). If this too was one of the earlier elements, as its form might suggest, its skyline position, on a narrow ridge forming one of the highest parts of the hill, would make it eminently conspicuous from all directions.

Many causewayed enclosures are located across the contours rather than on hilltops, and most seem designed to face in a particular direction, as Isobel Smith long ago pointed out (1971, 92). This observation has been persuasively elaborated by Oswald *et al* (2001, 91–106), who propose connections between enclosures and the areas to which they are 'tilted' and with which they are often intervisible. In the case of Hambledon Hill, the relationship is ambiguous, since intervisibility with the Chase is slight, but there is a quite intimate morphological relationship between the south long barrow on Hambledon and those to the east. Many of the long barrows in Cranborne Chase, especially those close to the Dorset cursus, have long been recognised as a distinctive form, relatively short and surrounded either by a continuous ditch or by a U-plan ditch, sometimes with slight causeways (Barrett *et al* 1991, 36–49). The south Hambledon long barrow conforms to this local tradition, even down to the detail of a posthole in a causeway in the ditch at the south end (Fig 3.47: LB5 F6), which echoes the three equally non-structural postholes at the east end of the Thickthorn Down long barrow (Drew and Piggott 1936, 82–3). It is possible to imagine the posts that occupied these sockets as markers used in the course of ceremonies, and/or as supports on which significant objects were displayed.

The only one of these barrows to have been excavated in addition to the Hambledon and Thickthorn Down examples is Wor Barrow, investigated by General Pitt Rivers (1898). Each had a very different structural and depositional history (Barrett *et al* 1991,

36–43), the starkest contrast being between the absence of primary burials from the Thickthorn Down long barrow and the presence of both articulated and disarticulated human remains beneath Wor Barrow. The available dates do not preclude contemporaneity but do little to demonstrate it. The construction date of the Hambledon barrow is estimated as *3680–3640 cal BC (95% confidence*; Table 4.2). For that of the Thickthorn Down barrow, however, there is only a *terminus post quem*, provided by a measurement of 4050–3800 cal BC (5160±45 BP; BM-2355) on animal bone from the old land surface beneath the mound, a sample the apparent age of which may have been increased by the application of PVA (Barrett and Bradley 1991, 10). At Wor Barrow the standard deviations of measurements on antler picks from the ditch base and the primary silts are so large that their probability distributions span most of the fourth millennium and all of the Neolithic use of Hambledon Hill: 3800–3100 cal BC (4740±130 BP; BM-2284R) and 3700–3000 cal BC (4660±130 BP; BM-2283R). The strongest argument for the broad contemporaneity of all three barrows is similarity of their final forms and the presence in them of Neolithic Bowl pottery and early Neolithic lithics in primary contexts. The distinctive morphology alone suggests that the south Hambledon long barrow and the long barrows in the Chase were built by people with common traditions.

Nevertheless, the Cranborne Chase barrows as a group appear to 'turn their back' on the highest ground of the north-west-facing façade of Cranborne Chase that overlooks the area dominated by Hambledon Hill. Their distribution is striking by its intimate relationship with the headwaters of a series of rivers that all run south-eastwards to the occupied coastal plain. Hambledon and the barrows seem to focus upon altogether different components of the landscape, perhaps with a *cordon sanitaire* of unexploited land between them. Projected backwards in time, this would accord with the very different level of Mesolithic presence in each. If this distinction is recognised, the crucial importance of Hambledon Hill's position becomes manifest. It commands the principal corridor of contact between areas of high Neolithic impact on the coastal plain of south-east Dorset and those on the uplands and in the levels of north-west Dorset and Somerset.

The evidence of artefacts and materials is significant here. If the more abundant kinds of quern material and non-local ceramics found at Hambledon are regarded as domestic equipment (Smith 1965, 42), in contrast to rare objects from more remote locations that may have been exchanged over long distances, then they may be a rough index of the overall territory from which people gathered on the hill. The sources in question form an arc running from the south-east Dorset coast through the Jurassic ridge to the Mendips, in other words the area visible from the hill (11.4.1). Some of them correspond to the apparent concentration of early Neolithic settlement on the coastal plain to the south and south-east of Hambledon and the Chase: beach pebbles of both flint and quartzite, some of them used as hammerstones (see Roe, 10.1.2; Saville, 10.2); scallop shells (see Somerville, 8.6); heathstone from between Wareham and Poole (see Roe, 10.1.2); pottery made from clays characterised by iron-rich red pellets (see Darvill, 9.2), possibly originating in the same area as the heathstone (see Roe, 10.1.2); and a small amount of pottery tempered with fresh, as distinct from fossil, shell (see Darvill, 9.2). Their source area overlaps with the concentration of early Neolithic finds mapped by Barrett *et al* (1991, fig 2.5) and extends to the west of it, especially if Roe is correct in attributing the beach pebbles to the Chesil Beach. That concentration itself, however, may reflect an acceleration of discovery in the course of gravel quarrying around the Bournemouth conurbation and of construction within it. The import of these materials to Hambledon accords with the use of the complex by people who lived towards the coast, 30–45 km away.

Other objects and materials were brought from the west and north-west, from the land rising beyond the Blackmoor Vale. These were pottery of clays from a range of locations along the limestone ridge, 25–60 km away (see Darvill 9.2), and Old Red Sandstone from the Mendips, 40–80 km away (see Roe 10.1.2). The catchment of the complex may well have extended this far, at most a couple or three days' walk. Travel by individuals over distances of this order is made all the more plausible by the history of a woman buried in the Monkton-up-Wimborne 'temple' towards or after the end of the use of the Hambledon complex. The level of lead in her bones was such that the nearest area in which she could have lived a substantial part of her life could only be the Mendips (Green 2000, 77–84). The terrain visible from the hill encompasses the source areas of the more abundant non-local materials brought to it, and they were brought to it from the start of the sequence (Figs 3.64–6, 3.128–9; Tables 10.2–3). What if this is the territory to which the complex was most closely related? A scarcity of sarsen, often the main quern material on chalkland sites, may also be significant here, as may a low frequency and underelaboration of carved chalk, compared with what is found in enclosures in Sussex and the rest of Wessex. Hambledon looked both ways, but many of those who frequented it came from the west and south, and the first of the earthworks which they built were designed to make a statement to those living to the east.

Earthwork building started relatively late on the west side of the hill (Fig 1.9), where the first stage may have been double ditches and banks with an imposing gateway (Fig 3.136), across the Hanford spur, which provides the easiest approach to the hill for those approaching from the west (Fig 1.4). It was only in the later part of Hambledon's Neolithic use, in the third quarter of the fourth millennium, that the inward-looking, 'secretive' approach to earthwork design was

fully rejected, with the construction of the western outwork and perhaps the linkage of the outworks on the Stepleton and Hanford spurs (Fig 1.9), forming an almost continuous line of defence along the west of the hill, sited so as to be clearly visible to the north and north-west, while slopes that were no steeper were left undefended on the east (Cranborne Chase) side. Here would seem to be a reversal of approaches to the use of the hill, now displaying its *strength* in a sky-line position, not, as formerly, displaying itself to the east, but dominating the basin of the Vale of Blackmoor to the west and north-west. Requirements had clearly changed 'politically'. Formerly the need had been for a 'statement' of physical presence (a statement constantly renewed by ditch recutting-episodes 'celebrated' by the deposit of feasting debris) and a statement of the *extent* of the enclosed area, designed to be inclusive in a geopolitical relationship focused towards the east and Cranborne Chase. Latterly the desire seems to be to impress and exclude, with these intentions focused towards the west and the Vale of Blackmoor.

The proposed southerly and westerly orientation may be exaggerated by the recognisability of materials from these areas. The flint-tempered pottery and flint nodules of the Wessex chalk cannot be pinned down with even this level of imprecision, and it is, after all, local materials that dominate the assemblages from the hill. The location of Hambledon Hill between Cranborne Chase and the Vale of Blackmoor recalls Barker's and Webley's observation (1978) that upland enclosures, and at least some of their lowland counterparts, sit at junctions within the terrestrial environment between areas of different geology and pedology and, thereby, the different vegetations and faunas that these support. In the case of Hambledon the geological junction is between the Chalk and the Greensand (Fig 1.2), as it is at Whitesheet, Knap Hill, Rybury, and Windmill Hill. It may be no coincidence that Whitesheet provides the only apparent comparison for the Hambledon complex: only the causewayed enclosure there is dated, but it is accompanied by further possibly Neolithic earthworks in the form of a second, smaller, ovoid enclosure, possibly a third enclosure underlying the hillfort, and perhaps cross-dykes, although a Neolithic date is now arguable only for the most northerly cross-dyke of the three, since sectioning of the other two has suggested that they are respectively Romano-British and Bronze Age (Rawlings *et al* 2004). This highly visible boundary between two provinces, the Wessex chalk and the physically and culturally distinct south-west, may have had particular meaning.

11.4.4 As Hambledon declined

The *floruit* of Hambledon Hill ended in the late fourth millennium (Table 4.4). Peterborough Ware, current *c* 3400–2500 cal BC (Gibson and Kinnes 1997), is confined to one semi-complete vessel and a few scattered sherds, all from the Stepleton spur. There are no chisel arrowheads from the hill and only a single oblique one. The initial use of other causewayed enclosures ended at about the same time – as is vividly exemplified at Maiden Castle by the construction of the Long Mound across the silted enclosure ditches (Sharples 1991, 54–7). But the use of Hambledon seems to have fallen off particularly abruptly. It is difficult not to link this to events to the east. The ideological, perhaps cosmological, transformations of the late fourth millennium reached their apogee in the building of the Dorset cursus in *3360–3030 cal BC (91% probability;* Barclay and Bayliss 1999, 22–3), when Hambledon was going out of use. One major monumental focus may have directly replaced another. Like Hambledon, the Dorset cursus is the largest known monument of its kind in Britain. With its construction, the monumental and ceremonial focus was shifted from the largely unoccupied boundary of the Chalk and the land to the south-west into the heart of the chalk downland of Cranborne Chase, where numerous smaller monuments were built in the late fourth and the early third millennium, and where middle and late Neolithic pottery and lithics abound (Barrett *et al* 1991, 59–108; Green 2000, 64–90; Saville 10.2.10). The late fourth millennium date of the Dorset cursus reduces the plausibility of Tilley's suggestion that movement along it played a part in the circulation of human remains to and from Hambledon Hill (1994, 200), although the cursus may have formalised, even closed off, an older route, as Johnston (1999) suggests, a route marked by long barrows.

The Dorset cursus has, clearly, two axes: a north-west/south-east axis of *linearity*, aligned on a number of the long barrows mentioned above, but also, as Bradley (1993) and Tilley (1994) have pointed out, a north-east/south-west axis of *partition*. Here its very construction, differentially as a deep barrier on its south-east side as opposed to a less assertive boundary on its north-west side (Barrett *et al* 1991, 43–6) might suggest a boundary function with, as Harding points out (1999, 32), the densest areas of Neolithic settlement set 5 km to the north-west of the monument (Barrett *et al* 1991, figs 2.4, 3.2).

Peterborough Ware, far more abundant in the Chase than early Neolithic pottery (Table 11.6; Barrett *et al* 1991, fig 4.4), was deposited in the upper levels of the already silted cursus ditch and in newly built monuments like Handley barrows 26 and 27 near Wor Barrow, and the Monkton-up-Wimborne 'temple' (Barrett *et al* 1991, 51, 70–3, 84–7; Green 2000, 77–80). It was also placed in much older sites, not only on Hambledon Hill, but in the upper fills of the Fir Tree Field shaft, and the ditches of Wor Barrow and the Thickthorn Down long barrow (Cleal 1991b; Allen 2000a, 40). Grooved Ware, current *c* 2900–2100 cal BC in southern Britain (Garwood 1999), is totally absent from Hambledon and from the older monuments in the Chase. Instead, it has been found in quantity in pits and in newly built monuments like

both Wyke Down henges (Barrett *et al* 1991, 59–108; Green 2000, 54–90). The focus around the cursus was maintained, but by the construction of new monuments rather than the continued use of old ones, and a new, lower-lying, focus was developed further down the river Allen at Knowlton where major henge monuments were built (Green 2000, 85–90). It is as if the disjunctures of the later fourth millennium grew from existing beliefs and practices, just as Peterborough Ware developed from Neolithic Bowl, while those of the early third millennium were a more abrupt break with the past, just as Grooved Ware appeared in new forms and fabrics and with new decorative motifs.

Despite the absence of Grooved Ware from Hambledon, one of the largest animal bone deposits there, a compact heap in the top of the inner east cross-dyke ditch including the remains of two adult cattle, one caprine and some bones of infantile cattle and of pig, is dated to 2920–2700 cal BC (Table 4.1: OxA-8893), firmly within the currency of Grooved Ware. The results of this slaughter could have fed hundreds of people – a feast by any standards (see Legge, 8.1), but it took place in a period when, on all the other available evidence, the hill was disused. The absence of artefacts clearly does not mean the absence of activity, but it strongly suggests that activity was confined to specific events.

On Hambledon Hill, the earth was again turned, and artefacts were again deposited, after Beaker pottery, current *c* 2500–1700 cal BC (Needham 2005), had come into use. Recuts were made in some of the ditches, and 'flint mines' were excavated on the Hanford spur (3.6.3) in a far more open environment than had prevailed in the fourth millennium (see Bell *et al*, 5.2). Round barrows, of admittedly uncertain date, were built on the hill (see Palmer and Oswald, Ch 2), This too is part of a wider development. Disparate distributions for Grooved Ware and Beaker are widespread, although the character of the disparity varies from region to region. One recurrent feature is that Beaker pottery tends to occur in the same Neolithic monuments, and sometimes in the same distinct areas, as Peterborough Ware, with which it was almost certainly not contemporary, more than it does at monuments and in areas associated with Grooved Ware, with which it was contemporary, probably for some centuries. This holds true in Cranborne Chase (Barrett *et al* 1991, 111–16) and, for example, on Salisbury Plain (Cleal *et al* 1995, 477; Thomas 1999, 174–83; Allen 1997c, pls 3–5), in the area around Dorchester, Dorset (Healy 1997b, 285–7), in the upper Thames catchment (Thomas 1999, 188–97; Barclay 1999), in the Nene valley (Harding and Healy forthcoming), and in Yorkshire (Thorpe and Richards 1984, 70–73; Manby 1988, figs 4.7, 4.15, 4.16).

It is as if sectors of society other than those allied with henge monuments, and all that went with them, had progressively become more powerful, and had severed themselves from the existing regime by adopting new, ultimately continental, technologies, artefact styles and modes of burial, at the same time emphasising customs which had a pedigree more ancient than prevailing beliefs. In a climate of validation by affiliation with an ancient past, use of old monuments would have had a rationale (Harding and Healy forthcoming). This may be the context of the late third/early second millennium use of Hambledon Hill, as well as of Beaker burials inserted into the Thickthorn Down long barrow (Drew and Piggott 1936, 80), Beaker sherds in the ditch of Wor Barrow and the Dorset cursus (Cleal 1991b) and in the upper fills of the central pit at Monkton-up-Wimborne (Green 2000, 100–1).

Hamilton (1999) has argued that use of causewayed enclosures in this period is indistinguishable from the contemporary settlement and funerary remains which extend across the landscape, and may thus form part of that pattern rather than reflect any conscious recognition of the pre-existing monuments. At Hambledon, this may apply to the round barrows, which are part of an extensive spread across the Chase, including major cemeteries (Barrett *et al* 1991, fig 4.6). It is also a reasonable characterisation of the Beaker assemblages themselves, which include fragments of both fine and rusticated vessels, sometimes in association with animal bone, struck flint, charcoal and other burnt material. It does not, however, take account of the relationship of the assemblages to what would at that time have been clearly visible earthworks. In the central area, Beaker material was concentrated at the two identified entrances. In the south, on the route to and from the Stepleton spur, shallow pits packed with flint and chalk sometimes with a few plain and rusticated Beaker sherds (and in one case with more than 400 pieces of struck flint), were cut into the two butts of the silted east ditch of the Long Barrow (3.3.6). The two densest concentrations of Beaker settlement material, both of very limited extent, were on either side of the entrance giving onto the Shroton spur, and were typologically distinct, suggesting two separate episodes (3.3.8). The more abundant of the two, in segment 4 of the inner east cross-dyke, was in a pit cut through the Neolithic ditch fills. Similar pit-like recuts, far poorer in artefacts, occurred at the same stratigraphic horizon elsewhere in the same segment, in segment 2 of the outer east cross-dyke and segments 10 and 11 of the main enclosure (3.3.2–3). These are unlikely to have been part of a wider scatter of pits, since the excavation of *c* 15% of the interior of the main enclosure revealed many Neolithic pits but no Beaker ones. There was, indeed, very little Beaker or early Bronze Age pottery in the interior at all, the largest assemblage consisting of a mere 16 sherds/86 g from a treethrow hole and recent features cutting it on site B (Table 3.6).

On the Stepleton spur, an emphasis on entrances similarly accompanied a dearth of Beaker material in the almost completely excavated interior. The only recut of this date in the Stepleton enclosure was in segment 9, at the putative entrance giving onto the obvious

route to the main enclosure (3.5.2). In the inner outwork, a possible south-east entrance between segments 5 and 6 was marked by midden-like deposits in the opposed butts of both (3.5.4), containing pottery (among which early Bronze Age wares out-numbered Beaker ones), lithics, animal bone, charcoal, 'pot-boilers', a copper alloy awl and a bone ornament which seems to be a replica of a jet or amber spacer bead (Fig 8.33: ST79 860). The deposit extended for some 27 m, occupying most of the length of segment 5, and was sometimes clearly in a recut (Figs 3.96–7: L2B). Its presence in the butt, and only the butt, of segment 6, where the bone bead was found (Fig 3.98), suggests that there was an intention to mark the causeway. Typology aside, the assemblage is of similar character to those from the phase VI Neolithic deposits. It may, indeed, also have resulted from the deposition of the residue of an episode of gathering, eating and drinking. In the outer outwork there was probably a localised recut containing Beaker pottery in one butt of segment 5, and a recut of unknown extent was sectioned in segment 2 (3.5.5). This recut is exceptional. It was the only one to contain a pottery assemblage which could scarcely be described as domestic (there were three bases and a rim fragment without other sherds, and at least one base was found upright and was hence, perhaps, an originally intact pot truncated by ploughing). It was also the only recut of this date on the Stepleton spur or in the central area to be made *after* ploughsoils had begun to accumulate in the ditch top. All the recuts described so far were made in gradually accumulated silts and were truncated together with them by subsequent ploughing. Bearing in mind that this segment was well away from the Stepleton enclosure; this suggests that ploughing started sooner outside the enclosure than inside it and immediately around it, reinforcing the impression that the enclosure continued to be recognised and used into the second millennium BC. The same sequence was recorded more extensively on the Hanford spur, where narrow, shallow, linear recuts were made along the outer edge of almost the entire excavated length of both outwork ditches after ploughing had taken place over them (3.6.2, Figs 3.137–40). The recut in segment 3 of the inner outwork contained a small amount of Beaker and early Bronze Age pottery, and, in the south butt, human bone disturbed from underlying layers seemed to have been rearranged. The same butt, next to a Neolithic entrance, was subsequently the site of a localised, pit-like recut (Fig 3.138).

The Hanford record thus reinforces the impression that ploughing may have started outside the Stepleton enclosure while the enclosure itself was still used and frequented to some extent and that, after this, both Hanford outworks were redefined, over a distance of at least 100 m. It is even possible that this redefinition extended for as much as 700 m, from the Hanford spur to the Stepleton spur. The extent of the recut in segment 2 of the outer Stepleton outwork is unknown: it spanned the 4 m wide section in which it was recorded and, within those 4 m, appeared trench-like rather than pit-like. It could have been linear. Segment 1, to the west of it (Fig 3.81), was planned but not excavated, so that it is not known whether it too was recut. There may have been an extensive, though exiguous, redefinition of the outworks on the south-west side of the hill after their line had been blurred by ploughing. The redefinition of the Hanford outworks may relate to another event, the excavation of what were at first thought to be flint mines on the Hanford spur. These features defy interpretation. They were of later third millennium date (see Bayliss *et al*, 4.7.15); they were pits, interlinked in some instances by short 'galleries' or 'port-holes', sunk to a seam of low-quality tabular flint which does not figure in the industries of the site (see Saville, 10.2); they contained an exceptional, often wild fauna (see Legge, 8.1); both the flint and chalk removed from them were deployed elsewhere, the pits being backfilled with soil (3.6.3); and there are surface indications of other similar features (see Palmer and Oswald, Ch 2; Fig 2.7). The date would accord with the Beaker pottery in the ditch recuts. Was material from the quarries piled onto the banks? A comparable event may be represented by a small bank built between the inner and outer ditches of the Maiden Castle causewayed enclosure after an episode of cultivation. It post-dated the enclosure, on the evidence of *termini post quos* in the form of an animal bone dated to the later fourth millennium and a Mortlake-ware sherd. Its coincidence with a concentration of Beaker pottery in the enclosure ditch enhances the possibility of a late third/early second millennium date (Sharples 1991, 57, 103, 113, 256).

The Neolithic earthworks at Hambledon were recognised as significant more than a thousand years after their construction. That significance is unlikely to have born any relation to the beliefs and practices of those who built and originally used the complex, but the disposition of the cultural material of this period reflects conscious use of the earthworks rather than settlement fortuitously located on them.

Eventual disregard of the earthworks is evidenced by a vestigial, undated field system on the saddle between the main enclosure and the Stepleton spur, which runs obliquely to the Stepleton–Hanford outworks, laid out as if they did not exist (see Palmer and Oswald, Ch 2; Fig 2.7). It is possible to disentangle the much degraded elements of a middle to late Bronze Age settlement from the excavated record of the Stepleton spur (3.5.7), and this may well have been coeval with the nearby field system and, indeed, with other fields on the hillfort spur, which pre-dated at least some of the Iron Age earthworks (see Palmer and Oswald, Ch 2; 3.7; Fig 3.148), as well as with the burnt mound in Everley Water Meadow (5.3.3). At this stage, the hill seems to have become part of the landscape of increasingly visible settlements and increasingly partitioned farmland which extended over the Chase

(Barrett *et al* 1991, 223–6) and much of the downland of southern England. The small, perhaps lineage-scale, cemeteries and isolated burials, often juxtaposed to settlements, find an echo in a late second millennium inhumation burial just outside the Stepleton enclosure (3.5.7). The continuation of ceremony on a larger scale is, exceptionally, evidenced on Ogden Down, close to the cursus, by the construction of a post-lined avenue linking two pre-existing round barrows, one of which was at the same time surrounded by multiple post circles (Green 2000, 113–17, pl 20).

This extensive, enclosive mode of settlement ended early in the first millennium. Cranborne Chase is devoid of late Bronze Age settlement or pottery, despite the presence of some metalwork of the period (Barrett *et al* 1991, 228; O'Connor 1991). This suggests that settlement became more nucleated, and is of low visibility because that nucleation took place on the sites of the hillforts that surround the Chase and/or on those of the later first millennium settlements within it (Barrett *et al* 1991, figs 6.1–2). Low levels of investigation of both kinds of site leave ample scope for speculation. In this context, small quantities of late Bronze Age pottery from Hambledon Hill have some interest, especially given their location. There is a handful from the north-west of the main enclosure, close to the hillfort spur (3.3.2), and rather more from the south and west of the excavated part of the Stepleton spur (see Smith, 9.1.2), close to Hod Hill. Also close to Hod Hill is Everley Water Meadow, where a couple of late Bronze Age sherds and fragment of a stone mould for a type of socketed axe perhaps current from the eleventh to the ninth centuries BC (see Needham, 10.1.4) were found in the gravels of the south area, downstream from the burnt mound (5.3.3). A late Bronze Age socketed gouge has also been found on Hod Hill itself (Pearce 1983, pl 110: 444). These finds hint, and only hint, that settlement on the sites of both hillforts may have begun early in the first millennium, although it may have preceded fortification, since the earliest rampart on the hillfort spur, the north cross-dyke, is likely to have been built between the late eighth and the late sixth century BC (3.7.3).

The limited evidence tends to favour the hillforts. No vast late second/early first millennium midden accumulations like Potterne (Lawson 2000) or Chisenbury (McOmish 1996), both in Wiltshire, themselves bespeaking aggregation, have been identified in the area. The unexcavated settlement enclosures of Cranborne Chase are morphologically of late Iron Age/early Romano-British type, and, of the ten or so excavated first millennium BC settlements, only two, Gussage all Saints (Wainwright 1979b) and Pimperne (Harding *et al* 1993) go back to the early Iron Age, let alone the late Bronze Age (Barrett *et al* 1991, 229), although there are two or three surface finds of early Iron Age pottery (ibid, 233, 236). First millennium metalwork finds from the area are overwhelmingly late Iron Age (ibid, table 6.1). Hambledon was occupied, on the evidence of numerous hut-platforms (Figs 2.13, 3.148); the one excavated example was early Iron Age and others could be earlier (3.7.4). Hod Hill was equally obviously occupied, but none of the numerous hut platforms within it (Crawford and Keiller 1928, pl I) has been dated to the early Iron Age, despite an early Iron Age component among the pottery from the site (see Brown, 9.3).

The proximity of these two hillforts, which are little more than 1.5 km apart, inevitably raises the question of their relationship. The Hambledon sequence, as far as it is known, seems to have been punctuated by periodic lulls, suggesting that the focus of power and activity may have pulsed between them. The cleanliness of the naturally accumulated silts of the north cross rampart ditch (excavated in 1986) suggests an interval of abandonment between its construction and the establishment over it of a house platform. If the 'tiers' and the scarps on which multivallate ramparts were built in the east-centre of the fort were indeed cultivation terraces that post-dated the south cross rampart as well as the north, as argued above (3.7.3), then an interval long enough for them to form (one of decades, if not of centuries) would have elapsed between the construction of the south cross rampart and that of the multivallation. The final swing of the pendulum seems to have been towards Hod Hill, since the late Iron Age presence is far more marked there – as far as we know – than on Hambledon, and was certainly a reality at the time of Vespasian's campaign. In terms of the location and physical characteristics of the sites, this may have been a move from a refuge to a political centre (Giles 1993).

It thus appears that, in the, early first millennium, there may have been a nucleation of the population in the hillforts around the Chase, followed only much later by the development of numerous settlements within it accompanied by elaborate, multi-ditched boundaries (marking much older divisions including that first signalled by the cursus) and focused on an oppidum-like complex of enclosures and high-status finds on Gussage Hill (Green 2000, 126–9), the whole reaching its maximum development in the century before the Roman conquest. This picture is made all the more plausible by the record of the Dorchester area, where, despite extensive excavation, late Bronze Age and early to middle Iron Age settlement remains scarce outside the local hillforts, and widespread settlement of the areas around and between them seems a development of the late Iron Age (Sharples 1991, 257–64; Healy 1997c, 298–9; R J C Smith 1997, 299–300). Sharples sees the initial nucleation into defended sites as reflecting aggressive competition for control of agricultural land among communities who could no longer compete for status through control of copper, tin and objects made from them, the most successful and long-lived hillforts being those located at the interface of complementary terrains, like Maiden Castle, Hod Hill, and Hambledon Hill. Towards the end of the second century BC he sees Maiden Castle, South Cadbury in Somerset, Hod Hill

and – by association – Hambledon Hill as coalescing into a single area of influence, defined by the Maiden Castle/Marnhull pottery style, a development which diminished the need for defences and furthered the proliferation of unfortified settlements (1991, 260–3).

11.5 Hambledon among other causewayed enclosures

Roger Mercer

This section will attempt to avoid repetition of material already published by this writer (Mercer 1988; 1990; 2003).

11.5.1 The act of enclosure

Enclosures in all their variety, over six millennia of European prehistory, offer an unfading attraction to the archaeologist. By their very nature they exhibit an 'internal' and 'external' logic in their seeming synchronic unity, or diachronic complexity, that encourages, indeed demands, a degree of classification and order that is, apparently, denied to less obviously 'organised' structures. Such classification and ordering may, however, offer only illusory security to the scholar who may be led quite unconsciously, or at least semi-consciously, into functionalist and cultural assumptions, often ethnocentric, and usually unjustified. One of the most common of such assumptions relates to 'defence' and what constitutes defensive and non-defensive enclosure, a discussion more often than not conducted in accord with notions associated with artillery warfare and relatively modern ideas of military discipline and conduct.

Such classifications are indeed imperilled if it is postulated that the nature of the enclosure may *not* be 'enclosive' as 'an event', but a cumulative statement over a period of many months or seasons, monumental in its ultimate outcome and perhaps intention, and, perhaps, 'enclosive' as only an ultimate stage of its development –where the accomplishment of the outcome is more important than the outcome itself. Such cumulicity may well be deniable either on the basis of 'Occam's razor', or on the basis of 'unity of conception' in later enclosures, but for those of the early farming period with their distinctive 'causewayed' or 'interrupted ditch' construction it is usually, if not always, impossible to *demonstrate* with certainty any unity of execution of the project. Indeed the waywardness of the alignment of the segments of causewayed ditch, whether in Denmark, Britain or Central Europe, and the quite individual filling patterns of contiguous segments that is frequently in evidence, might support the notion of individual events in a long, but by no means continuous, process.

Yet, where evidence survives for the banks, ramparts or walls of these enclosures, as at Hambledon Hill (11.1); Crickley Hill, Gloucestershire, Carn Brea, Cornwall, or Orsett, Essex, they display an internal logic which suggests that, whether on the grounds of the inter-relationship of timber ground-fast supports, or on the basis of the existence of evanescent or relict traces of the substance of a bank, that these obstacles were continuous and do not reflect directly the discontinuous appearance of the ditch segments. Yet how certain can we be of the unity of a linear earthwork without total excavation over a substantial distance – an investigation that has seldom taken place?

Furthermore the nature of these inner linear barriers appears, where it is susceptible to interpretation, to be extremely variable. It needs to be understood that relatively few excavations have taken place in Britain, or indeed Europe, that allow any complete understanding of the nature of the barrier that existed behind the ditch. Indeed the more such excavations that take place the greater the degree of variety that appears to be witnessed.

11.5.2 The nature of enclosure

In Britain, at the seminal site of Windmill Hill, the inner barriers of all three circuits of ditch have been argued on the basis of both relict traces and of the filling of the ditches by both Smith (1965) and Whittle *et al* (1999) to have been continuous, 'dump-style' banks of piled white chalk, with the site itself carefully offset on the low summit of the hill to promote intervisibility with lower areas set to the north and north-west. A similar situation is postulated on the basis of the extensive excavations at Briar Hill, Northamptonshire (Bamford 1985) where, on the basis of the asymmetry of the ditch filling, once again the excavator reconstructed a simple dump-style bank – but in this instance of rust-red Northampton Sand with Ironstone. Also, the issues associated with the inter-visibility of the nature of enclosure with its hinterland have been briefly explored by Oswald *et al* (2001), who classify this enclosure along with a series of others in having a valley side, and therefore 'tilted', location that offered prospects to and from the valley hinterland. The nature of the ditch-fillings at Briar Hill also made abundantly clear that which had been suspected on the less archaeologically transparent blocky fillings of the chalk-based sites, that multiple and complex phases of deliberate re-cutting of the ditch fills had taken place with the selective placement of debris within the declivities so created. To this widespread (although *not* universal) feature of early enclosure use we shall return.

The focus to the west

The combination, as at Hambledon, of inclusive/celebrative and exclusive/impressive roles is witnessed elsewhere in Britain. Two such sites are about equidistant from Hambledon in the southern English context. Hembury, in Devon, was one of the earliest causewayed enclosure sites to be investigated (Liddell 1930; 1931; 1932; 1935), and excavated extremely well by

the standards of the time, by Dorothy Liddell, sister-in-law of Alexander Keiller, the prime force behind the excavations at Windmill Hill. Hembury is a promontory site set on a Greensand geological base overlooking the lowlands of south Devon, in very much a similar circumstance to that of Hambledon Hill dominating the flatlands of Blackmoor. It was recognised archaeologically by virtue of the late first millennium ramparts prominent upon the site, and only Liddell's excavations revealed the relatively minimal Neolithic earthworks lying beneath. Our understanding of this earthwork is limited, as a result of the severely constrained excavation possible within Liddell's resources, but it is probably a single causewayed ditch with, set on its inner edge, a continuous rampart that appears to have been vertically faced and revetted with timber. This obstacle appears to have been subjected to firing in an episode that led to burning timbers collapsing into the ditch where their remains were located in direct association with a large number (*c* 80) of leaf-shaped arrowheads, many of which exhibited traces of calcining through heat. Such was the heat generated by the burning timber that the greensand rock was widely oxidised to a deep red wine colour. At Hembury this 1 ha promontory enclosure appears to have enclosed, again on the evidence of very limited excavation, an area subject to intensive structural and pit-digging activity, producing very large quantities of cultural debris – and subject also, apparently, to extensive burning.

The 1 ha enclosure at Hembury forms the focus of an altogether larger enclosure system, one element of which was located by Liddell, which may indicate an enclosure of as much as 3 ha in extent. This outer earthwork, comprising a 2 m-deep flat-bottomed ditch, also betrayed traces of burning, and the apparent disruption of the bank-obstacle built on its interior side with additional traces of a possible timber-built counterscarp feature as well. Hembury bears ready comparison with a further group of Neolithic enclosures to the south-west in Devon and, particularly, Cornwall. The direct comparisons are facilitated by a common suite of raw materials and fixed-origin artefacts passing along exchange-lines that clearly link the sites, and by common factors involving large outer enclosures and the presence of evident archery-accompanied attacks (Mercer 2003).

The second enclosure complex to which the writer would refer in this context is set on the very edge of the Cotswold scarp near Cheltenham, Gloucestershire. Like Hembury the site was excavated (in this case by Dr Philip Dixon) because of the visible traces of an early first millennium BC fortification, the remains of which were apparent from surface examination. It was only after several seasons of work on the site that the earlier, Neolithic, causewayed enclosure was found (there are a number of examples of this sequence of events – Wheeler's excavations at Maiden Castle, Dorset, being another). The sequence of events at Crickley Hill is, however, of particular interest in the context of Hambledon Hill as, unlike the absent 'sequence' at Hembury (largely a product of limited excavation, one suspects), at Crickley Hill (once again with a massive vista over a flatland area, in this case the Severn floodplain) the excavation was on a very large scale and sequence is an issue that has been well addressed (Dixon 1988 and pers comm).

It is not yet tied to the outcome of any available radiocarbon dating programme, but, at its earliest stratigraphic point, the only apparent structures on this promontory site, in Dixon's phase 1a, were a cluster of small, oval post-built structures, and a small, insignificant almost, oval barrow with no archaeological trace of any burial.

The structures were succeeded in Dixon's phase 1bi by an initial circuit of causewayed ditch enclosing about 1 ha (which was to become the outer ditch as the nature of the site developed). The ditch was broad, shallow and flat-bottomed with at least three, possibly five, entrances aligned so as to focus on the centre of the enclosed element of the promontory. The obstacle/bank of the enclosure set on the interior side of the ditch was interpreted as broad and low at the inner side of which, further from the bank, were the post-sockets of a palisade that, to judge by the depth of the sockets, was of no great height. It would seem at least possible that this first stage of enclosure was subject to attack (or at least targeting) by archers.

This circuit was recut and augmented in Dixon's phase 1bii by the digging, some 22 m within the lbi ditch, of a parallel set of pits which were somewhat deeper and separated by a larger number of 'causeways', many of them too small to be considered as access points. Three, and probably four, causeways were, however, matched by gate furniture all of which were aligned on the gates previously established within the lbi circuit. The inner obstacle/bank that lay within this circuit would appear, also, to have been similar in design to that of phase lbi. The phase 1a barrow was levelled (and its barrow's flanking ditches infilled) in order to allow the construction of this inner enclosure. The emphatic change with this second enclosure phase resides in the fact that at this time the interior of the double enclosure appears to have been furnished with a large number of integral post-supported rectangular structures interpreted as houses.

It is this double obstacle (lbii) enclosure with 'houses' set in the interior (houses, the posthole patterns of which survived owing to the unique circumstances at Crickley Hill where *no* cultivation has taken place) that is subject to what appears to be the first full-scale targeting by archers on the site, after which the two ditches appear to have been deliberately infilled with burning brushwood thrown into the ditch and promptly buried, with heat of sufficient intensity generated to slake the surrounding limestone. Into this backfilling, over a considerable period, five phases (Dixon's lci–v) of recutting associated with deliberate deposits of animal bone and pottery were made.

After this interval, currently of unknown length, the promontory is once again isolated by a single 'uninterrupted' continuous ditch with two causeways marking well-defined gateways in the internal obstacle (Dixon's phase ld). The ditch is, relatively speaking, massive, well over 2 m in depth, and curiously, where, in the process of its digging, breakthroughs have been made into the earlier phase lbii ditch, careful and illogical processes of blocking were undertaken which, far from taking advantage of the apparently accidentally discovered 'vein' of easy digging, chose to shut it off and to continue to dig native bedrock instead. This act of 'memorialisation' is paralleled by the fact that with this new barrier the two new causeways still focus on the earlier disposition of two causeways on the site – that would appear to represent a cultural continuum. The internal obstacle constructed from the product of this ditch digging was also, apparently, closely related to earlier concepts on the site in producing a broad, low bank 0.50 m in height by some 10 m in breath with a palisade on its innermost edge. The gateways of the obstacle lie flanked by the inner and outer 'barbicans' of timber-lined roadways that lead into the interior where aligned house-type rectilinear structures, ranging from 2 × 5 m to 10 × 5 m in size, are aligned upon them. This was apparently a settlement, but other issues supervene, however, as the occupation component is more-or-less confined to the eastern sector of the enclosure (nearest the ditches) while the western component seems to have been reserved for a most complex series of ceremonial activities associated with a range of platform-type structures, where the immensely careful excavational approaches of Dr Dixon have informed an extraordinarily detailed account of Neolithic conduct on and around them.

Once again Dixon phase ld appears to have been brought to a violent end by a second attack of focused and intensive archery, that, rather like Hembury, appears to be directed closely upon the entrances and where the palisade at the inner face of the 'bank' appears to have stopped many missiles (Dixon 1988). After this, apparently ultimate, phase of destruction, the site of Crickley Hill was deserted for many centuries.

Evidence of intense burning was also recovered by Sharples (1991, 51) at Maiden Castle, Dorset. When Wheeler (1943) excavated this site in the mid-1930s he was anxious to prioritise the exploration of the Iron Age aspects of the site and did not accord the filling of these unexpected Neolithic ditches the degree of recording and comment that he committed elsewhere. He did, however, record an entrance through the causewayed ditches some 6 m wide, with the ditches surviving to 1.50 m in depth and enclosing an area of about 4 ha. Of the two ditches Wheeler cleared about 70 m aggregate length, and the inner of them was by far the richer in terms of the deposition of cultural debris. Wheeler found at least ten leaf arrowheads in this ditch, mostly in the immediate locality of the eastern entrance. A further five were located in the make up of the long mound – presumably incorporated from the immediate locale during the construction of this monument after the Neolithic enclosure had gone out of use. Sharples records (1991, 51) that, in his trench, he located 'midden' debris (see 1991, 253) the deposits beneath which are, however, described as follows. 'At the base of the ditch were the chalk silts ... These were probably deposited by rainwater almost immediately after the ditch had been created. On top of these silts, and intermingled with silt layers were the much thicker and relatively unconsolidated layers of chalk rubble. ... The rubble contained considerable quantities of charcoal, largely mature oak, which was at least partially created by a fire which had scorched many of the chalk blocks.' This sounds (and looks in the published figures) very like the evidence retrieved from Hambledon Hill which, there, is interpreted as massive bank collapse induced by the burning of a timber casing. This interpretation is consistent with Rowena Gale's Maiden Castle charcoal identifications. While most samples recovered from the inner ditch in Sharples' Trenches I and II include charcoal of various deciduous taxa, those from the rubble layers in his trench I consist almost entirely of oak and hazel, like the remains of the inner Stepleton outwork (Gale 1991, microfiche M6:C10–C12). Furthermore, Paul Martin's examination of the leaf arrowheads from the site (2001) has shown that (1) most of the leaf arrowheads surviving from the Wheeler excavations had indeed been hafted, on the evidence of microscopic traces of organic residues, which could be from adhesives such as birch bark tar; (2) if, following the results of experiments by others, both proximal and distal breakage to an arrowhead can result from impact, then the frequency of both at Maiden Castle (Wheeler 1943, figs 42–43; Edmonds and Bellamy 1991, fig 178) could reflect their use as weapons; and (3) 13 of the 24 leaf arrowheads which could be located with any precision were concentrated in the area of the scorched rubble and charcoal. Against the possibility of defence and attack was the vertical distribution of the arrowheads in this area, some of which came from the inner ditch and others from the turfline beneath the long mound, suggesting that they had accumulated over a period of time. It is, however, possible that most of them might derive from a single episode, some progressively entering the ditch from the surrounding surface. Given the limited extent of excavation in the area, the boundaries of the concentration remain to be defined.

Further to the south-west, the characteristic format of causewayed ditch enclosed sites continues to its known extent with the site at Raddon Hill, Devon. Here the 2 ha main enclosure, sited squarely on the hill summit (Oswald *et al* 2001, fig 5.2), is accompanied by a further causewayed component, probably of Neolithic date, which offers enclosed *space* outside the main enclosure (Gent and Quinnell 1999, figs 2, 3, 11) – as at Hambledon and Hembury, although on a lesser scale. This pattern is continued into the furthest

part of the Cornish peninsula. However, in this, generally hard-rock, region, the constructional format of the enclosures changes, with boulder walls creating inner enclosures of roughly 1 ha extent. In two known instances, Carn Brea (Mercer 1981a) and Helman Tor (Mercer 1997), both in Cornwall, there are known to be outer enclosures, boulder-built, but in the case of Carn Brea, clearly defensive and constructed, it would seem, at least partly, upon an internal 'stone-box' system that offered *enclosed space* outside the inner enclosure. Certainly the site at Carn Brea exhibits extensive burning and has produced vast numbers (over 800) of leaf arrowheads which, both in terms of their condition and circumstances, would appear to represent a site subject to massive archery attack.

The sites at Carn Brea, Helman Tor, Hembury, Maiden Castle and Hambledon, as well as other less major interspersed sites not mentioned here (but see Mercer 2003), are linked by a common distributional pattern of artefacts and raw materials apparently being circulated by whatever mechanism over very considerable distances. Materials are moving both eastward and westward – pottery, flint, other quarried stone – and, while these materials do pass beyond Hambledon further into Wessex, those of westerly origin begin to fall off sharply in frequency of retrieved deposition.

Thus in the south-west of England we appear to have a series of enclosures linked by common, although not universally common, links of situation, design, multiple function, disposition to disturbance by violence and common exchange patterns. This commonality of links, seems, currently, to break down gradually beyond the 'boundary zone' of the chalk massif of central Wessex. Does this pattern reinforce the 'frontier' position of Hambledon Hill itself? Does the 'reversal' of role and focus of Hambledon from eastward to westward and from display/ceremonial in focus to defensive/dominant focus reflect that 'frontier' position and its possible reversal by communities that we know are in an energetic state of development on Cranborne Chase (Barrett *et al* 1991) and further to the north-east by the mid and later fourth millennium BC?

The focus to the east

Certainly, further to the east, causewayed enclosures exhibit broadly similar overall enclosive design but perhaps rather different layout, little evidence of violence, less apparent functional variety, and different exchange linkages. Let us examine these briefly.

It was Palmer (1976a) who first suggested the division of causewayed enclosures into four regional groups centred on Sussex, the Thames valley, the East Midlands and the South West of England which he recognised upon the grounds of morphological analysis in which he saw, broadly, greater complexity of layout in the Midlands and Thames than further to the south and west. It is interesting to compare this analysis with another, based upon an approach by Colin Renfrew (1973) founded upon a purely spatial-proximity analysis using the Theissen polygonal method that sought to develop an understanding of 'territories as revealed by the location of causewayed enclosures in Wessex' (an area that by and large has *not* seen a massive increase in their numbers) as compared with the cluster of long-barrows that surround them (or appear to), a linkage that has been lent added intimacy as a result of the work at Hambledon Hill itself. This study sees a complex of territories which are, however, all shut off by polygons isolating the south-west, from Poole Harbour to the Cotswolds, from the rest of Southern England – the very hinterland overviewed and bounded by Hambledon Hill.

All of this is purely retrospective construct. Let us review briefly what happens to the east of that quite 'imaginary line'. To this point we have seen an aspect of early Neolithic enclosure function in Britain which, whether at Crickley Hill, Hambledon Hill, Hembury, or enclosures of a rather different character further to the south-west has an apparent unity of conception, interlinkage and developing functionality that is quite impressive. When we turn eastwards from Hambledon Hill the degree of unity seems to change quite sharply.

The foundation of causewayed enclosure studies is the work conducted by Alexander Keiller at Windmill Hill, Wiltshire (Smith 1965). This site seems to be positioned in a manner familiar at all upland sites across southern Britain (including Hambledon, Maiden Castle, Whitesheet, Crickley Hill and most of the Sussex upland enclosures (Oswald *et al* 2001). The favoured location is a spur or ridge with extensive views in one principal direction. In most instances the enclosure is positioned in slightly 'off-set' tilted posture, so that it lies slightly off-summit in the direction on the view commanded – thus presumably promoting the intervisibility from each to the other. At Windmill Hill this focus is to the north and all three, inner, middle and site circuits, are tilted in this way. But at Windmill Hill, unlike any enclosure to the west, the enclosure ditches are not 'grouped' in order to be mutually reinforcing, whether psychologically or physically, nor are they 'focused' at particular approaches to the eminence upon which they are placed (as at Whitesheet, Hambledon, Hembury and Maiden Castle). At Windmill Hill a more or less 'neutral', 'concentric' pattern is adopted with, however, the earthworks increasing in stature towards the outermost.

Once we come to examine the archaeology of the use of the Windmill Hill enclosure, however, we observe a close accord with aspects of activity, although not the discontinuity, seen in the south-west. Smith's (1965) account of the excavation by Keiller, as well as Whittle's smaller scale investigations (Whittle *et al* 1999), indicates that feasting and the disposal of that feasting debris, as well as the disposal of human remains was a consistent process mediated archaeologically by the repeated recutting of ditch deposits and the placement of components of this debris within

those recuts. Under archaeological examination these deposits may seem rich but, as at Hambledon, when taken in the context of the likely chronological longevity of the site they may reflect only a very few episodes of celebration every few years (11.3.1). It is probably dangerous to embark further on this course of enquiry with sites less adequately sampled, dated or documented, but, impressionistically, we can observe that such very exiguous assemblages, per chronological range, apply widely elsewhere with an emphasis that increases as one moves further to the east (see below).

Another issue that relates to change as we move not only from west to east, but from chalk upland enclosures to the less elevated enclosures of eastern river valleys, is their relationship with the contemporary landscape. Usually on the basis of molluscan evidence, the upland enclosures at Offham, Sussex (Drewett 1977), Windmill Hill, Hambledon Hill, and Maiden Castle are understood to have existed in landscapes that fostered the prevalent presence of shade-loving species. It would appear that these enclosures were set in marginal woodland of greater or lesser density, certainly not an environment created by the ruminant animals that form the principal traces of meat consumption on these sites. Again the impression gained from the whole ambit of the evidence would suggest periodic visiting by small groups to sites of prestigious status set in marginal, indeed, perhaps territorially peripheral contexts – visits during which food and objects brought from a distance were consumed and/or deposited. The circumstances of the excavation at Hambledon Hill have suggested a very strong link between these periodic (perhaps in this instance seasonal) visits and the delivery to the site (and perhaps the removal from it) of human cadaveric and skeletal remains.

The site at Etton, Cambridgeshire, is held by its excavator (Pryor 1998) to parallel closely the activities reflected at Hambledon, characterised by periodic visits with special deposition episodes. Yet as we move into the valleys of eastern England, we encounter sites apparently far less dramatically sited, yet still in 'locally' marginal locations, as at Etton; Staines, Surrey (Robertson-Mackay 1987), possibly Orsett, Essex (Hedges and Buckley 1978), and Haddenham Cambridgeshire (Evans and Hodder 2006 and pers comm). Yet these sites are still the focus of some long-distance contact (in terms of much worked down Group VI and VII axe fragments from Etton) although there is relatively little evidence of the widespread ceramic contacts witnessed at Hambledon and Windmill Hill. Etton would appear to have been set at the margin of a landscape already substantially cleared of trees.

If the eastern river valley enclosures are more locally focused, commanding recognition among smaller, less distantly derived, communities, then there is also evidence that activity in their immediate vicinity was less intensive. To examine this issue this writer has interrogated the presence of worked flint and flint implements upon those sites where the sample was felt, upon inspection, sound enough to be recovered and recorded, and large enough to be indicative. The same exercise could be undertaken with other materials but only flint, it was felt, had the taphonomic resilience to allow comparison between widely varying sites. The question remains, of course, of the local availability of flint, which is difficult to assess, but in no instance is any site at considerably more than one day's walk from a good flint source – except, of course, those in Cornwall which, in themselves, furnish an interesting object lesson in this regard. There is no doubt that measuring excavated areas on plan and counting finds lists may often lead to error, and the writer has no doubt that error may have occurred here, but not such error as could seriously impact upon the order of magnitude of differences encountered. It can be suggested that rather than calculating 'area excavated', one ought perhaps to calculate volume of archaeological deposit excavated' (ie take into account the depth and length of archaeological features – ditches and pits – uncovered), but this exercise only builds in its own biases and uncertainty. The result is as set out in Table 11.7. Its plausibility is enhanced by the fact that a comparable one has been reached by Evans *et al* (2006), employing a different method of calculation and applying it only to material from enclosure ditches.

The outcome of this exercise shows very clear distinctions between the lithic assemblages and their intensity on the examined sites. Those sites that, in the far south-west of England, are interpreted (by this writer) as settlement sites, enclosed and lived in for extended periods, despite their situation far from bedrock deposits of flint, produce 16–20 fragments of worked flint per m^2. This order of magnitude begins to parallel that of European Neolithic settlement sites, and indeed those recognised elsewhere in Britain. Hembury, Devon, is clearly closely related.

Hambledon Hill, well within the flint-rich zone, stands at 2.0–6.6 items per m^2. Then we are faced with the completely exceptional nature of the Windmill Hill assemblage related, presumably, to the massive flint-working activity that has been known since the 1920s on the southern slope of the hill. The results of the most recent excavations there suggest that much of this mass of lithics may post-date the enclosure and have no relation to this discussion: irrespective of ditch circuit, high flint densities occur only at a late stage in each section and consistently coincide with the first occurrence in that section of later Neolithic pottery (Whittle *et al* 1999, tables 155–61, 173–9). Staines and Abingdon in the Thames valley compare closely to Hambledon, whereas Offham, Sussex, at 1.4 items per m^2 lies at approximately half the Hambledon rate, yet, surely, in an area of equivalent flint availability.

When we reach the east of England we find, by comparison tiny amounts of flint – a third to a tenth that of Hambledon. Rog Palmer (1976a) indicates, as

Table 11.7 Density per m² excavated of worked flint and flint implements at a selection of Neolithic enclosures and other sites in southern England

Site	*Area excavated m² (approx)*	*Total struck flint (as published)*	*Total implements (as published)*	*Implements per m²*	*Struck flint per m²*	*Source(s)*
Staines, Surrey	6675	23,355	1,344	0.2	3.5	Robertson-Mackay (1987)
Abingdon, Oxfordshire	1280	5137	842	0.6	4.0	Avery (1982); Leeds (1927; 1928)
Orsett, Essex	1725	1637	64	0.03	0.9	Hedges and Buckley (1978)
Briar Hill, Northants	14,196	2815	868	0.06	0.2	Bamford (1985)
Etton, Cambridgeshire	14,000	7,152	746	0.05	0.5	Pryor (1998)
Haddenham, Cambridgeshire	8878	2,245	*c* 220	*c* 0.025	0.25	Evans and Hodder (2006)
Offham, Sussex	4780	6,830	23	0.005	1.42	Drewett (1977)
Windmill Hill, Wiltshire	3233	98,273	4078	1.26	30.4	Smith (1965)
Hambledon Hill, Dorset (main enclosure)	10,000	36,146	1227	0.13	3.6	This volume
Hambledon Hill, Dorset (Stepleton enclosure)	16,000	36,094	828	0.05	2.25	This volume
Hembury, Devon	2295	32,000	1171	0.51	13.9	Liddell (1930; 1931; 1932; 1935)
Helman Tor, Cornwall	72	1371	233	3.24	19.0	Saville (1997)
Carn Brea, Cornwall	1631	26,382	3611	2.20	16.2	Saville (1981a)
Hurst Fen, Suffolk	1858	14,500	1298	0.7	7.8	Clark *et al* (1960)

we have seen, on the basis of the evidence of the aerial photographic recording of causewayed enclosures, by virtue of which the vast majority have been discovered, that four morphological and territorial groups exist. That grouping has been supported in a more recent review of the evidence (Oswald *et al* 2001). From the point of view of the excavator of Hambledon Hill, that four-fold division is indeed powerful and suggests that Hambledon itself was very much on a frontier – a frontier that continued in time, although quite differently marked by the complex of earthworks centring upon the Dorset cursus on Cranborne Chase – a frontier to be recognisable into the Iron Age. West of that frontier, complex events led to quasi-political unity over long distances and equally quasi-political prominence for some sites as 'symbolic' of the social solidarity that they had come to represent. A recognisable approximation to what we, today, call defence arose from this. These influences created a complexity of sequence for sites in this western area (including Crickley Hill, Hambledon, Maiden Castle, Hembury and sites further west) that is reflected in the variability of their archaeological expression. Across the boundary to the east this complexity seems never to have materialised during the earlier Neolithic. In Wessex and Sussex similar isolated sites never took on the 'career' of western sites. Further to the east such central places were also created but more locally focused, still marginally located within their local communities, and still the centre of only occasional attention. Currently there is no reliable evidence for chronological priority one way or the other. Nor is there very much evidence as to the contexts to which these clearly locally focused sites related. Our appreciation of their role now relies upon further exploration of the hinterlands of which they were clearly only a part and upon the process of inter- and intra-site chronological refinement, which is only now becoming a feasible prospect.

11.6 Questions, answered and unanswered

The research aims

Most of the questions posed at various stages in the project's history (see 1.7) have been substantially answered. Those formulated for the final post-excavation project are reviewed here.

1. What were the complete form and extent of the complex? How many hitherto undated or undiscovered elements formed part of it? Was there a third Neolithic enclosure on the northern, hillfort, spur?

The demonstrated scale of the complex, let alone its potential scale, makes it unique among earthworks of the earlier fourth millennium BC in Britain. Neolithic outworks extend around the steeper parts of every spur of the hill, such that the massive long barrow on the hillfort spur is within the enclosive earthworks rather than beyond them. What had appeared to be a third Neolithic enclosure on that spur, however, has proved to date from the earlier first millennium BC.

2. What was the chronology of its construction and use?

The chronology of the complex has achieved a resolution which affects the entire interpretation of the site and of other causewayed enclosures: episodic construction and continued use of the existing earthworks

spanned 300–400 years. 'Flint mines' on the Hanford spur have proved to date from the third millennium BC, after the complex had gone out of use.

This timescale provides perspective for a superficially vast assemblage. Spread over time, this seems to reflect only an intermittent presence at the complex, although at least sometimes – on the evidence of cattle slaughter – of large numbers of people

3. How did its components articulate in function and layout? Could the cross-dykes have been defensive, as their location suggested? How much diversity of use was there between the various components?

The uses of the complex embraced almost every aspect of contemporary life. Distinct, complementary practices at the two enclosures are detectable from the first and persisted over the centuries during which the hill remained a focal aggregation site for the people of a catchment which extended at least to the Mendips and the Dorset coast. Each enclosure filled different functions, and saw different styles of deposition of food remains and of artefacts from different sources, the distinctions persisting as the practices changed over time. The cross-dykes now appear to have functioned as additional circuits of the enclosure, their limited extent a response to the immediate topography. Outworks, however, were demonstrably defensive and were the sites of rather different depositional practices from the enclosure ditches. The Shroton spur outwork and the inner Stepleton outwork were both burnt, almost certainly in the course of hostilities, which are evidenced at a later date by two deaths by arrowshot. Inter-group conflict, and its anticipation, are emphatically demonstrated.

Although outworks were built progressively from an early stage in the sequence, their location and character changed over time. The outworks of periods 1–3 were sited on the relatively gentle slopes which provide the easiest access to the hill and incorporated gateways, on the Shroton, Stepleton and Hanford spurs. The main outworks of period 4 – the Western outwork with the outer, and perhaps the inner, Stepleton–Hanford outwork – were of a different kind: they were built along extended lengths of hillside, steep as well as gently sloping (Fig 1.9), and they entailed a greater input of labour than any previous constructions (Fig 11.3). Furthermore, while the early outworks had presented a series of imposing walls to those approaching from the east, these, for the first time, presented an even more imposing façade to those approaching from the west. This shifting location bespeaks a shift in the visible (and socio-political?) orientation of the complex. It may reflect a denial of the westerly links evident through most of the history of the complex and absorption into the developing ritual focus in Cranborne Chase to the east.

4. How was the complex built and what were its implications for contemporary resources, demography and social organisation?

The ergonomic requirements of the successive episodes of construction have been estimated, based on the inferred original form of the earthworks. They indicate a minimum workforce for each successive episode of construction which is surprisingly low in relation to the size of the complex – of the order of 100 people in a couple of annual episodes in late summer and autumn. Cumulative rather than simultaneous construction reduces the scale of the society which built the complex, and, given the extent of the potential catchment, could suggest a thinly scattered population.

It should be remembered, however, that the minimum workforce called for in practical terms may have borne no relation to the number of people who chose, or needed, to participate. It is pertinent that, more than two thousand years later, the construction of a modest timber monument subsequently known as Seahenge, less than 7 m in diameter and made up of 55 posts and a central tree trunk, entailed the use of 51 different axes, the marks of which survived on the timbers. The excavators interpret this as reflecting the participation not only of 51 axe-wielders, but of many more people, on the grounds that each of the 15–20 trees used to build the monument would have been felled, dressed and transported by a team of three or four, with others involved in construction (Brennand and Taylor 2003, 24–30, 62).

Relationships between members of that workforce can only be guessed at. It is possible to envisage scattered groups, or fractions of them, from a catchment perhaps extending to the Mendips and the Dorset coast, converging on the hill to work, united, more or less closely, by lineage, allegiance, belief, or all three. Some measure of co-ordinating authority, as distinct from common interest and common will, is implicit in the construction methods and their end results, and varying levels of meat consumption among those whose remains were buried there hint at social hierarchy, especially given consistently high meat consumption by those buried in the south long barrow (see Richards, 7.2). The importance of the coastal plain, as a relatively close focus of population (11.4.3) may be considerable here.

5. What were the genesis and nature of the numerous deposits of largely disarticulated human bone? What processes had brought them to their final state? How did these remains relate to the far more restricted burial environments of the two long barrows? How far could the intermingling of funerary and other ceremony with the debris of everyday life be interpreted?

The dead and their remains were intimately bound up with the preoccupations and practices of the living. Excarnation followed by disarticulation and the inhumation of complete, fleshed corpses were both practised from the first, the former sometimes on the hill itself. The condition and composition of the excavated human remains were the result of, among other

factors, weathering, gnawing by dogs, and human selection. Excarnation was active as well as passive, with flesh deliberately cut away from the bones, even to 'token' extent from those of articulated skeletons. The purposes for which small quantities of human flesh were removed can only be guessed at. Among a people who selected, retained, transported and manipulated human bones, practices pertaining to the flesh as well would be unsurprising.

6. How could the collection of artefacts and food remains from the site be best interpreted to create a picture of the socio-economic base of the period?

Meat consumption at Hambledon may hold up a distorting mirror to everyday diet. The frequency with which dairy products and cereals were consumed is brought home by several converging strands of evidence: indirectly by the kill-off patterns of the cattle, which suggest the cull of surplus animals from dairy herds, and by the presence of numerous querns and rubbers; directly by dairy fat residues in pottery, by the significant role which vegetable proteins played in the diets of some of the population, by the extensive recovery of charred cereal grains, and by the discovery of a single pit containing many litres of charred wheat. Jones' and Legge's argument for the inherent underrepresentation of cereals in the archaeological record of this period is a telling one.

7. What was the local context of the complex, in terms of contemporary settlement and of human impact on the natural environment? What light could valley-bottom deposits at the foot of the hill shed on these questions?

Molluscan evidence for woodland cover on the hill during the earlier fourth millennium highlights the probability of occasional rather than frequent use, as at other chalkland causewayed enclosures. This complements evidence for patchily more open conditions in Cranborne Chase to the east. Local early Neolithic settlement retains a low visibility, except on the coastal plain to the south, whence, on artefactual evidence, some of those who built and used Hambledon came.

Valley bottom deposits of this period did not survive, having been scoured out, perhaps because of the extensive agricultural landuse of the second millennium BC.

8. What were the subsequent human uses of the complex? Was Everley Water Meadow, in the Iwerne valley below the hill, a Bronze Age metalworking site?

Uses of the hill and of Cranborne Chase to the east continued to complement each other, in an extended cycle of dispersal and aggregation, extending into the first millennium BC. The middle Bronze Age burnt mound in Everley Water Meadow can now be linked to the development of second-millennium fields and settlement on the hill above, part of the widespread contemporary enclosure of the downland. It pre-dates the late Bronze Age axe mould from the same excavation, which has proved to come, with a few contemporary sherds, from gravels reworked in Roman times. It nonetheless provides evidence for late Bronze Age metalworking in the vicinity, at a time when a high-status enclosure, in the form of the hillfort on the northern spur, may have been established, and settlement probably began to nucleate in the nascent hillforts of the area.

The future

The acquisition of so much information has inevitably raised further questions, many of which could be practically addressed.

- What was the nature and extent of earlier Neolithic activity over the unexcavated parts of the hill, especially outside and between the enclosures?
- Was there a further, outer outwork on the Shroton spur (3.4)?
- Can the relation between the Stepleton and Hanford earthworks be better defined?

Investigation in and either side of the area where the outworks swing across the contours could clarify this point.

- What was the extent of Neolithic earthworks on the hillfort spur?

The Iron Age ramparts may conceal even more extensive Neolithic earthworks than have been identified. The location of Neolithic entrances on the gentle slopes of the Shroton, Stepleton and Hanford spurs suggests that there may be another at the south-east angle of the hillfort spur.

- Can environmental evidence from the hill itself be enhanced, at least to match advances in Cranborne Chase?

If the technical difficulties could be overcome, a section at a location where a Neolithic earthwork is known to underlie Iron Age ones could yield sealed soils of both dates, as well as the potential for taking stratified sequences of mollusc samples through ditch fills of both dates.

- Can the character, landuse history, and chronology of the apparent concentration of Neolithic settlement on the coastal plain to the south be elucidated?

Targeted fieldwork is an obvious tool here. There is also the still-untapped potential of the unpublished excavation of numerous pits, some with Bowl pottery in the south-western style, at Moortown, on the lower Stour (Horsey and Jarvis 1984).

- Can the prehistory of the Blackmoor Vale be elucidated?

The area remains an archaeological and palaeoenvironmental blank, and with that blank persistent, understanding of the local human presence is one-sided. Its fluviatile deposits could provide a history of its human use, and might encapsulate stratified archaeological material.

These thoughts must form an *envoi* to those willing to explore further the archaeological potential of this 'frontier zone' – where different aspects and expressions of Britain's early Neolithic meet. It is precisely in this context where inter-relationships, and by the means of these, greater clarity in interpretation, are to be anticipated. To this end, and on an entirely culturally inappropriate (and currently, perhaps, unfashionable) note – Good hunting!

Plate I The Shroton spur and the central dome of the hill (left) and the hillfort (right), viewed from the east side of the Iwerne valley. Photo Rog Palmer

Plate II View to the west from the Hanford spur during the 1982 excavations.

Plate III The yew wood on the west side of the hill from the floodplain of the river Stour.

Plate IV Shroton spur outwork, site L. South-east face of excavation, showing charcoal-rich silt (L9) entering ditch from interior. Equivalent to Figure 3.78: section A–A'.

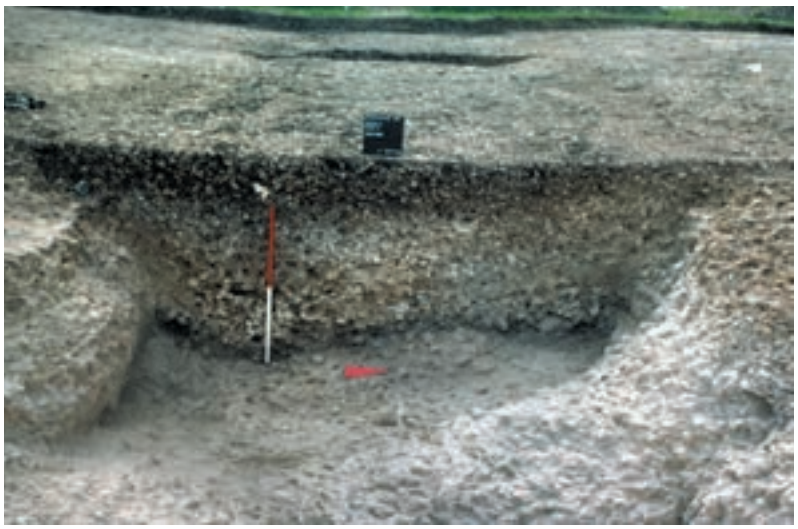

Plate V Inner Stepleton outwork. The east butt of segment 4.2, flanking the gateway, showing ashy silt with charcoal and chalk lumps (L4A) on base of ditch. Equivalent to Figure 3.95: section QQ–QQ'.

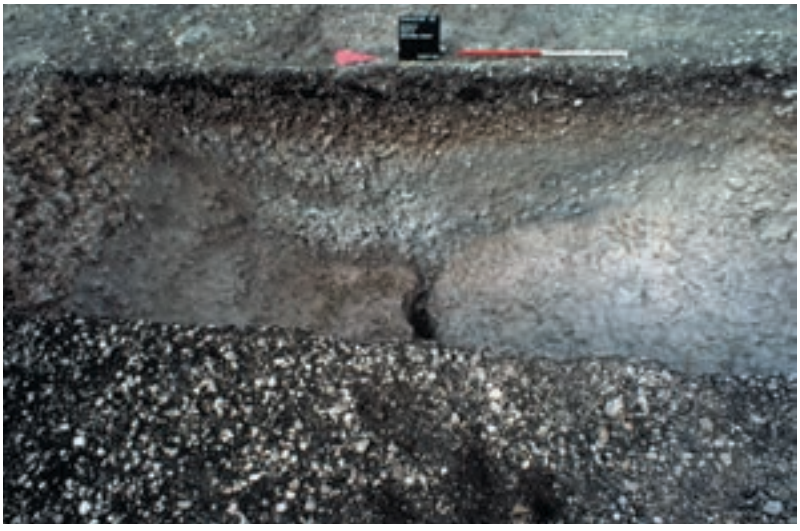

Plate VI Inner Stepleton outwork. The west face of unit 2, in the west butt of segment 5, close to the gateway, showing reddening of the ditch bottom (in which there is a natural fissure) and of the fills that progressively entered it.

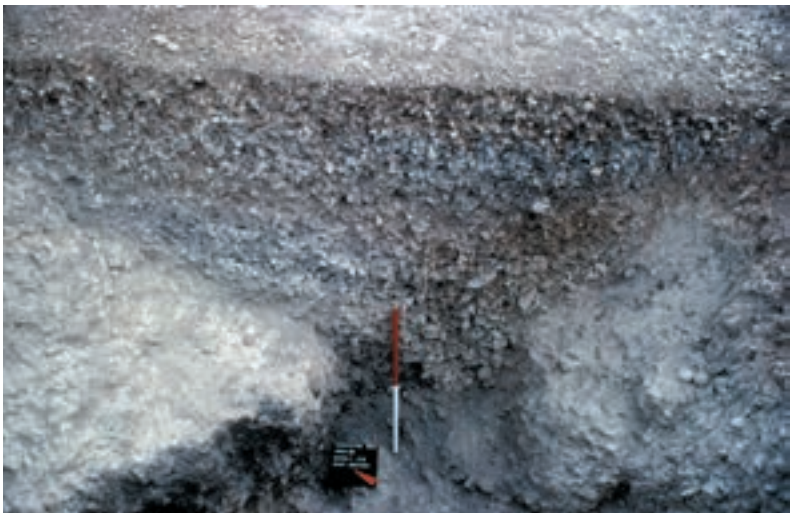

Plate VII Inner Stepleton outwork. The east face of cutting 13, roughly mid-way along segment 5, showing discoloured red-grey fills. There is a natural fissure in the base of the ditch.

Plate VIII Inner Stepleton outwork. Burnt clay and wood in L4A in cutting 1 in the centre of segment 6, where the ditch was cut through Clay-with-Flints. From north-east. Includes the area of Figure 3.99.

Plate IX Inner Stepleton outwork. Detail of burnt deposit shown in Plate VIII, including some of the sherds of P85 (ST79 1567).

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Abbreviations

BM	British Museum
DCM	Dorset County Museum
RCHME	Royal Commission on the Historical Monuments of England

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