SS3
Artefacts

SS3.1 Introduction

Frances Healy

Analysis of the artefacts took place from the late 1980s to the early 2000s. Since work at Redlands Farm was initially independent of the Raunds Area Project, finds from there have been analysed and reported on by different specialists than the finds from Irthlingborough, Stanwick and West Cotton. No attempt has been made to combine reports written by different authors from different perspectives at different times. Torben Bjarke Ballin and David Tomalin do, however, provide overviews of all the lithic and ceramic evidence (SS3.7.7, SS3.8.4). The extended time scale has also meant that responsibility for some aspects of the work has passed from one person to another. This is the case for the lithics from Irthlingborough, Stanwick and West Cotton, which were originally to be analysed by Jon Humble, like the lithics from the fieldwalking survey (Humble 2006). Increased and diversified professional commitments necessitated the delegation of the recording to Peter Makey, and both the final stages of recording and the composition of the report presented here were the work of Torben Bjarke Ballin.

The lapse of time has meant that the recording systems employed stemmed from the experience of the 1980s, and were designed to answer the questions of that decade rather than of subsequent ones. It has positive aspects too, notably the advance in techniques of lipid residue analysis which is reflected in the many times more informative results obtained from a second round of sampling undertaken some time after the first (Copley *et al* SS3.8.2), and developments in microscopy and spectrometry which have made it possible for Mary Davis to source the jet objects from Barrows 1 and 6 (SS3.4.2).

The total assemblage contributes to the project in many ways. Torben Bjarke Ballin's and David Tomalin's analysis of the Mesolithic and earliest Neolithic material clarifies the location and character of settlement in the valley bottom before the monuments began to be built. Maisie Taylor and Phillipa Bradley provide insights into the construction of the Long Barrow through their analyses of the waterlogged woodworking debris from the ditches and the axehead used to generate it. The combined skills of Torben Bjarke Ballin, Alistair Barclay, Phillipa Bradley, Mary Davis, Richard Evershed and his team, Andrew Foxon, Roger Grace, Stuart Needham, Ian Shepherd, David Tomalin and David Williams have been brought to bear on the grave goods from the early Bronze Age barrows. As a result it is possible to sketch a web of exchange, past use, curation and symbolism, which can reflect only a tiny part of the associations with which the buried objects were imbued for those who deposited them.

Some of the subsequent history of the monuments can also be read from the artefacts. Torben Bjarke Ballin shows how some of the barrows became flint-knapping sites within the pastoral landscape of the later second millennium cal BC, while Angela Wardle's identification of Roman weapons from Barrows 1 and 3 suggests that in the first and second centuries AD, when the mounds stood a little way outside a settlement, they were the sites of small-scale ritual perhaps related to the more substantial conversion of Barrow 5, which was inside the settlement, into a shrine used throughout the Roman period.

SS3.2 Artefact conservation

The late Glynis Edwards

Investigative conservation and some reconstruction were carried out on a variety of materials to enable examination by specialists and illustration for the publication.

Most of the material requiring conservation was pottery. Some of the vessels had been lifted in soil blocks, making it possible to excavate them carefully in the laboratory and allow the sherds to dry slowly before handling them. Excavation of the surviving

upper part of the inverted Collared Urn from F47171 in Barrow 5 (AOR 55241, Fig SS3.82: P90) revealed a flint knife tucked under the base of the collar (AOR 55112; Fig SS3.1). No consolidation of pottery was undertaken, as this would have changed the colour of the fabrics, but to make the joins more secure the broken edges were consolidated with a dilute solution of HMG (a cellulose nitrate adhesive) before reconstruction using the same adhesive. AJK (Alvar, Jute, Kaolin), a synthetic resin dough, was used to fill gaps to provide strength.

The Beakers from the primary burials in Barrows 1 and 6 were almost complete, and these were fully reconstructed, as creating just a profile would make any future reconstruction difficult and possibly endanger the fragile material (AOR 35135, Fig SS3.81: P85; SF 4573, Fig SS3.80: P84). Sarah Paynter analysed the white infill of the impressed decoration on the Beaker form Barrow 1 using X-ray fluorescence spectrometry, detecting much higher concentrations of calcium in the infill than in the calcareous clay of the pot itself and concluding that the infill is likely to be calcium carbonate.

Other material, such as stone and bone, required very little work. Soil was removed from the stone artefacts using a sable brush, and from the polished surfaces of the bone using cotton wool swabs moistened with distilled water. More stubborn deposits were removed using hand tools. The amber ring from Barrow 1 (AOR 34867, Fig SS3.7) was in a very friable state and was not treated, because amber, being a resin, might be affected by solvents, and methods using irreversible impregnation with materials such as waxes would affect later analysis. The ring has been packed in a plastic box, buffered and protected with acid free tissue, and should be handled as little as possible.

No treatment has been carried out on the jet buttons from Barrow 1 (AORs 34861–4, 34870, Fig SS3.6) and Barrow 6 (SF 4571, Fig SS3.7). Those from Barrow 1 developed cracks soon after excavation, and these would be likely to open up again on drying. Jet and shale have sometimes been treated using impregnation with polyethylene glycol (PEG) (Oddy and Lane 1976). This is a lengthy process and success cannot be guaranteed in all cases. Other research has been carried out using freeze-drying after impregnation with PEG (Page and Greenwood 1986). In any case, whatever method is chosen, it may be wise to keep the buttons under pressure to try to prevent the cracks opening again. They are still in cold storage in boxes padded with polyether foam. Mary Davis reports on her sourcing of these artefacts in SS3.4.2.

The bronze dagger from F30017 in Barrow 1 (AOR 15280, Figs SS3.2–3) was in

Figure SS3.1
Barrow 5.
Flint knife or dagger in situ *against the exterior of Collared Urn AOR 55241 from F47171. Found during excavation of the urn in the laboratory.*
(Photo English Heritage)

a fragile condition, particularly at the edges. The blade was covered with a layer of soil overlying a smooth patina with some pitting. The corrosion at the hilt end was more uneven and traces of the horn hilt were preserved there. The rivets also have remains of horn. The soil on the blade was carefully removed using sharp scalpel blades, and the patina could be seen to follow striations running the length of the blade. There was no trace of an organic sheath, even on the underside where there was a thicker coating of soil which would suggest that none was present. The dagger is stored in a sealed polyethylene box with silica gel to maintain a low relative humidity.

SS3.3 Metalwork

SS3.3.1 The dagger and pommel from Barrow 1

Stuart Needham

Context 30018. Cremation deposit with bronze blade, burnt fragmentary bone pommel and burnt fragmented bone pin all found within plough-truncated urn (Fig SS1.118).

The blade (AOR 15280, AML 8611014)

Dimensions
Blade – extant length 131.5mm; extant width at butt 40.5mm; maximum thickness (no corrosion products) 2.5mm.

Rivet 1 – length 11.2mm; intact axial dimensions of heads 3.3 and 3.8mm; minimum diameter of shank 3.3mm.

Rivet 2 – length 11.0mm; intact axial dimensions of heads 3.1 and 3.3mm; minimum diameter of shank 3.1mm.

Total weight 44.9g

Condition
The tip is missing and the whole of the blade outline is very serrated owing to corrosion damage; some tiny stretches are extremely thin and must be close to the original cutting edges. The butt is likewise badly damaged, such that its original shape can no longer be ascertained. Two rivets were recovered, one corrosion-locked into position, the other detached from a complementary emplacement surviving only as a notch. The extent of outline loss precludes the survival of any further rivet emplacements set outside these two, but no additional rivets were retrieved despite intensive sieving of the surrounding soil. Moreover, the greater part of the hilt (perhaps excluding the pommel – see below) seems to have been *in situ*, since remnants of hilt material, identified by Glynis Edwards as horn, are present on the surface of the hilt-plate (SS3.2). Differential surface condition suggests that the hilt terminated in a broad concave sweep at the centre, but on one face there is a distinct suggestion of this turning down the blade where the hilt would have overlain the edge furrows, thus forming a broad omega hilt-line (Fig SS3.2).

Large parts of the blade faces retain an intact green patina; patches, however, are covered with textured corrosion products or, alternatively, have flaked to an underlying bright-metal surface. Numerous very fine striations from grinding/polishing run along the blade, both on the mid-blade and edge bevels.

Form
The blade has a broad, essentially flat, mid-blade flanked on either side by a shallow furrow between 3.0 and 5.5mm wide. These 'hollow-ground' furrows are straight and evidently ran parallel to the cutting edges, being separated by an edge bevel at least 3.5mm wide. The mid-blade tapered to a point immediately beyond the lower break and it is unlikely that the tip would have been more than some 15mm longer than survives, giving a total length of around 145 mm.

The rivets have neat square sections throughout their lengths. 'Closure' of their heads has resulted in just minimal expansion, or in places none. Clear grinding marks traverse the flat heads.

Metal composition
Dr David Dungworth has kindly analysed the blade and a rivet by EDXRF analysis. This does not give quantitative results, but does confirm that both are of bronze.

The pommel (AOR 57001)

Dimensions
Extant length 21.5mm; reconstructed original length 25–26mm; depth 6.9mm; extant breadth 5.4mm; reconstructed original width 11–12mm; perforation diameters 1.6 x 1.8mm. The reconstructed dimensions may be underestimates due to shrinkage during cremation (McKinley and Bond 2001, 282).

Condition
Approximately half of the original pommel survives, having split longitudinally along the top. One end is also missing and the other is

slightly abraded; there is a small flake detached from the extant side of the mouth. It is made from antler, rather than bone, and is thoroughly burnt and a little distorted, having gone through the cremation process (Jacqui Watson pers comm).

Form

The pommel may be reconstructed as having an elliptical plan. The top is very slightly dished, possibly due to heat distortion, whereas the bottom edge is straight, from which the sides expand rapidly to the upper lip. A socket is cut into the underside; it would have been thin in side profile, while in long profile, visible due to the longitudinal fracture, it has parallel sides and a crenellated end, the latter presumably an accident of the mortising method in a confined space. Two rivet- or peg-holes are drilled through the extant side and would have been matched by an opposing pair. There was, however, no trace of the securing pegs themselves.

Discussion

In general terms, the blade may be classified as a flat dagger, having no significant swelling of the mid-blade. A number of idiosyncratic features, however, preclude attribution to any established type. The fairly long triangular shape is present within the flat dagger series, amongst Gerloff's types Butterwick and Masterton (1975), but also in the succeeding Armorico-British 'A' weapons, which are still

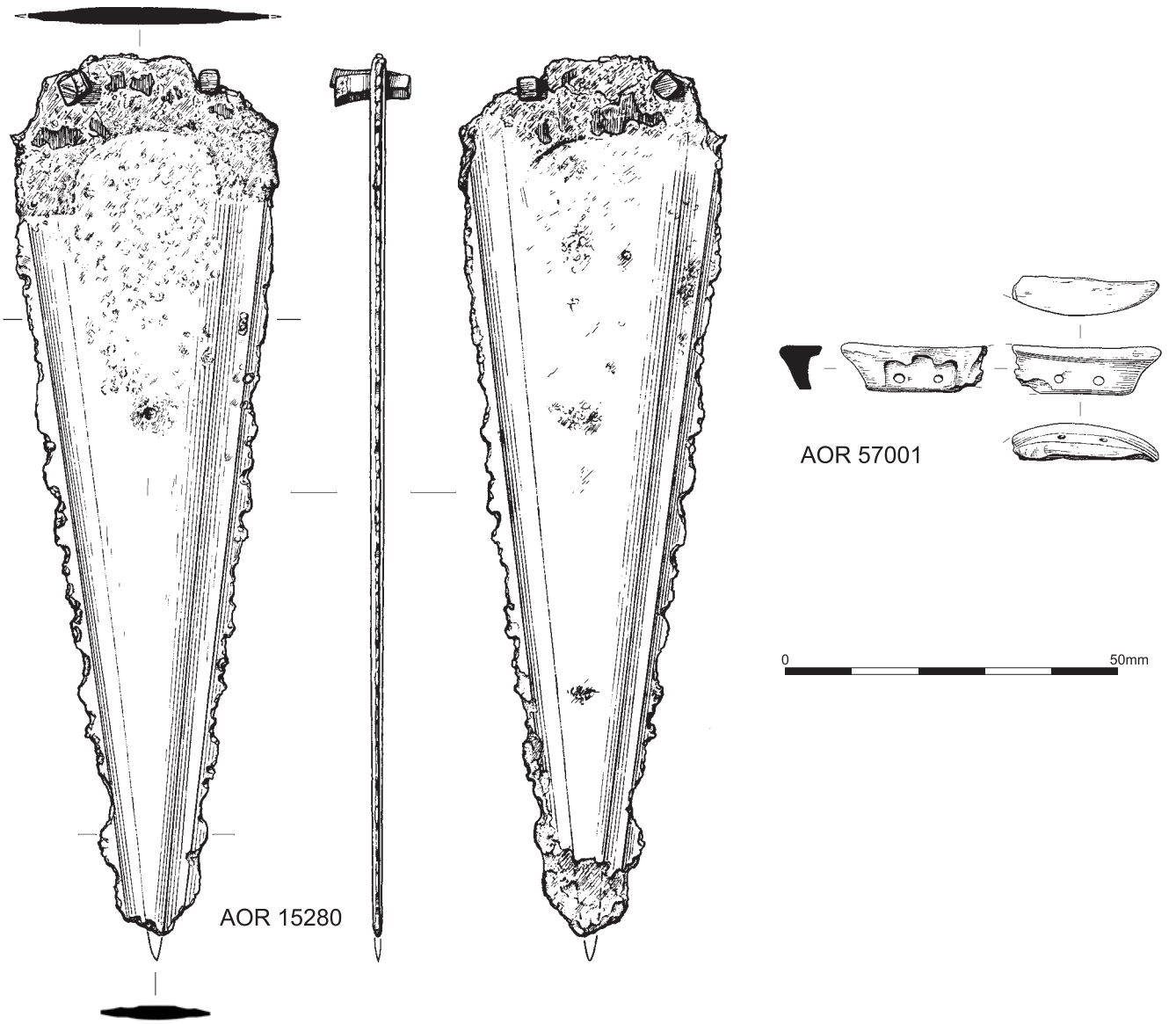


Figure SS3.2
Barrow 1.
The dagger and pommel from cremation F30017.

essentially flat bladed. Armorico-British daggers, however, are universally furnished with fine punched grooves, usually as multiple sets. The Irthlingborough blade has instead broad furrows inset from the edges. Such furrows recur throughout the early Bronze Age dagger series, sometimes in combination with groove sets. Furrows alone, however, are a feature of a few of the tanged copper daggers (Gerloff 1975, nos 1–5, 12) and occasional later weapons, sometimes as multiple furrows (ibid, nos 107, 120, 207–210), and are not in themselves diagnostic. They can also occur on a few of the shorter blades which are classified as knife-daggers (ibid, nos 316, 320–324). It is also worth mentioning the Breton dagger from Tossen Rugouec in this respect (Briard 1984, 86, fig 52; Needham 2000a, fig 5.4), from a grave group datable to an early stage in the Armorican Tumulus series.

What most distinguishes the Irthlingborough blade from the early riveted flat dagger series (Butterwick/Milston/Masterton) are the rivets. The square rivets are quite exceptional, and contrast with the generally thick 'plug' rivets of the early series. Even the later rivets on Armorico-British daggers, now of slender form, are typically circular in section. Rivet disposition may also be noteworthy; although we cannot be sure that the full set is present, it seems most likely that there were either two (as extant) or four. The classic arrangement on early flat daggers was an arc of three rivets, or, in type Milston, more than three. The presence of just two rivets set in the hilt-plate may sometimes be the result of one or more others being set higher up the hilt, thus missing the butt. This seems to be the case, for example, for the Helperthorpe dagger (Gerloff 1975, no 79) and others with clear notches at the centre of the butt. In other cases, however, even numbers of rivets may be original and it is noteworthy that some at least are late within the 'early' series. The Parwich example (ibid, no 54) is datable by its association to the Aylesford/Mile Cross stage, *c* 20th century BC. Indeed, the two daggers from the Aylesford context itself have even numbers of rivets, four and apparently six (ibid, nos 86 and 103). The Gristhorpe blade is much shorter and might be better grouped with knife-daggers, a class which frequently has only two rivets; nevertheless, its associated pommel points to a date after about 2000 BC (see further below), but probably not much later to judge from the radiocarbon determination of 2300–1650 cal BC (3590±100 BP; HAR-4424). The somewhat anomalous Armorico-British dagger from St Andrews, with blade furrows rather than grooving, is also unusual in having just four rivet holes (ibid, no 120), whereas on flat blades within the Armorico-British series (type A) a row of six slender rivets was standard.

It can therefore be posited that there was a transition during which less standardised dagger forms were emerging from the established early flat series around the

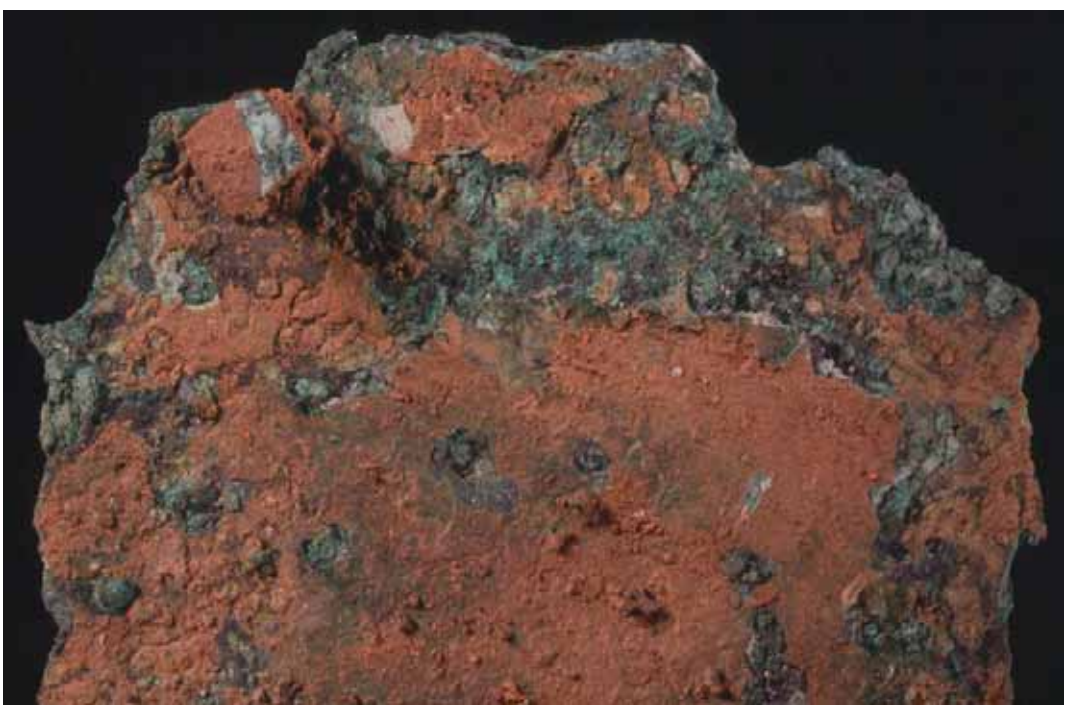


Figure SS3.3
Barrow 1.
The hilt end of the dagger from cremation F30017.
(Photo English Heritage)

Table SS3.1. Long oval pommels with pronounced lips (Fig SS3.4)

Provenance	*Burial rite*	*Mounting technique*	*Max. width*	*Associations*	*Hardaker group*	*References*
Gristhorpe, Yorkshire TA 0983	Crouched inhumation	Slotted	52mm	Bronze knife-dagger, bone pin, 3 flint flakes, horn ring, wooden instrument, bark vessel, all in tree-trunk coffin; 3590 ± 100 BP (HAR-4424) on charred branches	I	Hardaker 1974, no 6 Gerloff 1975, no 55
Galley Low, Derbyshire SK 2156	Inhumed bones	Slotted	32.5mm	Food Vessel, flint flake, antler tine rod, ironstone	II	Hardaker 1974, no 8 Vine 1982, 184–5, figs 214, 574, 997, 1008
Beech Hill House, Coupar, Perth and Kinross NO 2139	Cremation	Slotted	37.5mm	Bone toggle, stone ball; 3950 ± 70 BP (GU-2740) on sieved charcoal; 3665±45 BP (GrA-19426) on cremated bone	-	Stevenson 1995
Irthlingborough, Northants SP 9671	Cremation	Slotted	>21.5mm	Bronze dagger, Collared Urn, bone pin; 3520±40 BP (GrA-22378) on cremated bone	-	This report
Bedd Branwen 'B', Anglesey 3684SH	Cremation	Slotted	35mm	Food Vessel/Collared Urn hybrid (pot B), sandstone 'hone'; 3257 ± 80 BP (BM-455) on charcoal	II	Lynch 1971, 31–2 Hardaker 1974, no 13
Wilmslow, Cheshire SJ 8480	Cremation	Slotted	35mm	Collared Urn	II	Hardaker 1974, no 12 Longworth 1984, no 148
Merddyn, Anglesey SH 5278	Cremation	Slotted	33mm	Food Vessel/Collared Urn hybrid	II	Hardaker 1974, no 10 Longworth 1984, no 2148
Bwlch y Rhiw, Caernarvonshire SH 2227	Cremation	Slotted	>27mm	Collared Urn, bronze awl	II	Hardaker 1974, no 11 Savory 1980, no 341 Longworth 1984, no 2151
Radwell I, Bedfordshire TL 0157	Cremation	Slotted	24mm	Collared Urn, bronze awl, a pendant a button and numerous beads of jet and amber	-	Hall & Woodward 1977 Longworth 1984, no 18
Winterbourne Stoke G66, Wiltshire SU 0741	Cremation	Slotted; + top pegs	34mm	Bronze knife-dagger, Collared Urn, 'black beads'	II a	Annable & Simpson 1964, no 530 Hardaker 1974, no 16 Longworth 1984, no 1737
Bedd Branwen 'H', Anglesey SH 3684	Cremation	Slotted; + top pegs	30mm	Collared Urn (pot H), beads — 6 amber, 4 shale-like and 1 bone; 3520±30 BP (GrA-19652/20156/20176) on cremated bone	II a	Lynch 1971, 30–1 Hardaker 1974, no 14 Longworth 1984, no 2112 Sheridan and Davis 1998, 160
Marian Bach, Flintshire SJ 0777	Cremation	Through-slotted	28.5mm	Collared Urn	II a	Hardaker 1974, no 15 Savory 1980, no 340 Longworth 1984, no 2015

twentieth century BC, with a trend towards having even numbers of rivets, a trend which became consolidated with the full adoption in Britain of the Armorico-British style from about 1900 BC onwards. This 'transitional' phase also involved another significant modification: the grafting of midribs onto dagger blades, formerly a feature appropriate to halberds (Needham 2000b). Bearing in mind the discovery of an early Armorican dagger, of Quimperlé type (*c* 2100–1900 BC), at Lockington, Leicestershire, it would be a mistake to view these stages too rigidly, rather more as a process. Even so, the Irthlingborough dagger fits best in the context of this transition, a point reinforced by the vestige of a broad omega hilt-line, and would be best dated around the twentieth century BC on archaeological grounds. The calibrated radiocarbon measurement on the associated cremation is not inconsistent with this but is centred a little later, in the nineteenth century BC, calibrating to 1950–1730 cal BC (3520±40 BP; GrA-22378).

The pommel from Irthlingborough belongs to what is now the most common surviving type. It is broadly centred on Hardaker's group II/IIa (1974), but the present writer sees advantage to some redefinition. Rather than attempt to combine in a complex manner the quite distinct attributes of mounting method and style, these are best classified separately. Each will have different interpretative connotations. Style takes account only of the outward morphology of the pommel while in position atop the hilt;

this is what would have been visible during its use-life. Mounting method is important in assessing the competition between persistence of tradition and deviation to solve the problem of attachment 'better'. It may also, of course, have some bearing on the finer detail of outward appearance, such as the positions of peg heads, or colour-contrast arrangements.

The distinctive style of the Irthlingborough pommel – characterised by a long oval shape in plan and a pronounced expansion to the lip in elevation – is known on twelve finds (Table SS3.1; Fig SS3.4). The technology of attachment is in fact rather uniform within this group: eleven are socketed with side pegs ('trough' form), two being variant in having the addition of top pegs; on the twelfth, the socket is taken right through ('through-slotted') so that the tenon from the hilt would have appeared flush with the top of the pommel, or even protruded beyond. Although the grouping defined here slightly cross-cuts that of Hardaker, it continues to show the distributional emphasis that he found for his group II/IIa (1974, 49). The concentration of extant finds lies in a zone from northern Wales to the English east Midlands, as far north as the Peak District and Yorkshire, and just a single example from Wessex – this last remarkable given the intensity of barrow digging there and its benevolent environment for the preservation of bone. One of the more recent finds, from Beech Hill House, Perth and Kinross, is however, a salutary reminder of how fickle these distributions can be.

Associations for this style of pommel are, with just two exceptions, with cremation burials. In nine cases urn accompaniments are recorded, seven having been Collared Urns, almost all of Longworth's Primary series (1984), while two are hybrids with features of both Collared Urns and Food Vessel Urns. One further pot, from Galley Low, Derbyshire, is classified as a Food Vessel (Vine 1982, 184–5), but again shows some influence from Collared Urns. In eight of the burial deposits there were also sundry other objects, usually of an ornamental character, and only three contained a bronze blade. Aside from the Irthlingborough dagger, the other two were knife-daggers. Hardaker recognised that the lipped pommels were later than straighter forms (1974, 41), but had an insecure chronological framework as a template. Now with a better-understood chronology for the period, the associations point to a date range spanning periods 3 and 4, as defined by Needham (1996), *c* 2050–1500 BC. One of the knife-dagger associated

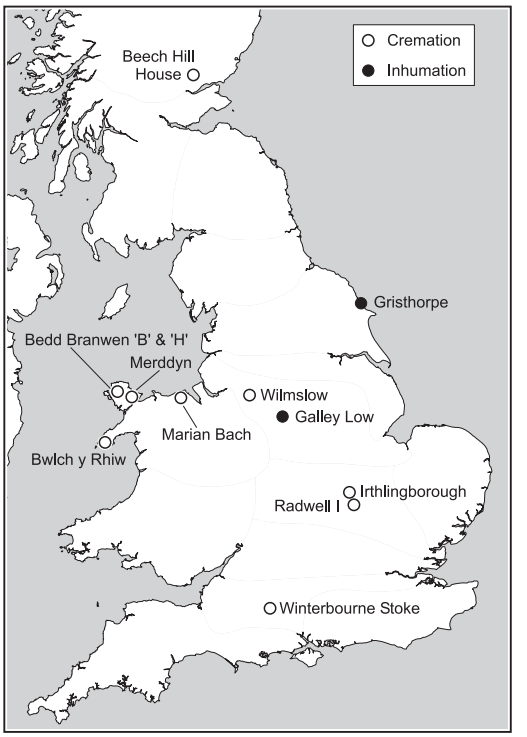


Figure SS3.4
Distribution of long oval pommels with pronounced lips

finds is that from Gristhorpe, East Yorkshire, already mentioned above as dating early within this period. This assumes further significance, since it is the one definite inhumation burial (a crouched inhumation in a log coffin).

In addition to Gristhorpe, three further burials within this group have been radiocarbon-dated. Charcoal from the deposit of cremated bones around the mouth of inverted urn 'B' at Bedd Branwen was dated to 3257±80 BP (BM-455; Lynch 1971), indicating a date not earlier than 1740 BC (2-sigma calibration 1740–1380 cal BC; 1-sigma 1620–1430 cal BC), although this is a very elderly determination. Cremated bone from the burials at Bedd Branwen 'H' and Beech Hill House has been dated, giving respectively, at 2-sigma, 1920–1740 cal BC (3520±30 BP; GrA-19652/20156/20176 – Alison Sheridan pers comm) and 2200–1910 cal BC (3665±45 BP; GrA-19426 – Jan Lanting pers comm.). A much earlier date from Beech Hill House (Table SS3.1) was obtained on wet-sieved charcoal which may have been residual in the burial pit.

The absence of blades from a number of the pommel-containing graves is a phenomenon that has been observed by Hardaker in his group II/IIa (1974, 49). The phenomenon is, again, almost exclusive to the redefined grouping here – only two pommels of other type are known to have been divorced from

their blades. Both have squat oval plans, but still feature pronounced lips. One comes from the core zone, at Narrowdale Hill, Staffordshire, and also conforms to the group under discussion in accompanying an urned cremation. The other, from Ridgeway G8, Dorset, was apparently not directly associated with a burial, but was instead in the body of the cairn at the heart of a large barrow (Drew and Piggott 1936b). It was clearly later than the unaccompanied primary burial in a cist set in a grave, but was most probably deposited earlier than two burials set near the top of the cairn. One of these secondary burials yielded the dagger that Hardaker has mistakenly associated with the pommel (1974, no 17). It would appear that a particular tradition emerged after about 2000 BC in which the bronze blades were deliberately excluded from the grave, the dagger or knife instead being represented just by the pommel. Hardaker suggested that the reason might be the desire to conserve valuable metal (ibid, 49).

The very small size of the Barrow 1 pommel, even allowing for the loss of one finial (but not shrinkage during cremation) makes it one of the smallest pommels yet known, and it may seem incongruous as a fitting for the dagger blade. Looking at the broader pattern of associations, among early pommel types (pre-2000 BC), all (with one possible exception) were associated with daggers and all but one fell within the width range 40–52mm. Later pommel types, including the group under discussion, were associated in five cases with daggers, in five with knife-daggers. In general pommel widths do reflect the class of blade associated (45–68mm for daggers; 22–35mm for knife-daggers), but. in addition to Barrow 1, one other find bucks the trend: the short blade at Gristhorpe had a wide pommel (52mm), the two components in this case certainly belonging together (Hardaker, however, suggested that the pommel might have been a later substitution on a long-lived blade – 1974, 10). It may be significant that these two cross-cutting associations occur early within the defined 'late' pommel period – ie around 20th century BC. However, given the size correlation of the majority, it does seem likely that most of the current group of pommels, all having widths under 38mm, would have furnished knife-daggers, as surmised by Hardaker (1974, 49).

One possibility is that the pommel does not in fact belong with the dagger and that the two elements represent two different implements. This view could be supported by a difference in condition (one well burnt, the other showing no signs of re-heating), which is extremely unlikely to have occurred if they were still attached to one another during the cremation rites. It might also tie in with the evidence that two individuals were identifiable among the cremated bones (Mays SS4.7.4); however, these individuals were obviously both subjected to the cremation process. Another possible explanation is that the separation of the pommel from the rest of the dagger and their different involvement in the mortuary rites was connected with the practice of excluding the metal blade from the grave which was so frequent with this style of pommel.

SS3.3.2 The basket 'earring' from the Long Barrow

Philippa Bradley with a contribution by Anna Cselik

A copper alloy basket 'earring' (sf 348; Figs SS3.5–6) was found on the lower right-hand side of the skull of skeleton 131 (Fig SS1.55), corresponding to a circular area of green staining which was recorded on the endocranial surface of the right parietal. The object is eroded and worn and organic remains were present.

Copper and copper alloy basket 'earrings' have been found in a number of different contexts, which are summarised in Table SS3.2. They have occurred either singly, as here, or more commonly in pairs, for example, at Cowlam, Yorkshire (Kinnes and Longworth 1985, 58, pl 58: 8–9), Tallington, Lincolnshire (Davey 1973, 98) and in the Migdale hoard (Anderson 1901, 267; Clarke *et al* 1985, 111, ill 4.36, 302–3). The disparity may be due to poor preservation or recovery, but occasionally green staining on the skull indicates that originally a pair of 'earrings' was placed in the burial, for example at Stakor Hill, Derbyshire both mastoid bones were stained green and two small fragments of bent tin bronze were recovered (Bateman 1861, 80). Interestingly only one of the parietal bones at Stanwick was stained, perhaps suggesting that a single 'earring' was deposited with the burial.

Gold basket 'earrings' have also been recovered from funerary contexts and are the oldest known metalwork in Britain (Taylor 1985, 187). The associations and available radiocarbon determinations for copper or copper alloy examples would suggest a slightly later date (May 1976, 68–71; Taylor

1985, 187; Sherratt 1986, 62; Needham 1999, 186, 189, table 7.8). European parallels for these objects in gold, silver and copper or tin bronze are well attested (Gimbutas 1965, 39, 44; Taylor 1979, 230).

The function of these objects has been debated at length (Sherratt 1986, 61–6; 1987, 119; Russel 1990, 164–6; Barclay and Wallis 1999). Sherratt argues that they were hair ornaments related to the central European *Noppenringe* and *Lockenringe* (1986, 62; 1987, 119). However, microscopic examination of the Chilbolton 'earrings' suggested that they had indeed been worn in pierced ears (Russell 1990, 166). The presence of preserved organic material on the Stanwick 'earring' may provide further evidence relating to the function of this type of ornament. The identification of human hair from the root area supports the hair ornament argument. The hair may, however, have become attached to the object *post mortem*, although this does seem a little unlikely.

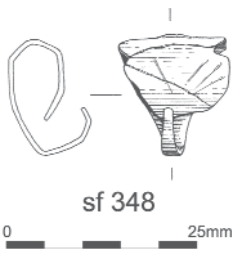


Figure SS3.5 (above) Long Barrow. F131, basket 'earring'.

Figure SS3.6 (left) Long Barrow. Basket 'earring'. (Photo Michael Dudley)

Table SS3.2. Copper alloy basket 'earrings'

Site	*Associations*	*References*
Tallington, Lincolnshire: grave 4, site 17	Pair of bronze earrings, a Beaker, a flint knife accompanying two adults and two or three children beneath a round barrow	Davey 1973, 98, 118, fig 44, 424–425 Simpson 1976, fig 7, 232–3
Thoresway, Lincolnshire: barrow 2	A single bronze earring, a few sherds of Beaker pottery, a flint scraper from round barrow; a shaft had been sunk through the centre of the mound and removed the primary burial	Whitwell and Wilson 1968, 21, fig I: 6 Davey 1973, 98–99 fig 25, 232
Stakor Hill, Buxton, Derbyshire	Female burial with Beaker, worked flint and two fragments of tin bronze bent in the middle, both mastoid bones stained green	Bateman 1861, 80
Redlands Farm, Stanwick, Northamptonshire	Adult female crouched inhumation inserted into the top of long barrow associated with a ?shale armlet, a fragmentary fingernail and comb-decorated Beaker and two flint flakes. Fragments from another adult and a subadult were also present.	This report
Cowlam (IX), Yorkshire: burial 6	Adult ?female crouched inhumation within round barrow, a pair of bronze earrings at temporals, jet button fragment in grave fill behind head and potsherds within grave fill	Kinnes and Longworth 1985, 58, pl 58:8–9
Goodmanham, Yorkshire: burial 1	Adult female crouched inhumation in round barrow, accompanied by a pair of decorated bronze earrings, a bronze awl (Thomas type 1) and a food vessel	Kinnes and Longworth 1985, 87–8, pl 115: 2–3
Garton Slack, Yorkshire: C53	Two inhumations in round barrow, one individual was associated with a Yorkshire Vase food vessel, two circular, decorated bronze earrings, a ribbed jet object, an ammonite and some ochre. Earrings found either side of skull and interpreted as having been worn in ears at time of internment	Mortimer 1905, 218, figs 558–9 Clarke *et al* 1985, 204
Migdale, Sutherland: metalwork hoard	Pair of bronze basket earrings associated with numerous pieces of bronze including a flat axe, tubular beads, bar armlets and jet/shale buttons	Anderson 1901, 267, 272, fig 5 Clarke *et al* 1985, 111, ill 4.36, 302–3
Possible 'earrings'		
Sale's Lot, Gloucestershire: Beaker burial	Small fragments of embossed sheet copper or bronze adhering to bone of an extended inhumation inserted into the barrow mound and associated with Bell Beaker. The bronze may represent fragments of basket-type earring but may also be another type of ornament	O'Neil 1966, 10, 31
Balnabraid, Kintyre: cist 5	Two fragments of rib-decorated bronze may be 'earrings' of basket-type. These were found in the cist associated with a cremation urn, a flint flake, a bone toggle and two strips of bronze	Coles 1969, 52, fig 39: no 20
Traprain Law, East Lothian	Possible fragment of early Bronze Age 'earring' of basket-type, the majority of the bronzework from the site is of late Bronze Age date	Coles 1969, 52

Mineral-preserved fibres on the 'earring'

Anna Cselik

The outer surface of the object is covered in fine fibres with no spin or weave which, from the position of the artefact in the burial, would appear to be the remains of human hair Due to the delicate nature of the remains, a sample could not be taken in the usual way, that is, with a scalpel or pinvice under magnification. The only chance seemed to be if a mould could be made of the impression. This mould could then be prepared as a sample for examination with a Scanning Electron Microscope (SEM). Colin Slack was requested to make the mould. Xantopren L, a blue silicon quick-setting dental impression material, was used.

When viewed in the SEM, only one area of scale pattern could be seen. This had smooth, near scale margins and an irregular mosaic scale pattern. The scales may be worn and the micrograph does show extensive cracking. But if, nonetheless, it is in relatively good condition, then the scale pattern is consistent with that of human hair at the root region.

SS3.3.3 Iron objects from Barrows 1 and 3

Angela Wardle

Barrow 1

Miscellaneous iron objects came from various later and disturbed contexts in the barrow (SS1.12). One was a knife fragment from plough-disturbed alluvium and mound material; another was a spearhead from outside the outer ditch.

AOR 2523 (AML 8611002) Context 20003. Alluvium, possibly with plough-disturbed mound material, in 1985 evaluation trench, containing struck flint, animal bone and Roman pottery, mainly of the first century AD.

Knife. Incomplete; length 56mm. Fragment of blade, with part of tang seen on x-ray. The object has fractured into several pieces. Not possible to date.

AOR 13316 (AML 8611034) Context 30001. Alluvium covering outer ditch and area around barrow, containing struck flint, animal bone, and Iron Age, Roman and later pottery, most of it of the first century AD. The spearhead was 5m outside the south side of the outer ditch (Fig SS1.122). The original object record describes it as 'Found standing upright cutting through silt layer [30001] into the natural gravel'. It may, in other words, have been in place before the Saxon alluvium was deposited around it.

Socketed spearhead. Almost complete; length (overall) 325mm; length (of blade) 260mm; width (max width of blade) 60mm; width of socket 17.5mm.

The closed cylindrical socket is broken at the lower end. The blade is leaf-shaped, the widest point near the base of the blade, with a prominent midrib, more pronounced on one side, but there is considerable corrosion on that side. The blade tapers regularly to the point, which is damaged and the whole object is flaking badly.

This appears to be a Roman form, similar to the Group IV spears in the British Museum's Durden Collection discussed by Manning (1985, 167), which date from the mid first century AD. In common with the majority of Roman spearheads with blades of similar length, the present example is a little wider than the examples from Hod Hill, with an outline more akin to a laurel leaf. Manning cites numerous continental parallels, chiefly from the German frontier forts and Newstead. The form of the socket appears not to be diagnostic. Its function was to secure the blade, and it was therefore not subject to the changes in design seen in blades (ibid, 161). The problem with the dating of Roman spears is, as Bishop and Coulston state (1993, 123), that spears of later periods did not differ greatly from earlier examples. The present example, which from its length must fall into the category of throwing spears or lances, appears very similar to an (incomplete) example from Hadrian's Wall (Turret 10a, Bishop and Coulston 1993, 110, fig 68: 1), with closed socket and pronounced midrib. On balance a first/second century date is probable.

Barrow 3

AORs 36305 and 36306 (AML 8702042) Context 30651. Third hand-excavated spit of disturbed and eroded mound material. The sword lay just outside the ditch to the south-west of the barrow, in two fragments, the lower part overlying the upper and slightly oblique to it (Figs SS1.140–1).

Sword. Incomplete; length 440 mm; width (maximum) 42mm. Parallel-sided blade, the full length preserved, tapering for the last third of its length to a point. The straight top edge of the blade is burred, but the junction with the missing tang is lost.

The length is suitable for a Roman short sword (gladius), but, although parallel-sided, the point is longer than found on the Pompeii type (Bishop and Coulston 1993, 71). It appears to be similar to examples from Camulodunum (Hawkes and Hull 1947, 340, pl CIV: 3, 4), which as Manning points out (1985, 151), although identified as gladii, are narrower than the classic form seen at Newstead (ibid pl XXII: top). There was certainly some variation in the basic forms and it is probable that this example dates to the late first or second century.

SS3.4 Jet, shale and amber

SS3.4.1 The Jet buttons and amber ring from Barrows 1 and 6

The late Ian A G Shepherd

Completed March 2001

All the objects were examined using a x8 hand lens and measured with Vernier callipers; certain features were also checked using a Wild microscope at *c* x20. They are illustrated in Figure SS3.7. Their positions in the burials in which they were found are illustrated in Figures 4.4 and 4.6.

Barrow 1 (primary burial)

Jet

Button 34861. A large conical button in very dense, high quality, black jet, altogether more evenly grained and showing less microscopic laminar cracking than the other four. It measures 25.1mm in diameter and 26mm transversely and stands 9.2mm tall. The upper surface is undecorated and very highly polished. The apex is very regular but very slightly rounded (as is usual in jet). Approximately 2mm below the apex is a small indentation which, under a Wild x20 microscope, looks like a natural flaw, as its edges are irregular and it is pitted in profile. Alternatively, this unevenness may simply be the result of the removal of spall; it is unlikely to be the beginnings of a scheme of decoration that was never executed. The upper surface of the button shows slight burnishing marks (under magnification) and the odd, deeper use-scratch.

There is a bevel, from 1.1mm to 2mm in height, inclined quite steeply in towards the base. Some manufacturing striations are visible on this but most have worn away. The variation in the height of the bevel is caused by an unevenness of the base on which there is a flake scar between the outer edge of one perforation and the circumference of the button.

The shaping striations on the base are very clear and, in the centre, between the perforations, unworn. This is largely because the base itself is uneven and bears several traces of flakes caused by the removal of spall. The wear has occurred around the edges which are, relatively speaking, slightly raised in comparison with the centre of the button. The striations have two principal orientations, but those of the subsidiary set are very much fainter than those in the centre.

The perforations are 5.8mm long by 5mm wide and 6.5mm long by 5.1mm across. One of the borings is slightly curved on its outer face, indicating a change in direction during the boring process.

There is a discernible softening of the inner edges of the central membrane but also a slight buffering of all edges of the perforations (seen in the loss of detail on the basal striations where they intersect with the borings). This would suggest that the button had been attached to a garment or other item by a loose thong.

This is large and moderately well-worn button, but one that is by no means in poor condition. It belongs to the large conical series (Shepherd 1973).

Button 34862. A very regular small conical button in moderately good, dense black jet, with one major network of cracks arising from the shaping of the piece at an angle to the grain. It measures 19.1mm in diameter and stands 10mm high. Its profile is compact and the apex is sharp. It is well-polished.

The basal bevel is not particularly regular and bears some striations from its fashioning. In places it is more rounded than the bevels on the other buttons in the assemblage, although, at its most pronounced, it is similar, being angled slightly inwards and relatively flat. The bevel is up to 1.5mm in height.

The base is not particularly well-finished and bears two main sets of deep striations as well as a subsidiary set of minor ones. These all reflect the shaping of the button. There are also several little pits where spall has been removed, particularly near the edge of the base. The perforations are small in relation to the area of the base and measure 4.2mm by 3mm and 4.5mm by 3mm. The latter perforation is elongated by the trace of an initial boring on its outer edge, which was abandoned as it lay too close to the edge. The concentric striations are not very clear

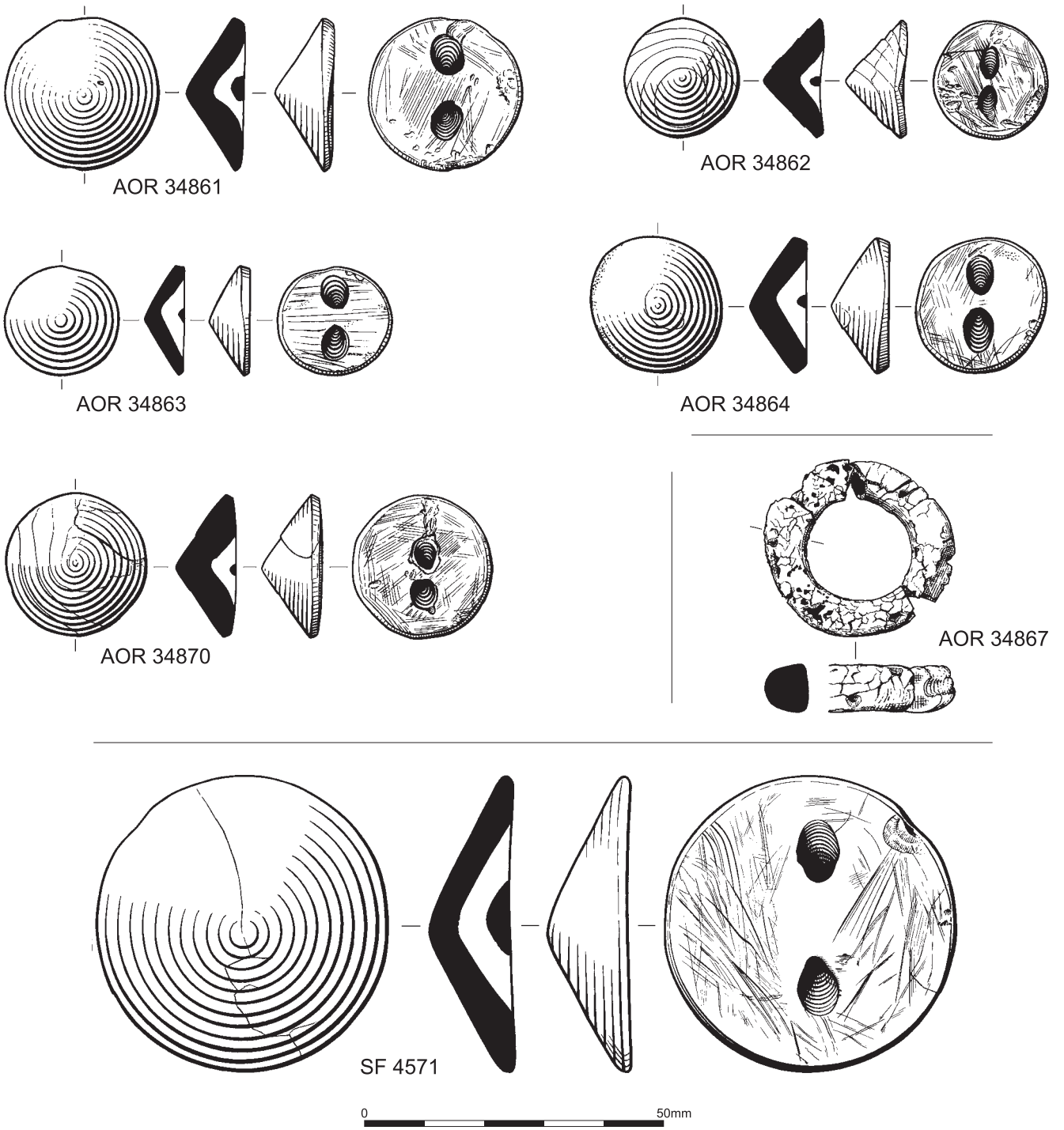


Figure SS3.7
Barrows 1 and 6. Jet buttons and amber ring, 34861–4, 34870 and 34867 from the primary burial in Barrow 1, 4571 from the primary burial in Barrow 6

on the insides of the perforations, being rather worn. This observation, and the very slight wear on the outer edges of the perforations, indicate moderate use of the button prior to deposition.

Button 34863. A subcircular small conical button in dense black jet. It measures 19mm by 18mm transversely (but looks more oval than it measures) and is 7mm in height. There is no obvious fracture in the jet and the upper surface is well-polished with just the occasional burnishing mark still visible. The basal bevel is, however, less well-finished, bearing pronounced striations, and varies from 2.0mm to 1.5mm in height. It is possible that the bevel was cut subsequent to the finishing of the button.

The base has been cut very flat and evenly and bears a single suite of a few parallel striations which have been partially worn-

off. Some traces of spall can still be seen on the base. The borings are wide and have been executed confidently. They both measure 5mm by 4mm and clearly retain the concentric striations from the boring process. A small flake had lifted from the inner edge of one of the perforations, the edges of which have become buffed or smoothed. However the corresponding edge of the membrane on the other perforation shows virtually no wear, leading to the conclusion that this button was scarcely used.

Button 34864. A slightly irregular small conical button in good, dense jet. It is 22mm in diameter and 23mm transversely and stands 10.6mm tall. The upper surface is well-polished and bears virtually no burnishing marks, although there is a slight crack near the apex. There is a pronounced basal bevel which varies in height from 2.1mm to 1.1mm. The bevel is well-finished, with very few shaping striations, and angled inwards only slightly.

The base has been cut very flat and regularly. Traces of two sets of deep striations can be seen faintly on the base; most have been polished off.

The oval borings are open and very neatly executed. They measure 6.8mm in length by 4.1mm transversely and 6mm by 5mm. The inner surfaces have concentric striations from the boring process; in the larger one, two deeper scars can be seen. The angles the perforations make with the base are generally fairly crisp, but some softening or wear is visible on the outer edges of both, and also to a lesser extent on the inner membrane. This would seem to indicate that the button had been fairly loosely attached to a garment or other item for a relatively brief period.

The button has definitely been in use prior to burial, but only for a short time.

Button 34870. Small conical button in dense, black jet with some cracking of upper surface, including one major fracture running from the base to half-way up the button. It is 23.5mm in diameter and 11mm tall, comprising a regular, even cone with some small burnishing marks on the upper surface. There is a slight inturning bevel, up to 1.9mm high, at the base, produced by grinding. The striations caused by the creation of this bevel are reduced by wear.

The base of the button bears some major striations, orientated in three principal directions, which seem to represent the initial shaping of the piece. The full irregularity of the jet pebble was never smoothed-off completely, as is represented by the channel visible on the drawing which may have been created by the removal of spall, the stony inclusion found in raw jet. Two small nicks near to the centre of the base of the button may relate to the same process.

The perforations measure *c* 4.5mm by 3mm and *c* 4mm by 3mm. The larger one is elongated slightly at its inner edge, probably from wear of the attachment string. A small depression visible on the outer edge of the smaller perforation represents an initial attempt at boring the perforation. Concentric striations on the inside surfaces of the perforations indicate that the boring was produced by a hand-held flint point.

The modest amount of wear indicates that this button had definitely been mounted on clothing or other fabric, but not for a great length of time prior to burial. It belongs to the small conical category of V-bored buttons.

Amber

Ring 34867. Recovered in two principal pieces, a D-sectioned ring of heavily oxidised amber, dull brown to buff in colour, with the occasional gleam of unoxidised amber showing through the cracks. It measures approximately 31mm in external diameter and 16mm internally; it is 8mm thick and 7mm wide.

A plain, evenly-cut ring, with no definite protrusions or perforations, barring a small channel, 11mm long and between 3 and 4mm wide, on the outer edge. It is conceivable that this could be one end of a shallow V-perforation.

The inner edge of the ring has been cut very regularly to a flat surface, whereas the outer edge has been carefully shaped into a curve, to produce a D-section. The whole piece has been manufactured very carefully, with great control. Unfortunately, its oxidised state conceals traces of its manufacture.

Barrow 6 (primary burial)

Jet

Button 4571. A substantial large conical button in very high-quality dense black jet. It is extremely regular in profile and has been finished expertly. A slight crack runs up to and over the, gently rounded, apex. It is completely circular, 49mm in diameter, and stands 14.9mm tall. The basal angle is rounded, rather than beveled, although over approximately one quarter of its circumference there is an inward-inclining facet *c* 2mm high.

The base is very flat and even and bears a number of deep striations, principally orientated in two directions and showing

evidence of softening or burnishing by wear. Some of these are slightly curved and may have been made with a tool bearing four very small notches or grooves in its end as some of the striations occur in groups of four. This could conceivably have been a flint used to scrape the base in preliminary cleaning. There are other, much finer striations as well. A single flake-scar impinges on the edge of the button.

The perforations are widely-spaced and measure 10.5mm by 7mm and 9.1mm by 6.5mm. The inner ends of both are elongated and show marked traces of wear. The wear on the boring adjacent to the flake scar is broader than its partner whose wear is rather narrow. Concentric striations are still visible deep on the outer surfaces of the borings but are wearing away nearer the surface of the base. The area between the perforations, the central membrane, is particularly smooth and worn, which, in conjunction with the elongation of their inner edges, could indicate that the button was tightly attached to a garment or accessory. Observations from the excavation that bear on this point are discussed in the next section.

A well-made and prestigious button, strung relatively tightly to its garment, but exhibiting only moderate wear.

Discussion: Jet

Introduction

The buttons found in both graves, the four small conical and one large conical from Barrow 1 and the single large conical from Barrow 6, are the commonest of the ten types of V-bored button identified in Britain. There are over fifty examples of the large conical and over 180 of the small conical (Shepherd 1973). Their relative popularity or frequency notwithstanding, they are still significant objects in any grave context.

Source

Mary Davis' analysis (SS3.4.2) shows that the buttons are of Yorkshire jet. All are of a good quality, lustrous jet. Some differences are apparent: the two large conical buttons (from Barrows 1 and 6) are particularly dense and, whereas the small conical ones exhibit slightly more of the grain of the wood that was the original source of the jet. In one case (AOR 34862) this is because the button was cut at an angle to the grain.

Use of more local shale has been identified nearby in the form of a shale bracelet on the arm of a female skeleton in a Beaker grave in the Redlands Farm long barrow (Bradley SS3.4.3), and of a broken spacer-plate necklace at Radwell, Bedfordshire (Hall and Woodward 1977). Briggs (1982) has pointed to the existence of black lignitic shales in the boulder clays of northern and eastern England.

Craftsmanship

It is possible to infer a fair amount about the level of skill of the maker(s) from the detailed examination carried out to create the catalogue. Evidence of consistent efforts to remove all traces of spall or stony inclusions has been found on all the buttons in varying degrees. Some inclusions remain on AOR 34863. The many groups of parallel striations and the small pits or gouged channels on AORs 34861, 34862, 34864 and 34870 in particular show a high degree of dedication on the part of the jet worker to ridding the finished objects of inclusions. The tools used likely to have been simple (Shepherd 1981; 1985): flint points and gouges for picking-out and sandstone for grinding away.

The perforations retain the concentric grooves which indicate boring with a triangular flint point (Shepherd 1981). Corrections of the initiation of borings on AORs 34870 and 34862 show an understanding of the properties of jet, albeit a little late in the day.

The consistent attempts to achieve a basal bevel, seen on all the Barrow 1 buttons, demonstrate interesting variations, from which it is possible to infer some sequencing of working. In the case of AOR 34863 there are fresh striations from the grinding process on the bevel which are unworn by subsequent use of the button (jet, being relatively soft, wears readily), whereas those on the bevel on AOR 34870 have been reduced by wear. The implications of these observations are discussed further below.

When jet is worked, it goes brown, requiring polishing to restore its lustre; all the buttons show a high standard of final finishing, which would have required the use of a polishing medium such as rottenstone (decomposed siliceous limestone; Shepherd 1981, 49).

None of the buttons shows any attempts at a decorative scheme (which are not frequent on jet buttons in any case – the principal aim was to achieve the impact of a bright shiny cone). The only possible case, noted on AOR 34861, is most probably natural, and it is significant that there was no attempt to work it into a scheme.

Comparanda

These two deposits of buttons in Northamptonshire begin to fill a very large gap in the

distribution of V-bored buttons in England. Hitherto, there has been a void in the triangle formed by the Derbyshire, Wessex and East Anglian concentrations (Shepherd 1973, map 6), presumably to a large extent an artefact of the history of barrow digging, to which such modern projects as Raunds have been an important corrective.

There are parallel assemblages, both near and far. In terms of those with similar associations, such as, *inter alia*, flint daggers and late Southern Beakers, there is a large conical button in jet, plus a pulley ring, a flint dagger and an S3(W)/step 6 Beaker from Little Downham, Cambridgeshire (Lethbridge and O'Reilly 1934; Clarke 1970, fig 959). We may also make comparisons with the grave at Garton Slack 37, Yorkshire, which had an S1/step 6 Beaker, a large conical button, a flint dagger and a battle axe (Mortimer 1905, 209–11, fig 514; Clarke 1970, fig 778).

There are no examples of small conical button and flint dagger associations, but this type is almost universal. The nearest examples are in Derbyshire and Wessex. At Hillhead, Derbyshire, for example, twelve small conical jet buttons, six of which were beveled, were found in a disturbed burial under a barrow, accompanied by a spacer-plate necklace (Bateman 1861, 66–7). Another example, in Wiltshire, is the S2(W)/step 6 twin Beaker grave at Winterbourne Monkton (Clarke 1970, figs 897–8).

Bevels, as noted on the buttons from Barrow 1, are a particular feature of the small conical type, being found on *c* 12% of the total for the group. Large and small conical buttons are a Beaker phenomenon, but are also found in Food Vessel, Collared and other urn contexts.

Inferences from burials

The Barrow 6 button 'lay with its base upwards and nearly horizontal, the point of the conical side being poised on the flint dagger beneath. It is clear that this button could not naturally have rested horizontally without support, so the disposition of this object strongly indicates that it was originally attached to or rested on some organic material which had subsequently decayed and of which no trace was discernable during excavation.' (Chapman *et al* SS1.17). This detailed observation on the part of the excavators appears to indicate that the button had been the means of attaching the pouch containing the group of artefacts (flint dagger, flint flake) to a belt or other item of clothing or accessory.

Turning to the inferences that can be drawn from the condition and use-wear of the buttons, it can be said that all had been in use prior to burial, some only for a short time. There is no indication that any button was made specifically for deposition, although it is conceivable that the unworn striations on the bevel of AOR 34863 indicates an attempt to unify the set for burial, by adding a bevel. This would indicate the collection of jet from different people/mourners rather in the way that jet spacer-plate necklaces often display a wide variety of wear of individual beads.

The most likely use of large conical buttons was as cloak fastenings, although the inference that can be drawn from the case of Barrow 6 is that of a means of attachment of a pouch to a belt. This is also consistent with the evidence. Those in Barrow 1 may have been deposited in a pouch or bag.

Certainly both bodies were those of exceptionally adult tall males, both with an estimated height of *c* 1.77m (*c* 5 ft 10 in; Henderson SS4.7.1; Mays SS4.7.2). Large conical buttons, as far as their associated bodies can be sexed, are largely found with adult males (Shepherd 1973). However, the exceptional richness of the contents of the Barrow 1 burial are to some extent reflected in the comparatively large number of buttons overall, the sourcing from Whitby and the care taken to unify them for burial.

Amber parallels

Amber in general and rings in particular have not heretofore been a Beaker association, but rather more a Wessex phenomenon (Beck and Shennan 1991; Eogan 1999, 77). The proportions and precision of manufacture of the D-sectioned ring are difficult to parallel (the closest amber is of course the mixed necklace elements with the Radwell, Bedfordshire, urn burial; Hall and Woodward 1977), the ring from the Wessex cremation Amesbury G48, with 10 amber beads, two stone beads and two segmented faience beads is rather thinner but relatively close in intention (Annable and Simpson 1964, 57; Beck and Shennan 1991, 147–8).

The possibility of the remains of a V-boring on the edge of this ring creates a link to jet pulley rings, some of which are found with, mostly Southern, Beakers (Clarke 1970, 448). The group of twin S2(W)/step 6 Beakers, shale pulley ring and a large and small conical button and a greenstone pebble and flint knife from Winterbourne Monckton, Wiltshire, is particularly characteristic (Annable and Simpson 1964, 39; Clarke 1970, figs 897–8).

However, amber in general and high class Beaker archer's burials (as evidenced here by the association with the wristguard) are definitely linked in the rare pair of amber V-bored buttons at Kelleythorpe, Driffield, Yorkshire (Mortimer 1905, 274–5; Clarke 1970, fig 553), and the bead at Culduthel Mains, Invernessshire (Clarke *et al* 1985, 267).

Conclusions

These two deposits of V-bored jet buttons represent a good quality collection. In the case of the group from Barrow 1 they may have possibly come from more than one owner and were assembled and partly modified on the death of the individual buried with them. The jet buttons and amber ring are evidence of wide connections with the mainstream of late Beaker (and wider) society and are entirely consistent in their quality with the other associations in these remarkable graves.

SS3.4.2 Analysis of buttons from Barrows 1 and 6

Mary Davis

A number of black lithic raw materials, such as jet, cannel coal and shale were used for the manufacture of jewellery and ornaments in antiquity. They were often worked and polished into small artefacts, and the various materials used are difficult to distinguish with the naked eye (Davis 1993; Hunter *et al* 1993, 69).

The principal material used was jet, and the majority of workable jet in the United Kingdom comes from the Whitby area of north Yorkshire, where it occurs in the Jurassic oil shales which outcrop along the North Sea coast. It is formed from logs of wood which were washed down into the sea and became impregnated with secondary bitumen derived from the organic matter distributed between the minerals of the oil shale (Teichmuller 1992). Muller (1987) quotes two distinct types of jet from Whitby – 'hard' and 'soft' jet. 'Hard' jet occurs in the Jet Rock Series of the Upper Liassic deposits at the base of the Jurassic rocks, whereas 'soft' jet is found amongst the bituminous shales above the jet deposits in the rocks of the middle Jurassic.

Jet appears to vary greatly in its quality. In both the Roman and Victorian periods a large number of high quality artefacts were produced, and the Victorians certainly knew which areas to mine for the best 'hard' jet, resorting to less good 'soft' jet (with a tendency to crack), only when the 'hard' jet ran into short supply (Muller 1987). This variation in quality is often noticeable in early Bronze Age artefacts (Davis 1990). Elemental analysis implies that many of these early Bronze Age artefacts originated from the

Figure SS3.8
EDX spectrum of Whitby jet (red) and cannel coal (blue) from Fife. This shows the higher carbon content of the jet, its distinctive sulphur peak, and much lower aluminium, silicon and potassium peaks than present in the cannel coala.

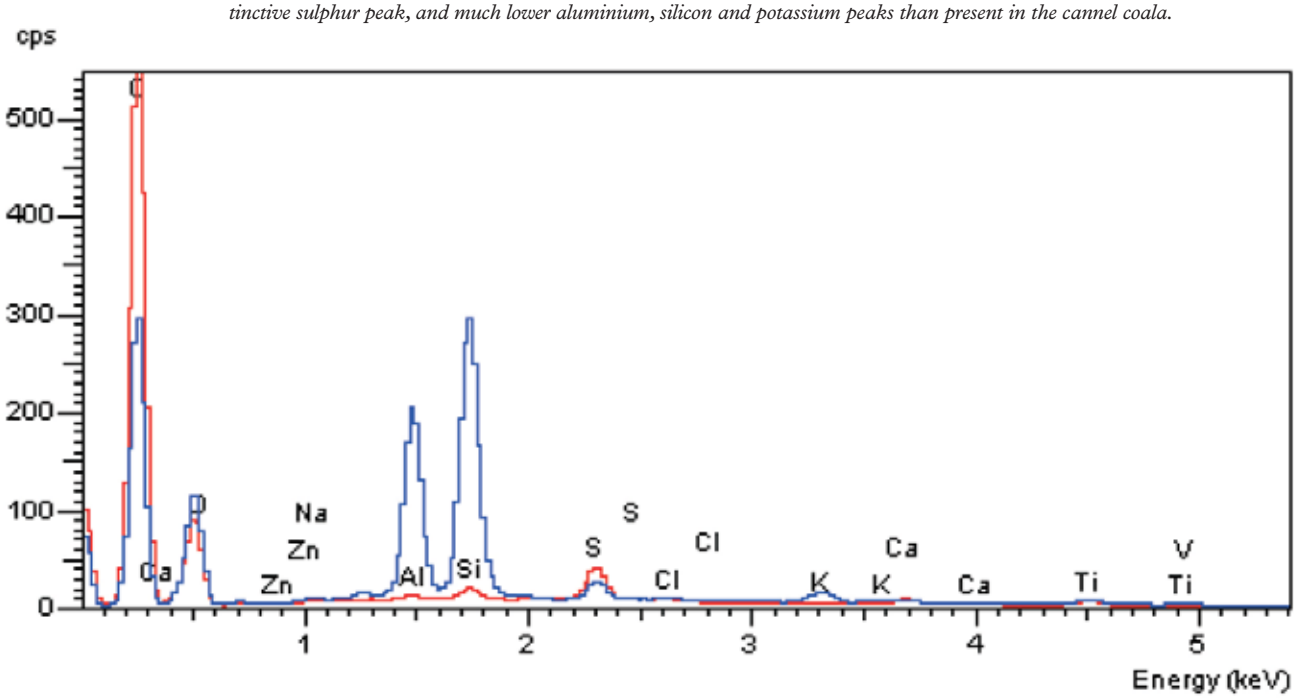


Figure SS3.9

Scatter diagram of oxygen and carbon content (normalised EDX results) of various EBA artefacts and sourced geological material. Most jet (lozenges) is grouped on the right hand side showing a higher carbon content and slightly lower oxygen content than the other black lithic materials.

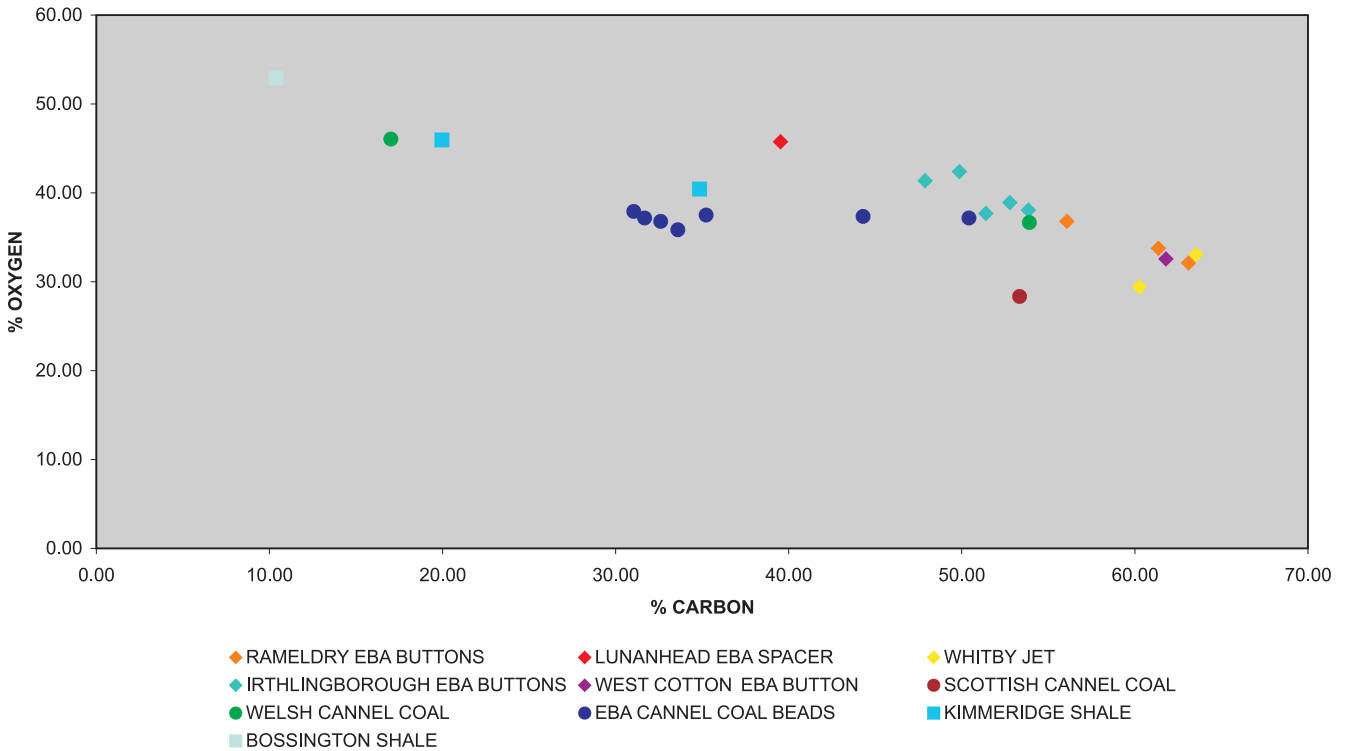


Figure SS3.10

Scatter diagram of aluminium and silicon content (normalised EDX results) of various EBA artefacts and sourced geological material. Most jet is grouped in the lower left corner and contains a minimal amount of both aluminium and silicon.

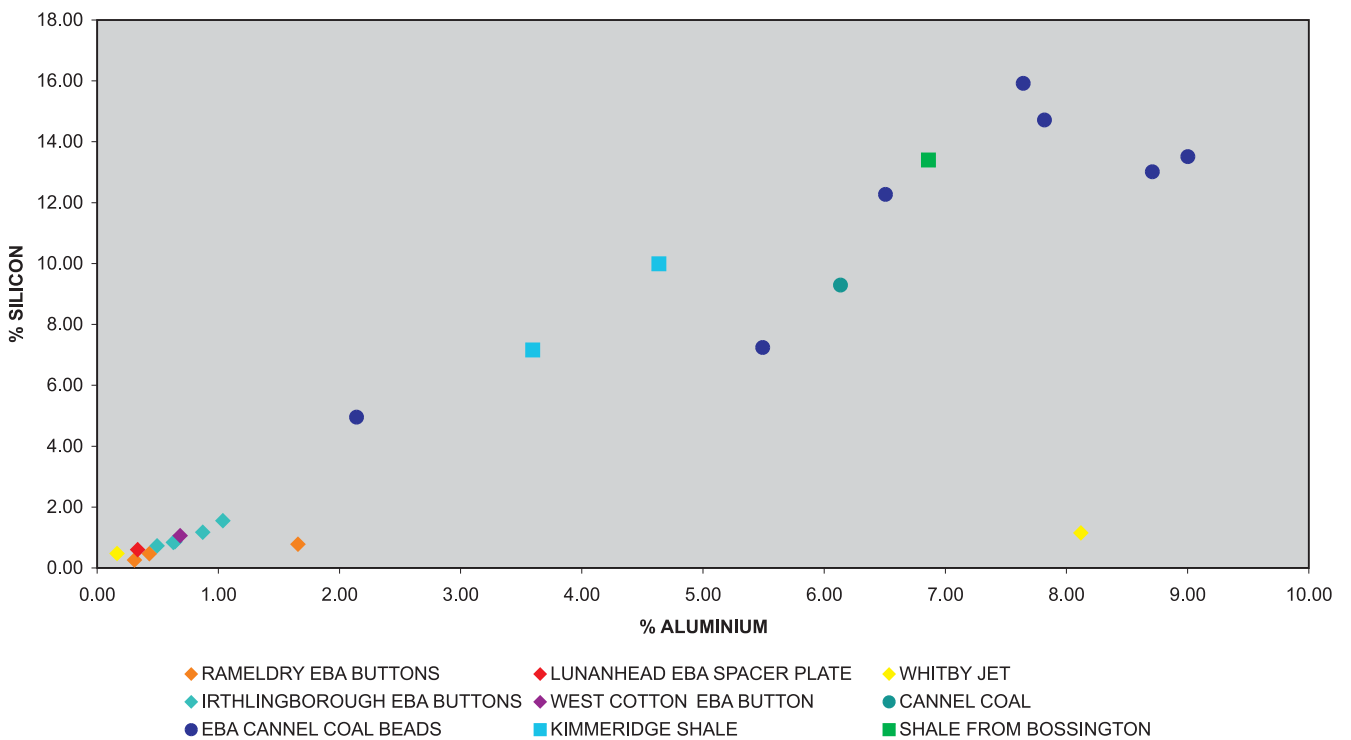
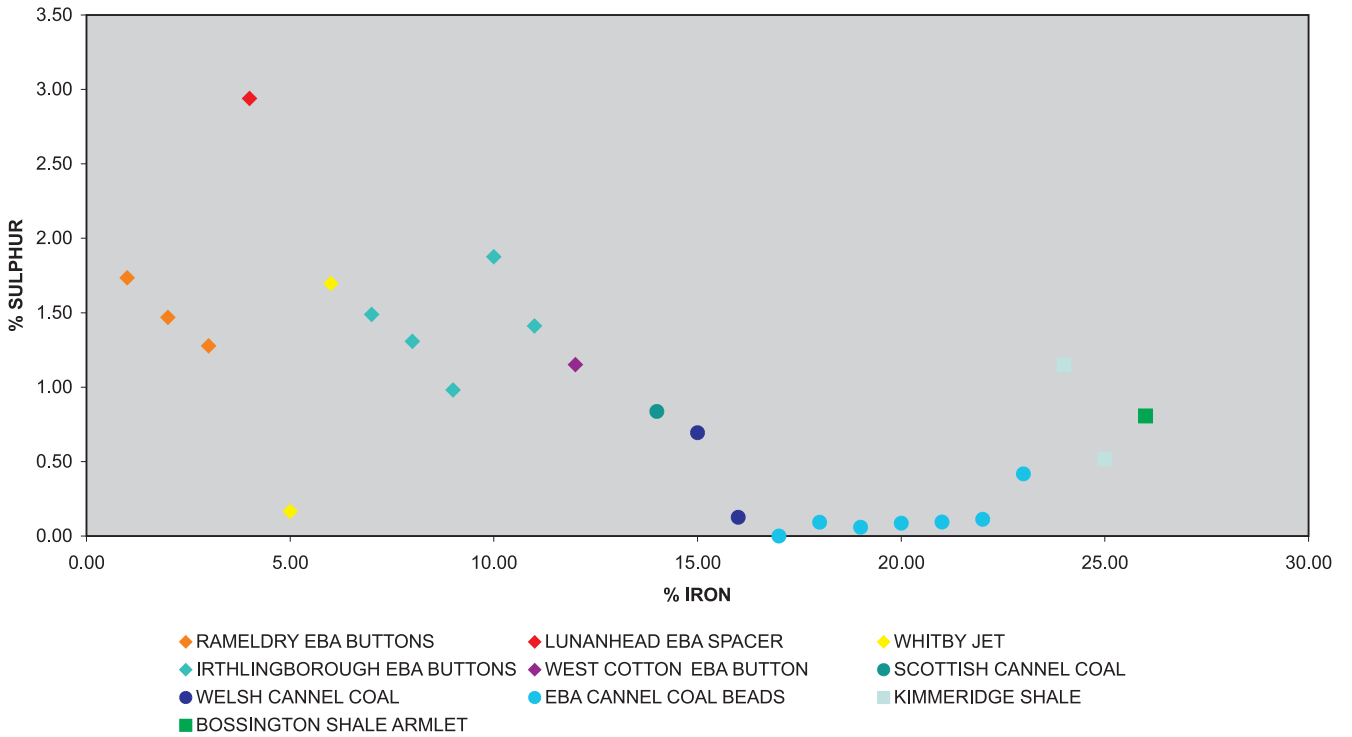


Figure SS3.11

Scatter diagram of iron and sulphur content (normalised EDX results) of various EBA artefacts and sourced geological material. The jet is grouped in the left half of the diagram; it generally contains more sulphur and less iron than other black lithic materials analysed here.



Whitby area (Davis 1993a); and a proportion of these have a distinctive and more extensive pattern of cracking than was found in either cannel coals or high quality jets of similar artefact type and from similar burial environments (Davis 1993). In the early Bronze Age it is possible that much of the raw material used was washed up along the coast or exposed during storms, and that people collecting the raw material or manufacturing the objects were less likely to be able to select the quality of jet available.

Visual analysis by both optical microscopy and scanning electron microscopy (SEM) of many early Bronze Age artefacts, including the majority of the buttons from Irthlingborough and West Cotton, reveals some of the characteristics of high-grade lignite. Lignite has many similarities to jet, but the geological conditions for its formation are not so specific and its structure is less compacted. Like jet it is also formed from logs washed into sediment, but lacks the hydrocarbon impregnation of jet. This hydrocarbon impregnation within the Whitby area would vary from log to log and in many areas jet would grade into lignite.

It is impossible to distinguish low quality jet from high quality lignite by non-destructive methods, and an exact definition of when one became the other would also be very difficult to determine. However, it does appear that there is a variation in the quality of material which comes from similar geological areas around Whitby; this material has probably always been considered as jet, and traded and exported as such.

An initial investigation to determine the composition of the buttons from Barrows 1 and 6 was undertaken by X-ray fluorescence (XRF) analysis in 1992 by Siobhan Watts (Watts 1992). At the same time she also X-rayed the buttons and undertook a detailed condition survey. Watts concluded that the buttons 34861 and 34863 from Barrow 1 were jet, but that the other Barrow 1 buttons and the button from Barrow 6 were of an 'intermediate' material. All the X-radiographs gave a translucent image which is consistent for objects made from jet rather than shale or canneloid shale (Hunter *et al* 1993); but as with all these materials there is a very large area of grading of one material into another, some cannel coals, for example, can also give translucent X-ray images. With XRF the main discriminators used are the quantities of iron and zirconium (Bussell *et al* 1982; Davis 1993b; Hunter *et al* 1993). Iron is useful for

distinguishing jet from non-jet, and zirconium, often in conjunction with elements such as vanadium, titanium and sometimes zinc, usually indicates material from the Whitby area. Quantities of iron within the buttons were not large, but some were at a slightly higher level than that seen in many sourced jets and jet-like materials from Whitby. The zirconium levels detected were acceptable for jet from Whitby (Watts 1992).

Further analysis to ascertain more detail about the materials used for the buttons was carried out using a CamScan MaXim 2040 analytical scanning electron microscope (SEM) with a low vacuum chamber, plus an Oxford Instruments Link Isis energy dispersive X-ray spectrometer (EDX). The objects were examined whole within the specimen chamber; the lower vacuum setting (typically around 10–20 mbar) meant that residual gas pressure within the chamber prevented the accumulation of electrical charges on the specimen and so negated the need for a conductive coating. The objects were analysed for 100 live seconds using a working distance of 35mm and an accelerating voltage of 20kV. Apart from very superficial surface swabbing of the artefacts there was no sample preparation.

The SEM analysis was able to complement the previous work undertaken by XRF and X-radiography. SEM-EDX analysis is able to examine a very specific area of the object and to analyse lighter elements than is possible by XRF. This is significant when considering the largely organic nature of these materials; however, it is difficult to get good quantitative data for carbon and oxygen levels. The results presented are therefore semi-quantitative and normalised to 100% to make comparison of data between objects and materials easier to undertake. This has enabled a comparative assessment to be made between the buttons from Barrows 1 and 6 and material analysed under similar conditions, including sourced jet from Whitby, cannel coals from several sources in Britain, Kimmeridge shale and previously analysed examples of early Bronze Age jet and cannel coal artefacts (Figs SS3.9–11). The most directly comparable material was a series of early Bronze Age buttons from Rameldry in Fife (Baker, Cowie and Sheridan in prep). These also had severe stability problems, and had cracked badly as they dried.

There are other sources of data, which do not give directly comparable results but which could indicate further properties of the materials. For example the proportions of both the organic and inorganic components of jet-like materials are particularly useful, some information about which has been produced by ashing experiments. (Bussell *et al* 1982; Strahan 1918).

The elemental analysis (Table SS3.3) produced a pattern of results comparable to those for jet from Whitby analysed under similar conditions (Davis, work in progress). The organic content (illustrated by the height of the carbon peak on the spectra, Fig SS3.8)

Table SS3.3. Average (two to three readings per object) elemental composition of buttons from Barrows 1 and 6: normalised EDX results

ELEM%	*AOR 34861*	*AOR 34862*	*AOR 34863*	*AOR 34864*	*AOR 34870*	*sf 4571*	*Whitby jet*
C	51.22	48.35	51.76	50.35	50.17	56.57	63.54
O	37.61	42.53	38.46	39.39	40.88	35.49	33.04
Mg	0.09	0.07	0.04	0.06	0.07	0.07	0.05
Al	1.06	0.91	0.86	0.94	0.83	0.37	0.16
Si	1.22	1.25	1.17	1.36	1.15	0.55	0.47
S	2.14	1.40	1.39	1.77	1.32	1.43	1.70
K	0.14	0.22	0.32	0.17	0.14	0.09	0.08
Ca	4.57	3.92	3.48	4.71	3.97	4.90	0.38
Ti	0.20	0.02	0.03	nd	nd	nd	0.46
V	0.01	nd	nd	nd	nd	nd	nd
Mn	0.01	0.11	0.27	0.02	0.17	nd	nd
Fe	1.63	1.23	2.25	1.27	1.35	0.58	0.08
Cu	0.06	nd	nd	nd	nd	nd	nd
Zr	0.03	nd	nd	nd	nd	nd	nd

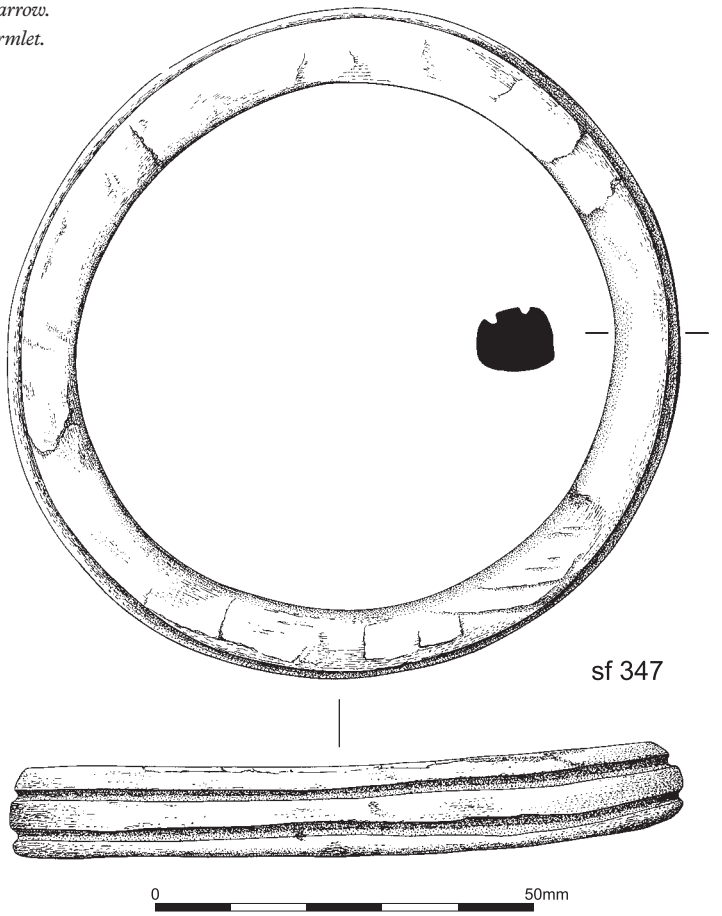


Figure SS3.12
Long Barrow.
Shale armlet.

Figure SS3.13
Long Barrow.
Shale armlet.
(Photo Michael Dudley)

is higher than for most cannel coals and shales, and the sulphur content is relatively pronounced. Conversely, the inorganic mud/clay type elements such as silicon, aluminium, potassium and iron (the major elements present in clay) are all at negligible quantities as in Whitby jet. However, as in most coal-like materials, the composition and inorganic content of the buttons do vary to some extent from the sourced material. This often seems to be the case for objects from a burial context. Here the level of calcium is always higher, and is almost certainly derived from absorption by the jet of the leached mineral content of the associated skeleton. Iron can also appear higher, especially where it has been difficult to remove all contamination from the surface of a non-sampled specimen.

In conclusion, it can be said that the buttons are of a very similar material to comparable early Bronze Age artefacts from Scotland, and that their elemental composition correlates closely with sourced jet/lignite-like material from Whitby. The slight variability in composition and their propensity to crack is almost certainly due to the original quality or grade of the jet; ie here it looks like a relatively low grade jet.

SS3.4.3 The shale armlet from the Long Barrow

Philippa Bradley with a contribution by the late Glynis Edwards

A shale armlet (sf. 347; Figs SS3.12–13) was associated with skeleton 131. The object was located on the arm immediately above the elbow (Fig SS1.55). It has an external diameter of 88–90mm and an internal diameter of 71mm and is decorated by a pair of concentric grooves. The object is worn and had begun to flake and distort. A variety of shale, jet and lignite objects have been found in early Bronze Age contexts (Shepherd 1985, 204). This shale armlet cannot, however, yet be paralleled in a Beaker context, although bronze armlets from the Migdale hoard are decorated with triple horizontal mouldings (Clarke *et al* 1985, 303, ill 4.34).

X-Ray fluorescence analysis of the armlet

The late Glynis Edwards

X-Ray fluorescence analysis detected a high iron peak which confirms the armlet to be a non-jet material (Hunter *et al* 1993; Watts 1992).

SS3.5 Worked bone and antler

SS3.5.1. The bone artefacts from Barrow 1

Andrew Foxon

The artefacts are catalogued at the end of this section and are illustrated in Figures SS3.14–15.

Rib spatulae (Fig SS3.14)

The spatulae have been made by splitting the rib of a large animal (probably that of cattle). Some of the artefacts show traces of cut-marks from the initial butchery process and marks which are likely to have come from scraping away soft tissue attachments such as the periosteum. It is possible that the rib would have been scored with a blade along

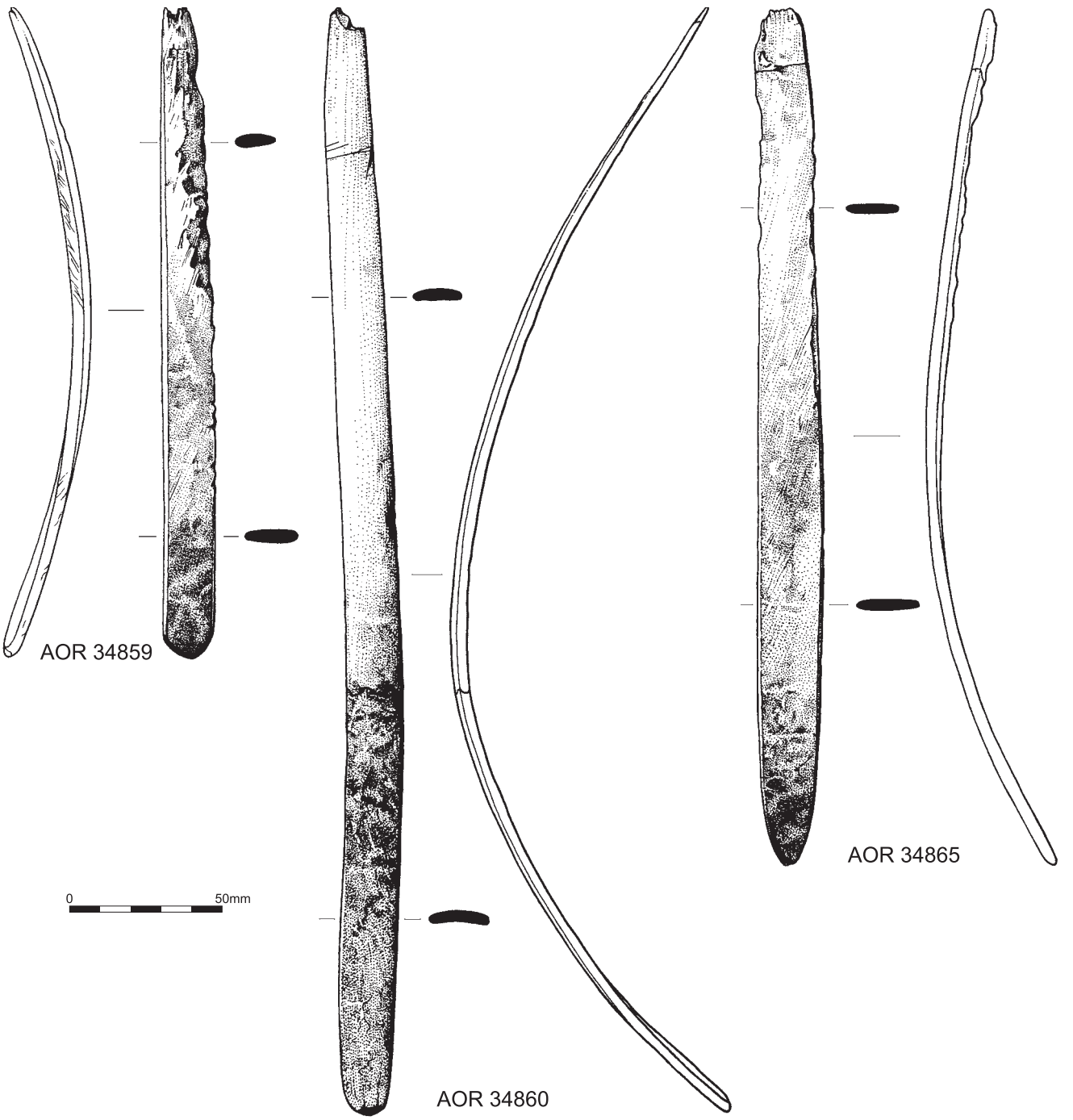


Figure SS3.14
Barrow 1.
Bone artefacts, 'spatulae' 34859, 34860 and 34865 from the primary burial.

its lateral faces before being split so as to make a cleaner break, but no marks from this survive. The evidence for such early stages of material preparation is often removed during the final finishing of bone and antler objects. The splitting of a rib leaves the spongy structure of cancellous tissue inside the bone in a rough and irregular condition which was rubbed down with a fine-grained stone to produce a smooth and more flattened surface. The broken or irregular lateral surfaces of the rib were scraped or trimmed with lithic tools so as to leave a smoothed and rounded, or slightly flattened, edge as shown by the long, irregular sweeps of striations which can be seen on these surfaces.

In vivo ribs provide protection for the soft tissues and organs in the main trunk of the body. So as to fulfil this function they are naturally curved and resilient and, as a result of this intrinsic property, the surviving spatulae themselves have a gentle curve. The spatulate tips of these large rib spatulae are very small, and the marks which can be seen on them have the appearance of worn marks of manufacture and polishing, rather than usewear. This is in contrast to some of the smaller objects from the period which are also called spatulae, especially, those made from antler (Foxon 1990). The size and shape of these objects suggests that they are unlikely to be hand-held tools in their own right. The 'tips' show wear which is more consistent with manufacture and general handling, rather than with use. These objects would seem to be best explained as parts of composite items. A split rib would have enough resilience to have its ends pressed closer together (thereby reducing the size of the chord) and, once the load had been removed, would have sprung back. If part of a composite item it could have provided some 'spring' to a larger object. These properties would seem to support a case for the large rib spatulae being part of an object such as a composite bow, as suggested by Ashbee (1960, 105), which might be seen as in keeping with the range of items associated with Beakers. Since it is the natural outer surface of the rib which forms the convex side of these objects and the concave surface is the smoothed cancellous interior, such a use would require the spatula to be on the outer surface of the bow, rather than the inner part. Were it being used as part of the tip of a bow, one would expect to see notching for the string and since there is no sign of any type of notching, this particular use seems extremely unlikely. Nor is there evidence on any surface of marks from bindings which might also have been expected. It would seem more likely that these could be plates which were applied to the outer curve of an object. This might have provided simply a decorative fitting to an object or, in the case of a bow, could have fulfilled an additional mechanical function. Since there are no marks which indicate that these were attached by binding, it might be assumed that the use of natural glues would have been an alternative. The porous cancellous tissue would have provided a surface to which such an adhesive could have been applied.

Their considerable length marks them out from some of the much smaller (and straighter) spatulae which have been found in graves of this period and their closest parallels are from Smerrill Moor, Derbyshire (Bateman 1861, 102–03). From the range of rib and red deer antler objects which are called 'spatulae', the very long rib spatulae really stand out in a group of their own.

Perforated points (Fig SS3.15)

Points made from the metapodial bones of sheep or goats are regularly found from Neolithic to Iron Age contexts and beyond (Foxon 1991). Perforated points are known from late Neolithic contexts onwards and, although the preliminary manufacturing processes are similar for all periods, the finishing stages and the end products show some differences.

Both the perforated points have been made by taking a sheep or goat metapodial and splitting it, probably with a blow to the shaft. It is likely that both points show traces of features from the distal end of the original bone. Both have had their surfaces trimmed and polished. The perforated point from the inhumation shows marks of manufacture which can be attributed to the use of lithic tools (including a drill bit). That from the cremation shows marks which are better attributed to a metal blade (and, therefore, bronze) including the perforation which seems to have been made with a knife tip.

Although there are genuine piercing tools made from such bones, the majority of those which are perforated are much more finely finished. Whilst they are often called 'needles' it is more likely that these finer, perforated points are decorative and their incorporation as grave goods may imply that they have been part of the clothing or hair styling of the buried individual. Indeed that from the inhumation burial was found near the head (Fig SS1.119;

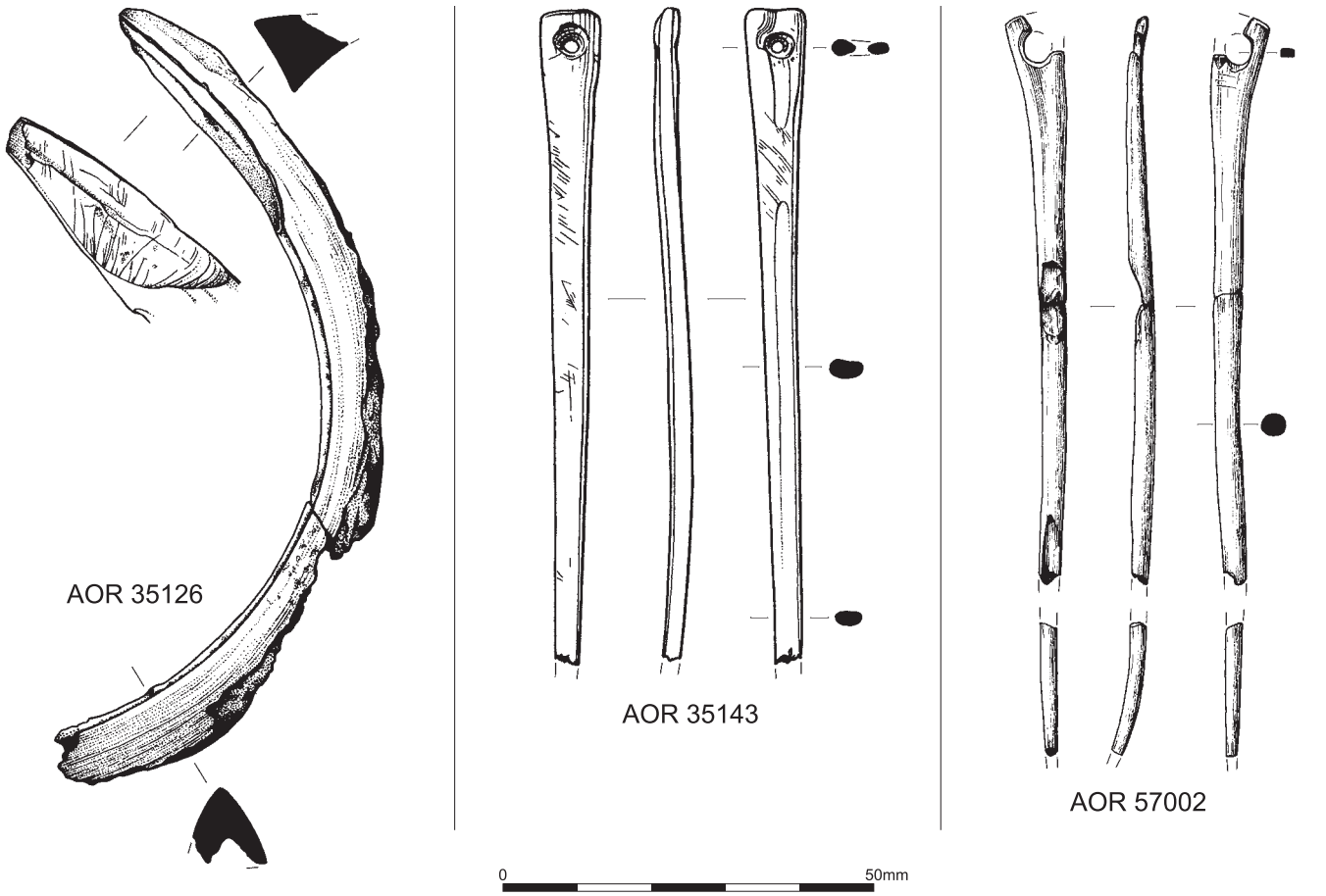


Figure SS3.15
Barrow 1.
Bone artefacts, boar tusk 35126 from the primary burial, pin 35143 from inhumation 30449, pin 57002 from cremation F30017

Harding and Healy 2007, Fig 4.7) and may well have formed part of the hair style.

Catalogue

Rib spatula 34859 (AML 8611101). Length (including fragments) 311mm; breadth 17mm; thickness 5mm

The spatula curves and has a chord of 300mm.

Current condition: The spatula is incomplete and broken. It comprises six joining fragments, but one end of the piece is completely broken and eroded, and the original object would have been longer. Parts of the surviving surface are also badly eroded.

The spatula has been made by splitting the rib of a large animal (probably that of cattle).

The blunt-nosed tip is rounded and slightly polished. To either side of the tip are slightly flattened facets, one side of which has fine striae at different angles to the tip. The fine striations are evidence for the use of a fine-grained stone to finish the surface of the tool and smooth its surface to produce an edge. The rounding and polishing of the tip is likely to have been the result of polishing as a finishing technique rather than being wear from use.

One lateral edge is badly eroded but the other shows oblique striations probably from where tissue was removed before the bone was trimmed to shape. The upper surface shows the naturally polished exterior surface of a rib with a few striations and the lower surface is formed by the ground and smoothed cancellous interior of the rib.

Rib spatula 34860 (AML 8611102). Length 414mm; breadth 20mm; thickness 5mm

The spatula curves and has a chord of 369mm

Current condition: The spatula is in two joining pieces, having been broken in recent times, but the whole object may have survived. Its surfaces survive in good condition.

The spatula has been made by splitting the rib of a large animal (probably that of cattle).

The tip itself is rounded and almost curved. To either side of the tip are very slight facets, one of which has been scraped.

All the surfaces of the tip have been polished as part of the finishing process for the tool.

Where the lateral edges of the spatula survive, there are clear striae which indicate trimming or scraping with long strokes from a lithic implement to smooth the edges of the piece, leaving some of the edge flattened and the area nearer the tip of the spatula rounded. The upper surface shows the naturally polished exterior surface of the rib with a few transverse cut marks which result from earlier stages in the butchery process.

The lower surface is of the ground and smoothed cancellous interior of the rib.

Rib spatula 34865 (AML 8611103). Length 285mm; breadth 20mm; thickness 4mm

The spatula curves and has a chord of 268mm

Current condition: The spatula is in two joining pieces, having been broken in recent times, but the whole object may have survived. Its surfaces are in reasonable condition although there is some erosion in places, especially on the lateral edges.

The spatula has been made by splitting the rib of a large animal (probably that of cattle).

The blunt-nosed tip was broken off in antiquity, but it had a much more pointed form than the other two spatulae. To either side of the tip are gently curving edges which converged to form the tip and which show the marks of trimming with a lithic tool.

The lateral edges show the marks of longitudinal trimming with a lithic tool to form a rounded or slightly flattened surface running from the tip to about the midway point. For the rest of the length of the object the lateral edges are eroded and broken. The upper surface shows the naturally polished exterior surface of a rib and the lower surface is of the ground and smoothed cancellous interior of the rib.

Tusk 35126 (AML 8611103). Length 133mm; breadth 14mm; thickness 8mm

The tusk curves and has an inner chord of 95mm

This is the tusk from a pig and is broken into two pieces. Although the tip shows natural marks of in vivo wear, there are no marks of human agency on it. Dated to 2890–2460 cal BC (4100±80 BP; OxA-4067).

Perforated point 35143 (AML 8611106). Length 88mm; breadth 8mm; depth 3mm; thickness of bone cavity 2.5mm

Current condition: The surface condition of the point is very good and clearly shows marks of manufacture. The tip has, however, broken off the piece at an angle to the shaft and is missing.

The point has been made from the split metapodial of a sheep or goat, which has had its surfaces scraped with a lithic tool and then smoothed in places with a polishing stone.

The tip has broken off leaving an irregular surface. The shaft shows the externally convex and internally concave natural shape of the original bone, the lateral edges of which have been smoothed to a flattened or rounded surface by grinding transversely and then polishing. The point has been made very thin by grinding down and creating a flat surface from the split side, thus removing much of the medullary cavity. The head of the point has been made by trimming and grinding away the natural articular surface of the bone to leave a squared head. There are some cut marks on the head which would have been made at an early stage in the butchery process. The head has been perforated from both sides in an 'hour-glass' manner probably using a lithic drill bit which has a left a perforation of 2mm.

Perforated point 57002 comprises three fragments, two of which are adjoining

Two adjoining fragments: Length 77mm; breadth 6mm; depth 3mm; diameter of shaft 3mm

Single fragment: Length 17mm; diameter of shaft 2mm

Current condition: Cremated bone point in 3 pieces and incomplete. The perforated head is broken; there is a fragment of bone missing where two adjoining pieces touch and at least two other fragments are also missing, ie between the longest surviving piece and the shortest, and the tip of the point. The bone is burnt white, is in good condition and has a brown staining on the surface.

The point is likely to have been made from the split metapodial of a sheep or goat, which has had its surfaces scraped with a lithic tool and then rubbed smooth along the shaft.

The tip has broken off transversely, as has the shaft at the other end of the shortest piece. The other two shaft breakages involved a transverse split adjacent to which a spall of bone has broken off. The shaft itself has been trimmed longitudinally to produce a near circular-sectioned profile, but which still shows very slight longitudinal facets from the blade with which it was scraped. The head of the point originally had a curved top, below which a perforation had been carved with a metal blade from both sides. Part of the head is missing.

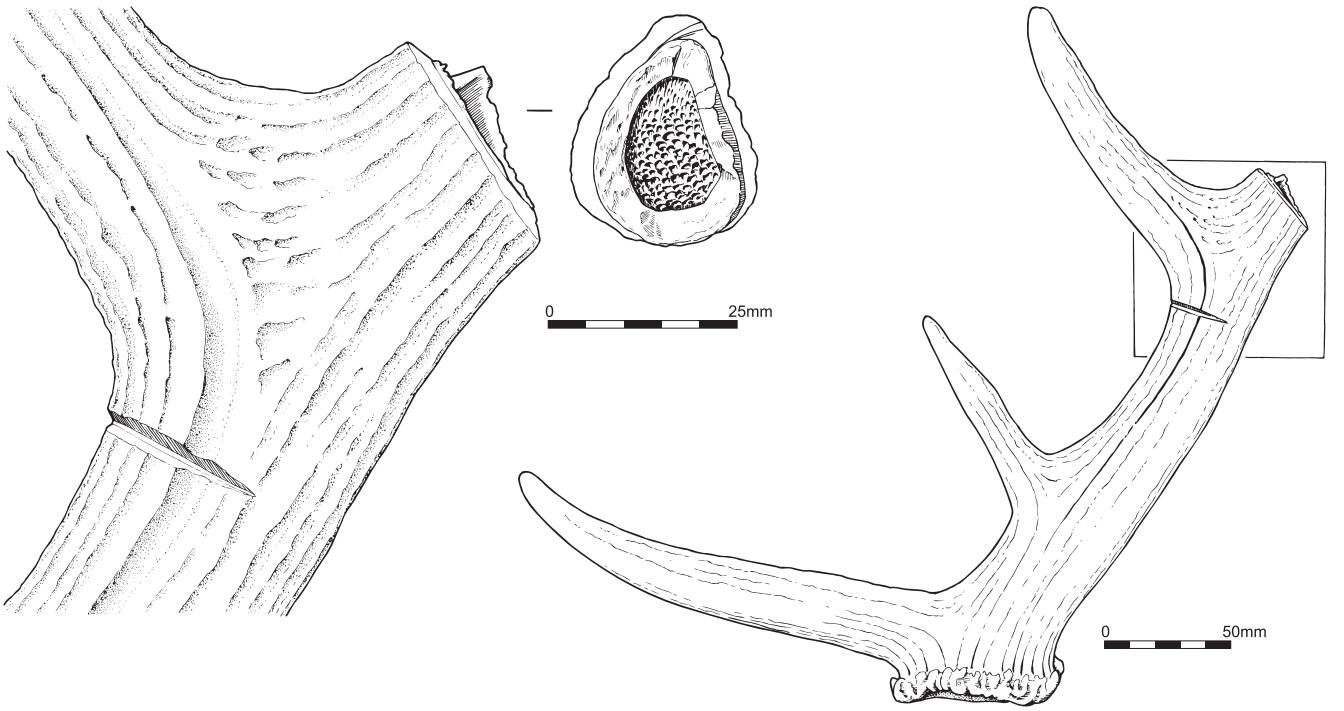


Figure SS3.16
Long Barrow.
Cut-marked red deer antler from ditch.

SS3.5.2 The antler from the Long Barrow

Philippa Bradley

A single shed antler (sf 784; Figs SS3.16–17) with cut marks was recovered from context 287 in the primary silts of the north-east butt of the north-west ditch (Fig SS1.46). It was identified as red deer by Simon Davis.

Figure SS3.17
Long Barrow.
Cut-marked red deer antler from ditch.
(Photo Michael Dudley)

SS3.6. Woodworking at the Long Barrow

Maisie Taylor

SS3.6.1 Introduction

Wood from the 1989 excavations was collected from Oxford at New Year 1994/5. It had been in store for over five years. The length of time that the wood had been in store has adversely affected the amount of useful data produced in the analysis of woodworking technology. Given the extreme rarity of Neolithic woodworking assemblages, the Long Barrow must be considered a major lost opportunity. The surviving material is catalogued at the end of this section and illustrated in Figures SS3.18–21.

SS3.6.2 Quality of Preservation

The wood was stored wet, in heavy-duty plastic wrappings in cardboard boxes. The material was well cushioned and supported in the boxes. Despite the care that had been taken in packing, much of the wood was in very poor condition when it was unwrapped, not because of physical damage but because of drying out and bacterial activity. There was a particular problem with this wood because it was packed unwashed and the

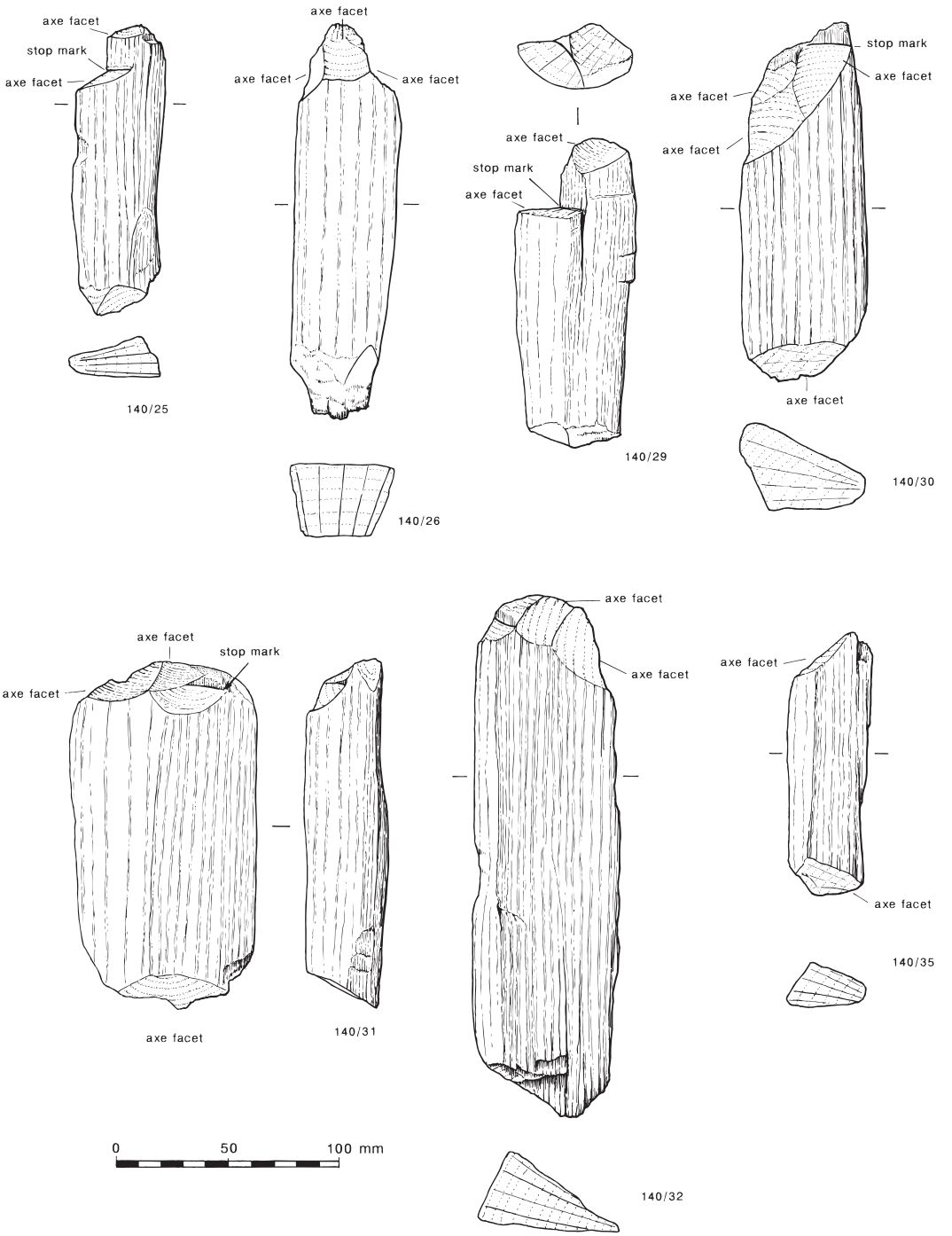


Figure SS3.18
Long Barrow.
Waterlogged wood
with axe facets.

soil adhering to it had encouraged bacterial-growth

The largest category of woodworking debris comprised woodchips, followed by bark. The term 'debris' is a general descriptive term for all types of small material, whether generated by human activity or not. The term 'woodchips' refers specifically to the small pieces of waste material generated by axing or adzing. Bark debris may or may not be generated by woodworking. Shedding of bark in pieces of various size can be a natural phenomenon. There is some loss of bark from mature trees and fallen trees may shed large pieces of bark when they collapse. For the purposes of studying ancient wood technology, therefore, bark alone cannot be considered as evidence of woodworking. Occasionally remarkable pieces of bark are found which are specifically shaped or placed (Pryor *et al* 1985a, pl XLIb) and they must be considered separately. Another way to

ascertain whether loose bark is the product of woodworking, or from natural loss, is where there are clear traces of sapwood still attached to the bark. Bark that is naturally shed, or that has been levered off the tree, particularly in spring, comes away cleanly from the wood. When bark is axed off, however, a thin layer of sapwood may also be cut away and remain attached to the bark. It is important therefore that bark fragments are examined to see if there are traces of sapwood.

The layer of sapwood may be very slight. Sapwood is very quick to deteriorate, and bark/sapwood woodchips are particularly fragile. Sapwood deteriorates much faster than bark for a variety of reasons. There is a high proportion of cellulose in young wood, and the living sapwood conducts food materials around the tree. The cellulose becomes softened in waterlogged conditions and in young wood (branches or sapwood), there may be no secondary cell walls to take the strain of drying out. As waterlogged sapwood dries, therefore, it is likely to collapse rapidly.

Only one piece of debris was identified as bark with sapwood attached, but there were thirteen pieces of bark with no sapwood attached. These pieces had deteriorated, so it was impossible to determine if sapwood had been present. There were also eighteen woodchips which were too deteriorated for analysis. Since sapwood is very vulnerable, it is quite possible that it is the sapwood woodchips which have deteriorated differentially. This would mean that wood chips derived from trimming up roundwood to a square section (a known building technique in the Neolithic) and woodchips derived from felling trees would be lost. The squared roundwood technique of building has been described at Kilham (Manby 1976, 121) and Maxey (Pryor 1985b, especially pls XI, XII and XIII) but there is no woodworking debris surviving from either site.

We are left with an assemblage where the total debris retrieved is 58 pieces. Of these, thirteen were too decayed for analysis. The 22 bark chips may not originally have been bark alone. In short, analysis of less than half the assemblage could be considered reliable. The total amount of debris was 58 pieces, consisting of 36 woodchips, and 22 pieces of bark. Of the 36 woodchips, 15 were tangentially aligned, 8 were radially aligned and 13 were too decayed for analysis.

SS3.6.3 Field data and dimensions

Problems were caused by the fact that dimensions of the wood had changed since the original measurements were taken six years previously. Since there was not enough material to justify detailed statistical analysis, this was not as serious a problem as it might have been. Where measurements differ markedly, the field measurements have been used, as they were made at the time of the excavation.

SS3.6.4 Toolmarks

A few pieces exhibit facets left by the axe when the wood was worked. Usually the evidence left on the wood by a tool can only be classed as a 'toolmark' if the shape or profile

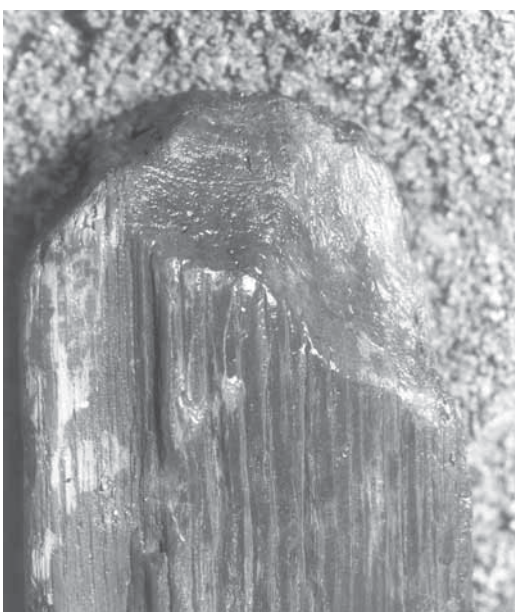


Figure SS3.19 (far left) Long Barrow. Detail of waterlogged oak showing axe facets. (Photo Francis Pryor)

Figure SS3.20 (left) Long Barrow. Detail of waterlogged oak showing axe facet. (Photo Francis Pryor)

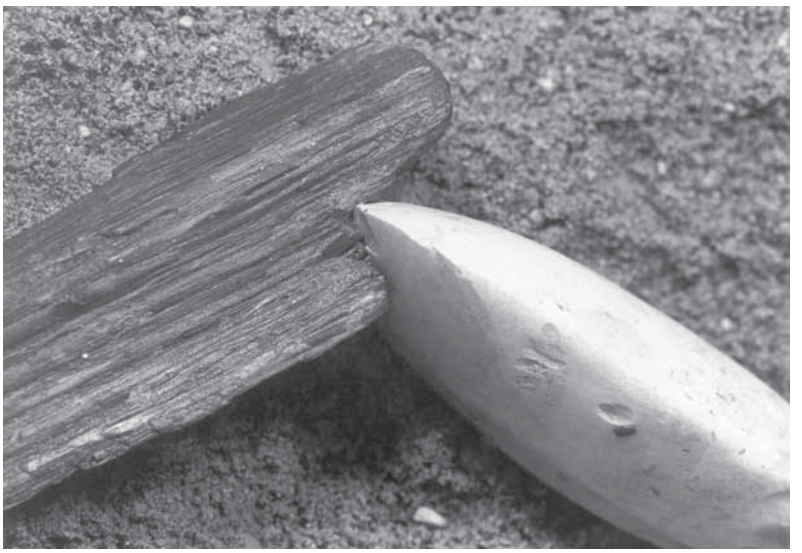


Figure SS3.21 Long Barrow. Waterlogged oak with facet and stop mark fitting flint axehead. (Photo Francis Pryor)

of the tool is clearly preserved in the wood. In the case of wood worked with a stone or flint axe, however, the axe tends to leave rather 'dished' facets because the axe does not bite into the wood as sharply as a metal tool. As each polished stone or flint axe is unique in profile, and as there was a flint axe excavated from the ditch about 1m above the woodworking debris, it was decided to test the shape of the axe against the surviving facets on the wood.

Ten pieces were found to have facets which the axe fitted convincingly. Eight pieces were photographed in detail and seven were drawn (Figs SS3.18–20). The axe fitted the facets exactly, including the edge damage (Fig SS3.21). All the wood with facets was oak, and all was from relatively small wood, rather than large timbers. One of the interesting features of the woodchips was that the facets were not all at the same angle to the grain and that they were all very 'chunky'. The woodchips were also not of a type recognised at the causewayed enclosure at Etton (Taylor 1998). They do, however, find an exact parallel in those produced during experimental tree-felling with stone axes in Denmark (Jørgensen 1985).

SS3.6.5 Characterisation of the assemblage

It has been shown that the woodworking technology data from Stanwick has been seriously distorted by the long-term storage of the wood. This distortion is difficult to quantify because of the delay in the compilation of the detailed record.

A subjective assessment of the material, which is all that we can now hope for, suggests that the debris results from lightweight wood- and timber-working. Many of the woodchips are from the felling of lightweight timber trees and timber-working. The plans show some short lengths of planking but these pieces are now so fragmentary that very little can be said about them. It would be impossible to suggest if the planks were collapsed barrow revetment although this does remain a possibility. Thirteen pieces were simply classified as 'debris' because it had deteriorated too much for detailed analysis of the woodworking. if the dimensions of these pieces are compared with the other classes of woodworking debris from the site, then they closely match the bark and the detritus derived from tree-felling.

Table SS3.4. Long Barrow. Dimensions of tangentially aligned woodchips (mm)

Length	*0–50*	*50–100*	*100–150*	*150–200*	*200–250*	*250–300*	*300–350*	*350–400*	*400–500*	*500–600*	*600+*	*Total*
Numbers	1	3	4									8
% of total	12.50	37.50	50									
Breadth	*0–10*	*10–20*	*20–30*	*30–40*	*40–50*	*50–60*	*60–70*	*70–80*	*80–90*	*90–100*	*100+*	*Total*
Numbers	1	1	1	2	1	2						8
% of total	12.50	12.50	12.50	25	12.50	25						
	8	8	8	8								
Thickness	*0–5*	*5–10*	*10–15*	*15–20*	*20–25*	*25–30*	*30–35*	*35–40*	*40–45*	*45–50*	*50+*	*Total*
Numbers	2	2		2		2						8
% of total	25	25		25		25						
Breadth/length ratio (b/l x 5)	*0–0.5*	*0.5–1*	*1–1.5*	*1.5–2*	*2–2.5*	*2.5–3*	*3–3.5*	*3.5–4*	*4+*			
Numbers		1	2	3	1		1					
% of total		12.5	25	37.5	12.5		12.5					

Table SS3.5. Long Barrow. Dimensions of radially aligned woodchips (mm)

Length	*0–50*	*50–100*	*100–150*	*150–200*	*200–250*	*250–300*	*300–350*	*350–400*	*400–500*	*500–600*	*600+*	*Total*
Numbers		1	5	4	2	1	1				1	15
% of total		6.67	33.3	26.67	13.3	6.67	6.67				6.67	
Breadth	*0–10*	*10–20*	*20–30*	*30–40*	*40–50*	*50–60*	*60–70*	*70–80*	*80–90*	*90–100*	*100+*	*Total*
Numbers		1	1	5	3	1	2		1		1	15
% of total		6.67	6.67	33.3	20	6.67	13.3		6.67		6.67	
	15	15	15	15								
Thickness	*0–5*	*5–10*	*10–15*	*15–20*	*20–25*	*25–30*	*30–35*	*35–40*	*40–45*	*45–50*	*50+*	*Total*
Numbers	1	3		1		4	3	1		1	1	15
% of total	6.67	20		6.67		26.67	20.00	6.67		6.67	6.67	
Breadth/length ratio (b/l x 5)	*0–0.5*	*0.5–1*	*1–1.5*	*1.5–2*	*2–2.5*	*2.5–3*	*3–3.5*	*3.5–4*	*4+*			*Total*
Numbers		4	4	4	2	1						15
% of total		26.67	26.67	26.67	13.33	6.67						

Table SS3.6. Long Barrow. Bark thickness (mm)

Thickness	*0–5*	*5–10*	*10–15*	*15–20*	*20–25*	*25–30*	*30–35*	*35–40*	*40–45*	*45–50*	*50+*	*Total*
Numbers	13	7	1			1						22
% of total	59.09	31.82	4.55			4.55						

Table SS3.7. Long Barrow. Debris thickness (mm)

Thickness	*0–5*	*5–10*	*10–15*	*15–20*	*20–25*	*25–30*	*30–35*	*35–40*	*40–45*	*45–50*	*50+*	*Total*
Numbers	9	4										13
% of total	69.23	30.77										

Some of the debris derives from shaping posts and stakes and there is some roundwood that is clearly coppice, including two possible fragments of coppice stools. The diameter of the round wood, other than twigs, appears to be in a range of slightly larger diameters (13–35mm) which might conceivably be used for wattle, but would be too large for baskets. The sample is, however, too small and damaged to draw many conclusions.

The two fragments of coppice stools might have been informative had they not been so dried-out. Sections of coppice stools were shaped into bowls at the causewayed enclosure at Etton (Pryor 1988), but the Stanwick material was too damaged for comparison to be made.

Almost all of the bark from Stanwick was less than 10mm thick: most of it was less than 5mm thick. This indicates that the bark came from immature stems, not from mature trunks where the bark would have been more corky, and therefore thicker. If the thickness of the unattributed woodchips is tabulated, it can be seen that these are also very thin: all less than 10mm, and most less than 5mm thick. This suggests that they were tangential, since radially aligned woodchips are often more 'chunky'. The table indicating thicknesses of radially aligned woodchips from Stanwick shows a wide range of thicknesses.

SS3.6.6 Discussion

The bark in the ditch was particularly interesting, partly because of the large size of some of the pieces; several were over 300mm long. The bark was also very thin, under 10mm thick. Naturally shed bark is usually thicker and corkier and detaches itself in small 'platey' pieces. Larger, thin pieces are more likely to result from intentional bark removal. Bark was an important commodity, depending to some extent on the species of tree. Bark from some trees produces dyes or drugs. The large piece of bark from the ditch (137–context 241) was identified as Tilia

(lime). Lime bark has been used until recent times for fibre production for ropes. It is the inner bark or bast which produces the fibres. Historically the best bast fibres from limes were taken from coppice stems of about ten years old (Edlin 1973, 9.119). The removal of the bark would kill the tree unless it was coppiced, but coppicing would produce fresh young stems to continue the supply. Over the age of ten years the bark would begin to grow corky and so would be more difficult to detach in reasonably sized pieces. The fibres for rope or string are removed from the bark by a combination of soaking and beating. It is significant that there was no other evidence for lime from the site, suggesting perhaps that the lime bark was brought in.

Of the 19 pieces of roundwood, more than half examined in detail had a diameter of less than 30mm. This would be within the range of sizes for wattle revetments. There were four larger pieces as well as 15 smaller pieces of roundwood, only seven of which were trimmed. Although there was not enough material for detailed statistics, the roundwood and roundwood debris was of a suitable size for wattle fencing (Taylor 1988). It would also have been suitable for revetments.

Only 23 woodchips survived in sufficiently good condition for detailed analysis. Eight were aligned tangentially to the stem or trunk, and 15 were aligned radially. If the breadth:length ratios of the two types of woodchip are plotted, the radially aligned woodchips make a particularly neat cluster. The overall size of the pieces was large (they should be described as 'offcuts' rather than woodchips).

The examples illustrated to show toolmarks, were pieces of radially split wood which had been further trimmed; they were not pieces that had been detached from a log by a single blow. They were distributed in the ditch close to, but separate from, the roundwood and appeared to represent one episode of woodworking.

Larger roundwood was split to produce stakes for sharpening or as part of the vertical component of wattle or revetment. Timber positions in the bottom of the façade trench were 120mm by 68mm and were recorded as 'oval' or subcircular.

Waterlogged roundwood or timber from horizontal layers may often become oval in section because of the weight of overburden, but vertical wood does not appear to distort in this way (Taylor 1998). This would suggest that the wood in the façade and revetment was half-split roundwood of approximately 120mm diameter. Two pieces of roundwood from the ditch approached that size (sample 166 267/3 and sample 188 285/0) but both, although distorted, were slightly smaller. Some of the radially aligned woodchips illustrated could have been derived from working roundwood similar to that used in the façade/revetment.

The distribution of woodchips along the ditch suggests discrete groups of debris rather than a general 'dump'. Roundwood was being trimmed, presumably for wattle, and larger roundwood was being split and trimmed close by. The presence of the larger pieces of bark may represent a third activity connected with bast fibre processing.

The most remarkable aspect of the wood from Stanwick is the presence of clear axe-marks. The sharpness and clarity of the marks contrasts with the effects observed in experiments with stone and flint axes (Coles and Darrah 1977; Olausson 1983). This highlights one of the difficulties of experimentation. So little is known about the way in which the tools were used. The wood from Stanwick may give us some insight into the method of using flint and stone axes. It may also illustrate the fine results that an expert, experienced in using such tools, could achieve.

SS3.6.7 Catalogue of the wood

L=length, D = diameter, W = width, Th = thickness

Context 205

Sample 140/17 205/17; piece not seen

Context 226

Sample 146 226/0 (Computer no C8). Roundwood – trimmed one end/roughly. L not available D 28mm. Box 7

Sample 143 226/0 (Computer no C40). Radial woodchip – heartwood only. L 120mm W 50mm Th 28mm. Facets on both ends – deteriorated in storage. Too deteriorated for identification. Box 3

Sample 145 226/0 (Computer no C7). Roundwood. L 310mm D 80/50mm. Too deteriorated for identification. Box 7

Sample 141 226/0 (Computer no C85). Roundwood. L 64mm D 13mm. Too dry for identification. Box 5

Sample 147 226/0 (Computer no C11). Radial woodchip – heartwood only. L 55mm W 13mm Th 8mm. *Quercus sp* (oak). Box 7

Sample 144 226/0 (Computer no C21). Roundwood (Twig). L 66mm Th 8mm. Too deteriorated for identification. Box 7

Sample 142 226/0 (Computer no C3). Roundwood (Twigs). L none recorded Largest D 25mm. Too fragmented for identification. Box 7

Sample 149 226/0 (Computer no C37). Roundwood debris – 1/2 split. L not recorded W 19mm Th 10mm Orig. D 19mm. Too deteriorated for identification. Box 1

Sample 158 226/0. Piece not found

Sample 148 226/0 (Computer no C18). Roundwood (Twigs). L 52mm D 26/13mm. Box 7

Sample 151 226/0 (Computer no C14). Not wood. Box 7

Sample 226/0 (Computer no C19). Roundwood. L not recorded D 8mm. Box 7

Sample 150 (Computer no C10). Coppiced roundwood – long straight stem and heel. L 250mm D 18/14mm. Possibly trimmed at heel. Box 7

Context 240

Sample 136 2400/0 (Computer no C72). Debris. L 620mm W 80mm Th 10mm (Field dimensions). Too deteriorated for identification. Box 2

Context 241

Sample 137 241/0 (Computer no C78). Same as C71 – see below). Box 6

Sample 137 241/0 (Computer no C71). Bark/sapwood debris. L 880mm W 140mm Th 10mm (Field dimensions). *Tilia sp* (lime). Box 6

Context 250

Sample 140/1 250/1 (Computer no C62). Tangential woodchip. Quercus sp – oak. L 80mm W 50mm Th 10mm (Field dimensions). *Quercus sp* (oak). Box 8

Sample 140/2 250/2 (Computer no C17). Bark. L 86mm W 46mm Th 3mm. Box 7

Sample 140/3 250/3 (Computer no C9). Bark. L 160mm W 25mm Th 10mm. Box 7

Sample 140/4 250/4 (Computer no C53). Fragments of bark and stem. L 230mm W 40mm Th 5mm (Field dimensions). Too fragmented for identification. Box 8

Sample 140/5 250/5 (Computer no C60). Debris. L 80mm W 20mm Th 5mm (Field dimensions). Too fragmented for identification. Box 8

Sample 140/6 250/6 (Computer no C57). Thin bark. L 100mm W 20mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/7 250/7 (Computer no C51). Not wood. Box 8

Sample 140/8 250/8 (Computer no C80). Bark. L 260mm W 60mm Th 5mm (Field dimensions). Not identifiable. Box 5

Sample 140/9 250/9 (Computer no C63). Debris. L 70mm W 50mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/10 250/10 (Computer no C61). Debris. L 70mm W 30mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/11 250/11 (Computer no C81). Debris. L 110mm W 90mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 5

Sample 140/12 250/12 (Computer no C59). Debris. L 200mm W 40mm Th 5mm (Field dimensions). Box 8

Sample 140/13 250/13 (Computer no C54). Debris. L 130mm W 250mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/14 250/14 (Computer no C55). Thin bark. L 80mm W 30mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/15 250/15 (Computer no C58). Roundwood (*Pomoideae*). L 400mm D 16mm. Not sampled. Box 8

Sample 140/16 250/16 (Computer no C64). Debris. L 100mm W 30mm Th 10mm (Field dimensions). Too fragmentary for identification. Box 8

Sample 140/17 250/17 (Computer no C83). Debris. L 240mm W 250mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 5

Sample 140/18 250/18 (Computer no C84). Debris. L 100mm W 5mm Th 5mm (Field dimensions). Too fragmentary for identification. Box 5

Sample 140/19 250/19 (Computer no C46). Radial woodchip. L 165mm W 55mm Th 30mm. 5 facets/one end – 2 facets/one end. Slides and B&W. Box 3

Sample 140/20 250/20 (Computer no C4). Radial woodchip. L 150mm W 40mm Th 10mm. Box 7

Sample 140/21 250/21 (Computer no C50). Radial woodchip. L 156mm W 48mm Th 34mm. Possibly one facet/each end but deteriorated. Box 3

Sample 140/22 250/22 (Computer no C2). Tangential woodchip. L 40mm W 10mm Th 5mm. Box 7

Sample 140/23 250/23 (Computer no C5). Radial woodchip. L 240mm W 30mm Th 10mm (Field dimensions). Box 7

Sample 140/24 250/24 (Computer no C86). Tangential woodchip. L 80mm W 30mm Th 5mm (Field dimensions). Too decayed for identification. Box 5

Sample 140/25 250/25 (Computer no C42). Tangential woodchip, trimmed square. L 130mm W 40mm Th 17mm. 2 facets/two ends. Drawn, slide, B&W. *Quercus sp* (oak). Box 3

Sample 140/26 250/26 (Computer no C45). Radial woodchip, trimmed square. L 180mm W 47mm Th 30mm. 3 facets/one end – deteriorating/one end. Drawn, slide, B&W. Box 3

Sample 140/28 250/28 (Computer no C1). Tangential woodchip. L 120mm W 60mm Th 30mm. *Quercus sp* (oak). Box 7

Sample 140/29 250/29 (Computer no C48). Tangential woodchip. L 147mm W 57mm Th 26mm. 2 facets/one end. Drawn, slide, B&W. Box 3

Sample 140/30 250/30 (Computer no C44). Radial woodchip. L 160mm W 63mm Th 32mm. 5 facets/one end – 1 facet/one end. Drawn, slide, B&W. Box 3

Sample 140/31 250/31 (Computer no C39). Radial woodchip. L 150mm W 82mm Th 31mm. 4 facets/one end – 1 facet/one end. Drawn, slide, B&W. Possibly sample sapwood for 14C. *Fraxinus excelsior* (ash). Box 3

Sample 140/32 250/32 (Computer no C43). Radial woodchip. L 236mm W 35mm Th 60mm. 5 facets/one end – one end deteriorated. Drawn, slide, B&W. Box 3. Provided sample for 14C date of 3910–3640 cal BC (4960±45 BP; OxA-6406).

Sample 140/33 250/33 Piece not seen.

Sample 140/34 250/34 Piece not seen.

Sample 140/35 250/35 (Computer no C47). Radial woodchip. L 120mm W 40mm Th 20mm. 1 facet/two ends. Drawn, slide, B&W. Box 3. Provided sample for 14C date of 3960–3660 cal BC (5005±50 BP; OxA-6405).

Sample 140/36 250/36 (Computer no C12). Radial woodchip. L 300mm W 40mm Th 5mm (Field dimensions). Box 7

Sample 140/37 250/37 (Computer no C22). Trimmed (one end/one direction) straight roundwood. L 580mm D 22mm. Box 7

Sample 140/37 250/37 (Computer no C34). Bark. Too fragmentary for full measurement – 3mm thick. *Corylus avellana* (hazel). Box 1

Sample 140/38 250/38 (Computer no C16). Roundwood. D 2mm. Field notes suggest much larger piece of wood. Too small and dry for identification. Box 7

Sample 140/39 250/39 (Computer no C35). Bark. L 270mm W 30mm Th 5mm (Field dimensions). Box 1

Sample 140/40 250/40 (Computer no C36). Trimmed roundwood, one end/one direction. L 400mm D 35mm. Box 1

Sample 140/41 250/41 (Computer no C20). Debris (Fragmentary). L 230mm W 30mm Th 5mm (Field dimensions). Box 7

Sample 140/42 250/42 (Computer no C26). Bark. L 70mm W 40mm Th 30mm (Field dimensions). Box 10

Sample 140/43 250/43 (Computer no C31). Bark. L 190mm W 60mm Th 10mm (Field dimensions). Box 10

Sample 140/44 250/44 (Computer no C49). Tangential woodchip, trimmed square. L 124mm W 34mm Th 20mm. Possible 2 facets/one end but deteriorated. Box 3

Sample 140/45 250/45 (Computer no C56). Bark. L 390mm W 50mm Th 10mm (Field dimensions). Too fragmentary for identification. Box 8

Context 251

Sample 138 251/0 (Computer no C52). Bark. L 370mm W 100mm Th 15mm (Field dimensions). Box 8

Context 252

Sample 139 252/0 (Computer no C23). Thin wood. L 400mm W 70mm Th 5mm (Field dimensions). Box 4

Context 265

Sample 160 265/2 (Computer no C6). Radial woodchip. L 280mm W 140mm Th 20mm (Field dimensions). Box 7

Context 266

Sample 161 266/1 (Computer no C73). Debris, poss. part of coppice stool. L 295mm W 64mm Th 48mm. *Quercus sp* (oak). Box 2

Sample 162 266/2 (Computer no C41). Radial woodchip. L 140mm W 70mm Th 50mm (Field dimensions). Box 3

Sample 163 266/3 (Computer no C77). Tangential woodchip. L 100mm W 20mm Th 10mm (Field dimensions). Too decayed for identification. Box 2

Context 267

Sample 165 267/2 (Computer no C75). Radial woodchip. L 350mm W 40mm Th 30mm (Field dimensions). *Quercus sp* (oak). Box 2

Sample 166 267/3 (Computer no C76). Radial woodchip. L 670mm W 200mm Th 40mm (Field dimensions). *Quercus sp* (oak). Box 2

Sample 166 267/3 (Computer no C66). Roundwood. L 670mm D 120/95mm (Field dimensions). Box 9

Context 275

Sample 167 275/0 (Computer no C24). Bark. L 230mm W 90mm Th 5mm (Field dimensions). Box 10

Context 276

Sample 168 276/0 (Computer no C32). Possible coppice stems, but very fragmentary, not wattle. Too fragmentary to measure D 10mm. Possible *Alnus glutinosa* (alder), *Pomoideae*). Box 10

Context 277

Sample 169/1 277/1 (Computer no C27). Bark. L 240mm W 110mm Th 5mm (Field dimensions). Box 10

Sample 169/2 277/2 (Computer no C30). Bark. L 170mm W 60mm Th 5mm (Field dimensions). Box 10

Sample 169/3 277/3 (Computer no C28). Fragmentary woodchip. L 100mm W 60mm Th 5mm (Field dimensions). Too fragmented for identification. Box 10

Sample 169/4 277/4 (Computer no C29). Bark. L 140mm W 40mm Th 5mm (Field dimensions). Box 29

Sample 169/5 277/5 (Computer no C70). Bark. Too fragmentary to measure. Box 9

Sample 169/6 277/6 (Computer no C25). Woodchip. L 170mm W 50mm Th 20mm (Field dimensions). Box 10

Sample 169/7 277/7 (Computer no C87). Debris. L 290mm W 10mm Th 10mm (Field dimensions). Too decayed for identification. Box 5

Context 283

Sample 186/1 283/1 (Computer no C33). Bark. L 490mm W 90mm Th 5mm (Field dimensions). Box 1

Sample 186/2 283/2 Piece not seen

Sample 186/3 283/3 (Computer no C74). Bark. L 300mm W 80mm Th 5mm (Field dimensions). Box 2

Sample 186/4 283/4 (Computer no C79). Bark. L 270mm W 90mm Th 10mm (Field dimensions). Box 5

Sample 186/5 283/5 (Computer no C82). Debris. L 150mm W 150mm Th 5mm (Field dimensions). Too fragmented for identification. Box 5

Sample 186/6 283/6 (Computer no C15). Bark. L 130mm W 90mm Th 10mm (Field dimensions). Box 7

Context 285

Sample 188 285/0 (Computer no C65). Trimmed (one end/one direction) roundwood L 820mm D 120/60mm (Field dimensions). *Quercus sp* (oak). Box 9

Context 286

Sample 189 (Computer no C38). Trimmed roundwood (side branches trimmed). L 360mm D 90/80mm (Field dimensions). *Corylus avellana* (hazel). Box 1

Sample 190 286/2 (Computer no C68). Roundwood. L 140mm D 45/35mm. Box 9

Sample 192 286/3 (Computer no C69). Roundwood. L Too fragmentary to measure D 10mm. Box 9

Sample 186/6 286/6 (Computer no. C15). Bark. L 130mm W 90mm Th 10mm (Field dimensions). Box 7

Sample 189 286/1 (Computer no. C13). Debris. L 120mm W 90mm Th 10mm (Field dimensions). Box 7

SS3.7 Lithics

SS3.7.1 Catalogue of stone implements

Petrological identifications by David F Williams, descriptions by Jon Humble with additional comments by Frances Healy

The thirteen Neolithic and Bronze Age artefacts of stone other than flint comprise a flake, four fragments and two complete examples of polished axes, a fragment of a macehead, and a pebble-hammer broken in manufacture. In addition, a 'sponge finger', an archer's wrist-guard or bracer, a chalk object and a possibly unmodified piece of chalk were recovered from burial contexts. With the exception of the four grave goods, all stone artefacts were residual to the context in which they were found. Most of the artefacts are illustrated in Figure SS3.22.

The majority of the stone is of diverse non-local origins, but some could have been obtained from local Drift deposits.

All measurements are given with length as the axis perpendicular to the assumed functional edge or end. The co-ordinates relate to the appropriate site grids.

Axes

AOR 40729. Stanwick Villa. Context 45515 (lower ploughsoil, containing Roman and Iron Age pottery). 110445 129325

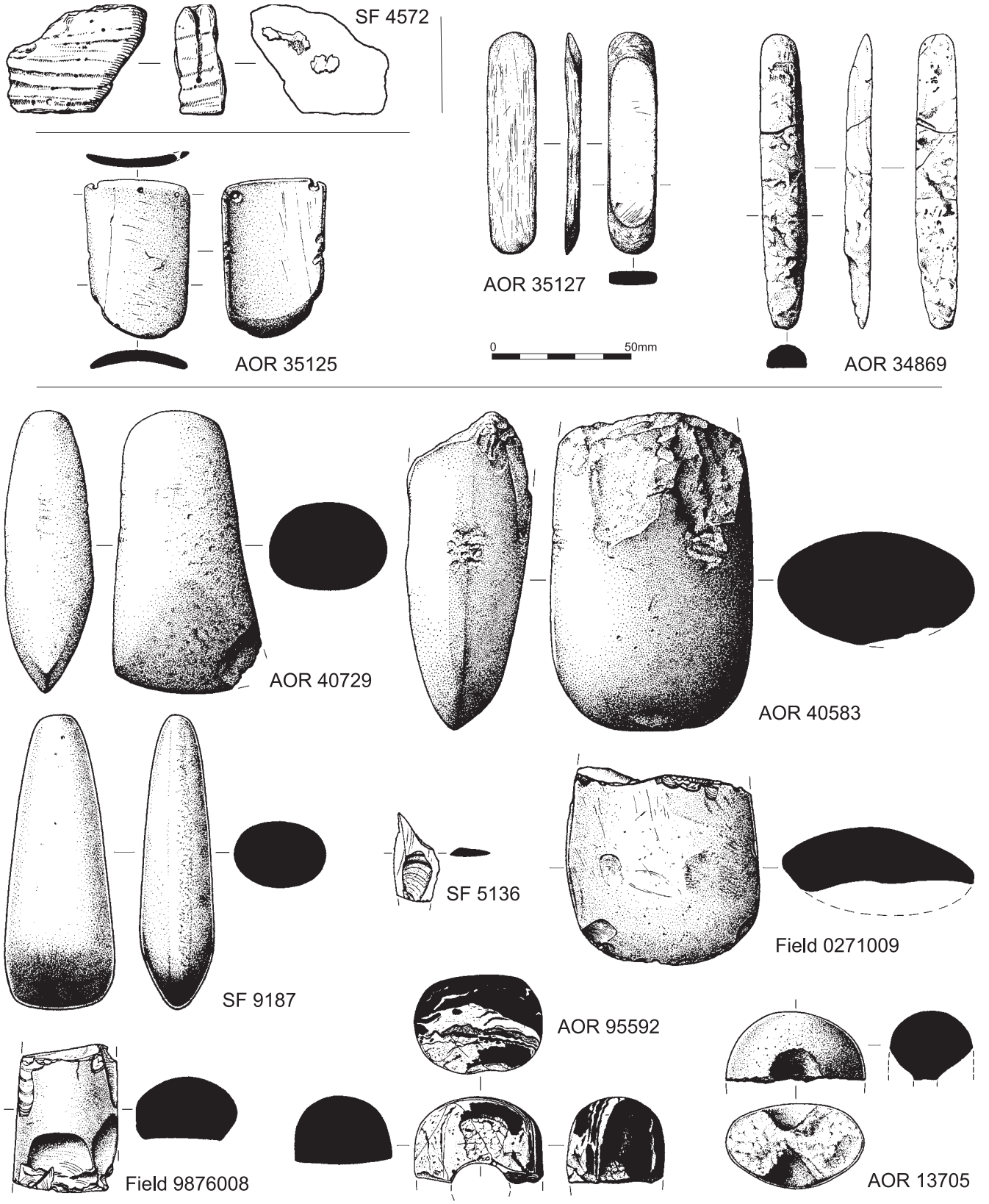


Figure SS3.22 Stone artefacts.
Sf 4572 from the primary burial in Barrow 6; AORs 35125, 35127 and 34869 from the primary burial in Barrow 1; the two fragments labelled with field numbers from fieldwalking survey; the remainder from various findspots in the excavated area (particulars in catalogue)

Length 101mm, width 55mm, thickness 33mm, weight 276g

Petrology. A thin section shows that the rock is an uralitized gabbro, and as such it can be classified as belonging to the Implement Petrological Committee's Petrological Group I, with an origin in the south-western peninsula.

Description Virtually complete axe of trapezoidal outline with a thick, rounded butt, dark grey in colour. One large and one small chip are missing from a (post-depositionally?) thin damaged end of the blade edge, but the axe is in otherwise good and apparently unused condition.

AOR 40583. Stanwick Villa. Context 45026 (layer below ploughsoil containing Iron Age, Roman, and medieval pottery). 114281 121306

Length 106mm, width 73mm, thickness 43mm, weight 556g

Petrology. A thin section shows that the rock is a fairly coarse-grained greywacke sandstone. It does not appear to be micaceous enough to belong to the Implement Petrology Committee's Petrological group XV, thought to have an origin in the southern Lake District. An alternative source might be Group XIX, with a suggested origin in Cornwall. However, implements of this group have rarely been identified outside the south-west (Clough and Cummins 1988, map 16), and it is possible that this rock came from another source.

Description. Approximately half of a large axe of rectangular outline. The edges of the axe bear rounded facets, and the steep and asymmetric angle of the used blade edge is due to unifacial resharpening. A small area of surface roughening on one of the edge facets may have been intended to improve the grip for a hafting thong. Transversely broken at the butt end with invasive spalling on both faces.

AOR 90256. Stanwick Villa. Context 89006 (lower ploughsoil, containing Roman coin). 102350 106500

Length 82mm, width 51mm, thickness 29mm, weight 197g

Petrology. A thin section shows that the rock is an uralitized gabbro, very similar in composition to AOR 40729. Implement Petrology Committee Petrological Group I, with a south-western origin.

Description. Approximately three-quarters of a dark grey axe with trapezoidal outline and a thick tapering butt. The blade edge is dulled, but unchipped. Transversely broken at the butt end.

Sf 9187. West Cotton. Context 6712. 182.20 639.75, Saxon mill leat, close to Riverside Structure

Length 106mm, width 40mm, thickness 26mm, weight 149g

Petrology. Micaceous sandstone. It is difficult to suggest a likely origin for this piece.

Description. Complete axe of trapezoidal outline with a thin tapering butt. The blade edge is rounded and blunt, yet unchipped. Soil conditions have caused differential post-depositional weathering of the two faces.

Sf 5136. West Cotton. Context 1200

Length 31mm, width 16mm, thickness 3mm, weight 2g

Petrology. Greyish-green altered basic tuff. Appears identical in hand specimen to axeheads from Great Langdale in the Lake District, Implement Petrology Committee Petrological Group VI.

Description. Small struck flake with a distal break from a polished implement with faceted edges, presumably an axe. The flake bears a dorsal struck flake scar and may provide evidence of the re-fashioning of a broken tool.

Field 0271009. Tran/St 20/20. RAP Survey. NGR 502483 271215

Length 67mm, width 67mm, thickness 20mm, weight 164g

Petrology. Greyish-green altered basic tuff. Appears identical in hand specimen to axeheads from Great Langdale in the Lake District, Implement Petrology Committee Petrological Group VI.

Description. Approximately one-third of an axe with rectangular outline. The lateral edges display pronounced facets, a characteristic which is typical of many axes of this rock type. Grinding of the surfaces during manufacture has failed to completely remove the preparatory flake beds. Any evidence of use has been lost by extensive plough scarring of the blade edge. The plunging transverse break is likely to have occurred during use.

Field 9876008. Tran/St 6/9. RAP Survey. NGR 498186 276369

Length 51mm, width 36mm, thickness 23mm, weight 77g

Petrology. Greyish-green altered basic tuff. Appears identical in hand specimen to axeheads from Great Langdale in the Lake District, Implement Petrology Committee Petrological Group VI.

Description. Medial section of an axe of rectangular? outline, comparatively thick for its width. Lateral edge facets are sharply defined. Initial plunging and subsequent

simple transverse breaks, with flake removals from both the platform-like breaks. These removals are likely to be either accidental or the result of post-depositional damage.

Shaft-hole Implements

AOR 95592. Stanwick Villa. Context 85207 (layer of ashy soil covering an area of around 50 sq m, containing Roman pottery and widespread large to medium limestone fragments, lenses of clay; charcoal and sand, with some localised deposits of iron slag, possibly a Romano-British iron-working area). 112500 93210.

Length 34mm, width 47mm, thickness 35mm, weight 89g

Petrology. Dark grey and white banded metamorphosed rock. A thin section shows that can be described as an amphibolite. It quite probably came from Cornwall.

Description. Rounded end and part of straight bored shaft-hole of a Neolithic mace head. Although incomplete, upon criteria of a pestle-like end and ostensibly straight sides, the artefact can tentatively be assigned to Roe's Thames Pestle mace head type (1979, 30). The artefact has broken across the shaft-hole. Pestle mace heads and the related cushion and ovoid types, are of later Neolithic date, and associations are mainly with Grooved Ware (Roe 1968 – although several of the associations listed are anything but secure). The rock was almost certainly chosen for its visual appeal, and echoes the selection of banded rocks for maceheads found with Neolithic cremations at Dorchester on Thames (Atkinson *et al* 1951, fig 31: 149) and at Stonehenge (Cleal *et al* 1995, pl 8.1). Probably cognate is an unmodified banded pebble from a pit containing Grooved Ware at Firtree Farm, Cranborne Chase, Dorset (Brown 1991, 113).

AOR 13705. Barrow 1. Context 30001 (alluvium). 026028 031760

Diameter *c* 50mm, thickness 30mm, weight. 48g

Description. Small pebble-hammer with pecked hour-glass perforation on quartzite pebble. The perforation is only 80% completed, and the artefact clearly broke during manufacture. The majority of datable associations with pebble hammers are Mesolithic, but it appears likely that their use continued well into the Neolithic (Roe and Radley 1968; Roe 1979, 36).

Grave Goods

Sf 4572. Barrow 6. Context 3259 (primary burial, object at feet with other grave goods). 232.75 618.88

Length 59mm, width 37mm, thickness 16mm

Petrology. Fine-grained, white chalk with shallow, horizontal grooves, most probably naturally formed.

Description. Irregular piece of chalk placed with other grave goods at the feet of the primary inhumation. The surface of the artefact is eroded and rounded.

Chalk objects, often carved, are a relatively common occurrence in Beaker burials, particularly in the south-east of England (eg Pull 1932, 67), and the practice of incising lines is also attested (Thompson 1984). Yet their function remains obscure.

AOR 35125. Barrow 1. Context 30476 (primary burial, object at feet with other grave goods). 24685 32525

Length 57mm, width 38mm, thickness 3mm

Petrology. Greenish-grey altered basic tuff, probably from Great Langdale, Implement Petrology Committee Petrological Group VI.

Description Highly polished archer's wristguard or bracer placed with other grave goods at the feet of the primary inhumation. The artefact is of rectangular outline, with a slightly rounded and bevelled end, and a finely worked convexo-concave transverse section. Perforations (one damaged) were drilled at two corners mainly from the underside and completed from the other face, creating a slight hour-glass section. A straight-sided, incompletely drilled hole is approximately centrally placed on the upper convex surface. These fixing points are not symmetrically located, the broken hole being much closer to the end edge than the intact perforation. Bracers were intended to shield the inside of the forearm from the lash of the bowstring, and either may have been directly tied to the arm with a piece of gut or a thong, or fixed to a backing of textile or leather. It is likely the perforation was damaged upon removal from a backing. The function of the partial perforation is unclear, and it may either have been intended for purely decorative purposes, or perhaps as the recess for a small stud.

The opposite end is heavily worn and rounded, and it would appear that the artefact was broken and this end was used as a form of burnishing tool. Two small chips are missing from both lateral edges and their position suggests that they may have been inadvertently or deliberately caused by hafting for this secondary function. Examination of the re-used end with a SEM revealed a smoothed but unpolished surface marked by

Figure SS3.23
Bracers made of Group VI rock from Barrow 1 at Raunds (right) and from site XII at Dorchester-on-Thames (left).
(Reproduced by permission of the Visitors of the Ashmolean Museum)

fine striations. This pattern of wear is consistent with prolonged contact with a resilient material containing minute abrasive grits, such as a hide. Similar wear was observed on 'sponge-finger' stone 35127, and the shapes of the edges are comparable.

The artefact is of high quality and unusual section and cannot be comfortably placed within Atkinson's insular typology of British bracers (Clarke 1970, 570). The best British parallel, also thought to be of rock resembling Group VI, is from a primary burial with a Wessex/Middle Rhine Beaker at Dorchester-on-Thames site XII (Fig SS3.23; Whittle *et al* 1992, 179–84), yet bracers of this general type, often of similar transverse section, normally occur with Wessex/Middle Rhine beakers. The form is more common, however, in central and eastern Europe (Harrison 1980, fig 37, type 4).

AOR 35127. Barrow 1. Context 30476 (primary burial, object at feet with other grave goods). 24685 32525

Length 79mm, width 18mm, thickness 6mm

Petrology. Appears to be a greenish-grey slate

Description. 'Sponge-finger' stone (Thurnam 1871, 425–6) manufactured from a fine-grained green laminated rock, placed with other grave goods at the feet of the primary inhumation. The artefact is of rectangular outline, with flat faces and neatly rounded and bevelled ends. The bevels are unpolished. The artefact is in excellent condition. Residual scratch marks, mainly parallel to the long axis and predominantly on the very slightly hollow lower face are due to grinding, but elsewhere these have been removed by polishing. No indications of use could be detected upon any of the flat surfaces.

Examination of the bevelled ends with a SEM revealed slight facets on both tips marked by very fine striations, of similar character to those observed upon the bracer (see above).

Sponge-finger stones have been suggested as tools 'used during the essential process of rubbing in fat (to leather) and applying the final burnish' (Smith and Simpson 1966, 134) and the evidence from Irthlingborough does not conflict with this interpretation. The exotic stone and the care and quality of manufacture, however, do not appear in keeping with use for arguably mundane and utilitarian tasks when a simple wooden or bone tool would have performed equally well. Other examples, mainly from burial contexts (Smith and Simpson 1966, 149–51; Thomas 1988, 205), without exception also bear only limited signs of use.

AOR 34869. Barrow 1. Context 30476 (primary burial, object at feet with other grave goods). 24685 32525

Length 103mm, width 15mm, thickness 9mm

Petrology. Fine-textured white chalk

Description. Slender, elongated object placed at the feet of the primary inhumation. The artefact has a semi-circular plano-convex transverse section, with ends strongly bevelled on the upper surface and slightly bevelled at the tips on the underside. One end is markedly tapered in plan. A single break occurred in antiquity, and erosion and iron-staining of all surfaces has obscured any evidence of manufacture and use. It is clear, however, that preparatory carving was followed by grinding and smoothing.

The artefact has been compared to 'sponge-finger' stones on the basis of its morphology and size, but its thickness could suggest that it is a replica of a flint 'fabricator'. No other examples of either are known which are made of chalk, and the softness of the rock means that the object can never have been functional. In the late Neolithic there are non-functional axehead-like objects made from chalk, including examples from Woodhenge and Stonehenge (Varndell 1991, 106; Cleal *et al* 1995, 403–6).

SS3.7.2 The Stanwick flint axe hoard (Figs SS3.24–26)

Jon Humble

Circumstances of discovery

On June 22 1938, the Northamptonshire Evening Telegraph carried a report entitled 'Prehistoric knives found at Stanwick' which tells how, while digging excavations for a new house on the estate of Messrs A J Potter and Son, builders at Stanwick, workmen found, underneath a yew tree which was itself hundreds of years old, several flints and fragments of pottery. The flints and pottery were shown to Mr J Dunn, headmaster of the Church of England School at Burton Latimer, who identified the flints as 'fine examples of Neolithic knives' and the pottery as of 'Windmill Hill' type.

Correspondence between the Central Museum in Northampton and Mr Potter and his relatives, confirms that the axes came from the foundations of no 1 Woodlands, at SP 9804 7126. Mr Potter's daughter, Mrs Rockingham, stated 'that there were more axes, but they were buried in the concrete of the foundations' (Northampton Central Museum Ordnance Survey Catalogue, Antiquity No SP 97 SE 11, 1969). Since the discovery of the hoard, notes and letters held by the Central Museum record the history of how the axes changed hands during the last 50 years. As these have an important bearing on the circumstances of discovery, they are worth considering in detail.

Three of the axes (Accession Nos. D.98, D.99, D.100) were donated to the Museum by Mr Potter in 1941 (Central Museum Donation Form D.10). The fourth axe was retained by Mr Potter and is now lost. The fifth axe was given to Mr Rockingham of Stanwick (son-in-law of Mr Potter) who subsequently passed it to Mr N Headland of Kettering, who then loaned the axe to the Museum (Loan no L.426). The sixth axe was passed to Mr Rollings of Rushden, who loaned the axe to the Museum (Loan no L.494). Notes in Northamptonshire Archaeology (1980, 166; 1986–7, 153) state, however, that the fifth and sixth axes were found in 1946 whilst digging the garden of no 1, Woodlands, a few yards away from the original findspot of the hoard. Nevertheless, annotations on the bag containing L.494 strongly suggest that the axe was not a later find and was found as part of the hoard. As the hoard is known to have comprised at least six axes, all initially in the possession of Mr Potter, it appears likely that L.426 is also part of the original find, and the suggestion of 'later finds' was introduced in error when the axes changed hands. Regrettably the location of the pottery found in 1938 is unknown. The find is catalogued by Pitts (1996, 357:23).

The site

The site lies in Stanwick village, half-way up the scarp at *c* 50m OD on the east side of the Nene valley. At this point Stanwick Brook, a minor stream draining into the Nene 1.2 km to the west, cuts into the Jurassic clays, sandstone and limestones of the valley side. The hoard was found 40m south of Stanwick Brook, at the junction of the Great Oolite Limestone and the Upper Estuarine Series silts and clays. It thus lies in the kind of location which was locally favoured for settlement in the Neolithic and Bronze Age as well as in the historic period (Parry 2006).

Catalogue

D.98. Length 172mm, width 68mm, thickness 32mm

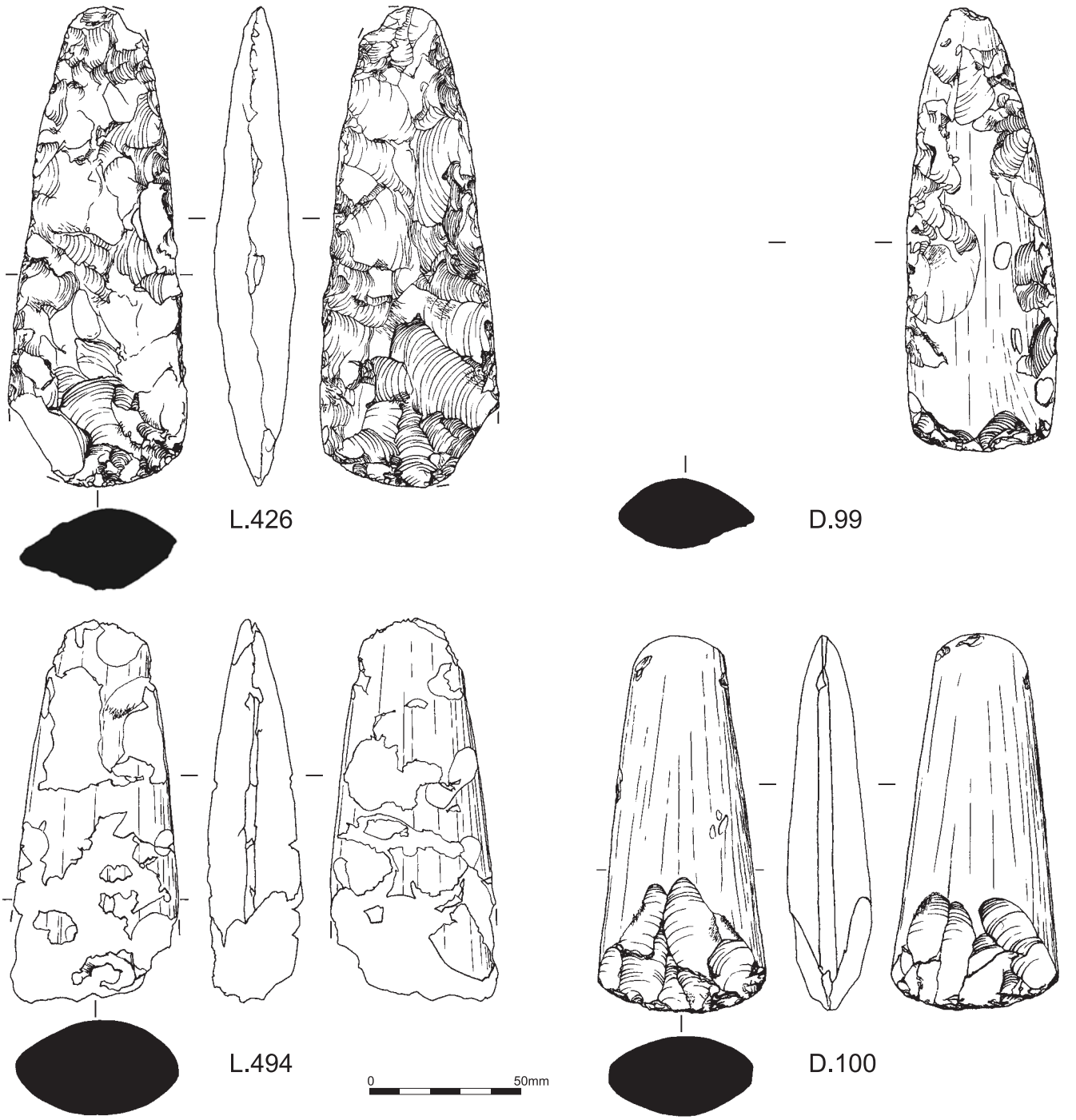


Figure SS3.24
The Stanwick flint axehead hoard. Further artefact in next figure.

Polished axe made from medium-grained grey chalk flint. Opaque white cortication. Almost straight sides and thin tapering butt. Oval section with rounded facets on sides. Few shallow flake scars on faces from original rough-out. On both faces the blade has been polished to a mirror-like finish. Striations from grinding on remainder of faces. Butt chipped. Blade resharpened by flaking. Limey encrustation on one face. One large flake removed from blade is modern damage.

D.99. Length 147mm, width 51mm, thickness 21mm

Polished axe made from medium-grained grey chalk flint. Opaque white cortication.

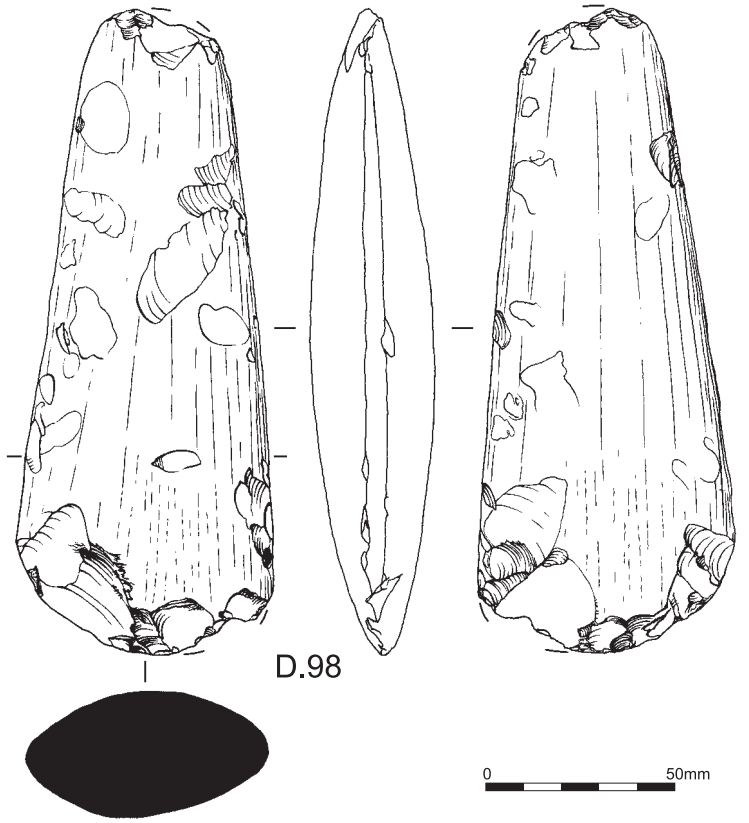


Figure SS3.25
The Stanwick flint axehead hoard. Other artefacts in previous figure.

Sides slightly convex and converging towards a pointed butt. Thin cross-section. Blade, sides and butt rechipped. Polish restricted to blade with striations from grinding on rest of faces. Invasive and semi-invasive reworking has removed *c* 60% of ground and polished finish on both faces. Almost straight cutting edge. Limey encrustation on one face.

D.100. Length 125mm, width 55mm, thickness 26mm, weight 92g.

Ground axe made from medium-grained grey chalk flint. Opaque white cortication. Straight sides tapering towards a thin, broad and rounded butt. Oval section with squared facets on sides and butt. Grinding has almost totally removed flake scars on roughout. Blade invasively flaked on both faces to create a new, convex cutting edge. Limey encrustation on one face.

L.426. Length 158mm, width 60mm, thickness 26mm, weight 241g

Flaked axe rechipped from polished/ground axe on medium grained grey chalk flint. Opaque white cortication. Straight sides with thin tapering butt and convex blade. Re-worked by preparatory invasive flaking, followed by semi-invasive and semi-abrupt trimming and shaping. Trimming flake scars marked by multiple step fractures. One face retains *c* 2% of the original ground and polished surface. Limey encrustation on one face. Large flake removed from blade as result of modern damage. Slight modern damage to butt.

L.494. Shattered during transit to museum. Reassembled but only *c* 70% complete. Surviving length 127mm, width <56mm, thickness 32mm.

Ground and ?polished axe made from medium-grained flint of indeterminate colour. Opaque grey cortication. Heavily burnt. Slightly convex sides tapering towards a rounded butt. Oval section with thin side facets. Flake scars on rough-out almost completely removed by grinding. Blade missing.

Figure SS3.26
The Stanwick flint axehead hoard.
(Photo English Heritage)

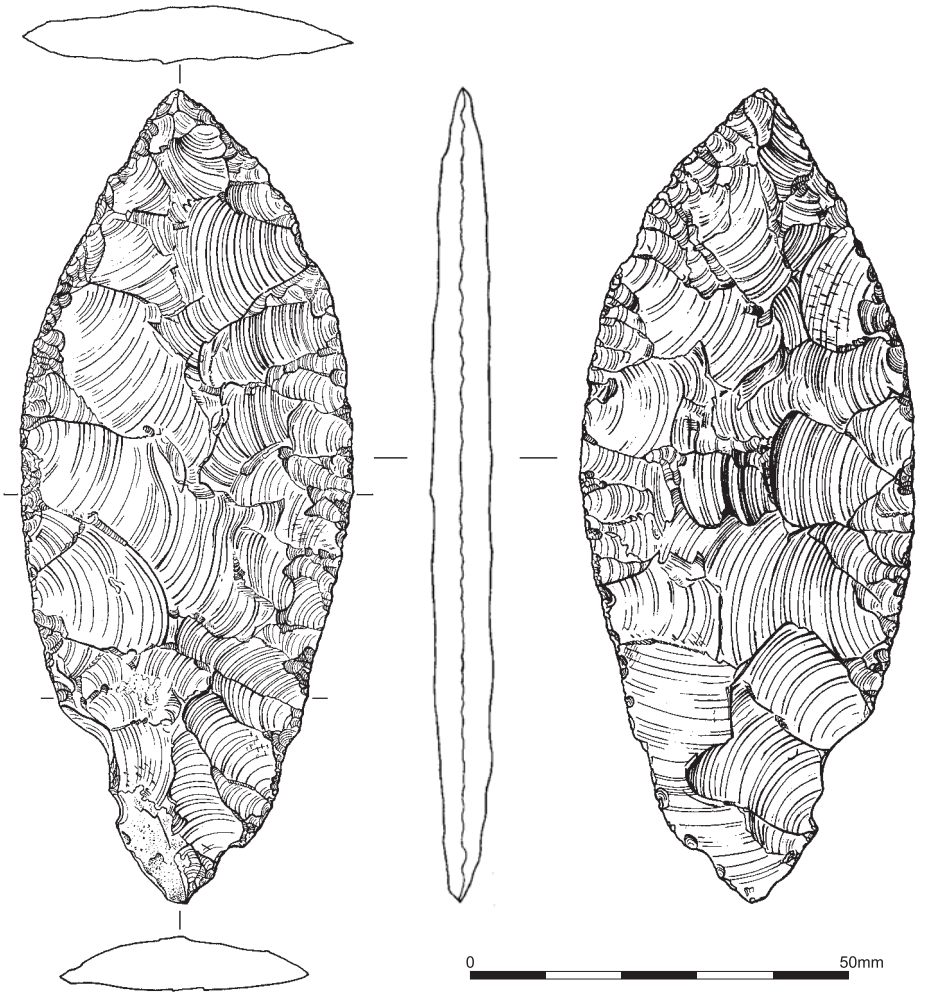


Figure SS3.27
The Higham Ferrers 'dagger'.

SS3.7.3 The Higham Ferrers dagger (Figs SS3.27–28)

Jon Humble

Circumstances of discovery

The dagger was found in the ploughsoil during 1985 by Mr Bob Butler of Rushden at SP 978 676, approximately 250m south-east of Slater's Lodge, Higham Ferrers, to the south-east of the Raunds Area project boundary. The findspot lies at the junction of the southern end of a Jurassic series ridge with the glacial boulder clays, which meet at this point, forming a gentle but pronounced knoll. There were no associated finds, although worked flints were described as plentiful on the surrounding surface.

Given the circumstances of discovery and the thinness of the blade, the dagger is remarkably intact and undamaged. The chief significance lies in the proximity of the findspot to the Irthlingborough and West Cotton barrows which included flint daggers amongst the grave goods.

Description

Dimensions. Length 107mm. Max Breadth 44mm. Max Thickness 7.5mm. Edge Angle 25° (medial)

Cortex. Thin and smoothed, presumably from river-rolling of gravel pebble. Colour 10YR 7/4

Flint. Good quality, vitreous, no inclusions or fissures. Colour 7.5YR 4/4. Translucent at edges.

Condition. Two abrupt dorsal removals beside the surviving patch of cortex may have resulted from recent plough damage. Occasional minor plough chipping. A very light grey dappling on both surfaces is the result of incipient cortication. In general, remarkably well preserved for a surface find.

Manufacture. There is a small portion of the ventral surface of the presumed original flake surviving in the haft area. The character of the ripples of this scar is consistent with a

Figure SS3.28
The Higham Ferrers 'dagger'.
(Photo English Heritage)

flake which would have been large enough to serve as the support.

Thinning was by bold, very shallow (max 0.6mm between ridges) and overlapping invasive flaking. Removals were designed to meet at the central long axis. The shallowness of the scars and the lack of pronounced bulbs are consistent with the use of a soft hammer, quite possibly an antler baton. There is no evidence of a turned edge, although light abrasion of the edge would have been necessary to strengthen the edge before each blow. Blows alternated between faces. Only six thinning scars terminate in slight step fractures, with undetached distal ends to the removals. Symmetrical.

Shaping was by less invasive, more tightly-spaced removals, using the same technique yet with less force than for thinning. Particular attention to dorsal right-side.

Final trimming to form an even blade edge was by fine, semi-abrupt retouch. Particular attention to dorsal left-side.

The 'haft' area at all stages of manufacture has received as much attention as the 'blade'.

SS3.7.4. Usewear analysis of artefacts from treehole F62123 and flint grave goods from Barrows 1 and 6

Roger Grace

Introduction

The analysis was undertaken in the late 1980s, following the methods described by Grace (1989). This summary is based on information supplied by Roger Grace shortly

Table SS3.8. Treehole F62123, context 62125. Pieces with usewear

RHS and LHS = right- and left-hand sides as viewed from the proximal end of the dorsal face

AOR	*Type*	*Wear traces*	*Location*
55046	Flake	Scraping wood	RHS, straight edge, 47°
55047	Flake	Scraping wood	RHS, slightly concave edge, 53°
55049	Flake	Whittling soft wood	RHS, convex edge, 15°
55055	Notch	Scraping soft antler or horn	LHS, in notch, 48°
55056	Blade	Cutting meat	Distal, straight edge, 28°
55060	Blade	Cutting meat	RHS, sinuous edge, 17°
55062	Flake	Cutting wood	LHS, straight edge, 39°
55069	Blade	Cutting meat	LHS, straight edge, 18°
55073	Flake	Cutting or scraping fish	RHS, straight edge, 24°
55074	Blade	Cutting soft wood	LHS, straight edge, 43°
55075	Hollow scraper or notch	Scraping wood	RHS, in notch, 53°
55079	Core	Chopping wood	Platform edge, 44°

Table SS3.9. Barrows 6 and 1. Usewear on flint artefacts from primary burials

RHS and LHS = right- and left-hand sides as viewed from the proximal end of the dorsal face

Context	*AOR or Sf*	*Illustration (Figs D3.42–43, D3.50–52)*	*Type*	*Wear traces*	*Location/comments*
Barrow 6 context 3259	4569	61	Dagger	Sheathed and hafted	Polish on edges and on arrises of both faces in blade area, no polish on tang
	4570	59	Flake	Whittling wood	RHS, slightly convex, 20°
	4640	60	Knife	-	Coarse-grained material made observation impossible
Barrow 1 context 30476	34866	133	Knife	Scraping wood, possibly antler	LHS, slightly convex, 45°
	34868	131	Dagger	Sheathed and hafted	Polish on edges and on arrises of both faces in blade area, no polish on tang
	35128	126	Flake	Butchering	LHS, sinuous, 30° Distal,slightly concave, 40° RHS, slightly concave, 27°
	35129	130	Triangular arrowhead	Unused	Perhaps a blank, and perhaps too thick to be completed satisfactorily
	35130	127	Flake	Cutting medium to hard material	LHS, slightly sinuous, 27°
	35131	134	Scraper	Scraping wood	Distal, convex, LHS, slightly sinuous, 25°
	35132	128	Flake	Scraping wood	Distal, convex, 55°
	35133	124	Flake	Unused	
	35134	125	Flake	Unused	
	35136	136	Miscellaneous retouched	Scraping medium material	Distal, convex, 52°
	35137	135	Scraper	Scraping hide	Distal, slightly convex, 65°
	35138	132	Knife	Cutting soft material on medium material	RHS, straight, 15°
	35139	129	Core rejuvenation flake	Unused	

after the work was completed, and on a preliminary publication of the results of work on the grave goods (Grace 1990).

Treehole F62123

An assemblage of ninety-seven pieces was recovered from this feature. A small proportion came from the lowest layer, short-life charcoal from which is dated to 4360–3980 cal BC (5370±80 BP; OxA-3057). Most, including all the pieces on which wear traces were identified, came from the lower part of the overlying layer, 62125. The assemblage included a few burnt pieces, which seemed to link it to the burning-out of the treehole. Small chips and two refitting flakes suggested that it had been knapped nearby. A low proportion of cortical pieces indicated that the cores had been decorticated elsewhere, and the relatively large size of the blades showed that microlith blanks were not among the intended products. The assemblage is further described by Ballin (SS3.7.6). The material itself was unfortunately lost before it could be illustrated.

Although the whole assemblage was examined, usewear could be identified on only twelve artefacts, which are listed in Table SS3.8. The combination of meat- and fish-preparation, wood- and bone- or antler-working and limited flint knapping suggests food consumption and the manufacture and/or repair of tools. The fact that the one piece used to scrape bone or antler (55055) and two of the pieces used to scrape wood (55047, 55075) had concave scraping edges, in two cases deliberately formed rather than selected, suggests that handles or hafts – even a bow – were made or modified.

The grave goods

All of the flint grave goods from the primary Beaker burials in Barrows 6 and 1 were examined. The results are summarised in Table SS3.9. The artefacts themselves are illustrated in Figures SS3.50–52 and SS3.42–43. Figures SS1.105 and SS1.157 show their locations in the graves.

Both daggers were, or had been, sheathed and hafted, but no actual usewear was evident. A proposed programme of experimental use of replica daggers was never carried out.

A single flake lying under the dagger in the Barrow 6 grave had been used to whittle wood. In Barrow 1, where twelve artefacts other than the dagger were present, all but the three smallest flakes (35133, 35134, 35139) and a triangular arrowhead or arrowhead blank (35129) had been used. The five artefacts used for scraping (34866, 35131, 35132, 35136, 35137) had convex edges and relatively high edge angles. The three used for cutting or butchery (35128, 35130, 35138) had straighter, although not straight, edges and variable edge angles. An initial interpretation was that the artefacts were used in the construction of finishing of the wooden chamber which covered the burial (Grace 1990, 11). The range of materials worked, however, argues against this (wood, meat, hide, possibly antler, indeterminate soft and medium materials). Ballin concludes that 'The fact that most of the lithic implements have been used proves that the grave goods were not manufactured for the 'event', the burial, and the entire collection of grave goods may very well be the actual belongings of the deceased.' (SS3.7.6). Alternatively, the various tasks could all have formed part of the preparation of the grave or of the funeral itself. The one flake used for butchery (35128) lay slightly apart from the rest (Fig SS1.105; Harding and Healy 2007, Fig 4.6). If even a handful of the many cattle whose remains were piled over the grave were slaughtered and consumed on the spot (Davis SS4.6.1), this artefact might have been used in the process. Some other burials of this period include used flint artefacts, whether unmodified flakes or retouched pieces. Examples include a twice-used grave at Chilbolton, Hampshire (Boismier 1990) and graves 4660 and 203 at Barrow Hills, Radley, Oxfordshire (Barclay and Halpin 1999, 63, 139–140). The range of actions and materials represented among the eighteen artefacts fromgrave 203 is at least as wide as at Barrow 1. Here it is considered that some may have been personal items while others were used in funerary rites (P Bradley 1999a, 223), but the manufacture of many of them on flakes with a distinctive cortex from what may have been a single nodule may link their manufacture and use to a single event, and that event may have been the funeral itself.

SS3.7.5 Struck flint from Redlands Farm

Philippa Bradley

Introduction

Nine hundred and two pieces of worked flint were recovered from the Long Barrow, Barrow 7, the Redlands Farm villa and various other trenches within the area examined by the Oxford Archaeological Unit. The assemblage is summarised in Table SS3.10 and selected pieces are illustrated in Figures SS3.29–31 and described in the catalogue. Further details of the assemblage may be found in the site archive. The flint was recorded using the system devised by Jon Humble for the Raunds Area Project to facilitate comparison between the different groups of material. The flint was examined using a x20 hand lens and each piece was weighed to the nearest gramme. The paper record was transferred to Dbase IV to aid analysis. Metrical analysis was not undertaken as there were insufficient complete flakes or blades to form a valid sample from each of the Landscape Units. However, some technological attributes, such as butt type, hammer mode, and termination type, were recorded to aid the interpretation of the assemblages.

Raw materials and condition

The flint is dark brown and grey in colour with a buff smooth cortex. It has fairly good flaking properties although there are a few cherty and crystalline inclusions. The majority of the raw material is derived from gravel terraces of the river Nene. Some of it may have been recovered during monument construction. Two pieces, an almost complete polished axe from the Long Barrow (Fig SS3.30: 12) and a flake from a polished implement (Fig SS3.31: 25), are almost certainly of imported flint, the latter perhaps coming from north Lincolnshire, around Louth (Jon Humble pers comm). Cortication where present is generally light to medium, a few pieces exhibit heavy, white cortication. A few pieces are iron-stained. Very little flint was burnt to any degree. There was limited evidence for the reworking of older artefacts, for example a blade and three flakes (contexts 112, 127, 162) and two cores (a class E core from context 122 and a class C from context 148) from the Long Barrow. The assemblage from the Long Barrow was relatively fresh with little later edge damage. In contrast, the material from the villa site and

the other trenches was abraded and worn. This is perhaps not surprising as the majority of this material was recovered from Romano-British and later contexts.

Assemblage composition

The assemblage is summarised by Landscape Unit in Table SS3.10, cores and retouched forms are summarised in Tables SS3.11 and SS3.12. All elements of the reduction sequence were recorded although there are some notable biases, for example very few chips were recovered. This may in part be due to different recovery methods employed, post-depositional factors and the range of activities occurring at each location.

Table SS3.10. Redlands Farm. Flint assemblage composition

Landscape Unit/phase	*Flakes (including core rejuvenation flakes)*	*Blades*	*Irregular debitage*	*Cores*	*Retouched forms*	*Totals*
Long Barrow						
0	19	12	-	1	3	35
1	4	-	-	3	2	9
2.1	7	2	-	-	2	11
2.2.i	25	1	1	-	-	27
2.2.ii	362	24	14	23	24	447
2.3	45	13	3	4	-	65
3.1	1	-	-	-	-	1
3.2	3	-	-	-	1	4
3.3	4	-	-	-	1	5
3.5	1	-	-	-	-	1
4.1	3	-	-	1	-	4
4.2	53	6	2	3	7	71
5	7	-	1	-	1	9
Barrow 7						
1	2					2
2.2	1					1
4	6	1	1			8
Villa site	100	17 (incl unsnapped microburin)	9	7	10	143
Other	41 (incl flake from polished implement)	8	2	5	3	59
Totals	684	84	33	47	54	902

Table SS3.11. Redlands Farm. Core typology (after Clark and Higgs 1960).

Landscape Unit	*Single platform*	*Two platforms (A1, A2)*	*Multi-platform (C) (B1, B3)*	*Keeled (E)*	*Fragments*	*Totals*
Long Barrow	4	3	13	6	9	35
Villa site	2	2	2	-	1	7
Other	2	-	2	1	-	5
Totals	8	5	17	7	10	47

Table SS3.12. Redlands Farm. Retouched forms.

Landscape Unit	*Scrapers*	*Serrated flake*	*Miscellaneous retouched*	*Arrowhead, ?unfinished or blank*	*Denticulate/notch*	*Knives*	*Microliths*	*Piercers*	*Axe*	*Total*
Long Barrow	14	9	7	2	2	3	1	2	1	41
Villa site	2	1	6	-	-	-	1	-	-	10
Other	-	1	2	-	-	-	-	-	-	3
Totals	16	11	15	2	2	3	2	2	1	54

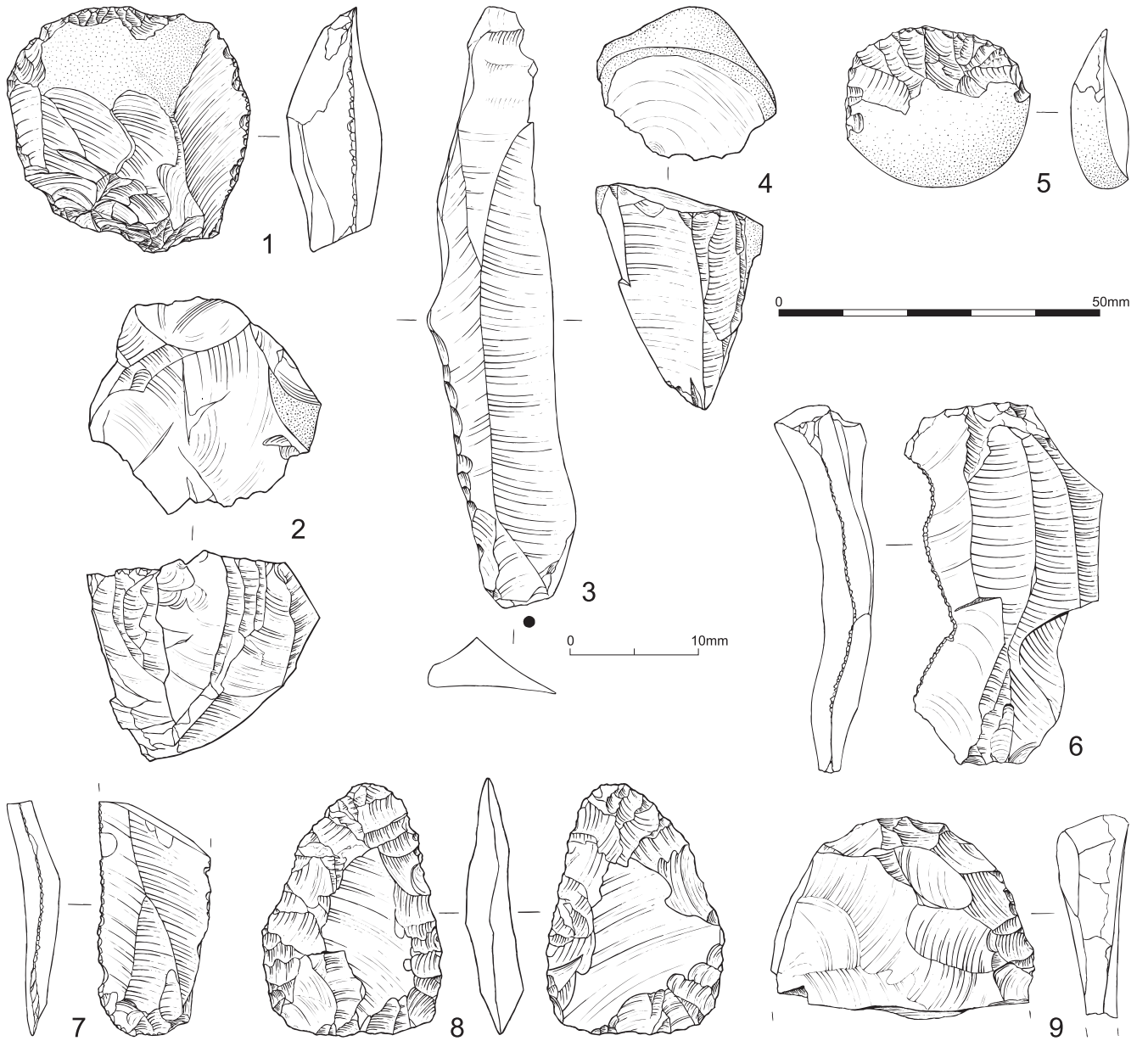


Figure SS3.29
Long Barrow.
Struck flint. Particulars in catalogue.

Flintworking

Flakes dominate the debitage (Table SS3.10) and blade production does not seem to have been carried out systematically, although blade scars were recorded on five cores, and five flakes have previous blade scars on their dorsal faces. One serrated piece from the Long Barrow was made on a flake from an opposed platform blade core (Fig SS3.29: 6). Apart from two microliths and an unfinished microburin (Figs SS3.29: 3, SS3.31: 19–20) serrated flakes seem to be the only retouched form consistently made on blades or blade-like flakes. Two scrapers, one from the Long Barrow and one from the finds scatter on the villa site (Fig SS3.31: 22), were made on blade-like blanks. The scarcity of such pieces may reflect the use of small nodules of gravel flint.

Although no hammerstones were identified, technological characteristics indicate that both hard and soft percussors were used. The bulb and platform types of complete flakes and blades from the Long Barrow are summarised in Tables SS3.13–14. Simple platforms are most frequent; with linear and punctiform butts relatively common amongst the complete flakes and dominant among the few complete blades. The relatively high proportion of flakes with wholly cortical butts may indicate that raw material was being worked in situ. Several wholly cortical flakes

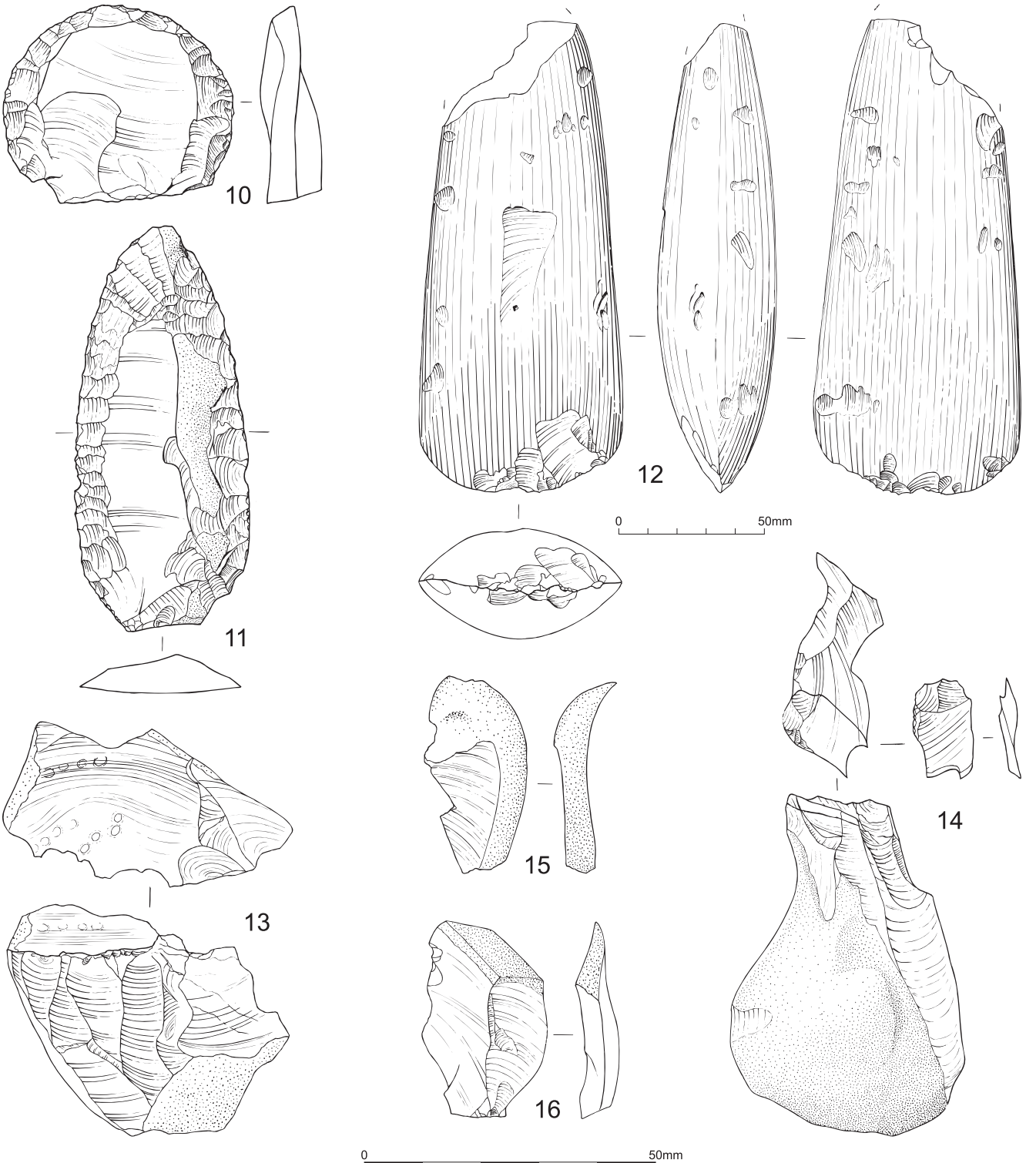


Figure SS3.30
Long Barrow.
Struck flint. Particulars in catalogue.

were recovered from all of the landscape units but in particular the Long Barrow. The majority of blanks end in feather terminations. A single platform edge termination was also recorded. Hinge fractures are relatively common, indicating some loss of control during knapping. This may also partly reflect the nature of the raw material.

Core typology is summarised in Table SS3.11. Class C or multi-platform types dominate, and there appears to be little evidence for systematic blade production,

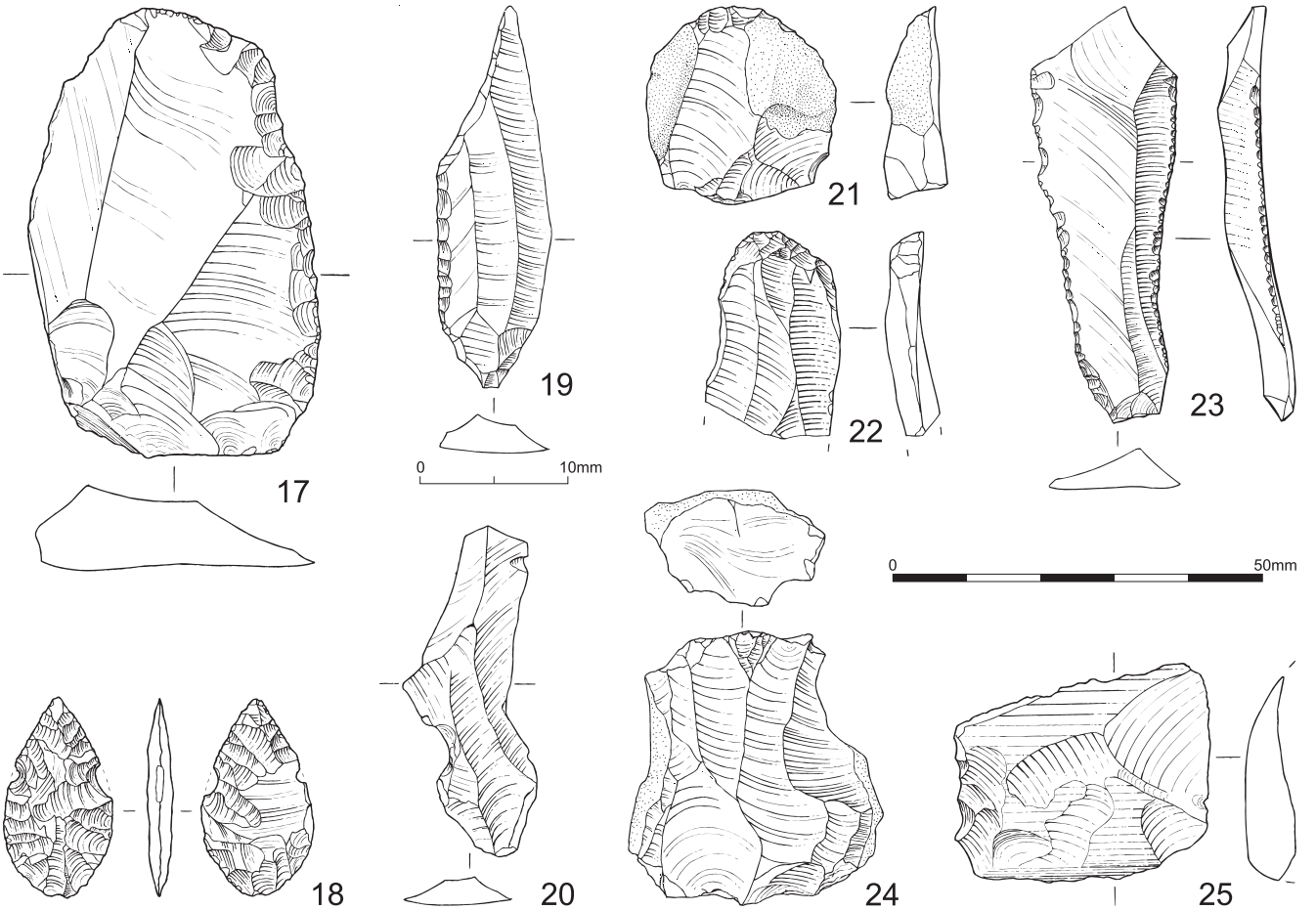


Figure SS3.31
Long Barrow and other contexts at Redlands Farm. Struck flint. Particulars in catalogue.

although there is some evidence for careful, controlled knapping. Platform edge abrasion was recorded on three cores and one core fragment. Eight core rejuvenation flakes were also recovered. These are all face or edge types which have removed intractable platform edges to facilitate further reduction. Cores were relatively intensively worked, the average core weight is 25.18g, excluding core fragments. A relatively high proportion of keeled cores was recovered from the Long Barrow; two of these are Levallois types and may have been used to produce specific blanks (Table SS3.11). Keeled cores are generally more common amongst later Neolithic assemblages although this may be a regional difference (Healy 1985, 192 –3).

Dating

Very little flint, other than the assemblage from the Long Barrow, was recovered from prehistoric contexts. A single flake came from pit F429 which contained a Wessex/ Middle Rhine Beaker (Fig SS3.72: P20). A spread associated with Barrow 7 produced a small quantity of undiagnostic material.

Some diagnostic retouched forms were recovered (Table SS3.12). These include two microliths, of which one was unstratified (Fig SS3.31: 19); and the other redeposited in a pit underneath the Long Barrow (Fig SS3.29: 3). As both types occur throughout the Mesolithic, the dating of these pieces is difficult to refine, although the size of the edge-blunted point may indicate an earlier Mesolithic date and the relatively small size of the obliquely-blunted point may suggest a later Mesolithic date (Pitts and Jacobi 1979, 169, fig 5). The leaf-shaped arrowhead (Fig SS3.31: 18) and the possible unfinished example (Fig SS3.29: 8) from the Long Barrow clearly indicate earlier Neolithic activity. The axe (Fig SS3.30:12)is demonstrably earlier Neolithic, as the toolmarks on some of the waterlogged wood found near the base of the Long Barrow ditches and almost certainly derived from the construction of the revetment match its damaged cutting edge (Fig SS3.21). Two of the woodchips which fit the axe have been radiocarbon dated, to 3910–3640 cal BC (4960±45 BP; OxA-6406) and 3960–3660 cal BC

(5005±50 BP; OxA-6405). These determinations can be rendered slightly younger by allowing for the outermost sapwood rings, which were absent from both samples, although some sapwood survived. Modelling of the complete series of dates from the Long Barrow indicates a construction date, and hence a date for the use of the axe, of *3710–3430 cal BC at 95% confidence* (Bayliss *et al* SS6).

The majority of the remaining retouched types are common to the Neolithic and early Bronze Age and include scrapers, serrated flakes, knives and piercers (Table SS3.12). A single denticulate from the upper fill of the Long Barrow ditch may be of slightly later date. Technologically the majority of the debitage recovered would be consistent with a rather broad date-range of the Neolithic to early Bronze Age. A few flakes and one or two of the cores from the Long Barrow and the villa have incipient cones of percussion which may suggest a later Bronze Age date (cf Brown 1992, 92; Montague 1995, 22). However, this may simply reflect the nature of the raw material rather than indicating loss of knapping skills usually associated with later Bronze Age flintworking.

Description by Landscape Unit

The Long Barrow

A total of 689 pieces of struck flint were recovered from the Long Barrow. The majority was from the ditches and mound, a few pieces were from isolated features such as pits, postholes and the Beaker inhumations (Table SS3.10). Flakes dominate the debitage, with little evidence for systematic blade production, although there is evidence to suggest that blades were being produced for some retouched forms such as serrated flakes (for example Fig SS3.29: 6–7). Some of the cores have blade and flake scars and one of the serrated flakes was made on a blank from an opposed platform blade core (Fig SS3.29: 6). Although blade production does not seem to have been important, the flint was generally carefully knapped with some evidence for platform edge abrasion and core rejuvenation. The relatively high incidence of hinge fractures, prominent bulbs and the presence of incipient cones of percussion may simply reflect the quality of the raw material rather than indicating less controlled knapping.

The retouched forms recovered are common to the Neolithic and early Bronze Age (Table SS3.12). The only piece which may be slightly later in date is a denticulate from the upper ditch fill. Diagnostic pieces include an edge blunted point of Mesolithic date (Fig SS3.29: 3) and the earlier Neolithic leaf-shaped arrowhead (Fig SS3.31: 18).

The distribution of worked flint is plotted in Figures SS1.50–1. There is a noticeable concentration of material towards the front of the Long Barrow, especially in the secondary silts of the south-east ditch, above the waterlogged deposits (phase 2.2.ii). This coincides with the distribution of a relatively small amount of animal bone (Table SS4.37) and contrasts with the distribution of prehistoric pottery, especially Peterborough Ware, which is concentrated in the same levels at the front end of the north-west ditch (Fig SS1.52).

Barrow 7

A small assemblage of flint was recovered from Barrow 7 (Table SS3.10). No diagnostic retouched pieces were recovered. The flakes tend to be small (average weight 3.6g) with plain or cortical butts. Both soft and hard hammers appear to have been used. Two flakes had hinge fractures indicating that they had been mis-hit. A single flake was recovered from the ditch; six flakes, a blade and a piece of irregular debitage were recovered from a spread; and two flakes were found in the topsoil. The assemblage is too small to provide secure dating.

The Redlands Farm Villa site

A scatter of flintwork was recovered from the Roman Villa excavated in 1990 (Table SS3.10). Only a single flake was recovered from a prehistoric context, a pit (F429) which contained a Wessex/Middle Rhine Beaker (Fig SS3.72: P20). The remaining flint is distributed across the site. It is possible that some pieces were originally associated with Barrow 9 and subsequently re-distributed by ploughing.

Both soft and hard hammers were used and there appears to be a component of carefully controlled knapping. The blades, soft-hammer struck flakes, previous blade scars on the dorsal faces of some flakes, an opposed platform flake core, and a core rejuvenation flake indicate the latter. Flakes are small (average weight 3.15g), with platforms of generally simple types. Cores tend to be extensively worked (average weight 50.5g) and no particular types seem to dominate (Table SS3.11; Fig SS3.31: 24).

Diagnostic retouched forms were recovered from the site, enabling dating to be proposed with some confidence. A small obliquely-blunted point with basal ancillary

retouch and an unsnapped microburin indicate limited Mesolithic activity (Fig SS3.31: 19–20). The size of the obliquely blunted point and the basal retouch may suggest a late Mesolithic date. However, without other examples for comparison it would be unwise to speculate further as this type of microlith occurs in both earlier and later Mesolithic assemblages (Pitts and Jacobi 1979, 169, fig 5). The other retouched forms comprise two end scrapers (Fig SS3.31: 21–22), six miscellaneous retouched pieces and a serrated blade with edge gloss (Fig SS3.31: 23). The miscellaneous pieces tend to be broken or of irregular forms. A bifacially flaked piece from context 10 may be part of an arrowhead or knife. A possible unfinished scraper with edge polish was recovered from context 474; the polish may be the result of use. These types and the nature of the retouch would suggest a Neolithic to early Bronze Age date for the majority of the assemblage. A few flakes with unresolved bulbs of percussion may indicate a small mid to late Bronze Age component.

Other contexts

A small assemblage of flint was recovered from a series of features in Trench 93, provisionally interpreted as quarry pits of possibly Roman date. Flakes and blades tend to be small (average weight 3.75g). This is emphasised by the small size of the keeled core from context 1005 (45g). The core has three platforms and has been extensively worked, being discarded only when no further removals could be made. There is some evidence to show that keeled cores tend to be more common in later Neolithic assemblages in certain parts of the country (Healy 1985, 192–3).

Both soft and hard hammers seem to have been used and the incidence of previous blade scars on dorsal faces of flakes and blades suggests that there was some degree of control over knapping. A blade from an opposed platform blade core from context 1003 would support this. A Neolithic date for the majority of this material would not be out of place although the overall sample size is small for secure dating purposes.

Diagnostic retouched forms are absent and include a serrated flake, two miscellaneous pieces and a flake from a polished implement in a creamy white flint (Fig SS3.31: 25). The latter piece would suggest a Neolithic presence, as indicated by the evidence for careful, controlled knapping.

Discussion

Mesolithic activity is represented by a few widely distributed, relatively undiagnostic microliths and debitage. This contrasts with the substantial Mesolithic assemblage from West Cotton. A little Mesolithic material was also found during the fieldwalking survey undertaken as part of the Raunds Area Project (Humble 2006).

Diagnostic Neolithic flintwork was recovered from the Long Barrow and arguably some of the less diagnostic pieces from the villa site and other trenches could be contemporary. Very little flint was recovered from the lower fills of the Long Barrow ditches (Table SS3.10).

A substantial quantity of material was recovered from the secondary fills and in some instances Peterborough Ware was found in the same layers. A mid to late Neolithic date for some of this material must therefore be envisaged, although technologically there was little difference between this material and few pieces of flint from the lower ditch fills. Flint may have been procured from the weathered ditches and worked *in situ*. It would seem likely that this flintworking was connected with the secondary activity associated with the Long Barrow.

Table SS3.13. Long Barrow. Bulb types.

Removal type	*Diffuse*	*Prominent*	*Eraillure*	*Twin*	*Indeterminate*	*Totals*
Flakes (%)	84 (28.2)	115 (38.6)	49 (16.4)	4 (1.3)	46 (15.4)	298
Blades (%)	13 (41.9)	5 (16.1)	9 (29.0)	-	4 (12.9)	31

Table SS3.14. Long Barrow. Platform types.

Removal type	*Wholly cortical*	*Linear*	*Punctiform*	*Plain*	*Dihedral*	*Shattered*	*Totals*
Flakes (%)	78 (26.2)	34 (11.4)	62 (20.8)	109 (36.6)	7 (2.3)	8 (2.7)	298
Blades (%)	1 (3.2)	3 (9.7)	23 (74.2)	4 (12.9)	-	-	31

Some very fine objects were recovered from the Long Barrow, for example a scale-flaked knife of possible later Neolithic or early Bronze Age date and the polished flint axe (Fig SS3.30: 11–12). The knife may originally have been placed in or on the mound, perhaps even with one of the Beaker burials, and have subsequently eroded into the ditch. The axe is particularly interesting as it was recovered from the southern ditch approximately 1m above a deposit of water-logged wood. Toolmarks on several of the woodchips from this deposit fitted the axe (Fig SS3.21; Taylor SS3.6). It would seem likely that the objects had been placed in the mound and had subsequently eroded into the ditches. There are several parallels for this type of deposition, for example a Scandinavian-type axe was found in the mound of Julliberrie's Grave, Kent (Piggott 1939, 267, fig 1). Axe fragments have been recovered from a number of long barrows including Hambledon Hill, Dorset (Mercer 1980, 43), King Barrow, Wiltshire (Kinnes 1992, 25) and Gib Hill, Derbyshire (Kinnes 1992, 38). A worn sandstone axe was recovered from the edge of the ditch at Giant's Hills, Skendleby, Lincolnshire (Phillips 1936, 77). Axes also accompanied inhumations, for example a partly polished flint axe was found together with a jet belt slider and flint blade in a middle Neolithic burial under a round barrow at Whitegrounds, Yorkshire (Brewster 1984, 10, fig 21).

The axe seems to have had symbolic importance in the Neolithic and was often deposited whole in a variety of contexts including rivers, pits with other special deposits, and in the ditches of monuments such as causewayed enclosures and long barrows (Mercer 1980, 23, fig 12; Wickham-Jones 1985, 171–3; Bradley 1990, 44–5; Edmonds 1995, 53; Bradley and Edmonds 1993, 48). The Redlands Farm axe was also an essential tool during the construction of the Long Barrow. Whether it was deposited hafted or not is uncertain. The depth at which the axe was recovered was above the level of waterlogging so even if it had eroded out of the mound relatively soon after deposition, it would be unlikely that the haft would have survived.

The axe has extensive wear on its cutting edge (Figs SS3.30: 12, SS3.32). A flake scar on its dorsal surface would appear to represent the removal of a flake during use rather than being an original scar which had not been completely removed by polishing and grinding. Experimental work with both flint and stone axes has shown that upon breakage flakes or blades are often detached from the tool (Olausson 1983, 43, fig 14). The wear patterns on the cutting edge of the axe from the Long Barrow are not entirely consistent with the experimental results. This is of some interest, as the wood worked in the experiment seemed to be very ragged (ibid, 445–47, figs 15 –17), and unlike the archaeological examples from the Long Barrow ditches (Taylor SS3.6). The numerous flake scars at the cutting edge seem to indicate use for quite some time without resharpening (Olausson 1983, 42, table 6).

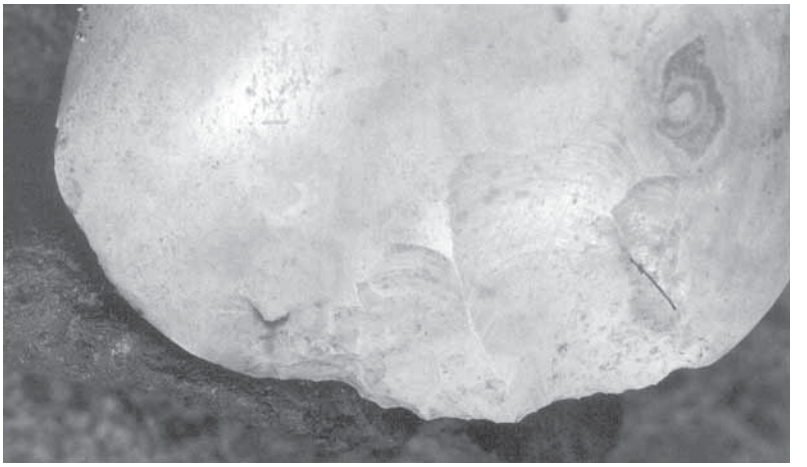


Figure SS3.32 Long Barrow. Heavy wear on cutting edge of flint axehead (Fig SS3.30: 12) from secondary fills of ditch. (Photo Francis Pryor)

The wear patterns on the experimental flint and stone axes are of some interest. Flint axes were found to suffer point initiation breaks from the cutting edge or to break completely; stone axes suffered slower dulling of the edge or removal of a series of flakes along the cutting edge (ibid, 59). Damaged flint axes were found to require substantial repair whilst damaged stone axes could still be used (ibid, 45, 59, fig 15). Interestingly the experimental flint axe was more efficient than a comparable stone example, but the difference was not significant (ibid, 48). From the experimental results Olausson concluded that stone axes were used for heavy work whilst flint ones were chosen for finer work (ibid, 58).

Only two pieces of flint, both flakes from burial 131 cut into the top of the Long Barrow (Fig SS3.30: 15–16), seem to have been deliberately placed in a grave. A backed knife was found 0.10m south of one group of bone in burial 163 and was almost certainly deliberately placed in the grave (Fig SS3.31: 17). The position of these three pieces of flint would indicate that they were deliberately placed objects rather than accidental inclusions in the grave fill (cf Humble 1990, 8; P Bradley 1999a, 223–4). The knife from 163

(Fig SS3.31: 17) is quite finely worked and would not be out of place in a funerary context. Flint flakes and knives have diverse Beaker associations (Clarke 1970, 448). A single flint flake was recovered from pit 429 on the villa site which contained a Wessex/ Middle Rhine Beaker and a small quantity of undiagnostic flint was recovered from Barrow 7.

Within the region comparable gravel-flint based assemblages have been recovered from sites including the causewayed enclosure at Briar Hill (Bamford 1985, 59, table 3.1), the other monuments in the Raunds area (Ballin SS3.6) and the Raunds Area Project field-walking survey (Humble 2006). Large surface collections from beyond the project area have also produced substantial flint assemblages (Bamford 1985, 5; Martin and Hall 1980, 7).

Catalogue of illustrated struck flint

Catalogue entries have been ordered as follows: context number, phase (where phased), identification with brief description, condition, weight and small find number.

Long Barrow

F1 218 old ground surface. Phase 0. End scraper, worn with worn right-hand edge. Minimal retouch, scraping angle approximately 70°. Fresh condition. 26g. Sf 717.

F2 152 old ground surface. Phase 0. Multi-platform flake core, Class C, with flake and blade-like flake scars. Light cortication. 41g. Sf 301.

F3 239/2 central pit. Phase 1. Edge blunted point. Heavy cortication. 2g. Sf 694.

F4 239/A/1 central pit. Phase 1. Opposed platform blade core, Class B1. Heavily corticated. 19g. Sf 765.

F5 161 façade trench. Phase 1. End and side scraper, shallow, invasive retouch. Scraping angle 40–55°. Fresh condition. 7g. Sf 605.

F6 146 ditch fill. Phase 2.2.ii. Serrated flake. LHS serrated approximately 8 serrations per 10mm, worn, gloss visible. On flake struck from an opposed platform blade core. Fresh condition. 15g. Sf 290.

F7 129 ditch fill. Phase 2.2.ii. Serrated flake, proximal break. LHS serrated. Approximately 9 serrations per 10mm, gloss. Heavy cortication. 4g. Sf 622.

F8 129 ditch fill. Phase 2.2.ii. ?Unfinished leaf-shaped arrowhead. Fine, invasive retouch largely confined to edges of both faces. Fresh condition. 7g. Sf 614.

F9 129 ditch fill. Phase 2.2.ii. Scraper, broken but possibly an end and side. Scraping angle approximately 60–75°. Fresh condition. 15g. Sf 681.

F10 180 ditch fill. Phase 2.2.ii. End and side scraper. Neatly retouched, scraping angle approximately 55–65°. Medium cortication. 13g. Sf 680.

F11 140 ditch fill. Phase 2.2.ii. Scale-flaked knife. Invasively retouch along both edges. Stained pink and grey. Lightly corticated. 19g. Sf 648.

F12 186 ditch fill. Phase 2.2.ii. Polished flint axe, butt broken. Some flake scars have not been completely polished. The cutting edge has been extensively used and damaged, a flake from the dorsal surface would also seem to have been removed possibly through pressure from the haft. The axe refits several woodchips found in the same ditch location, approximately 1m lower down the profile. Medium cortication. Recent break to butt end. 524g. Sf. 703.

F13 162 ditch fill. Phase 2.2.ii. Multi-platform flake core, Class C. Incipient cones of percussion. Fresh condition. 44g. Sf 440.

F14 122 ditch fill. Phase 2.2.ii. Keeled core, Class E with refitting flake. Fresh condition. 44g. Sf 248.

F15 131 Beaker inhumation. Phase 3.2. Unretouched flake. Lightly corticated. 3g. Sf 344.

F16 131 Beaker inhumation. Phase 3.2. Unretouched flake, incipient cones of percussion. Lightly corticated. 4g. Sf 345.

F17 163 Beaker inhumation. Phase 3.2. Backed knife, slight trimming LHS and invasive retouch RHS. Fresh condition. 31g. Sf 521.

F18 134 Plough disturbed layer. Phase 4.2. Leaf-shaped arrowhead. Some damage to edges. Fine retouch over most of both faces. 2g. Sf 696.

Villa site

F19 37/B. Obliquely blunted point, ancillary edge trimming lower RHS. Lightly corticated. 1g. Sf 287.

F20 59. Unsnapped microburin. Fresh condition. 3g. Sf 396.

F21 37/B. End scraper, partly cortical blank with minimal retouch at distal end, 60 –75°. Fresh condition. 6g. Sf 346.

F22 509. End scraper, on distal end of a blade-like blank, proximal break. Scraping angle 45 –95°. Lightly corticated. 3g. Sf 992.

F23 609. Serrated flake. Both edges serrated, LHS notched approximately 5 serrations per 10mm, RHS finely worked, approximately 10 serrations per 10mm. Gloss visible. Lightly corticated. 6g. Sf 1180.

F24 437/B. Opposed platform core, Class B1, with flake and slightly blade-like removals, some hinge fractures. Medium cortication. 22g. Sf 691.

Trench 93

F25 1005. Flake from a polished implement, striations visible. Fresh condition. 7g. Sf 1026.

SS3.7.6 Struck flint from West Cotton, Irthlingborough and Stanwick

Torben Bjarke Ballin

In the years from 1985 to 1992 a total of 22,079 pieces of worked flint were recovered during excavations under the auspices of the Raunds Area Project (RAP). The many small and large assemblages were retrieved from monuments and trial trenches over an area of approximately 3 x 1.5 km in the Nene Valley at Raunds, Northamptonshire. The work was carried out by the then Central Archaeological Unit of English Heritage (Irthlingborough and Stanwick), the then Northamptonshire Archaeology Unit (West Cotton) and the Oxford Archaeological Unit (Redlands Farm). Approximately 20 Neolithic and Bronze Age monuments were investigated, some with lithic artefacts and others without, and several miles of trenches were dug between the monuments. The lithic assemblages include Mesolithic, Neolithic and Bronze Age material from undisturbed contexts, chronologically mixed monument and post-monument contexts, as well as contexts between the monuments.

The main aim of this report is to present the excavated flint artefacts from the three excavation areas. The individual assemblages are characterized in detail, and attempts are made at defining chronologically unmixed subassemblages. The characterization of the assemblages and subassemblages is based primarily on typological and technological attributes. The dates of the assemblages are discussed, with the main elements being diagnostic types and technological attributes, as well as their association with other diagnostic materials, such as pottery and radiocarbon dates. In section SS3.7.7, the excavated flint from West Cotton, Irthlingborough and Stanwick will form part of a general overview of the lithic evidence from the RAP, along with the material from the Field Walking Survey (Raunds Area Survey) and Redlands Farm.

Methodology

This presentation of the worked flint from the project area was produced in the autumn of 2001, as part of the efforts to bring the results from the RAP to publication. Due to time constraints, the present section is based on the existing lithics database, and actual physical examination of artefacts was only possible as spot checks or in connection with other tasks, such as 'stocktaking' or 'box control' and the classification of approximately 1,000 unrecorded pieces. The Raunds flint database was compiled mainly by Peter Makey in the course of the 1990s, based on a flint recording system devised by Jon Humble in 1992. To allow comparison between the worked flint presented in this section and the finds from the Raunds Area Survey (Humble 2006) and Redlands Farm (P Bradley SS3.7.5), it was decided to adopt the original recording system and typology, albeit with minor adjustments (see discussion below).

Recording system and database

The flint recording system was devised by Jon Humble, who was Project Director for RAP from 1991 to 1997. As a general rule, flint artefacts were recorded individually, though a small number of finds were recorded in bulk (more than one artefact per record). Twelve fields deal with artefact identification and horizontal/vertical provenance and 34 fields describe the artefact by reference to a large number of typological and technological attributes. Two 'tick box fields' show whether the artefact had been or ought to be illustrated, and two fields inform the analyst in which box or subbox the artefact is stored.

The present lithics database is in Access, but it was originally (early 1990s) created as an application of the program Delilah and later converted. In connection with the conversion process, small amounts of data have been lost (eg the Comments field has been truncated), and during the recording process some data had been entered in the wrong fields or contained spelling errors or omissions with unfortunate consequences for data retrieval, sorting and listing. However, considering the fact that the database contains approximately 22,000 records, each with 50 fields and involving innumerable attributes, errors are relatively few and the database is a useful tool in the analysis of the many lithic assemblages from the project.

Lithic typology

The lithic typology, forming part of the recording system, was based on archaeologi-

cal literature from the 1980s and before. Since then, much lithic research has been carried out in Britain and abroad and general lithic typology has progressed considerably. Though this report is based mainly on the typology from the Raunds recording system, some changes, or simplifications, have been implemented, where this could be done without reducing the compatibility of the various specialist reports (Humble 2006; P Bradley SS3.7.5).

The main lithic categories applied in the Raunds Area Survey report (Humble 2006) have been replaced with a set of categories applied widely in present-day lithic studies. Humble distinguishes between parent material (anvils, cores, crested blades, core rejuvenation flakes, fabricators and hammerstones), regular and irregular debitage, scrapers and implements, whereas the following main categories are used in this section: debitage (flakes, blades, non-bulbar fragments, crested pieces and core rejuvenation flakes), cores and tools (including scrapers, anvils, fabricators and hammerstones).

Due to the purpose of this report, which is to provide a general presentation and discussion of the Raunds flint assemblages, the number of descriptive categories has been reduced. In the lithics database, raw materials (flint types) were recorded as eight subcategories, but in the present section the raw material types have been combined to form three main categories (fine- medium- and coarse-grained). In the same way, the recording system's four categories of burning have been reduced to simply a question of whether a given piece has been affected by fire or not.

In the database (and the Raunds Area Survey report, Humble 2006), each piece of debitage is referred to one of a large number of reduction stages (based on Saville 1981a, 6), whereas the present paper applies the following simplified scheme:

Primary + secondary 1 = primary pieces (with the dorsal faces totally covered by cortex)

Secondary 2–4 = secondary pieces (with the dorsal faces partially covered by cortex)

Secondary 5 + tertiary = tertiary pieces (with no cortex)

Other subcategories, mainly relating to non-bulbar and fragmented pieces, were disregarded.

A microblade (or narrow blade) is defined as a blade the width of which is 8mm or less. This follows the definition of Scottish (Wickham-Jones 1990, 72) and Norwegian (Ballin 1996, 9) microblades, but differs from the definition of microblades from chalk flint areas, such as south-east England and Denmark (width ≤10mm). Size-wise, the blades from the Raunds area are thought to be hybrids of blades from decidedly flint-poor areas (like Scotland or Norway) and areas rich in good-quality flint (like south-east England or Denmark).

The original RAP flint recording system subdivided core-rejuvenation flakes into five subtypes (1–5; based on Saville 1973). In the present paper, those types have been reduced to the following four types: platform edge removals (type 1), core side removals (types 2 + 3), platform removals (type 4) and apex removals (type 5). Many so-called platform edge removals resulted in obtuse flaking angles and subsequent rejection of the core and, most probably, platform edge removals are failed platform removals. Many pieces recorded as core side removals are probably just thick or failed flake removals (for example, with plunging terminations) and not true core rejuvenation flakes.

The Raunds core typology follows Clark and Higgs (1960, 216) and, in general, this is unproblematic. However, the different categories of 'keeled cores' (core types B4, D and E) pose a problem, as they may be amalgamations of core types defined and implemented in the 1970s and 1980s (mainly discoidal and bipolar cores). The highly simplistic cores from the later Bronze Age knapping floors on Barrows 1 and 3 have all been classified according to the categories of Clark and Higgs, but cursory examination of these later Bronze Age assemblages suggest that the material fits those categories rather badly. The most appropriate action would probably have been to propose one or more new (and possibly diagnostic) core types.

The microlith typology of the RAP recording system operates with only a small number of types and in the present section 'points', 'edge-blunted blades' and 'rods' have been combined to form 'backed pieces'. Obliquely-blunted points, edge-blunted points and scalene and subtriangular pieces have been retained as true microlith types. The original recording system's types 'points', 'awls', 'piercers' and 'spurred implements' have been combined to form the general category piercers.

All other artefact categories have been applied as they were defined in the original recording system.

The terrace

The Long Mound

The Long Mound (SS1.1) was investigated as part of the excavation of the Saxon and early Medieval hamlet of West Cotton and formed part of the West Cotton monument complex. It lay immediately south-west of Barrow 6 and the Ditched Enclosure and to the north of the Long Enclosure. To the west, it was flanked by what was then an active channel of the Nene.

The Long Mound was at least 135m long, tapering from east to west and between 13m and 18m wide. It was aligned east-north-east/west-south-west. Approximately half of the mound was fully excavated. The central area had been almost completely removed by later leat and stream channels, and the western end had been truncated by quarrying. The mound was probably constructed in two stages, with the first mound being about 90m long. It was later extended to its full length, and a gully was dug around the top end of the monument. At the eastern end, the gully fill shows signs of a possible façade. Along parts of its flanks, the mound was accompanied by broad, shallow 'quarry pits' which most probably post-date the structure.

The Long Mound was probably constructed in the early fourth millennium, and it has been possible to establish several pre-mound, mound and post-mound phases. A number of undisturbed features were found beneath the monument, containing mainly Mesolithic flint material. The main bulk of the lithic assemblage derived from the actual mound is thought to be primarily redeposited Mesolithic and early Neolithic material. Small amounts of later types were probably incorporated into mound and post-mound phases in connection with post-mound activities.

Raw material. As shown in Table SS3.15, the assemblage from the Long Mound is heavily dominated by fine-grained vitreous flint (94.2%). Only 5.8% of the lithic material is in medium-grained flint, with a single piece being coarse-grained. The proportion of medium-grained flint varies very little through the mound, but there is a division between the pre-mound material and the actual mound and post-mound material. The lithics from pre-mound activities (phase 1) have a content of 1.6% medium-grained flint, with lithics from the mound and post-mound activities (phases 3.1–5) having a content of on average 6.4% (5.6%–9.1%).

Table SS3.15. The Long Mound. Raw material

Flint type	*Number*	*Percent*
Fine-grained vitreous	4,894	94.2
Medium-grained	302	5.8
Coarse-grained	1	0.0
TOTAL	5,197	100.0

Four flakes struck from polished Neolithic axes are in a white-grey opaque flint with small chert-like inclusions. This type of raw material has been found *in situ* near Louth in Lincolnshire (Humble 2006) and may represent prehistoric exchange, but its presence in the project area may also be due to glacial transport with the source being the local Anglian till and related deposits.

312 provenanced pieces (8.5%) are burnt, with the highest percentages in phases 3.2 and 4.2 (Table SS3.16). The excavators (SS1.1) suggest that burnt flint may have been deposited or scattered across the mound surface, but it seems equally plausible that the varying proportions of burnt flint may have been embedded in turf and soil from settlement sites stripped to provide the mound material. The proportion of burnt flint from pre-mound activities is similar to that of the immediately following phase of mound construction (7.2%).

The assemblage – general. Table SS3.17 summarises all lithic finds recovered during the excavation of the Long Mound. A total of 5,197 lithic artefacts was retrieved from the monument.

The distribution of lithic artefacts by main categories is shown in Table SS3.18. Debitage makes up 86.2% of the assemblage,

Table SS3.16. The Long Mound. Burnt flint by phase

Phase	*Number*	*No burnt*	*Percent*
Natural (phase 0)	8	0	0.0
Pre-mound features (phase 1)	249	18	7.2
West-central mound (phase 3.1)	528	38	7.2
East mound (phase 3.2)	1,129	135	12.0
Mound refurbishment (phase 3.3)	42	2	4.8
Gully infill (phase 4.2)	197	20	10.2
Quarry pits (phase 4.4)	502	26	5.2
Later activity (phase 5)	1,006	73	7.3
Later activity (phase 7.2)	11	0	0.0
TOTALS	3,672	312	11.8

Table SS3.17. The Long Mound. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	2,598	58.1
	Blades	1,398	31.2
	Non bulbar fragments	303	6.8
	Crested flakes/blades	41	0.9
	Core rejuvenation flakes	135	3.0
	Subtotal	4,475	100.0
Cores		350	100.0
Tools	Arrowheads	18	4.9
	Microliths	114	30.8
	Microburins	9	2.4
	Laurel leaves	2	0.5
	Knives	4	1.1
	Scrapers	60	16.2
	Scraper resharpening flakes	5	1.4
	Piercers	16	4.3
	Burins	2	0.5
	Serrated pieces	4	1.1
	Truncated pieces	4	1.1
	Notches	25	6.7
	Denticulates	1	0.3
	Axes and axe fragments	14	3.8
	Retouched pieces	85	23.0
	Fabricators	1	0.3
	Hammerstones	4	1.1
	Anvils	2	0.5
	Subtotal	370	100.0
TOTAL		5,195	

Table SS3.18. The Long Mound. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	4,475	86.2
Cores	350	6.7
Tools	370	7.1
TOTAL	5,195	100.0

and cores and tools were found in approximately equal proportions (6.7% and 7.1%).

Debitage. The debitage from the Long Mound totals 4,475 pieces (Table SS3.17). This artefact category is dominated by flakes (58.1%) and blades (30.9%) with 6.8% being non-bulbar fragments. 1.2% are crested pieces, and 3.0% are core rejuvenation flakes. As shown in Table SS3.19, the main differences in the distribution of flakes and blades by reduction stages are in the frequency of the primary and tertiary material: as expected, there are more primary flakes than primary blades (5.2% against 1.4%), with tertiary blades being slightly more numerous than tertiary flakes (38.5% against 34.2%). Secondary material amounts to *c* 60% in both debitage categories.

The blades of the Long Mound are mainly macroblades, with a microblade:macroblade ratio of *c* 19:81. However, as Table SS3.20 demonstrates, this relation is not constant through the mound phases, with the pre-mound material being dominated by microblades and mound and post-mound phases by macroblades.

Blades usually play an important part in the construction of diagnostic technological profiles (2004), but as Figure SS3.33 demonstrates, the Long Mound assemblage constitutes a palimpsest of several subassemblages of different ages. Usually, a diagram based on the blade widths of an unmixed assemblage would form a regular bell-shape

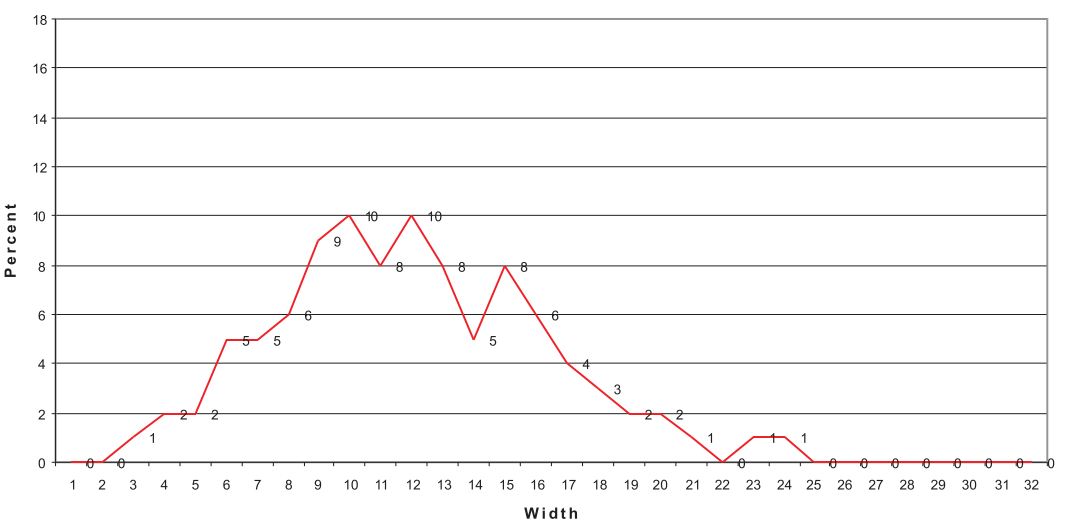


Figure SS3.33
Long Mound.
Blade widths (%)

Table SS3.19. The Long Mound. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	84	5.2	13	1.4	97	3.8
Secondary (S2+S3+S4)	981	60.6	558	60.1	1,539	60.4
Tertiary (S5+T)	553	34.2	358	38.5	911	35.8
TOTAL	1,618	100.0	929	100.0	2,547	100.0

(a normal distribution) (cf Ballin and Lass Jensen 1995, 42, fig 8). Figure SS3.33 shows the blade widths of the Long Mound assemblage, and the many peaks and terraces indicate the inter-mixing of different subassemblages (subassemblages characterized by average blade widths of *c* 6–7mm, 10mm, 12mm and 15mm).

Table SS3.20. The Long Mound. The distribution of intact microblades and macroblades by phase

Phase	*Microblades: macroblades (no)*	*Microblades: macroblades (%)*
Pre-mound (phase 1)	11:20	65:35
Mound (phases 3.1–4.4)	59:251	19:81
Post-mound (phase 5)	97:18	16:84
TOTAL	167:289	37:63

Table SS3.21. The Long Mound. Types of core rejuvenation flake

Types of CRF	*Number*	*Percent*
Platform-edge removals (1)	34	25.2
Core-side removals (2, 3)	42	31.1
Platform removals (4)	50	37.0
Apex removals (5)	9	6.7
TOTAL	135	100.0

Fifty-four primary and secondary crested flakes and blades were found, with four pieces from pre-mound phases (phases 0 and 1), 26 from mound phases (phases 3.2–4.4; eg Fig SS3.39: 31) and two from post-mound phases (phases 5 and 7.2). Crested flakes and blades attest to the careful preparation of cores before initiating blank production.

A total of 135 core rejuvenation flakes were found (Table SS3.21), with platform edge removals (25.2%), core side removals (31.1%) and platform removals (37.0%) being most numerous. As discussed in the methodology section above, platform edge removals are probably unsuccessful platform removals, and together platform and platform edge removals amount to 62.4% of the core rejuvenation flakes.

Cores. 350 cores were retrieved from the Long Mound (Table SS3.22). More than half of this artefact group are classified as 'core fragments' and 12% as 'unclassifiable'. Single-platform cores and cores with two

Table SS3.22. The Long Mound. Cores – main types and sub-types

Main type	*Sub-type*	*Number main types*	*Number sub-types*	*Percent main types*	*Percent sub-types*	*Only flake removals*	*Flake/blade removals*
Single-platform cores	A1: knapped on the entire circumference	41	7	11.7	2.0	3	4
	A2: knapped on part of the circumference		34		9.7	10	24
Two platforms	B1: opposed platforms	50	15	14.3	4.3	5	10
	B2: platforms at oblique angles		15		4.3	10	5
	B3: platforms at right angles		10		2.9	3	7
	B4: opposed platforms, one of which is keeled		10		2.9	4	6
Three or more platforms	C	8	8	2.3	2.3	3	5
Keeled cores	D: flakes struck from two directions	22	13	6.3	3.7	10	3
	E: with one or more platforms		9		2.5	5	4
Unclassifiable		42	42	12.0	12.0	33	9
Fragments		187	187	53.4	53.4	Not recorded	
TOTALS		350	350	100.0	100.0	86	77

Table SS3.23. The Long Mound. Arrowhead types

Arrowhead type	*Number*	*Percent*
Leaf-shaped arrowheads	13	72.1
Chisel arrowheads	1	5.6
Oblique arrowheads	1	5.6
Barbed and tanged arrowheads	2	11.1
Miscellaneous	1	5.6
TOTAL	18	100

platforms are present in approximately equal proportions (11.7% and 14.3%), whereas multi-platform cores make up 2.3%. 6.3% of all cores from the Long Mound are 'keeled cores' – for discussion of this type concept, see methodology section above. One unstratified single-platform core is on a fragment of a polished axe (Fig SS3.40: 54). Eighty-six of the 163 unfragmented cores are blade cores, corresponding to 52.8%.

Tools. A total of 370 tools were recovered from the Long Mound (Table SS3.17), resulting in a tool ratio of 7.1. This relatively high ratio is probably mainly due to the lack of consistent sieving, resulting in fewer chips (maximum dimension ≤10mm) .

Table SS3.24. The Long Mound. Microlith types and sizes

Microlith type	*Number*	*Percent*	*Width < 8 mm*	*Width > 8 mm*	*Narrow: broad*
Obliquely-blunted points	17	14.9	11	6	65:35
Edge-blunted points	46	40.4	37	9	80:20
Scalene triangles	2	1.8	1	1	50:50
Sub-triangular	4	3.5	4	0	100:0
Backed pieces	30	26.3	24	6	80:20
Unclassifiable	15	13.1	10	5	67:33
TOTAL	114	100.0	77	22	78:22

Table SS3.25. The Long Mound. Scraper types

Scraper type	*Number*	*Percent*
Discoidal scrapers	2	3.3
Denticulated scrapers	1	1.7
End scrapers	25	41.7
Double end scrapers	1	1.7
Extended end scrapers	3	5.0
Nosed end scrapers	3	5.0
Side-scrapers	2	3.3
Side/end scrapers	6	10.0
Unclassifiable scrapers	17	28.3
TOTAL	60	100.0

Eighteen *arrowheads* were recovered from the Long Mound (Table SS3.23). Almost three-quarters of the arrowheads are leaf-shaped (thirteen; eg Figs SS3.39–40: 33, 44, 45, 52, 55, 56), supplemented by one chisel arrowhead (Fig SS3.40: 46), one oblique arrowhead (Fig SS3.40: 53), two barbed and tanged arrowheads and one crude hollow-based point.

The leaf-shaped arrowheads are generally medium-sized (size 2–3, with one size 4) and quite slender: one is variant A, three are variant B and eight are variant C (one is too fragmented for classification) (Green 1980, 69–72). Three leaf-shaped points are ogival. The chisel arrowhead belongs to Clark's type C, and the oblique arrowhead is a type E (Clark 1934, 34–35). The two barbed and tanged points belong to Green's types Sutton B and Conygar D (Green 1980, 121–123).

The microlith group (114 pieces; Figs SS3.39–40: 26, 27, 29, 34, 35, 36, 39, 40, 43) is dominated by edge-blunted points which make up approximately 40% of the microliths from the Long Mound (Table SS3.24). Obliquely-blunted points and backed pieces are represented as approximately 15% and 26% each, supplemented by single numbers of scalene triangles and subtriangular pieces. If narrow blades (or microblades) are defined as blades with widths of 8mm or less (see methodology section), more than three-quarters of the microliths fall in this category. The obliquely-blunted points are somewhat wider than the other microlith types, suggesting the possible mixture of microliths of different ages. Eight of the nine microburins have oblique microburin facets, whereas one has a straight snap fracture.

The scraper group (114 pieces; eg Figs SS3.39–40: 28, 38) is varied and is probably made up of material from different periods and phases (Table SS3.25). End scrapers dominate with 41.7%, supplemented by a number of end scraper subtypes (double, extended, nosed scrapers). Apart from 'unclassifiable scrapers', other types are only present as a few percent. The small regular button-shaped or thumbnail scrapers ('discoidal') are thought to be of early Bronze Age date. Denticulate scrapers are probably related to 'denticulates' and may be dated to the Bronze Age as well. Five flakes have been defined as possible resharpening flakes from the rejuvenation of worn scrapers.

The piercer group (16 pieces) consists of two main subgroups, namely 'piercers' (tip formed by two regularly converging lateral

Table SS3.26. The Long Mound. Axe types

Axe type	*Number*	*Percent*
Flake axes, fragments	2	14.3
Sharpening flakes from flake axes	2	14.3
Flakes from flaked axes	1	7.1
Flakes from polished axes	9	64.3
TOTAL	14	100

retouches) and 'spurred implements' (tip formed by two notches or concave areas of retouch; defined according to Smith 1965, 105). Nine of the piercers are 'piercers' and seven are 'spurred implements'.

Notched pieces are relatively common (25 pieces). The group is dominated by artefacts with one retouched notch (68%), supplemented by double-notched pieces (20%) and pieces with three and four notches (12%). From the Raunds Area Survey these pieces were noted as regularly occurring in association with Bronze Age tool forms (Humble 2006). Another late type, denticulates, is represented by a single piece.

Fragments of fourteen axes were recovered from the Long Mound (Table SS3.26). Flakes, sharpening flakes and fragments of flake axes make up 35.7%, whereas flakes from polished axes amount to 64.3%. Four flakes from polished axes are in grey opaque flint, usually associated with the Louth area of Lincolnshire (see above).

Other less frequent types from the Long Mound are: laurel leaves (two), knives (four), burins (two; eg Fig SS3.40: 41), serrated pieces (four) and truncated pieces (four). The laurel leaves were both quite small; one was longitudinally fractured with a length of 60mm and the other one, which had the tip broken off, had a width of 33mm, suggesting dimensions of *c* 60 x 33mm. One of the knives is a plano-convex knife (Fig SS3.39: 37), whereas two are backed knives with retouched cutting edges; one is a plain backed knife. One of the two burins is a dihedral burin, whereas the other one is an angle burin on a truncation. Three serrated macroblades and one flake have cutting edges defined by 9 to 17 fine teeth per 10mm. All four truncated pieces are on macroblades, one having an oblique proximal truncation, the others with straight distal truncations. Eighty-five retouched pieces and fragments cannot be classified further. Tool types involved in the primary lithic production were found in the following numbers: one fabricator, four hammerstones and two anvils.

Possibly chronologically 'clean' contexts and features. The typological and technological composition of the individual contexts and phases within the Long Mound attests to the lithic artefacts from the mound as being, in general, chronologically mixed, probably redeposited, settlement material. However, within this palimpsest, pockets of possibly unmixed assemblages occur, such as 1) F5291 (phase 1), 2) F2073 (phase 1), 3) F5488 (phase 1), 4) context 5681 (phase 3.1) and 5) F5257, F5260 and F5263 (phase 4.4.iN).

Context 5291, beneath the eastern part of the mound, has been interpreted as a trampled surface. From this layer a small cluster of lithics was retrieved (5280), tightly grouped within an area of *c* 0.25m diameter. The small lithic assemblage probably represents activity prior to mound construction, and it contained one core rejuvenation flake, 17 flakes and 13 blades. The blades form a homogeneous group of narrow pieces with blade widths between 7mm and 10mm, and the lengths of the complete blades are (excluding two 'outsiders' with lengths 13mm and 35mm) 22–30mm (average dimensions: 24.8 x 8.1mm). The cluster includes four refitting pieces and may represent a single episode in the later Mesolithic period.

Feature 2073 (a treethrow hole) and its immediate surroundings contained the densest cluster of lithic artefacts from the monument (at its densest *c* 88 per cu m), and the excavators interpret this assemblage as representing a single pre-mound episode (SS1.1). The actual feature contained 1 core (fine blade core of type C), 14 flakes, 9 blades and 1 microlith (edge-blunted point), and the surrounding cluster in parts of contexts 2072 and 2074 (occupying an area of *c* 6 x 3m) contained 57 flakes, 28 blades, 1 core rejuvenation flake, 5 microliths (2 edge-blunted points, 1 obliquely-blunted point, 1 backed piece and 1 unclassifiable specimen), 2 scrapers and 2 retouched pieces. The activities may, as suggested by the excavators (SS1.1), have been centred around a tree or the hollow left by a fallen tree, but the diversified composition of the assemblage suggests an actual settlement, albeit small and of a short-term character. Beyond this concentration, the more dispersed material from the rest of contexts 2072 and 2074 (the soil underlying the north end of the mound) consists of 30 flakes, 19 blades, 6 core fragments, 4 crested blades,

3 core rejuvenation flakes, 5 microliths (1 edge-blunted point and 4 obliquely-blunted points), 1 notched piece, 1 piercer, 1 burin and 3 scrapers. A frag-mentary leaf-shaped arrowhead indicates some intrusion of Neolithic material, but in general this assemblage appears to represent Mesolithic activity.

A substantial pit beneath the west-central part of the mound (F5488/context 5489) contained one flake, a blade and the tip of an unclassifiable microlith (18 x 8mm). A sample of carbonised oak trunk from the pit has given a radiocarbon date of 4780–4460 cal BC (5767±BP; UB-3329).

Context 5681 formed a dark layer at the bottom of the west-central part of the Long Mound. It was relatively compact and constitutes a distinctive kind of turf placed within a bay of the substructure. It contained a small cluster of lithic artefacts (F5282), including 19 flakes, 15 blades, 3 cores, 2 core rejuvenation flakes, two microliths and a notched piece. The cores are one high-quality blade core of type C, a fragmented type A core and a fragment of an unclassifiable core, and the microliths are 1 edge-blunted point and 1 subtriangular piece. Both microliths are on micro-blades. The blades are slightly larger than the blades from F5291 with average dimensions of 37.1 x 13.4mm and represent an actual macroblade industry as opposed to F5291's microblade industry. The presence of 2 narrow-blade microliths in a collection dominated by macroblades suggests some intrusion of Mesolithic material into this probably Neolithic assemblage.

The two 'quarry pits' contained a number of lower pits or hollows, some of which included flint artefacts. Feature 5260 only contained a single flake, whereas F5257 and F5263 were richer. In F5257 6 flakes and 9 blades were recovered. Feature 5263 contained 2 flakes in its lower part (context 5261), whereas the remaining fill (contexts 5262/5264/5525) included 14 flakes, 6 blades, 4 cores (a flake core of type A2 and 3 unclassifiable cores) and 1 chisel arrowhead (type C; Fig SS3.40: 46). The blades have average dimensions of 32.8 x 12.3mm and represent a macroblade industry. Radiocarbon dating of organic material from the 'quarry pits' gave two dates of 3650–3370 cal BC (4750±45 BP and 4770±45 BP; OxA-7944 and OxA-7943), which are supported by the chisel arrowhead and the presence of Ebbsfleet pottery. F5257 and F5263 may represent limited post-mound knapping events.

Dating. The composition of the lithic assemblage, and its technological attributes, throughout the mound suggest that most of the phases are chronologically mixed (see for example Fig SS3.33). Based on diagnostic artefacts and technological attributes, F5291, F2073 and F5488 were identified as probably Mesolithic, context 5681 as probably Neolithic (albeit containing two microliths) and F5257, F5260 and F5263 are probably later fourth millennium or middle Neolithic (see above) — all other contexts and features seem to contain varying proportions of artefacts from the Mesolithic, the Neolithic and the Bronze Age periods.

The most diagnostic artefact groups, the microliths and the arrowheads, emphasize this mixture as no microlith and arrowhead types are restricted to any specific layers or contexts. The majority of the microliths are narrow blade varieties and therefore probably from the later Mesolithic; the scalene triangles and subtriangular pieces are certainly late Mesolithic (Mellars 1976b). A number of obliquely-blunted points are slightly broader, and most of those are probably from the early Mesolithic period (Pitts and Jacobi 1979). Leaf-shaped arrowheads are early Neolithic, chisel and oblique arrowheads are middle to late Neolithic types, and barbed and tanged arrowheads are early Bronze Age (Green 1980). One of the barbed and tanged arrowheads was identified as a Sutton point, which can be dated to the early Bronze Age in general; the other barbed and tanged arrowhead is a Conygar point and as demonstrated by Green (1980, 138–139), those are generally associated with Food Vessels and Primary Series Collared Urns.

This impression of a palimpsest situation is supported by a number of other diagnostic types, which also had random vertical and horizontal distributions, such as, laurel leaves, serrated pieces, discoidal scrapers and extended end scrapers, plano-convex knives and knives with retouched cutting edges, spurred implements, polished axes and flake axes, and notched and denticulated pieces.

Technologically, the composition of the subassemblages from possibly unmixed features and contexts (see above) demonstrates the presence of narrow blade and broad blade industries, and the Bronze Age material, which is mixed into the general fill of the mound, represents one or more flake industries. The distribution of microblades by phases (Table SS3.20) suggests that phase 1 may generally be less mixed than the other phases and probably contains a larger

proportion of Mesolithic material than later phases. The relatively small number of notched and denticulated pieces and barbed and tanged arrowheads indicate that the Long Mound probably only contains small amounts of Bronze Age material.

Two radiocarbon dates relate to lithic material. Feature 5488, a pit under the west-central part of the mound (phase 1), contained two blades and the tip of a microlith and was dated to 4780–4460 cal BC (5767±BP; UB-3329). Feature 5263, in the northern 'quarry pit', contained a number of flakes and blades as well as four flake cores and a chisel arrowhead; it was dated to 3650–3370 cal BC (4750±45 BP and 4770±45 BP; OxA-7944 and OxA-7943). The typological and radiocarbon dates of F5263 are supported by middle Neolithic pottery (Ebbsfleet style).

Barrow 6

Like the Long Mound, Barrow 6 (SS1.17) formed part of the West Cotton monument complex. It lay immediately north-east of the Long Mound, with the Double Ring-Ditch to the west and overlapping the Ditched Enclosure to the east; a number of ring-ditches lay north-east of the monument. The monument was a complex, multi-phased round barrow, with three concentric ditches. Each ditch was associated with a phase of the mound or its enlargement. The outer ditch was *c* 31m in diameter. The barrow was fully excavated. The inner ditch may have been centred on a standing tree. It is believed that the primary mound was constructed over a Beaker grave which post-dates and truncates the treehole. The date of the Beaker burial, and thereby possibly the first mound, is 2130–1820 cal BC (3608±41 BP; UB-3311). The central grave contained a number of grave goods among which were several flint artefacts. Two pre-mound features, both containing lithics, are assumed to be of an early Neolithic date. The fill from the various mound and ditch stages contained mainly Mesolithic and early Neolithic material, supplemented by small numbers of later Neolithic and Bronze Age finds from cremations and post-mound activities.

Raw material. The lithic assemblage from Barrow 6 is heavily dominated by fine-grained vitreous flint (96.8%), with only 3.2% of the artefacts being in medium-grained or coarse-grained flint (Table SS3.27). The relative distribution of medium and coarse-grained flint in the mound varies considerably, with some phases being devoid of this type of raw material and others having as much as *c* 7%. The average per phase is 3.2%, but no pattern emerges. With 12.5%, the Beaker burial (phase 1.2) has a particularly high proportion of coarser flint varieties, but this may be a result of the very small sample size (eight pieces of flint). An exceptionally large conical core in chalk flint (F3257/phase 1.1) may represent imported raw material.

Table SS3.27. Barrow 6. Raw material

Flint type	*Number*	*Percent*
Fine-grained vitreous	911	96.8
Medium-grained	28	3.0
Coarse-grained	2	0.2
TOTAL	941	100.0

The proportion of burnt flint by phases (Table SS3.28) fluctuates considerably, with an average per phase of 5.2%. The proportions are noticeably low from pre- and post-mound phases, with the highest proportion of almost 10% being from the primary mound (phase 1.3).1 The excavators suggest that burnt (white) flint may have been distributed on or in the Long Mound in connection with mound construction (SS1.1), but even though the ratio of burnt flint is high in Barrow 6 phase 1.3, this ratio only corresponds to 18 pieces. The number of fire-crazed pieces is too low to support a hypothesis of ritual distribution of burnt flint and the fluctuating proportions may simply reflect the content of the turf and soil where the fill of the barrow was collected (redeposited settlement material; see below).

Table SS3.28. Barrow 6. Burnt flint by phase

Phase	*Number*	*No burnt*	*Percent*
Pre-mound soil (phase 0)	3	0	0.0
Pre-mound features (phase 1)	4	0	0.0
Minor features (phase 1.1)	29	1	3.4
Beaker burial (phase 1.2)	8	0	0.0
Primary mound (phase 1.3)	181	18	9.9
Inner ditch and ditch fills (phase 1.4/2)	240	15	6.3
Middle ditch and ditch fills (phase 3.1/4)	70	4	5.7
Second mound (phase 3.2)	32	2	6.3
Outer ditch and ditch fills (phase 5.1/6)	93	5	5.4
Third mound (phase 5.2)	29	2	6.9
Cremations (phase 7)	1	0	0.0
Later activity (phase 9)	251	2	0.8
TOTAL	941	49	5.2

Assemblage – general. Table SS3.29 summarises all the lithic artefacts recovered in connection with the excavation of Barrow 6. A total of 941 pieces of worked flint was retrieved from the mound.

Table SS3.29. Barrow 6. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	528	64.7
	Blades	181	22.2
	Non bulbar fragments	82	10.1
	Crested flakes/blades	6	0.7
	Core rejuvenation flakes	19	2.3
	Subtotal	816	100.0
Cores		62	100.0
Tools	Arrowheads	2	3.2
	Microliths	17	26.9
	Microburins	1	1.6
	Daggers	1	1.6
	Knives	1	1.6
	Scrapers	14	22.2
	Piercers	3	4.8
	Burins	1	1.6
	Serrated pieces	2	3.2
	Notches	5	7.9
	Denticulates	2	3.2
	Axes and axe fragments	1	1.6
	Retouched pieces	12	19
	Anvils	1	1.6
	Subtotal	63	100.0
TOTAL		941	

Table SS3.30. Barrow 6. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	816	86.7
Cores	62	6.6
Tools	63	6.7
TOTAL	941	100.0

The distribution of lithic artefacts by main categories is shown in Table SS3.30. The distribution does not vary from the general trend in other monuments on the terrace with 86.7% debitage and almost exactly equal proportions of cores and tools (6.6% and 6.7%).

Debitage. During the excavation of Barrow 6, 816 pieces of debitage were found (Table SS3.29). Flakes (64.7%) and blades (22.2%) dominate the category, supplemented by 10.1% non-bulbar fragments, 0.7% crested pieces and 2.3% core rejuvenation flakes. The distribution of flakes and blades by reduction stages (Table SS3.31) demonstrates a general trend, with the flake group containing more primary material (9.3% against 4.0%) and the blade group containing more tertiary material (45.6% against 39.6%). The proportions of secondary material amongst flakes and blades are similar (51.1% and 50.4%).

The blade group is dominated by macroblades, but with a rather substantial number of microblades (*c* 28%). The ratios of microblades:macroblades differ somewhat through Barrow 6, but this may be due to the relatively low number of blades in some phases (Table SS3.32).

Figure SS3.34 illustrates the blade widths of the Barrow 6 assemblage, and this diagram clearly indicates a chronologically mixed assemblage. The many terraces and peaks each define one chronological element (cf methodology section in Ballin 2004), with major subassemblages characterized by average blade widths of *c* 9–10mm, 13mm and 15–16mm

Six primary and secondary crested flakes and blades were recovered from various phases of the mound. The nineteen core rejuvenation flakes from Barrow 6 (Table SS3.33) are mainly platform removals (42.1%) and platform edge removals (42.1%), supplemented by some core side removals (15.8%) and apex removals (5.3%).

Cores. A total of sixty-two cores were found in connection with the examination of

Table SS3.31. Barrow 6. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTAL*	
Reduction stage	Number	Percent	Number	Percent	Number	Percent
Primary (P+S1)	34	9.3	5	4.0	39	8.0
Secondary (S2+S3+S4)	186	51.1	63	50.4	249	50.9
Tertiary (S5+T)	144	39.6	57	45.6	201	41.1
TOTAL	364	100.0	125	100.0	489	100.0

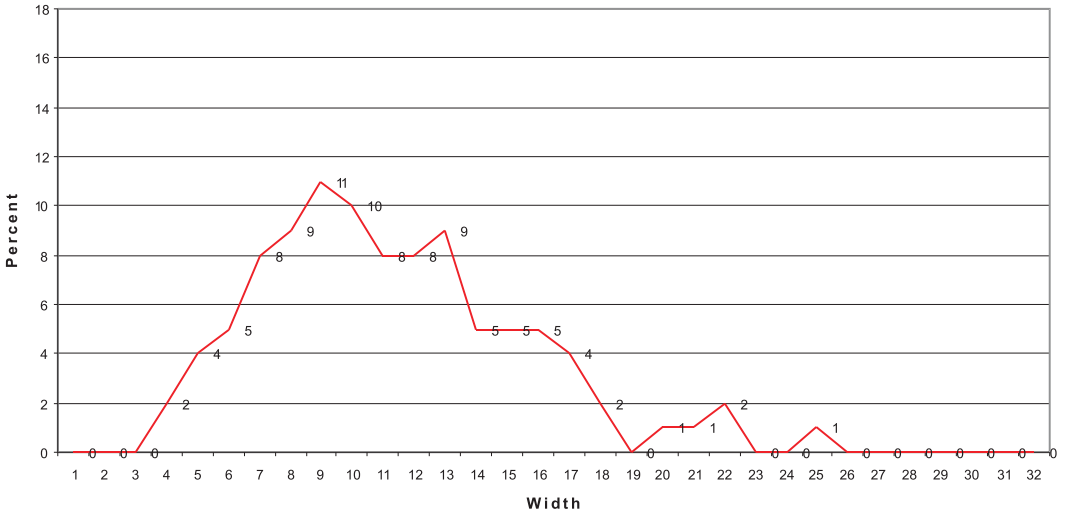


Figure SS3.34
Barrow 6.
Blade widths (%.)

Barrow 6 (Table SS3.34). Half of these are classified as 'core fragments' and 6.5% as 'unclassifiable'. Single-platform cores and cores with two platforms were found in equal proportions (11.3% each), whereas multi-platform cores amount to as much as 17.7%. The two keeled cores correspond to 3.2%. Nineteen, or 61.3%, of the 31 unfragmented cores are blade cores.

Tools. Sixty-three tools were retrieved from Barrow 6, corresponding to a tool ratio of 6.7. As the major part of the Barrow 6 assemblage may be redeposited settlement material (see below), this ratio is slightly higher than would be expected. The main reason for the sizeable tool ratio is probably the lack of consistent sieving during the excavation, resulting in fewer chips (maximum dimension ≤10mm) and thereby a higher tool ratio.

Only two arrowheads were found, both fragmented leaf-shaped forms. One was a point of Green's type 3Bo, that is, a relatively

Table SS3.32. Barrow 6. The distribution of intact microblades and macroblades by phase

Phase	*Microblades: macroblades (no)*	*Microblades: macroblades (%)*
Pre-mound (phase 1.1–1.2)	0:3	0:100
Primary mound and ditch (phase 1.3–2)	14:36	28:72
Second mound and ditch (phases 3–4)	7:12	37:63
Third mound and ditch (phases 6–6)	1:11	8:92
Later activity (phase 9)	7:13	35:65
TOTAL	19:75	20:80

Table SS3.33. Barrow 6. Types of core rejuvenation flakes

Types of CRF	*Number*	*Percent*
Platform-edge removals (1)	7	36.8
Core-side removals (2, 3)	3	15.8
Platform removals (4)	8	42.1
Apex removals (5)	1	5.3
TOTAL	19	100.0

Table SS.34. Barrow 6. Cores – main types and sub-types

Main type	*Sub-type*	*Number main types*	*Number sub-types*	*Percent main type*	*Percent sub-types*	*Only flake removals*	*Flake/blade removals*
Single-platform cores	A1: knapped on the entire circumference	7	0	11.3	0.0		
	A2: knapped on part of the circumference		7		11.3	4	3
Two platforms	B1: opposed platforms	7	2	11.3	3.2	1	1
	B2: platforms at oblique angles		3		4.9	2	1
	B3: platforms at right angles		2		3.2	1	1
Three or more platforms	C	11	11	17.7	17.7	7	4
Keeled cores	D: flakes struck from two directions	2	1	3.2	1.6	1	
	E: with one or more platforms		1		1.6		1
Unclassifiable		4	4	6.5	6.5	3	1
Fragments		31	31	50.0	50.0	Not recorded	
TOTAL		62	62	100.0	100.0	19	12

Table SS3.35. Barrow 6. Microlith types (classifiable)

Microlith type	*Number*	*Percent*
Obliquely-blunted points	3	17.6
Edge-blunted points	8	47.0
Backed pieces	4	23.6
Unclassifiable	2	11.8
TOTAL	17	100.0

Table SS3.36. Barrow 6. Scraper types

Scraper type	*Number*	*Percent*
End scrapers	6	42.9
Extended end scrapers	2	14.3
Side scrapers	1	7.1
Unclassifiable scrapers	5	35.7
TOTAL	14	100.0

small point of medium width (Fig SS3.44: 74), whereas the other point was a small fragment of a slender type C point (Green 1980, 69–72). With seventeen specimens, microliths were far more numerous (Table SS3.35). The microlith group is dominated by edge-blunted pieces (47.0%; Fig SS3.44: 62–64, 69,72), supplemented by some obliquely-blunted points (Fig SS3.44: 70) and backed pieces. One classic microburin was found.

With fourteen pieces, scrapers are the second most common tool type found in the barrow (Table SS3.36). Approximately one-third of the scrapers are unclassifiable, with end scrapers being the most numerous sub-type (57.2%). Only one side-scraper was retrieved.

A number of other tool types are present in single figures: daggers (one), knives (one), piercers (three), burins (one), serrated pieces (two), notches (five), denticulates (two), axe fragments (one) and anvils (one). The dagger is a complete tanged and notched specimen (168 x 76mm) and it was recovered from the Beaker burial in phase 1.2 (Fig SS3.43: 61). The knife is a backed knife with retouched cutting edge (Fig SS3.42: 60), and it was found in the same feature. The piercers are two ordinary piercers and one spurred implement. The burin is a simple angle burin on an unprepared end (Fig SS3.44: 68). The two serrated pieces, a blade and a flake, are defined by nine to fourteen fine and closely positioned teeth per 10mm. Four of the five notched blades and flakes are characterized by a single lateral notch, whereas one has two notches. Two crude denticulates have three and four teeth. The single axe fragment is a flake of a finely polished axe. Twelve retouched pieces and fragments cannot be classified further.

Possibly chronologically 'clean' contexts and features. With a few exceptions, all Barrow 6 contexts constitute redeposited settlement material from the Mesolithic and the early Neolithic periods, supplemented by a small amount of Bronze Age material (see dating section, below). The only chronologically unmixed assemblages are from pre-mound features: 1) F3257 (phase 1.1), 2) F3384 (phase 1.1) and 3) F3259 (phase 1.2).

Feature 3257 was a shallow pit under the barrow, containing a single find: a large conical core of type A2 from which flakes and blades had been struck (Fig SS3.41:58). The core measures 119mm from platform to apex, it has a diameter of 105mm and weighs 1229grammes. The raw material is chalk flint, and the core is exceptionally large for the area and may represent exchange with the English chalk flint region. The core had been deliberately placed in the pit with apex downwards and the platform roughly horizontal. The size and quality of the detached blades suggest an early Neolithic date.

Feature 3384 was a relatively deep grave-like pit which contained a flint scatter (nine flakes, 14 blades, five non-bulbar fragments, one core, one scraper, one notched piece) and a scatter of medieval sherds. Based on comparison with nearby Saxon and medieval contexts, the excavators assume (SS1.17) that the pit is prehistoric but that its upper fills were disturbed in the medieval period. It is suggested that an original burial may have been removed from the central part of the pit (possibly the human bones reburied in F3390 beneath the Beaker burial, F3259). If the flint scatter from F3384 is associated with these human remains, or if it was part of the infill from the original burial, the radiocarbon date of the bones from F3390 (4500±33 BP; UB-3310) should provide a *terminus ante quem* for the flint scatter of 3360–3030 cal BC, or the middle Neolithic.

Feature 3259 was the central grave of Barrow 6 and contained a Beaker period burial with the articulated skeleton of an adult male and some grave goods. The grave goods consisted of a long-necked Step 6 Beaker, a large V-perforated jet button, an irregular piece of chalk and three lithic artefacts: one tanged and notched dagger (Fig SS3.43: 61), one small flint knife (Fig

SS3.42: 60) and one large unretouched, but used, flake (Fig SS3.42: 59). A bone from the skeleton was radiocarbon-dated to 2130–1820 cal BC (3608±BP; UB-3311), corresponding well with the diagnostic elements of the grave goods.

Dating. Examination of the general mound material and the individual contexts suggests that all phases constitute varying mixtures of mainly Mesolithic and Neolithic material, possibly supplemented by a small number of artefacts from the early Bronze Age. Only the assemblages from F3257, F3384 and F3259 may be chronologically clean, with the lithic material from F3257 and F3384 being possibly early Neolithic and the material from F3259 deriving from the late Beaker period.

The main diagnostic artefact types, microliths and arrowheads, are Mesolithic and Neolithic. The 17 microliths are primarily later Mesolithic edge-blunted points on microblades (eight pieces; Mellars 1976b) and three broader obliquely-blunted points may be early Mesolithic (Pitts and Jacobi 1979); three of the four backed pieces are narrow blade types and are probably of a later Mesolithic date. The two arrowheads are both leaf-shaped and date to the early Neolithic (Green 1980). The proportion of Mesolithic material in Barrow 6 is relatively high. This is demonstrated by the microblade:macroblade ratio of the individual barrow phases, which all have microblade proportions of *c* 30–35% (apart from the third mound and ditch with 8%). In comparison, the Long Mound's mound and post-mound phases, which contained substantial numbers of microliths, had microblade proportions of *c* 15–20%.

Barrow 6 yielded very few other diagnostic types. A flake from a highly polished axe dates from the Neolithic period, and two microdenticulates and a spurred implement may be Neolithic as well. Denticulates and notched pieces are frequently associated with Bronze Age industries, but they are not common in the barrow. The scraper group contained no early Bronze Age thumbnail or button-sized scrapers. The only distinct early Bronze Age artefacts (see above) were found in the central grave of Barrow 6, a typical Beaker burial.

Two radiocarbon dates are associated with the lithic assemblage, one directly and one indirectly. The Beaker burial and its associated grave goods (F3259) were dated to 2130–1820 cal BC (3608±41BP; UB-3311) on the basis of a bone from the interred individual; this date is supported by a Step 6 Beaker, a jet button and diagnostic lithic artefacts. The assemblage from F3384 is assumed by the excavators to be associated with the possibly re-buried human remains in F3390, which were radiocarbon-dated to 3360–3030 cal BC (4500±33 BP; UB-3310), that is, the middle Neolithic.

The Turf Mound

The Turf Mound (SS1.3) lay at the southern end of the West Cotton monument complex. It was situated *c* 110m south of the Long Mound and an almost equal distance north of Barrow 5. It is not possible to reach a full understanding of the development of the Turf Mound, as much of the monument was recorded in salvage conditions. It consisted of a subquadrangular, unditched mound (the north mound) constructed early in the fourth millennium. In the third millennium a ditched, subcircular mound (the south mound) was built onto the southern tail of the first mound. The character and extent of the Turf Mound were recognized in connection with advanced gravel extraction, by which time the monument had already been partly destroyed. As a consequence, it was only possible to fully excavate the north-eastern part of the mound and a short end of ditch enclosing the southern half of the monument. A tree-hollow beneath the primary mound contained a small early Neolithic flint scatter, and the body of the mound yielded a lithic assemblage of mainly Mesolithic and early Neolithic material. From post-mound layers an assemblage of largely later Neolithic and Bronze Age artefacts was recovered.

Raw material. Like the other lithic assemblages from Raunds monuments, this assemblage is dominated by fine-grained vitreous flint (233 pieces or 97.1%), supplemented by a small proportion of medium-grained flint (seven pieces or 2.9%). The coarser flint pieces were found in phases 2.1 and 7.2. Seventeen pieces (7.1%) are burnt, and the burnt pieces were distributed across all phases.

Assemblage – general. Table SS3.37 summarises all the lithic artefacts recovered in connection with the excavation of the Turf Mound. A total of 240 pieces of worked flint was retrieved.

The distribution of lithic artefacts by main categories is shown in Table SS3.38. The only minor difference to the distribution of the two largest monument assemblages (from the Long Mound and Barrow 6) is a slightly lower proportion of debitage and higher proportions of cores and tools.

Table SS3.37. The Turf Mound. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	130	66.0
	Blades	41	20.8
	Non bulbar fragments	20	10.2
	Crested flakes/blades	2	1.0
	Core rejuvenation flakes	4	2.0
	Subtotal	197	100.0
Cores		19	100.0
Tools	Arrowheads	3	12.5
	Microliths	5	20.8
	Microburins	1	4.2
	Scrapers	5	20.8
	Piercers	1	4.2
	Serrated pieces	1	4.2
	Notches	1	4.2
	Retouched pieces	7	29.2
	Subtotal	24	100.1
TOTAL		240	

Table SS3.38. The Turf Mound. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	197	82.1
Cores	19	7.9
Tools	24	10.0
TOTAL	240	100.0

Debitage. The debitage from the Turf Mound amounts to 197 pieces (Table SS3.37). The composition of this category is similar to that of the other larger monuments on the terrace, with 66.0% flakes, 20.8% blades and 10.2% non-bulbar fragments. Crested blades make up 1% of the category and core rejuvenation flakes 2%. The distribution of flakes and blades by reduction stages (Table SS3.39) corresponds to the general trend, with primary material being more numerous amongst flakes than blades (7% against 0%) and tertiary material being more numerous amongst blades than flakes (39.4% against 24.5%). Compared with other larger monument assemblages from the terrace, the difference between the proportions of tertiary flakes and blades is more pronounced – *c* 15% in the Turf mound assemblage against *c* 4–6% in the Long Mound and Barrow 6 assemblages. As most of the artefacts in the mound represent redeposited material, this difference may simply reflect the random combination of settlements and settlement areas affected by the construction of the monuments.

Twenty-three intact blades were found in the Turf Mound, with macroblades dominating – the general microblade:macroblade ratio is *c* 22:78. The ratio differs considerably through the mound (Table SS3.40), but this is most likely due to the small sizes of some of the samples. The two largest samples of intact blades are from phases 2.1 (twelve pieces) and 7.2 (six pieces), where the dimensions of the blades suggest that the samples may represent different industries. Table SS3.41 shows that the L:W ratio of blades from phase 2.1 is approximately 1:3, whereas the ratio for blades from phase 7.2 is 1:2, that is, blades from the later phase just qualify metrically as blades (L ≥ 2B). Table SS3.41 also demonstrates that there is a significantly higher proportion of flakes in phase 7.2 (86%) than in phase 2.1 (63%). This comparison suggests that the assemblage from phase 2.1 represents one or more blade industries, whereas the assemblage from phase 7.2 represents an industry focused on production of broad macroblades or elongated flakes. The impression is further strengthened by the fact that four of the five microliths from the Turf Mound were recovered from phase 2.1 and none from phase 7.2; a crude microburin was, however, found in phase 7.2.

The two crested blades from the site are both secondary crested blades, but nevertheless attest to careful preparation of cores prior

Table SS3.39. The Turf Mound. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	7	7.1	0	0.0	7	5.3
Secondary (S2+S3+S4)	67	68.4	20	60.6	87	66.4
Tertiary (S5+T)	24	24.5	13	39.4	37	28.3
TOTAL	98	100.0	33	100.0	131	100.0

to blank production. One crested blade is from phase 2.1 and one crested flake is from phase 7.2. Four core rejuvenation flakes are: one platform edge removal, two core side removals and one platform removal.

Cores. Nineteen cores were recovered from the Turf Mound (Table SS3.42). The core group is greatly dominated by core fragments (57.9%), with single-platform cores, opposed-platform cores and multi-platform cores each represented by two pieces (including Fig SS3.45: 78, 79). One core is a keeled core and one is unclassifiable. Three of the eight unfragmented cores are blade cores, corresponding to 37.5%.

Tools. In total, twenty-four tools were found in the Turf Mound, or exactly 10% of the assemblage. The tool category includes three arrowheads, all of which belong to the leaf-shaped type. One is fairly large and of medium width (Green's type 2B), and two are of the smaller type 3, one broad — subtype A — and one of medium width —subtype B (Fig SS3.44–45: 75, 76; Green 1980, 69–72). Two of the five microliths are obliquely-blunted points (Fig SS3.45: 80, 81), two are edge-blunted points (eg Fig SS3.45: 77), and one is a backed piece. The microliths are supplemented by a small crude microburin.

Five scrapers were found in connection with the excavation of the mound, three of which are end scrapers (two plain end scrapers and one nosed end scraper). One scraper is a side scraper, and one is unclassifiable. In addition, one small piercer was found, as well as one serrated blade with 8 closely positioned teeth per 10mm (Fig SS3.45: 82) and a flake with one notch. Seven retouched pieces and fragments cannot be classified further.

Table SS3.40. The Turf Mound. The distribution of intact microblades and macroblades by phase

Phase	*Microblades: macroblades (no)*	*Microblades: macroblades (%)*
Pre-north mound (phase 1.1)	1:2	33:67
North mound (phase 2.1)	3:9	25:75
North mound (phase 2.2)	1:0	100:0
Recut in eastern gully (phase 3.2)	0:1	0:100
Post-mound soil (phase 7.2)	0:6	0:100
TOTAL	5:18	22:78

Possibly chronologically 'clean' contexts and features. As in the case of the other mounds and barrows from the project area, most of the contexts from the Turf Mound constitute redeposited settlement material. The only exception is the assemblage from contexts 6310 and 6311, which were associated with a treethrow hole beneath the north mound (phase 1.1). This assemblage contained thirteen flakes, three blades, four non-bulbar fragments and two leaf-shaped arrowheads (types 3A and 3B; Fig SS3.44–45: 75, 76).

Examination of the assemblage from the treethrow hole revealed that the six lithic artefacts from F6311 were in five visibly

Table SS3.41. The Turf Mound. Comparison between the blanks from phases 2.1 and 7.2 (the average L:W of phase 2.1 was calculated by excluding two very large 'outsiders')

Phases	*Microblades/ macroblades*	*Average blade Length:Width*	*Length:Width ratio of blades*	*Flakes/blades*
North mound (phase 2.1)	25/75 %	31:11 mm	1:2.8	63/37 %
Post-mound soil (phase 7.2)	0/100 %	36:18 mm	1:2	86/14 %

Table SS3.42. The Turf Mound. Cores

Core types	*Number*	*Percent*	*Flake removals*	*Flake/blade removals*
Single-platform cores of type A2	2	10.5	1	1
Opposed-platform cores (B1)	2	10.5		2
Cores with three or more platforms (C)	2	10.5	1	1
Keeled cores of type D	1	5.3		1
Unclassifiable	1	5.3	1	
Fragments	11	57.9	Not recorded	
TOTAL	19	100.0	3	5

different flint types and, even though the raw material of the fifteen pieces from F6310 appeared more homogeneous (fine-grained dark grey/light brown flint), at least three different types of cortex were present. Three pieces (Sfs 6518, 6523 and 65280) from F6310 has the same distinctive yellow cortex, and, as they were also found within centimetres from each other, they may be from the same nodule.

The excavators (SS.1.3) put forward two likely interpretations of the assemblage, namely 1) that the recovered scatter may be the chance survival of part of a more extensive topsoil scatter where it lay slightly deeper over the natural feature, and 2) it could represent a small but deliberate deposit of flint within the hollow. The heterogeneous composition of the assemblage from the treethrow hole supports suggestion one, whereas the recovery of two leaf-shaped arrowheads of roughly the same type (3Ai and 3Bp) may indicate a deliberate deposition. The inclusion of macroblades and leaf-shaped points, and the absence of microblades and microliths suggest an early Neolithic date of this small collection.

Table SS3.43. Barrow 5. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	45	50.0
	Blades	33	36.7
	Non bulbar fragments	2	2.2
	Crested flakes/blades	3	3.3
	Core rejuvenation flakes	7	7.8
	Subtotal	90	100.0
Cores		11	100.0
Tools	Arrowheads	5	33.3
	Microliths	2	13.3
	Knives	1	6.7
	Scrapers	3	20.
	Burins	2	13.3
	Retouched pieces	1	6.7
	Fabricators	1	6.7
	Subtotal	15	100.0
TOTAL		112	

Table SS3.44. Barrow 5. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	90	77.6
Cores	11	9.5
Tools	15	12.9
TOTAL	116	100.0

Dating. The composition of the Turf Mound assemblage, as well as its technological attributes, suggest that all the mound phases are chronologically mixed. It is possible that the small subassemblage from contexts 6310/6311 represents unmixed early Neolithic material (see above).

Judging from the pottery recovered, it is likely that Mesolithic, Neolithic and early Bronze Age lithics may be present throughout the Turf Mound, but the diagnostic types (leaf-shaped arrowheads, obliquely-blunted and edge-blunted microliths and a serrated blade) from phases 1.1 and 2.1 suggest that the subassemblages from those phases may be mainly Mesolithic and early Neolithic. This is supported by a large proportion of blades. An analysis of the intact blades from the two phases with the highest number of such blanks demonstrated a clear difference between the debitage from phases 2.1 (north mound) and 7.2 (post-mound soil). The blades from phase 2.1 are relatively longer and narrower, and of a higher quality, than those from phase 7.2 and there are relatively fewer blades in phase 7.2. Based on the diagnostic types and the different qualities of blanks, the lithic assemblage from phases 1.1–2.1 appears to be mainly Mesolithic or early Neolithic, whereas the lithic assemblage from phase 7.2 appears to be mainly later Neolithic or Bronze Age (one crude microburin may be intrusion from the upper layers of the monument). No radiocarbon dates were directly associated with the lithic finds.

Barrow 5

Barrow 5 (SS1.16) lay on the terrace between the Stanwick Iron Age and Roman settlement and the deserted hamlet of West Cotton. It was located less than 100m to the north of the Causewayed Ring-Ditch, and an equal distance separated it from the Turf Mound to the north-east. The monument consisted of an early Bronze Age round barrow, sealing, *inter alia*, a post-circle 17m in diameter and a central Beaker 'burial' without any human remains but with traditional Beaker grave goods. The barrow consisted of at least two constructional phases, and it was encircled by two ditches, the outermost of which had a diameter of *c* 31m. Due to the overlying Roman deposits and alluvium,

Table SS3.45. Barrow 5. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	4	8.2	0	0.0	4	5.4
Secondary (S2+S3+S4)	25	51.0	16	64.0	41	55.4
Tertiary (S5+T)	20	40.8	9	36.0	29	39.2
TOTAL	49	100.0	25	100.0	74	100.0

Barrow 5 was unrecognized until immediately before its destruction, and it was subsequently excavated in near-salvage conditions. The pre-mound features were examined in detail, but the ditches were only sampled in two 2 m-wide trenches along the south and west axes. The mound itself is only known from sample transects cut across it.

Due to the removal of approximately four-fifths of the mound, the lithic assemblage is small and probably only partly representative of the original assemblage. Early Bronze Age flint artefacts were recovered in connection with the central feature as well as secondary burials from the same period. The lithic assemblage from the mound consists of redeposited Mesolithic and early Neolithic settlement material.

Assemblage – general. In the Barrow 5 assemblage, fine-grained vitreous flint dominates almost completely — only two pieces of medium-grained flint was found, or 0.8%. Fourteen pieces (11.1%) of burnt flint was recovered. This is a fairly high proportion, but those pieces were distributed over five different phases, with single numbers of burnt flint in each (phases 0, 2.2, 3, 5.3 and 6). The burnt material probably represents a combination of redeposited settlement material and burnt grave goods from cremations (see below).

Table SS3.43 summarises all the lithic artefacts recovered in connection with the excavation of Barrow 5. A total of 112 pieces of worked flint was retrieved from the mound. The distribution of lithic artefacts by main categories is shown in Table SS3.44. Compared to other monuments in the project area, the proportion of debitage is low (77.6%). With tools (12.9%) outnumbering cores (9.5%), the general composition of this Bronze Age barrow is more similar to that of the early monuments on the terrace than the other Bronze Age mounds on Irthlingborough island.

Debitage. In total, ninety pieces of debitage were recovered from the barrow (Table SS3.43). The composition of this category defines the assemblage as a typical 'terrace assemblage', with flakes dominating the group (50.0%), but with a very large contingent of blades (36.7%) and few non-bulbar fragments (2.2%). Three crested pieces and seven core rejuvenation flakes were also found. The distribution of flakes and blades by reduction stages (Table SS3.45) corresponds largely to the general trend, with primary material being more numerous amongst flakes than blades (8.2% against 0%) and secondary material dominating both flakes and blades.

Though the composition of this collection links it to the other terrace assemblages, the microblade:macroblade ratio of the Barrow 5 material isolates it. With a ratio of 9:91 it contains fewer microblades than most other Raunds assemblages. The average dimensions of the blades are 38.1 x 15.3 x 5.1mm, resulting in a length:width ratio of 2.5. Even though this is slightly higher than the ratio of the Bronze Age assemblages on Irthlingborough island, it still defines the blades as generally short and stocky. The blade population is probably a mixture of mainly Neolithic and early Bronze Age blanks. As Table SS3.46 demonstrates, all phases are dominated by macroblades.

The three crested blades from the barrow are all primary crested pieces, two blades (eg Fig SS3.45: 88) and one flake. The seven

Table SS3.46. Barrow 5. The distribution of intact microblades and macroblades by phase

Phase	*Microblades: macroblades (no)*	*Microblades: macroblades (%)*
Natural (phase 0)	0:3	0:100
Pre-mound features (phase 1.1)	0:1	0:100
The mound (phase 2.2)	2:18	10:90
Inner ditch (phase 3)	0:1	0:100
Central secondary burials (phase 5.2)	0:1	0:100
Peripheral cremations (phase 5.3)	0:1	0:100
Later activity	1:5	17:83
TOTAL	3:30	9:91

Table SS3.47. Barrow 5. Cores

Core types	*Number*	*Percent*	*Flake removals*	*Flake/blade removals*
Single-platform cores (A1, A2)	3	27.3	3	0
Cores with two platforms (B1, B3)	2	18.2	1	1
Cores with three or more platforms (C)	2	18.2	1	1
Keeled cores of type E	3	27.3	1	2
Unclassifiable	1	9.1	1	0
TOTAL	11	100.1	7	4

core rejuvenation flakes are: one platform edge removal, four core side removals and two platform removals.

Cores. A total of eleven cores were recovered from Barrow 5 (Table SS3.47): three single-platform cores, two cores with two platforms, two multi-platform cores, three keeled cores and one unclassifiable core. No core fragments were recorded. Four of the 11 cores, or 36.4%, are blade cores.

Tools. The assemblage includes fifteen tools, corresponding to a tool ratio of 12.9%. The high tool ratio is probably the result of two factors, namely 1) the small size of the assemblage (112 artefacts), which allows random statistical fluctuations, and 2) the inclusion of primarily tools with the grave goods (five arrowheads in F47149, a foliate knife in F47171 and a fabricator in F47087).

The five arrowheads from the central burial (or ?cenotaph — no human remains were identified, see below), F47149 (phase 1.2), all belong to Green's type Sutton B (Fig SS3.45: 83–87; Green 1980, 122). Two microliths were recovered from the mound, phase 2.2; both are backed pieces, one very narrow (W = 3.7mm) and one broad (W = 10mm). An unburnt foliate knife was found against the outside of the inverted urn which contained cremation F47171; it is 'dagger-shaped', but due to its small size (90 x 30 x 7mm) it was decided to classify the piece as a knife (Fig SS3.46: 90).

Three scrapers were extracted from the mound. One is a crude chunky scraper manufactured on a thermally fractured single-platform core; one is an unclassifiable scraper on a simple core; and one is an end scraper on a flake. Two burins, also from the mound fill, are angle-burins on snapped flakes. A burnt fabricator, found in cremation F47087, belongs to the plano-convex type (Fig SS3.46: 93). One retouched flake from pre-mound soils cannot be classified further.

Possibly chronologically 'clean' contexts and features. The major part of the Barrow 5 assemblage constitutes redeposited settlement material, mainly from the Neolithic period but with a small admixture of Mesolithic material (see below). Only a small number of burial features seem to be chronologically clean, namely 1) F47149 (phase 1.2), 2) F47171 (phase 5.2) and 3) F47087 (phase 5.3). All three features contained few artefacts.

The central feature beneath the mound, F47149, contained no human remains, but the artefacts deposited in it would usually have been associated with a Beaker burial. It contained five arrowheads of type Sutton B (Fig SS3.45: 83–87), the crushed remains of a Wessex/middle Rhine Beaker and a fragment of a Collared Urn. The Beaker sherds date the assemblage to the middle part of the Beaker period, with the sherd of a Collared Urn probably being intrusive. The feature was clearly disturbed, possibly robbed, and it had also been cut by a later Collared Urn cremation (F47171). The lack of human remains and the obvious signs of any disturbance have influenced the interpretation of the feature and the excavators (SS1.16) suggest that 1) it may have been a cenotaph, or 2) an interred corpse may have been removed, possibly in connection with the deposition of urned cremation F47171.

Feature 47171 contained a stylistically early Collared Urn with the remains of at least three individuals and an unburnt bifacially flaked foliate knife (Fig SS3.46:90). The urn had been deposited in the central part of the mound immediately above F47149 and cutting the earlier feature. It was itself truncated by F47168.

Feature 47087 is somewhat enigmatic. It contained a densely packed cremation and three burnt lithics: a flake, a blade and a fabricator. Charcoal from the cremation was radiocarbon dated to 3350–2920 cal BC (4460±70 BP; OxA-3054) — or the middle Neolithic period. There is no stratigraphic relation between the cremation and the mound; the excavators suggest that the early

date either reflects the incorporation of already old charcoal in the pyre or identifies an actual middle Neolithic cremation. The flint artefacts are not diagnostic in the stricter sense of the word (Fig SS3.46: 91–93), but examination of the deposited blade identifies this as more likely to be Neolithic than of a Bronze Age date.

Dating. With the exception of a small number of finds from features and a limited amount of material from pre-mound soils, most lithics were recovered from the mound (phase 2.2) or later disturbed contexts (phase 6). Those finds represent redeposited settlement material. In dating the Raunds finds, the core:tool ratio has proved to be useful, with late assemblages being characterized by a dominance of cores and earlier assemblages by tools – this suggests that the main bulk of the redeposited material is early (Mesolithic/early Neolithic). The debitage group contains a large proportion of blades and blade cores, which support an early date. However, microblades are almost absent and Mesolithic material may therefore form a relatively small part of the assemblage. Two microliths and possibly two burins prove that some Mesolithic material is present.

The central feature of Barrow 5 contained five barbed and tanged arrowheads of Green's type Sutton B. This type is characteristic of the entire Beaker period. The arrowheads were found with sherds from a Beaker, the style of which (Wessex/middle Rhine) suggests a slightly narrower date of the middle Beaker period. The date of F47149 provides a *terminus post quem* for the construction of the mound and thereby also a *terminus ante quem* for the redeposited settlement material in it.

The foliate knife from F47171 is an early Bronze Age type. It is stratigraphically later than F47149, and the Collared Urn, under which it was found, is a post-Beaker type of vessel dated to the middle of the early Bronze Age. Material from this feature has not been radiocarbon dated, but cattle remains from another phase 5.2 deposit, pit F47168, have been dated to 2130–1820 cal BC at 80% probability (mean of 3680±100 BP and 3625±BP; OxA-3120 and OxA-7950). As F47168 may have cut F47171, the date of the former may provide a *terminus ante quem* for the latter and thereby the foliate knife.

The peripheral cremation F47087 contained three burnt lithics, a flake, a blade and a fabricator. There was no stratigraphic relation between cremation and mound, but a radiocarbon date of 3370–2910 cal BC (4460±BP; OxA-3054) suggests a middle Neolithic date. This date is supported by the blade, which is more likely to be Neolithic than later.

The Long Enclosure

The Long Enclosure (SS1.5) was situated in the central part of the West Cotton monument complex. It lay immediately south of the Long Mound, south-west of Barrow 6 and the Ditched Enclosure and north-east of the Turf Mound. It was 117m long and 17m wide internally and orientated south-west to north-east. The monument was defined by a single, probably continuous ditch, and it may have had internal banks. The northernmost 26m of the enclosure were totally excavated, whereas the remaining parts of the ditch were located by machine-cut trial trenches. The southern part of the enclosure was heavily affected by later stream channels.

The Long Enclosure was probably constructed in the later half of the fourth millennium BC, and the small flint assemblage generally pre-dates the monument. The assemblage most probably represents redeposited Mesolithic and Neolithic settlement material.

Assemblage. The Long Enclosure assemblage is completely dominated by fine-grained vitreous flint, with medium-grained and coarse-grained flint varieties being absent. Only three pieces are burnt. Table SS3.48 summarises all the lithic artefacts recovered in connection with the excavation of the Long Enclosure. A total of seventy-five pieces of worked flint was retrieved from the monument.

Table SS3.48. The Long Enclosure. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	50	75.8
	Blades	11	16.7
	Non bulbar fragments	3	4.5
	Crested flakes/blades	2	3.0
	Subtotal	66	100.0
Cores		6	100.0
Tools	Microliths	1	33.3
	Retouched pieces	2	66.7
	Subtotal	3	100.0
TOTAL		75	

Table SS3.49. The Long Enclosure. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	66	88.0
Cores	6	8.0
Tools	3	4.0
TOTAL	75	100.0

The distribution of lithic artefacts by main categories is shown in Table SS3.49. The proportion of debitage (88%) corresponds to that of other late assemblages from the project area. Cores (8%) outnumber tools (4%) which is also a late feature.

Debitage. Sixty-six pieces of debitage were found at the Long Enclosure (Table SS3.48). Compared to assemblages from other large monuments on the terrace, the debitage from the Long Enclosure was characterized by a more pronounced dominance of flakes (75.8%), with only 16.7% being blades and 4.5% being non-bulbar fragments. Only two crested pieces were found and no core rejuvenation flakes. The distribution of flakes and blades by reduction stages is also different to that of the other large Raunds monuments, with a heavy dominance of secondary material and relatively few tertiary blanks. However, these differences are possibly due to the small size of the Long Enclosure assemblage and they may represent random statistical fluctuations.

Two-thirds of the intact blades are macroblades and one-third are microblades. One of the crested pieces is a primary crested blade, whereas the other piece is a secondary crested flake.

Cores and tools. A total of six cores were found during the excavation of the Long Enclosure: one flake core with opposed platforms (B1; Fig SS3.46: 94), one blade core with two platforms at oblique angles (B2), one unclassifiable blade core and three fragments of flake cores. Only one formal tool type is represented in the assemblage. It is an intact obliquely-blunted point on a narrow blade (L:W = 30 x 8mm). The only other tools are two retouched blades (widths of 11 and 15mm, respectively).

Dating. The assemblage from the Long Enclosure is a fairly small one and it contains few chronological indicators. The only diagnostic type is an obliquely-blunted point, which was retrieved from a phase 4 context (secondary silts). The microlith suggests Mesolithic activity in the area prior to construction of the monument. The blade assemblage is too small to allow dating based on the microblade:macroblade ratio, but the presence of regular broad blades suggest activity in either the earlier part of the Mesolithic period or in the early Neolithic.

Apart from two artefacts associated with recuts, all stratified lithic finds are from phase 2, 4 or 6 contexts (primary, secondary and final silts). As all fills probably result from ditch slipping, erosion or creeping of the internal bank (SS1.6), it is possible that all, or most of, the lithics are residual and thus pre-date the Long Enclosure. If, as suggested by the excavators, a shed red deer antler from phase 2 is close in age to the construction of the monument, its radiocarbon date of 3360–2880 cal BC (4411±BP; UB-3312) provides a *terminus ante quem* for the lithic assemblage.

The Southern Enclosure

The Southern Enclosure (SS1.7) lay in the extreme south of the Stanwick excavation area, a few hundred metres from the Avenue and the Segmented Ditch Circle and separated from them by a small water course which is likely to have been active in the early Holocene (Ch 2). It was located as a result of the investigation of the Bronze Age field systems (SS1.23). The general layout was defined by the excavation of trial trenches, followed by machine stripping of first the eastern half and then the western half; only 5m of each ditch terminal was excavated by hand. The monument was a parallel-sided

Table SS3.50. The Long Enclosure. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	3	7.5	0	0.0	3	6.4
Secondary (S2+S3+S4)	29	72.5	4	57.1	33	70.2
Tertiary (S5+T)	8	20.0	3	42.9	11	23.4
TOTAL	40	100.0	7	100.0	47	100.0

enclosure, orientated north-east/south-west. The surrounding ditch was approximately 3m wide and 1.50m deep and it enclosed an area of *c* 30 x 50m. The ditch had an entrance at the eastern terminal. The area defined by the enclosure contained a number of postholes and pits. The Southern Enclosure is undated, but structural details suggest a Neolithic or Bronze Age construction date. Lithic artefacts were generally rare and almost absent from the ditch. Finds from two treethrow holes are thought to be Mesolithic, whereas the finds from pits and postholes may date to the later Neolithic or Bronze Age periods.

Assemblage – general. The Southern Enclosure assemblage is completely dominated by fine-grained vitreous flint, with coarser flint varieties being absent. Fifty-nine pieces of the ninety-five pieces (62%) from pre-monument treehole F87706 are burnt, and fourteen burnt pieces are from discrete features in phase 5 (see below). Table SS3.51 summarises all the lithic artefacts recovered in connection with the excavation of the Southern Enclosure. A total of 138 pieces of worked flint was retrieved from the monument.

The distribution of lithic artefacts by main categories is shown in Table SS3.52. The proportion of debitage (92.0%) is very high and that of cores (0.7%) very low. This is most probably due to the small size of the assemblage, allowing random statistical fluctuations and the influence of two large debitage-dominated subassemblages from phase 1. The tool ratio (7.3%) corresponds to the ratios of Raunds assemblages dominated by early material (SS3.7).

Debitage. A total of 127 pieces of debitage was retrieved from the monument. The debitage category is dominated by flakes (43.3%) and non-bulbar fragments (40.2%), supplemented by 16.5% blades. The composition of the debitage is heavily influenced by two Mesolithic pre-monument features (see below) which jointly muster 100 pieces, or three-quarters of the entire assemblage from the Southern Enclosure. The blades all come from the two pre-mound features, and their lithic material represents one or more blade industries. The large proportion of non-bulbar fragments is mainly made up of minute chips; some of the chips are knapping debris, but most of the pieces probably owe their small sizes to heavy burning of microlithic material and subsequent disintegration. No blades are included in the finds from monument and post-monument phases.

Table SS3.51. The Southern Enclosure. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	55	43.3
	Blades	21	16.5
	Non bulbar fragments	51	40.2
	Subtotal	127	100.0
Cores		1	100.0
Tools	Microliths	2	2
	Microburins	1	10
	Knives	1	10
	Scrapers	3	30
	Saws	1	10
	Retouched pieces	2	20
	Subtotal	10	100.0
TOTAL		138	

Table SS3.52. The Southern Enclosure. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	127	92.0
Cores	1	0.7
Tools	10	7.3
TOTAL	138	100.0

Cores and tools. During the excavation of the Southern Enclosure one core fragment and ten tools were found. The core fragment is that of a fine conical microblade core (A1) and it had been heavily burnt (Fig SS3.46: 95). The tool group includes two microliths (Fig SS3.46: 96, 98), one microburin (Fig SS3.46: 97), one knife, three scrapers, one saw and two retouched pieces. The microliths are both small scalene triangles. One microlith and the microburin came from treehole F87706 (phase 1); the other microlith came from pit F87720 (phase 5). The knife is a backed flake with a retouched cutting edge. The three scrapers are one end scraper and two extended end scrapers. A blade 'saw' has fine denticulated retouch on the entire length of either lateral side, but the pointed distal end has usewear from a twisting movement, and the piece may be a piercer or a combined tool. Two retouched pieces cannot be classified further.

Possibly chronologically 'clean' contexts and features. Due to the small size of the assemblage, a substantial proportion (96.3%) of

the collection is from possibly clean or unmixed contexts. Apart from two unstratified finds and two flakes from recuts of the ditch, all lithics come from features in either phase 1 (pre-monument features) or phase 5 (undated discrete features). The chronologically unmixed features from phase 1 are: 1) F87682 and 2) F87706. The chronologically unmixed features from phase 5 are: 1) F87688, 2) F87694, 3) F87698, 4) F87720, 5) F87736 and 6) F87760 (the subassemblage from this feature has been lost).

Both phase 1 features are probable treethrow holes. F87682 contained three flakes, one broad blade and one bladelet; the blades date the assemblage to the Mesolithic period or the early Neolithic period. F87706 contained 95 pieces of flint, 62% of which is burnt. The assemblage contains one fragmented conical microblade core, one scalene triangle and one microburin, but most of the assemblage (97%) is debitage. The debitage from the feature includes twenty-nine flakes (32%), nineteen (micro-)blades (20%) and forty-four non-bulbar fragments (mainly chips; 48%). The minute flint chips define this concentration as a knapping floor, but the reason for the exceedingly high chip ratio is the burning of the assemblage, which has disintegrated many microlithic pieces, combined with careful sieving (2mm mesh) of the soil. The fire-crazed state of much of the flint is probably due to the vicinity of a tree which was burnt. Diagnostic types and technological attributes date the assemblage to the late Mesolithic period.

The phase 5 features were either pits or postholes and contained from two to twelve pieces of worked flint. Feature 87688 was a pit and the finds include a flake, a non-bulbar fragment and a burnt flake with retouch; the flint was found with an early Bronze Age sherd. Feature 87694 was a probable posthole and contained three flint flakes. Feature 87698 was a pit or large posthole and contained three flakes. Feature 87720 was a pit, the upper fill of which contained a flake and a scalene triangle. Feature 87736 was a pit, from which a slightly larger assemblage was recovered; the eleven pieces of worked flint include seven flakes, three non-bulbar fragments and an extended end scraper. An assemblage of similar size was found in connection with posthole F87760; the twelve flints include five flakes, three non-bulbar fragments, one knife, two scrapers (one end scraper and one extended end scraper) and one retouched flake. In general, the typological and technological attributes associated with the individual phase 5 assemblages suggest later dates, either Neolithic or Bronze Age. This is supported by the early Bronze Age sherd in F87688. The scalene triangle from F87720 may be residual.

Dating. Based on comparison with linear, cursus and enclosure monuments, the excavators suggest a Neolithic or Bronze Age date for the construction and use of the Southern Enclosure (SS1.7). The pre-monument features contained three diagnostic pieces, a conical microblade core, a scalene triangle and a microburin which, combined with the technological attributes of the (micro-)blades, indicate a late Mesolithic date. The collection of lithic material from phase 5 features has a composition generally associated with later Neolithic or Bronze Age assemblages: the blanks are plain flakes, with no blades being present and the tools include a backed knife with a retouched cutting edge and two extended end scrapers. An early Bronze Age sherd was found in F87688. A scalene triangle recovered from the upper fill of F87720 is probably residual and represents late Mesolithic activity in the area prior to monument construction.

West Cotton and the remainder of the terrace – minor assemblages from monuments and non-monument features

As well as the substantial flint assemblages described above, minor assemblages were retrieved from monuments, field systems and features between the monuments. They are discussed below. The monuments include the Causewayed Ring-Ditch, the Avenue and the Segmented Ditch Circle. Flint artefacts were also found in connection with the Bronze Age field system and discrete features F1732, F4933 and F31820.

The Causewayed Ring-Ditch. The Causewayed Ring-Ditch was a suboval enclosure, or hengiform monument, with an east-facing causeway. It lay north of the Roman and Iron Age settlement and approximately 95m south of Barrow 5. During the excavation, a small assemblage of worked flint was recovered. Table SS3.53 summarises the lithic material from the monument.

The debitage consists of roughly equal proportions of flakes (six pieces) and good-quality macrolithic blades (four pieces), supplemented by one non-bulbar fragment. One primary crested blade was also found, as well as two core rejuvenation flakes (one core side removal and one apex removal). The assemblage includes one core, a flat single-platform flake core of type A2. Only two tools

Table SS3.53. The Causewayed Ring-Ditch. General artefact list

Artefact types	*Numbers*
Flakes	6
Blades	4
Non-bulbar fragments	1
Crested pieces	1
Core rejuvenation flakes	2
Cores	1
Arrowheads	1
Serrated pieces	1
TOTAL	17

were retrieved, namely a small leaf-shaped arrowhead of Green's type 3A (Green 1980, 71) and a fine blade with serrated edge-retouch (16 teeth per 10mm) .

Three flakes were found in pre-monument soils (phase 0). One primary crested blade was recovered from possible backfill of the ditch (phase 3). Two flakes and one blade were retrieved from fine silty loams on top of phase 3 (phase 4). All remaining finds came from recut fills (phase 6).

Based on radiocarbon dates for charred pieces of wood from the primary silts, the excavators suggest a construction date of *3340–3020 cal BC at 95% probability* (SS6), or the middle Neolithic period. The lithic assemblage seems to be largely early Neolithic (good quality broad blades, a leaf-shaped arrowhead, a serrated blade) and most probably the finds represent redeposited settlement material.

The Avenue. The Avenue consisted of two rows of approximately parallel ditches and hollows. It lay at the southern end of the Stanwick excavation area, to the east of the river Nene. Only three pieces of worked flint were found: a flake, a broken bladelet and a fragmented double-backed bladelet (Fig SS3.46: 99).

Two of the finds, the flake and the bladelet, were found in hollows at the north-east end of the monument. The flake was recovered from F87506 from which a late Mesolithic date was obtained (4330–3990 cal BC; 5325±50 BP; OxA-7867) and the bladelet was recovered from F87501, from which an early Neolithic date was obtained (3940–3650 cal BC; 4970±45 BP; OxA-7868). The fragmentary backed bladelet was retrieved from internal feature F87475 (a treethrow hole), towards the north-east end of the enclosed area.

Based on a number of radiocarbon dates, the Avenue's construction date is estimated at *3860–3620 cal BC at 92% probability* (SS6), that is, in the very beginning of the early Neolithic period. The typo-technological attributes of the flint artefacts are consistent with a late fifth–early fourth millennium date.

The Segmented Ditch Circle. This monument was a circular enclosure made up of ten inter-connecting segments. It lay at the southern end of the Stanwick excavation area, to the east of the river Nene, where it cut the south-western terminal of the earlier Avenue. Three pieces of worked flint were recovered: two flakes and a utilized blade. All three artefacts were found in phase 4 contexts, that is, in the backfill of the ditch, where they probably represent redeposited settlement material.

Two antler picks from the bottom of the ditch are thought to be associated with the construction of the monument. They provide an estimated construction date for the monument of *2020–1680 cal BC at 95% probability* (SS6) or the early Bronze Age. The flint blade is most probably early Neolithic.

The Ditched Enclosure. The Ditched Enclosure consisted of an approximately ovoid ditch, and it probably had an internal bank. It lay immediately to the east of Barrow 6 and west of a small probable ring-ditch. Only one piece of flint was found, a broad flake. This unstratified find was recovered from the final fills of the ditch (phase 3), near the surface. Due to the presence of one sherd of Grooved Ware pottery, the excavators suggest that the monument may be later Neolithic (SS1.9). The date of the flint flake is unknown.

The Bronze Age Field Systems. Two Bronze Age field systems were uncovered north-west of the eastern channel of the river Nene, in the area later occupied by the Stanwick Roman and Iron Age settlement. It was composed of a number of segments of field boundary ditches, separating the area into rectangular divisions, with entrance-ways generally sited at the corner junctions. The system and scale of land division suggested a pastoral economy (SS1.23).

During the excavation of the Field Systems a small assemblage of worked flint was retrieved. Table SS3.54 summarises the lithic material from the Field Systems.

One scraper (extended end scraper; Fig SS3.46:100) is in medium-grained flint, and three flakes are burnt. The debitage consists entirely of broad, chunky flakes, and the blanks of the tools are broad, thick flakes as well. No blades were recovered. The only

Table SS3.54. The Field Systems. General artefact list

Artefact types	*Numbers*
Flakes	13
Cores	1
Scrapers	2
Retouched pieces	1
TOTAL	17

Table SS3.55. Feature 31820. General artefact list

Artefact types	*Numbers*
Flakes	16
Blades	3
Crested pieces	3
Core rejuvenation flakes	1
Piercers	1
Serrated pieces	1
Knives	1
TOTAL	26

Table SS3.56. The Terrace – non-monument contexts. Raw material

Flint type	*Number*	*Percent*
Fine-grained vitreous	5460	93.1
Medium-grained	377	6.4
Coarse-grained	31	0.5
TOTAL	5868	100.0

core in the assemblage is a core with two platforms at right angles. The tool group includes two scrapers and one retouched piece. One scraper is a broken extended end scraper, and the other scraper is a combined side/end scraper.

Typo-technological attributes suggest a late date for the assemblage. The debitage and the blanks of the tools, define the assemblage as the product of a flake industry, either late Neolithic or Bronze Age. Based on the stratigraphic relation of the field ditches to other features and on two radiocarbon dates for probably related postholes the complex is assumed to be from the middle Bronze Age. It was not possible to establish whether the individual pieces of worked flint are contemporary with the Field Systems, or whether they are earlier or later.

Feature 1732. F1732 was a small pit, 0.65m across and 0.15m deep. It lay *c* 5m south-east of the Long Mound and 4m west of cremation F1741 and may have been a natural hollow. It contained one unmodified flake.

Feature 4933. F4933 was an almost circular pit, 1.10m in diameter and 0.50m deep. It lay 30m north-west of the centre of the Double Ring Ditch and it may have been a posthole. It contained a large unclassifiable core fragment.

Feature 31820. This feature was a circular pit, *c* 0.90m in diameter and 0.18m deep. It lay north of the Causewayed Ring Ditch, in the area of the Stanwick Iron Age and Roman settlement. The pit contained a small assemblage of worked flint. Table SS3.55 summarises the lithic material from F31820.

One knife (Fig SS3.47: 101) and one point are in medium-grained flint and one flake is in coarse-grained flint. Three flakes and a blade are burnt. The debitage category is made up of broad flakes and relatively irregular blades. The blades are generally thin and usable as blanks for cutting implements. The assemblage appears fairly homogeneous and probably represents a flake industry aiming at the production of elongated flakes. Three crested pieces were found: two primary crested flakes and one secondary crested blade. They all appear plain. The core rejuvenation flake is a platform removal. No cores were retrieved from the pit. The tool group includes one piercer on a large flake, one serrated blade (*c* 8 teeth per 10mm; Fig SS3.47: 102), and one simple backed knife on a blade (Fig SS3.47: 101).

The pit also contained a number of Grooved Ware sherds, and charred hazelnut shells from it were dated to 2920–2580 cal BC (4210±70 BP; OxA-3056), the late Neolithic period. The flint assemblage may well form a single chronological unit, and the technological attributes of the debitage and the blanks are consistent with a late Neolithic date.

West Cotton and the remainder of the terrace – flint from non-monument contexts

In the present section, worked flint from the area between the terrace monuments ('non-monument contexts') is presented. In a subsequent section, the worked flint from monument contexts is compared with that from non-monument contexts.

Raw material. The assemblage from non-monument contexts is heavily dominated by fine-grained vitreous flint (93.1%), with 6.4% being in medium-grained flint and 0.5% being in coarse-grained flint (Table SS3.56).

Table SS3.57. The Terrace – non-monument contexts. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	3,182	66.5
	Blades	940	19.
	Non bulbar fragments	537	11.2
	Crested flakes/blades	24	0.5
	Core rejuvenation flakes	100	2.1
	Subtotal	4,783	100.0
Cores		448	100.0
Tools	Arrowheads	49	7.7
	Microliths	65	10.2
	Microburins	6	0.9
	Bifacials	3	0.5
	Laurel leaves	1	0.2
	Knives	17	2.7
	Scrapers	151	23.7
	Scraper resharpening flakes	2	0.3
	Piercers	58	9.1
	Truncated pieces	2	0.3
	Notches	34	5.3
	Saws	1	0.2
	Serrated pieces	10	1.6
	Denticulates	14	2.2
	Axes and axe fragments	5	0.8
	Retouched pieces	209	32.8
	Fabricators	2	0.3
	Hammerstones	6	0.9
	Gunflint	2	0.3
	Subtotal	637	100.0
TOTAL		5,868	

A total of 383 pieces of burnt flint was found, or 6.5%.

Assemblage – general. Table SS3.57 summarises all lithic finds recovered in connection with excavations between the terrace monuments. A total of 5,868 pieces of worked flint was retrieved from the area. The distribution of lithic artefacts by main categories is shown in Table SS3.58 — the distribution is consistent with an assemblage dominated by Mesolithic and Neolithic material (SS3.7.7).

Table SS3.58. The Terrace – non-monument contexts. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	4,783	81.5
Cores	448	7.6
Tools	637	10.9
TOTAL	5,868	100.0

Debitage. During the excavation of the area's non-monument contexts, 4,783 pieces of debitage were retrieved (Table SS3.57). Flakes dominate the category (66.5%) and are supplemented by a relatively high ratio of non-bulbar fragments (11.2%), suggesting that the assemblage contains considerable amounts of material from later flake industries. However, a blade ratio of 19.7% demonstrates that the assemblage also includes debitage from one or more blade industries. Crested pieces make up 0.5% of the category and 2.1% are core rejuvenation flakes.

Table SS3.59 illustrates a trend repeated in most RAP monument assemblages: the flake group contains more primary material than the blade group (4.4% against 0.5%) and tertiary blades are slightly more numerous than tertiary flakes (38.8% against 31.1%). The ratio of secondary:tertiary material is approximately 2:1 in the flake group and 3:2 in the blade group.

Of the 940 blades from non-monument contexts, just 293 are intact. Only 17 of those are microblades, with 276 being macroblades (percentage distribution 6:94). The low proportion of microblades suggest that the blade industries represented in the assemblage are mainly early Neolithic, with later Mesolithic material being relatively scarce. This tendency is demonstrated in

Table SS3.59. The Terrace – non-monument contexts. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	111	4.4	3	0.5	114	3.7
Secondary (S2+S3+S4)	1,639	64.5	355	60.7	1,994	63.8
Tertiary (S5+T)	789	31.1	227	38.8	1,016	32.5
TOTAL	2,539	100.0	585	100.0	3,124	100.0

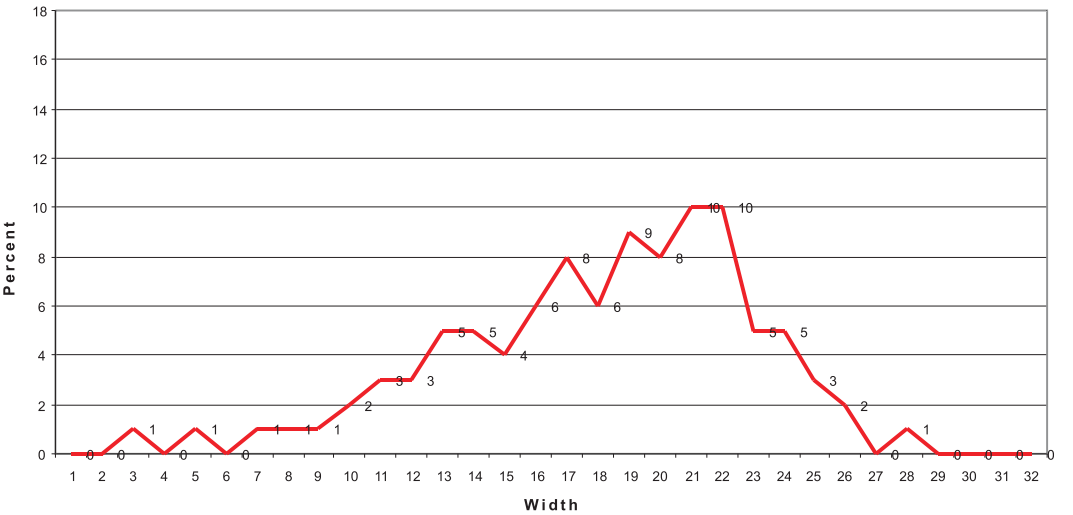


Figure SS3.35
Non-monument contexts on the terrace. Blade widths (%).

Figure SS3.35, which shows the blade widths of the intact blades from the assemblage. The highest peak of the graph is at blade widths 21–22mm, corresponding to an average blade width of 15.1mm

Twenty-four primary and secondary crested pieces and 100 core rejuvenation flakes (Table SS3.60) were recovered. Approximately one-third of the core rejuvenation flakes are platform edge removals, and core side removals make up another third. Platform removals amount to 19% and apex removals 12%. Platform edge removals may be failed platform removals and, combined, the two types of core rejuvenation flakes total 54%.

Cores. A total of 448 cores was recovered from contexts between the terrace monuments (Table SS3.61). Core fragments make up 35.1% and unclassifiable cores 18.5%. The most numerous core types are single-platform cores (16.5%) and cores with two platforms (14.7%), supplemented by multi-platform cores (4.7%) and keeled cores (10.5%). 'Keeled cores' constitute an amalgamation of several core subtypes, including discoidal cores like Figure SS3.48: 113 (2.9%). Cores with scars from the removal of

Table SS3.60. The Terrace – non-monument contexts. Types of core rejuvenation flake

Types of CRF	*Number*	*Percent*
Platform-edge removals (1)	35	35
Core-side removals (2, 3)	33	33
Platform removals (4)	19	19
Apex removals (5)	12	12
Unclassifiable	1	1
TOTAL	100	100.0

Table SS3.61. The Terrace – non-monument contexts. Cores – main types and subtypes

Main type	*Sub-type*	*Number main types*	*Number subtypes*	*Percent main types*	*Percent subtypes*	*Only flake removals*	*Flake/blade removals*
Single-platform cores	A1: knapped on entire circumference	74	12	16.5	2.7	6	6
	A2: knapped on part of the circumference		62		13.8	29	33
Two platforms	B1: opposed platforms	66	14	14.7	3.1	6	8
	B2: platforms at oblique angles		19		4.2	8	11
	B3: platforms at right angles		17		3.8	9	8
	B4: opposed platforms, one of which is keeled		16		3.6	4	12
Three or more platforms	C	21	21	4.7	4.7	17	4
Keeled cores	D: flakes struck from two directions	47	18	10.5	4.0	14	4
	E: with one or more platfoms		16		3.6	12	4
	Discoidal cores		13		2.9	13	0
Unclassifiable		83	83	18.5	18.5	72	11
Fragments		157	157	35.1	35.1	Not recorded	
TOTAL		448	448	100.0	100.0	190	101

blades amount to approximately one-third of the core group.

Tools. The terrace non-monument assemblage includes 637 tools, corresponding to a tool ratio of 10.9. This ratio is fairly high and may be the result of the application of more crude recovery techniques than the ones applied in connection with the investigation of the Raunds monuments (see the comparison between the area's monument and non-monument flint below).

Forty-nine arrowheads were recovered from the area (Table SS3.62). Leaf-shaped arrowheads and chisel or oblique arrowheads each make up more than one-third of the points, with barbed and tanged arrowheads amounting to *c* one-quarter. Only two other points, both triangular, were found.

Each of the three main arrowhead types can be subdivided into a number of subtypes. The seventeen leaf-shaped points are classified according to size (1–4) and slenderness (A–C; Green 1980, 69–72): five belong to the relatively large type 2 (eg Fig SS3.47: 107), seven to the slightly smaller type 3 (eg Fig SS3.47: 108) and two to the small type 4 (eg Fig SS3.47: 106), whereas three are too fragmented for classification; five of the classifiable points belong to the slender type A, six to type B and three to the squat type C. One of the leaf-shaped arrowheads is almost kite-shaped. The classification of the transverse arrowheads (chisel and oblique forms) follows Clark's system (1934), with types B–D being referred to as 'chisel' and types E–I being 'oblique arrowheads': thirteen points (including Fig SS3.48: 115) are chisel arrowheads (two B, seven C, four D) and four (including Fig SS3.48: 116) are oblique arrowheads (one G, three H), with one specimen being atypical. The barbed and tanged arrowheads are classified according to Green (1980, 121–123): four points belong to the Sutton B type, three are classified as Sutton C points, four as Green Low points (eg Fig SS3.48: 112) and one as a Conygar point.

Table SS3.62. The Terrace – non-monument contexts. Arrowhead types

Arrowhead types	*Number*	*Percent*
Leaf-shaped arrowheads	17	34.7
Chisels and oblique arrowheads	18	36.7
Barbed-and-tanged arrowheads	12	24.5
Miscellaneous	2	4.1
TOTAL	49	100

The microliths (Table SS3.63) are characterized by approximately equal numbers of obliquely-blunted points, edge-blunted points and backed pieces, with each group making up between one-quarter and one-third of the artefact group. These microlith types are supplemented by one scalene triangle and seven unclassifiable pieces. The individual microlith types have different average widths, with edge-blunted points, backed pieces and scalene triangles being based mainly on narrow blades, whereas obliquely-blunted points and unclassifiable pieces are broader. This situation is repeated in other Raunds assemblages (eg the Long Mound assemblage, above), and the width of the microlith blank is most probably a diagnostic attribute (Mellars 1976b): most of the broader pieces are probably earlier than the narrow microliths. The assemblage also includes six microburins, although their classification is less than certain (see comments on the project database).

Seventeen knives were recovered from terrace non-monument contexts (eg Figs SS3.47–49: 103, 117, 119, 120). Four are finely modified plano-convex knives, either with the dorsal face totally covered by invasive retouch (three pieces) or edge-retouched (one piece). Nine are scale-flaked knives, and two have been backed by abrupt retouch; the latter two have had their cutting edges modified by flat retouch. Two pieces are unclassifiable.

The scraper group (Table SS3.64) includes a large number of subtypes, with

Table SS3.63. The Terrace – non-monument contexts. Microlith types and sizes

Microlith type	*Number*	*Percent*	*Width =< 8 mm*	*Width => 9 mm*	*Percent*
Obliquely-blunted points	17	26.2	8	9	47:53
Edge-blunted points	21	32.3	14	7	67:33
Scalene triangles	1	1.5	1	0	100:0
Backed pieces	19	29.2	17	2	89:11
Unclassifiable	7	10.8	4	3	57:43
TOTAL	65	100.0	44	21	68:32

Table SS3.64. The Terrace – non-monument contexts. Scraper types

Scraper type	*Number*	*Percent*
Discoidal scrapers	10	6.6
Denticulated scrapers	5	3.3
End-scrapers	36	23.8
Double end-scrapers	2	1.3
Extended end-scrapers	20	13.3
Nosed end-scrapers	1	0.7
Hollow scrapers	7	4.6
Side-scrapers	7	4.6
Side/end-scrapers	25	16.6
Unclassifiable scrapers	38	25.2
TOTAL	151	100.0

end scrapers (thirty-six pieces), extended end scrapers (twenty pieces) and side/end scrapers (twenty-five pieces) being the most common ones. Approximately one-quarter of all scrapers are unclassifiable. Less numerous subtypes include discoidal scrapers (ten pieces), denticulate scrapers (five pieces), double end scrapers (two pieces), nosed end scrapers (one piece), hollow scrapers (seven pieces) and side-scrapers (seven pieces). Two flakes have been defined as scraper resharpening flakes.

With fifty-eight pieces, the piercer group is relatively large (eg Fig SS3.47: 104). The group consists of two subtypes, 'piercers' *sensu stricto* (tip formed by two regularly converging lateral retouches) and 'spurred implements' (tip formed by two notches or concave areas of retouch; Smith 1965, 105). The former type includes forty-seven pieces and the latter eleven pieces.

Thirty-four notched pieces were found in the area: twenty-two pieces have a single lateral notch, one piece has two notches and one piece has three notches. The assemblage includes ten serrated pieces, seven blades and three flakes. Generally, the pieces have between eight and fourteen serrations per 10mm, but one crude specimen has only five serrations per 10mm. Fourteen denticulates include pieces with one tooth (one), two teeth (three), three teeth (for), four teeth (two), five teeth (three) and six teeth (one).

In addition, the following less frequent tool types were found: bifacials (three; eg Fig SS3.47: 109), laurel leaves (one), truncated pieces (two), saws (one), axes and axe fragments (five), fabricators (two), hammerstones (six) and gunflints (two). The three bifacial pieces are relatively crude flakes with bifacial retouch. The laurel leaf is a fragmented, irregular piece (24 x 30 x 6mm), and it may be the fragment of a large twisted leaf-shaped arrowhead. The two truncated pieces, one flake and one blade, are simple pieces with crude straight truncations. The saw is a blade with four teeth separated by *c* 2mm wide notches. The axe group includes one tranchet axe (Fig SS3.49: 122), one other core axe or adze (SS3.49:118), two flakes from polished axes and one axe sharpening flake. The two fabricators are one piece with a plano-convex cross-section and one irregular piece. A total of 209 retouched pieces and fragments cannot be classified further.

Dating. The typological and technological composition of this assemblage suggests that it includes elements from several prehistoric periods. The clearest indication of this is presented by the composition of the arrowhead group: the leaf-shaped points are early Neolithic, the chisel and oblique arrowheads are middle and late Neolithic and the barbed and tanged and triangular arrowheads are of an early Bronze Age date. The three main arrowhead types are present in roughly equal proportions.

The subtypes of the arrowheads demonstrate that the assemblage represents material from a number of phases within each period. The outline of one leaf-shaped point is almost kite-shaped (Fig SS3.47:107), suggesting a late early Neolithic date (Green 1980, 97); chisel and oblique arrowheads are predominantly associated with Peterborough Ware and Grooved Ware respectively, and thereby represent the middle and late Neolithic (Green 1980, 111–116); the barbed and tanged subtypes Green Low and Conygar are associated with Beakers and Food Vessels, respectively, and they are diagnostic of earlier and later parts of the early Bronze Age (Green 1980, 137–141). Points of Sutton type are common throughout the early Bronze Age period.

The microlithic component of the assemblage is evidence of a Mesolithic presence in the area. Most microliths (edge-blunted points, scalene triangles and backed pieces) are produced on narrow blades and thereby diagnostic of the late Mesolithic period (Mellars 1976b). The obliquely-blunted points and the unclassifiable pieces are generally broader and thereby probably earlier (Pitts and Jacobi 1979). Six microburins are diagnostic of the Mesolithic in general.

The diagnostic arrowhead and microlith types demonstrate activity on the terrace throughout prehistory. This impression is supported by other diagnostic types. Apart

Table SS3.65. The Terrace. Distribution of lithic artefacts by main categories

	MONUMENT FLINT		*NON-MONUMENT FLINT*		*ALL FLINT*	
Group	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Debitage	5,781	85.8	4,783	81.5	10,564	83.8
Cores	449	6.7	448	7.6	897	7.1
Tools	509	7.5	637	10.9	1,146	9.1
TOTAL	6,739	100.0	5,868	100.0	12,607	100.0

from the microliths, Mesolithic elements are rare and include two core axes; burins are absent. A number of Neolithic and Bronze Age types indicate dominance by post-Mesolithic industries. The diagnostic tool types are: one laurel leaf, fragments of polished axes, small discoidal scrapers, knives with invasive retouch, serrated pieces, spurred implements and notched and denticulated pieces.

In technological terms, the assemblage contains elements from flake industries as well as blade industries. The debitage category is dominated by high proportions of flakes and, combined with the relatively high proportion of non-bulbar fragments, this indicates a noticeable late component (late Neolithic and Bronze Age). However, a blade proportion of almost 20% demonstrates the inclusion of material from one or more blade industries as well. Only 6% of the blades are microblades and, in association with an average blade width of *c* 15mm, most of the blades from the terrace non-monument contexts must be Neolithic (Fig SS3.35).

The relative numbers of diagnostic typo-technological attributes suggest a marked dominance of post-Mesolithic elements. Compared to their frequency in some of the Raunds monuments, notably the Long Mound, microliths, microburins and microblades are comparatively rare and burins are absent. The only other definitely Mesolithic artefacts are two core axes. In contrast, Neolithic and Bronze Age types are numerous, as are their unmodified supports, broad blades and flakes.

Comparison between monument flint and non-monument flint on the terrace

In connection with the excavations in the West Cotton area and on the remainder of the terrace, a total of 12,607 pieces of worked flint was recovered. This large assemblage was retrieved partly from Neolithic and Bronze Age monuments ('monument flint') and partly from later and superficial contexts ('non-monument flint'). The composition of the two subassemblages differ considerably, and in this section they are compared and the similarities and differences are discussed.

General composition. As shown in Table SS3.65, the main differences between the two subassemblages are the higher proportions of cores and tools in non-monument contexts. Cores are slightly more frequent in non-monument contexts (7.6% against 6.7%), which may be due to the dominance of this assemblage by later material. As demonstrated in connection with the later Bronze Age knapping floors on Barrows 1 and 3 (described below), relatively few blanks were produced per late prehistoric core, resulting in a higher core ratio.

Tools are considerably more frequent in non-monument contexts (10.9% against 7.5%), which may be due to the application of different recovery techniques in monument and non-monument contexts. Though some monuments were investigated in near-salvage conditions and with the application of relatively crude recovery techniques (machinery, hoeing), the excavation of most monuments were somewhat more refined (in some cases involving sieving) than the excavation of the areas between them. Consequently, more small flakes and flake fragments would be retrieved from monument contexts and, as a secondary effect, the tool ratio would automatically decrease.

An additional factor may be the fact that the main aim of the large-scale area excavations on the terrace was the investigation of the Saxon settlement at West Cotton and the Iron Age and Roman settlement at Stanwick. The predominance of cores and tools may partly reflect excavation by those whose eyes were more attuned to pottery, building material, metalwork and mosaics than to struck flint.

Debitage. Table SS3.66 demonstrates considerable differences in the composition of the debitage category as well. In comparison with the monument assemblage, the non-monument assemblage has higher proportions of flakes (66.5% against 59.1%) and non-

Table SS3.66. The Terrace. Monument and non-monument flint

		MONUMENT FLINT		*NON-MONUMENT FLINT*		*ALL FLINT*	
Group	*Category*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Debitage	Flakes	3,415	59.1	3,182	66.5	6,597	62.4
	Blades	1,686	29.2	940	19.7	2,626	24.9
	Non bulbar fragments	461	8.0	537	11.2	998	9.5
	Crested flakes/blades	54	0.9	24	0.5	78	0.7
	Core rejuvenation flakes	165	2.8	100	2.1	265	2.5
	Subtotal	5,781	100.0	4,783	100.0	10,564	100.0
Cores		449	100.0	448	100.0	897	100.0
Tools	Arrowheads	28	5.5	49	7.7	77	6.7
	Microliths	164	32.2	65	10.2	229	20.0
	Microburins	12	2.3	6	0.9	18	1.5
	Bifacials	0	0.0	3	0.5	3	0.3
	Laurel leaves	2	0.4	1	0.2	3	0.3
	Daggers	1	0.2	0	0.0	1	0.1
	Knives	7	1.4	17	2.7	24	2.1
	Scrapers	85	16.7	151	23.7	236	20.6
	Scraper resharpening flakes	5	1.0	2	0.3	7	0.6
	Piercers	20	3.9	58	9.1	78	6.8
	Burins	5	1.0	0	0.0	5	0.4
	Truncated pieces	4	0.8	2	0.3	6	0.5
	Notches	31	6.1	34	5.3	65	5.7
	Saws	1	0.2	1	0.2	2	0.2
	Serrated pieces	7	1.4	10	1.6	17	1.5
	Denticulates	3	0.6	14	2.2	17	1.5
	Axes and axe fragments	15	2.9	5	0.8	20	1.7
	Retouched pieces	110	21.6	209	32.8	319	27.8
	Fabricators	2	0.4	2	0.3	4	0.3
	Anvils	3	0.6	0	0.0	3	0.3
	Hammerstones	4	0.8	6	0.9	10	0.9
	Gunflint	0	0.0	2	0.3	2	0.2
	Subtotal	509	100.0	637	100.0	1,146	100.0
TOTAL		6,739		5,868		12,607	

bulbar fragments (11.2% against 8.0%), but a significantly lower proportion of blades (19.7% against 29.2%). This fact is most probably the result of different chronological compositions, with the monument assemblage containing more material from microblade and macroblade industries, whereas the non-monument assemblage is dominated by macroblade and flake industries. The main chronological difference between the two assemblages is the size of the Mesolithic element: the monument assemblage includes a large Mesolithic component from unmixed pre-mound contexts and from redeposited settlement material in the mounds and ditches of the monuments, whereas the non-monument assemblage includes less Mesolithic material. The monument assemblage contains a slightly higher proportion of crested pieces and core rejuvenation flakes, which supports the chronological differences presented above. There are no differences between the proportions of primary, secondary and tertiary material from the two assemblages.

Cores and tools. Table SS3.67 illustrates the proportion of blade cores from each of the terrace monuments and from contexts between the monuments; the monuments have been sequenced according to their decreasing percentage of blade cores. It is obvious that blade cores are relatively scarce in the non-monument assemblage, and only the assemblages from Bronze Age Barrows 5 and 6 and from the middle Neolithic Long Enclosure, have similar low percentages. This

supports the impression of the non-monument assemblage as generally late prehistoric.

In the tool group (Table SS3.66), arrowheads, knives, scrapers, piercers, serrated pieces, denticulates and retouched pieces are most frequent in non-monument contexts, whereas microliths, microburins, burins and axes are most frequent in monument contexts; a number of tool types are too scarce to be statistically relevant. These differences are probably mainly chronologically determined: the tool types most frequent in the non-monument assemblage are largely late, and the tool types most frequent in monument assemblages are early. A small number of artefacts owe their presence in monument contexts to their use as burial goods, such as daggers, which have only been recovered from monuments (Barrow 6 on the terrace and Barrow 1 on the island).

Discussion. As demonstrated above, there are clear indications of chronological differences between the composition of the monument assemblage and that of the non-monument assemblage. Both assemblages contain lithic material from the early Mesolithic (broad blade microliths?) through to the later Bronze Age, but in different proportions. The monument assemblage contains large proportions of Mesolithic, Neolithic and Bronze Age material, whereas the non-monument assemblage contains negligible amounts of Mesolithic material, and it is dominated by material from early Neolithic blade industries and late Neolithic and Bronze Age flake industries.

As the area between the monuments yielded relatively little Mesolithic material, and as the Mesolithic finds from monuments on the terrace most probably represents redeposited settlement material (apart from finds from pre-monument contexts), the question arises: where did the redeposited material originate from? Logically, only four options present themselves, namely 1) that the redeposited surface soil was transported across huge distances, that is, from outside the project area, 2) that the redeposited soil derives from one or more areas inside the project area, but between the excavated trial trenches, 3) that by redepositing soil from areas containing Mesolithic settlement material all, or most, traces of these settlements were removed, or 4) that the fill of the mounds derives from areas immediately adjacent to the monuments.

Table SS3.67. The terrace. Blade cores as percent of all cores

	Percent blade cores
Turf Mound	63
Long Mound	47
Barrow 6	39
Barrow 5	36
Long Enclosure	33
Non-monument	35

Option 1 is implausible for logistical reasons, and it is not very likely that the extensive area excavations and trial trenches covering the terrace accidentally missed what, judging from the evidence of the redeposited material in the West Cotton mounds, must have been substantial Mesolithic settlements (Option 2). This leaves Options 3 and 4 for serious consideration and the answer may be a combination of the two: The largest earthwork on the terrace is the Long Mound at West Cotton, which also accounts for *c* three-quarters of the area's monument flints. If the excavators' estimates for the amount of turf stripped to build the monument (*c* 8–12,000 sq m) is correct, the removal and concentration within the monument of most of an area of settlement would not be out of the question. Features beneath the Long Mound indicate settlement in that area in the period immediately prior to and around, the turn of the fifth and fourth millennia BC.

Irthlingborough island

Barrow 1

Barrow 1 (SS1.12) formed part of a small group of Bronze Age monuments situated on the valley floor between two arms of the River Nene. Barrow 1 was the southernmost of the four Bronze Age barrows in this area, and it was situated in the south-west corner of Irthlingborough island. It lay south-west of Barrows 2–4, and approximately 300m to the south-east, across the river, lay the early Neolithic Long Barrow, the lithics from which are reported on by Philippa Bradley (SS3.7.5).

The monument was a round barrow encircled by three concentric ditches; the outer ditch had a diameter of *c* 36m. The mound was hoed and machine-graded down, and the ditches were excavated in segments, some of which were not bottomed. Apart from widespread disturbance from ploughing and animal burrowing, a suspected modern anthrax pit was discovered in the central part of Barrow 1.

The barrow was constructed over a richly furnished Beaker burial and, possibly, a cen-

Table SS3.68. Barrow 1. Raw material

Flint type	*Number*	*Percent*
Fine-grained vitreous	5,516	92.5
Medium-grained	405	6.8
Coarse-grained	42	0.7
Indeterminate	1	0.0
TOTAL	5,964	100.0

trally placed tree, which had already decayed. It contained secondary burials, one further inhumation and at least one cremation, and a number of later peripheral cremations. Barrow 1 was constructed at the turn of the third and second millennia BC, and the later peripheral cremations were probably inserted around the mound in the second half of the second millennium BC. The large flint assemblage is mainly from the late Neolithic and early Bronze Age periods, with few finds being attributable to the Mesolithic and the early Neolithic. A small number of artefacts had been deposited in connection with burials, and a sizeable assemblage was recovered from post-mound contexts, probably representing middle or late Bronze Age knapping events on the barrow.

Raw material. The Barrow 1 assemblage is heavily dominated by fine-grained vitreous flint (92.5%), supplemented by 6.8% medium-grained flint and 0.7% coarse-grained flint (Table SS3.68). There are practically no coarser flint varieties in the early phases (phases 0–5.2), whereas the later phases have on average 7.9% medium- and coarse-grained flint. With 12.5%, phase 8.1 has a particularly high proportion of coarser flint.

The proportion of burnt flint is generally low, with no burnt material in the early phases, and only 3% or less in the later phases (Table SS3.69). In connection with the Long Mound, the excavators suggest that burnt flint may have been deposited or scattered across the mound surface (SS1.1), but in the case of Barrow 1 the number and proportion of burnt flint is low throughout the mound, and all the burnt flint is probably from either redeposited material (most phases) or post-mound activities (phases 8.1 and, to some degree, 8.2).

Assemblage – general. Table SS3.70 summarises all the lithic artefacts recovered in connection with the excavation of Barrow 1. A total of 5,973 pieces of worked flint was retrieved.

The distribution of lithic artefacts by main categories is shown in Table SS3.71. Debitage makes up 86.5% of the assemblage,

Table SS3.69. Barrow 1. Burnt flint by phase

Phases	*Number*	*No burnt*	*Percent*
Natural (phase 0)	13	0	0.0
Beaker burial (phase 2.1)	13	0	0.0
First mound (phase 3.2)	24	0	0.0
Secondary burials (phase 3.3)	5	0	0.0
Inner ditch fills (phase 4)	44	0	0.0
Second mound (phase 5.2)	73	0	0.0
Middle ditch fills (phase 6.1)	32	1	3.0
Bank or third mound (phase 7.2)	212	3	1.4
Flint scatters on mound (phase 8.1)	1,725	40	2.3
Outer ditch fills (phase 8.2)	770	8	1.0
Disturbed and eroded mound (phase 9)	2,133	25	1.2
Undated natural features (phase 10)	23	0	0.0
Later activity (phase 11)	759	13	1.7
Unstratified	138	4	2.9
TOTAL	5,964	94	1.6

Table SS3.70. Barrow 1. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	4,231	82.1
	Blades	265	5.1
	Non bulbar fragments	574	11.1
	Crested flakes/blades	7	0.1
	Core rejuvenation flakes	83	1.6
	Subtotal	5,160	100.0
Cores		463	100.0
Tools	Arrowheads	11	2.9
	Microliths	3	0.9
	Microburins	1	0.3
	Daggers	1	0.3
	Knives	9	2.6
	Scrapers	54	15.8
	Scraper resharpening flakes	2	0.6
	Piercers	18	5.3
	Burins	1	0.3
	Truncated pieces	1	0.3
	Notches	29	8.5
	Saws	1	0.3
	Serrated pieces	2	0.6
	Denticulates	13	3.8
	Axes and axe fragments	1	0.3
	Retouched pieces	193	56.9
	Fabricators	1	0.3
	Subtotal	342	100.0
TOTAL		5,964	

Table SS3.71. Barrow 1. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	5,160	86.5
Cores	463	7.8
Tools	341	5.7
TOTAL	5,964	100.0

cores 7.8%, and tools 5.7%. This distribution corresponds to the general trend amongst the later assemblages of the project area.

Debitage. During the excavation of Barrow 1 a total of 5,169 pieces of debitage were found. The debitage category is heavily dominated by flakes (82.1%) and non-bulbar fragments (11.1%), supplemented by a small proportion of blades (5.1%). Crested pieces are few (0.1%), and core rejuvenation flakes only make up 1.6%. The total domination of crude debitage types at the expense of blades groups the Barrow 1 assemblage with the other large assemblages from Irthlingborough island. Those assemblages differ considerably from the assemblages on the terrace, which are generally characterized by large contingents of blades (*c* 20–30%).

The distribution of flakes and blades by reduction stages (Table SS3.72) is interesting, as the distribution of the two blank types is almost identical. As expected, there are more primary flakes than blades, but the difference is small (12.3% against 9.2%); in other Raunds assemblages, primary flakes are between 2.5 to 6 times more frequent than primary blades – if primary blades have been present at all. The proportion of secondary flakes is more-or-less similar to the proportion of secondary blades (57.9% against 58.3%), and there are roughly equal proportions of tertiary flakes and blades (29.8 against 32.5%).

Macroblades dominate the blade group, with a microblade:macroblade ratio of 23:77. This corresponds to the ratios of other Raunds monuments, but contrary to the terrace assemblages, no individual phases or contexts are heavily dominated by regular microblades. The average blade dimensions are 30.9 x 13.8 x 5.5mm, resulting in a length:width ratio of only 2.2 and an average thickness of more than 0.5 cm. The Barrow 1 blades are short and stocky, and most of them are probably random products of an industry generally aiming at producing flakes. This is supported by the fact that the flakes and blades contain roughly equal proportions of primary, secondary and tertiary material (see above).

Seven primary and secondary crested pieces were retrieved, one crude blade and six flakes. They were recovered from contexts throughout the mound. With eighty-three specimens (Table SS3.73), core rejuvenation flakes are relatively rare (1.6% of the debitage group). The main types are platform-edge removals, core-side removals and platform removals with between one-quarter and one-third of the total category each. Apex removals are not common (2.4%).

Cores. During the excavation of the mound 463 cores were recovered (Table SS3.74). The most numerous subcategory is 'unclassifiable cores' (25.3%), with *c* one-fifth of all cores being 'fragments'. The most frequent 'proper' core type is the single-platform core (22.2%), whereas cores with two platforms make up 13.2%, keeled cores 12.7% and multi-platform cores 8.2%. Approximately one-quarter of the keeled cores are discoidal cores. Blade cores are

Table SS3.73. Barrow 1. Types of core rejuvenation flakes

Types of CRF	*Number*	*Percent*
Platform-edge removals (1)	22	26.5
Core-side removals (2, 3)	25	30.1
Platform removals (4)	29	35.0
Apex removals (5)	2	2.4
Unclassifiable	5	6.0
TOTAL	83	100.0

Table SS3.72. Barrow 1. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	383	12.3	19	9.2	402	12.2
Secondary (S2+S3+S4)	1,795	57.9	120	58.3	1,915	57.9
Tertiary (S5+T)	924	29.8	67	32.5	991	29.9
TOTAL	3,102	100.0	206	100.0	3,308	100.0

Table SS3.74. Barrow 1. Cores – main types and subtypes

Main type	*Sub-type*	*Number main types*	*Number subtypes*	*Percent main types*	*Percent subtypes*	*Only flake removals*	*Flake/blade removals*
Single-platform cores	A1: knapped on entire circumference	103	12	22.2	2.6	12	0
	A2: knapped on part of the circumference		91		19.6	87	4
Two platforms	B1: opposed platforms	61	12	13.2	2.6	8	4
	B2: platforms at oblique angles		31		6.7	30	1
	B3: platforms at right angles		16		3.5	14	2
	B4: opposed platforms, one of which is keeled		2		0.4	2	0
Three or more platforms	C	38	38	8.2	8.2	35	3
Keeled cores	D: flakes struck from two directions	59	32	12.7	6.9	31	1
	E: with one or more platfoms		12		2.6	11	1
	Discoidal		15		3.2	15	0
Unclassifiable		117	117	25.3	25.3	113	4
Fragments		85	85	18.4	18.4	84	1
TOTAL		463	463	100.0	100.0	442	21

rare – only 4.5% of the entire core group have flaking fronts characterized by blade scars. In comparison, the large terrace assemblages (the Long Mound and Barrow 6) have proportions of *c* 45%, and the nearby Barrow 3 *c* 9%.

Tools. A total of 341 tools were retrieved, corresponding to a tool ratio of 5.7. This tool ratio is the lowest amongst the larger Raunds monuments.

Eleven arrowheads were recovered, with seven barbed and tanged arrowheads dominating the group. Those arrowheads are supplemented by one leaf-shaped point, one chisel arrowhead (Fig SS3.53:140), a small fragment of an indeterminate transverse arrowhead, and one triangular point (Fig SS3.50:130). The barbed and tanged arrowheads are mainly of Green's type Sutton B (Fig SS3.53–55:145, 148, 153, 154, 157, 162), with one of the Green Low type (Fig SS3.53:137; Green 1980, 123). The leaf-shaped point is a small specimen of medium relative width (Green's type 3B; 1980, 71). The chisel arrowhead belongs to Clark's type C (Clark 1934, 34). The fragmentary transverse arrowhead is too small for further characterization. The triangular point is finely retouched, and it formed part of the grave goods of the central Beaker burial (phase 2.1); the Green Low point had been burnt and was retrieved from the first mound (phase 3.2); and the remaining points were from the fill of the outer ditch (phase 8.2), and later, disturbed contexts. The assemblage includes three microliths, one backed piece (Fig SS3.55: 160) and two unclassifiable fragments, as well as one microburin; they were all found in later, disturbed contexts.

With nine specimens, knives are relatively common. Two pieces are finely modified, pointed plano-convex knives with the dorsal face totally covered by retouch (eg Fig SS3.54: 155) ; two belong to the scale-flaked type (Fig SS3.53: 141, Fig SS3.55: 164); four have been backed by abrupt retouch; and one piece may be a flaked discoidal knife or a heavily reduced discoidal core (Fig SS3.55:163). The simplest of the four backed knives were recovered from the Beaker burial (Fig SS3.52: 132, 133), the rest from mound/ditch fills or later disturbed contexts.

The scraper group (Table SS3.75) is dominated by end scrapers (thirty-one), supplemented by two extended end scrapers; one of the end scrapers is on a flake struck off a polished axe. Almost one-fifth of the scrapers are simple, unclassifiable pieces. Denticulate scrapers, assumed to be late, amount to four pieces. The remaining scrapers are either side or side/end scrapers (three and four pieces, respectively). Two scraper resharpening flakes were also found.

With eighteen pieces, piercers are fairly common. This tool group can be subdivided

Table SS3.75. Barrow 1. Scraper types

Scraper type	*Number*	*Percen*
Denticulated scrapers	4	7.4
End-scrapers	31	57.4
Extended end-scrapers	2	3.7
Side-scrapers	3	5.6
Side/end-scrapers	4	7.4
Unclassifiable scrapers	10	18.5
TOTAL	54	100.0

into 'piercers' (tip formed by two regularly converging lateral retouches) and 'spurred implements' (tip formed by two notches or concave areas of retouch; defined according to Smith 1965, 105). Eight piercers are 'piercers proper', and 10 are spurred implements.

Notched pieces number twenty-nine specimens. Twenty-three of those have a single notch, whereas five have two notches, and one piece has three notches. They are related to denticulates, of which thirteen were recovered (eg Fig SS3.54:150). One of the denticulates has one crude tooth, six have two, four have three, and two have four teeth. The notched and denticulated pieces are generally fairly coarse implements on large, thick flakes or chunks.

In addition, the following less frequent types were found in and around Barrow 1: daggers (one; Fig SS3.51: 131), burins (one), truncated pieces (one), saws (one), serrated pieces (one), axe fragments (one), and fabricators (one). The dagger was retrieved from the Beaker burial, phase 2.1, and is a fine specimen. The outermost part of the tip has broken off. It has a gradually tapering tang and miniscule spots of cortex at either end. The burin is a blade which has had a burin-edge formed by a blow to an oblique distal truncation. A short flake has a straight to slightly oblique truncation. The saw is a proximal end of a flake with two surviving retouched teeth. Two serrated blades are functionally related to the saw; one has 10 teeth per 10mm, the other nine. A flake has been struck from a crudely polished axe. The fabricator has a plano-convex section and may possibly be a double-sided scraper. A total of 194 retouched pieces and fragments cannot be classified further.

Possibly chronologically 'clean' contexts and features. Ingeneral, the Barrow 1 assemblage seems to be late, and it is very likely that the vast majority of the lithic artefacts are of a Bronze Age date. There is, nevertheless, the occasional earlier piece mixed into the mound and the ditch fills. Three microliths, a microburin and, possibly, a burin are Mesolithic, and a leaf-shaped arrowhead, a chisel arrowhead, a fragment of a transverse point and a flake struck off a polished axe are Neolithic. A number of tools on blades may also be Neolithic, such as the two scale-flaked blades. The Neolithic arrowheads are both from ditch fills (phase 6.1 and 8.2), whereas the remaining early finds are from later, disturbed contexts; all Mesolithic and Neolithic artefacts are thought to represent redeposited material.

This material is mixed with lithics from the early Bronze Age, some of which are redeposited, and a small portion probably derive from disturbed secondary burials, such as, for example, the burnt Green Low point (Fig SS3.53: 137). Possibly unmixed subassemblages are few, and include: 1) context 30476 (phase 2.1), 2) context 30012 (phase 3.3), 3) a small cluster of flints at the interface of contexts 30411 and 30399 (phase 4) and 4) phase 8.1 (mainly contexts 30036 and 30057). Context 30012 is a possible cremation – it was only associated with two flakes. Contexts 30476, the flint cluster from contexts 30411/30399, and phase 8.1 are discussed below.

Context 30476 was a Beaker burial found at the centre of the barrow, and probably the cause of the mound construction. In addition to other typical finds from the Beaker period (one Beaker, four V-perforated jet buttons, one amber ring, three bone spatulae, one boar tusk and two slate and chalk 'sponge fingers'), thirteen lithic artefacts were recovered. At the feet of an almost complete male skeleton was a compact pile of grave goods, including one dagger, one triangular arrowhead, two knives, two scrapers, one core-side removal, one retouched flake, and five unmodified flakes. A usewear analysis of the lithics (Grace SS3.7.4) revealed that they had been used to varying extents: there were no wear traces on the arrowhead, two small flakes and the core-side removal, and the only traces on the dagger stem from its having been sheathed. One scraper, one knife and one flake had been used to scrape wood and, in one case, possibly antler as well. One scraper had been used to scrape hide, one flake to cut bone and tissue (butchering), and one knife, one retouched piece and one flake had been used to cut or scrape indeterminate materials of varying hardness. The fact that most of the lithic implements have been used proves that the grave goods were not manufactured for the 'event', the burial, and the entire collection of grave goods may very well be the actual belongings of the deceased. Based on the style of the Beaker (Tomalin SS3.8.4), the burial, and by association its content, can be dated to the later part of the Beaker period. A radiocarbon date on parts of the skeleton gave the date 2200–1920 cal BC (3681±47 BP; UB-3148).

The interface of contexts 30411 and 30399, in the western part of the inner ditch (phase 4), was the site of a small cluster of struck flint made up of a core, a macroblade

Table SS3.76. Barrow 1. Phase 8.1. Composition of the debitage

Category	*Number*	*Percent*
Flakes	1,309	80.4
Blades	69	4.2
Non bulbar fragments	234	14.4
Crested flakes/blades	1	0.1
Core rejuvenation flakes	14	0.9
TOTAL	1,627	100.0

Table SS3.77. Barrow 1. Phase 8.1. Cores

Core types	*Number*	*Percent*
Single-platform cores (A1 and A2)	7	11.5
Cores with two platforms (B2 and B3)	5	8.2
Cores with three or more platforms (C)	3	4.9
Keeled cores (D and E)	4	6.5
Unclassifiable	7	11.5
Fragments	35	57.4
TOTAL	61	100.0

and twelve flakes (collectively AOR 34099). There were three sequences of refits: between a pair of flakes, a flake and the blade, and six successive flakes. The cluster thus seems to represent a brief knapping episode which took place when only the primary silt had accumulated in the inner ditch.

Phase 8.1 constitutes an extensive, dense main flint scatter (*c* 6 x 5m) in the north-west quadrant of the barrow (1,555 pieces) and an equally extensive, but much less dense, scatter in the south-east quadrant (132 pieces), supplemented by a small number of stray finds. The two flint scatters are most probably the results of post-mound flintworking on the phase 7 barrow. Material from phase 8.2 (the fills of the outer ditch) shows similarities to the phase 8.1 assemblage, and the two assemblages may, to a large extent, be contemporaneous. However, the finds from phase 8.2 are thought to be a mixture of material eroded out of the mound and material generated by later activity (Frances Healy pers comm) and, consequently, it contains some early types (eg the fragment of a transverse arrowhead). For this reason, phase 8.2 lithics will not be included in the following presentation of the phase 8.1 flint scatters.

In total, the flint assemblage comprises 1,811 lithic artefacts, but eighty-six of those could not be located for classification, and the characterization of the assemblage will therefore be based on the remaining 1,725 pieces. 12.5% of the assemblage is flint of coarser varieties, and 2.2% is burnt. Approximately 94% is debitage, 4% cores, and 2% tools. Compared to the general composition of the material from the barrow (Table SS3.71), phase 8.1 thus contains more debitage and fewer cores and tools. As the assemblage represents a late and fairly basic industry with a low blank output per core (see below), a higher core ratio was expected (the technologically almost identical assemblage from phase 8.2 has a ratio of 18.3%). These debitage and core ratios cannot be explained at present, but may be the results of factors such as the 'centrifugal effect' (Stapert 1989, 10–12), that is, cores having been flung out of the site as part of 'preventive maintenance' or 'toss' (Binford, 1983, 189).

Table SS3.76 shows the composition of the phase 8.1 debitage, and, with more than 80% flakes, the assemblage obviously represents a flake industry. The flakes are supplemented by a large contingent of non-bulbar fragments, and blades and core preparation/rejuvenation flakes are scarce. The proportions in Table SS3.76 are very similar to the proportions characterizing the entire Barrow 1 assemblage. Blades and core rejuvenation flakes are slightly less frequent, which may be the result of the phase 8.1 assemblage being chronologically clean, whereas the complete collection from the barrow contains small amounts of material from Mesolithic and early Neolithic industries.

In total, sixty-one cores were retrieved from phase 8.1 contexts (Table SS3.77) – no cores had scars from blade removals. The composition of the core group differs considerably from the composition of the cores from Barrow 1 (Table SS3.74), in that the frequencies of core types A–E and unclassifiable cores are much lower in phase 8.1. This is mainly due to the presence of a higher proportion of core fragments in phase 8.1 (57.4% against 18.4%); if all fragments are disregarded, the core type proportions from Barrow 1 and phase 8.1 are almost identical.

The assemblage from phase 8.1 contains relatively few tools, and these are generally of plain, late types: seven scrapers (three of which are denticulated), two piercers (one of which is a spurred implement), three notches, three denticulates and twenty-one retouched pieces.

The assemblage clearly represents a flake industry, and, as shown in Figure SS3.37, the flakes and blades form a continuum, with the small number of blades (L ≥ 2W) being

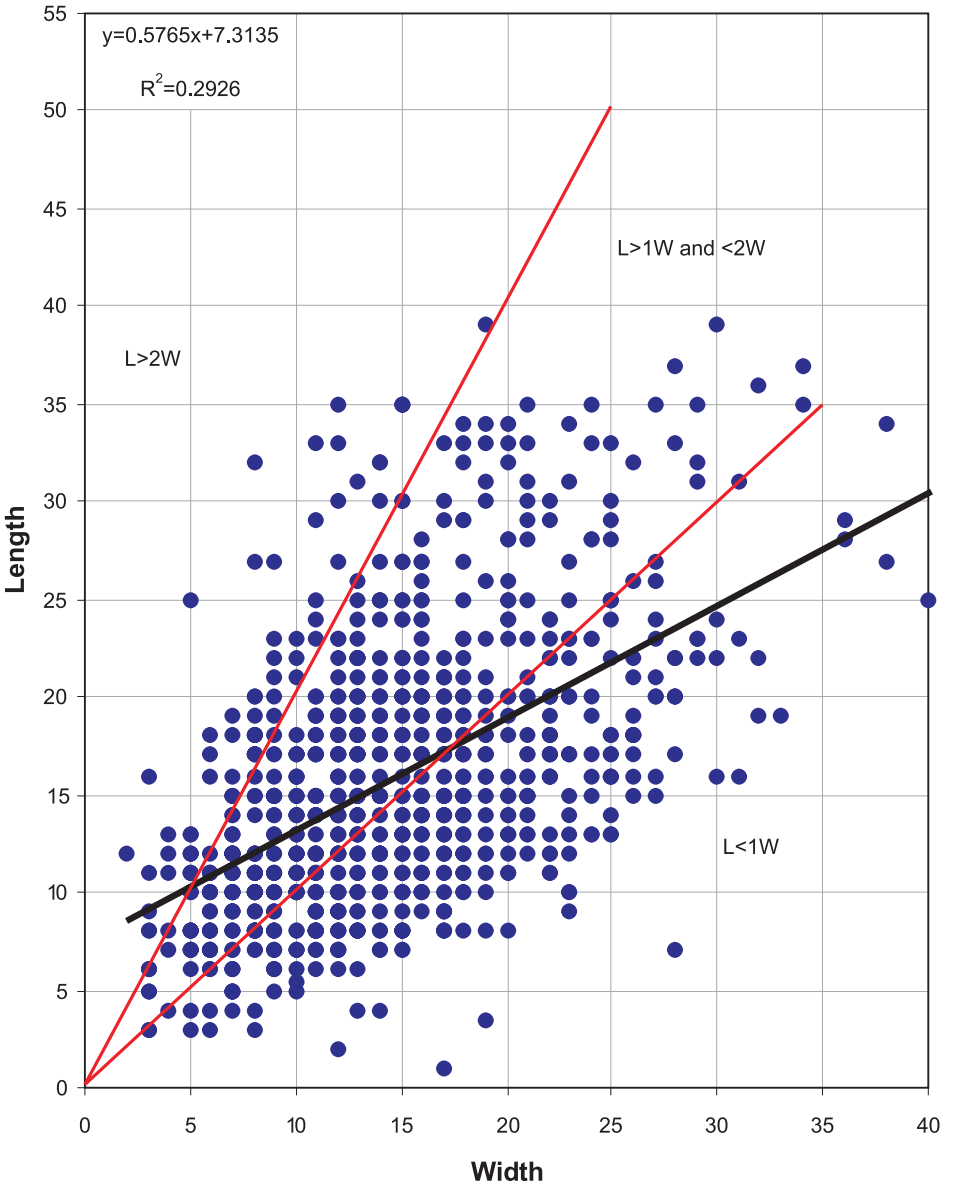


Figure SS3.36
Barrow 1.
Lengths and widths of all flakes and blades from phase 8.1. A trendline has been inserted, including its equation and correlation coefficient.

short and stocky. The average dimensions of the blade population are 20.8 x 9.2 x 4.6mm, corresponding to a L:W ratio of only 2.3. The average dimensions of the flakes (15.3 x 14.8 x 6.4mm) correspond to a L:W ratio of exactly 1, which is a result of equal numbers of flakes being slightly elongated ($L > 1W \wedge < 2W$) and broad ($L \leq 1W$). The distribution of flakes and blades by reduction stage corresponds more-or-less to that of the entire Barrow 1 assemblage with 12.2% primary material, 57.9% secondary material and 29.9% tertiary material; there is slightly more primary and tertiary material and slightly less secondary material in the phase 8.1 assemblage.

Only a minor proportion (188 pieces) of the blanks from phase 8.1 had had their terminations defined in connection with the general recording of finds. This small artefact group is dominated by feathered terminations (59.8%), but approximately one-third (32.8%) of the blanks are hinged. 7.4% of the recorded pieces have stepped terminations. The platform remnants (Table SS3.78) confirm the impression of a simplistic reduction strategy, 25.7% being cortex-covered and 28.7% plain.

The bulb types of intact blanks or proximal ends give an indication of the applied percussion technique. Generally, diffuse bulbs are perceived as representing soft hammer technique, and pronounced bulbs hard-hammer technique. A cursory examination of bulb types on flakes from this phase demonstrated an almost complete domi-

Table SS3.78. Barrow 1. Phase 8.1. Flakes and blades – classifiable platform types

Platform types	*Number*	*Percent*
Cortex	59	25.7
Core face	27	11.7
Plain	66	28.7
Facetted	35	15.2
Punctiform	1	0.4
Linear	22	9.6
Battered	4	1.7
Shattered	16	7.0
TOTAL	230	100.0

nance of pronounced bulbs, many of which are multiple. The presence of multiple bulbs is a diagnostic feature of a poorly controlled hard-hammer technique.

The lithic assemblage of phase 8.1 has the appearance of a small short-term camp site. Compared to the total assemblages from the project area, the tool ratio is low (2%) and the range of tools limited. The scatters probably represent *ad hoc* knapping by later Bronze Age herders in a pastoral landscape dotted with early Bronze Age barrows.

Dating. The general composition of the lithic material gives an impression of a predominantly late assemblage, and an assemblage less influenced by the admixture of Mesolithic and early Neolithic industries than the assemblages on the terrace. Most of the lithic finds (all other phases than phase 8.1) probably represents redeposited material, but mainly from the later Neolithic or the early Bronze Age. Phase 8.1 may be almost chronologically clean (see above).

The debitage group is heavily dominated by flakes (*c* 82%), with only *c* 5% blades and *c* 11% non-bulbar fragments. This defines the assemblage as primarily the product of one or more flake industries, whereas the assemblages on the terrace represent mainly blade industries (generally 20–30% blades) with a small supplement of late material from flake industries. As the transition between the early and the late Neolithic signifies the transition from blade to flake industries, the composition of the debitage suggests a date for most of the lithics of the later Neolithic or Bronze Age. The blades from Barrow 1 are generally short and stocky elongated flakes, and the more elegant blades associated with earlier industries are extremely rare. The picture of a flake industry is supported by the composition of the core group with only 4.5% of the cores having scars from blade removals, and the core preparation/rejuvenation flakes characterizing more sophisticated reduction strategies are relatively scarce.

In general, the diagnostic tool types support a late date for the assemblage, but a small number of artefacts can be attributed to the Mesolithic (three microliths, a microburin and, possibly, a burin) and Neolithic periods (a leaf-shaped point, a chisel arrowhead, the fragment of a transverse arrowhead and a flake from a polished axe). The barbed and tanged arrowheads, the triangular point and the dagger date to the early Bronze Age, and the notched and denticulated pieces are probably mainly from the Bronze Age. Artefacts such as knives, spurred implements and serrated pieces may be either Neolithic or Bronze Age. The most precisely datable item is the barbed and tanged arrowhead of Green Low type, which is usually associated with late Beakers (Green 1980, 140).

All the Mesolithic artefacts and the Neolithic leaf-shaped point and axe fragment are from the disturbed phases 9 and 11. The chisel arrowhead is from the inner ditch fills, and the fragment of a transverse arrowhead from phase 8.2 probably represents erosion of the mound. Most of the other diagnostic tool types were recovered from the fill of the mound, and the Mesolithic, Neolithic and most of the early Bronze Age artefacts probably represent redeposited material. The dagger and the triangular point formed part of a collection of grave goods from the central Beaker burial (phase 2.1); they were found with a stylistically late Beaker, and by association the phase 2.1 subassemblage can be dated to the later part of the Beaker period. The Green Low point is burnt, and its burnt condition suggests that it had formed part of a cremation. The association of Green Low points with late Beakers dates this secondary burial to a time not long after the construction of the mound.

The assemblage from the phase 8.1 flint scatters (and to some extent phase 8.2) represents post-mound knapping activities on the barrow (see description above). Technologically, this collection is characterized by the production of broad flakes, with a small number of elongated flakes barely satisfying the metrical requirements of blades ($L \geq 2W$). The tools recovered from phase 8.1 contexts are plain and characteristic of a middle or late Bronze Age industry: the assemblage is dominated by scrapers (some

of which are denticulated) and notched and denticulated pieces; implements with invasive retouch are absent.

The skeleton from the phase 2.1 Beaker burial (and thereby indirectly the grave goods associated with it) is radiocarbon dated to 2200–1920 cal BC (3681±47 BP; UB-3148). Combined with other relevant radiocarbon dates from the mound, the construction date is estimated as 2140–1800 cal BC at 95% probability. The construction date of the mound provides a *terminus ante quem* for the redeposited Mesolithic, Neolithic and early Bronze Age material.

Barrow 3

Barrow 3 (SS1.14) formed part of a small group of Bronze Age monuments situated on the valley floor between two arms of the River Nene. The barrow was situated in the centre of the island, with Barrow 1 to the south-west and Barrows 2 and 4 to the east. The monument was a round barrow encircled by one complete, original ditch and a later, incomplete outer ditch, which extended only half way round the mound. The inner ditch was over 2m wide and had a causeway to the north-west. The mound had a diameter of 19m, and the complete ditch a diameter of 25m. Barrow 3 had been built over a complex system of post settings, which included at least seven different post circles. Barrow 3 was completely excavated. No primary burial could be located, but a few artefacts from the mound are thought to derive from secondary cremations. Barrow 3 is estimated to have been constructed at the turn of the third and second millennia BC (SS6). Most of the finds from the barrow represent redeposited material from the late Neolithic and early Bronze Age periods, supplemented by a tiny proportion of Mesolithic and early Neolithic artefacts. Approximately one-third of the assemblage was recovered from two post-mound knapping floors at the north-west and south-east corners of the monument.

Raw material. Like all other Raunds lithic assemblages, the material from Barrow 3 is heavily dominated by fine-grained vitreous flint (92.0%), with 5.7% being medium-grained flint and 2.2% coarse-grained (Table SS3.79). According to the project database, two pieces are of chert, but unfortunately neither of those pieces could be re-found and re-examined. In the database, two lithics from other parts of the project area are classified as chert and, as a control, they were located and examined. One piece turned out to be coarse-grained flint, whereas the other piece (AOR 36872, an unstratified non-bulbar fragment) truly is chert. Consequently, the raw material of the two 'chert' artefacts from Barrow 3 has been labelled 'indeterminate' (Table SS3.79).

Most finds (85%) are from later contexts (phases 5–5.5)2. No medium- and coarse-grained flint was found in pre-mound and mound contexts (phases 0–4.3), whereas the proportion of coarser flint types is relatively high in all later contexts. This proportion is 5.9% in phase 5.1, 13.9% in phase 5.3, and 4.2% in phase 5.4. Only two pieces of burnt flint (Table SS3.80) were recovered from pre-mound and mound contexts, thirty-one pieces being associated with later contexts (mainly phases 5.3 and 5.4).

Assemblage – general. Table SS3.81 summarises all the lithic artefacts recovered in connection with the excavation of Barrow 3. A total of 2,235 pieces of worked flint was retrieved.

The distribution of lithic artefacts by main categories is shown in Table SS3.82. The proportion of debitage (84.7%) corresponds well with that of other Raunds monuments dominated by late material. The ratio of cores (8.9%) exceeds that of tools (6.4%), which is also a late feature (SS3.7.7).

Table SS3.79. Barrow 3. Raw material

Flint type	*Number*	*Percent*
Fine-grained vitreous	2,057	92.0
Medium-grained	128	5.7
Coarse-grained	48	2.2
Indeterminate	2	0.1
TOTAL	2,235	100.0

Table SS3.80. Barrow 3. Burnt flint by phase

Phases	*Number*	*No burnt*	*Percent*
Pre-mound soils (phase 0)	5	0	0.0
The first mound and ditch (phase 2.1/2.2)	18	0	0.0
Inner ditch silts (phase 3)	34	2	5.9
Enlarged mound (phase 4.3)	5	0	0.0
Later activity (phase 5)	46	0	0.0
Recut fills (phase 5.1)	17	0	0.0
Features cut into enlarged mound (phase 5.2)	2	0	0.0
Flint scatter outside the ditch (phase 5.3)	790	15	1.9
Disturbance/erosion of mound surface (phase 5.4)	1,016	16	1.6
Undated features beyond the barrow (phase 5.5)	33	1	3.0
Unstratified	269	2	0.7
TOTAL	2,235	36	1.6

Debitage. A total of 1,894 pieces of debitage were retrieved from the barrow. The composition of the debitage category corresponds well with that of the other island assemblages (for example Barrow 1 and Barrow 4), but differs considerably from the composition of the terrace assemblages. The flint assemblage from Barrow 3 includes 80.7% flakes (terrace monuments *c* 60–65%), 3.8% blades (terrace monuments *c* 20–30%), and 11.9% non-bulbar fragments (terrace monuments *c* 7–10%). Crested pieces make up 0.8% of the category, and core rejuvenation flakes amount to 2.8%.

The distribution of flakes and blades by reduction stages (Table SS3.83) follows the general trend, with a higher percentage of primary flakes than blades (9.2% against 1.5%), and there are considerably more tertiary blades than flakes (50.0% against 39.2%). The blade group is characterized by a dominance of macroblades, and the microblade:macroblade ratio does not differ considerably from that of other Raunds monuments in the project area. In the Barrow 3 assemblage the ratio is 27:73 but, contrary to the terrace assemblages, no individual phases or contexts are heavily dominated by regular microblades.

Sixteen primary and secondary crested pieces were found, primarily in phase 5.3 and 5.4 contexts. Though the two phases yielded very similar numbers of blanks (611 and 722 flakes and blades, respectively), many more crested pieces were assigned to phase 5.4 (ten) than to phase 5.3 (one). This may be an indication that the two subassemblages represent different technological approaches and thereby industries (see below).

Core rejuvenation flakes amount to fifty-three specimens (Table SS3.84), with almost half (43.5%) of the classifiable pieces being core-side removals. Combined, platform and platform-edge removals are equally frequent (41.3%). With 15.2%, apex removals are relatively common.

Cores. A total of 200 cores was recovered from Barrow 3 (Table SS3.85). Approximately one-third are classified as 'core fragments', and 13.0% as 'unclassifiable cores'. Single-platform cores make up 18.5%, cores with two platforms 13.5%, multi-platform cores 11.0%, and keeled cores 12.5%.

Table SS3.81. Barrow 3. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	1,529	80.7
	Blades	71	3.8
	Non bulbar fragments	225	11.9
	Crested flakes/blades	16	0.8
	Core rejuvenation flakes	53	2.8
	Subtotal	1,894	100.0
Cores		200	100.0
Tools	Arrowheads	5	3.6
	Microliths	3	2.1
	Laurel leaves	1	0.7
	Knives	3	2.1
	Scrapers	28	19.9
	Piercers	5	3.6
	Burins	3	2.1
	Truncated pieces	2	1.4
	Notches	13	9.2
	Serrated pieces	2	1.4
	Denticulates	4	2.8
	Retouched pieces	71	50.4
	Fabricators	1	0.7
	Subtotal	141	100.0
TOTAL		2,235	

Table SS3.82. Barrow 6. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	1,894	84.7
Cores	200	8.9
Tools	141	6.4
TOTAL	2,235	100.0

Table SS3.83. Barrow 3. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	121	9.2	1	1.5	122	8.8
Secondary (S2+S3+S4)	678	51.6	33	48.5	711	51.5
Tertiary (S5+T)	514	39.2	34	50.0	548	39.7
TOTAL	1,313	100.0	68	100.0	1,381	100.0

Roughly one-third of the keeled cores are discoidal cores. The proportion of cores with blade scars is very low, only 9.0%; the large terrace assemblages (the Long Mound and Barrow 6) have proportions of *c* 45%.

Tools. In total, 141 tools were recovered during the excavation of Barrow 3, resulting in a tool ratio of 6.4. This tool ratio corresponds well with the ratios of other late assemblages (SS3.7.7).

Five arrowheads were retrieved, two of which are fragmented. Two intact arrowheads and an arrowhead with broken-off barb, tang and tip belong to Green's category Sutton B (Fig SS3.56:169, 172; Green 1980, 122–123). One point is a Conygar type arrowhead (Fig SS3.56:168), and one broken-off tip with delicate invasive retouch is probably from a leaf-shaped arrowhead (Fig SS3.56:176). Only three microliths were found, one of which is an obliquely-blunted point. The other two microliths are backed pieces.

The assemblage also includes three knives. One is a fine plano-convex knife on a large blade (Fig SS3.56:171), with most of the dorsal face covered by invasive retouch. The other two knives are cruder, backed pieces. Scrapers amount to twenty-eight pieces, distributed on a large number of scraper subtypes (Table SS3.86). Plain unclassifiable scrapers dominate the tool group (35.7%), with end scrapers being the second largest scraper type (25.0%). With 17.8%, end scraper subtypes (extended, nosed and hollow scrapers) are relatively frequent as well. Side-scrapers make up 14.3%, and there is a single specimen of the hybrid side/end scraper form.

The piercers from Barrow 3 can be subdivided into two groups, 'piercers' and 'spurred implements', with two pieces being 'piercers', that is, with the tip formed by two regularly converging lateral retouches (eg Fig SS3.56:174), and three pieces being 'spurred implements', that is, with the tip formed by two notches (Smith 1965, 105; eg Fig SS3.56:167). Most of the piercers have an *ad hoc* appearance.

With thirteen specimens, notched pieces are the second most common group of formal tool types. Nine pieces have one

Table SS3.84. Barrow 3. Types of classifiable core rejuvenation flakes

Types of CRF	*Number*	*Percent*
Platform-edge removals (1)	8	17.4
Core-side removals (2, 3)	20	43.5
Platform removals (4)	11	23.9
Apex removals (5)	7	15.2
TOTAL	46	100.0

Table SS3.86. Barrow 3. Scraper types

Scraper type	*Number*	*Percent*
Denticulated scrapers	1	3.6
End-scrapers	7	25.0
Extended end-scrapers	2	7.1
Nosed end-scrapers	1	3.6
Hollow scrapers	2	7.1
Side-scrapers	4	14.3
Side/end-scrapers	1	3.6
Unclassifiable scrapers	10	35.7
TOTAL	28	100.0

Table SS3.85. Barrow 3. Cores – main types and subtypes

Main type	*Sub-type*	*Number main types*	*Number subtypes*	*Percent main types*	*Percent subtypes*	*Only flake removals*	*Flake/blade removals*
Single-platform cores	A1: knapped on entire the circumference	37	2	18.5	1.0	1	1
	A2: knapped on part of the circumference		35		17.5	29	6
Two platforms	B1: opposed platforms	27	10	13.5	5.0	9	1
	B2: platforms at oblique angles		5		2.5	5	0
	B3: platforms at right angles		7		3.5	4	3
	B4: opposed platforms, one of which is keeled		5		2.5	3	2
Three or more platforms	C	22	22	11.0	11.0	22	0
Keeled cores	D: flakes struck from two directions	25	2	12.5	1.0	2	0
	E: with one or more platfoms		14		7.0	14	0
	Discoidal		9		4.5	8	1
Unclassifiable		26	26	13.0	13.0	26	0
Fragments		63	63	31.5	31.5	59	4
TOTAL		200	200	100.0	100.0	182	18

notch, two have two, and two have three notches. They are generally fairly simple flake implements, but also a blade, a bladelet, a core rejuvenation flake and a chunk were used as blanks. Some of the notched pieces may form an actual tool type, probably of a Bronze Age date, but in some cases the notch may be the result of use or post-depositional effects. Four denticulated pieces were recovered, with three, four or five crude teeth (eg Fig SS3.56:175). Two serrated pieces are present as well, one bladelet with eighteen closely positioned teeth per 10mm in either lateral side, and a blade with slightly coarser teeth, seven per 10mm.

The assemblage also includes one laurel leaf, three burins, two truncated pieces, one fabricator, and seventy-one retouched pieces. One small fragment of a laurel leaf probably snapped during manufacture. Two of the burins are dihedral forms, whereas one is a burin on a truncation. The two truncated pieces are both fragmented, one is on a flake, the other on a blade. The Barrow 3 fabricator is a fragment of an irregular plano-convex subtype. Seventy-one retouched pieces or fragments cannot be referred to any more formal tool types.

Possibly chronologically 'clean' contexts and features. In the main, the assemblage from Barrow 3 appears late, but it does contain some earlier material, such as three microliths and the broken-off tip of a leaf-shaped arrowhead. The early finds were mostly recovered from phase 5.4, which represents later disturbance and erosion of the mound surface, and most probably the lithic material is redeposited material. Phase 5.3, on the other hand, appears chronologically clean. It is a post-mound flint scatter found outside the ditch to the north-west, under denuded mound material. Even though the phase 5.3 lithic assemblage seems to be unmixed, it is not completely undisturbed as Iron Age and Roman sherds were retrieved from the same contexts. Below, this collection will be characterized in detail.

In total, the assemblage numbers 790 pieces of flint, *c* 14% of which is medium- or coarse-grained flint, and 1.9% is burnt. Approximately 91% is debitage, 6% cores and 3% tools. Compared to the general composition of the material from the monument (Table SS3.82), phase 5.3 thus contains more debitage and fewer cores and tools. As the assemblage represents a late industry with a low blank output per core (see below), a higher core ratio was expected. Most probably the individual ratios reflect specific site activities involving factors such as the 'centrifugal effect' (Stapert 1989, 10–12), or 'preventive maintenance' (Binford 1983, 189), but a detailed spatial analysis would have to be carried out to provide a satisfactory explanation.

The composition of the phase 5.3 debitage is shown in Table SS3.87, which shows a marked dominance of flakes and non-bulbar fragments, supplemented by a very low number of blades and core preparation/rejuvenation flakes. Compared to the composition of the total Barrow 3 assemblage, phase 5.3 contains a lower proportion of blades and core preparation/rejuvenation flakes, suggesting an even more simplistic technological approach. Most probably the difference is due to phase 5.3 representing an almost chronologically clean late industry, whereas the remaining Barrow 3 collection includes a small amount of material

Table SS3.87. Barrow 3. Phase 5.3. Composition of the debitage

Category	*Number*	*Percent*
Flakes	587	81.7
Blades	21	2.9
Non bulbar fragments	94	13.1
Crested flakes/blades	1	0.1
Core rejuvenation flakes	16	2.2
TOTAL	719	100.0

Table SS3.88. Barrow 3 Phase 5.3. Cores

Core types	*Number*	*Percent*	*Flake removals*	*Flake/blade removals*
Single-platform cores of type A2	11	22.9	9	2
Cores with two platforms (B1 and B2)	3	6.3	2	1
Cores with three or more platforms (C)	6	12.5	6	0
Keeled cores (D and E)	5	10.4	5	0
Unclassifiable	6	12.5	6	0
Fragments	17	35.4	17	0
TOTAL	48	100.0	45	3

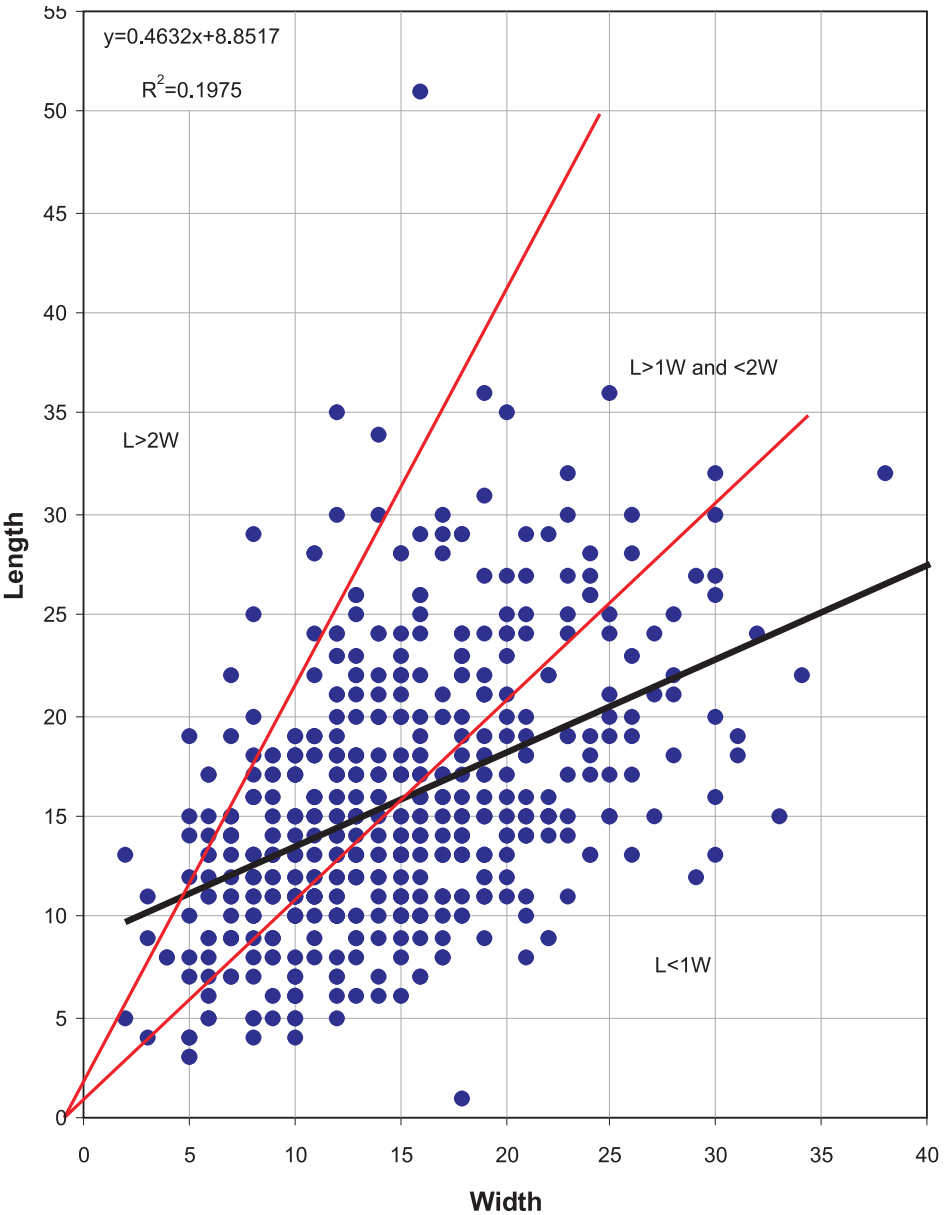


Figure SS3.37
Barrow 3.
Lengths and widths of all flakes and blades from phase 5.3. A trendline has been inserted, including its equation and correlation coefficient.

from earlier, technologically more sophisticated industries.

Forty-eight cores were retrieved from this phase (Table SS3.88), and, compared to the total core collection from the monument, the proportion of single-platform cores and core fragments is higher. The single-platform cores are generally fairly crude, displaying relatively few removal scars (average *c* 5½). The percentage of blade cores is *c* 10%, compared to *c* 6.5% for the barrow as a whole.

The phase 5.3 contexts contained few tools, and mainly tools of rather plain types: seven scrapers (including Fig SS3.56:170), one denticulate, one short serrated blade (the cruder specimen of the two serrated pieces presented above), one fabricator and twelve retouched pieces. One extraordinarily fine artefact was recovered from a phase 5.3 context, namely a plano-convex knife manufactured on a good blade (Fig SS3.56:171). The quality of the blank and the retouch of this implement suggests that it may be intrusive to the phase.

Technologically, the industry behind the phase 5.3 assemblage must be characterized as a flake industry. As Figure SS3.37 illustrates, the flakes and blades of this collection form a continuum, with the blades (L ≥ 2W) best being understood as elongated flakes. This is demonstrated by the average dimensions of the blade population (22.0 x 8.6 x 3.6mm), corresponding to a L:W ratio of only 2.5.

Table SS3.89. Barrow 3 phase 5.3. Flakes and blades – classifiable platform types

Platform types	*Number*	*Percent*
Cortex	115	25.0
Core face	18	3.9
Plain	142	30.9
Facetted	39	8.5
Punctiform	6	1.3
Linear	121	26.3
Battered	15	3.3
Shattered	4	0.9
TOTAL	460	100.0

The average dimensions of the flakes (15.3 x 14.8 x 4.2mm) corresponds to a L:W ratio of exactly 1, which is a result of equal numbers of flakes being slightly elongated (L > 1W ∧ < 2W) and broad (L ≥ 1W). The distribution of flakes and blades by reduction stage corresponds more-or-less to that of the entire Barrow 3 assemblage with 8.4% primary material, 47.7% secondary material and 43.9% tertiary material; there is slightly less secondary material and slightly more tertiary material in the phase 5.3 assemblage.

Most terminations of flakes and blades are feathered (77.8%), but some blanks are hinged (16.0%), and some have stepped terminations (6.2%). The platform remnants (Table SS3.89) confirm the impression of a simplistic reduction strategy, with 25% being cortex-covered and 30.9% being plain.

The bulb types of intact flakes/blades and proximal ends of blanks testify to the applied percussion technique. Generally, diffuse bulbs are perceived as representing soft hammer technique, and pronounced bulbs hard-hammer technique. A cursory examination of bulb types on flakes from this phase demonstrated an almost complete dominance of pronounced bulbs, many of which are multiple. The presence of multiple bulbs is a diagnostic feature of a poorly controlled hard-hammer technique.

The phase 5.3 lithic scatter has the appearance of a small camp site, albeit a short term one. Like the Barrow 1 post-mound scatters, this scatter probably represents *ad hoc* knapping by later Bronze Age herders in a pastoral landscape dotted with early Bronze Age barrows.

Dating. The general composition of the Barrow 3 material gives an impression of a generally late assemblage, less influenced by the admixture of early prehistoric blade industries than, for example, the terrace assemblages. Most of the lithic finds (all other phases than phase 5.3) probably represent redeposited material, but mainly from the later Neolithic or early Bronze Age periods. Phase 5.3 may be almost chronologically clean (see above).

The composition of the debitage is chronologically significant, with more than 80% being flakes, *c* 12% non-bulbar fragments and only *c* 4% blades. The assemblage does not represent a blade industry, and if it contains material from more than one industry, blade industries only account for a small proportion of the total. As the transition between the early and the late Neolithic signifies the transition from blade to flake industries, the debitage suggests a date for the main bulk of the lithics of the later Neolithic or Bronze Age. The blades from the barrow are largely short macroblades, forming part of a flake/blade continuum, and the admixture of early material into this generally late collection seems to be fairly limited. This impression is supported by the composition of the core group, as only 9% of the cores have blade scars against *c* 45% for the larger terrace assemblages (the Long Mound and Barrow 6).

Diagnostic types are few and include Mesolithic, Neolithic and Bronze Age forms. Three microliths are Mesolithic, the tip of a possible leaf-shaped arrowhead is Neolithic, and four barbed and tanged arrowheads are of a Bronze age date. The microliths and the fragment of a leaf-shaped arrowhead were all found in phase 5.4 contexts and represent redeposited material eroded from the mound. Two barbed and tanged points are unstratified finds, but the remaining two points are from later contexts: a Conygar point probably derives from an eroded burial, and a Sutton B point derives from pit F30763 near the centre of the mound. Both points post-date the construction of the mound, but they are associated with the ritual use of it. Conygar points are generally associated with early Bronze Age Food Vessel and Collared Urn styles (Green 1980, 138–9), and thereby the later part of this period.

Two burins may be Mesolithic, but in general the tool types are late, either Neolithic or Bronze Age (laurel leaves, knives, serrated pieces, notches and denticulates, extended end scrapers and spurred implements); they are primarily from the later phases 5.3 and 5.4. The assemblage from phase 5.3 (described above) probably represents post-mound knapping activities on the barrow. This collection appears

relatively homogeneous, and it is characterized by the production of broad flakes, although a small number of short blades were found. The assemblage includes twenty-two plain tools, and one particularly fine implement, a plano-convex knife on a good blade. The blank of this knife suggests an early Neolithic date, but the relative technological simplicity of the entire subassemblage suggests a general date of middle or late Bronze Age.

Based on radiocarbon evidence the estimated construction date is 2180–1930 cal BC at 95% probability (SS6). This date forms a *terminus ante quem* for the redeposited lithic material in the barrow. Dates for charcoal from the silts of the ditch suggests enlargement of the mound around the turn of the third and second millennia cal BC, shortly after construction (SS6). This also places the two stratified barbed and tanged points, and the assemblage from phase 5.3 in the second millennium cal BC.

Barrow 4

Barrow 4 (SS1.15) formed part of a small group of Bronze Age monuments situated on the valley floor between two arms of the River Nene. The barrow was situated between the centre of the island and the eastern arm of the river. It lay *c* 130m north of Barrow 2 and *c* 200m east of Barrow 3.

The mound was a round barrow encircled by two opposed C-shaped lengths of ditch with a diameter of *c* 26m. The two ditch segments were separated by two causeways to the north-west and south-east. The surviving mound was mainly excavated by the combined use of machine and hoe, and approximately one-half of the two lengths of ditch was sampled. The barrow is estimated to have been built around the turn of the third and second millennia BC or in the first half of the second millennium BC (SS6). No central feature was located, and only one cremation was recognized. A part of the flint assemblage represents redeposited material of a late Neolithic or Bronze Age date, whereas some knapping debris on top of the monument post-dates the barrow.

Assemblage – general. The Barrow 4 assemblage is almost completely dominated by fine-grained vitreous flint (84 pieces or 86.6%). Only three artefacts are in coarser flint varieties, one is an unstratified find and two are from phase 2.2. No burnt flint was found. Table SS3.90 summarises all the lithic artefacts recovered in connection with the excavation of the barrow. A total of eighty-seven pieces of worked flint was retrieved from the monument.

The distribution of lithic artefacts by main categories is shown in Table SS3.91. The proportion of debitage (88%) corresponds well with that of other Raunds monuments dominated by late material. Like other assemblages on Irthlingborough island, but contrary to most assemblages on the terrace, cores (9.2%) outnumber tools (6.9%).

Debitage. Seventy-three pieces of debitage were retrieved from Barrow 4 (Table SS3.90). The debitage category is heavily dominated by flakes (78.1%) and non-bulbar fragments (13.7%) with relatively few blades (8.2%). The blades are generally short and stocky (average dimensions 31.5 x 12.8 x 4.7mm; L:W ratio 2.4). Although the assemblage is the one from Irthlingborough island with the lowest proportion of flakes, it clearly belongs to this group of generally late assemblages and differs from the lithic material on the terrace, which is characterized by a substantially higher proportion of blades (*c* 20–30%). No crested pieces or core rejuvenation flakes were found. Fifty-four intact blanks (fifty-one flakes

Table SS3.90. Barrow 4. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	1,529	80.7
Debitage	Flakes	57	78.1
	Blades	6	8.2
	Non bulbar fragments	10	13.7
	Subtotal	73	100.0
Cores		8	100.0
Tools	Arrowheads	1	16.7
	Knives	1	16.7
	Scrapers	1	16.7
	Denticulates	1	16.7
	Retouched pieces	2	33.3
	Subtotal	6	100.1
TOTAL		87	

Table SS3.91. Barrow 4. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	73	83.9
Cores	8	9.2
Tools	6	6.9
TOTAL	87	100.0

and three blades) could be classified by reduction stage: approximately half of the flakes and blades are secondary pieces (53.7%), and the remaining blanks are tertiary (46.3%). No primary flakes or blades were found.

Cores and tools. Eight cores were retrieved from the barrow. Four of those are single-platform flake cores (A2), three are flake cores with two platforms at either right or oblique angles (B2 and B3), and one flake core is unclassifiable.

The assemblage includes one arrowhead, a transverse arrowhead of type C1 (chisel; Fig SS3.57:179). One knife on a kidney-shaped flake is backed, with part of the cutting edge having been modified by invasive retouch (Fig SS3.57:180). One scraper has been defined as an extended end scraper (Fig SS3.57:181). A denticulate piece has three crudely formed teeth. Two retouched flakes cannot be classified further.

Dating. The presence of diagnostic types and attributes defines this small assemblage as late, with practically no material being attributable to the Mesolithic or early Neolithic periods. The blades are short and stocky, and they form a continuum with the flakes. The Barrow 4 assemblage is obviously the product of one or more flake industries, and the presence of a chisel arrowhead proves that at least part of the lithic material is from the later fourth millennium. Denticulates are usually associated with the Bronze Age.

The lithic collection contains no material from chronologically clean contexts or features (for example, burials). Forty-nine pieces derive from context 60301 (cleaning off the top of the mound after removal of the alluvium) and probably post-date the barrow, whereas the remainder is thought to represent redeposited material. A radiocarbon date of 2110–1680 cal BC (3530±70 BP; 3530±70 BP; OxA-3053) on charred timbers beneath the mound forms a *terminus post quem* for the construction of Barrow 4 (and thereby the subassemblage post-dating the barrow), and a *terminus ante quem* for the redeposited material.

Irthlingborough island – minor assemblages from non-monument features

On Irthlingborough island substantial assemblages were recovered from three monuments, Barrows 1, 3 and 4 (see above). In addition, a number of minor assemblages were retrieved from features in Trench B140, which was extended to investigate a dense concentration of treethrow-holes at the north end of the island. The assemblage from treehole F62123 is fairly large (ninety-seven pieces of flint), whereas the remaining assemblages each contain single-digit numbers of finds. The features are a combination of cut features and treethrow holes.

Pit F62105. F62105 was an oval pit, *c* 0.90m long and 0.70m wide. It was heavily burnt, and the excavators (SS1.22) suggest that it may relate to the burning-out of trees in the nearby treethrow holes. It contained one undiagnostic flint flake.

Treethrow hole F62113. This treethrow hole is one of the smaller of its kind. It only measured 1.5m in diameter, but it was as deep as the other treethrow holes. It showed heavy burning. The only finds from this location is a flake and the burnt fragment of a broad blade. The feature was radiocarbon dated on charcoal (*Corylus*/*Alnus*) to 3650–3340 cal BC (4700±80 BP; OxA-3058), that is, the end of the early Neolithic period.

Treethrow hole F62123. This feature was *c* 2.5m across, and it had been burnt out like so many of the treethrow holes in the area (Harding and Healy 2007 Panel 3.2)). During the excavation of the feature and its surroundings, ninety-seven pieces of worked flint was found. Table SS3.92 summarises the lithic material from the feature.

The debitage makes up 85.6%, the cores 5.1%, and the tools 9.3%. The debitage consists of 57.5% flakes, supplemented by 25.0% blades and 17.5% non-bulbar fragments. This defines the assemblage as the product of one or more blade industries. Only three of the 15 intact blades are microblades (20%). Four pieces of debitage (three flakes and one blade) are burnt. Two

Table SS3.92. F62123. General artefact list

Artefact types	*Numbers*
Flakes	46
Blades	20
Non-bulbar fragments	14
Core rejuvenation flakes	3
Cores	5
Scrapers	3
Piercers	1
Burins	1
Notched pieces	2
Denticulates	1
Backed pieces	1
TOTAL	97

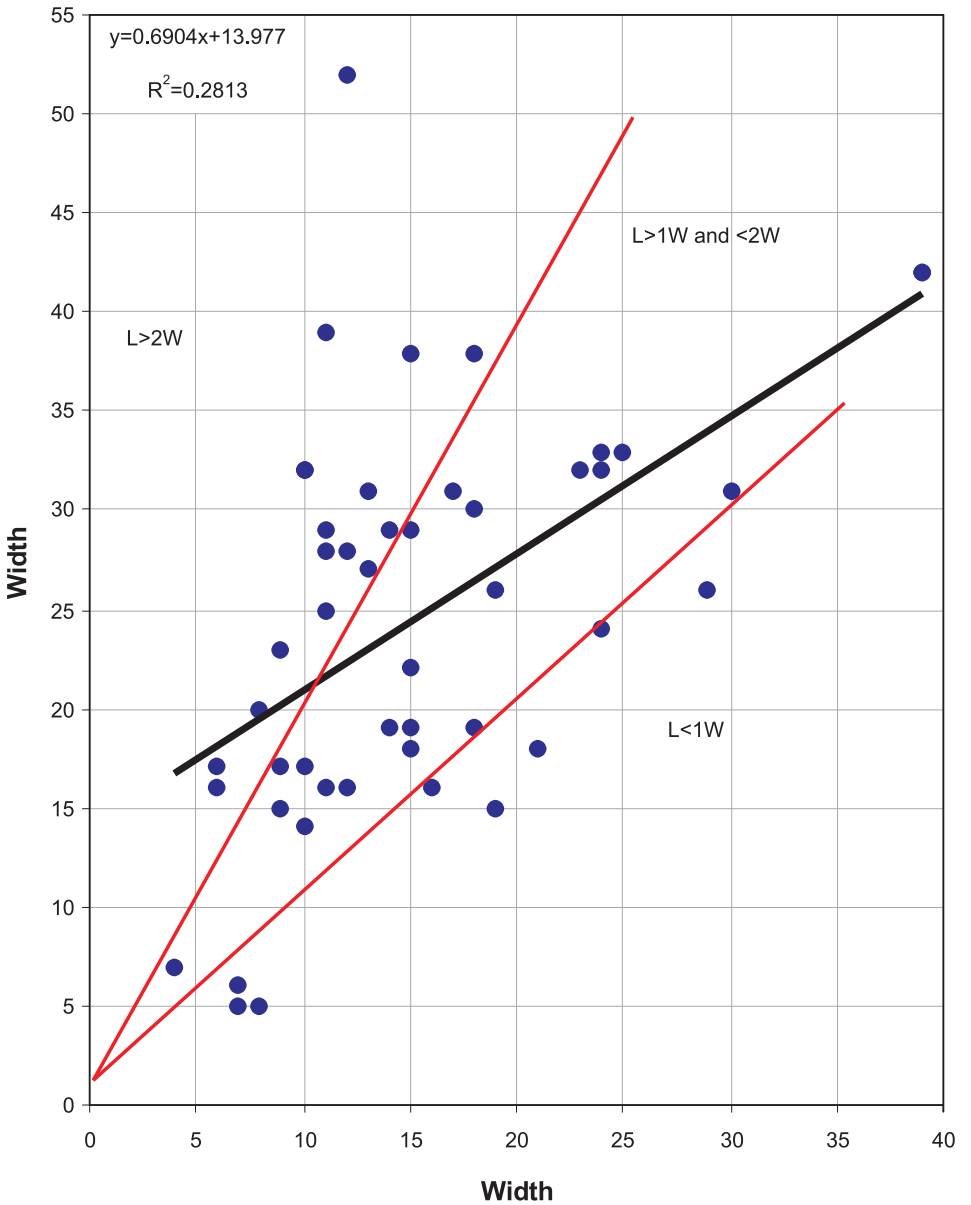


Figure SS3.38
F62123.
Lengths and widths of all flakes and blades. A trendline has been inserted, including its equation and correlation coefficient.

core rejuvenation flakes are core-side removals, whereas one is unclassifiable. Four of the five cores are core fragments; the only unfragmented core is a single-platform core of type A2. The single-platform core and one core fragment have scars from blade removals. Eight tools were recovered from the feature: three scrapers (one nosed and two hollow scrapers), one piercer, one burin, two notched pieces (one possible microburin), one denticulate, and one backed blade.

The average dimensions of the intact blades are 29.6 x 11.1 x 4.0mm, corresponding to a L:W ratio of 2.7. The average dimensions of the intact flakes are 22.1 x 17.3 x 4.4mm, corresponding to a L:W ratio of 1.3. Compared to the post-mound assemblages from Barrows 1 and 3, which represent flake industries, the flakes and blades from F62123 are clearly larger and relatively more elongated (Fig SS3.38). Practically no primary flakes or blades are present (one flake), and both flakes and blades are characterized by an approximately fifty-fifty distribution across secondary and tertiary material. This means that decortication of cores probably took place elsewhere.

Fifty-three flakes and blades have intact classifiable terminations. Of those, 60.4% are feathered, 22.6% hinged and 13.2% stepped; 3.8% has platform terminations, testifying to the application of opposed-platform technique. The platform remnants (Table SS3.93) characterize an assemblage of

Table SS3.93. F62123. Flakes and blades – classifiable platform types

Platform types	*Number*	*Percent*
Cortex	3	5.5
Core face	0	0.0
Plain	23	42.7
Facetted	2	3.7
Punctiform	1	1.9
Linear	19	35.2
Battered	3	5.5
Shattered	3	5.5
TOTAL	54	100.0

Table SS3.94. The island – non-monument contexts. General artefact list

Group	*Category*	*Number*	*Percent*
Debitage	Flakes	1,529	80.7
Debitage	Flakes	146	63.2
	Blades	41	17.7
	Non bulbar fragments	35	15.2
	Core rejuvenation flakes	9	3.9
	Subtotal	231	100.0
Cores		18	100.0
Tools	Arrowheads	1	3.0
	Microliths	1	3.0
	Scrapers	6	18.2
	Piercers	1	3.0
	Burins	1	3.0
	Truncated pieces	1	3.0
	Notches	4	12.1
	Denticulates	1	3.0
	Retouched pieces	17	51.5
	Subtotal	33	99.8
TOTAL		282	

Table SS3.95. The island – non-monument contexts. Distribution of lithic artefacts by main categories

Group	*Number*	*Percent*
Debitage	231	81.9
Cores	18	6.4
Tools	33	11.7
TOTAL	282	100.0

blanks produced after careful decortication. In comparison with the later post-mound assemblages from Barrows 1 and 3, cortex-covered remnants are few in number (5.5% against *c* 25–26%). The dominance of plain platform remnants (42.7%) is evidence that relatively limited preparation of the core platforms took place. As the assemblage could not be re-found for detailed examination of the bulbar area of the blanks, it is not possible to define the applied percussion technique.

Based on charcoal from short-lived species from the bottom fill of the treethrow hole, F62123 was radiocarbon dated to 4360–3980 cal BC (5370±80 BP; OxA-3057). This corresponds to the transition between the Mesolithic and early Neolithic periods. The assemblage contains no strictly diagnostic artefacts (apart from a possible microburin), but the fact that it is a blade industry supports a late Mesolithic/early Neolithic date. The possible microburin indicates a Mesolithic date, whereas the marked dominance of broad blades over narrow blades supports a Neolithic date.

Twelve pieces have distinctive microwear traces. Six of those have been used for scraping (two flakes and a hollow scraper), whittling (a flake), cutting (one flake and a bladelet), or chopping wood (a core); one notch has been used for scraping soft antler or horn; three blades have been used for cutting meat; and one flake has been used for cutting or scraping fish. For further details on the usewear analysis, see SS3.7.4.

The general composition of the assemblage leaves the impression of a short term camp site either right next to a living tree, which was later burned down, or in the hollow of a treethrow hole. A pair of refitting flakes suggest little displacement. The almost complete absence of primary material may be evidence that blank production was carried out on cores which had been decorticated outside the camp.

Treethrow hole F62132. During the excavation of treethrow hole F62132 a small flint assemblage was recovered: a small flake, a bladelet, three non-bulbar fragments, and a fragmented backed bladelet. The attributes of the finds are consistent with a Mesolithic/early Neolithic date.

Pit F62136. F62136 was an ovoid pit, *c* 0.68m long and 0.50m wide. Like pit F62105, this pit was heavily burnt, and the excavators suggest (SS1.22) that it may relate to the burning-out of trees in the nearby treethrow holes. It contained the fragment of an unclassifiable core.

Table SS3.96. The island – non-monument contexts. Flakes and blades – reduction sequence of classifiable pieces

	FLAKES		*BLADES*		*TOTALS*	
Reduction stage	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Primary (P+S1)	1	2.6	0	0.0	1	1.9
Secondary (S2+S3+S4)	17	44.8	6	37.5	23	42.6
Tertiary (S5+T)	20	52.6	10	62.5	30	55.5
TOTAL	38	100.0	16	100.0	54	100.0

Pit F62168. This feature was of similar size, shape and type to Feature 62105. An undiagnostic flake was recovered from the pit.

Irthlingborough island – flint from non-monument contexts

In the present section, worked flint from the area between the island monuments ('non-monument contexts') is presented. Approximately one-third of the finds were recovered in connection with features (treethrow holes) in Trench B140 in the northernmost part of the island (see discussion in the previous section); almost all of the remaining finds were discovered as artefact clusters in Trenches B42 and B43 in the southern part of the island and may represent single episodes of prehistoric activity. The worked flint from the area's monument and non-monument contexts is compared in a subsequent section.

Assemblage – general. The assemblage from non-monument contexts is almost completely dominated by fine-grained vitreous flint (280 pieces or 99.3%). Only two artefacts are in coarser flint varieties. Seven pieces of burnt flint was found, corresponding to 2.5%. Table SS.94 summarises all the lithic artefacts recovered in connection with the excavation of the area's non-monument contexts. A total of 282 pieces of worked flint was retrieved from the contexts.

The distribution of lithic artefacts by main categories is shown in Table SS3.95 – 81.9% is debitage, 6.4% is cores, and 11.7% is tools.

Debitage. The assemblage contains 231 pieces of debitage. The debitage category is dominated by flakes (63.2%), and blades and non-bulbar fragments were recovered in approximately equal proportions (17.7% and 15.2%, respectively). The island's non-monument flint has the highest proportion of non-bulbar fragments of all the Raunds assemblages (apart from the very small assemblage from the Southern Enclosure) and, combined with a high proportion of flakes, this indicates an assemblage dominated by later prehistoric flake industries.

Table SS3.96 shows that the lithic material is almost completely dominated by secondary and tertiary pieces. Only one primary flake was found (1.9% of all classifiable pieces). Although the flake group and the blade group both consist almost entirely of secondary and tertiary material, their compositions differ: the blade group contains more tertiary material than the flake group (62.5% against 52.6%). Only three of the 16 intact blades are microblades, corresponding to a microblade: macroblade ratio of 19:81.

Nine core rejuvenation flakes were recovered: one platform-edge removal, three core-side removals, four platform removals and one unclassifiable piece.

Cores. Only 18 cores were recovered from non-monument contexts on the island (Table SS3.97). The dominant core types are single-platform cores (27.8%) and multi-platform cores (27.8%), supplemented by

Table SS3.97. The island – non-monument contexts. Cores – maintypes and sub-types

Core types	*Number*	*Percent*	*Flake removals*	*Flake/blade removals*
Single-platform cores (A2)	5	27.8	4	1
Cores with two platforms (B3, B4)	3	16.7	3	0
Cores with three or more platforms (C)	5	27.8	5	0
Core fragments	4	22.2	3	1
Unclassifiable	1	5.5	1	0
TOTAL	18	100.0	16	2

Table SS3.98. The island. Distribution of lithic artefacts by main categories

	MONUMENT FLINT		*NON-MONUMENT FLINT*		*ALL FLINT*	
Group	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Debitage	7,126	86.0	231	81.9	7,357	85.9
Cores	671	8.1	18	6.4	689	8.0
Tools	490	5.9	33	11.7	523	6.1
TOTAL	8,287	100.0	282	100.0	8,569	100.0

cores with two platforms (16.7%). Combined, core fragments and unclassifiable pieces make up 27.8%. Only two cores, or 11.1%, have scars from the removal of blades. Four cores are on thick flakes.

Tools. The assemblage includes thirty-three tools, corresponding to a tool ratio of 11.7%. The non-monument assemblage from the terrace had a similar ratio (10.9%) which, as stated in connection with the presentation of this assemblage, is high. The high ratios of the non-monument assemblages may be the result of the application of more crude recovery techniques than the ones applied in connection with the investigation of the Raunds monuments (see comparison between the area's monument and non-monument flint, below).

The excavations between and around the island monuments yielded one barbed and tanged arrowhead (a point of Green's type Sutton B; Green 1980, 122; Fig SS3.57:183), and one narrow microlith (a backed bladelet). Six flake scrapers were recovered, of the following subtypes: one end scraper, one double end scraper, one nosed end scraper, two hollow scrapers and one unclassifiable piece.

The assemblage includes four notched pieces, all of which are flakes with a single notch. A crude denticulate has three teeth. The excavations also produced the following tools: one flake piercer, one dubious burin, one truncated flake and 17 retouched pieces; three of the retouched pieces are on broad blades.

Dating. The assemblage contains little unequivocally diagnostic evidence, but the presence of a microlith and a barbed and tanged arrowhead proves the inclusion of material from the Mesolithic and the early Bronze Age. The microlith is a backed piece on a 3mm wide bladelet; narrow microliths are generally perceived as being characteristic of the later Mesolithic. The Bronze Age point belongs to Green's type Sutton B, which was in use throughout the early Bronze Age period.

Burins and denticulates are usually perceived as slightly less certain chronological indicators, but the two types are generally associated with the Mesolithic and the Bronze Age periods, respectively. However, the classification of the burin is uncertain. Notched pieces have also been associated with the Bronze Age, but it must be born in mind, that notched edges may have been formed not only by intentional modification but also by use, trampling and contact with archaeological tools of recovery. The fact that, apart from three retouched pieces on broad blades, all tools are on flakes, may be an indication of a generally late date.

Technologically, the assemblage is characterized by a large number of flakes and non-bulbar fragments, which indicates the presence of elements from one or more late flake industries (late Neolithic/Bronze Age). Blades make up a proportion of 17.7%, suggesting the inclusion of some early material from blade industries; the proportion is higher than the blade proportion of the island monuments (4.8%), but smaller than the blade proportion of the terrace non-monument contexts (19.7%) and monuments (29.2%). Approximately 20% of the blades are microblades, but this proportion corresponds to only three pieces and, consequently, the statistical value of the microblade presence is limited. The combination of chronological indicators suggest a dominance of material from later flake industries, but with the inclusion of material from earlier blade industries.

Comparison between monument flint and non-monument flint on the island

In connection with the excavations on Irthlingborough island, a total of 8,578 pieces of worked flint was retrieved. This sizeable assemblage was recovered mainly from three Bronze Age barrows ('monument flint'), and to a lesser extent from an extensive network of trial trenches dug between and around the mounds ('non-monument flint'). In this section the two subassemblages will be compared, and the similarities and differences will be discussed.

General composition. The main difference between the two subassemblages is their relative sizes, with monument flints amounting to 8,287 pieces and non-monument flints to 282 pieces (Table SS3.98). This corresponds to a percentage distribution of 97:3, whereas the assemblage from the terrace had a percentage distribution of 55:45, that is, with approximately equal amounts deriving from monument and non-monument assemblages. The small size of the non-monument assemblage suggests that the island was never the focus of actual settlement, although it must also reflect the absence of area excavation beyond the barrows, except on a limited scale in trench B140.

Table SS3.98 also shows differences in the proportions of cores and tools, with the assemblage from non-monument contexts containing a lower proportion of cores (6.4% against 8.1%) and a considerably higher proportion of tools (11.7% against 5.9%). The core and tool ratios of the non-monument assemblage may be influenced by the small number of finds (282 pieces), allowing random statistical fluctuations, but, to some degree, they probably also reflect actual activities on the island in the Stone and Bronze Age periods. If prehistoric settlement on the island was limited to small transit or special purpose camps, this might result in the core and tool ratios displayed in Table SS3.98 (see below).

The monument assemblage owes its general composition to redeposited material in the three mounds, supplemented by a number of post-mound knapping floors on Barrows 1 and 3 (described above). The

Table SS3.99. The island. Monument and non-monument flint

		MONUMENT FLINT		*NON-MONUMENT FLINT*		*ALL FLINT*	
Group	*Category*	*Number*	*Percent*	*Number*	*Percent*	*Number*	*Percent*
Debitage	Flakes	3,415	59.1	3,182	66.5	6,597	62.4
Debitage	Flakes	5,813	81.6	146	63.2	5,959	81.0
	Blades	345	4.8	41	17.7	386	5.2
	Non bulbar fragments	809	11.4	35	15.2	844	11.5
	Crested flakes/blades	23	0.3	0	0.0	23	0.3
	Core rejuvenation flakes	136	1.9	9	3.9	145	2.0
	Subtotal	7,126	100.0	231	100.0	7,357	100.0
Cores		671	100.0	18	100.0	689	100.0
Tools	Arrowheads	17	3.3	1	3.0	18	3.2
	Microliths	6	1.2	1	3.0	7	1.3
	Microburins	1	0.2	0	0.0	1	0.2
	Bifacials	3	0.6	0	0.0	3	0.6
	Laurel leaves	1	0.2	0	0.0	1	0.2
	Daggers	1	0.2	0	0.0	1	0.2
	Knives	13	2.7	0	0.0	13	2.5
	Scrapers	83	16.9	6	18.2	89	17.0
	Scraper resharpening flakes	3	0.6	0	0.0	3	0.6
	Piercers	23	4.7	1	3.0	24	4.6
	Burins	4	0.8	1	3.0	5	0.9
	Truncated pieces	3	0.6	1	3.0	4	0.8
	Notches	42	8.6	4	12.1	46	8.8
	Saws	1	0.2	0	0.0	1	0.2
	Serrated pieces	4	0.8	0	0.0	4	0.8
	Denticulates	18	3.7	1	3.0	19	3.6
	Axes and axe fragments	1	0.2	0	0.0	1	0.2
	Chisels	1	0.4	0	0.0	1	0.2
	Retouched pieces	263	53.9	17	51.5	280	53.7
	Fabricators	2	0.2	0	0.0	2	0.4
	Subtotal	490	100.0	33	99.8	523	100.0
TOTAL		8,287		282		8,569	

marked dominance of cores over tools in the monument assemblage is probably due to the generally late date of this material, with a low blank production per core automatically resulting in a high core ratio.

Debitage. As shown in Table SS3.99, the composition of the debitage category differentiates the two assemblages as well. In comparison with the monument assemblage, the non-monument assemblage has a considerably lower flake ratio (63.2% against 81.6%), but much higher ratios of blades (17.7% against 4.8%) and non-bulbar fragments (15.2% against 11.4%). The analysis of both assemblages suggests that they are primarily composed of material from the early and later Bronze Age periods, but the larger blade ratio (and subsequently lower flake ratio) of the non-monument assemblage may be an indication that this collection contains a slightly larger proportion of Mesolithic and early Neolithic material.

There are too few core preparation/rejuvenation flakes in the non-monument assemblage for them to be statistically relevant. Compared to the monument assemblage, the non-monument assemblage has a significantly lower proportion of primary pieces (1.9% against 12.2% and 8.8% in the two largest island monuments). This fact may be due to the considerable primary production which took place on Barrows 1 and 3 after their construction, whereas a large proportion of the non-monument debitage possibly represents stocks of finished blanks produced outside the island, or blanks produced on the island from already prepared cores (see discussion below).

Cores and tools. Table SS3.100 shows the proportion of blade cores from each of the island monuments and from contexts between the monuments; the monuments have been sequenced according to their decreasing percentage of blade cores. The blade core ratio of the non-monument assemblage corresponds well with the ratios of the island monuments and, compared to the blade core ratios of the terrace assemblages (from monument contexts as well as non-monument contexts), all island ratios are low (0–11% against 33–63%). This supports the notion of all island assemblages as being heavily dominated by late (flake) industries. The relatively high blade ratio of the non-monument assemblage (Table SS3.99) indicates some Mesolithic and early Neolithic activity on the island, but the low number of blade cores suggest that these activities did not take the form of actual habitation, and the Mesolithic and early Neolithic blades and tools (see discussion below) may primarily have been brought to the island as parts of prefabricated tool kits.

Table SS3.100. The island. Blade cores as percent of all cores

	Percent blade cores
B3	11
B1	5
B4	0
Non-monument	11

As demonstrated by Table SS3.99, tools are few (thirty-three) in the non-monument assemblage, which makes detailed comparison with the much larger monument assemblage (490 tools) statistically unsound. However, the tool groups of the two assemblages indicate dominance by later industries with the inclusion of small numbers of artefacts from earlier industries.

Discussion. The artefactual comparison above presented some clear indications of chronological and activity-based differences between the two island assemblages. The composition of the three groups debitage, cores and tools suggest that both the monument assemblage and the non-monument assemblage are dominated by material from late prehistoric flake industries. However, the proportion of blades in the non-monument assemblage proves that this assemblage includes a noticeable component from early prehistoric blade industries.

The small size of the non-monument assemblage, combined with the relatively low number of cores and primary pieces, suggests that the island was never the focus of continuous habitation, and the differences between the two assemblages probably represent different ways of exploiting the area in the earlier and later prehistory.

The high tool and blade ratios of the non-monument assemblage may be indications of sporadic visits in prehistory to undertake specialized activities, such as, hunting, fishing, fowling, gathering of reeds, etc. These activities would have been carried out from small special purpose camps, and the blades and tools left on these sites would, to a large extent, represent tool kits 'imported' into the island area. This impression is supported by the low blade core ratio.

The negligible number of primary pieces suggests that any supplementary blank production was based on cores which had been decorticated at a base camp or permanent settlement to minimize their weight before transportation to the island. The blade element suggests that the specialized activities took place in the earlier part of prehistory but, as the non-monument assemblage contains a large proportion of material from later flake industries as well, they may have continued into later prehistory.

The composition of the monument assemblage suggests an entirely different pattern of landscape use. The three island monuments, Barrows 1, 3 and 4, are almost entirely dominated by early and late Bronze Age material, supplemented by a small number of Mesolithic and Neolithic artefacts. The high number and proportion of debitage proves the importance of primary production, and the higher core ratio is due to the fact that fewer blanks were removed from each core in the later prehistoric flake industries, thus automatically raising the ratio. Primary material is common in the large assemblages from Barrows 1 and 3, demonstrating that raw nodules were brought to the sites.

The extensive knapping floors on Barrows 1 and 3 prove that primary production took place on the mounds after their construction, but the large redeposited assemblages from the mounds and ditch fills of the three barrows indicate that similar activities took place elsewhere on the island as well. Most likely, these off-mound, late prehistoric knapping floors were situated in the central parts of the island and removed in connection with the topsoil stripping/ditch digging associated with the construction of the barrows. The very small size of the present non-monument assemblage suggests that the off-mound knapping floors were situated close to the Bronze Age barrows and almost completely removed when the monuments were built, but the limited number of artefacts from pre-mound contexts proves that they were not located at the same spots as the barrows.

The lack of more substantial late prehistoric features or structures on the island suggests that the Bronze Age knapping floors – off-mound as well as post-mound – did not form part of more permanent settlements. Most likely, they represent the remains of short-term occupation by people looking after herds grazing the pastures of the Bronze age settlements on the valley sides.

Catalogue of illustrated artefacts

No attempt has been made to illustrate all artefact types characterizing the individual assemblages and sub-assemblages. Instead, artefacts have been selected for illustration if they are important to the dating and phasing of the monuments or, if they in other ways contribute to the understanding of individual monuments, features and contexts (eg the composition of burial goods from individual graves). Together, the illustrated lithics give an impression of the typological spectrum in the Raunds area. In the present catalogue the sequence of illustrated artefacts is according to landscape zone, monument, phase, feature, context and type.

The Terrace

Long Mound

Phase 1, context 2072

26 Microlith, edge-blunted point. L 22mm, W 7mm, T 3mm. Sf 3167
27 Microlith, obliquely-blunted point. L 30mm, W 10mm, T 3mm. Sf 3162
28 Double end scraper/side-scraper. L 29mm, W 19mm, T 8mm. Sf 3302

Phase 1, context 2074

29 Microlith, obliquely-blunted point. L 23mm, W 8mm, T 3mm. Sf 3468
30 Retouched piece. L 31mm, W 18mm, T 6mm. Sf 3471

Phase 3.2, context 2061

31Crested blade. L 33mm, W 6mm, T 2mm. Sf 3012
32 Single-platform core. L 32, W 30, T 20
33 Leaf-shaped arrowhead, type 3B. L 28mm, W 15mm, T 4mm. Sf 2209

Phase 3.2, context 2063

34 Microlith, obliquely-blunted point with inverse basal retouch. L 27mm, W 7mm, T 3mm. Sf 2524

Phase 3.2, context 2066

35 Microlith, edge-blunted point with inverse basal retouch. L 33mm, W 8mm, T 2mm. Sf 3217
36 Microlith, edge-blunted point with inverse basal retouch. L 22mm, W 8mm, T 3mm. Sf 2185

Phase 3.2, context 2067

37 Knife, plano-convex edge-retouched. L 85mm, W 30mm, T 8mm. Sf 2597
38 Scraper, unclassifiable. L 13mm, W 15mm, T 4mm. Sf 2720
39 Microlith, obliquely-blunted point. L 33mm, W 10mm, T 3mm. Sf 2622

Phase 3.2, context 2068

40 Microlith, obliquely-blunted point. L 33mm, W 10mm, T 3mm. Sf 2896

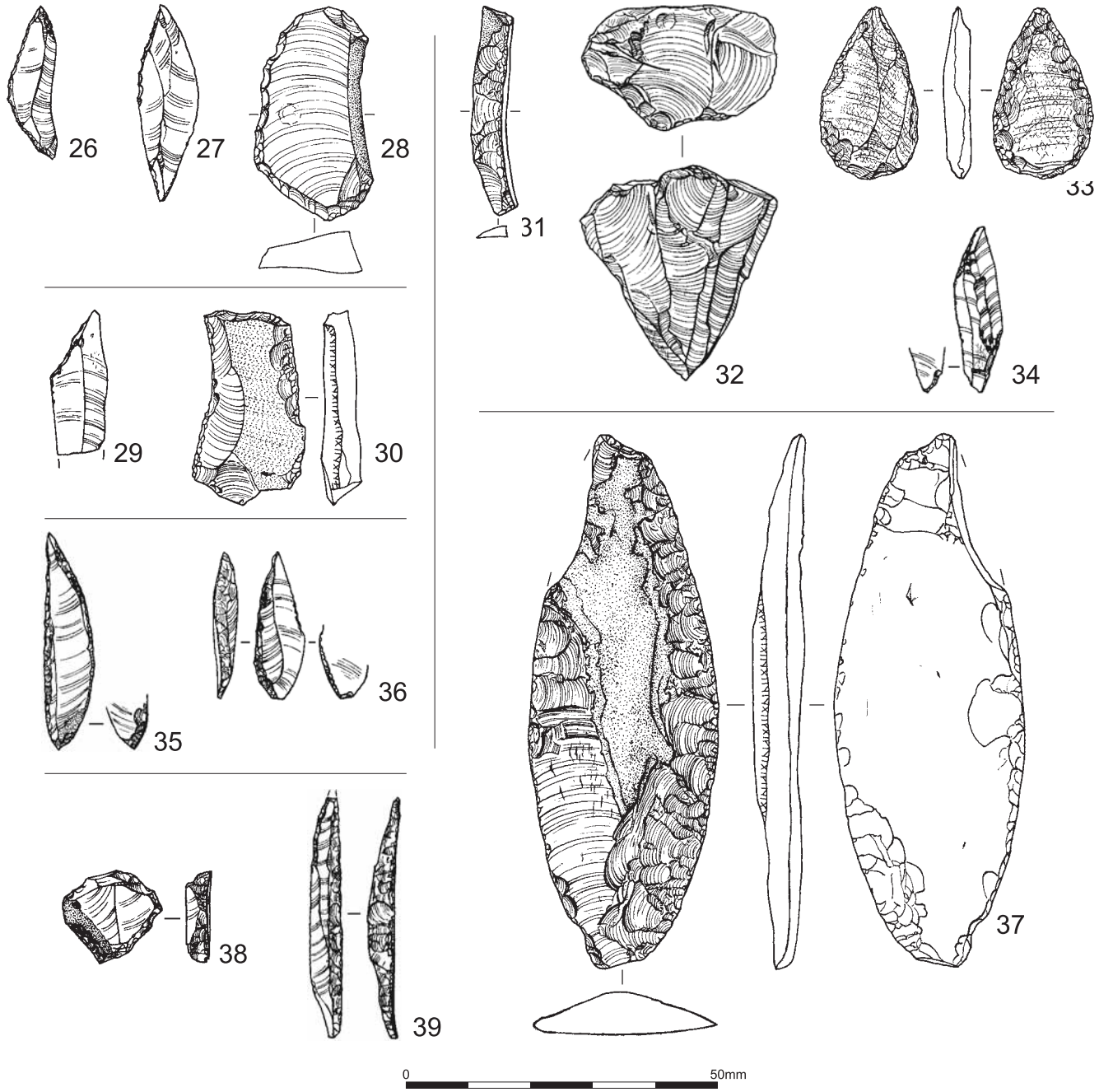


Figure SS3.39
Long Mound.
Struck flint.
Particulars in catalogue.

Phase 3.3, context 2065
41 Angle-burin on truncation. L 38mm, W 30mm, T 12mm. Sf 2523
42 Notch. L 45mm, W 12mm, T 5mm

Phase 3.3, context 2069
43 Microlith, edge-blunted point. L 27mm, W 7mm, T 3mm. Sf 2907

Phase 4.2, F938, context 6023
44 Leaf-shaped arrowhead, type 3B. L 33mm, W 16mm, T 4mm. Sf 5186

Phase 4.2, F938, context 2028
45 Leaf-shaped arrowhead, type 3C. L 42mm, W 19mm, T 5mm. Sf 1235

Phase 4.4.iN, F5263, context 5264
46 Chisel arrowhead, type C. L 29mm, W 26mm, T 4mm. Sf 8307

Phase 4.4.iS, F5549, context 5550 with infant cremation
47 Single-platform core, on a lightly corticated older core. L 40mm, W 35mm. Sf 9276
48 Core fragment. Sf 9275
49 Blade. L >49mm, W 23mm, T 6mm. Sf 9274
50 Flake, slightly burnt. L>8mm, W 6mm, T 1mm. Sf 9273
51 Flake, slightly burnt. L >21mm, W 13mm, T 2mm. Sf 9273

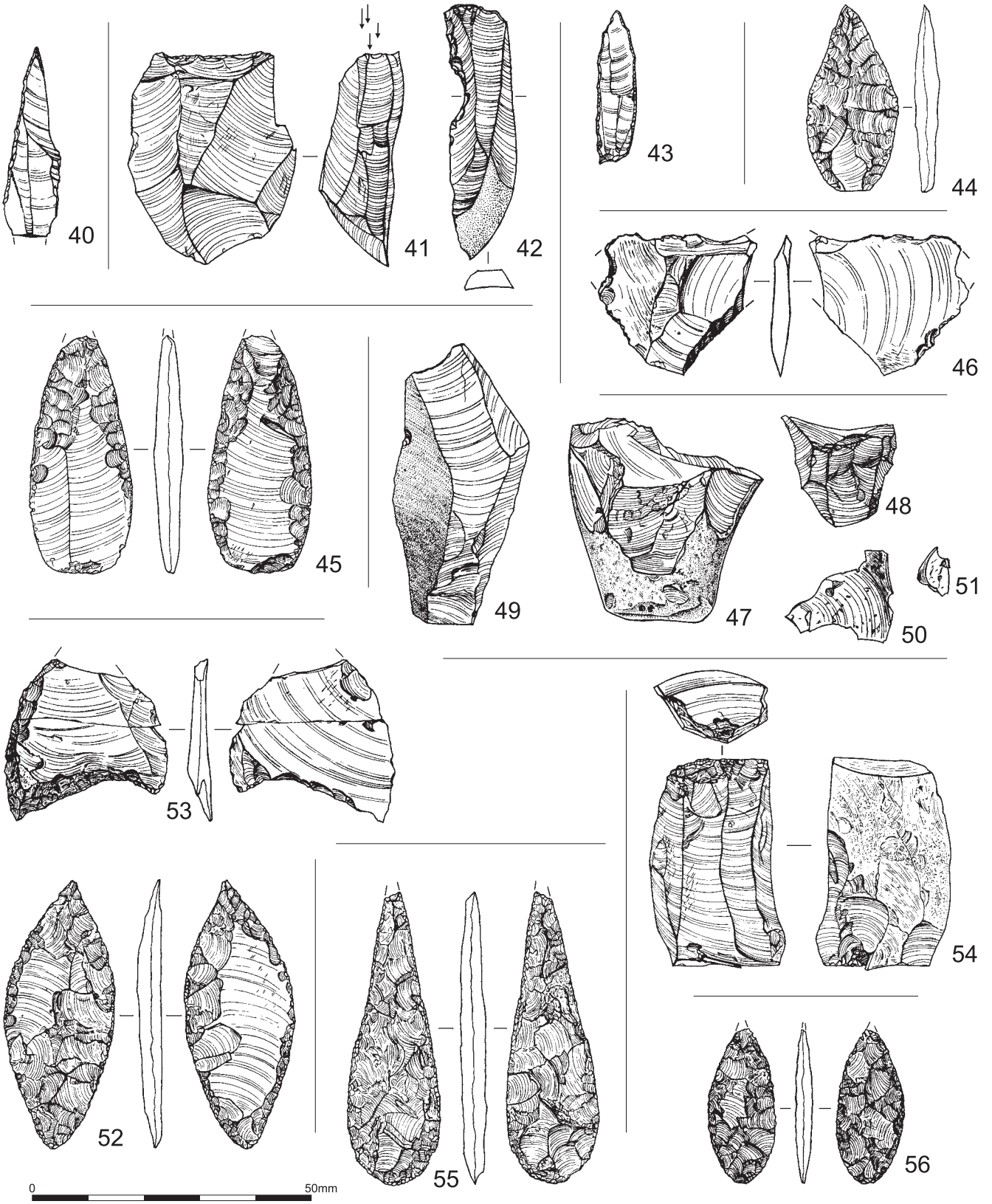


Figure SS3.40
Long Mound. Struck flint. Particulars in catalogue.

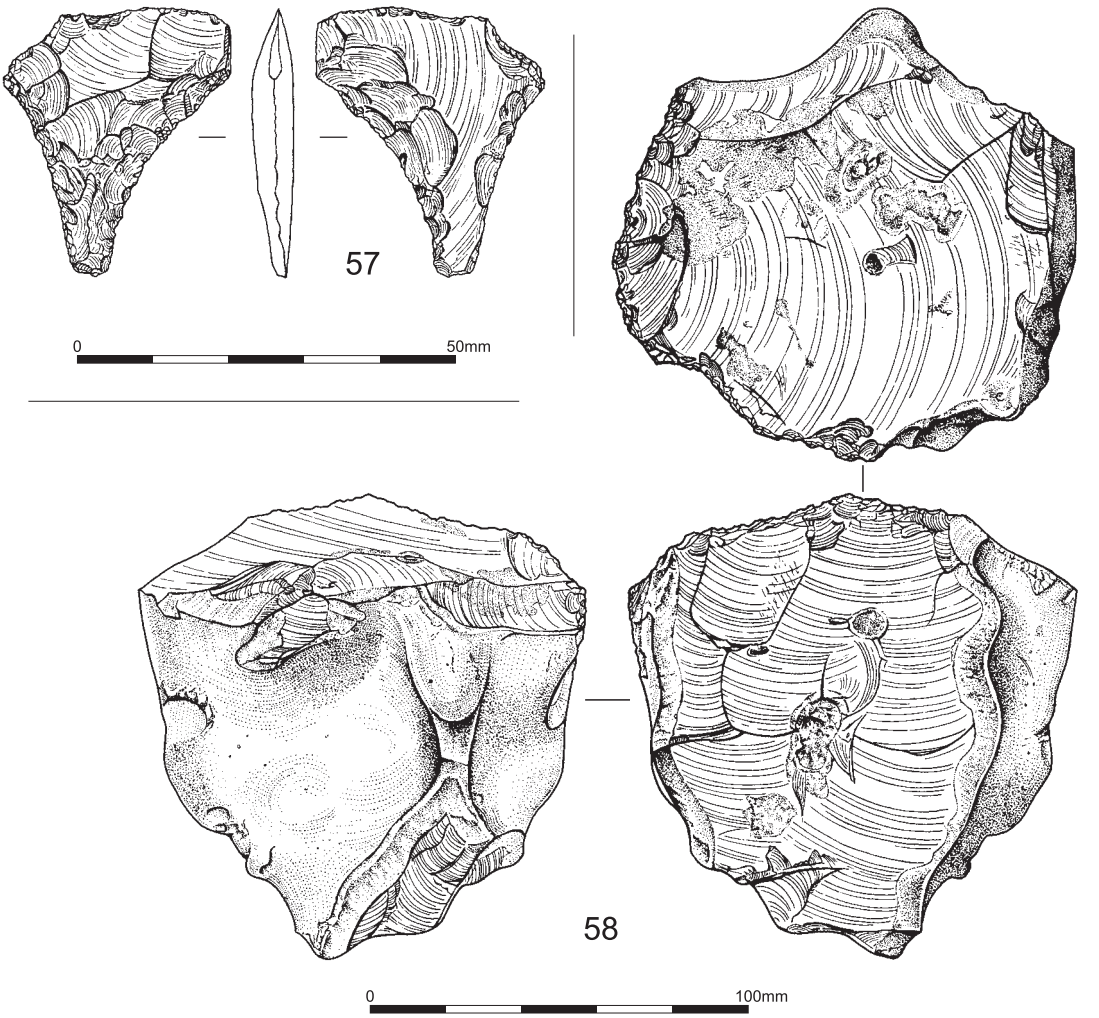
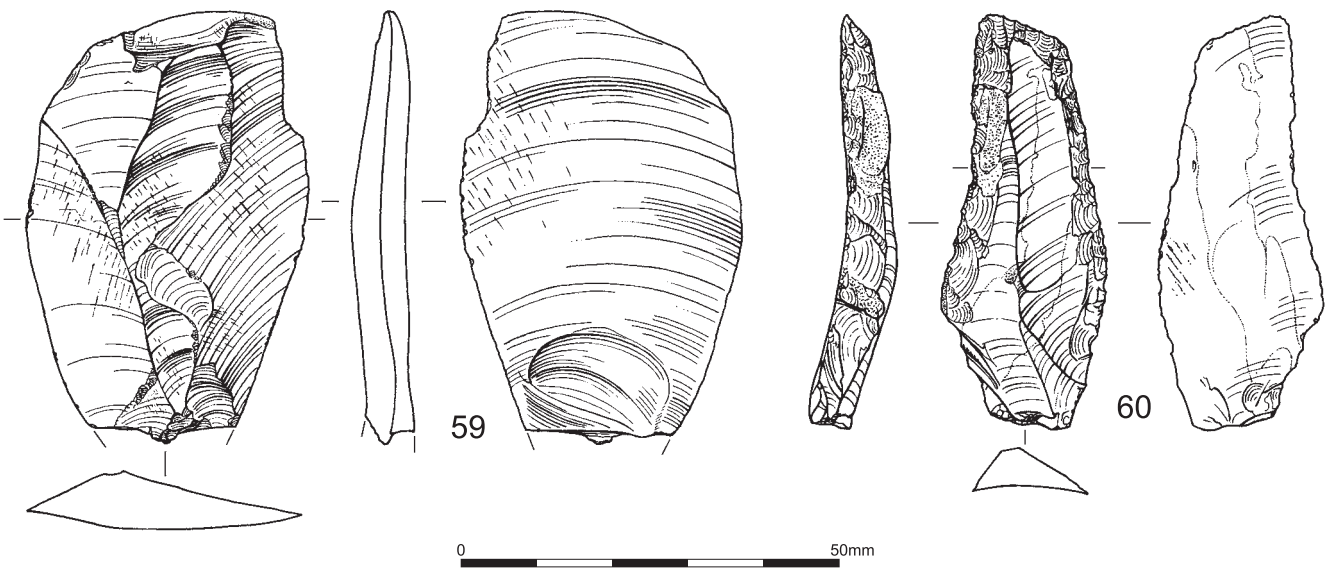


Figure SS3.41
Stray find (57) and Barrow 6 (58).
Struck flint.
Particulars in catalogue.
The core (58) is drawn at half the scale of the arrowhead (57) and the other illustrated flint artefacts.



SS3.42
Barrow 6 F3259.
Struck flint.
Particulars in catalogue.

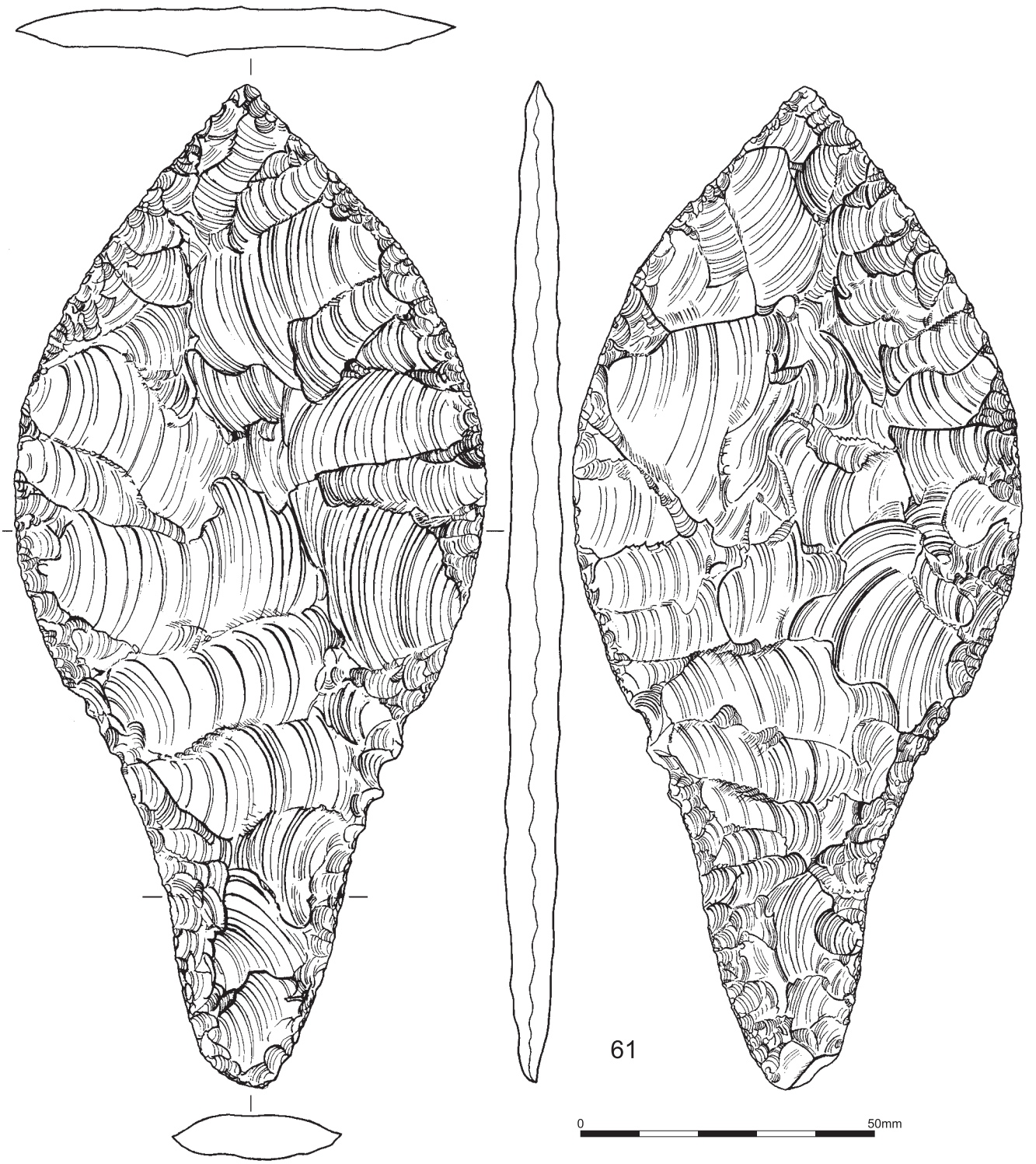


Figure SS3.43
Barrow 6 F3259.
Flint dagger.
Particulars in catalogue.

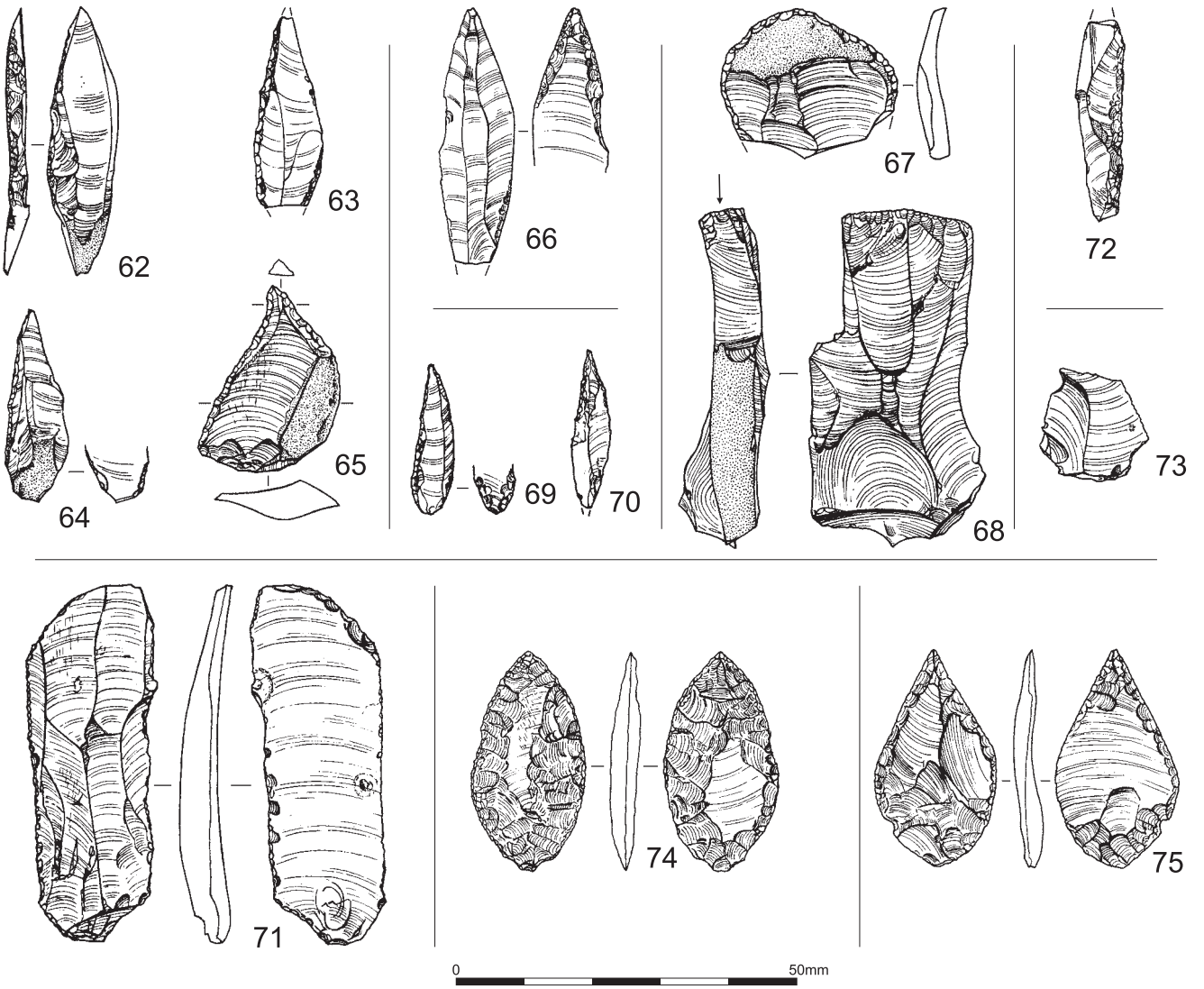


Figure SS3.44
Barrow 6 (62–74) and Turf Mound (75). Struck flint. Particulars in catalogue.

Phase 4.4.iiS, context 5247
52 Leaf-shaped arrowhead, type 3C. L 48mm, W 19mm, T 4mm. Sf 7733
53 Oblique arrowhead, type E. L 27mm, W 29mm, T 4mm. Sf 7765
Context 2056
54 Single-platform core, on fragment of polished axe. L 38mm, W 22mm, T 13mm. Sf 1912?
Context 5000
55 Leaf-shaped arrowhead, type 2C. L 52mm, W 17mm, T 4mm. Sf 5462
Context 5206
56 Leaf-shaped arrowhead, type 4C. L 27mm, W 12mm, T 3mm. Sf 7470
Stray find from north of the Long Mound
Context 7011
57 Chisel arrowhead, type D. L 35mm, W 30mm, T 5mm. Sf 9322

Barrow 6
Phase 1.1, F3257
58 Single-platform core. L 106mm, W 120mm, T 114mm. Sf 4610
Phase 1.2, F3259
59 Flake, unmodified. L 54mm, W 36mm, T 7mm. Sf 4570
60 Knife, backed, retouched cutting-edge, nosed. L 54mm, W 21mm, T 8mm. Sf 4640
61 Dagger. L 168mm, W 76mm, T 9mm. Sf 4569
Phase 1.3, context 3194
62 Microlith, edge-blunted point. L 40mm, W 10mm, T 2mm. Sf 4529
63 Microlith, edge-blunted point. L 27mm, W 9mm, T 3mm. Sf 4055
64 Microlith, edge-blunted point with inverse basal retouch. L 30mm, W 9mm,

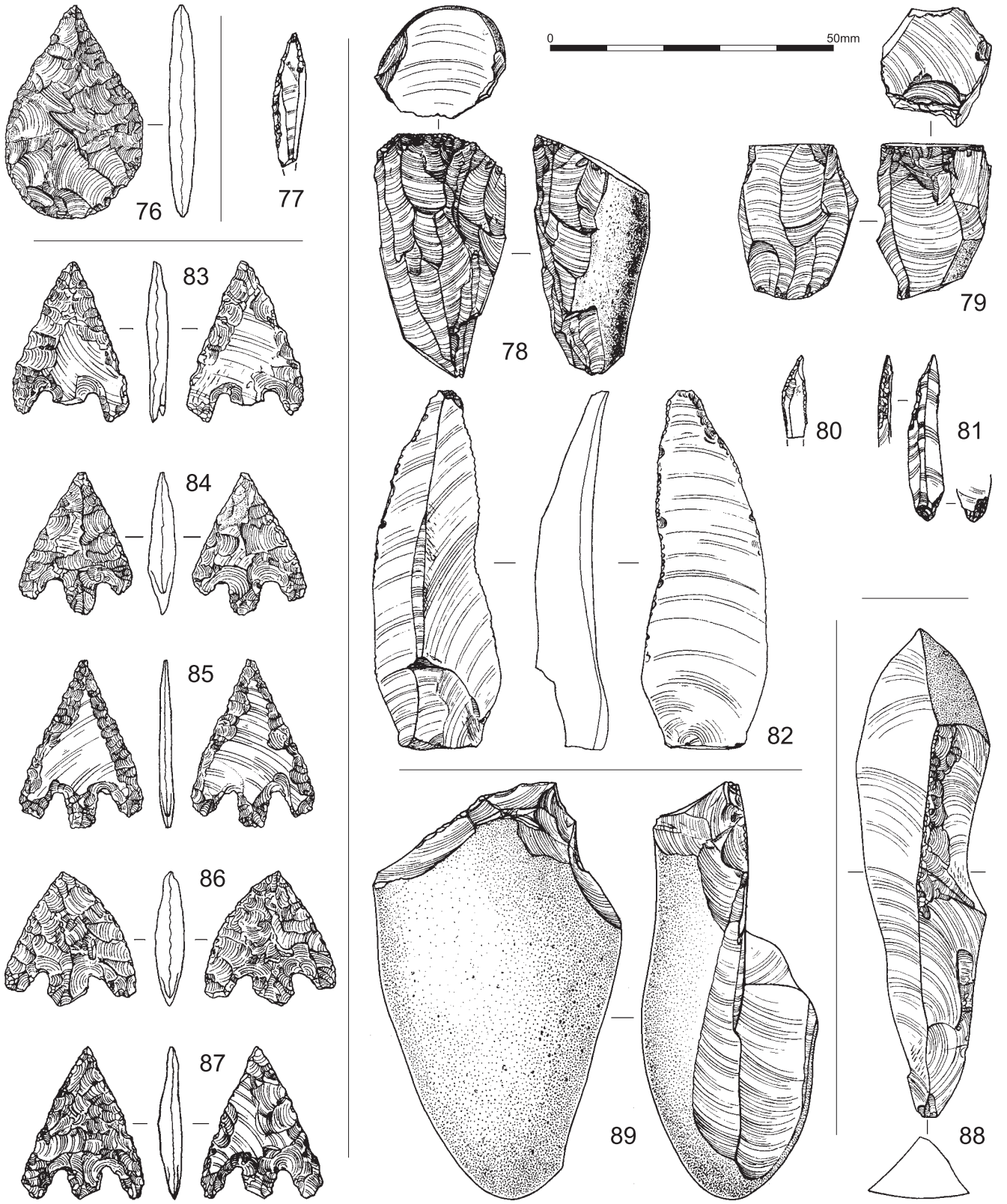


Figure SS3.45
Turf Mound (76–82) and Barrow 5 (83–9). Struck flint. Particulars in catalogue.

T 4mm. Sf 4189
65 Piercer. L 27mm, W 16mm, T 6mm. Sf 4089
Phase 1.4, context 180
66 Microlith, unclassified. L 37mm, W 11mm, T 3mm. Sf 4514
Phase 1.4, context 3262
67 Extended end scraper. L 16mm, W 20mm, T 2mm. Sf 4402
68 Angle-burin on unprepared proximal end. L 46mm, W 24mm, T 7mm. Sf 4410
Phase 3.2, context 3193
69 Microlith, edge-blunted point with inverse basal retouch. L 22mm, W 6mm, T 2mm. Sf 3957
70 Microlith, obliquely-blunted point. L 24mm, W 5mm, T 2mm. Sf 3991
Phase 5.1, context 3196
71 Serrated blade. L 32mm, W 17mm, T 6mm. Sf 3196
Phase 5.2, context 3191
72 Microlith, edge-blunted point. L 29mm, W 7mm, T 4mm. Sf 3829
Phase 7, context 3179, F3180 with cremation 3677
73 Flake. L 15mm, W 15mm. Sf 3681
Phase 9, context 3108
74 Leaf-shaped arrowhead, type 3B. L 31mm, W 17mm, T 3mm. Sf 3788

Turf Mound
Phase 1.1, context 6310
75 Leaf-shaped arrowhead, type 3B. L 32mm, W 18mm, T 3mm. Sf 6512
Phase 1.1, context 6311
76 Leaf-shaped arrowhead, type 3A. L 37mm, W 24mm, T 5mm. Sf 6529
Phase 1.1, context 6312
77 Microlith, edge-blunted point. L 63mm, W 5mm, T 2mm. Sf 7417
Phase 2.1, context 6301
78 Conical core. L 43mm, W 23mm, T 20mm. Sf 7222
79 Opposed-platform core. L 27mm, W 22mm, T 21mm. Sf 6483
80 Microlith, obliquely-blunted point. L 14mm, W 4mm, T 1mm. Sf 6482
81 Microlith, obliquely-blunted point with inverse basal retouch. L 28mm, W 6mm, T 2mm. Sf 7232
82 Serrated blade. L 62mm, W 22mm, T 9mm. Sf 6497

Barrow 5
Phase 1.2, F47149, context 31734
83 Barbed and tanged arrowhead, Sutton B type. L 29mm, W 22mm, T 3mm. AOR 55253
84 Barbed and tanged arrowhead, Sutton B type. L 24mm, W 20mm, T 5mm. AOR 55252
85 Barbed and tanged arrowhead, Sutton B type. L 28mm, W 21mm, T 3mm. AOR 55251
86 Barbed and tanged arrowhead, Sutton B type. L 23mm, W 23mm, T 5mm. AOR 55255
87 Barbed and tanged arrowhead, Sutton B type. L 26mm, W 21mm, T 4mm. AOR 55256
Phase 2.2, context 47103
88 Crested blade. L 86mm, W 22mm, T 12mm. AOR 55223
Phase 2.2, context 47074
89 Scraper on abandoned single-platform core. L 73mm, W 42mm, T 33mm. AOR 55144
Phase 5.2, F47171, context 47172
90 Foliate knife or miniature dagger. L 90mm, W 30mm, T 7mm. AOR 55112
Phase 5.3, F47087, context 47088
91 Flake, heavily burnt. L 49mm, W 28mm, T 5mm. AOR 55216
92 Blade, unmodified, heavily burnt. L 61mm, W 25mm, T 10mm. AOR 55218
93 Fabricator, plano-convex, heavily burnt. L 55mm, W 16mm, T 10mm. AOR 55217

Long Enclosure
Phase 4, F157, context 2135
94 Opposed platform core. L 40mm, W 26mm, T 17mm

Southern Enclosure
Phase 1, F87706, context 87707
95 Conical core, heavily burnt. L 33mm, W 17mm, T 12mm
96 Microlith, scalene triangle, heavily burnt. L 17mm, W 4mm, T 1mm
97 Microburin, heavily burnt. L 13mm, W 8mm, T 2mm
Phase 5, F87720, context 87721
98 Microlith, scalene triangle. L 15mm, W 4mm, T 1mm

Minor assemblages
The Avenue, Phase 3, F87475, context 87476
99 Backed bladelet. L 25mm, W 5mm, T 3mm. AOR 91801
The Bronze Age field system, F38277, context 38278
100 Extended end scraper. L 34mm, W 42mm, T 8mm. AOR 55375
Trench B110, F31820, context 31821
101 Knife, straight-edged, pointed, bilateral. L 38mm, W 16mm, T 3mm.
102 Serrated blade. L 37mm, W 22mm, T 3mm.

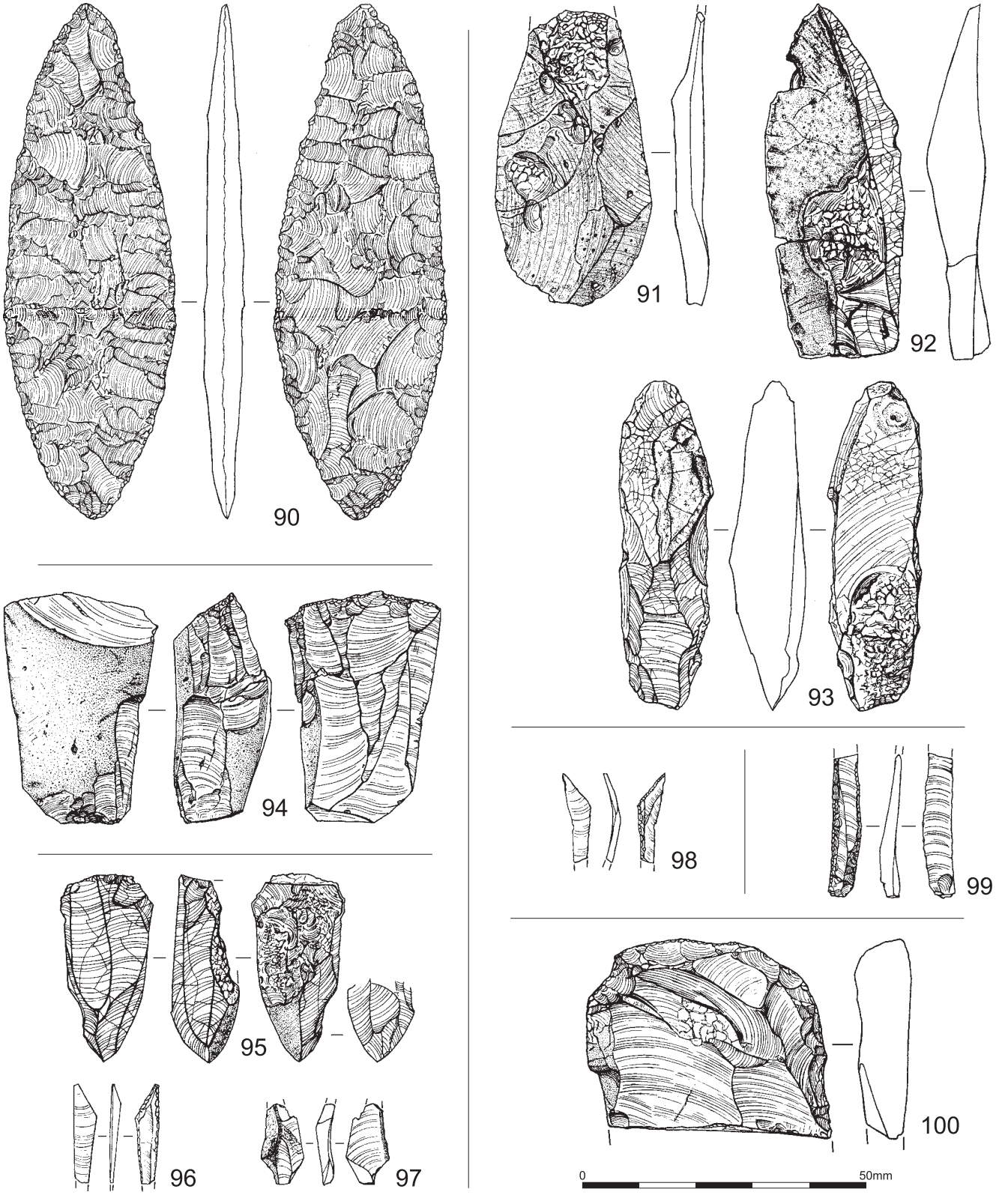


Figure SS3.46
Barrow 5 (90–93), Long Enclosure (94), Southern Enclosure (95–8), Avenue (99) and Field System (100). Struck flint. Particulars in catalogue.

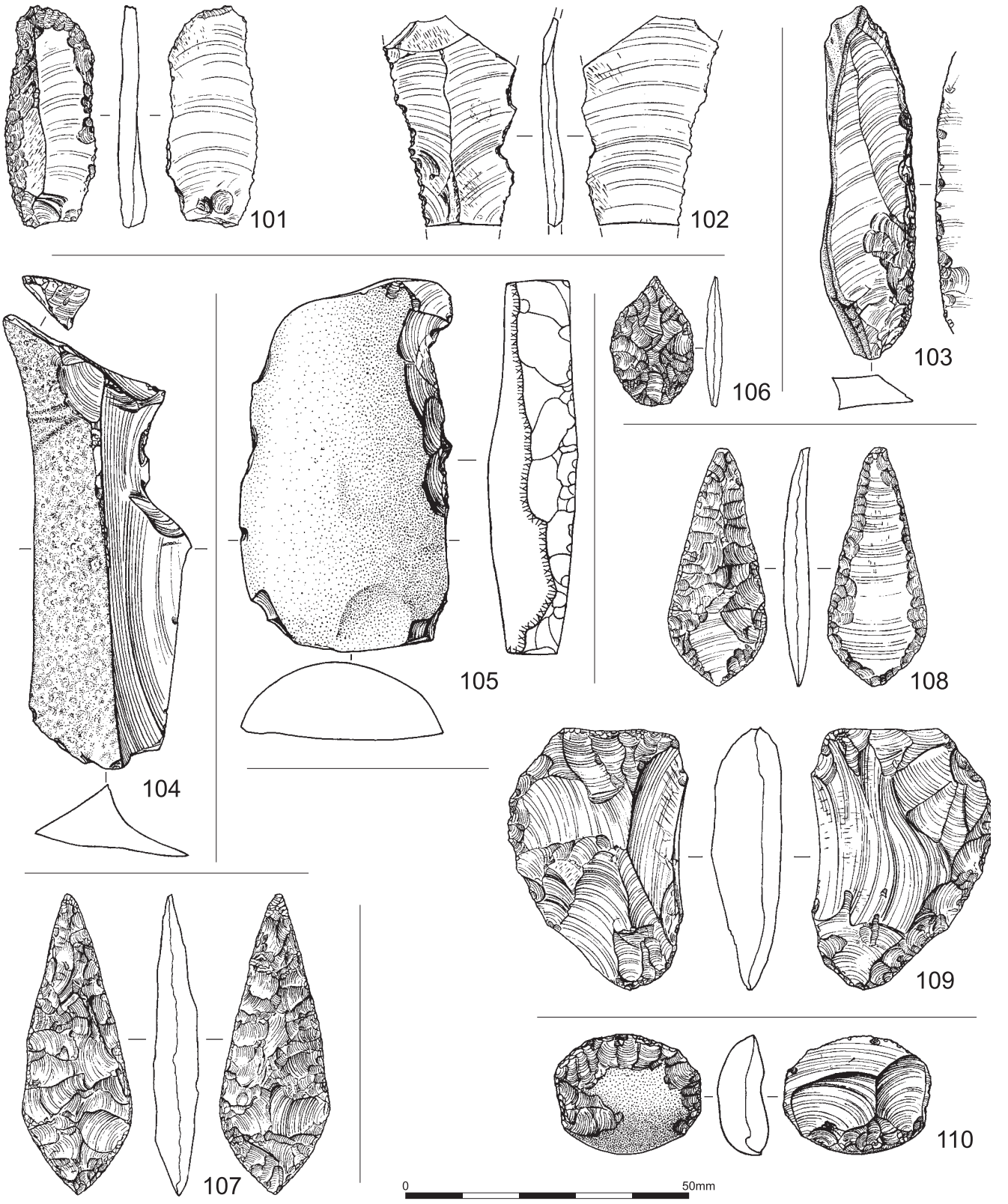


Figure SS3.47
Grooved Ware pit F31820 (101–20) and miscellaneous contexts on the terrace (103–10).
Struck flint. Particulars in catalogue.

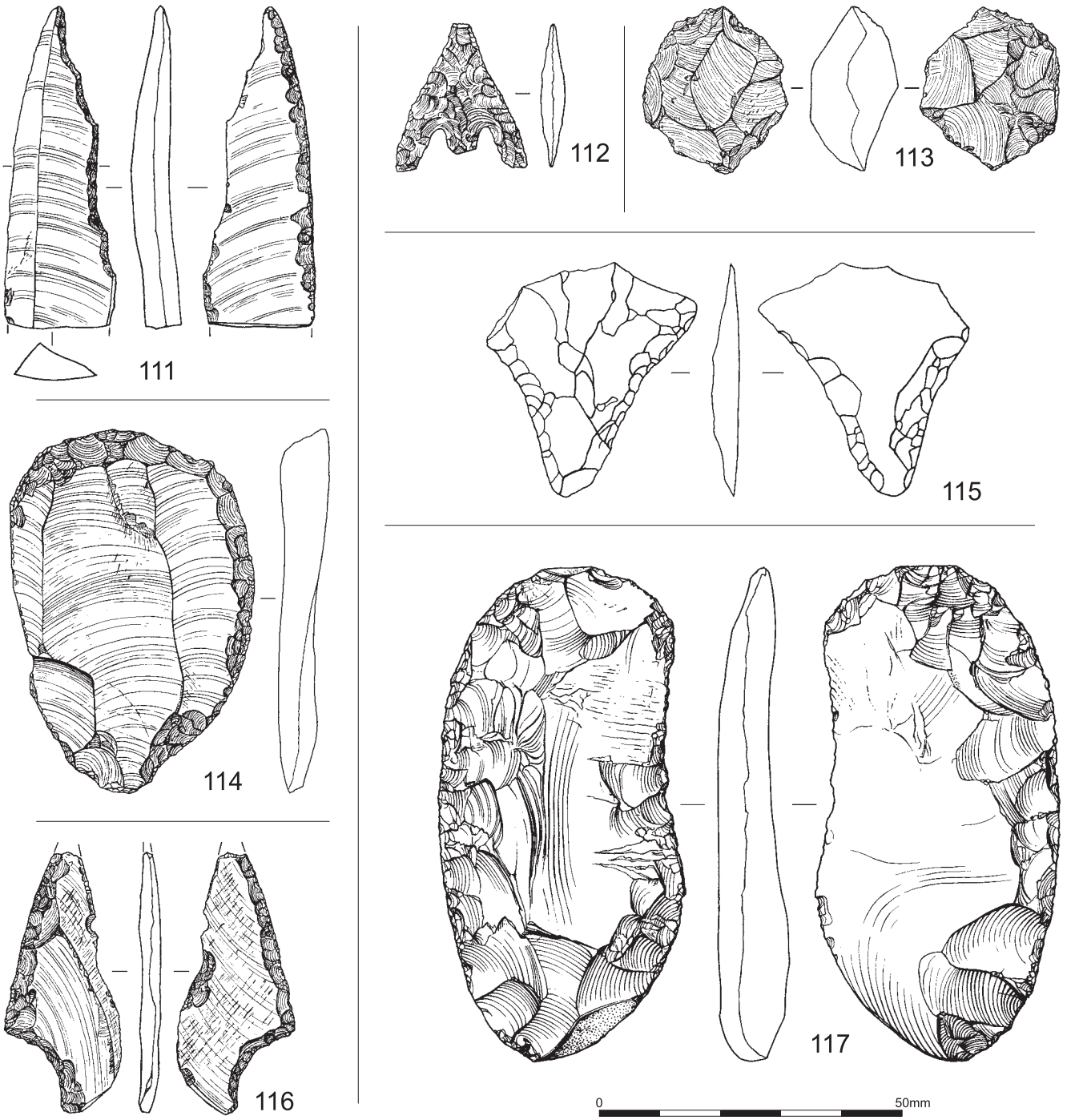


Figure SS3.48
Miscellaneous contexts on the terrace.
Struck flint.
Particulars in catalogue. No 115 is unshaded because the original artefact could not be found when the time came to complete the drawing.

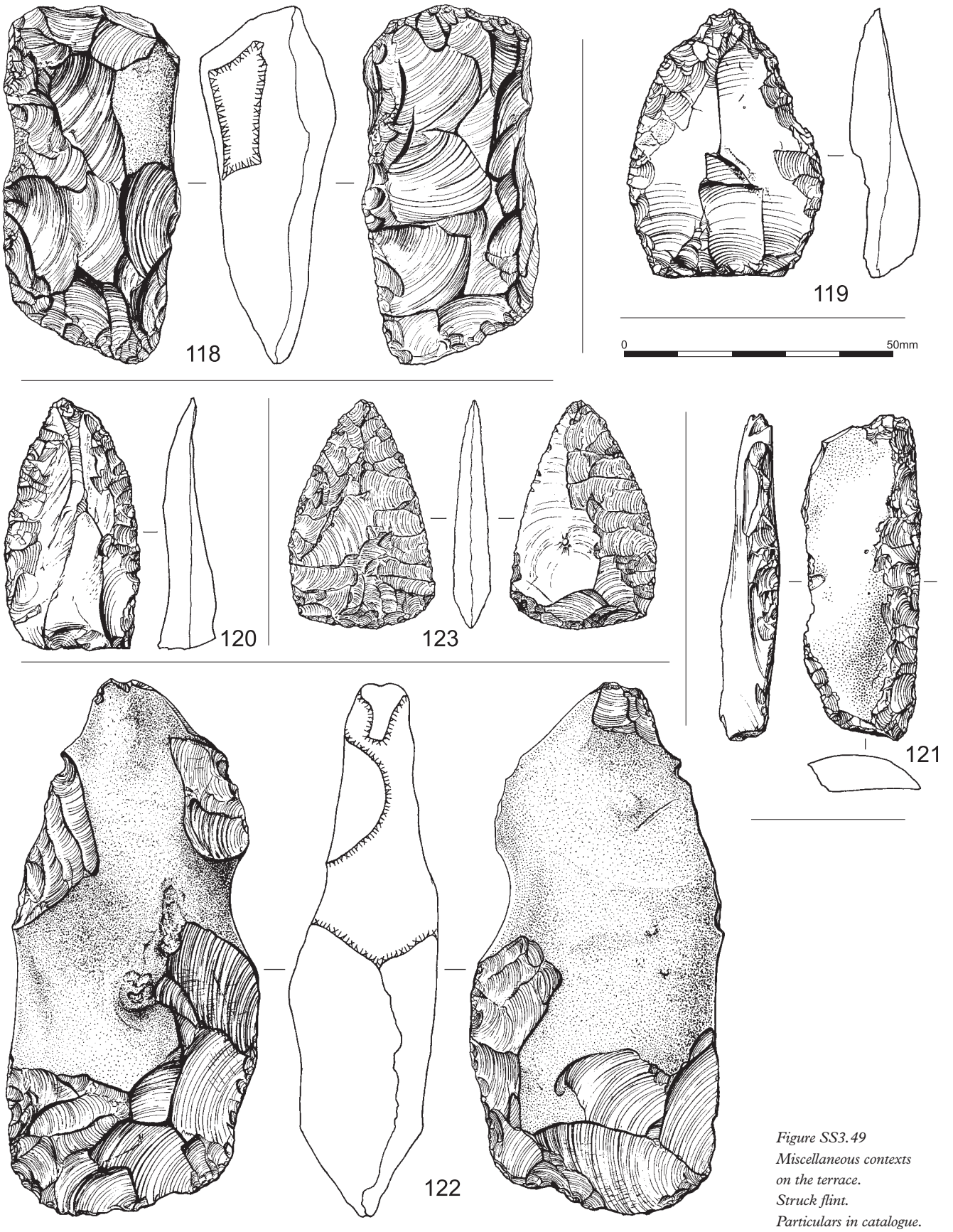


Figure SS3.49
Miscellaneous contexts on the terrace. Struck flint. Particulars in catalogue.

Terrace non-monument assemblage
Trench B100, F45928, context 45929
103 Knife, straight-edged, bilateral. L 61mm, W 18mm, T 7mm AOR 41183
Trench B100, F46641, context 46642
104 Piercer. L 77mm, W 25mm, T 12mm
Trench B100, context 45025
105 Denticulate scraper. L 66mm, W 36mm, T 12mm
Trench B100, context 45030
106 Leaf-shaped arrowhead, type 4B. L 23mm, W 14mm, T 3mm. AOR 40744
Trench B100, context 45270
107 Leaf-shaped arrowhead, type 2C. L 53mm, W 20mm, T 8mm. AOR 40787
Trench B100, context 47010
108 Leaf-shaped arrowhead, type 3C. L 41mm, W 17mm, T 5mm. AOR 40904
109 Bifacial piece. L 46mm, W 32mm, T 12mm. AOR 40955
Trench B100, context 47114
110 Extended end scraper. L 21mm, W 26mm, T 9mm. AOR 55205
Context 65091
111 Piercer. L 52mm, W 19mm, T 6mm. AOR 75456
Trench B296, F60492, context 60505
112 Barbed and tanged arrowhead, Green Low type. L 18mm, W 21mm, T 4mm. AOR 50371
F4800, context 4801
113 Discoidal core. L 27mm, W 23mm, T 12mm. AOR 1528
F8684, context 8685
114 Side/end scraper. L 57mm, W 37mm, T 8mm. AOR 12526
F9650, context 9651
115 Chisel arrowhead, type D. L 35mm, W 33mm, T 5mm. AOR 16204
F82101, context 81834
116 Oblique arrowhead, type H. L 43mm, W 20mm, T 4mm
Context 3201
117 Knife, backed, retouched cutting-edge. L 81mm, W 39mm, T 10mm. AOR 1626
Context 3760
118 Core axe. L 65mm, W 32mm, T 24mm. AOR 16227
Context 4025
119 Knife, straight-edged, pointed, bilateral. L 49mm, W 37mm, T 10mm. AOR 1401
Context 4501
120 Knife, pointed, bilateral. L 46mm, W 25mm, T 7mm. AOR 1281
Context 4788
121 Knife, straight-edged, bilateral. L 60mm, W 21mm, T 7mm. AOR 1522
Context 33501
122 Tranchet axe. L 100mm, W 46mm, T 27mm. AOR 12892
Context 82001
123 Triangular arrowhead. L 42mm, W 27mm, T 7mm. AOR 72335

Irthlingborough island
Barrow 1
Phase 2.1, context 30476
124 Flake, unmodified. L 21mm, W 13mm, T 7mm. AOR 35133
125 Flake, unmodified. L 13mm, W 10mm, T 3mm. AOR 35134
126 Flake, unmodified. L 57mm, W 29mm, T 7mm. AOR 35128
127 Flake, unmodified. L 49mm, W 30mm, T 11mm. AOR 35130
128 Flake, unmodified. L 30mm, W 32mm, T 14mm. AOR 35132
129 Core rejuvenation flake, core-side removal. L 23mm, W 27mm, T 5mm. AOR 35139
130 Triangular arrowhead. L 34mm, W 26mm, T 8mm. AOR 35129
131 Dagger. L 163mm, W 55mm, T 5mm. AOR 34868
132 Knife, unclassified. L 74mm, W 44mm, T 9mm. AOR 35138
133 Knife, unclassified. L 66mm, W 38mm, T 8mm. AOR 34866
134 End scraper. L 21mm, W 26mm, T 6mm. AOR 35131
135 Side/end scraper. L 52mm, W 32mm, T 7mm. AOR 35137
136 Miscellaneous retouched. L 20mm, W 28mm, T 8mm. AOR 35136
Phase 3.2, Context 30415
137 Barbed and tanged arrowhead, Green Low type. L 29mm, W 19mm, T 3mm. AOR 34098
Phase 3.3 F30012, context 30012 (in fill of truncated inverted Collared Urn)
138 Flake, unmodified, broken, AOR 18178 flake
139 Flake, unmodified, with slight edge damage. L 14mm, W 18mm. AOR 18179
Phase 4, F30373, context 30409
140 Chisel arrowhead, type C. L 25mm, W 17mm, T 14mm. AOR 34088
Phase 5.2, context 30361
141 Knife, straight-edged, unilateral. L 50mm, W 14mm, T 6mm. AOR 33965
142 End scraper. L 42mm, W 24mm, T 13mm. AOR 3997 (?)
Phase 7.2, F30169, context 30191
143 Denticulate. L 26mm, W 44mm, T 13mm
Phase 8.1, context 30036
144 Piercer/scraper. L 37mm, W 35mm, T 9mm. AOR 18212

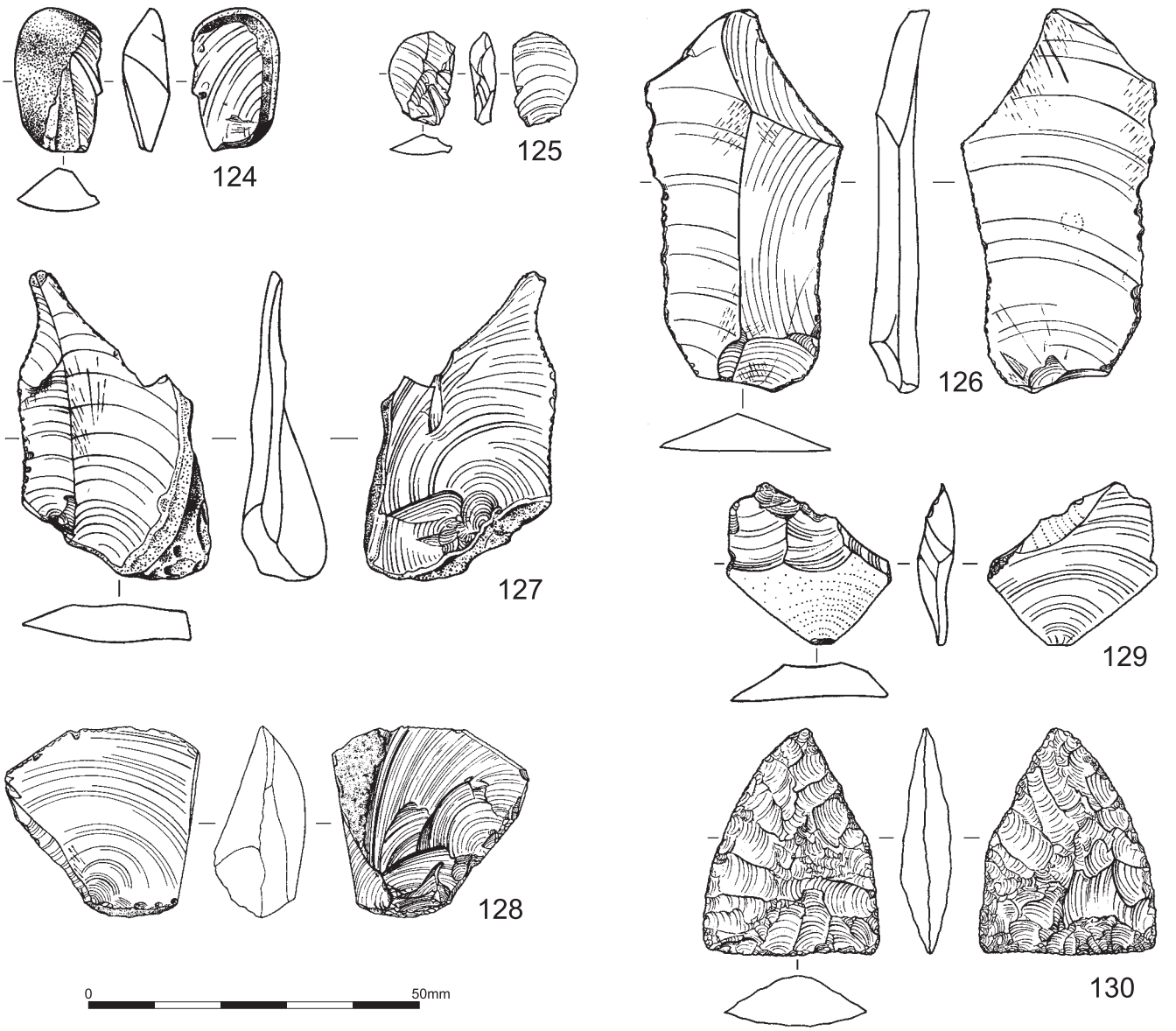


Figure SS3.50
Barrow 1 F30476.
Struck flint.
Particulars in catalogue.

Phase 8.2, F30127, context 30206
145 Barbed and tanged arrowhead, Sutton B type. L 37mm, W 25mm, T 4mm. AOR 13807

Phase 8.2, F30128, context 30207
146 End scraper. L 34mm, W 24mm, T 10mm. AOR 13814

Phase 8.2, F30129, context 30208
147 Single-platform core. L 35mm, W 27mm, T 19mm

Phase 8.2, F30138, context 30217
148 Barbed and tanged arrowhead, Sutton B type. L 37mm, W 28mm, T 6mm. AOR 13817

Phase 8.2, F30144, context 30223
149 Scraper, unclassified. L 39mm, W 40mm, T 7mm. AOR 33918

Phase 8.2, F30146, context 30225
150 Denticulate. L 34mm, W 51mm, T 13mm

Phase 8.2, context 30209
151 Bipolar core. L 31mm, W 17mm, T 7mm

Phase 9, context 30005
152 Keeled core. L 51mm, W 39mm, T 21mm. AOR 14300
153 Barbed and tanged arrowhead, Sutton B type. L 25mm, W 17mm, T 5mm. AOR 14700

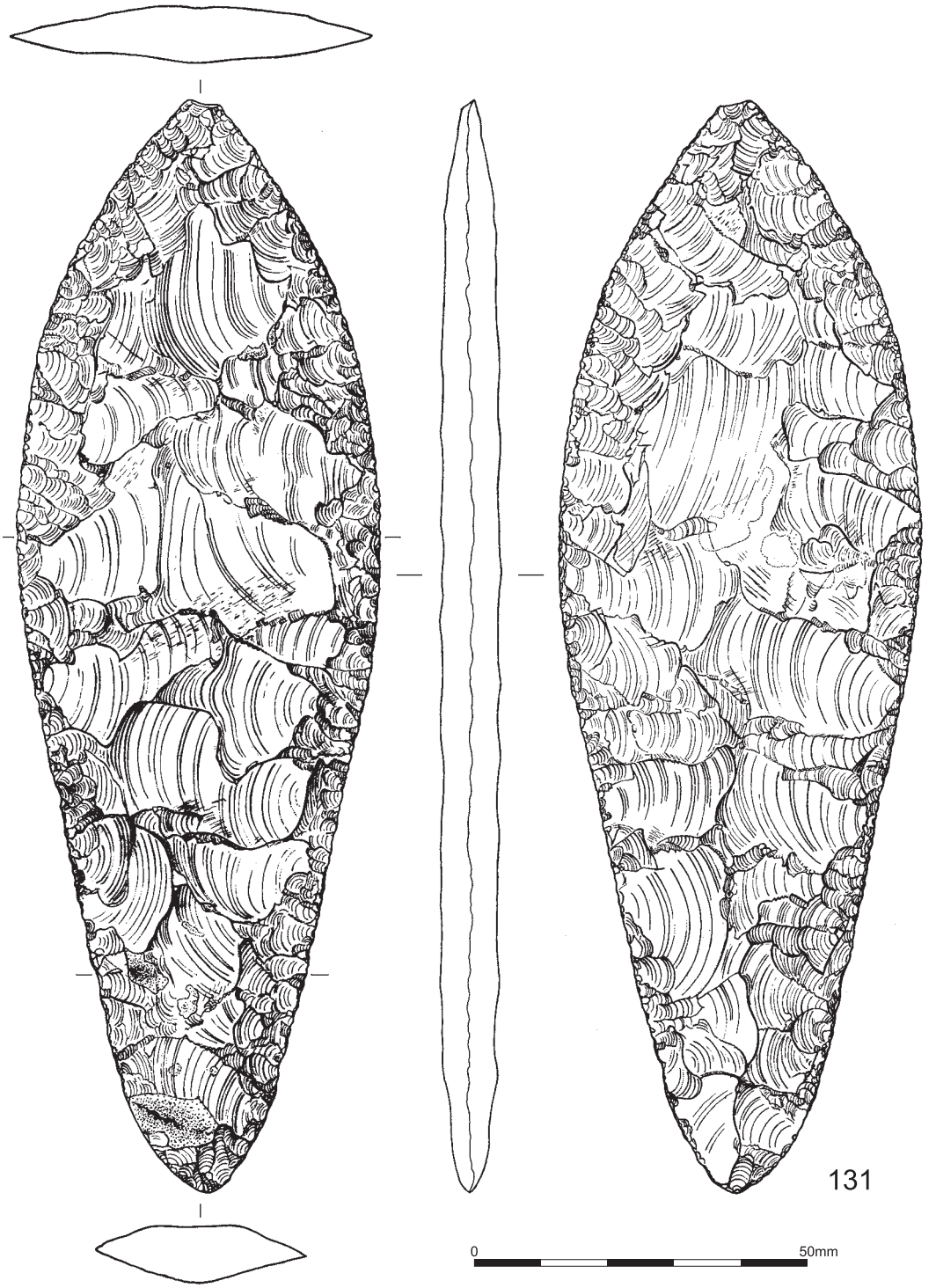


Figure SS3.51
Barrow 1 F30476.
Flint dagger.
Particulars in catalogue.

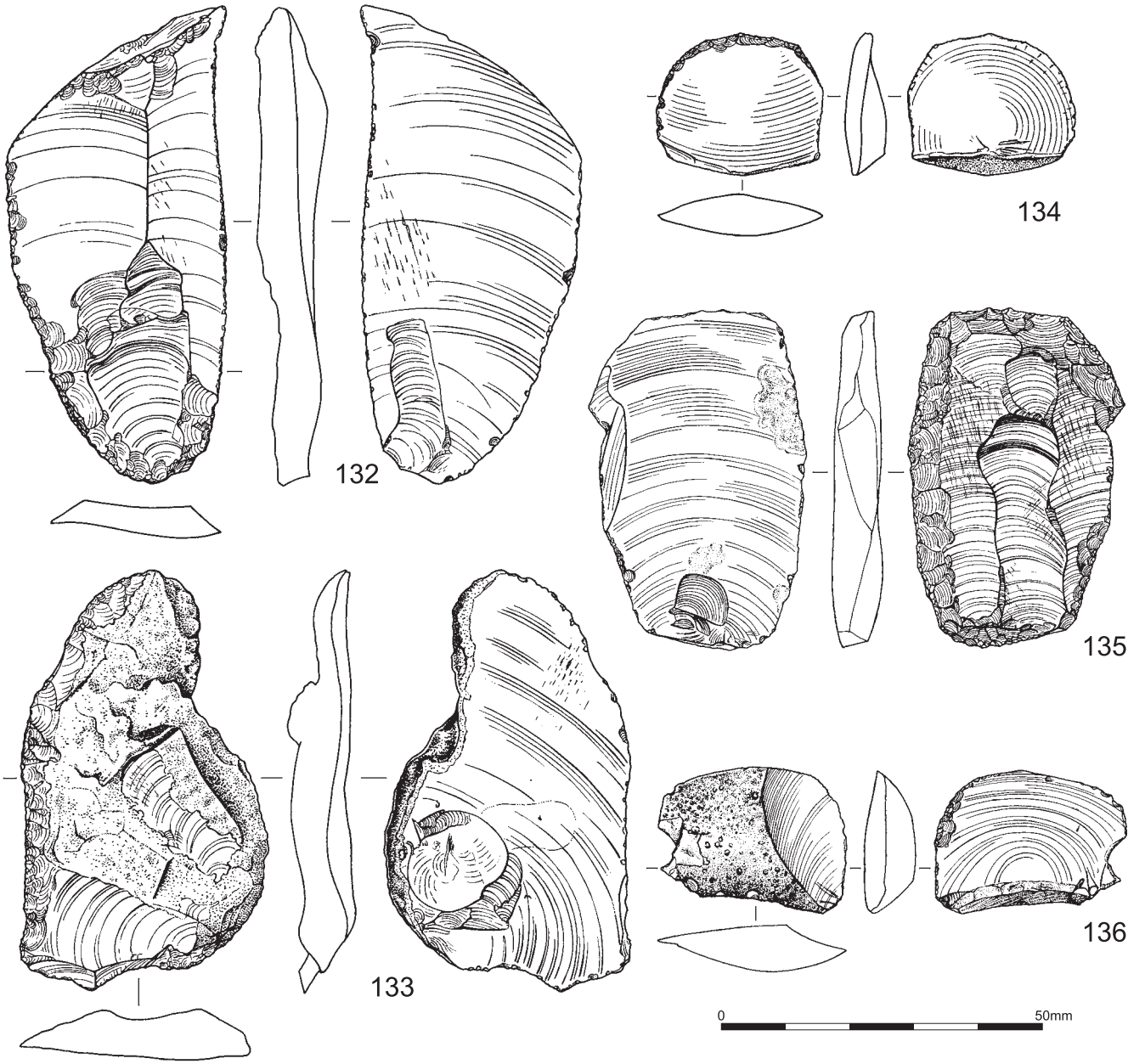


Figure SS3.52
Barrow 1 F30476.
Struck flint.
Particulars in catalogue.

154 Barbed and tanged arrowhead, Sutton B type. L 29mm, W 19mm, T 4mm. AOR 14683
155 Knife, plano-convex, complete dorsal retouch. L 37mm, W 20mm, T 6mm. AOR 14380

Phase 9, context 30011

156 Keeled core. L 40mm, W 37mm, T 13mm. AOR 15431
157 Barbed and tanged arrowhead, Sutton B type. L 33mm, W 22mm, T 4mm. AOR 15167
158 End scraper on fragment of polished axe. L 32mm, W 32mm, T 7mm. AOR 18858

Phase 9, context 30021

159 Side/end scraper. L 49mm, W 14mm, T 5mm. AOR 18963

Phase 9, context 30038

160 Backed bladelet. L 20mm, W 4mm, T 2mm. AOR 18390
161 Serrated blade. L 41mm, W 20mm, T 12mm. AOR 18133

Phase 9, context 30041

162 Barbed and tanged arrowhead, Sutton B type. L 22mm, W 21mm, T 4mm. AOR 18399

Phase 10, context 30003

163 Knife, discoidal, flaked. L 40mm, W 33mm, T 8mm. AOR 13811

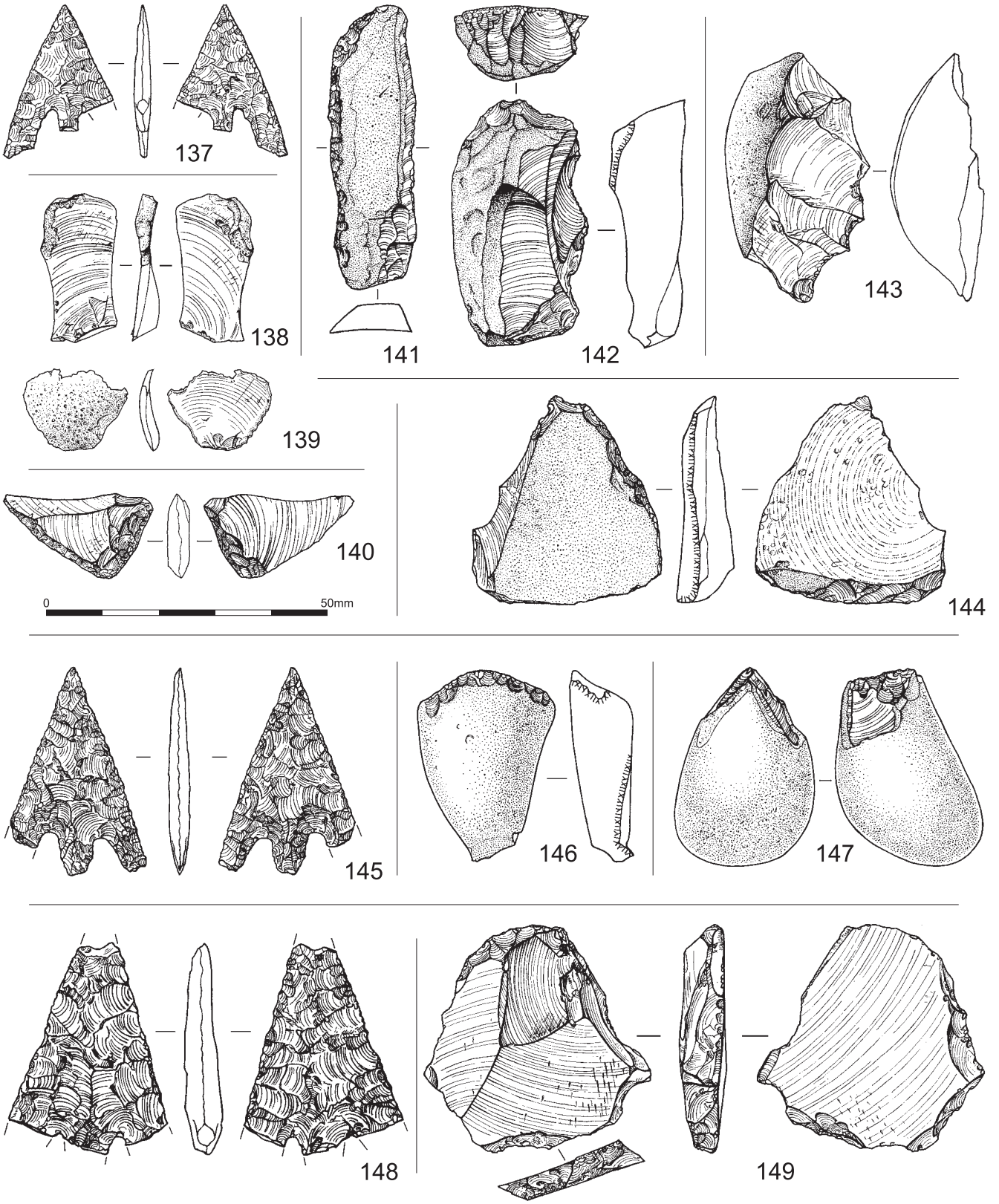


Figure SS3.53
Barrow 1.
Struck flint. Particulars in catalogue.

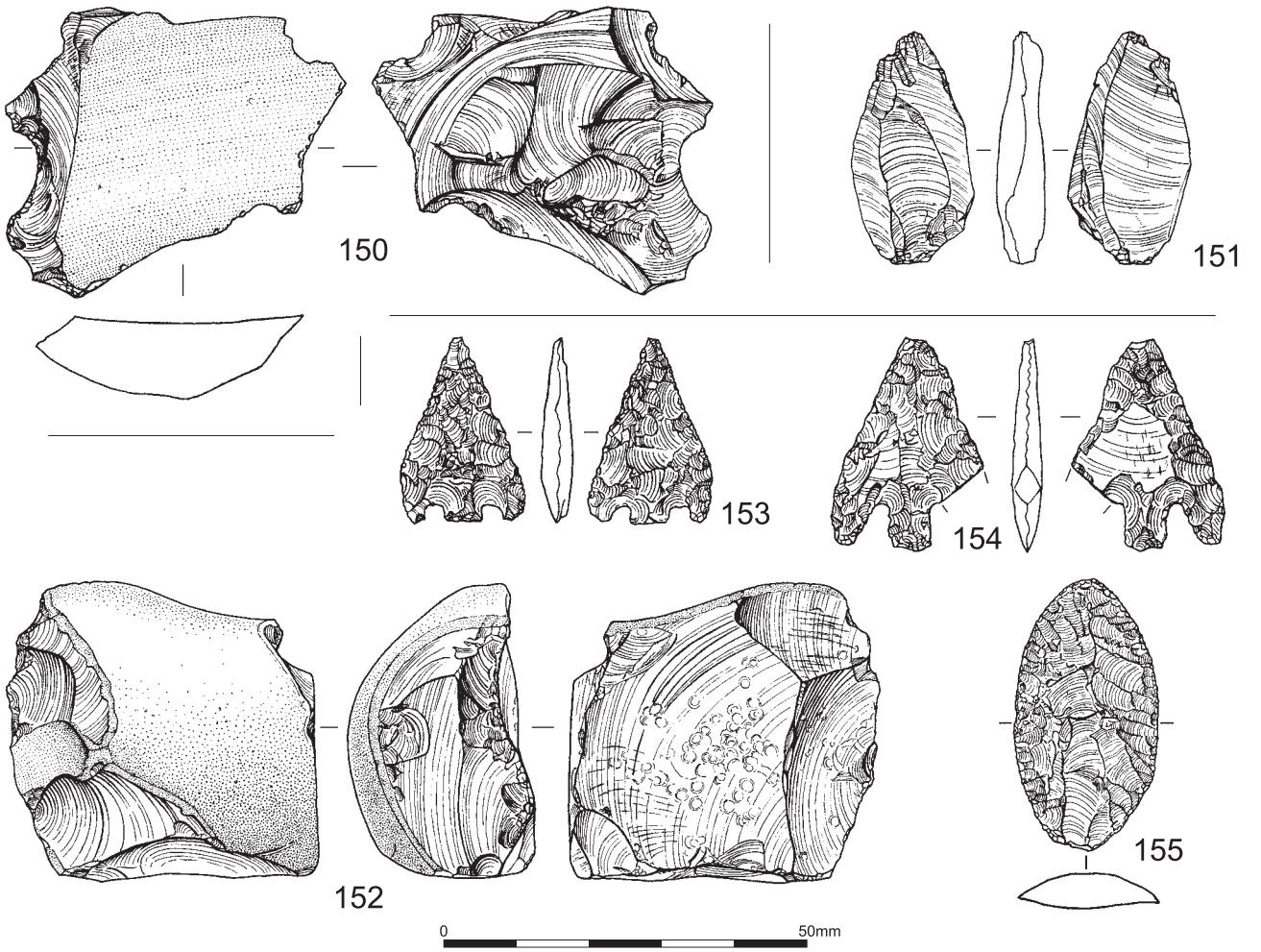


Figure SS3.54
Barrow 1.
Struck flint.
Particulars in catalogue.

Phase 11, context 30001
164 Knife, straight-edged, bilateral. L 55mm, W 14mm, T 6mm. AOR 13103
165 Denticulate. L 34mm, W 32mm, T 10mm. AOR 13649

Barrow 3

Phase 0, context 30808
166 End scraper. L 57mm, W 26mm, T 14mm. AOR 37404

Phase 4.3, context 30779
167 Piercer, spurred implement. L 36mm, W 26mm, T 10mm. AOR 36893

Phase 5.1, context 30749
168 Barbed and tanged arrowhead, Conygar type. L 38mm, W 27mm, T 4mm. AOR 50252

Phase 5.2, F30763, context 30764
169 Barbed and tanged arrowhead, Sutton B type. L 23mm, W 18mm, T 4mm. AOR 37397

Phase 5.3, context 30727
170 End scraper. L 23mm, W 32mm, T 9mm. AOR 37182

Phase 5.3, context 30741
171 Knife, plano-convex, edge-retouched. L 44mm, W 17mm, T 10mm. AOR 50168

Phase 5.4, context 30664
172 Barbed and tanged arrowhead, Sutton B type. L 18mm, W 14mm, T 4mm. AOR 36810
173 End scraper. L 63mm, W 30mm, T 9mm. AOR 36426
174 Piercer. L 34mm, W 29mm, T 14mm. AOR 36529
175 Denticulate. L 24mm, W 23mm, T 8mm. AOR 36452

Phase 5.4, context 30786
176 Leaf-shaped arrowhead, type 1A. L 32mm, W 26mm, T 5mm. AOR 37331
177 Barbed and tanged arrowhead, Sutton B type. L 27mm, W 23mm, T 4mm. AOR 36906

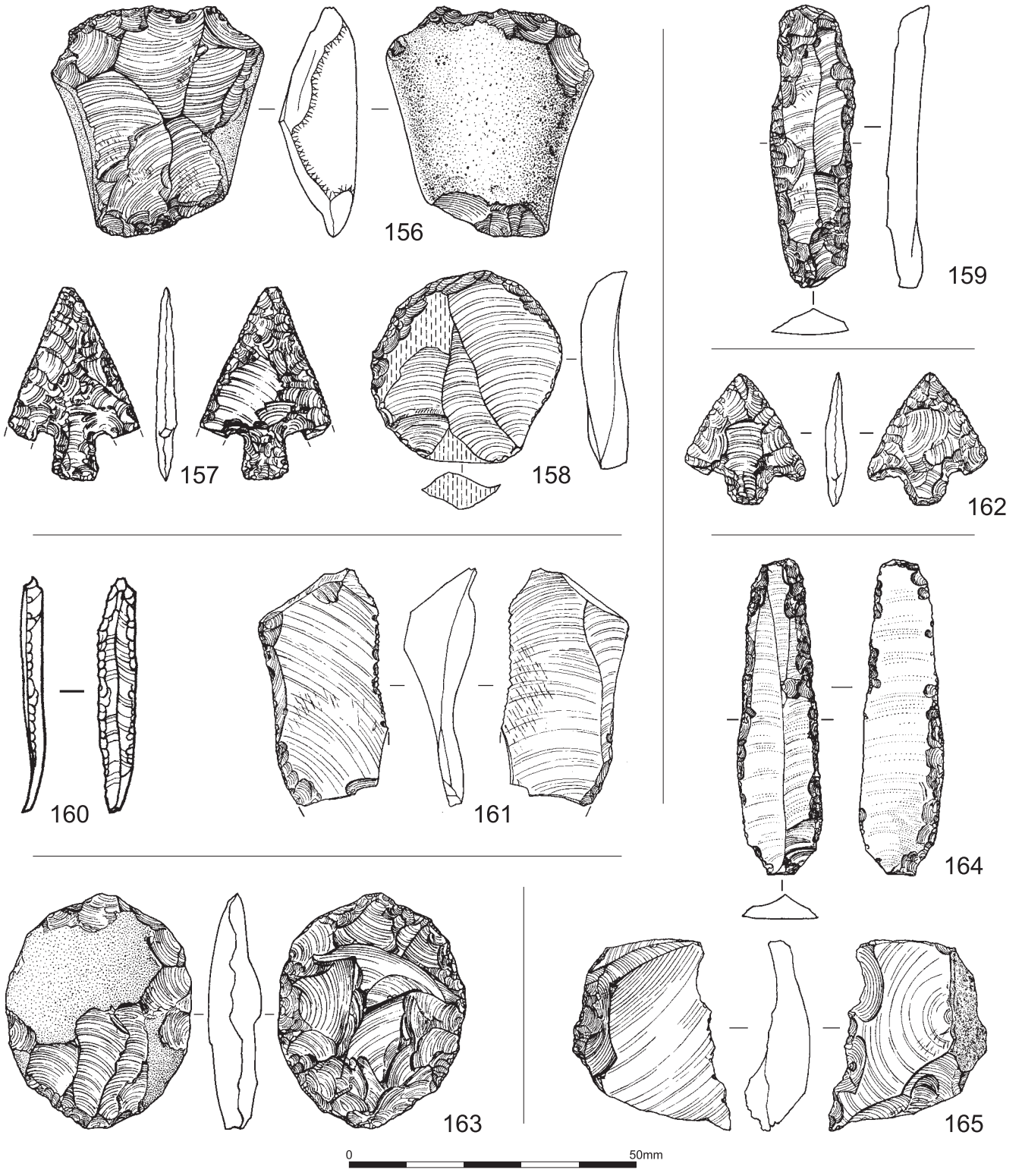


Figure SS3.55
Barrow 1.
Struck flint. Particulars in catalogue.

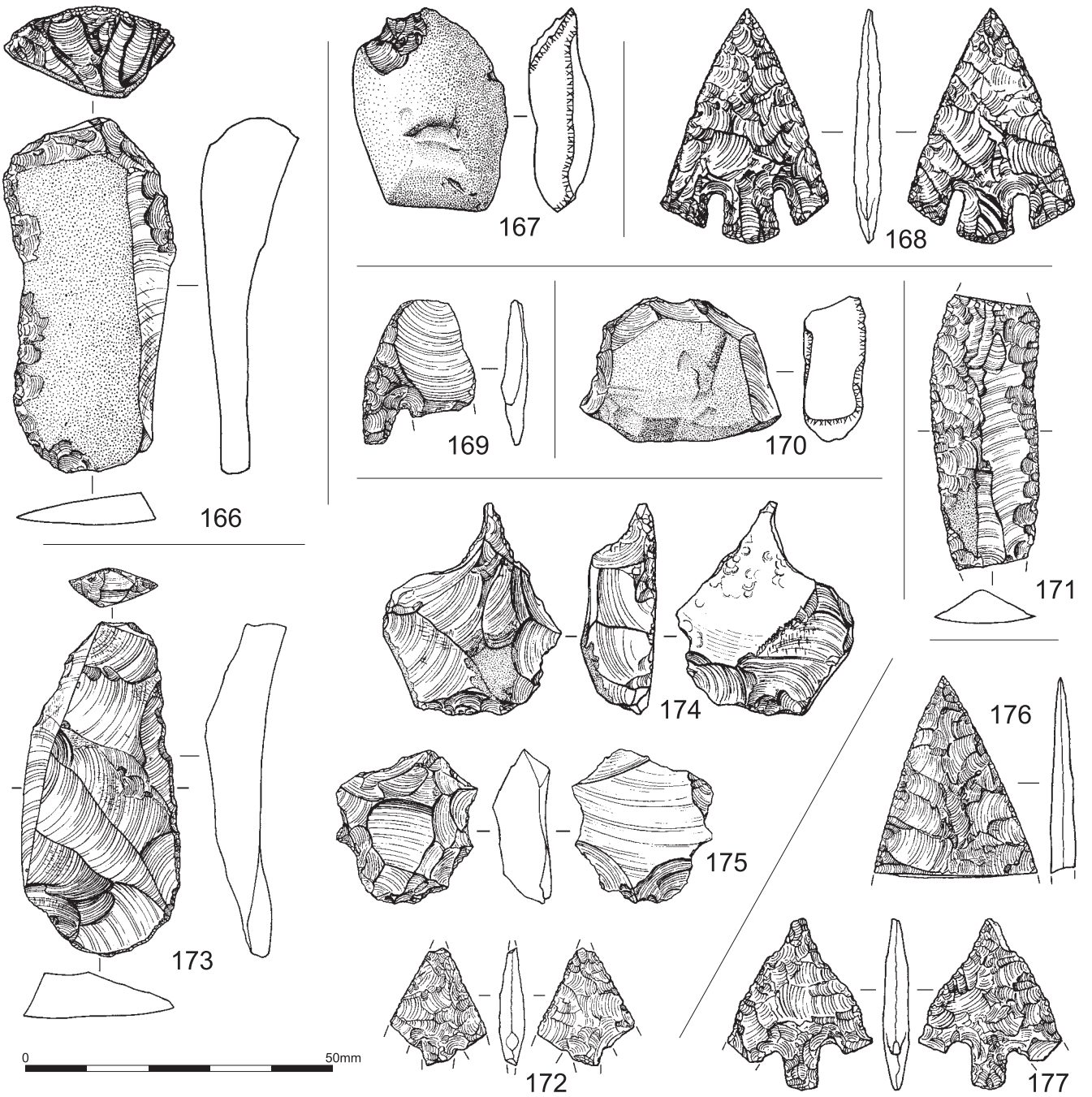


Figure SS3.56
Barrow 3.
Struck flint.
Particulars in catalogue.

Barrow 4

Phase 0, context 60318

178 Single-platform core. L 57mm, W 44mm, T 34mm. AOR 55530

Phase 2.2, context 60308

179 Chisel arrowhead, type C. L 36mm, W 35mm, T 3mm. AOR 55512

Phase 2.3, context 60314

180 Knife, backed, retouched cutting-edge. L 54mm, W 34mm, T 7mm. AOR 55518

181 Extended end scraper. L 25mm, W 31mm, T 15mm. AOR 55526

Clearance, context 60301

182 End scraper. L 45mm, W 28mm, T 9mm. AOR 55490

Island non-monument assemblage

Trench B41, context 27601

183 Barbed and tanged arrowhead, Sutton B type. L 41mm, W 24mm, T 5mm. AOR 27801

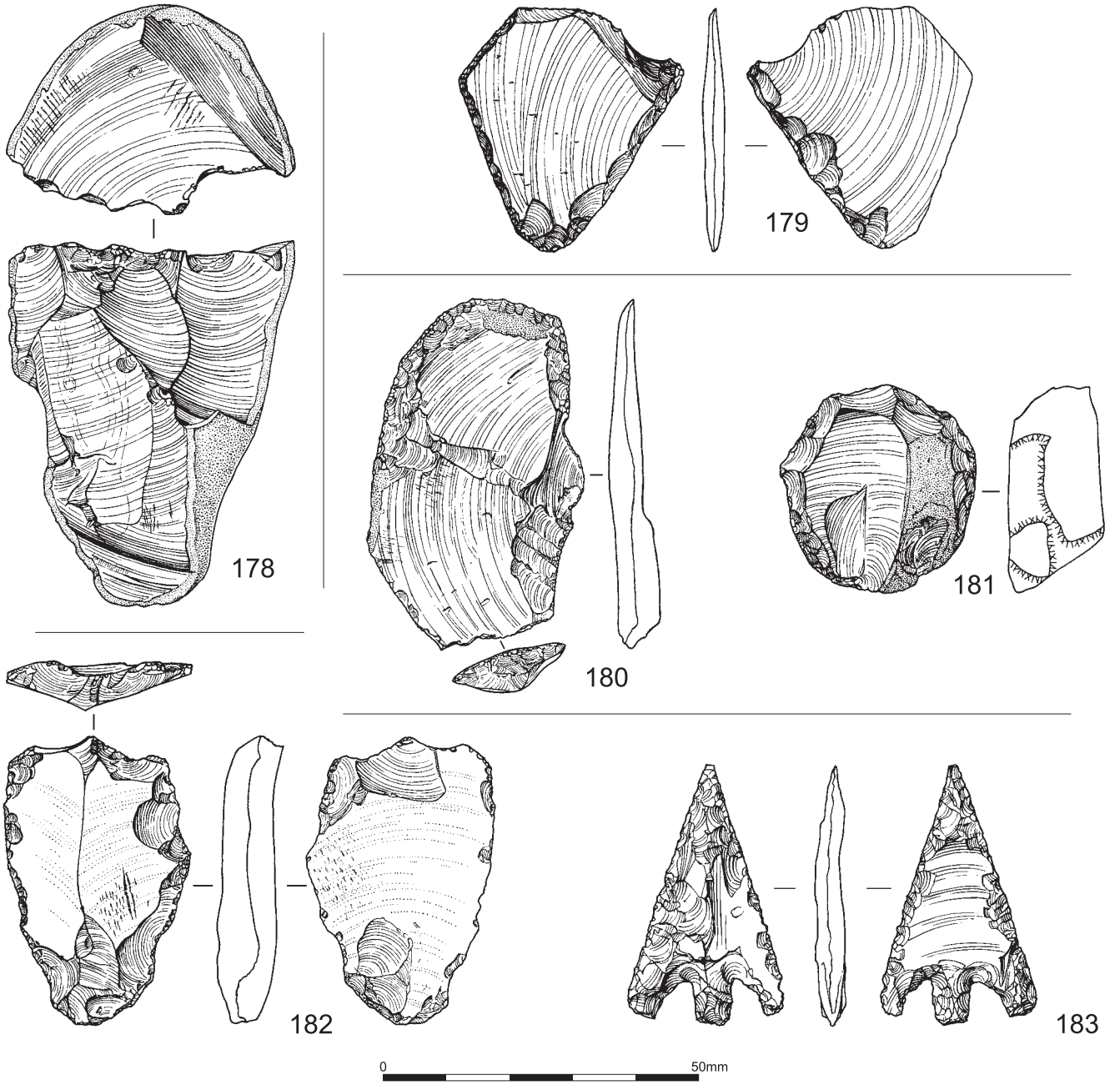


Figure SS3.57
Barrow 4 (178–82) and trench B41 (183). Struck flint. Particulars in catalogue.

Endnotes

1 Analyses of the soils from Barrow 6 suggest that the excavators erroneously perceived the turf at the top of the pre-mound soil as part of the mound (Macphail, SS4.8.2). This means that part of the mound soil (phase 1.3) may actually be pre-mound soil (phase 0) and finds allocated to the mound may be from the pre-mound phase, affecting numbers and percentages in Tables SS3.28 and SS3.32.

2 In keeping with the excavation report (SS1.14), Phase 5.4 is referred to as part of the 'later activities' as it represent the later erosion and disturbance of the mound surface. The lithic content of Phase 5.4 is, however, interpreted as redeposited settlement material predating the mound.

SS3.7.7 Overview of the lithic evidence

Torben Bjarke Ballin

In connection with the fieldwalking and excavation campaigns, the Raunds area was subdivided into smaller, topographically relevant zones. These zones were investigated by a number of different archaeological units (SS1.1–23), and the post-excavation analysis of the worked flint involved a number of different specialists (SS3.7.1–6). In the present section, the lithic finds from the different zones will be compared, a chronological overview for the Raunds flint will be produced, and a number of cross-period questions will be discussed.

In the presentation of the flint from the fieldwalking survey, the finds were subdivided into material from the valley side/valley floor and material from the Boulder Clay plateau (Humble 2006). As the two fieldwalking subassemblages vary little in composition they have been combined in this comparative section. The excavated flint was recovered from four main zones, namely the West Cotton Area on the terrace, the remaining terrace, Irthlingborough island and Redlands Farm (SS3.7.5–6). Below, the West Cotton Area and the remaining terrace will be treated as a single topographical unit ('the terrace').

General overview of the four main assemblages

The fieldwalking assemblage

This assemblage was recovered in connection with reconnaissance of the valley side and the Boulder Clay plateau to the east of the excavated area, as well as a small area immediately west of Irthlingborough island. Most of the area affected by the fieldwalking survey is from higher elevations than the landscape units of the excavation project, with only a small proportion of the area being located to the actual valley floor. Below, the assemblage is characterized briefly; for a more detailed presentation see Humble (2006). The fieldwalking survey assemblage constitutes a surface collection of individual artefacts or small concentrations of lithics. The landscape unit covered by the fieldwalking survey includes a very small number of monuments (the Cotton Henge, two ring-ditches and Barrow 9). In total, artefacts from monuments in the fieldwalking survey landscape unit number 148 pieces in contrast to the 10,531 pieces of non-monument flint from the fieldwalking survey assemblage.

The debitage is characterized by high proportions of broad flakes and non-bulbar fragments (73.6% and 21.6%, respectively), and a low blade ratio (4.2%). The tool group includes tools diagnostic of all prehistoric periods, but with a marked dominance of plain tool types, such as scrapers, piercers, notches and denticulates. The composition of the debitage group, as well as the tool group, suggests a dominance of material from later flake industries; a large proportion of the material most probably has a middle to late Bronze Age date. This proposition is supported by blank attributes, such as the fact that all flakes are characterized by pronounced bulbs-of-percussion. Approximately one-quarter of the core group are defined as 'unclassifiable cores' (24.6%), which corresponds well with late monument assemblages, such as, the Barrow 1 material (25.3%); all the larger monument assemblages from the terrace have less than 12% of unclassifiable cores.

The distribution of the diagnostic types and attributes displays a strong chronological trend, with Mesolithic and early Neolithic material almost completely confined to the valley floor and the valley side, with almost no evidence of activity on the Boulder Clay plateau. The distribution of later types and attributes suggest an expansion onto the clays during the late Neolithic and Bronze Age periods. The possible expansion onto the plateau in later prehistory is supported by the coarser flint types' association with the Boulder Clay (their area of origin; Humble 2006, 51), and the later Bronze Age knapping floors on Irthlingborough island (SS3.7.6).

The terrace assemblage

The terrace assemblage was retrieved in connection with archaeological excavation of the gravel deposits on the low gravel terrace. Approximately half of the lithic finds derive from monuments, and half from the large-scale excavation of areas between and around the monuments. The excavation of non-monument areas revealed a small number of pits containing worked flint and a multitude of lithic stray finds.

The monuments comprise a mixture of early Neolithic mounds and enclosures, middle Neolithic enclosures and early Bronze Age barrows, whereas the area excavations between and around the monuments were undertaken to investigate the Saxon

settlement at West Cotton and the Iron Age and Roman settlement at Stanwick. Approximately 77% of the flint from monuments on the terrace derives from the Long Mound, and *c* 96% of it derives from the West Cotton area.

The debitage is characterized by a high proportion of blades (24.9%) and a low proportion of non-bulbar fragments (9.5%). Due to the high number of blades, the flake ratio is much lower than in any of the other main assemblages (62.4% against 73.6–84.5%). Diagnostic tools, supplemented by technological attributes, indicate that the assemblage comprises a mixture of material from the Mesolithic to the later Bronze Age, but with material from Mesolithic and early Neolithic blade industries as the dominating components. However, subassemblages from pre-monument, monument and post-monument contexts differ somewhat.

In general, very few finds were made from pre-monument contexts, but features beneath the Long Mound revealed a number of chronologically clean Mesolithic assemblages. One of these features was a treethrow hole. Other pre-monument and monument features from the terrace area contained small, chronologically clean assemblages from the early Neolithic and early Bronze Age periods. The vast majority of the finds from the terrace monuments is made up of redeposited settlement material from the Mesolithic and early Neolithic periods, and stray Bronze Age finds, such as, barbed and tanged arrowheads, may represent disturbed secondary burials. In the case of the terrace mounds, most lithic finds from post-monument contexts represent flint eroded out of the mounds, rather than assemblages post-dating the construction of the monuments (cf. the island assemblage, below).

The composition of the terrace non-monument assemblage differs considerably from that of the monument assemblage, in that it contains a much smaller proportion of Mesolithic material (for example, the monument flints have a microlith ratio of 32.2%, whereas the non-monument flints have a ratio of 10.2%). Most likely, this is due to turf-stripping in connection with the construction of the Long Mound. This process may have affected as much as 12,000 sq m, and it is possible that most of an area of Mesolithic settlement may have been removed and redeposited in the Long Mound. West Cotton was probably the centre of settlement in the Raunds area in the late Mesolithic/early Neolithic period, and the focus of monument building in the Neolithic and Bronze Age periods.

The island assemblage

The island assemblage was recovered in connection with excavations on Irthlingborough island on the valley floor. Most of the lithic assemblage (97%) was found during excavation of the island barrows, with the remainder deriving from the excavation of trial trenches between and around the monuments. The latter revealed a number of treethrow holes and pits containing struck flint, as well as many stray finds. Approximately 70% of the flint from the island derives from Barrow 1.

The debitage is heavily dominated by flakes (81.0%), supplemented by substantial amounts of non-bulbar fragments (11.5%). Blades only make up a small proportion (5.2%). Like the fieldwalking survey assemblage, the lithic assemblage from the island appears to be dominated by late prehistoric flake industries, and the diagnostic tool types and technological attributes suggest that those industries primarily date to the early and later Bronze Age. Contrary to the fieldwalking survey assemblage, the island assemblage includes plain tool types associated with secular activities, as well as more elaborate tool types deposited in connection with primary and secondary burials. Mesolithic and early Neolithic types are relatively uncommon in island monument and non-monument contexts: the microliths only make up 1.3% of the assemblage against 20.0% on the terrace, and out of eighteen arrowheads only two are leaf-shaped with the remainder being mainly barbed and tanged points (twelve), supplemented by transverse (three) and 'miscellaneous' (one) points.

A large proportion of the monument flint is redeposited late prehistoric material, probably from short term camps in the central parts of the island. In comparison with the monument assemblage from the terrace, a negligible number of finds derive from pre-mound contexts. A sizeable proportion of the island monument flint represents post-mound activities, probably of a later Bronze Age date.

The small island non-monument assemblage (282 pieces) has a much larger blade ratio than the island monument assemblage (17.7% against 4.8%), suggesting a substantially larger contribution from earlier blade industries. This probably signifies a change of landscape use through prehistory, with the island and its wetland periphery being the focus of activities, such as, hunting, fishing, fowling and gathering of reeds in the earlier part of prehistory, whereas in the later part of prehistory the above activities were substituted with pastoral (and ceremonial) activities in the centre of the island (Harding and Healy 2007, Ch 2).

The Redlands Farm assemblage

This relatively small assemblage (903 pieces) was retrieved in connection with excavations on the valley floor immediately south of the Irthlingborough island. Most finds derive from prehistoric monuments in the area, but *c* 15% of the assemblage was recovered during area excavation of a Roman Villa, and *c* 5% derives from a series of small features in a trial trench. Almost all monument flint from the Redlands Farm area were recovered from the Long Barrow (689 pieces), supplemented by a dozen flints found in Barrow 7.

The debitage category is heavily dominated by flakes (84.5%), but with few non-bulbar fragments (4.1%). The blade ratio (10.4%) is considerably lower than the ratio of the terrace assemblage (24.9%), but twice that of the island assemblage (5.2%). The flake and blade ratios suggest a dominance of material from later flake industries, intermixed with some material from earlier blade industries. Technological flake attributes, such as cortex-covered platform remnants, prominent bulbs-of-percussion and hinge fractures support the notion of a sizeable component from later industries (in this case, association with pottery suggests a date of the later fourth millennium, see below). The quality and dimensions of the blades indicate an early Neolithic rather than a Mesolithic date, and they may mainly have been produced as blanks for serrated pieces. Tools are few (fifty-six pieces), and the Redlands Farm tool group is almost completely dominated by three tool types: scrapers, serrated pieces and plain retouched pieces make up approximately three-quarters of the group. Three knives were found, and all other tool types are represented by one or two pieces.

Diagnostic tool types (microliths, leaf-shaped arrowheads, a polished axe and a flake from a polished axe) demonstrate the presence of Mesolithic and early Neolithic elements in the assemblage (dates from the primary fills of the Long Barrow ditches suggest deposition of material in the earlier fourth millennium (SS6), whereas attributes associated with the debitage in the secondary ditch fills of the Long Barrow suggest post-mound activity at a later time in prehistory (mainly associated with Peterborough Ware, although small numbers of late Neolithic and Beaker sherds were also found).

Only two flint flakes were found in a grave, but a small number of other artefacts may derive from disturbed burials. Thirty-five pieces were found in pre-mound contexts beneath the Long Barrow, and the large blade component of this subassemblage suggests a late Mesolithic or early Neolithic date. Probably between one-quarter and one-third of the finds from the Long Barrow represents redeposited Mesolithic and, mainly, early Neolithic material. The largest artefact group in the Long Barrow sub-assemblage is the knapping debris from the secondary ditch fills (*c* 65%).

This assemblage has several similarities with the assemblage from Irthlingborough island, such as, a negligible Mesolithic component and a low topographical level. Most likely, the prehistoric exploitation of the Redlands Farm landscape unit was similar to that of Irthlingborough island, with no permanent settlement.

The four major Raunds assemblages – a discussion of assemblage composition

The complete Raunds assemblage (the combined fieldwalking survey and excavated material – Table SS3.101) totals more than 30,000 pieces of worked flint from several millennia and, obviously, a large number of factors may have influenced the composition of the individual subassemblages. However, the following factors seem to be the most important ones:

Bias from different methods of recovery

Differences in recovery methods would be expected to play a role in the observed differences between the fieldwalking survey assemblage and the three excavated assemblages. As everyone with experience of fieldwalking knows, there is a general tendency for material retrieved in this fashion to include fewer small and less eye-catching pieces than excavated material. In the present case one would primarily expect the relative numbers of tools to be affected.

In general, the material from the fieldwalking survey includes many small pieces, and the influence from the 'fieldwalking factor' does not appear to be dramatic. However, microliths and microburins are probably somewhat under-represented, and the larger tool categories (eg scrapers, piercers, denticulates and fabricators) may be slightly over-represented. Due to the limited application of sieving during the project, all assemblages have low chip ratios.

Chronological differences

Most of the differences in assemblage composition appear to be associated with different assemblage dates: the fieldwalking survey

Table SS3.101. general artefact list – the assemblages from the fieldwalking survey, the terrace, the island, and Redlands Farm

		FIELD WALKING SURVEY		*TERRACE*		*ISLAND*		*REDLANDS FARM*	
group	*Category*	*Numbers*	*Percent*	*Numbers*	*Percent*	*Numbers*	*Percent*	*Numbers*	*Percent*
Debitage		8,568	81.3	10,564	83.8	7,357	85.9	800	88.6
Cores		892	8.5	897	7.1	689	8.0	47	5.2
Tools		1,071	10.2	1,146	9.1	523	6.1	56	6.2
TOTAL		10,531	100.0	12,607	100.0	8,569	100.0	903	100.0
Debitage	Flakes	6,304	73.6	6,597	62.4	5,959	81.0	676	84.5
	Blades	362	4.2	2,626	24.9	386	5.2	83	10.4
	Non bulbar fragments	1,848	21.6	998	9.5	844	11.5	33	4.1
	Crested flakes/blades	6	0.1	78	0.7	23	0.3	0	0.0
	Core rejuvenation flakes	48	0.5	265	2.5	145	2.0	8	1.0
	Total	8,568	100.0	10,564	100.0	7,357	100.0	800	100.0
Cores		892	100.0	897	100.0	689	100	47	100.0
Tools	Arrowheads	28	2.6	77	6.7	18	3.2	2	3.6
	Microliths	12	1.1	229	20.0	7	1.3	2	3.6
	Microburins	4	0.4	18	1.5	1	0.2	1	1.8
	Bifacials	11	1.0	3	0.3	3	0.6	0	0.0
	Laurel leaves	3	0.3	3	0.3	1	0.2	0	0.0
	Daggers	0	0.0	1	0.1	1	0.2	0	0.0
	Knives	11	1.0	24	2.1	13	2.5	3	5.3
	Scrapers	502	46.9	236	20.6	89	17.0	16	28.5
	Scraper resharpening flakes	0	0.0	7	0.6	3	0.6	0	0.0
	Piercers	126	11.8	78	6.8	24	4.6	2	3.6
	Burins	5	0.4	5	0.4	5	0.9	0	0.0
	Truncated pieces	0	0.0	6	0.5	4	0.8	0	0.0
	Notches	46	4.3	65	5.7	46	8.8	1	1.8
	Saws	4	0.4	2	0.2	1	0.2	0	0.0
	Serrated pieces	0	0.0	17	1.5	4	0.8	11	19.6
	Denticulates	37	3.4	17	1.5	19	3.6	1	1.8
	Axes and axe fragments	6	0.6	20	1.7	1	0.2	2	3.6
	Chisels	1	0.1	0	0.0	1	0.2	0	0.0
	Retouched pieces	203	18.9	319	27.8	280	53.7	15	26.8
	Fabricators	48	4.5	4	0.3	2	0.4	0	0.0
	Anvils	7	0.7	3	0.3	0	0.0	0	0.0
	Hammerstones	17	1.6	10	0.9	0	0.0	0	0.0
	Gunflint	0	0.0	2	0.2	0	0.0	0	0.0
	Total	1,071	100.0	1,146	100.0	523	100.0	56	100.0
TOTAL		10,531		12,607		8,569		903	

assemblage is dominated by later prehistoric flake industries, the terrace assemblage is dominated by blade industries and includes a large Mesolithic component, the island assemblage is dominated by later prehistoric flake industries, and the Redlands Farm assemblage may be a hybrid form containing roughly equal proportions of material from mainly early Neolithic blade industries and later fourth millennium flake industries.

Differences in the composition of the three main categories, debitage, cores and tools, are probably partly chronological. In the terrace assemblage tools are more frequent than cores (7.1% against 9.1%), and in the island assemblage cores are more frequent than tools (8.0% against 6.1%); this fact is probably mainly due to differences between earlier and later lithic technologies, with a higher blank production per core in the Mesolithic and early Neolithic periods and a smaller blank production per core in the late Neolithic and Bronze Age periods (Table SS3.102). Most of the finds from the fieldwalking survey are probably later prehistoric, and the dominance of tools over cores (8.5% against 10.2%) may be due to the fact that eye-catching pieces, such as formal tools, tend to be slightly over-represented in fieldwalking assemblages. The general composition of the Redlands Farm assemblage (few cores – 5.2%, and few tools – 6.2%) may be due to its hybrid character of a mixed early/later Neolithic assemblage.

Table SS3.102. Distribution of assemblages dominated by early and late material by main categories (percent). The assemblages have been sequenced according to ascending core:tool ratio

	Assemblage	*Debitage*	*Cores*	*Tools*	*Core:tool ratio*
Early blade industries	B5	77.6	9.5	12.9	0.74
	TM	82.1	7.9	10.0	0.79
	LM	86.2	6.7	7.1	0.94
	B6	86.7	6.6	6.7	0.98
Later flake industries	B4	83.9	9.2	6.9	1.33
	B1	86.5	7.8	5.7	1.37
	B3	84.7	8.9	6.4	1.39
	LE	88.0	8.0	4.0	2.00

Table SS3.103. Distribution of assemblages dominated by early and late material by debitage categories (percent). The assemblages have been sequenced according to descending blade ratio

	Assemblages	*Flakes*	*Blades*	*Non-bulbar fragments*	*Totals*
Early blade industries	B5	56	41	3	100
	LM	60	33	10	100
	B6	67	23	10	100
	TM	68	22	10	100
Later flake industries	LE	78	17	5	100
	B4	78	8	14	100
	B1	84	5	11	100
	B3	84	4	12	100

The relative numbers of the three main debitage categories (flakes, blades and non-bulbar fragments) are undoubtedly chronologically determined (Table SS3.103). The fieldwalking survey assemblage and the assemblage from the island are both characterized by low blade ratios, revealing that their main components are late; the large non-bulbar component of the fieldwalking survey assemblage may be an indication that this material is generally later than the material from the island (21.6% against 11.5%). Almost one-quarter of the terrace assemblage (24.9%) is blades and, combined with the low ratio of non-bulbar fragments (9.5%), this demonstrates the generally early date of the assemblage and the presence of a noticeable Mesolithic component. The intermediate size of the Redlands Farm blade ratio (10.4%) is probably due to this assemblage containing little Mesolithic material, but sizeable early and later Neolithic components.

All four assemblages include diagnostic tool types from early and late prehistoric periods, but in different proportions. The fieldwalking survey collection is largely characterized by plain tool types, such as, scrapers (46.9%), piercers (11.8%), notches (4.3%) and denticulates (3.4%), which supports the proposed dominance of the assemblage by material from the early and, not least, the later Bronze Age. The terrace assemblage contains many microliths (20.0%) but few denticulates (1.5%), demonstrating that this material has a large Mesolithic component and a small later Bronze Age component. The island assemblage is dominated by the same tool types as the fieldwalking survey material, and it probably dates to the same period. The tool group of the Redlands Farm assemblage is rather small (fifty-six pieces) and therefore probably subject to random statistical fluctuations, but details such as a high number of serrated pieces (19.6%) support the proposed dominance of early and later Neolithic material.

Activity-based differences

The Raunds assemblages are also products

of different prehistoric activities. The main activity-based difference between the assemblages is whether the individual landscape units include the remains of funereal activities, or whether they are mainly characterized by secular activities. Secular activities may be further subdivided into activities associated with permanent settlements (base-camps, villages), or short-term/special-purpose camps (this includes camps by hunters, fishers, herders, etc).

The landscape unit covered by the fieldwalking survey includes a very small number of monuments, and none of the finds from the actual fieldwalking survey assemblage are from funereal contexts. Consequently, the more elaborate tool types frequently deposited as burial goods are either absent or uncommon: daggers are absent, and very few knives were recovered from higher elevations. Even though arrowheads are not uncommon in the fieldwalking survey assemblage (2.6%), they are less common here than in the excavated assemblages (3.2–6.7%). The assemblages from the terrace, the island and Redlands Farm all include burial goods: the daggers from the terrace and the island both derive from graves (as does the miniature dagger/foliate knife from Barrow 5), and the large proportion of arrowheads in the terrace assemblage (6.7%) and the large proportion of knives from the Redlands Farm assemblage (5.3%) are probably due to the inclusion of these types as burial goods.

The terrace assemblage primarily consists of redeposited settlement material from monuments, supplemented by substantial numbers of finds from superficial non-monument contexts. The main bulk of this material derives from the West Cotton area, which seems to have been the focus of repeated settlement in the Mesolithic and early Neolithic periods, supplemented by some activity in the Bronze Age. The finds from the island constitute a mixture of redeposited material and post-mound knapping floors, supplemented by a small amount of finds from non-monument contexts. Probably all the flint from the island derives from short-term camps around or on the monuments (herders?) or special-purpose camps associated with, for example, hunting and fishing. Settlement in the Redlands Farm area was probably considerably more limited than settlement in the West Cotton Area, and of a less permanent character – where the West Cotton Long Mound assemblage numbered 5,195 pieces of mainly redeposited flint, the Redlands Farm Long Barrow assemblage only numbered 689 pieces.

Chronological overview

The four main assemblages (the fieldwalking survey assemblage, the terrace assemblage, the island assemblage, and the Redlands Farm assemblage) all include worked flint from the Mesolithic, Neolithic and Bronze Age periods. Based on changes in artefact style and significant developments of flint technology, the lithic finds can be attributed to the following six broad chronological groups.

Mesolithic

As shown in Table SS3.101, the terrace – and primarily the West Cotton confluence – was the focus of Mesolithic and early Neolithic settlement. The fieldwalking survey demonstrated that Mesolithic and early Neolithic finds were most common on the lower terrace and in the valley bottom, with artefacts from these two periods becoming scarcer on higher elevations and, in particular, on the Boulder Clay.

Analysis of the three excavated assemblages proved that Mesolithic types are most common amongst finds from the terrace, in absolute as well as relative numbers. For example, 229 microliths were found on the terrace, with only seven on the island and two in the Redlands Farm area; this corresponds to 20.0%, 1.3% and 3.6% of the assemblages (Fig SS3.58). Burins are usually perceived as a Mesolithic type, but they are extremely rare in the Raunds material (15 pieces out of an approximate total of 30,000); this may, to some degree, be due to problems associated with the identification of this artefact type. A small number of core and flake axes have also been found, supplemented by fragments and edge resharpening flakes (Fig SS3.58).

The technological composition of the assemblages shows the same tendencies, with blades being most common in the terrace assemblage (24.9%), and less common in the island (5.2%) and Redlands Farm assemblages (10.4%). The blade ratios indicate that material from Mesolithic and early Neolithic industries centred on the terrace area. The different microblade:macroblade ratios of the many monument and non-monument sub-assemblages reveal that a large proportion of the blades in the terrace area are microblades, and thereby Mesolithic, whereas microblades are scarcer in the other areas.

Within the terrace area, three-quarters of the monument flint comes from the Long Mound, demonstrating that the area around,

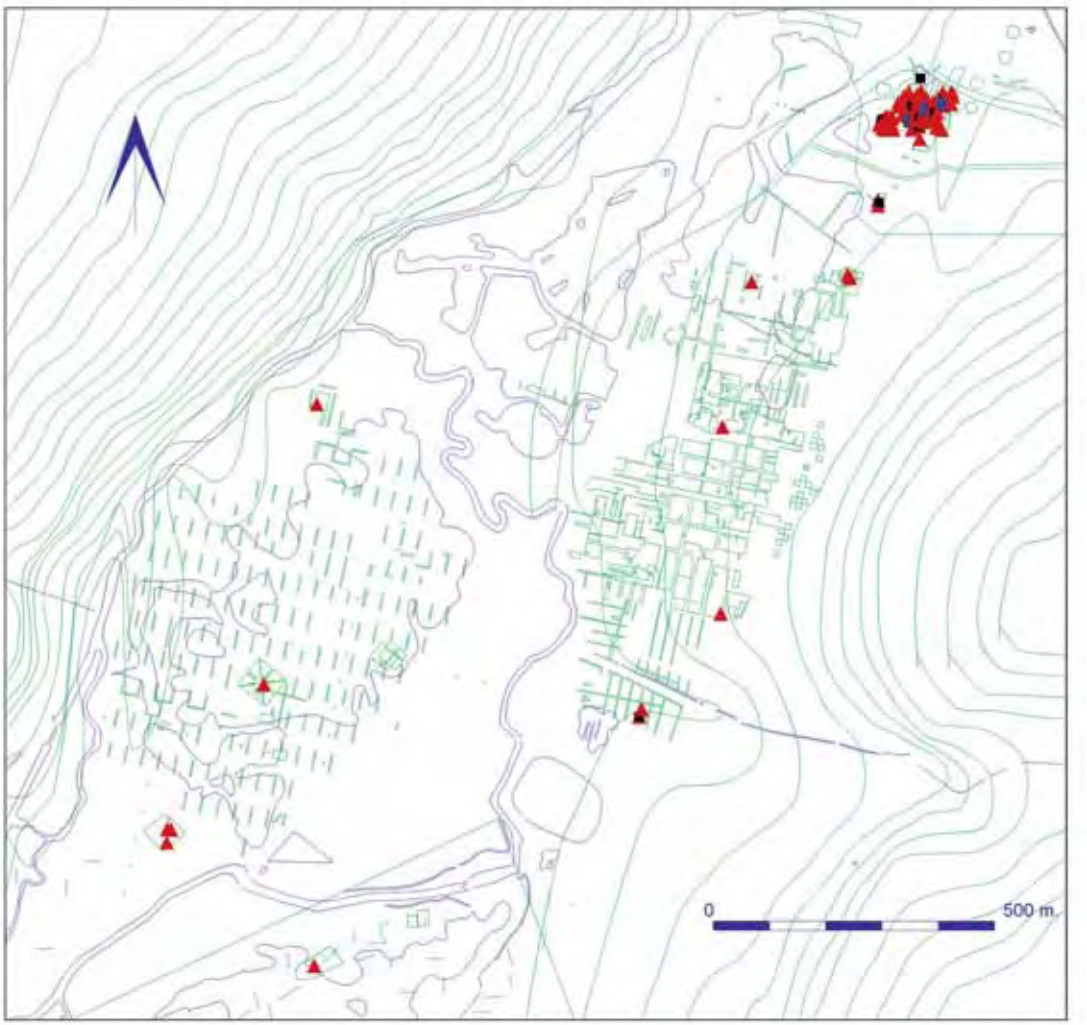


Figure SS3.58 Distribution of all microliths (red triangles), microburins (black squares), and axe sharpening flakes (purple circles) from the excavations. Three axe sharpening flakes from West Cotton are plotted as squares but are invisible among the large number of microliths.

or an area near, this monument was the focus of Mesolithic settlement in the area. Most of the finds from the Long Mound represent redeposited settlement material, and the fact that non-monument contexts on the terrace include a much smaller proportion of Mesolithic types than monument contexts suggests that a large part of the Mesolithic settlement in this area was removed and redeposited in connection with turf-stripping prior to the construction of the Long Mound. Probably as much as 12,000 sq m was affected by this process (SS1.1).

Because most of the finds were redeposited it has been difficult to assess the date of the Mesolithic component. Radiocarbon dating of contexts with chronologically clean Mesolithic assemblages, and radiocarbon dating associated with treethrow holes, suggests activity in the Raunds area in the late Mesolithic period. Pit F5488 beneath the Long Mound contained, *inter alia*, a microlith tip, and charred wood in the top of it is dated to 4780–4460 cal BC (5767±58 BP; UB-3329). Treethrow hole F62123 on Irthlingborough island did not contain any diagnostic tool types, but the technological attributes of the associated microblades prove its Mesolithic affinity; it was dated to 4360–3980 cal BC (5370±80 BP; OxA-3057).

There are technological indications of a chronological division in the Mesolithic material. The two largest collections of microliths, from the Long Mound and from non-monument contexts on the terrace, could both be subdivided into two groups: broad and narrow microliths. With broad and narrow pieces being defined as microliths with widths of more and less than 8mm, edge-blunted points, scalene and sub-triangular pieces, and backed pieces were characterized as generally narrow microliths, whereas obliquely-blunted forms and unclassifiable pieces were mostly broader. Most probably, the obliquely-blunted forms are earlier than the narrower microlith types

(Pitts and Jacobi 1979), although no precise date can be estimated.

A number of chronologically clean Mesolithic assemblages were recovered, partly from pre-monument contexts, and partly from extra-monumental contexts, such as pits or treethrow holes. A number of features beneath the Long Mound contained Mesolithic artefacts (pit F5488 in the west-centre and two areas of pre-mound soil in the east: contexts 5291 and 2072/2074, the second of which surrounded treethrow hole F2073 which also contained artefacts), as did one feature within the area of the Avenue (F87475), another within the Southern Enclosure (F87706) and one non-monument feature from the island (F62123). All chronologically clean Mesolithic subassemblages are characterized by a high blade ratio (*c* 20–40%), and most of the blades are microblades, suggesting a general late Mesolithic date for all these features. F5488 contained one microlith tip, whereas F2073 included an edge-blunted point, context 2072/2074 ten microliths of various types, F87475 a fragmentary double-backed bladelet and F87706 a scalene triangle and a microburin. The associated cores are mostly regular microblade cores, and burins were found in F2073 and F62123. A small number of scrapers, piercers, notched pieces, denticulates and retouched pieces were also recovered from the Mesolithic contexts and features. F2073, F87475, F87706 and F62123 were all treethrow holes.

Some of the Mesolithic assemblages seem to represent small-scale flint-knapping (context 5291, F5488 and F87706), such as blank production or substitution of damaged microliths, whereas other features have a broader spectrum of artefacts (F2073, with context 2072/2074, and F62123). The broader spectrum of activities associated with F62123 are supported by usewear analysis of the assemblage (SS3.7.4). All the above Mesolithic assemblages most probably represent transit camps of mobile hunter-gatherers. It is not possible to determine with

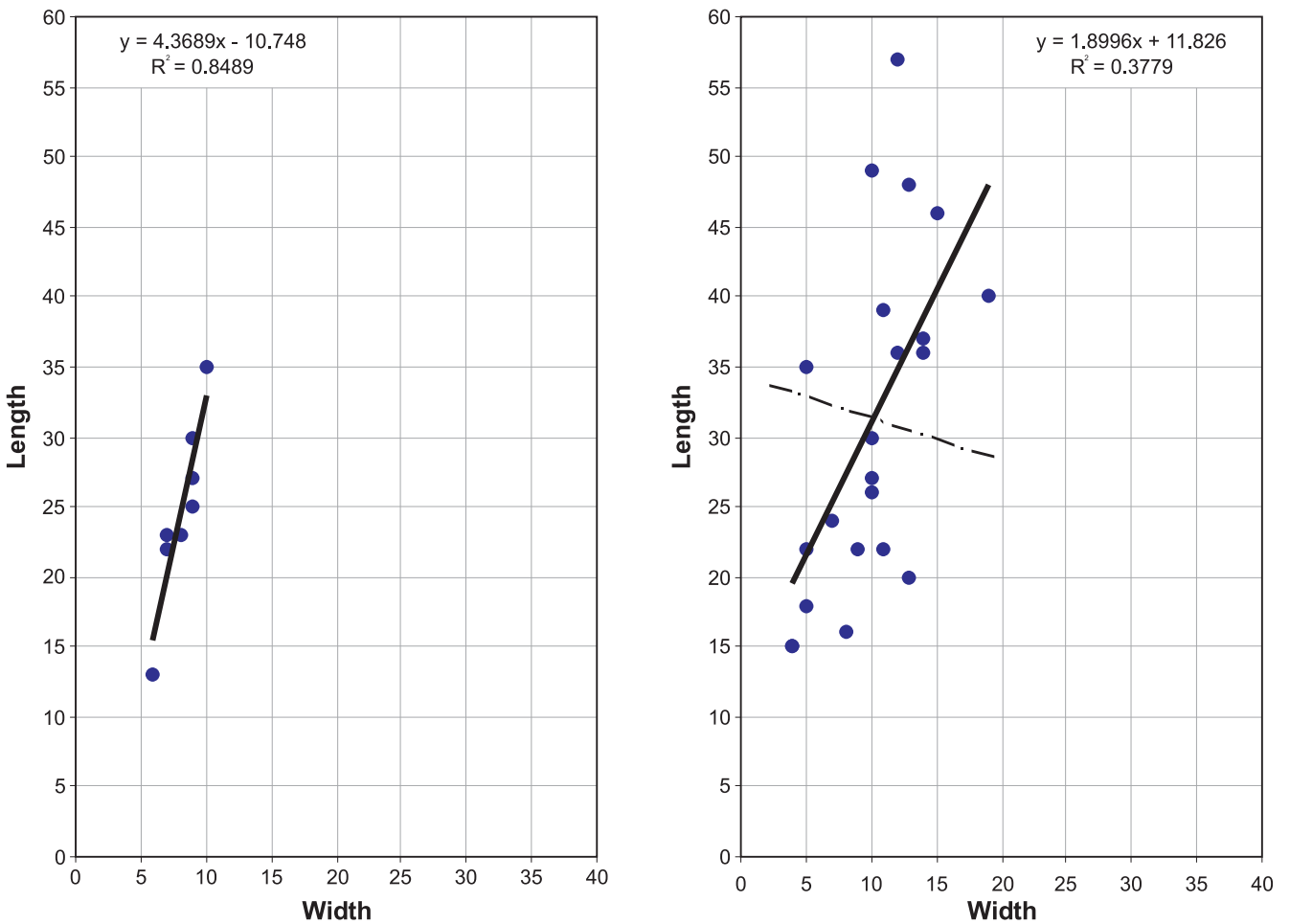


Figure SS3.59
Long Mound. Length:width diagrams of the blades from context 5291 (left) and F2073 (right; including material from contexts 2072 and 2074). Trendlines, including equations and correlation coefficients, have been inserted. In the right-hand diagram a dashed line separates two possible sub- groups of blades (early and late Mesolithic?).

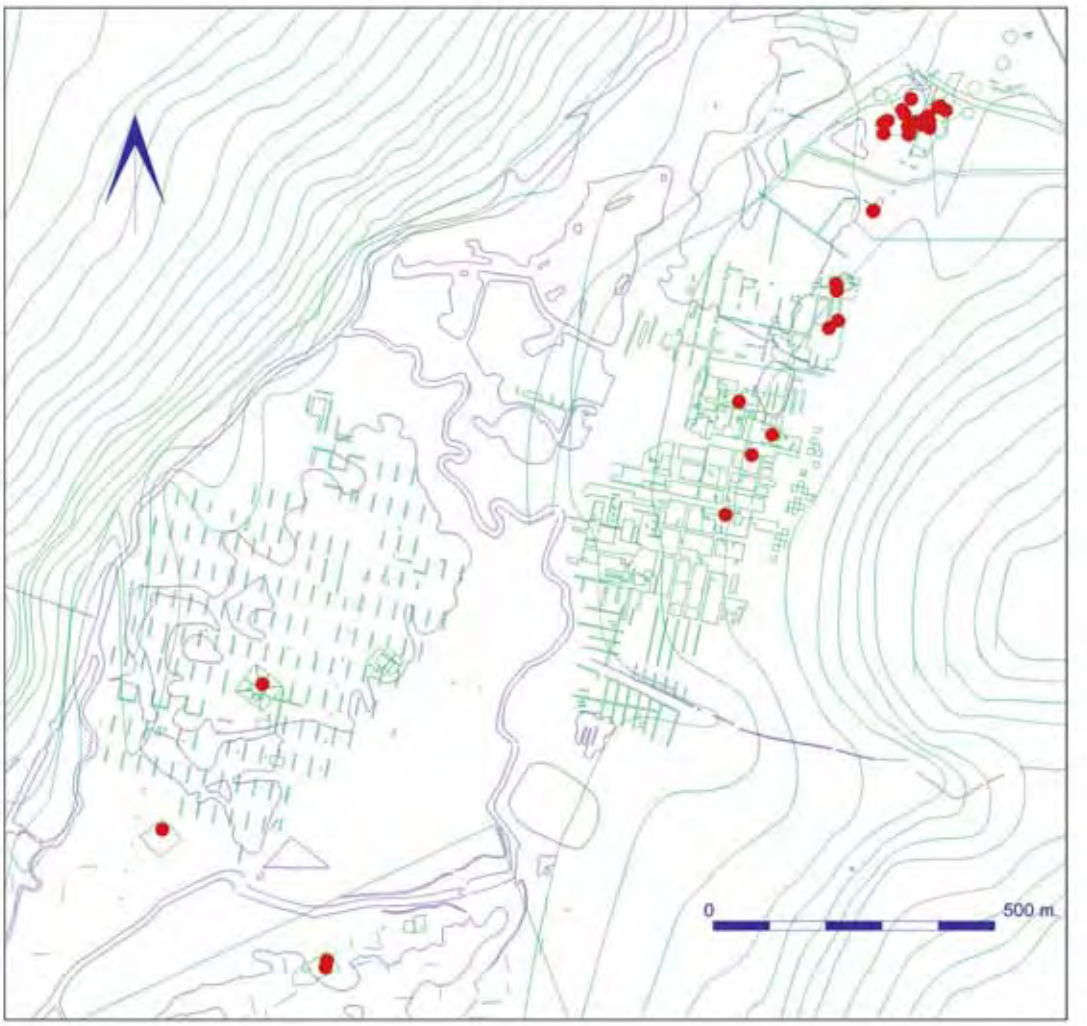


Figure SS3.60
Distribution of all leaf-shaped arrowheads from the excavations.

certainty whether the Mesolithic people sheltered in the hollows of burnt-out trees, or whether they camped under trees which were later burnt, but the fact that the majority (*c* 62%) of the assemblage from F87706 was fire-crazed, suggest the latter option.

Figure SS3.59 suggests that the Mesolithic subassemblages beneath the Long Mound may actually represent different phases of the Mesolithic period. The assemblage from context 5291 (on the left in Figure SS3.59) did not include any microliths, but the blades were all narrow; this assemblage most probably dates to the late Mesolithic. The material from F2073 (on the right in Figure SS3.59) and its surroundings included an equal amount of narrow and broad blades, and in the diagram there is a slight separation of the blades into two sub groups. As the microliths include an equal amount of broad blade types (obliquely-blunted and unclassified specimens) and narrow blade types (edge-blunted and backed specimens), the dichotomy of the diagram may signal the mixture of material from the early and the later Mesolithic. This would obviously be evidence of continued use of the West Cotton area throughout the Mesolithic period.

Little comparative material is available from the Northamptonshire Mesolithic. The Honey Hill collection (Saville 1981b), characterized by narrow microliths with inverse basal retouch (*c* 20%), is considered by Reynier (1998, 181) to possibly represent a transitional stage between early and late Mesolithic assemblages. The only *in situ* assemblage among the Mesolithic material from Spong Hill in Norfolk was radiocarbon dated to 7530–7080 cal BC (8280±80 BP; HAR-7063), or the earlier part of the late Mesolithic (Healy 1988). Assemblages from the full late Mesolithic period are known from the neighbouring county of Warwickshire (Corley Rock, Over Whitacre Site 4 and Over Whitacre Spring; Saville 1981c),

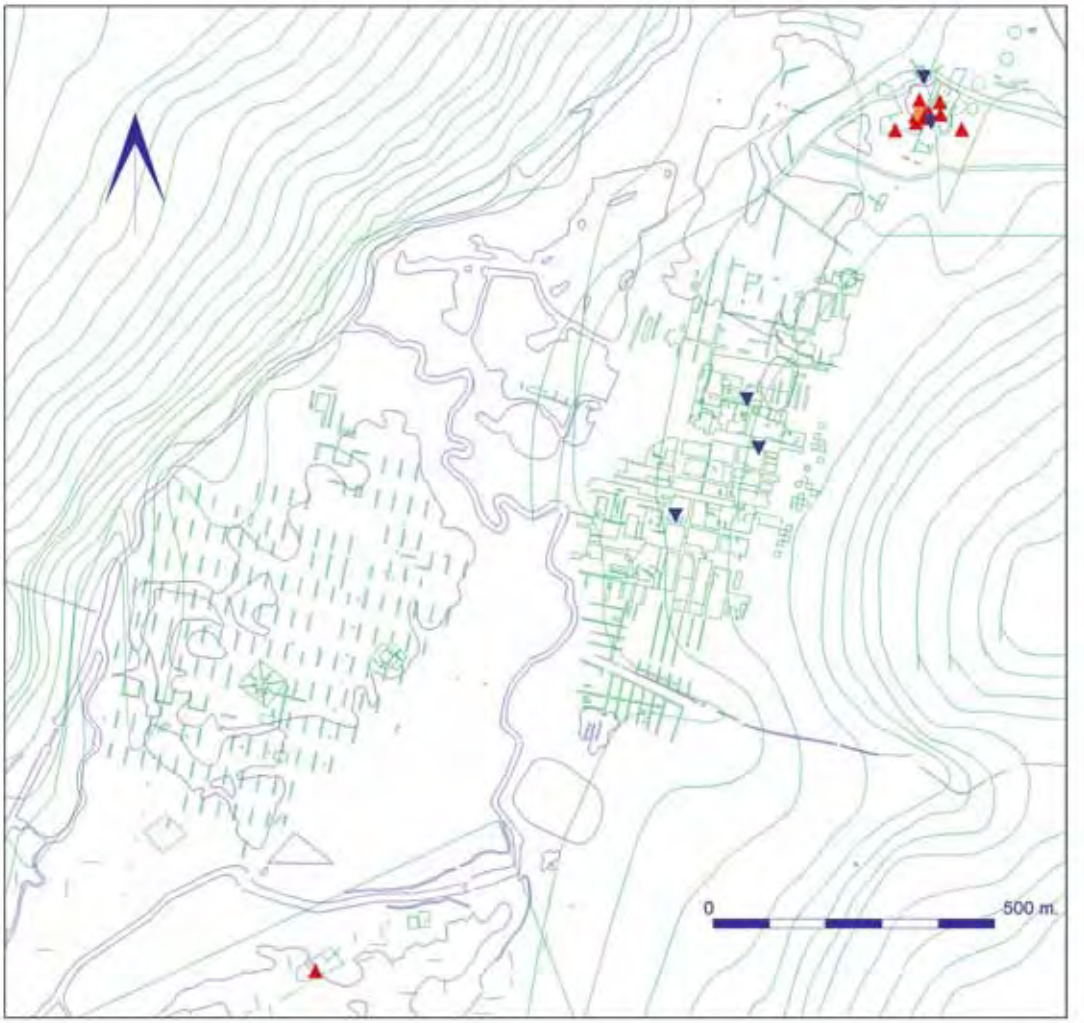


Figure SS3.61
Distribution of flakes and fragments from polished flint axeheads (red triangles), flaked flint axehead (orange circle) and stone axeheads and axehead fragments (purple inverted triangles) from the excavations.

and, although they include some typical 'Honey Hill' microliths with inverse basal retouch, they are generally characterized by narrow microliths and between 20% and 40% of those are geometric and subgeometric forms. The Peacock's Farm assemblage from the Cambridgeshire Fenland (Clark 1955) is probably slightly later, and its mainly narrow microliths include *c* 5% pieces with inverse basal retouch and *c* 17% quadrilaterals. The latest part of the Mesolithic period is generally associated with the dominance of backed bladelets, and at a site in Dorset five backed bladelets and two microliths were securely dated to the fifth millennium cal BC (Allen and Green 1998; Green 2000).

According to the project database, only *c* 1% of the microliths from Raunds have inverse basal retouch, but as the illustrated microliths demonstrate, this feature is in fact fairly common here. Geometric types and quadrilaterals are scarce. Backed bladelets are more common in the Raunds assemblage, and they amount to between one-quarter and one-third of the microliths found in the terrace area.

Early Neolithic

As mentioned in the previous section, the terrace and, in particular, the West Cotton area, was the focus of early Neolithic settlement. To a large extent the early Neolithic settlement covers the same area as the Mesolithic settlement, but minor differences are discernible. As demonstrated by the fieldwalking survey, the Mesolithic and early Neolithic settlement was concentrated at lower elevations, but the composition of the terrace monument and non-monument assemblages suggest that the Mesolithic settlement was concentrated in the West Cotton area near the Long Mound, whereas the early Neolithic settlement may have been more widely distributed. This is indicated by the fact that redeposited artefacts in the West Cotton monuments include a high number

of microliths as well as early Neolithic tool types (leaf-shaped arrowheads, laurel leaves, serrated blades), whereas the almost equally large non-monument assemblage contains relatively few microliths but even more early Neolithic artefacts than the monuments. The distribution of early Neolithic material is demonstrated by the distribution of diagnostic tool types from the period (Figs SS3.60–61), with the distribution of leaf-shaped arrowheads most clearly supporting the spatial trend suggested above.

The blade ratios of the three excavated assemblages differ considerably, with blades being common in the terrace assemblage (24.9%) and less common in the island (5.2%) and Redlands Farm Assemblage (10.4%). Most of the blades from the terrace assemblage are macroblades (*c* 65%), suggesting that a large proportion of the large assemblage from the terrace may be early Neolithic. Though even larger proportions of the blades from the other two assemblages are macroblades, these assemblages have low blade ratios, and therefore probably contain relatively little early Neolithic material.

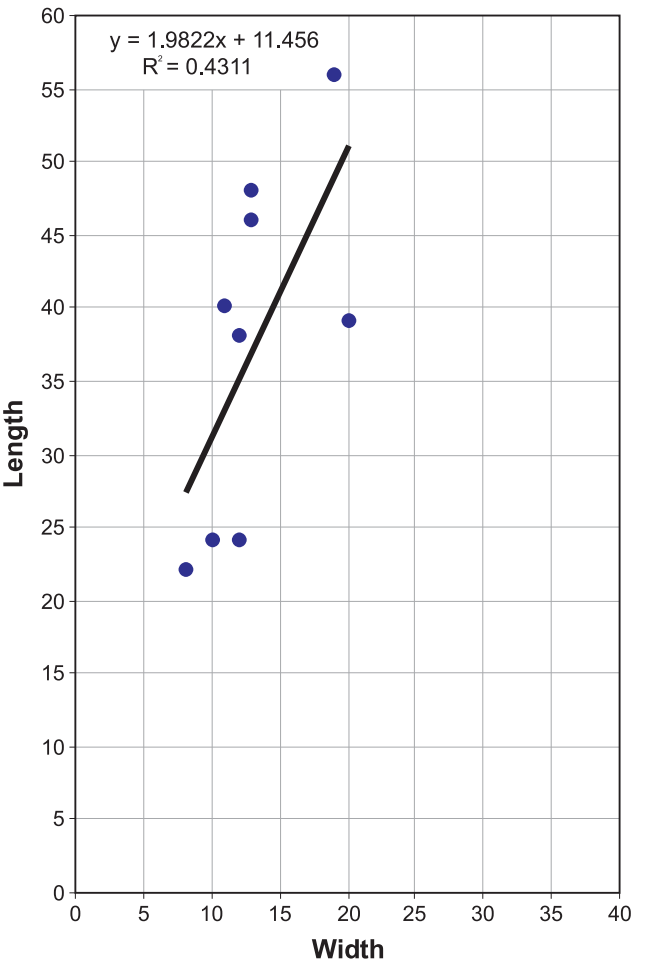


Figure SS3.62 Long Mound. Length:width diagram of the blades from context 5681. A trendline, including its equation and correlation coefficient, has been inserted.

Though a substantial number of the monuments were constructed in the early Neolithic period, only two flint assemblages may be associated with a ritual or funerary context, namely those from F3257 beneath Barrow 6 and F6310/F6311 beneath the Turf Mound. F3257 only contained one find, a large conical blade core in chalk flint (Fig SS3.41: 58). The flint type makes this artefact a possible import from the English chalk flint region to the south, and the careful positioning of the core with its apex downwards and the platform roughly horizontal suggests that this may be a deliberate deposition.

The flint assemblage from F6310/F6311 was associated with a three-throw hole, and it included a number of flakes, blades, non-bulbar fragments and two leaf-shaped arrowheads (Figs SS3.44–45: 75, 76). The excavators (SS1.3) suggest two likely scenarios, namely 1) that the recovered scatter may be the chance survival of part of a more extensive topsoil scatter where it lay slightly deeper over the natural feature, and 2) that it could represent a small but deliberate deposit of flint within the hollow. The two leaf-shaped arrowheads are of roughly the same type (types 3A and 3B), and may indeed represent a small deposition. However, the bulk of the assemblage is in at least five different flint types, and the heterogeneous composition of the assemblage supports option 1. Most probably the finds from the hollow represent a mixture of plain knapping debris and a deliberate deposition of two leaf-shaped arrowheads.

The Raunds collection includes another important assemblage from the early Neolithic, namely context 5681 in the Long Mound. This assemblage includes flakes, blades, cores, core rejuvenation flakes, and a notched piece. Two narrow-blade microliths are most probably residual. The assemblage is the product of a macroblade industry, and it was contained in a distinctive kind of turf within a bay of the substructure, suggesting that it was removed from the same early Neolithic settlement in connection with the stripping of topsoil for the construction of the Long Mound.

Several comparative assemblages are available from Northamptonshire and neighbouring counties. The material from Hurst Fen in Suffolk (Clark and Higgs 1960) represents domestic occupation, and as such it is relevant for comparison with the redeposited and non-monument collection from Raunds. The assemblages from Briar Hill in

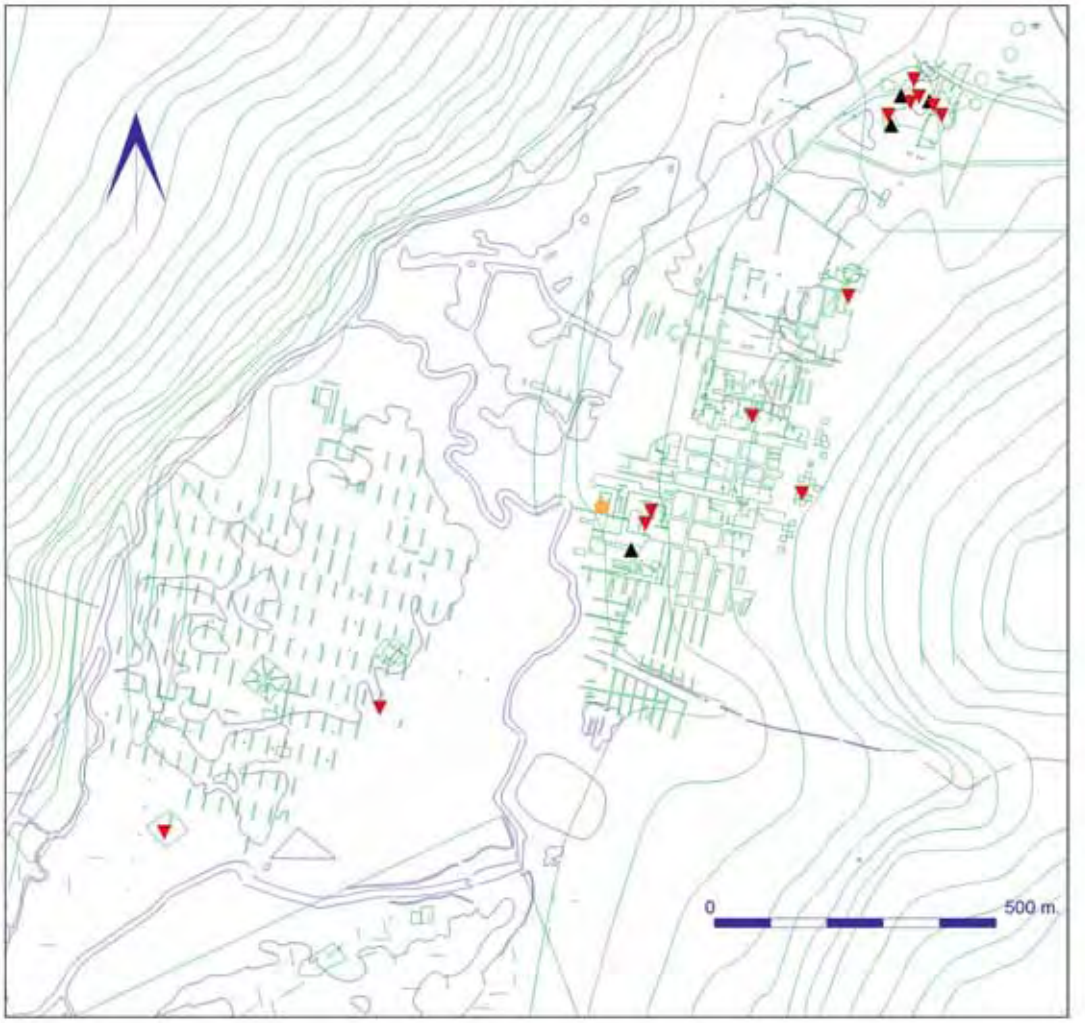


Figure SS3.63 Distribution of chisel arrowheads (red inverted triangles), oblique arrowheads (black triangles) and miscellaneous transverse arrowheads (orange circles).

Northamptonshire (Bamford 1985) and Etton in Cambridgeshire (Pryor 1998a) are both from causewayed enclosures and add further information on domestic flint from the region. They both contain artefacts from early Neolithic and later industries, but generally separated on different features and contexts. The assemblage from the enclosure at Broome Heath in Norfolk (Wainwright 1972) is mostly early Neolithic, but it is difficult to achieve an overview of the assemblage as the general artefact list (table 4) has had its column headings reversed. Further comparanda are supplied by the assemblages of Spong Hill (Healy 1988) and the Wissey Embayment in Norfolk (Healy 1996), and small collections from Fengate (Pryor 1974a, 10–13; 1978a, 7–10).

The above assemblages present a detailed picture of early Neolithic industries, and by metrical and attribute analyses of debitage it has been possible to illustrate the key technological features distinguishing early and middle Neolithic flint technology (macroblade production) from that of the later industries (flake production).

The later fourth millennium

The later fourth millennium constitutes a transitional phase between the early and the late Neolithic periods, and it is frequently referred to as middle Neolithic. The period is characterized by pottery of the Peterborough series (eg Ebbsfleet ware), and the flint of the period partly represents blade industries (early), and partly flake industries (later). Flint assemblages from the later fourth millennium may include late leaf-shaped arrowheads as well as chisel arrowheads (transverse arrowheads of Clark's types B–D; Clark 1934).

In general, the only certain diagnostic types from the middle Neolithic are kite-shaped arrowheads (Green 1980, 97) and chisel arrowheads (Green 1980, 111–4). Kite-shaped arrowheads are practically

absent, only one example being approximately kite-shaped (from a non-monument context in the Stanwick area). Chisel arrowheads are more common, although not from monument contexts. Only four chisel arrowheads were recovered from monuments (the Long Mound, Barrow 1 and Barrow 4). Most of the chisel arrowheads (fourteen specimens) derive from non-monument contexts, equally distributed on the West Cotton area and the remainder of the terrace (Fig SS3.63). In connection with the fieldwalking survey only one chisel arrowhead was recovered among many generally late, less diagnostic tool types.

As little flint can be associated with this period with any degree of certainty, it is difficult to assess the character of the middle Neolithic activity in the Raunds area. However, the small number of middle Neolithic arrowheads in any Neolithic or Bronze Age Raunds monument suggests that the focus of settlement may have shifted slightly in comparison with the Mesolithic and early Neolithic focus on the valley floor and lower terrace in general, and the West Cotton area in particular. The roughly equal distribution of chisel arrowheads on the West Cotton area and the remainder of the terrace may indicate a shift of focus towards the Stanwick area. The three chisel arrowheads redeposited in Barrows on Irthlingborough island signify some later fourth millennium activity there. The distribution of artefacts from the fieldwalking survey suggests a general expansion onto higher elevations during the late Neolithic and Bronze Age periods (see above and Parry and Humble 2006).

Only F5257 and F5263 in the base of the northern 'quarry pit' of the Long Mound represent chronologically clean samples of material from the later fourth millennium. Both features contained Peterborough Ware. The assemblages from F5257 and F5263 are relatively small and include roughly equal proportions of flakes and broad blades, which are supplemented by a number of cores and a chisel arrowhead (F5263). Organic material from the 'quarry pits' suggests a date for the assemblages of 3650–3370 cal BC (4770±45 BP and 4750±45 BP; OxA-7943; OxA-7944).

The assemblage from the ditches of the Long Barrow (Phase 2.2.ii) is probably less chronologically clean, but it is thought that the major part of this assemblage belongs to the later fourth millennium. Some of the finds may be later, and they possibly relate to early or middle Bronze Age activities. The assemblage from the Long Barrow ditches contains a combination of flakes and blades, but with a more pronounced dominance of flakes (percentage distribution: 93:7); it also included several cores and tools, one of which is a rough-out for a leaf-shaped arrowhead (Fig SS3.29: 8).

The character of the Long Mound assemblages is uncertain, but they may represent limited post-mound knapping events. The character of the material from the secondary fills of the Long Barrow ditches is less certain. The fact that most of the finds from the ditches are concentrated in the two north-east terminals of the ditches, at the high wide end of the barrow, combined with the deposition of most of the flint in one ditch and pottery in the other, suggests that this lithic assemblage may be associated with ritual activities carried out at the barrow's higher, wider north-east end.

Local comparanda are supplied by a number of mixed and chronologically clean assemblages, such as Ecton (Moore and Williams 1975) and Briar Hill (Bamford 1985) in Northamptonshire, Middle Harling in Norfolk (Healy 1995b) and Etton (Pryor 1998) in Cambridgeshire. They support the impression of the period presented above, that is, with an earlier phase characterized by blades/elongated flakes and leaf-shaped arrowheads, and a later phase characterized by flake production and chisel arrowheads (cf Wainwright and Longworth 1971, figs 67 and 68). A substantial number of chisel arrowheads were retrieved in connection with the landscape project at the Wissey Embayment in Norfolk (Healy 1996).

Late Neolithic

Distinguishing lithic material from the late Neolithic is associated with the same practical problems as distinguishing material from the later fourth millennium. Few types are exclusive to the late Neolithic, whereas many of the types common in the period may be perceived as simply ' generally late types'. Basically, the only types exclusive to late Neolithic assemblages are the different subtypes of the oblique point (types E–I; Clark 1934), whereas the general technology (a flake industry) is common to all late prehistoric industries. All other diagnostic types are types of low diagnosticity shared either with earlier Neolithic industries or later Bronze Age industries.

Only one oblique arrowhead was found in a monument, the West Cotton Long Mound (Fig SS3.40: 53). A further four were recovered during the Raunds excavations, two

from the West Cotton area, and two from the remainder of the terrace (eg Fig SS3.48: 116). Though fewer in number than the chisel arrowheads, the distribution of the oblique points clearly mirrors that of the former (Fig SS3.63). During the fieldwalking survey four oblique arrowheads were retrieved. As suggested above, the distribution of chisel and oblique arrowheads may be evidence of a shift in the focus of settlement, with the focus of settlement and activity in the Mesolithic and early Neolithic clearly being the West Cotton area, whereas the focus of settlement in later prehistory may be the Stanwick area with associated activities in the neighbouring areas and on higher elevations.

One minor assemblage from the Stanwick area has been radiocarbon dated to this period, namely the assemblage from pit F31820 (2920–2580 cal BC; 4210±70 BP; OxA-3056). It contained a number of Grooved Ware sherds, and the character of the lithic assemblage is consistent with a late Neolithic date. The artefacts are obviously the products of a flake industry (Fig SS3.64), and the tools included one piercer, one serrated piece and a knife.

Few late Neolithic assemblages are known from Northamptonshire and neighbouring counties, with the most significant ones being Storey's Bar Road, Fengate, Cambridgeshire (Pryor 1978a) and Hunstanton and Middle Harling in Norfolk (Healy *et al* 1993; Healy 1995b). All three assemblages include material from other periods as well, but a substantial proportion of the late Neolithic artefacts derive from well-defined features, such as pits. The late Neolithic subassemblages are generally characterized by flake industries.

At Hunstanton a number of chisel arrowheads were associated with Grooved Ware (Healy *et al* 1993, 34), suggesting that the general perception of chisels being associated with Peterborough Ware and oblique arrowheads with Grooved Ware may be an oversimplification (discussion in Saville 1981a, 49–50). This notion is further supported by material from pits at Fengate, where chisel and oblique arrowheads were found together (eg Pit W17; Pryor 1978a, 21), and Green (1980, 235–6) has documented the association of chisel arrowheads with the Clacton and Woodlands substyles.

Probably, oblique arrowheads are exclusively late Neolithic, whereas the simpler forms of the transverse arrowhead may appear in Peterborough Ware (later fourth millennium) as well as Grooved Ware (late Neolithic) contexts. A substantial number of stray oblique arrowheads were recovered in connection with the Wissey Embayment area project (Healy 1996, 60–61).

Early Bronze Age

As discussed above, a fair number of tool types are diagnostic to the later prehistoric flake industries in general, but few late types have a higher degree of diagnosticity. Only three of the tool types found in the Raunds area are exclusive to the early Bronze Age, namely the dagger, the barbed and tanged arrowhead (including the related triangular point) and the plano-convex knife.

Two daggers were found in the Raunds area (Fig SS3.43: 61; Fig SS3.51:131): one in F3259 in Barrow 6 (on the terrace), and one in F30476, Barrow 1 (on Irthlingborough island). Both were associated with primary Beaker burials. A small foliate knife (Fig SS3.46: 90) formed part of a cremation in Barrow 5 (F47171); morphologically, it is a miniature dagger and as such it dates to the early Bronze Age. This date is supported by the Collared Urn containing the cremation, against the side of which the artefact lay.

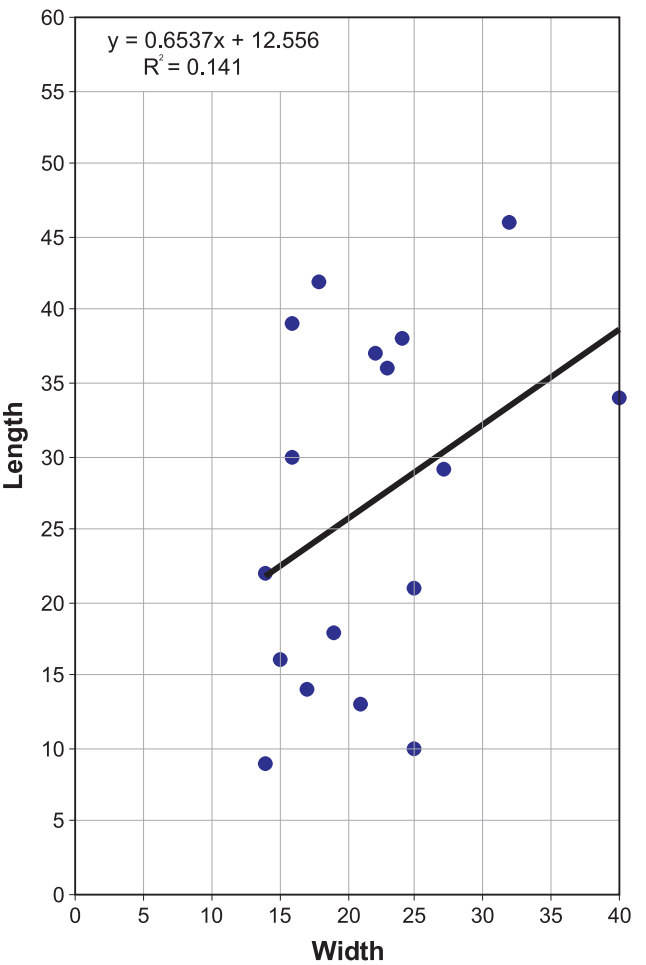


Figure SS3.64 Grooved Ware pit F31820. Length:width diagram of flakes and blades. A trendline, including its equation and correlation coefficient, has been inserted.

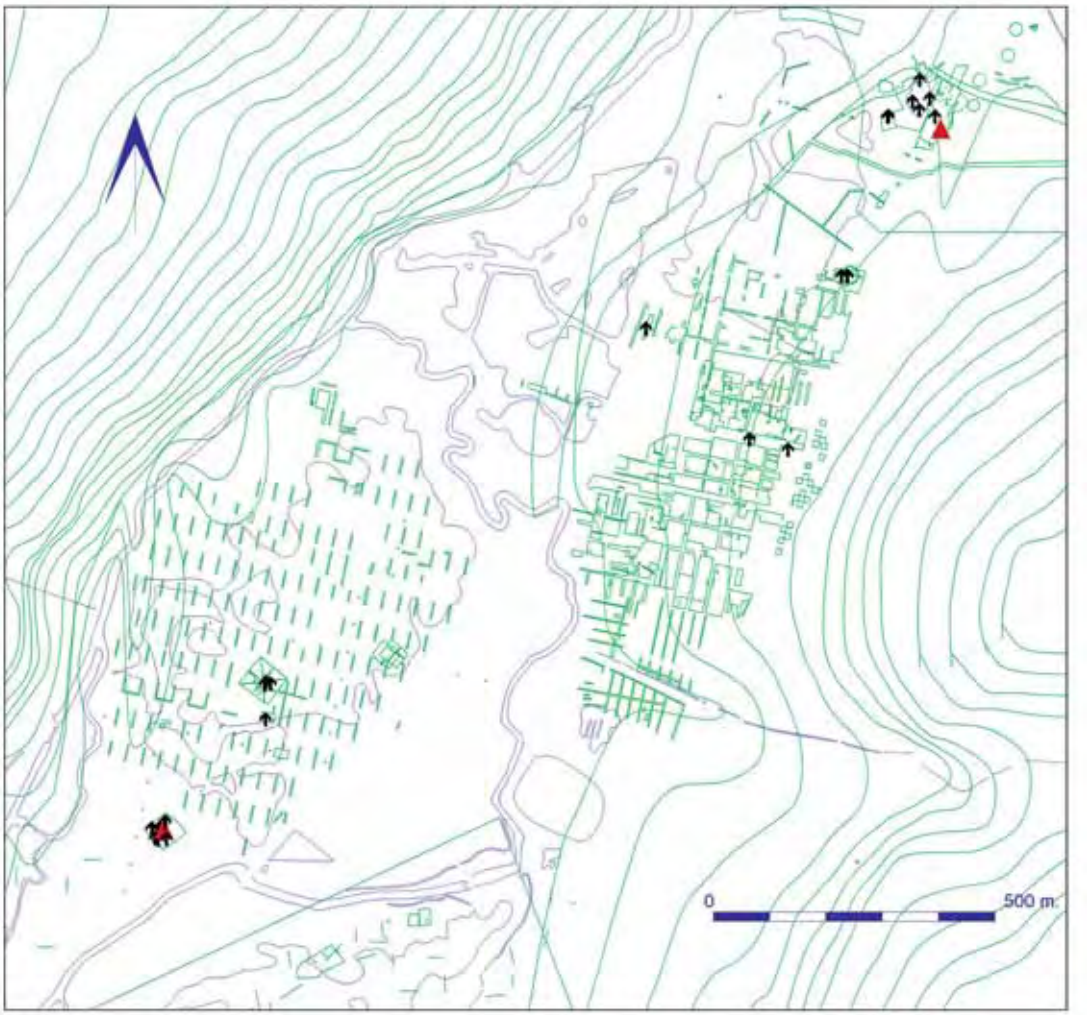


Figure SS3.65 Distribution of barbed and tanged arrowheads (black arrows) and triangular arrowheads (red triangles) from the excavations.

A dagger was found in the ploughsoil near Slater's Lodge, Higham Ferrers, just south-east of the boundary of the RAP; apart from a slightly less tapering handle, it is similar in shape and size to the daggers in the Raunds burials (Humble SS3.7.3; Figs SS3.27–28).

Barbed and tanged arrowheads were recovered from all landscape units, as well as from the fieldwalking survey. They were common in monuments and in the non-monument contexts between and around them. Two were found in post-mound contexts at the early Neolithic Long Mound and probably represent disturbed secondary deposits (there is evidence of Beaker activity at the monument). Barbed and tanged points were recovered from most of the early Bronze Age barrows, either from recognizable burials or from mounds or ditch fills. Five points derive from Barrow 5 (from the central Beaker burial or cenotaph; Fig SS3.45: 83–87), seven from Barrow 1 (from redeposited mound material; Figs SS3.53–55: 137, 145, 148, 153, 154, 157, 162), and four from Barrow 3 (two from the mound, and two from post-construction deposits; Fig SS3.56: 168, 169, 172, 177). A Green Low point from the mound of Barrow 1 was burnt and probably derives from a cremation (Fig SS3.53: 137). Thirteen barbed and tanged arrowheads were recovered from non-monument contexts; one was retrieved from the island, and the remaining twelve were evenly distributed across the West Cotton area and the remainder of the terrace. Though many generally late types were recovered during the fieldwalking survey, only three barbed and tanged arrowheads are included in the fieldwalking survey assemblage. A triangular point was found in Barrow 1 (in the central Beaker burial; Fig SS3.50: 130).

Only eight plano-convex knives are known from the excavation areas, all representing above-average manufacturing skills. Four are from monuments: one is from the

east end of the Long Mound (Fig SS3.39: 37), two are from Barrow 1 (mound and ditch fills; including Fig SS3.54: 155), and one is from the post-mound flint scatter on Barrow 3 (Fig SS3.56: 171). The plano-convex knife from the flint scatter is on a good blade, and it obviously does not belong to this middle to late Bronze Age sub assemblage. Most likely, all plano-convex knives from Raunds monuments represent disturbed secondary burials. Two plano-convex knives were recovered from non-monument contexts in the West Cotton area, and two from similar contexts in the Stanwick area. A plano- convex knife was also retrieved during the excavation of the Long Barrow in the Redlands Farm area (Fig SS3.30: 11). It formed part of the post-mound subassemblage in the secondary ditch fills and, though most of this assemblage is assumed to be later Neolithic, sherds of possible early Bronze Age style suggest that small amounts of later material may be present as well. Only one plano-convex knife was found in connection with the fieldwalking survey.

The distribution of the early Bronze Age tool types generally reflects the impression of the distribution of later fourth millennium and late Neolithic material (Fig SS3.65). In all three cases, the distribution of diagnostic types outside monuments shows an approximately even distribution across the West Cotton area and the remainder of the terrace. In contrast, the material from the Mesolithic and early Neolithic period saw a concentrated focus on the West Cotton area. This fact probably demonstrates a shift in the focus of general activity towards the Stanwick area. Though the presence of many generally late tool types in the area covered by the fieldwalking survey suggests an expansion of activity onto the clays in later prehistory, few strictly diagnostic types support this. An explanation of this phenomenon may be that the 'better' diagnostic types are frequently associated with funereal contexts, and as no burial monuments are known from the higher elevations in the Raunds area, but many from the valley floor and lower terrace, the distribution pattern will be biased.

Table SS3.104 lists those Raunds burials that contained flint grave goods. The table also includes information on burial type, date, and other types of grave goods. The Barrow 1 Green Low point was found in the mound, and only its burnt state suggests that it may have been part of a cremation burial. The Phase 5.3 cremation from Barrow 5 was radiocarbon dated to the middle Neolithic,

Table SS3.104. Early Bronze Age burials with flint grave goods

Monument	*Phase*	*Feature*	*Burial type*	*Flint artefacts*	*Pottery*	*Other finds*	*cal BC*
Barrow 1	2.1	30476	Primary — inhumation	1 dagger, 1 triangular point, 2 knives, 2 scrapers, 1 ret pieces, 1 core rejuvenation flake, 5 flakes	Beaker	5 jet buttons, 1 amber ring, 3 spatulae, 1 boar tusk, slate 'sponge finger', chalk object	2200–1920
	3.2	30426	?Secondary — cremation	?1 Green Low point, 2 flakes			
Barrow 5	1.2	47149	Primary — ?cenotaph	5 Sutton points	Beaker		
	5.2	47171	Secondary — cremation	1 leaf-shaped knife or miniature dagger	Collared Urn		
	5.3	47087	Secondary — cremation	1 fabricator, 1 flake, 1 blade			3350–2920
Barrow 6	1.2	3259	Primary — inhumation	1 dagger, 1 knife, 1 flake	Beaker	1 jet button, 1 chalk lump	2130–1820
	7	3178	Secondary — cremation	1 flake	Collared urn	1 cow or horse tooth, 1 ceramic stud	
Long Barrow	3.2	131	Secondary — inhumation, 3 individuals	2 flakes	Beaker	1 Cu alloy basket 'earring', 1 shale armlet	1890–1630 2290–1980
		163	Secondary — cremation	1 knife			1860–1420

but the date of this cremation may also reflect the use of pyre material of disparate ages. The knife from the Long Barrow possibly represents a disturbed burial.

There is a tendency for the early inhumation burials to be more richly furnished than the later cremation burials. The inhumation burials generally include well-crafted items, such as daggers, arrowheads and knives, and usually they contain a number of flint artefacts and multiple flint and non-flint artefact types. In contrast, where cremations burials contain any artefacts at all, most contain one or a few flints and frequently of rather plain types, eg flakes, and they rarely contain other grave goods.

The inclusion of chalk items appears to be associated with Beaker burials, and the phenomenon is highly relevant to the discussion of the possible importation of high-grade flint from the chalk flint region to the south. Chalk artefacts are foreign to the Raunds area (although small amounts of chalk may be found in the local till), and they may indicate the existence of a Bronze Age exchange network involving this area and the chalk flint region.

Most of the domestic early Bronze Age material from Northamptonshire and neighbouring counties was recovered as individual pieces from multi-period occupation sites such as Spong Hill (Healy 1988) and the Wissey Embayment (Healy 1996) in Norfolk, and the Newark Road subsite at Fengate (Pryor 1980). The only local assemblage providing an impression of a full early Bronze Age flint inventory is that of Plantation Farm, Shippea Hill, Cambridgeshire (Clark 1933). This Fenland settlement material is not chronologically clean *sensu stricto*, as it contains a small number of microliths and barbed and tanged arrowheads assumed to represent different stages of the early Bronze Age (Green Low and Conygar types, see Clark 1933, figs 2–6; cf Green 1980, 120–143, table 14). However, the vast majority of the lithic assemblage is thought to be early Bronze Age, which is supported by the associated pottery. The industry is a flake industry which aimed at the production of squat blanks, and the tool group includes diagnostic tools, such as, different types of barbed and tanged and triangular arrowheads, plano-convex (and other) knives and serrated flakes. Leaf-shaped arrowheads, fragments of polished axes and narrow finely-serrated flakes are completely absent.

Comparanda for the Raunds early Bronze Age grave goods are presented by Green (1980, table 14), with supplementary information in his Assemblage List (ibid 287–420). Only one of the listed burial contexts is from Northamptonshire or neighbouring counties, but the early Bronze Age burial customs seem to have been fairly standardized throughout Great Britain, and the grave goods described in Green's table 14 encompass the lithic and other types recovered from early Bronze Age graves in the Raunds area (Table SS3.104).

Middle and late Bronze Age

No artefacts are exclusively diagnostic to this period, but middle and late Bronze Age assemblages usually have a higher proportion of notched and denticulated pieces. The island assemblage has the highest proportion of notched pieces (8.8%) and the Redlands Farm assemblage the lowest proportion (1.8%), whereas the percentages of notched pieces are approximately the same in the fieldwalking survey and terrace assemblages (4.3% and 5.7%; Table SS3.101). These figures probably reflect two facts, namely 1) that the island assemblage contains large post-mound scatters from the later Bronze Age, and 2) that the group 'notched pieces' includes not only the typical crude flakes with large notches known from the later Bronze Age, but also flakes and blades with notches formed by use or post-depositional effects (eg trampling, trowelling) or to facilitate hafting. The latter pieces may be dated to any prehistoric period, and the almost identical percentages from the fieldwalking survey (mostly later material) and terrace (mostly earlier material) assemblages are probably due to this fact.

Denticulates are more reliable diagnostic pieces, as this artefact type is more precisely defined. Pieces with finer indentations, which are diagnostic of earlier periods, have been separated out as different types (saws, serrated pieces); pieces with coarse indentations, that is, denticulates, are particular to later prehistoric industries, not least the industries of the middle and late Bronze Age. The assemblages from the fieldwalking survey and the island have almost identical proportions of denticulates (3.4% and 3.6%), and the assemblages from the terrace and Redlands Farm have low proportions (1.5% and 1.8%; Table SS3.101). This supports the notion of the fieldwalking survey and island assemblages as having large later Bronze Age components.

Two chronologically clean assemblages were dated to this period, namely the post-

Table SS3.105. Technological attributes of later Bronze Age assemblages (Barrow 1, Phase 8.1 and Barrow 3, Phase 5.3)

Many pieces in coarser raw materials	*c* 12–14%
Many flakes	*c* 80–82%
Many non-bulbar fragments	*c* 13–15%
Few blades	*c* 3–4%
Few cores with blade scars	*c* 0–6%
Low flake L:W ratio	*c* 1
Many primary flakes	*c* 8–12%
Many hinged flakes	*c* (16–)33%
Many cortex-covered platforms	*c* 25%
Many pronounced bulbs	*c* 83%[1]
Many double/triple bulbs	*c* 16%[1]

[1]The proportions of bulb types are based on attribute analyses of samples

mound knapping floors from Barrow 1 (Phase 8.1) and Barrow 3 (Phase 5.3). The later Bronze Age assemblages are characterized in Table SS3.105.

The debitage and cores define the two post-mound assemblages as the products of one or more flake industries, aiming at the production of broad flakes by generally crude techniques. The relatively few hinged flakes in the Barrow 3 assemblage (*c* 16%) may be due to this assemblage being slightly earlier than the Barrow 1 assemblage, or it may include some earlier material. In comparison, the assemblage of the fieldwalking survey is characterized by *c* 73% flakes, *c* 4% blades, *c* 22% non-bulbar fragments, and a dominance of pronounced bulbs – further technological comparison was not possible due to differences in levels of recording.

The fact that as much as 12–14% of the post-mound scatters are in coarser flint varieties links these subassemblages with the exploitation of the Boulder Clay plateau, where this flint variety is abundant (Humble 2006). In contrast, only *c* 1–6% of the assemblages from the terrace are in coarser flint varieties, with the island barrows having slightly higher proportions due to the inclusion of the post-mound material (*c* 7–8%). The earlier phases of the island barrows include practically no artefacts in coarser flint, demonstrating that this raw material's affiliation is with the later Bronze Age, and not with other late prehistoric flake industries. Only 4% of the flint from the fieldwalking survey is in coarser flint varieties, which probably just demonstrates the mixed character of this assemblage. Even though a majority of the fieldwalking survey assemblage may be late (later fourth millennium, late Neolithic, early and later Bronze Age), the composition of the material from the island barrows suggests that only the industries of the later Bronze Age exploited this resource extensively, and the mixture of material from several late industries will automatically lower the proportion of the coarser flint. The non-monument contexts from the terrace and from the island yielded few denticulates (2.2% and 3%), but without the support of further information it is not possible to estimate the level of later Bronze Age activity in these areas.

Later Bronze Age flint assemblages are known from several sites in southern England, but in most cases they are relatively small or mixed with material from other periods, like the finds from the settlements and ditch systems of Fengate (Pryor 1980; 1984), and the finds from the Dorchester By-Pass (Bellamy 1997). A number of post-mound knapping floors are known from barrows in Wiltshire (Saville 1980), producing finds similar to the post-mound flint assemblages from Raunds Barrows 1 and 3. The largest middle and late Bronze Age assemblages are provided by the collections from the flint mines at Grimes Graves in Norfolk. The finds from Shaft X Phases II and I cover the middle and late Bronze Age periods, respectively (Herne 1991), and the finds from the 1972 Shaft and Trenches 7B and 8B cover the middle Bronze Age period (Saville 1981a). Both shafts were constructed in the late Neolithic in connection with the extraction of flint and, after abandonment and erosion, they were subsequently used as rubbish dumps for nearby Bronze Age settlements. The composition of these assemblages differs somewhat from that of the Raunds knapping floors, particularly regarding the presence of 'rods'. These elongated, prismatic tools with steep lateral retouch (for typological definition, see Saville 1981a, 10) are common at Grimes Graves (*c* 5% of all tools), but absent from the Raunds assemblage (for discussion of the confusion of rods and fabricators, see Saville 1981a, 62–63).

Cross-period topics

A number of topics relate to more than one period, such as the use of lithic raw materials, treethrow holes and their lithic assemblages, and the burning of lithic artefacts. These topics are discussed below.

Raw materials

All Raunds flint artefacts were attributed to one of three possible flint types, fine-grained,

medium-grained and coarse-grained flint. Fine-grained flint can be found everywhere in the Raunds area, although most abundantly on the valley floor and on the lower terrace. Medium-grained and coarse-grained flint types are associated with higher elevations and, particularly, the Boulder Clay plateau (Humble 2006).

In the Raunds assemblages coarse-grained flint is rare, and in the comparison of the many monument and non-monument assemblages medium-grained and coarse-grained flint were treated as one flint category, 'coarser flint varieties'. In general, little difference was observed between the raw material compositions of the larger assemblages. All landscape units (including the fieldwalking survey assemblage), monuments and non-monument contexts are heavily dominated by fine-grained flint, with coarser flint types making up between 3% and 8% of the individual assemblages. Some smaller assemblages differ slightly, probably mainly due to random statistical fluctuations: on the terrace, small monument assemblages may have no coarser-grained flint, and on the island, Barrow 4 has as much as 13.4% coarser-grained flint (assemblage size eighty-seven pieces; three pieces of coarser flint).

However, some interesting trends were observed between subassemblages within the larger monument assemblages. In the Long Mound assemblage, flint from pre-mound contexts has a very low proportion of coarser flint varieties (1.6%), with mound and post-mound contexts having on average 6.4%. In the larger island assemblages (Barrows 1 and 3) flint from pre-mound and mound phases is almost exclusively fine-grained, whereas the post-mound subassemblages include much more coarser flint: Phase 8.1 from Barrow 1 has a proportion of 12.5% coarser flint, and Phase 5.3 from Barrow 3 has a proportion of 13.9%. Thus, only the later Bronze Age assemblages are associated with significantly above average proportions of coarser flint varieties, which supports the suggested late prehistoric expansion onto heavier soils at higher elevations (Parry and Humble 2006).

The fine-grained Raunds flint is of a quality similar to that of chalk flint and, in the absence of cortex, the two flint types are indistinguishable. However, powdery cortex and large sizes have identified a small number of artefacts as imports from the southerly chalk province: from the fieldwalking survey a single scraper has thick powdery cortex indicative of chalk flint, and the sizes of the Beaker daggers from Barrows 1 and 6, and the blade core deposited beneath Barrow 6, indicate importation from the chalk region. Contact with the chalk province is further substantiated by the deposition of chalk objects in Beaker burials (Barrows 1 and 6). As it is impossible to determine whether smaller, decorticated artefacts are in chalk flint, the scale of importation from the chalk region can not be estimated, and it is not possible to assess whether the imported flint was used for particular implements (prestige objects?) or whether it was imported in bulk and used for everyday tools, as in the case of flint imported from Jutland to Norway in the Scandinavian Neolithic and Bronze Age periods (Ballin 1999; 2000).

Neolithic polished axes from the Raunds area, as well as axe fragments and flakes struck from abandoned axes, are frequently in a white-grey opaque flint type. This flint type has been noticed at other sites in the region (eg Briar Hill, Northampton; Bamford 1985, 60), and it has been suggested that it may represent the importation of flint from the Louth area of Lincolnshire (Humble 2006). However, its presence in the Northamptonshire region may also be due to glacial transport, with the source being the Anglian till and related deposits.

Treethrow holes

In connection with the investigation of the Raunds monuments, and the areas between and around them, several treethrow holes were discovered. Seven treethrow holes were associated with lithic assemblages (Table SS3.106), numbering from two (F62113) to almost two hundred (F2073, with surroundings) pieces of worked flint. These treethrow holes and their assemblages are discussed below; for further information on the treethrow holes, see Panel 3.2 and SS4.8.2.

A large proportion of the treethrow holes displayed signs of heavy burning (Macphail SS4.8.2), and of the seven treethrow holes associated with lithic finds three had been heavily burnt (F62113, F62123, F62132). The remaining treethrow holes showed no signs of burning, but the exceedingly high proportion of burnt material in the assemblage from F87706 (62.1%) suggests that a tree was burnt down at this location as well. It is difficult to say whether the relatively high burning ratios of context 2072/2074 (10.4%) and F6310/F6311 (13.6%) are due to the burning of trees or due to ordinary camp activities near a fireplace in the confined space of a natural hollow.

Due to the presence of microblades, microliths and microburins the assemblages from F2073 (and the adjoining parts of contexts 2072/2074), F62132 and F87706 are dated to the late Mesolithic. Due to the presence of diagnostic types or radiocarbon dating, the assemblages from F6310/F6311 (leaf-shaped arrowheads) and F62113 (3650–3340 cal BC; 4700±80 BP; OxA-3058) are dated to the early Neolithic. The assemblage from F62123 is radiocarbon dated to the transition between the late Mesolithic and early Neolithic periods (4360–3980 cal BC; 5370±80 BP; OxA-3057:), and the small assemblage from F87682 could only be dated to the late Mesolithic/early Neolithic in general. A treethrow hole (F62126) without accompanying flint artefacts was dated to 5300–4800 cal BC (6130±80 BP; OxA-3059), or an earlier phase of the late Mesolithic period. No treethrow holes have been radiocarbon dated, or dated by association with diagnostic worked flint, to a period earlier than the late Mesolithic or later than the early Neolithic (the two carbon samples OxA-3059 and OxA-3058 provide a chronological frame work of *c* 5300–3340 cal BC), although an attempt at archaeomagnetic dating on unevenly magnetised burnt clay suggested a Bronze Age date for one (SS6; Linford 1989).

Some of the fallen trees may have come down during storms, for example the tree in F62126, the earliest known treethrow hole in the area. However, the concentration of dates around the transition between the late Mesolithic and the early Neolithic periods suggests that they may be associated with clearance activities. It is not possible to establish whether the individual trees were felled by man or brought down by natural agencies, but several trees had definitely been burnt *in situ* (F62113, F62123, F62132 and F87706).

The presence of lithic assemblages in treethrow holes may be explained in two ways: either the lithics were deposited at a location in connection with a group of people camping in the shade of a standing tree which later fell, or was felled, or they were deposited in connection with a group of people sheltering in the hollow after a tree had fallen. In most cases it is impossible to establish which event led to the deposition of the assemblage, but the burnt state of the worked flint in F87706 suggests that this late Mesolithic assemblage pre-dates the tree-fall and the burning of the tree. The two early Neolithic leaf-shaped arrowheads (possibly the entire assemblage) in F6310/F6311 may be a deliberate deposit post-dating the tree-fall creating the hollow containing the deposition. The assemblages of F87706 and F6310/F6311 support the theory associating the burning of fallen trees with general clearances in the Raunds area in the early Neolithic, and probably mainly in the earlier part of this period.

Burnt lithics

The proportion of burnt lithics varies considerably from monument to monument (Table SS3.107), with terrace monuments having relatively large ratios (generally, between 4.0% and 11.1%), and island monuments relatively small ratios (0–1.7%). The ratio of the lithic assemblage from the Southern Enclosure is particularly high, but this is due to the presence of F87706. This late Mesolithic subassemblage included 95 pieces of worked flint, 62% of which was burnt. The assemblage from F87706 was associated with a treethrow hole, and the burnt state of most of the lithics is probably

Table SS3.106. Flint assemblages from or associated with treethrow holes

Monument	*Feature/context*	*Finds*	*Burnt*
Long Mound	F2073	14 flakes, 9 blades, 1 core, 1 microlith	None
	Surroundings of F2073 (context 2072/2074)	57 flakes, 28 blades, 1 core rejuvenation flake, 5 microliths, 2 scrapers, 2 retouched pieces	19 pieces/10.4%
Turf Mound	F6310/F6311	13 flakes, 3 blades, 4 non-bulbar fragments, 2 leaf-shaped arrowheads	3 pieces/13.6%
Southern Enclosure	F87682	3 flakes, 2 blades	None
	F87706	29 flakes, 19 blades, 44 non-bulbar fragments, 1 core, 1 microlith, 1 microburin	59 pieces/62.1%
Island Minor Features	F62113	1 flake, 1 blade	1 piece/50%
	F62123	46 flakes, 20 blades, 14 non-bulbar fragments, 3 core rejuvenation flakes, 5 cores, 3 scrapers, 1 piercer, 1 burin, 2 notches, 1 denticulate, 1 backed piece	4 pieces/4.1%
	F62132	1 flake, 1 blade, 3 non-bulbar fragments, 1 backed bladelet	None

Table SS3.107. Sequencing of assemblages by their burnt flint ratio (descending ratio)

Monument	*Percent*
Southern Enclosure	52.9
Barrow 5	11.1
Long Mound	8.5
Turf Mound	7.1
Barrow 6	5.2
Long Enclosure	4.0
Barrow 1	1.7
Barrow 3	1.6
Barrow 4	0.0
Fieldwalking survey	7.4
Redlands Farm	4.1

Table SS3.108. Sequencing of subassemblages by their burnt flint ratio (descending ratio)

Subassemblage	*Percent*
Barrow 1, phase 8.1	2.2
Barrow 3, phase 5.3	1.9
Barrow 1, phase 8.2	0.4

due to the vicinity of a tree which was burnt out (see above).

The terrace-island dichotomy is supported by the finds from non-monument contexts, with the terrace contexts having a ratio of 6.6%, and the island contexts a ratio of 2.5%. The post-mound assemblages from Barrows 1 and 3 all have very low ratios (Table SS3.108).

One possible explanation of this difference is the application of pyrotechnic production methods in the early prehistoric industries dominating the assemblages from terrace monuments (Humble 2006). However, lithic production by the application of pyrotechnic methods leaves other traces on the affected artefacts, the most important of which is the presence of 'glossy' removal scars (Eriksen 1997; 1999; Olausson and Larsson 1982). This attribute has not been observed in the Raunds collection, and the application of pyrotechnic production methods remains unproven.

The dichotomy may instead be the result of different uses of the various topographical zones. The terrace area was probably the focus of more permanent settlement, whereas Irthlingborough island was used more sporadically by first foraging hunter-gatherers and later herders watching their flocks (discussed above). The higher burnt flint ratio on permanent settlements is the result of the extensive use of fire in these camps for a multitude of purposes, from heating and cooking to preserving food, making pottery, etc, whereas the use of fire on short-term camps may be limited, especially in connection with transit camps (stays of a few hours, or one night).

It has been suggested (SS1.1) that higher burnt flint ratios in some monument phases may be associated with the deliberate distribution or deposition of burnt flint. However, investigation of individual cases shows that even when the proportion of burnt flint is high, the number of burnt pieces is usually low (see for example the description of the flint from the Long Mound, above). This makes the hypothesis of burnt flint depositions implausible, and the higher ratios in some phases may simply be coincidental, in the sense that these phases include redeposited material from settlement zones close to fireplaces.

Conclusion

During the entire Raunds Area Project, some 30,000 pieces of worked flint were recovered from monument and non-monument contexts. Approximately 10,000 pieces were found during the fieldwalking survey, *c* 10,000 pieces were excavated on the terrace (mainly in the West Cotton area), and an equal number on Irthlingborough island. Combined, these finds constitute an important addition to the knowledge of the prehistory of the area which, before the start of the project, was extremely restricted. Previously, the Neolithic and Bronze Age record for the project area was limited to a cache of flint axes recovered in Stanwick village in 1938 (Humble SS3.7.2), an urn found in Irthlingborough (Harding and Healy 2007, 5), and six possible round barrows (RCHME 1975, 56–7, 78–9).

Though much of the unearthed flint is mixed, redeposited material from mounds and barrows, these finds, supported by chronologically clean assemblages from monument and non-monument contexts, add much new or supplementary information on the local material culture, their associated socio-economical setting and prehistoric landscape use. The Raunds assemblage as a whole reveals information on the lithic types manufactured locally throughout prehistory. Chronologically clean assemblages,

particularly the Mesolithic and later Bronze Age finds from pre- and post-mound contexts, add information on individual industries and their applied technologies. Raw material use, the possible involvement of exchange networks in the acquisition of certain flint types, and chronological differences in the exploitation of fine-grained and coarser-grained flint are illustrated by find circumstances and distribution patterns. The treethrow holes and their associated flint assemblages have been demonstrated to be indicative of mainly early Neolithic clearance activities. Flint artefacts also formed part of early Bronze Age assemblages of grave goods, adding to our knowledge of prehistoric society and cosmology. The general distribution of lithic types and technological attributes has contributed significantly to our understanding of changes in land use from the Mesolithic period to the later Bronze Age period.

Although the present investigation of the Raunds lithic assemblage has been extensive, it has not exhausted the scope of this important collection. The purpose of the lithic analyses has primarily been to explore the research potential of the assemblage, and define research areas of particular significance. Many find groups deserve further attention, either in their own right (for example, the later Bronze Age knapping floors; Ballin 2002), or as part of more general research (eg the treethrow holes and their lithic components in relation to the transition between the Mesolithic and Neolithic periods). This presentation of the Raunds flint assemblage is not the end, but the beginning.

SS3.8 Pottery

SS3.8.1 A note on the petrology of some Neolithic and Bronze Age pottery from Raunds

David F Williams

Introduction

Twelve small sherds of Neolithic and Bronze Age pottery from Raunds were submitted for an examination in thin section under the petrological microscope. The main object of the analysis was to provide a more detailed description of the fabric of each sherd than could be obtained by hand-specimen study alone. Raunds is situated on Jurassic deposits with Boulder Clays close by (Geological Survey 1" Map of England Sheet 186). All of the sherds submitted were initially studied macroscopically with the aid of a binocular microscope at x20. Munsell colour charts are referred to together with free descriptive terms. The sherds are listed in Table SS3.109.

Petrology and fabric

On the basis of the range of non-plastic inclusions present in the sherds sampled, two broad fabric divisions have been made.

1. Shelly limestone (Sf 1071, AOR 35135)
Soft, rough, fabric with clearly visible plates of shell and small irregular pieces of white limestone scattered throughout both sherds. AOR 35135 has light buff (10YR 8/4) surfaces and a dark grey core; while AOR 35135 displays a grey surface (10YR 5/1) and a dark grey core. Thin sectioning shows frequent curved plates of shell with evidence of some recrystallization of calcite, suggesting that these are fossi1iferous. Also present are some fragments of a shelly limestone, although it is difficult to identify the forms of shell involved. The same holds true for the discrete pieces of shell previously mentioned. Grains of quartz also occur, more numerously in AOR 1071, while AOR 35135 may also include a few small pieces of ?grog. The petrology suggests a local origin for these sherds, since shelly limestone is easily found in the Jurassic Ridge on which Raunds is situated.

2. Grog (AOR 36224, AOR 55241, AOR 36224, AOR 55249, AOR 18177, AOR 15618, Sf 3678, AOR 15618, Sf 7770, Sf 7766)

All of these ten small, somewhat friable, sherds are in a generally soft smoothish fabric with dark or light earthy grains readily visible. The colour-range is reddish-brown (2.5YR 5/4) to brown (10YR 5/3) surfaces and often a dark grey core. Thin-sectioning shows that each of these sherds contains inclusions of grog (ie crushed up pottery that has previously been fired) scattered throughout the clay matrix. There is, however, some degree of variation in the frequency of the other non-plastic inclusions present in the sherds, generally represented by grains of quartz. Thus, for example, AORs 55241, AOR 36224, Sf 7770 and Sf 7766 all display a comparatively fine-grained clay matrix containing little else but a few grains of quartz, small flecks of mica and some black iron ore. In contrast, the remainder of the sherds tend to be somewhat coarser-textured, with rather more grains of quartz present in the clay matrix. At this stage little

Table SS3.109. Sherds examined in thin section

AOR or Sf	*Drawing*	*Monument*	*Context*	*Description*	*Fabric group*
1071	P55	Barrow 6	1316	Decorated Neolithic Bowl, redeposited	Shelly limestone
55249	P83	Barrow 5	31649	Wessex/Middle Rhine Beaker from primary feature	grog
35135	P85	Barrow 1	30476	Beaker from primary burial	Shelly limestone
7766	P64	Long Mound	5248	Rusticated Beaker from probable recut in S 'quarry pit'	grog
7770	P64	Long Mound	5248	Rusticated Beaker from probable recut in S 'quarry pit'	grog
15618	P91	Barrow 1	30011	Collared Urn with cremation, Cu alloy dagger, bone or antler pommel, bone pin	grog
18177	P92	Barrow 1	30021	Collared Urn inverted near top of mound	grog
36224		Barrow 3	30641	?Collared Urn, unstratified	grog
55241	P90	Barrow 5	47172	Collared Urn with multiple cremation, flint knife	grog
3678	P99	Barrow 6	3178	Collared Urn	grog

can be usefully said about the pieces of grog themselves. They are generally quite angular, indicating that they were broken up and crushed prior to being added to the clay during the preparation stage, quite variable in size, and seem to be composed of the same general range of inclusions as the sherds they are found in. The fact that grog-tempering is commonly encountered in Bronze Age pottery, together with the lack of diagnostic minerals present in the clay matrix of these sherds, makes it difficult to suggest anything other than a fairly local origin, perhaps utilizing the local Boulder Clays (Clarke 1970; Peacock 1970, Darvill 1982).

SS3.8.2. Residue analysis of Neolithic and early Bronze Age sherds

Mark Copley, Stephanie Dudd, Carl Heron and Richard Evershed

Introduction

The analysis of organic residues in association with archaeological pottery encompasses both the study of carbonised residues adhering to the surface of the potsherd and the extraction and analysis of lipids trapped within the porous microstructure of the pot wall (Evershed *et al* 1992). The purpose of organic residue analysis is to screen solvent extracts of residues using high-temperature-gas chromatography and identify the components present in order to determine the commodities originally processed or contained in the vessel. The most commonly recognised residues in archaeological vessels are degraded animal fats, which are present in a high percentage (>40%) of the vessels which we have analysed to date. However other commodities are occasionally found, including beeswax, mixtures of beeswax and animal fat (Charters *et al* 1995) and plant leaf waxes (eg from *Brassica* sp; Evershed *et al* 1991; 1994).

Our research has more recently been concerned with the identification of the origins of the degraded animal fats associated with archaeological pottery, facilitated partly by the large proportion of vessels in which we find animal fats and partly by the relatively large quantities in which the fats are found. Ruminant and non-ruminant fats have been extracted and distinguished from potsherds excavated from numerous sites in Britain, dating from the Neolithic to Medieval period (eg Evershed *et al* 1997; Dudd and Evershed 1999; Dudd, Gibson and Evershed 1999; Evershed *et al* 2002; Copley *et al* 2003). Distinctions are based on various criteria, including measurements of the stable carbon isotope composition of the major fatty acids ($C_{16:0}$ and $C_{18:0}$) in the animal fats which vary between the fats of different animal species. These variations are based in part upon the nature of their diet and in part upon differences in their metabolism. These criteria have been utilised to unambiguously identify dairy fats recovered from archaeological vessels (Dudd and Evershed 1998), and recently have allowed the extent of dairying in prehistoric Britain to be elucidated (Copley *et al* 2003).

Sampling, methods and results

Two rounds of analysis were undertaken on the Neolithic Bowl, Beaker and early Bronze Age pottery from Raunds, the samples in both cases being submitted by David Tomalin. The sherds analysed in both, often from the same vessels, are listed in Table SS3.110. One aim of the analysis was to determine, at David Tomalin's instigation, whether pots

Table SS3.110. Sherds sampled for residue analysis

The saturated fatty acids identified in the first round were predominantly $C_{16:0}$ and $C_{18:0}$

AOR or Sf	*Drawing*	*Monument*	*Context*	*Description*	*1st round Lipid concentration*	*Lipid components present*	*Assignment*	*2nd round Lipid content (g g-1)*	*Description*
1071	P55	Barrow 6	1316	Decorated Neolithic Bowl (same vessel as 4285)	High	Saturated fatty acids	Degraded animal fat		
4285	P55	Barrow 6	3198	Decorated Neolithic Bowl (same vessel as 1071; body sherd from below shoulder)				129	Hydrolysed animal fat residue, identified by the abundance of saturated C_{16} and C_{18} free fatty acids. Other components include C_{14}, C_{16}, C_{17}, C_{17}br, C_{18} free fatty acids, mid-chain ketones (C_{31}, C_{33}, C_{35}) and unidentified components eluting between 14 and 20 mins. Trace intact acyl lipid
4278	P21	Barrow 6	3196	Plain Neolithic Bowl				39	Plasticisers
4573	P84	Barrow 6	3259	Beaker	High	Saturated fatty acids	Degraded animal fat	834	Plasticisers abundant; degraded animal fat comprising abundant saturated free fatty acids (C_{12} to C_{20}, C_{17} and C_{17}br), MAG, DAG (C_{28} to C_{36}) and TAG (C_{40} to C_{54})
35135/1	P85	Barrow 1	30476	Beaker				39	UCM and plasticizers; free fatty acids (C16, C_{18}); unidentified components eluting between 14 and 22 mins
35135/2	P85	Barrow 1	30476	Beaker, sampled on internal 'tideline'	High	Saturated fatty acids, TAG (trace)	Degraded animal fat		
35135/3	P85	Barrow 1	30476	Beaker, sampled above internal 'tideline'	Low				
55249	P83	Barrow 5	31649	Beaker (upper/mid-body)	High	Saturated fatty acids	Degraded animal fat	8	UCM and plasticisers; free fatty acids (C_{16}, C_{18})
7688	P64								
	Long Mound		5248	Rusticated Beaker? (mid-body)				50	UCM including some plasticisers; free fatty acids (C_{16}, C_{18})
3678	P99	Barrow 6	3178	Collared Urn	Low	Saturated fatty acids (trace)		265	Plasticisers
3938	P101	Barrow 6	3219	Collared Urn (shoulder)	Low			10	Plasticisers
15618	P91	Barrow 1	30011	Collared Urn? (mid-body)	Low			46	UCM and plasticisers; free fatty acids (C_{16}, C_{18})
18177	P92	Barrow 1	30021	Collared Urn (body)	High	Saturated fatty acids, TAG (trace)	Degraded animal fat	619	Degraded animal fat comprising abundant free fatty acids (C_{14}, C_{16},C_{17}, C_{17}br, $C_{18:1}$); MAG; DAG (C_{32} to C_{36}); TAG (C_{46} to C_{54}); some unidentified components eluting at short retention times (2–10 mins)
36224		Barrow 3	30641	Collared Urn?	High	Saturated fatty acids	Degraded animal fat		
55254	P94	Barrow 5	31649	Collared Urn	High	Saturated fatty acids	Degraded animal fat		
55241	P90	Barrow 5	47172	Collared Urn (upper body, below collar)	Low	Saturated fatty acids (trace)		143	Degraded animal fat comprising free fatty acids (C_{14}, C_{16}, C_{17}, C_{17}br, $C_{18:1}$, C_{18}); TAG (C_{48} to C_{54}); mid-chain ketones (C_{31}, C_{33}, C_{35}); plasticisers
3847	P104–5	Barrow 6	3076	Early or Middle Bronze Age urn				424	Slight UCM; degraded animal fat comprising free fatty acids (C_{16}, C_{17}, C_{18}); MAG; DAG (C_{34}, C_{36}); TAG (C_{48} to C_{54}); mid-chain ketones (C_{33}, C_{35})

had been selected from domestic assemblages for funerary use.

The first round

In the first round, conducted fairly early in the project, twelve samples from eleven vessels were examined by Carl Heron and Stephanie Dudd. Seven of these exhibited lipid distributions that are indicative of degraded animal fats, which are characterised by high relative abundances of saturated free fatty acids, namely hexadecanoic acid ($C_{16:0}$) and octadecanoic acid ($C_{18:0}$), and triacylglycerol distributions that have high abundances of the C_{48} to C_{52} even carbon chain homologues. Sherds from on and above a visible internal 'tideline' in the Beaker placed with the primary burial in Barrow 1 had respectively high (35135/2) and low (35135/3) concentrations of lipids. It is not possible to determine whether the lipids were ruminant (ie ovine and bovine) or non-ruminant (eg porcine) adipose fats, or ruminant dairy fats; as these can only be distinguished through the carbon stable isotope ($\delta^{13}C$) values of the $C_{16:0}$ and $C_{18:0}$ fatty acids (eg Evershed *et al* 1997; Dudd and Evershed 1998; Mottram *et al* 1999). The determination of the $\delta^{13}C$ values of the individual fatty acids has recently become an integral and important component of lipid residue analyses of archaeological pottery vessels.

The second round

In the second round, conducted at a later date, samples from twelve vessels were analysed by Stephanie Dudd (Table SS3.110). All of the samples were photographed for our records. The sherds came from Neolithic Bowls, Beakers, Collared Urns and an indeterminate Bronze Age urn (Table SS3.110).

Analytical methodology. Each sherd was screened for absorbed lipid residues using our established extraction protocol. Care was taken to avoid damaging sherds with decorative or rim features, samples being taken from the interior surface using a scalpel. In other cases, thumbnail-sized pieces of the sherds were taken and the surfaces cleaned with a modelling drill to remove exogenous contamination (eg from post-excavation handling) and then crushed to a fine powder using a pestle and mortar. The ground sherd was extracted with a mixture of organic solvents (chloroform/methanol, 2:1 v/v) by ultrasonication to obtain the solvent-extractable lipid components. The solvent was reduced under nitrogen to yield a total lipid extract (TLE).

Portions of the total lipid extract were derivatised using *N*, *O*-bis(trimethylsilyl) trifluoroacetamide (20 µl; 70°C; 60 min) and analysed by gas chromatography (GC) and gas chromatography/mass spectrometry (GC/MS).

Results. Screening of the extracts showed the presence of lipid residues identified as degraded animal fats in six out of the fifteen sherds analysed. Consideration of specific characteristics of the remnant animal fat residues has enabled the probable origin of the fats to be identified in most cases. The remainder of the sherds contained either complex mixtures unresolvable by GC analysis of the total lipid extracts and/or highly abundant plasticisers derived from the bags in which the sherds had been packaged. The concentrations of lipid per gramme of powdered sherd and descriptions of the lipid components identified on the basis of GC retention time are shown in Table SS3.110. Partial chromatograms obtained by HTGC analysis of the total lipid extracts are to be found in Figures SS3.66–70.

Among the Neolithic Bowl samples, the decorated bowl (Sf 4285) contained animal fat, although decay has significantly changed the original character of the residue. Complete hydrolysis of the intact acylglycerol components has resulted in an abundance of free fatty acids which include the branched-chain components abundant in ruminant fats. The presence of mid-chain ketones proves that the vessel and contents were severely heated during processing, vessel failure or following discard, since these components are known to form via a condensation reaction at temperatures in excess of 300°C (Evershed *et al* 1995; Raven *et al* 1997). The relative abundances of the C_{31} and C_{33} ketones preserve the ratio of saturated C_{16} and C_{18} fatty acids present in the original fat. This ratio is more reliable than the ratio of the free fatty acids which is susceptible to change due to the preferential loss of the shorter-chain $C_{16:0}$ component. Thus, in the original fat the $C_{16:0}$ fatty acid was more abundant than the $C_{18:0}$ fatty acid, which is the case in bovine adipose fat.

The remnant fat in the Beaker from the primary burial in Barrow 6 (Sf 4573) comprises a broad range of intact triacylglycerols (C_{40} to C_{54}) which are highly abundant in fresh ruminant dairy fats. The Beakers from the primary burial in Barrow 1 (AOR 35135) and the primary deposit in Barrow 5 (AOR 55249) both contained low abundances of

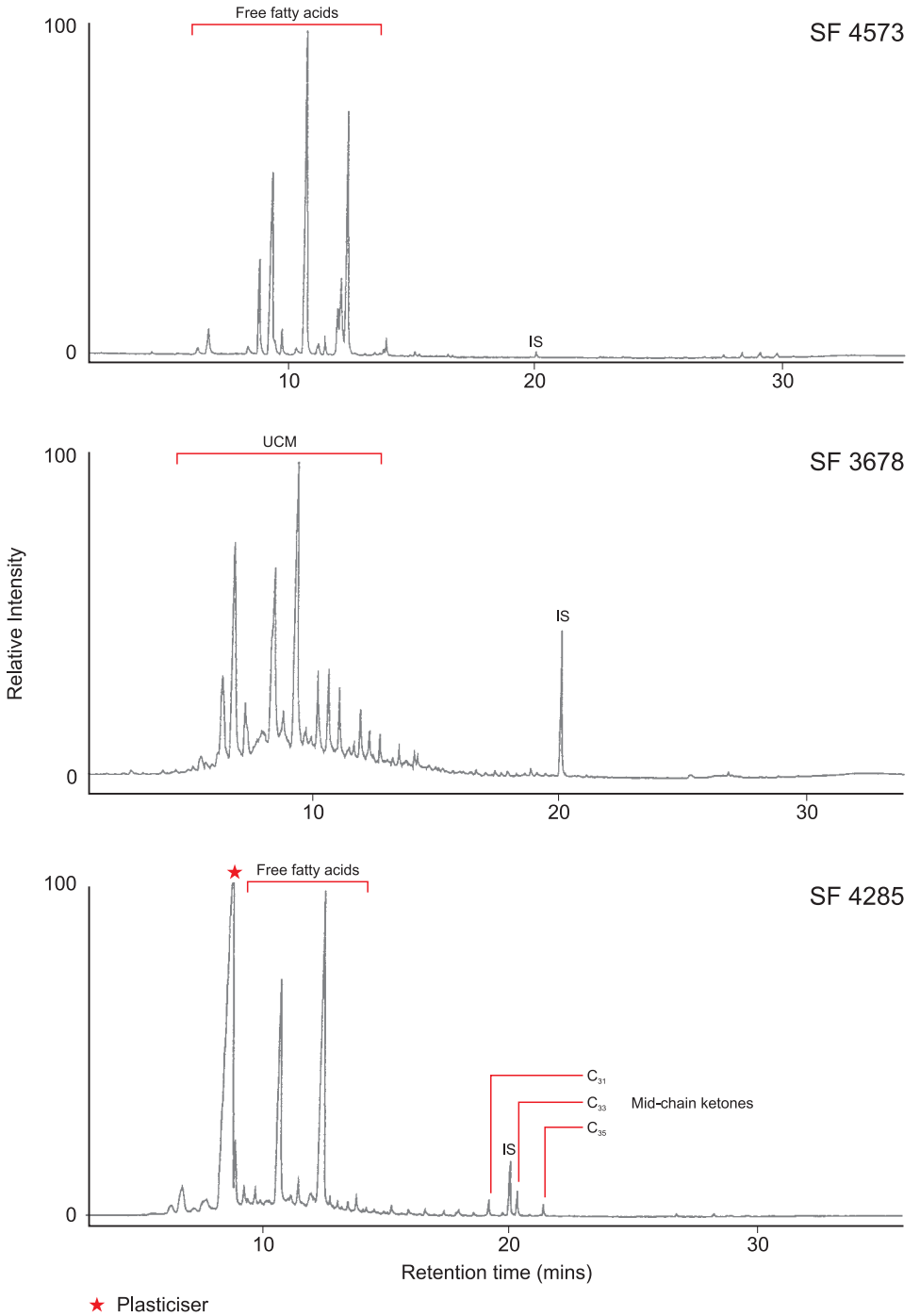


Figure SS3.66
Analysis of lipid residues in SFs 4573, 3678, 4285.

lipid, including some free fatty acid components. These free fatty acids may derive from highly degraded fats. The Barrow 1 vessel also contained a number of components which could not be unambiguously identified based upon retention time alone (Table SS3.110).

Particularly high abundances of degraded animal fat residues were detected in a large Collared Urn inverted on top of the central cairn of Barrow 1 (AOR 18177; 619 μg g^{-1}). This residue contained abundant saturated fatty acids and branched-chain components found in ruminant fats. The ratio of fatty acids and intact triacylglycerols indicated that the residue is derived from ovine (eg sheep) adipose fat. Like the Beaker from the same barrow, this vessel contained a number of components which could not be unambiguously identified based upon retention time alone (Table SS3.110). The fat residue in a Collared Urn containing a triple cremation

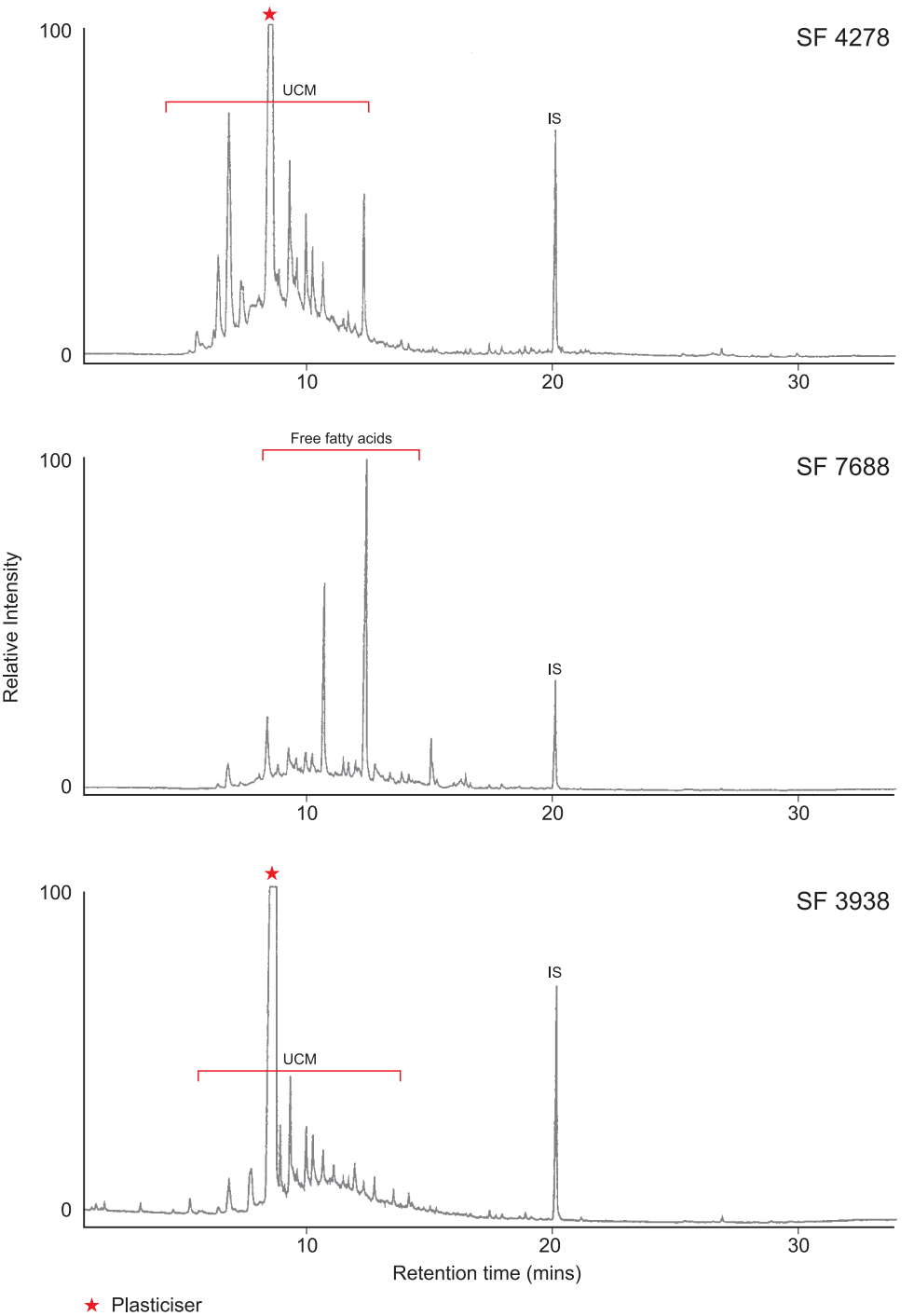


Figure SS3.67
Analysis of lipid residues in SFs 4278, 7688, 3938.

in Barrow 5 (AOR 55241) is probably also derived from a ruminant fat, due to the presence of branched-chain fatty acid components, however, because of the low abundance of intact triacylglycerols, it is not possible to identify whether the fat is of a dairy or adipose origin. Mid-chain ketones are also present. An urn containing a double cremation with a dagger and pommel in Barrow 1 (AOR 15618) contained low abundances of lipid, including some free fatty acid components. These free fatty acids are indicative of highly degraded fats.

An indeterminate, fragmentary urn from a disturbed context at the edge of Barrow 6 (Sf 3847) contained degraded animal fat identified as ovine (eg sheep) adipose by the distribution of intact triacylglycerols and the relative abundance of the C_{18} fatty acid. The significantly higher abundance of the $C_{18:0}$ than the $C_{16:0}$ fatty acid in the original fat is confirmed by the distribution of C_{31} and C_{35},

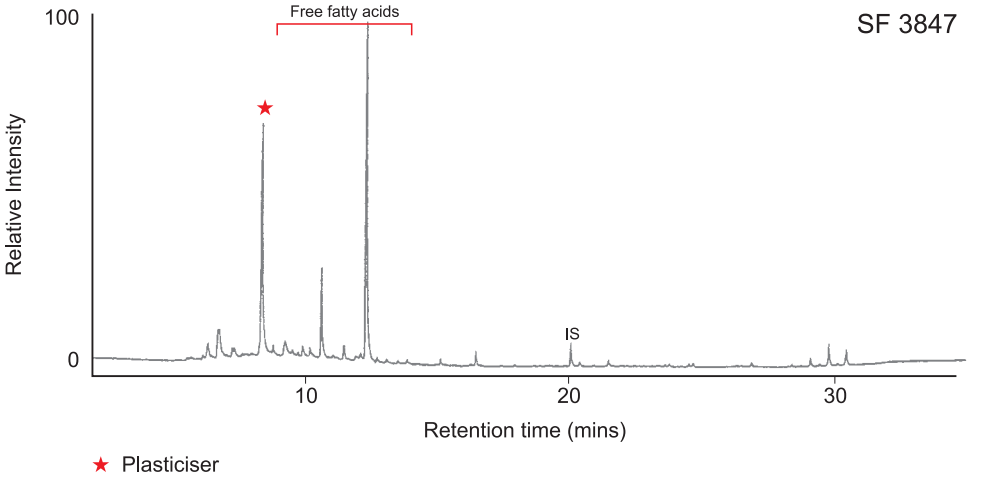


Figure SS3.68
Analysis of lipid residues in SF 3847.

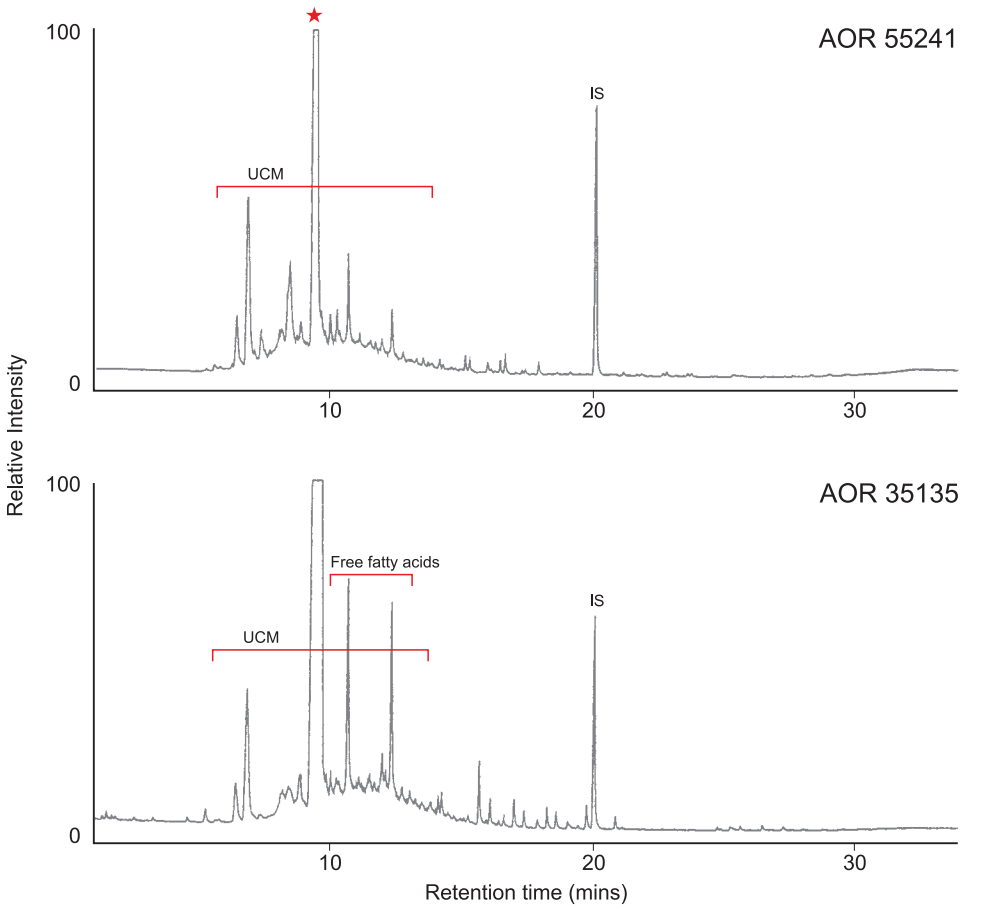


Figure SS3.69
Analysis of lipid residues in AORs 55241 and 35135.

mid-chain ketones. Their presence also indicates that the fat or meat was strongly heated during processing or failure.

Lipid content in a plain Neolithic Bowl (Sf 4278), a Pot Beaker (Sf 7688) and two Collared Urns (Sfs 3678 and 3938) was predominantly made up of plasticisers, clearly showing the advantage of storing sherds in acid-free paper rather than plastic bags or bubblewrap.

Conclusions

A Neolithic Bowl probably derived from a settlement context and certainly pre-dating the barrows yielded traces of animal fat and chemical evidence of heating; a Beaker from an inhumation grave contained a ruminant dairy residue; a Collared Urn which eventually contained a cremation deposit had been used to process ruminant adipose at high

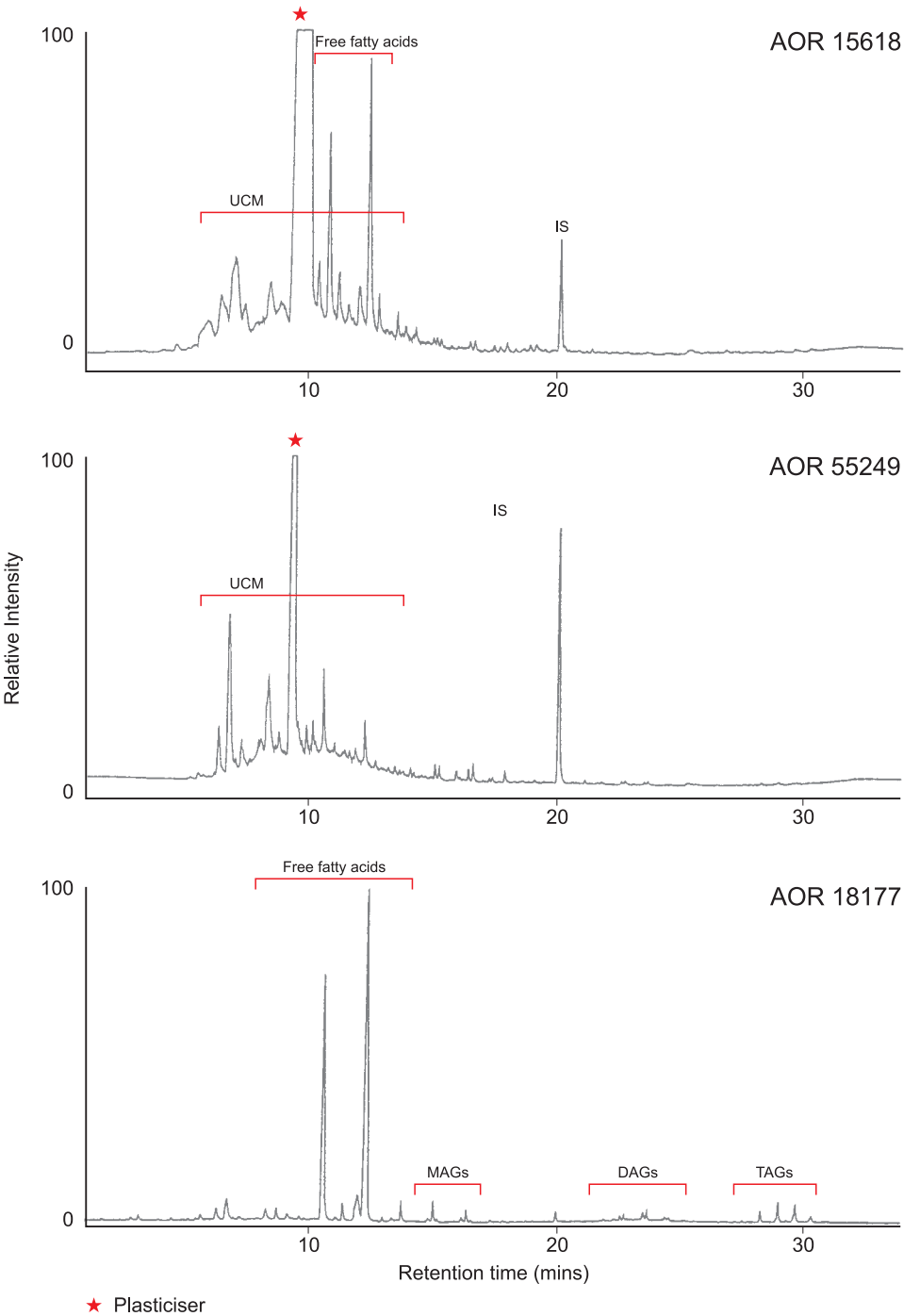


Figure SS3.70
Analysis of lipid residues in AORs 15618, 55249, 18177.

temperatures, as has an indeterminate urn which may originally have held a cremation, while a further Collared Urn, which may also have held a cremation before it was ploughed-down, had particularly high concentrations of ovine adipose. These results indicate that the urns could indeed have been previously used in domestic contexts, although other interpretations more closely linked to funerary rites are also feasible.

Less than half of the sherds analysed yielded preserved lipid residues. The UCMs may have derived from the plastic packaging, we have, however, also observed these unresolved mixtures in extracts of sherds from archaeological sites where large numbers of fish bones have been recovered. These unresolved mixtures may have formed following the polymerisation during decay of the highly unsaturated lipid components found, for example, in fish and plant oils.

These preliminary analyses have established the presence of remnant animal fats in a number of the vessels studied. Further work would enable more detailed compositional information to be obtained, including $\delta^{13}C$ values of the saturated fatty acids, distributions of positional isomers of the monounsaturated C_{18} fatty acid and consideration of the relative abundances of individual components. Recently, these criteria have been successfully utilised in determining origins of degraded natural fats from archaeological vessels and would enable the assignments made in this report to be confirmed.

SS3.8.3 Pottery and fired clay from Redlands Farm

Alistair Barclay with Ian Kinnes

Introduction

The pottery assemblage from Redlands Farm consists of 592 sherds (2931g), including two whole vessels. It was recovered from five landscape units: the Long Barrow, Barrows 7, 8 and 9, and pit F429. A detailed breakdown of the complete assemblage by landscape unit and context is given in Table SS3.111 and selected pieces are illustrated in Figures SS3.71–73 and described in the catalogue. The distribution of pottery at the Long Barrow is presented in Figure SS1.52. The overall assemblage ranges in date from *c* 3250 to *c* 1200 cal BC and includes Peterborough Ware, Beaker, early Bronze Age and Deverel-Rimbury pottery. A small quantity of material is of indeterminate prehistoric date.

Methodology

The assemblage is quantified by weight and sherd number in SS3.110. Refitting fresh breaks are excluded from the sherd count and sherds less than 10mm in width/diameter are counted as crumbs. The pottery is characterised by fabric, form, surface treatment, decoration and colour. Only the more diagnostic featured sherds are listed in the catalogue. A record was made of burnt residues. The sherds were analysed using a binocular microscope (x 20) and were divided into fabric groups by principal inclusion type. OAU standard codes are used to denote inclusion types. (A = sand (quartz and other mineral matter), F = flint, G = grog, C = calcareous matter excluding shell, S = shell, P = clay pellets, Q = quartz and quartzite, R = rock fragments (Fe = ironstone, SST = sandstone), O = organic matter, V = indeterminate voids). Size range for inclusions: 1 = <1mm fine; 2 = 1–3mm fine–medium and 3 = 3mm < medium–coarse.

Fired clay

The only ceramic from phase 1 contexts is a wedge-shaped object of fired clay (Fig SS3.73) from the façade trench of the Long Barrow (context 161). It has a convex exterior surface, weighs 5g, and contains common (leached) shell. It is incomplete with two pieces fitting together along a fresh break.

Peterborough Ware

A total of 65 sherds of Peterborough Ware (including Fig SS3.71: P1–8), representing at least ten vessels, were recovered from the Long Barrow ditches, mainly from phase 2 deposits, and from a posthole in front of the façade. The sherds belong to the Ebbsfleet, Mortlake and Fengate Ware substyles.

Fabrics

Eight different Peterborough Ware fabrics have been identified:

Sand with flint. AF1/PW Hard laminated fabric with sparse (5–7%) ill-sorted subround quartz sand (<1mm) and rare (<3%) angular flint (<2mm).

Flint. F2/PW Hard fabric, irregular fracture, with moderate (10–15%) ill-sorted angular flint (1–2mm).

F3/PW Hard fabric with a laminated fracture containing sparse (5–7%) ill-sorted angular calcined and non-calcined flint (1–4mm).

FQ3/PW Hard fabric with a hackley fracture containing moderate (10–15%) ill-sorted angular calcined flint (1–7mm) and sparse (5–7%) ill-sorted angular quartz (1–4mm).

FQA3/PW Hard fabric with a laminated fracture containing sparse (5–7%) ill-sorted angular flint (1–4mm) , sparse (5–7%) ill-sorted angular quartz (1–4mm) and rare (<3%) ill-sorted subround sand, mostly quartz (0.25–0.5mm).

Quartz/Quartzite. QR(Fe)2/PW Hard fabric with a hackley fracture containing sparse (5–7%) ill-sorted angular quartz (<4mm) and rare (<3%) ill-sorted rounded ironstone (<4mm) including ooliths (<1mm).

Sandstone. R(SST)S2/PW Hard fabric with a laminated fracture containing sparse (5–7%) angular quartz sandstone (<3mm) and rare (<3%) shell, sometimes leached, platelets (<3mm).

Shell. S2/PW Hard fabric with a hackley fracture containing sparse (5–7%), sometimes leached, shell platelets (up to 3mm).

Table SS3.111. Redlands Farm. Pottery and fired clay

Landscape unit/phase	*Context*	*Drawing*	*Sherds*	*Weight (g)*	*Fabric*	*Comment*
Long Barrow						
1	161		1	5	common (leached) shell	Fired clay
1 (disturbed)	239/A/2	P13	2	7	GF3/BKR	Southern style Beaker
2.1 (disturbed)	264		1	1	S3/DR	Deverel-Rimbury
2.2.ii (topmost, plough-damaged layer)	129			2	leached shell fabric	Rim sherd. Late Iron Age/early Roman
2.2.ii?	160	P5–6	11 & crumbs	39	S2/PW	Mortlake Ware rim and body sherds
2.2.ii	162		3	6	R(SST)S2/PW	Peterborough Ware: two sherds with burnt residues
			1	2	AF1/PW	Ebbsfleet Ware fabric
			1	6	F3/PW	Peterborough Ware
			1	14	FQ3/PW	Peterborough Ware
			1	1	G?/-	Beaker?
			2	2	IND	Indeterminate prehistoric
			crumb	1	R(SST)S2/PW	Peterborough Ware fabric
			12 & crumbs	61	S2/PW	Mortlake Ware fabric
			1	1	S2/PW?	Peterborough Ware?
		P11	1	4	SAG2/LNEBA	LNEBA
		P9	1	4	GI2/LNEBA	LNEBA: twisted cord dec.
2.2.ii?	164		1 & crumbs	7	F2/PW	Peterborough Ware
		P2	1	17	FQ3/PW	Fengate Ware
			2	10	F3/PW	Peterborough Ware,1 sherd with burnt residues
		P1	1	7	FQA3/PW	Ebbsfleet Ware rim
			crumbs	6	IND	Indeterminate prehistoric
		P3–4	16 & crumbs	36	S2/PW	Mortlake Ware: at least one vessel includes P5
			crumb	1	S2/PW?	Peterborough Ware?
			1	7	R(SST)S2/PW	Peterborough Ware
	164/B <sample 184>		1	3	F3/PW	Peterborough Ware
			1 & crumbs	4	S(L)2/PW	Mortlake Ware fabric
			1	7	R(SST)S2/PW	Peterborough Ware
2.2.ii	185/A	P7	1	9	S2/PW	Mortlake Ware rim
	185/D	P8	3	7	AF1/PW	Ebbsfleet Ware rim
	190		1 & crumb	4	FQ3/PW	Peterborough Ware
2.3	136		*c*	<1	IND	Indeterminate prehistoric
3.1	206	P10	1	2	SAG2/LNEBA	Late Neolithic/early Bronze Age stab dec
3.2	131	P12	31	88	GAS3/BKR	Southern style Beaker-fragmentary belly sherd refits from context 128
	151	P14	7	42	S3/EBA	EBA body and base sherds from a small urn
3.3	105		16	13	S3/DR	Deverel-Rimbury
3.3	106	P15	65	130	S3/DR	Deverel-Rimbury base from an urn of probable bucket-shape

Landscape unit/phase	*Context*	*Drawing*	*Sherds*	*Weight (g)*	*Fabric*	*Comment*
	106		1	4	F2/PW	Peterborough Ware
	107		1	1	S3/DR	Deverel-Rimbury
	108		6	6	S3/DR	Deverel-Rimbury
	111/B		1	1	IND	Indeterminate prehistoric
	193		1	2	IND	Indeterminate prehistoric
	196		25	31	S3/DR	Deverel-Rimbury base from an urn of probable bucket-shape
	197		5	6	S3/DR	Deverel-Rimbury
	198	P16	90	746	S3/DR	Deverel-Rimbury base from an urn of probable bucket-shape
	202		1	<1g	S3/DR?	Deverel-Rimbury?
	208/B		1	1	IND	Indeterminate prehistoric.
3.5	269		1	2	S3/DR	Deverel-Rimbury
4	292		1	1	IND	Indeterminate prehistoric
4.2	124			2	Samian	Sherds. Central Gaulish, 2nd century (SF 133)
	142			1	sand and clay pellets	Oxidised body sherd, fresh breaks. Probably early Roman
	166			5	sand and clay pellets	Oxidised body sherd, probably early Roman (SF 524)
U/S and misc			15	26	S3/DR	Deverel-Rimbury
	134		7	11	S3/DR	Deverel-Rimbury
	100		3	4	S3/DR	Deverel-Rimbury
	112		1	3	G3/LNEBA	LNEBA
	238		1	1	S3/DR	Deverel-Rimbury
	242/A		1	3	S2/PW?	Peterborough Ware?
Barrow 7						
2.1	2000		1	4	SAG2	LNEBA
Barrow 8						
1.1	2011	P17	1	5	AP(Fe)1	W/MR Beaker sherd
2	2009	P18	5	23	C2	Plain EBA rim
Barrow 9						
1.4	742	P19	>100	986[1]	GAS4	Pot Beaker
Villa site						
Pit F429	429	P20	c 200	638	GA2	Complete (broken) W/MR Beaker

[1]Includes modern filler

Although the sample is small, there are some correlations between substyle and fabric. Ebbsfleet Ware (Fig SS3.71: P1, P8) was manufactured from the sand with flint fabric (AF1/PW), and the flint with quartz(ite) and sand-tempered fabric (FQA3/PW), Mortlake Ware (Fig SS3.71: P3–7) was manufactured from the shell-tempered fabric S2/PW and Fengate Ware (Fig SS3.71: P2) was manufactured from the flint- and quartz(ite)-tempered fabric FQ3/PW. The remaining six fabrics (F2–3/PW, FQ3/PW, QR(Fe)2/PW and R(SST)S2/PW) account for plain body sherds which are likely to belong to the Peterborough Ware tradition. A similar range of fabrics was found in the Peterborough Ware assemblages from the Briar Hill causewayed enclosure and the occupation site at Ecton, both in Northamptonshire (Bamford 1975; 1985).

Form, decoration and function

Five rims (Fig SS3.71: P1, P3–8), two of which could come from the same vessel, were recovered from the upper fills of the Long Barrow ditches. The rims (P1, P3–8) are of relatively simple form, although they differ in both style and fabric. The rims have approximate diameters of 240–260mm and belong to vessels probably of bowl form and of medium size. Peterborough Ware vessels of variable form have a mouth diameter

range spanning at least 50–400mm (A Barclay 2002).

The rim P8 is from a fine Ebbsfleet Ware vessel of typical closed-shouldered form. The incised linear decoration, the fabric and the rim and vessel form are all indicative of what is termed early Ebbsfleet Ware (Piggott 1939, 409). The obliquely applied whipped cord decoration on the rim bevel of P1 is a recurrent features of more 'developed' Ebbsfleet Ware bowls (Smith 1965, 71, fig 31: P237, 240–1, 243 and fig 32: P250–5; cf. Whittle 1987, 90). Although rare, the heavier hammer-shaped rim form is also found on some Ebbsfleet Ware bowls in association with obliquely decorated rim bevels (cf. Smith 1965, fig 31: P241).

The remaining three vessel rims, represented by the sherds P3–4, P5–6 and P7, are heavier and are manufactured from the

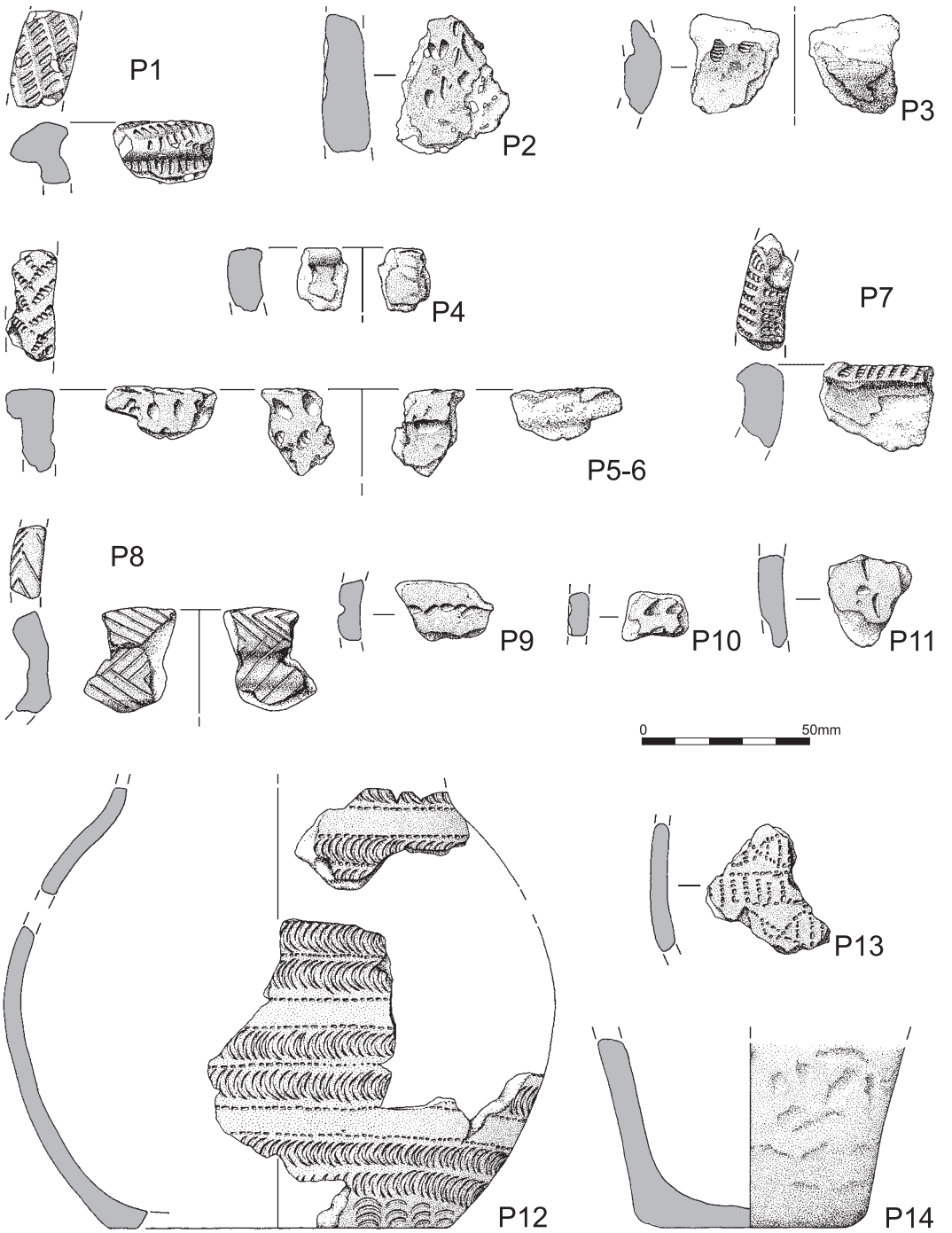
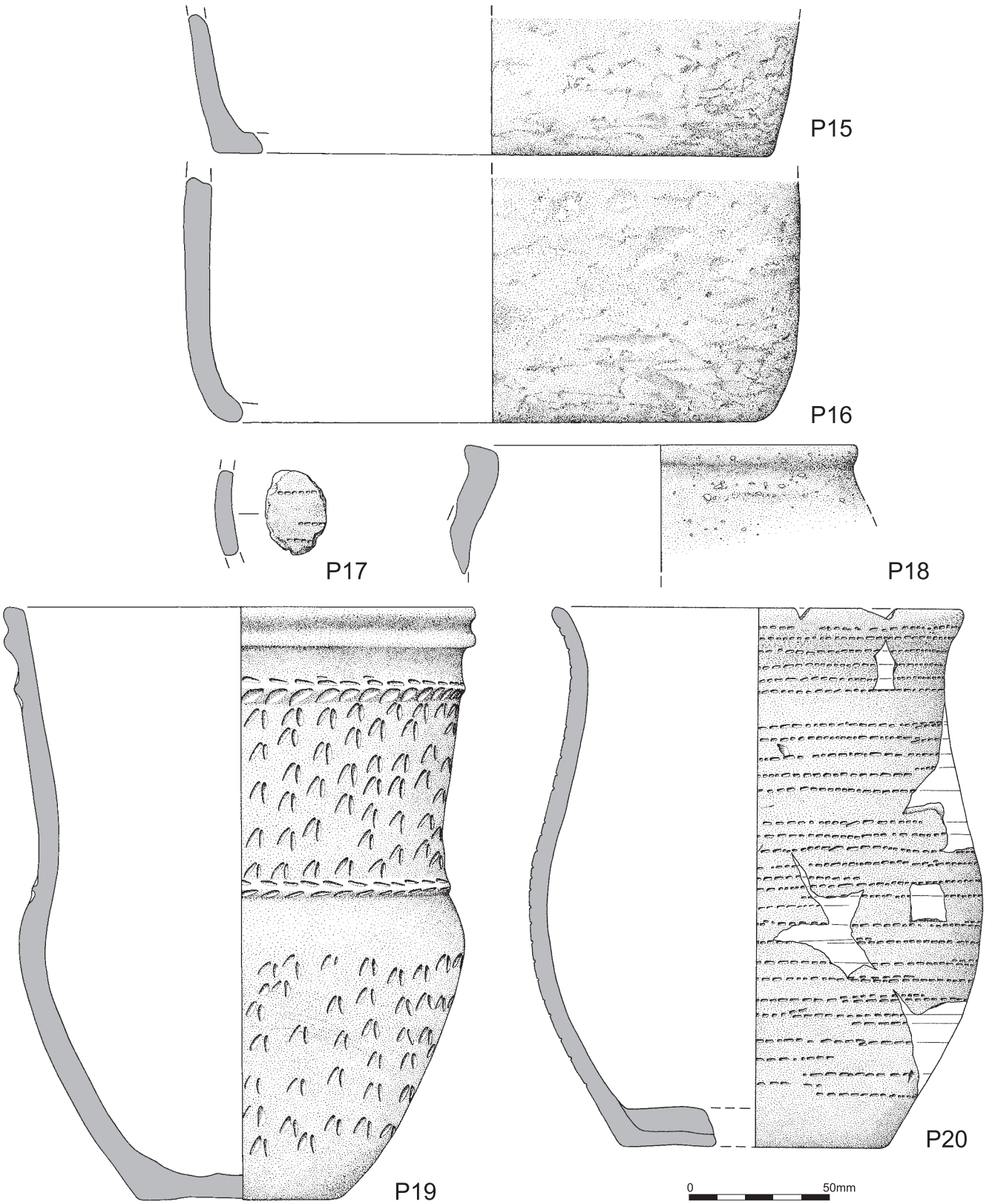


Figure SS3.71
Long Barrow. Peterborough Ware, Beaker and early Bronze Age pottery. Particulars in catalogue.

Figure SS3.72
Long Barrow (P15–P16), Barrow 8 (P17–P18), Barrow 9 (P19) and Redlands Farm F428 (P20). Middle Bronze Age and Beaker. Particulars in catalogue.



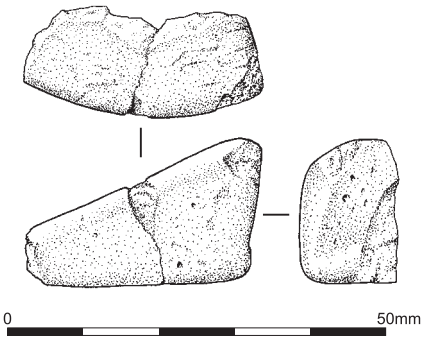


Figure SS3.73
Long Barrow.
Fired clay object from facade trench.

shell-tempered fabric S2/PW. P7, probably with an out-turned neck, could also belong to the Ebbsfleet substyle. However, the rim fragments P5–6 with maggot and oval decoration have greater affinity with the Mortlake Ware substyle (Smith 1965, fig 33).

Burnt residues consisting of black carbonaceous material were identified on the interior surfaces of three body sherds in fabrics R(SST)S2/PW and F3/PW from contexts 162 and 164. The residues indicate that at least some vessels were used as cooking pots.

Chronology

It is now accepted that all three substyles of the Peterborough Ware tradition were fully developed by the end of the fourth millennium cal BC (Gibson 1994, 175; Gibson and Kinnes 1997). Radiocarbon determinations on samples from waterlogged fills near the bottom of the Long Barrow ditch, all stratified below the general level of the Peterborough Ware, provide the greater part of the evidence for an estimated construction date of *3710–3430 cal BC at 95% confidence* (Bayliss *et al* SS6; 4810±80 BP (OxA-3001), 4560±140 BP (OxA-3002), 4790±90 BP (OxA-3003), 5005±50 BP (OxA-6405), 4960±45 BP (OxA-6406)). Taken together these dates indicate the probable deposition of the lower ditch fill during the middle of the fourth millennium cal BC. It could thus be suggested that much of the Peterborough Ware was either deposited or even redeposited sometime after 3350 cal BC. A post 3350 cal BC date would accord with a late fourth to early third millennium cal BC chronological range for this ceramic tradition.

Context

The Peterborough Ware was nearly all recovered from the secondary fills of the Long Barrow's flanking ditches, above the waterlogged levels. From a total of 55 body sherds only three are decorated: P3, a neck sherd with internal decoration; P2, a coarse sherd with paired fingertip decoration; and a tiny sherd with whipped cord maggot decoration (not illustrated). Taken at face value the assemblage is characterised by mostly plain body sherds and rims with either minimal or profuse decoration. It lacks the profuse all-over decoration often found in both developed Ebbsfleet Ware and Mortlake Ware (cf. Smith 1974b, 112). Although the evidence points towards an 'early' Ebbsfleet Ware assemblage (cf. Piggott 1962, 34; Smith 1976, 112), it is also conceivable that decorated body sherds were deliberately excluded from the Long Barrow ditches.

Peterborough Ware is not unusual in the upper fills of long barrow ditches, and the clustering of sherds in the front terminals (Fig SS1.52) recurs elsewhere (Barrett *et al*. 1991, fig 2.11; Thomas 1991, 68–70). The small sherd size of the Peterborough Ware from the Redlands Farm Long Barrow would indicate that much of this material had suffered considerable breakage and abrasion prior to deposition. The variety of rim forms, decoration and fabric may also point to secondary deposition or redeposition of material perhaps collected from a midden.

Indeterminate late Neolithic/early Bronze Age

Five body sherds from relatively thin-walled vessels are of indeterminate late Neolithic/early Bronze Age (LNEBA) date.

Fabric

All are manufactured from grog tempered fabrics:

Shell. SAG2/LNEBA Hard fabric with an irregular fracture containing common (20–25%) (leached) shell platelets (1–4mm), sparse (5–7%) quartz sand (<1mm) and rare (<3%) angular grog (1–4mm).

Grog. G3/LNEBA Soft fabric with a hackley fracture containing sparse (5–7%) large grog (>3mm).

GI2/LNEBA Soft fabric with a hackley fracture containing moderate (10–15%) sub-angular grog (<3mm) and rare (<3%) sub-angular ironstone (3mm).

None of the identifiable Peterborough Ware from the Long Barrow contained grog temper and the sherds are therefore likely to have greater affinities with the Beaker ceramic tradition where grog is a common inclusion.

Form and decoration

Three of the five late Neolithic/early Bronze Age sherds are decorated body sherds: P9, decorated with short lengths of twisted or

knotted cord, P10, decorated with oblique stab marks, and P11, decorated with a single fingernail impression, could belong to either the Peterborough Ware or Beaker tradition.

Chronology
None of the sherds is closely datable, except in that they were probably manufactured at some point during the 3rd millennium cal BC

Context
Three, including P9 and P11, come from the upper ditch fills. P10 comes from the fill of pit/posthole 206 in front of the Long Barrow façade, and a plain body sherd in fabric SAG2/LNEBA comes from grave 2000 in Barrow 7.

Beaker

The Beaker material includes two complete (reconstructible) vessels (P19–20), a fragmentary vessel (P12) and three sherds including P13 and P17. P12 and P19 are associated with radiocarbon determinations.

Fabric
The small quantity of Beaker material was manufactured from a range of grog tempered fabrics

Sand. AP(Fe)G2/BKR (2011)
Hard fabric with a hackly fracture containing sparse (5–7%) subangular quartz sand (<1mm), sparse (5–7%) angular ferruginous pellets (<2mm) and rare (<3mm) rounded grog (<2mm).

Grog. GA2/BKR (SF864)
Hard fabric with a hackly fracture containing common (20–25%) subangular grog (1–2mm) and rare (<3%) quartz sand (<1mm).

GAS3/BKR (SF 1313)
Hard fabric with a hackly fracture containing common (20–25%) angular grog (1–6mm), rare (<3%) white and colourless subround sand and rare (<3%) plate-like voids (1–4mm) probably leached shell.

GF3/BKR (239/A/2)
Hard fabric with a hackly fracture containing sparse (5–7%) subround grog (1–4mm) and sparse (5–7%) angular flint (1–4mm).

Beaker fabrics containing either grog alone or grog with sand and/or flint are quite common across central Southern England.

Form

The Beakers can be classified according to Clarke (1970) into the Wessex/Middle Rhine (P17, P20), the Southern (P12–P13) and the domestic/Fingernnail styles (P19).

Wessex/Middle Rhine. The Wessex/Middle Rhine style is represented by a complete vessel from pit F429 within the villa site (P20) and a sherd from the ditch of Barrow 8 (P17). Both are different from the Wessex/Middle Rhine Beaker from Barrow 5.2 km to the north-east (Tomalin SS3.8.4). There are close parallels for P20 from Wessex (Clarke 1970, corpus nos 177, 1075, 1157) and from Brixworth, Northamptonshire (Clarke 1970, corpus no 633).

The Southern style. The Southern style is represented by P12, a fragmentary vessel from grave 131 cut into the Long Barrow mound, and P13, a sherd recovered from the upper fill of pit 239, a disturbed phase 1 feature. Both have banded decoration, the latter is more geometric and complex in terms of motifs. P12 is probably the base of a long-necked vessel of Clarke's Primary Southern British group (S1), and its decorative technique and motifs can be paralleled with a small number of Southern style Beakers from Bedfordshire and Huntingdon (Clarke 1970, corpus nos 4, 6, 14, 370).

The domestic style. The domestic style is represented by P19, a complete (reconstructible) vessel from a secondary grave in Barrow 9. Late Neolithic/early Bronze Age sherd, P11, with a single fingernail impression, may belong to this style. The form and decoration of P19 are more familiar in large ?storage vessels known from sherds in domestic assemblages throughout Britain (Gibson 1982; Bamford 1982). P19 is an example of a British Pot Beaker, a type known to exceed 400mm in height (Lehmann 1965, 23; Gibson 1980a, 220). The decoration, consisting of fingernail rustication and cordons, is typical of this style.

Chronology
Research into the dating of British Beakers suggests that the Beaker ceramic tradition was current from approximately 2600 to at least 1800 cal BC and possibly extending down to 1600 cal BC (Kinnes *et al.* 1991, 39). Two of the Beaker vessels have direct associations with radiocarbon determinations. The date for P12 has a calibrated range of 1890–1630 cal BC (3450±45 BP; BM-2833), which probably post-dates the range of 2140–1780 cal BC (3610±50 BP; BM-2866) for P19 (SS6, Fig SS6.11). The radiocarbon dates indicate that P19 was deposited before P12, although both were deposited within the last 500 years of Beaker currency. It is possible that the

stylistically earlier Wessex/Middle Rhine Beaker, P20, and the sherd, P17, were used and deposited before this phase during the interval 2600–2200 cal BC (Kinnes *et al.* 1991, fig 5).

Context

Beaker pottery was recovered from the Long Barrow, Barrow 8, Barrow 9 and a pit. The association of P19, the only Beaker in Barrow 9, with a secondary burial rather than the primary grave is unusual. The occurrence of the Wessex/Middle Rhine vessel P20 in an apparently non-funerary context is unusual but not uncommon (cf. Cleal 1992, 63). The Wessex/Middle Rhine sherd, P17, from the ditch of Barrow 8, may indicate further non-funerary activity associated with this style. Other sherds, notably the Southern style sherd, P13, may indicate further domestic or ceremonial activity at the Long Barrow.

The Southern style Beaker P12 from a grave inserted into the Long Barrow formed part of a grave group with a shale armlet, a copper alloy basket earring and two flint flakes, and the grave itself was central to two unaccompanied burials, also axially aligned. A Southern style Beaker of unusual carinated form accompanied the primary burial of an adult male in Barrow 1 (Fig SS3.81: P85). Although the two graves were less than 400m apart, the vessels are quite dissimilar. The sherds of P12 were behind the head and shoulders, and, given that no rim sherds were recovered, it is possible that the vessel had originally been placed upright. If the fragmentary vessel is indeed correctly attributed to the S1 style, then it is interesting to note that according to Clarke most vessels of this style are found in this position relative to the skeleton (1970, 455).

Copper alloy basket earrings tend to be found with Late style Beakers. At Tallington, Lincolnshire, a disturbed grave containing 1–2 adults and 2–3 subadults contained a Final Southern British (S4) Beaker and a pair of copper alloy basket earrings (Simpson 1976, 217). At Stakor Hill, Buxton, Derbyshire, a female adult was accompanied by a Beaker with finger-pinched rustication and a copper alloy earring (Clarke 1970, 447).

The Beaker association with the shale armlet has no known British parallel, although it can be noted that copper alloy armlets and bracelets are more commonly found with Southern style Beakers than other styles (Clarke 1970, 444–7; A Barclay *et al* 1995).

Early Bronze Age

Twelve sherds from two vessels (P14, P18) are of early Bronze Age date (Table SS3.111). Both occur in calcareous fabrics (C2/EBA & S3/EBA).

Fabric

Calcareous. C2/EBA Soft fabric with moderate (10–15%) subangular limestone (<3mm).

Shell. S3/EBA Hard fabric with common (20–25%) leached shell platelets (1–4mm).

Form

The fragmentary base P14 is probably from a small or miniature urn of the Food Vessel or Collared Urn tradition. The plain rim fragment P18 could be from a small urn or Food Vessel.

Context

The base fragment P14 came from context 151 within the Long Barrow mound. The rim P18 was recovered from a probable cremation, context 2009, which was left *in situ* in a pit cut into the top of Barrow 8.

Chronology

If the attribution of the base and rim to the Food Vessel and Urn tradition of the earlier Bronze Age is correct, then they could be contemporary with the deposition of the Late style Beaker P12. Food Vessels and Collared Urns were in use during the first half of the second millennium, and the Redlands Farm vessels could have belonged to the period 2000–1450 cal BC (Tomalin 1988, fig 6).

Middle Bronze Age

A total of 172 sherds from at least three vessels (P15–16) are of middle Bronze Age date. This material comes from a series of cremation pits at the front of the Long Barrow, from the upper ditch fill and from the pit alignment.

Fabric

Shell. S3/DR Hard fabric with common (20–25%) leached shell platelets (1–4mm).

This material occurs in a poorly preserved leached shell fabric (S3/DR). The vessels have suffered from extensive post-depositional damage, probably from ploughing, and because of this and the poor state of the fabric the vessels are very fragmentary. The fabric is similar to that described by Bamford for a group of cremation urns from Briar Hill 20km to the south-west (1985, 49).

Form
From the general appearance of this material it can be suggested that the fragmentary vessels belong with the Deverel-Rimbury ceramic tradition of the middle Bronze Age. The bases from at least three vessels are represented, each deriving from a separate context (106, 196, 198; Table SS3.111 and Fig SS3.72: P15–6). As the tallest vessel survived to a height of only 90mm and rim and shoulder sherds are absent, little comment can be made on the original forms. Two of the vessels have base diameters of approximately 200mm indicating that they were quite substantial. At Briar Hill, the most complete vessel had a slight shoulder, although all the vessels are described as bucket-shaped (Bamford 1985, 118, fig 56 BAP1).

Chronology
It is widely accepted that most Deverel-Rimbury pottery was in use during the period 1700–1050 cal BC (cf. Needham 1996) and this is perhaps supported by the date for cremation 208 of 1860–1420 cal BC (3320±80 BP, OxA-2989), if it is really contemporary with the other urned cremations. There is a similar date of 1620–1260 cal BC (3180±70 BP; HAR-4065) for an urned cremation from the secondary cremation cemetery at Briar Hill, although a second date from an unaccompanied cremation is much earlier, at 2560–1680 cal BC (3700±150 BP; HAR-4058; Bamford 1985, 128). Both were made on unidentified charcoal.

Context
The fragmentary urns were associated with a 'flat' cemetery at the façade end of the Long Barrow, adjacent to a post alignment in one posthole of which (269) was a further Deverel-Rimbury sherd.

Indeterminate prehistoric

A small number of contexts (Table SS3.111) contained pottery which cannot be attributed to any ceramic style or fabric, although it is probably of prehistoric date. This material consists of small and abraded sherds or crumbs.

Discussion

The prehistoric pottery from Redlands Farm has a mid Neolithic through to mid Bronze Age date range (3250–1200 cal BC).

Although most of the assemblage was recovered from the Long Barrow (Table SS3.111), no Plain Bowl pottery was recovered from pre-barrow features or from the primary phase of the monument. The Peterborough Ware, Beaker and Bronze Age pottery from the Long Barrow indicate several episodes of reuse during the later Neolithic and Bronze Age.

Sherds from a small number of Peterborough Ware vessels came from the upper fills of the Long Barrow ditches, where they were concentrated towards the façade end of the barrow. This material provides evidence for subsequent domestic or ceremonial use of the monument at a time when its structure had started to collapse. A few burnt residues on sherds indicate domestic activity, and the relatively small sherd size could indicate collection of already broken vessels. The concentration of sherds in the north-east terminal of the north-west ditch points to some deliberate dumping of material and contrasts with the scatter of sherds in the southern ditch (Fig SS1.52). The range of rim types and fabrics could indicate several episodes of activity. Elsewhere Peterborough Ware is frequently found in Long Barrow ditches and nearly always in the middle and upper ditch fills (Kinnes 1992, 111). Ebbsfleet Ware was also found at West Cotton (Tomalin, SS3.8.4).

To the south-west, along a 20km stretch of the Nene Valley, Ecton, Aldwincle, Grendon and Briar Hill have produced small Peterborough Ware assemblages which contained one or more of the substyles (Bamford 1975, 12–9; 1985, 104; Gibson 1985, 54; Manby 1976, 56–62). At Grendon Peterborough Ware traits can be recognised in some of the pottery described as earlier Neolithic Mildenhall Ware (Gibson 1985, fig. 20: especially P44, 46–7) and at Earls Barton pottery described as Primary Collared Urn (Mercer 1984, fig. 9, P1–3) may more appropriately be attributed to the Peterborough Ware tradition (Gibson 1995). Downstream to the north-east, there is a further small assemblage from Tansor Crossroads (Gibson 1997).

Beaker pottery was recovered from the Long Barrow, Barrow 8, Barrow 9 and a pit. The pottery from these sites and others within the Raunds monument complex varies in both style and motifs. The form and size of P19 is similar to the Beaker from the primary grave in Barrow 6, although the decoration is markedly different. Beakers placed, like P19, in secondary positions within barrows are sometimes crude and/or simply decorated (cf. Grimes 1960; Russel 1990). In contrast finer Beakers with more complex decoration tend to occur in

primary graves, such as P12 (found with an adult female) and the Beakers from Barrows 1 and 6 (found with adult males). P12, although incomplete, lacks the complex geometric motifs of the other two Beakers. Gibbs has noted that Beakers found with females tend to lack complex geometric decoration (1989, 176).

The occurrence of the Wessex/Middle Rhine vessel P20 in an apparently non-funerary context is unusual but not uncommon (cf. Cleal 1992, 63). The sherd P17 from Barrow 8 ditch may indicate further non-funerary activity associated with this style. Other sherds, notably P13 may indicate further domestic or ceremonial activity at the Long Barrow.

The radiocarbon dates for the two Beaker vessels, P12 and P19, do not overlap at the 2 σ range and this could indicate separate phases of activity. The date for the Domestic Beaker falls within the period 2140–1780 cal BC and indicates possible contemporaneity with the long-necked Beaker from Barrow 1 (Fig SS3.81: P85). Interestingly, both Southern and Domestic styles occur together on occupation sites (Bamford 1982; Gibson 1980). The radiocarbon date for the Southern Beaker, P12, within the period 1900–1650 cal BC is quite acceptable for this typologically Late style vessel. The radiocarbon date range for Southern style Beakers is quite wide and a number of mid second millennium cal BC dates have been obtained (Kinnes *et al*. 1991, 45).

Two of the Late style Beaker vessels have direct associations with radiocarbon determinations. The date for P12 has a calibrated range of 1890–1630 cal BC (BM-2883), that does not overlap with the date range of 2140–1780 cal BC (BM-2866) for P19. The radiocarbon dates indicate that P19 was deposited before P12, although both were deposited within the last 500 years of Beaker currency. It is possible that the stylistically earlier Wessex/Middle Rhine Beaker, P20, and the sherd, P17, were in use and deposited before this phase during the interval 2600–2200 cal BC (Kinnes *et al*. 1991, fig 5).

There is little ceramic evidence for early Bronze Age activity, except for the probable Food Vessel rim P18 from Barrow 8 and the base P14 from the Long Barrow. Middle Bronze Age cremation urns of the Deverel-Rimbury tradition were restricted to the flat cemetery at the front end of the Long Barrow.

Romano-British pottery from the Long Barrow

Contexts 124, 129, 142 and 166 produced small sherds and crumbs of Roman Pottery. The assemblage includes a rim, a samian sherd and two oxidised body sherds. The assemblage is early Roman in date. This material is characterised by its small size and worn condition.

Catalogue of illustrated pottery

The Long Barrow

Peterborough Ware

P1 164. Phase 2.2.ii. Ebbsfleet Ware (1, 7g). Expanded T-shaped rim with impressed whipped cord maggot decoration. Diameter *c* 250mm. Fabric FQA3/PW. Colour: ext: buff; core: grey; int: buff.

P2 164. Phase 2.2.ii. Fengate Ware (1, 17g). Body sherd with paired fingertip impressions. Thickness 14mm. Fabric FQ3/PW. Colour: ext: orange brown; core: dark grey; int: buff.

P3–4 164. Phase 2.2.ii. Mortlake (1, 6g). Rim and neck sherds decorated on the interior with impressed ovals and short whipped cord maggots. Thickness 11mm. Fabric S(L)2/PW. Colour: ext: dark brown; core: dark grey; int: buff.

P5–6 164 and 160. Phase 2.2.ii. Mortlake Ware (5, 13g). Simple internally expanded rim decorated with whipped cord maggots and impressed ovals (knotted cord). Fabric S(L)2/PW. Colour: ext core & int: dark grey.

P7 185/A. Phase 2.2.ii. Mortlake Ware (1, 9g). Slightly expanded rim either with an upright or out-turned neck. Decoration on rim consists of impressed ?whipped cord maggot. Fabric S(L)2/PW. Colour: ext, core & int: dark grey.

P8 185/D. Phase 2.2.ii. Ebbsfleet Ware (1, 7g). Simple slightly expanded rim and upright neck from a shouldered bowl of closed form. Decorated all-over with incised lines forming a herring bone motif. Fabric AF1/PW. Colour: ext: buff; core: dark grey; int: buff.

Late Neolithic/early Bronze Age.

P9 162. Phase 2.2.ii. Late Neolithic/early Bronze Age (4, 9g). Body sherd with impressed decoration consisting of short lengths of twisted or knotted cord. Fabric GI2/LNEBA. Colour: ext: buff; core & int: dark grey.

P10 206. Phase 3.1. Late Neolithic/early Bronze Age (1, 2g). Body sherd with oblique stab decoration. Fabric SAG2/LNEBA. Colour: ext: reddish brown; core & int: dark grey.

P11 162. Phase 2.2.ii. Late Neolithic/ Early Bronze Age (1, 4g). Body sherd decorated with a single impressed fingernail. Fabric SAG2/LNEBA. Colour: ext: reddish brown; core: black; int: dark grey.

Beaker

P12 131. Phase 3.2. Beaker. Form: Incomplete profile, angular waist and globular belly (approx. Clarke shape VII). Decoration: zoned bands of impressed fingernail bounded by lines of impressed comb (Clarke 1970 Motif 5). Comb length 25mm, 9 teeth rectangular. Fabric SAG2/ BKR. Colour: ext: reddish brown; core: black; int: buff.

P13 239/A/2. Phase 1 (disturbed). Beaker. Two refitting body sherds (old break) with complex decoration consisting of alternating bands of crosses and comb filled blocks. Decoration would fit within Clarke's Southern British, Motif group 4 (1970, 427). Fabric GF3/BKR. Colour: ext: buff; core: dark grey; int: buff.

Bronze Age

P14 151 (SF 295). Phase 3. Food Vessel or urn. Base and body sherds (7, 42g). Base Diameter 80mm. Fabric S3/EBA. Colour: ext reddish brown; core & int dark grey. One sherd, possibly from a different vessel, has burnt residues on the interior surface.

P15 106. Phase 3.3. Deverel-Rimbury. Fragmentary base probably from a bucket-shaped vessel (40, 100g). Survives to a height of 50mm. Base Diameter 200mm. Fabric S3/DR. Colour: ext, core & int: brownish orange.

P16 Tr 91/198 soil sample 112. Phase 3.3. Deverel-Rimbury. Fragmentary base probably from a bucket-shaped vessel (90, 746g). Survives to a height of 90mm. Base Diameter 200mm. Fabric S3/DR. Colour: ext: brownish orange; core: grey; int: greyish brown.

Barrow 8

Beaker

P17 2011. Phase 1.1. Beaker. Body sherd (1, 5g). Horizontal lines of impressed comb. Comb teeth rectangular 1 x 1.5mm. Thickness 6mm. Fabric AP(Fe)G1/BKR. Colour: ext: buff; core & int: grey.

Collared Urn or Food Vessel

P18 2009. Phase 2. Collared Urn or Food Vessel. Rim (5, 23g). Rim Diameter 140mm. Fabric C2/EBA. Colour: ext: buff; core & int: orange.

Barrow 9

Beaker

P19 742 (SF1313). Phase 1.4. Beaker. (100+ sherds, 986g includes some conservation filler). Style: example of a miniature Pot Beaker, which sometimes exceed 400mm in height (Lehmann 1965; Gibson 1980). Decoration consists of all-over paired fingernail impressions with a plain zone on girth. Below the rim is a slight thumb groove to low pinched-up cordon. Simple rim to funnel neck and globular body (Clarke Shape VII/IX, not exact). Fabric GAS3/BKR. Colour: ext: reddish brown with blackened patches; core dark grey; int: greyish brown.

Pit 429

Beaker

P20 429 (SF864). Beaker (*c* 200 sherds, 638g). Style: Clarke W/MR; Lanting and van der Waals Step 3 (1972); Case Middle style (1977). S-profile, simple rim to deep neck with low belly (Clarke 1970 shape II). Decoration consists of separated zones of horizontal tooth-comb stamping; comb length 32mm, 14 teeth rectangular to worn ovate (Clarke Motif 1 AOO zoned). Fabric GA2/BKR. Burnished all-over and inside. Colour: ext: buff to brownish orange; core: dark grey to black; int: buff.

SS3.8.4 The character, chronology and cultural implications of the Neolithic and Bronze Age ceramics

David Tomalin

The approach to the Neolithic and Bronze Age pottery

Despite its general softness and fragility, pottery of the earlier prehistoric period can often survive when it is contained within ancient buried soils or the fills of ditches and pits or engulfed in ancient alluvial sediments. Pottery of this nature is more likely to be preserved when it is insulated from the excesses of heavy rain and the action of frost. This means that prompt burial within a few seasons or so of its discard may be necessary to ensure survival.

At Raunds, the complex of Neolithic monuments on the upper margin of the valley floor has provided a number of contexts which have afforded preservative environments of this kind. This has secured the preservation of a modest and informative

array of small potsherds. This tantalising sample of random and scattered fragments of Neolithic pottery has been supplemented by the remains of six early Bronze Age Beakers. All of these had been deposited in contexts that were associated with later funerary activities, when the construction of round barrows extended the monument complex onto the riverine and 'island' area of the valley floor.

Due to the infinite creative possibilities offered by the malleability and plasticity of the potter's clay, prehistoric ceramics have often been viewed by antiquaries and archaeologists as a ready display, or signal, of cultural identity. This view was advanced with considerable enthusiasm during the nineteenth and the earlier twentieth centuries when artefacts first recovered from Neolithic and Bronze Age sites were generally confined to those composed of stone and clay.

At Raunds, the Neolithic and early Bronze Age pottery is an important source of information, yet its interpretation demands particular care. For pottery of these periods, archaeologists have traditionally employed a typological approach in order to construct a relative chronological framework for the sites they have chosen to investigate (Anderson 1984; Gibson and Woods 1990). In the past, this often led to a view in which pots have been perceived to fall naturally into 'families' or 'generations', which might be traced through an evolutionary trajectory. It has also been common for researchers in this field to speak of 'relationships' and to perceive lineages which might link these artificially assembled groups. At Raunds these 'families' can be recognised under the established names of the Ebbsfleet, Mildenhall, Mortlake and Fengate styles. A particularly distinct 'family' or entity might also be perceived in the small number of pots which have been fashioned in the Grooved Ware tradition (Longworth 1971; Garwood 1999a).

During the late Neolithic and early Bronze Age, it has been perceived that further groups of pots have developed in a putative lineage. Ever since the days of John Thurnam (1871), this development has been subject to frequent review and debate. Formal and stylistic variation within British early Bronze Age Beakers has been discussed for well over a century, yet recent outcomes have only produced three perceived styles which still persist in offering chronological enigmas and ambiguities (Kinnes *et al* 1991). The development of the 'Food Urn' pottery tradition, with its collared and other components, has been similarly ordered (Longworth 1984; Burgess 1986; Tomalin 1988; Needham 1996).

Once pots are perceived to belong to theoretical 'families' or groups of a kindred nature, it has seemed but a minor and rational step for the archaeologist to view a particular style of pot as the hallmark or cultural signature of a particular group of people. While all pots are, in some way, representative of their makers, it is important that we recognise that there will be factors in their spread and development which will be contrary to those principles of evolution that bind the natural world. These impediments to the assumption of an evolutionary ceramic lineage have been well summarised by Thomas (1999). At Raunds there are several good reasons to resist the temptation to perceive overt cultural signals in the various styles of pottery. In the first instance, the quantity of sherds is relatively meagre. These are certainly insufficient to permit the reconstruction of a collection of complete pots such as that which might, arguably, characterise the cultural traditions of the Raunds community. Such a collection of pots, produced in a repetitive fashion by a local community would normally be described as an 'array'.

Consistencies in the decorative techniques and motifs employed in the production of Neolithic pottery may appear to be a significant cultural indicator but we must remember that we are still ignorant of the social and personal context in which each potter pursued her or his craft. If the Neolithic pottery at Raunds was produced as a simple domestic chore, then conformity to a cultural tradition may have been no more than the thoughtless or 'innate' product of conservative and unimaginative repetition.

A further caution, guiding this study, concerns our ignorance of the selection processes which may have encouraged the builders and users of the Raunds monuments to remove certain pots from everyday use before discarding them at this particular location. Such a process of selection may have completely expunged from the archaeological record those pots which were most commonly used in the domestic life of the community. This lost or unseen 'domestic array' may have been that best-suited to reveal the true cultural complexion of the community. When considering the selection of Beaker pottery for burial within the round barrows at Raunds, we must allow for the operation of similar cultural filters. This possibility is particularly reinforced by the textural

characteristics of Beaker P83 from Barrow 5 which may well be an import to the area.

If formal and stylistic conformity in the task of Neolithic pot-making was no more than a repetitive domestic task, then we might be mistaken in seeking to attribute specific cultural or ethnic significance to several of our accepted pottery styles. Moreover, if no more than a conservative mindset and a lack of innovation were responsible for the perpetuation of many of these styles, this might explain the longevity of the best known components of the Peterborough tradition. Most of these styles now seem to present a notable level of overlap through the best part of a millennium. During this time we should expect an inevitable degree of unconscious variation or 'drift' to occur. We should also be mindful that the nature of this drift need not be chronologically or geographically consistent.

In this study of the Neolithic and early Bronze Age pottery at Raunds, this writer has given emphasis to another phenomenon of potters' choice which might serve to identify a specific cultural tradition. This concerns the recipes employed in the preparation and tempering of the potter's clay. These recipes may be well entrenched in cultural tradition and, while they might be subject to variation based on the availability of local raw materials, there can be little doubt that conscious predilections and choices were consistently reinforced when they were employed. At Raunds this amounted to the gathering of shell tempering materials and the virtual exclusion of local supplies of flint, stone and sand tempering agents. All of these alternative materials could be readily acquired on or near this site.

In the following text, the sparse and modest fragments of Neolithic pottery from Raunds have been accorded descriptions which have allowed them to be assigned to the established styles of the Peterborough and other traditions. In some cases, this writer views these attributions as little more than a descriptive convenience or shorthand in a milieu where the true and complete nature of all of these shattered and dispersed vessels is sadly lacking. By adhering to these established formal and stylistic definitions, some analogies with the Abingdon style and some meagre examples of the Mildenhall style have been noted. It must be recognised, however, that these analogies only arise where a best-fit comparison has been drawn from the limited formal and decorative features which now survive on some small portions of certain specific sherds.

Set against these individual analogies is a resident shell-tempered potting tradition in which a number of decorative features may have been borrowed or absorbed without any significant or conscious regard for the enforcement or perpetration of a particular cultural tradition. In these circumstances we should be mindful of Healy's (1995a) caution that 'every decorated bowl assemblage has its own characteristics'. Similarly, Thomas (1999) has endorsed this statement while adding that distinctions between styles of decorated Neolithic pottery can often be 'more apparent than real'.

Characterising the Neolithic pottery

For the formal description of the Neolithic pottery a simple distinction has been drawn between bowls of open or closed form. In most instances the presence of the bowl form has been deduced from a number of non-conjoining sherds yet it should also be noted that no sherds provided any reason to suspect the presence of deep, jar-like forms. Where the closed form has been distinguished by a discernable 'carination', this word has been substituted for the word closed. The term 'closed' identifies any vessel in which the neck is discernibly in-bent to accommodate a mouth which displays a diameter which is less than the neck or shoulder. Where the neck rises vertically to a rim in a neutral position or where the neck is out-bent from the shoulder, the form is perceived to be open. Due to the fragmentary condition of the Raunds pottery, no confident distinction could be made between neutral and open forms.

Descriptions of the rim forms of the Neolithic pottery have followed the scheme first developed by Longworth (1960) and Smith (1965). More recently, this scheme has also been adopted by Robertson-Mackay (1987). This permits the ready recognition of rims of plain, rolled and heavily developed or thickened form. At Raunds, it is the rims of plain and rolled form which clearly predominate, and there is only a minor incidence of those heavily-developed rims which might be equated with later Neolithic preference.

Six styles/substyles of Neolithic pottery were distinguished at Raunds. The plain forms comprised simple bowls and shouldered bowls, some with noted carination. Decoration on the Neolithic pottery has been recorded as tool impressed, tool incised, cord impressed, fingernail decorated (FN), or fingertip decorated (FT). Putative examples of the Mildenhall style and certain decorative analogies with the Abingdon style have been noted in minor instances. In these cases

their shell-tempered fabric otherwise suggests that they are closely bound to the contemporary production of the Ebbsfleet pottery which seems to dominate the Neolithic ceramics on this site. The Mortlake and Fengate substyles of the Peterborough decorative tradition are weakly represented as is the minor presence of Grooved Ware.

Characterising the Beaker pottery

The description of Beaker pottery in this report has generally followed the formal and chronological scheme advanced by Case (1977). This has since been modified in the light of the Beaker radiocarbon dating programme conducted by the British Museum (Kinnes *et al* 1991). This modification has allowed the simple division of British Beakers into early, middle and late phases of production to be recast, respectively, as styles 1, 2 and 3 (Case 1991). Case has announced his new scheme to be 'without chronological implications' yet, essentially, such relabelling has allowed readers to apply their own chronological predilections according to their interpretation of the radiocarbon determinations. Where close formal or stylistic analogies are present, some may wish to refer to the finer typological divisions which have been proffered within the theoretical scheme advanced by Lanting and van der Waals (1972). Where appropriate, the 'Dutch scheme' has been cited in this text but it is offered as a means of discussing stylistically comparable pots and it is not offered as a means of relative dating.

Where the form of some of the reconstructed Beakers is discussed, reference is made to the 'short-necked' and 'long-necked' forms of British Beaker which have been recognised by Piggott (1963) and Bamford (1982). Case (1977 and 1991) considers these descriptions to be a useful shorthand for Beakers which would now fall respectively within his styles 2 and 3. Reference is also made to the earlier theoretical classification devised from statistical analyses by Clarke (1970). Particular use of this classification has been made in the description of the Beaker pottery from Redlands Farm (Barclay SS3.8.3). Elsewhere, Clarke's list of decorative motifs has been used to provide a consistent description of Beaker decoration, for it is generally recognised that his corpus remains the principal source of comparative material (Kinnes *et al* 1991).

Characterising the Bronze Age pottery

In the description of the early Bronze Age pottery reference is made to the Food Urn tradition. This embraces those forms which have been traditionally made known to us as Food Vessels, Food Vessel Urns, Encrusted Urns, Cordoned Urns and Collared Urns (Tomalin 1988). The unifying elements of all these forms are a consistent preference for a grog tempering recipe and a soft and lightly oxidised fabric. It seems possible that this mode of tempering may have been acquired from the Beaker potting tradition where fine grog was commonly used to fortify the fabric of thin-walled Beakers before they were fired in an oxidising environment. Various writers have commented that this mode of temperature control may have been gleaned from contemporary metalworking processes. Certainly, the yellowish and reddish brown oxidised pots of the Food Urn tradition provide an explicit contrast with the grey reduced vessels of Neolithic type.

A further characteristic of the Food Urn tradition is a general uniformity of rim forms. A common lexicon of incised and cord-impressed motifs also distinguishes this tradition (Tomalin 1995). Where motifs have been recognised the A–O classification of Longworth (1984) has been employed in the pottery descriptions. Where decoration has been impressed by the application of twisted cord, the direction of twist has been recorded in accordance with Hurley (1979). The details of this cord classification are further described in this text.

The fabric descriptions

The examination of fabrics has been an extremely valuable component of the analysis of the prehistoric pottery at Raunds. At the main monument complex the fabrics and their inclusions were identified under a x 20 stereo-microscope. This identification was assisted by the use of a lapidary wheel which could cut and polish small facets or cross sections. These polished surfaces provided a clear 'window' in which the inclusions could be measured and quantified. The size of the inclusions was determined with the help of an annular graticule. This enabled the largest common or modal size to be estimated and expressed to the nearest 0.25mm. The quantity of inclusions was calculated by reference to visual charts based on those of Shvetsov (1955). The chart graduations were set at 1%, 3%, 5%, 7%, 10%, 15%, 20% and 25%. Summarised information from these analyses is presented in the temper diagrams which are appended to the illustrations. These provide an image which allows textural information to be readily perceived in

any visual comparison between one vessel and another.

Broad fabric groups are defined in Table SS3.112. Amongst the Neolithic and Bronze Age vessels two fabrics, E and TV, were considered to be the same. Shell-temper was distinguished as fabric E while a number of other sherds, containing tabular voids, were classified as fabric TV. Eventually some transitional examples were found in which the voids were accompanied by a few cavities containing decayed shell. Shell temper was present in some of the Neolithic and Beaker pottery and it recurred in later Bronze Age vessels.

Some Neolithic vessels were found to be tempered with a mixture of inclusions which could include grog, sand, shell or flint in any combination (fabric MT). Other sherds contained only quartz sand (QS). Where the sand content exceeded 5% this was suspected to be a deliberate additive, because incidental sand in other vessels from the site seldom exceeded 3%. In rare instances no temper was visible in a sherd (NT) but there always remained the possibility that inclusions had been added in such low and ill-dispersed quantities that they had failed to register in the sampled section.

Where no original surface of a sherd had survived, the remaining particle of the core was described as a crumb. Crumbs were usually too small to permit practical macroscopic examination, and in such cases the temper was usually considered to be indeterminate. A highly distinctive temper was fabric PB. This contained angular calciferous or tufaceous inclusions and it served to distinguish the sherds of a large Beaker with false FN decoration (P64). These sherds were found in a discrete scatter in a recut in the fill of the southern 'quarry pit' of the Long Mound.

A further element of the textural examination was a description of firing. Oxidisation on or within the body of a pot was noted in the analysis as 'X', while reduction of the clay body was noted as 'R'. These two distinctions were used to grade the cross-section of each sherd, beginning at the outer face. Each cross-section was scored on a scale of 10. This meant that the wall of a Collared Urn with some 60% of its centre weakly fired and unburnt might be accorded a score of 2X 6R 2X. If the reduction of the core was off-centre the score could be 3X 6R 1X. Where these details have helped to characterise a pot they have been included in the descriptive catalogue.

At Redlands Farm, pottery studies were carried out by Alastair Barclay then of Oxford Archaeology (SS3.8.3). Here, methods of fabric description have differed slightly but there has been little difficulty in recognising fabrics E, QS and G while mixed temper (MT) has also been observed. In place of the Shvetsov method, the quantification of inclusions in these vessels has been set on a slightly coarser scale. These fabric descriptions have been retained here.

Table SS3.112. Summary of the fabric class

Fabric group	*Temper(s)*
E	Comminuted shell (including SV and TV, see below).
F	Flint
G	Grog
PB	Calciferous temper, found only in a single large FN Beaker (P64)
L	Limestone inclusions, found only in a thick-walled urn from Barrow 8 (P18)
QS	Quartz sand occurring above 5%. (Sometimes noted simply as S in database where inclusion of some flint sand is suspected)
TV	Tabular voids (Sometimes noted simply as V for non-tabular voids or SV where shell residue could be confirmed) This fabric can generally be equated with fabric E. The distinction has been retained in the archive.
MT	Mixed temper of various types including shell, flint, grog and quartz sand.
Q	Angular white quartz

Quantifying the pottery

Some 770 sherds of Neolithic, early Bronze Age and later Bronze Age pottery were recovered from the excavations at West Cotton, Irthlingborough and Stanwick. This excludes the 592 sherds recovered in the excavations by the Oxford Archaeological Unit at Redlands Farm (SS3.8.3; Table SS3.111). Quantification of the assemblage proved difficult owing to the homogeneity and longevity of the local shell-tempering tradition. Where plain and undistinguished body sherds have been found on many archaeological sites it has often been possible to achieve an identification by extra-polation from fabric analysis of the more complete vessels.

At Raunds, this approach was not possible. A substantial quantity of body sherds, amounting to 43%, could only be noted as unclassified (Table SS3.113), although it is reasonable to suppose that these were very largely Neolithic and probably further examples of the wares which have been positively identified. These pieces have included many tiny core fragments of pottery which have been recorded in the database as crumbs. Where a qualified classification of a sherd was reached solely on the grounds of its fabric and without any other supportive evidence, a question mark was added to the database entry. For the purpose of general quantification this reservation has been disregarded in

Table SS3.113. Quantification of Neolithic and Bronze pottery from West Cotton, Irthlingborough and Stanwick

Tradition	*Complete or semi/complete vessels*	*Sherds*	*Minimum number of vessels*
Plain Neolithic Bowl	-	7	6
Decorated Neolithic Bowl	-	5	2
Peterborough	-	132	18
Grooved Ware	-	13	6
Beaker	3	154	16
EBA – Food Urn	6	37	14
Middle/Later Bronze Age	-	4	4
Miscellaneous and unclassified – mostly Neolithic	-	333	?
TOTALS	9	770	66

the generation of the summary table in this report (Table SS3.113).

There also arose the problem of distinguishing between plain sherds from the plain portions of decorated vessels and plain sherds from vessels which were themselves plain. Plain Neolithic vessels could only be identified where sufficient rim and shoulder profiles survived to provide an assurance of the absence of decoration. Six vessels offered reasonable assurance of a lack of decoration but it had to be acknowledged that an incalculable number of plain vessels might remain concealed among the featureless body sherds. Two of these plain vessels (P21 and P22) were considered to be comparable with the Grimston style.

The total number of decorated Neolithic sherds, including individual conjoining pieces, amounted to forty-five. Of these, twenty-four sherds, amounting to a minimum of 16 vessels, could be attributed to the Ebbsfleet substyle. Individual sherds from five more pots could be attributed to a general level within the Peterborough tradition and one shoulder sherd was assigned to the Mildenhall style. A further nine sherds were attributed to the Grooved Ware tradition and one sherd (P62) was considered to be possibly Grooved Ware.

The identification of the Beaker pottery was less problematic and this enabled 154 sherds to be recognised. This identification also embraced three semi-complete Beakers (P83, P84 and P85) found in funerary contexts. For quantification purposes these were considered to be the same as a single sherd. They have also been listed separately in the summary table.

In dealing with the early Bronze Age pottery, the fabric was again found to be a distinguishing feature. Here, the same counting principal was applied to six pots of the Food Urn tradition which had been intentionally buried in funerary contexts. Due to the presence of semi-complete vessels composed of numerous sherds, no useful purpose was found in weighing the pottery. Some sparse fragments of middle or later Bronze Age pottery were also readily identifiable by their fabric. These amounted to a total of just four sherds representing three different pots and a lid.

For the estimation of minimum numbers of vessels, an examination of rim forms, decoration and fabric has been used to form a general conclusion. For the Peterborough tradition this analysis has suggested a minimum of sixteen pots of the Ebbsfleet substyle, one rusticated pot, possibly of the Mortlake/Fengate style (P52) and a further three pots displaying general Peterborough characteristics. In the Grooved Ware tradition, a minimum of six pots could be identified and the presence of at least 16 Beaker vessels could be discerned.

Within the early Bronze Age pottery, a minimum of 14 vessels could be identified. Of these, six were semi-complete pots of the collared style of the Food Urn tradition (P90, P91, P92, P94, P99a, P101). These were recovered from funerary or funerary-related contexts. Sherds of six further pots, all probably of similar collared type, were scattered in various contexts. Four dispersed sherds could be attributed to a form 2A Food Vessel (P88) and one sherd could be assigned to a small, plain early Bronze Age cup (P103). A ceramic plug, used for personal adornment (P99b), was not included in the count.

The nature and context of the Neolithic pottery

The Neolithic Plain Wares

A reasonable indication of plainness could be observed on six Neolithic vessels. These are illustrated as P21, P22, P23, P24, P26 and P27. Given the predominance of plain body sherds, the actual number of pots of this type might be assumed to be higher, but this could not be determined. Sherds P25 and P28 were observed to be plain but insufficient vertical profile survived to provide reasonable assurance. A notable feature was the small size and thinness of most of these vessels. Only sherds P23 and P26 seem to indicate the presence of vessels of any notable size. Both of these display robust rolled rims and thick necks appropriate to cooking or storage pots. This particular form is well matched by vessel P90

at Staines (Robertson-Mackay 1987). No reliable estimate could be made of the number of plain vessels because an unknown quantity of plain sherds could belong to the lower plain portions of vessels which were otherwise decorated.

With the exception of the heavy, thick-walled, shell-tempered vessels P23 and P26 the remaining plain wares are of a light, delicate and modest nature. The latter display thin walls and small rims, which suggest that only pots of relatively small proportions were generally used on the site. The same observation can also be applied to the decorated wares. Due to their modest size, all of these vessels seem best equated with eating and drinking rather than cooking, transportation or storage. Design for drinking is epitomised by vessel P21 which is discussed below.

Neolithic plain wares were redeposited in various parts of Barrow 6, some disturbed at various stages of monument construction, some at later dates. P24, part of a plain shouldered bowl, was found in the inner ditch, while P21, a portion of the elegant shouldered bowl, was recovered from the outer ditch. Other plain vessels from this barrow are represented by sherds P23 and P22, from plough-disturbed levels on the barrow's berm.

A further source of putative plain wares was the neighbouring Long Mound. The first pottery detected in this monument was associated with phase 3.1. It was then that sherd P27 was deposited in the body of the mound. The heavy vessel P26 may also belong to this phase. The lack of a lower neck and shoulder profile makes both of these vessels putative plain wares rather than proven ones. Some further sherds of similar shell-tempered fabric (Sfs 8539, 8540, 8543, 8544, 8666 and 8667) were incorporated in the east end of the Long Mound (phase 3.2). Unfortunately these were too small and crumbly to permit clear identification or to verify an incontrovertible absence of decoration. An absence of identifiable pieces also characterised the meagre amount of pottery from the fill of the rectilinear gully which had been cut into the Long Mound and then backfilled during phase 4.2.

Decorated vessels had certainly come into use at the Long Mound by the time the 'quarry pits' were dug (phase 4.4.i). It is during this phase that decorated shell-tempered pottery of the Ebbsfleet substyle occurs, especially in modest assemblages in features F5257 and F5263 in the base of the north 'quarry pit'. Context F5263 yielded two identical dates of 3650–3370 cal BC (4770±45 BP and 4770±45 BP; OxA-7943 and OxA-7944). This accords well with a general chronological ambit for the Ebbsfleet substyle which might be set within a bracket of 37/3500 BC to 29/2600 BC with some possible persistence to and after the close of the third millennium BC (Thomas 1999, fig 5.10).

The nature and incidence of carination

Plain vessels with carinated shoulders were redeposited in post-Neolithic contexts at Barrow 6. Two of these pots deserve particular note. Vessel P21, from the outer ditch, was a shallow shell-tempered bowl with a simple, pointed and everted rim. Vessel P22 was found in a disturbed, superficial context, and this, too, appeared to be another shallow bowl and it also displayed a notable carination.

Some caution is required in the classification of these two pots. Vessel P21 shows considerable resemblance to early Neolithic bowls of the Grimston style although it lacks the beaded rim and the true outward-leaning neck that generally characterise that series (Herne 1988). Herne observes that sharp shouldering of this kind is also present on a number of middle Neolithic vessels at Broome Heath (Wainwright 1972, cf P247, P259) while Thomas (1999, fig 5.1) identifies a chronological trajectory for the production of plain wares which spans most of the fourth millennium and overlaps with the emergence of the Peterborough style during the closing centuries of that period. Arguably, this might unite the use of these two slightly differing forms. At Broome Heath, however, the pointed rim of P21 is still difficult to match; the closest being Broome Heath P404 which is not a close analogy. Strong carinations and everted rims are, nevertheless, a consistent characteristic of the Grimston style and this could certainly place this Raunds vessel in the early to mid fourth millennium BC; a date which would also be appropriate for P22.

The neck and rim profile of P21 can also be compared with vessel P31 (AOR 55431) from a Saxon context in trench B118. While proffering a carinated profile, this pot is also decorated with shallow fingertip impressions at the shoulder, and there are hints of further shallow indentations or crenellations on the rim. These features might link this pot to the Ebbsfleet substyle where somewhat similar profiles and FT decoration can sometimes be found (cf Mixnam's Pit, Thorpe, Grimes 1960, fig 71 nos 3–6; Canterbury, Smith 1956, fig 46). A comparable profile is also to

be found in the unusual shallow decorated bowl (P55) which was found in a disturbed context in Barrow 6.

All of these vessels are similarly tempered with comminuted shell, and the plain examples suggest that distinctive thin-rimmed shouldered bowls were part of an early Neolithic ceramic repertoire in this region of the Nene valley. It is certainly worth observing that shell-tempered vessels of Grimston character have been reported in an assemblage recovered some 12km upstream in a funerary structure situated on the shoulder of the Nene valley at Grendon (Gibson and McCormick 1985). Here, the vessels are generally too few and too fragmentary to show whether the rims were rolled in the true Grimston manner or whether they were tapered like some of those at Raunds.

Neolithic pottery of the Mildenhall style

Attribution to the Mildenhall style might be securely claimed for just one shell-tempered sherd from Raunds. This is P29 from the Long Mound. A second sherd, P30, is the rim of a simple open cup. This form could be compared with some small plain vessels of the Mildenhall style found at Etton (M215), Hurst Fen (P36) and Spong Hill (P88; Pryor 1998a; Longworth 1960; Healy 1988), while its incised herringbone decoration finds some analogy in the rims of certain Mildenhall vessels at Etton (eg Kinnes 1998, fig 194: M264).

Vessel P29 comes from the upper fill of the south 'quarry pit' of the Long Mound. This sherd represents a shouldered bowl with a near-upright neck and short-line incisions on the upper body. This can be compared with Mildenhall vessel M175 at Etton (Kinnes 1998, fig 188). A straight-profiled neck and a clearly defined 'stepped' shoulder often distinguish the Mildenhall style (Smith 1956). It should be noted that the textural qualities of this sherd are indistinguishable from those at Raunds which otherwise accord with the Ebbsfleet substyle. A further vessel which could arguably lay claim to the Mildenhall style is P8 from the Long Barrow. The internal and external incised decoration and the incurved lip is at home in the Ebbsfleet substyle, yet a very similar form with a slightly taller and straightened neck has been found in the vessels of the Mildenhall style recovered at Spong Hill (Healy 1988, fig 66: P70, fig 70: P121, fig 72: P144). On P70 and P14 from Spong Hill the line decoration has also been applied internally and externally in the manner of P8 from Raunds. The straightened neck is also comparable yet the decorative technique has created sharp incisions rather than blunt channels and the external herringbone motif is not easy to match in the Mildenhall style.

Pottery of the Peterborough tradition

Ebbsfleet Ware. Pottery of the Ebbsfleet substyle was recovered from two principal monuments at Raunds. The secondary silts of the Long Barrow ditches contained a meagre quantity of Neolithic pottery mostly comprising featureless body fragments but at least two vessels of the Ebbsfleet substyle could be identified here (P1 and P8). One of these vessels was tempered with a mixture of sand and flint while the other contained sand and particles of quartzite. A third decorated vessel from the ditch (P7) is deemed to belong to either to the Ebbsfleet or the Mortlake substyle (Barclay SS3.8.3). This was tempered with comminuted shell, a material which is characteristic of the other Ebbsfleet vessels from Raunds.

At the Long Mound some of the most cohesive evidence for the mid fourth millennium use of the Ebbsfleet substyle comes from the fill of F5257; a basal hollow on the floor of the north 'quarry pit' (context 5255/5256/5259; Fig SS1.13). A small assemblage of some 28 sherds in this feature includes Ebbsfleet vessels P32–33, P35, P40, P41, P42 and P43. It also includes a fragment of a plain shoulder (P34) which appears to have been detached below the decoration line of its parent pot. A further shoulder sherd, attributed to P32–3, was recovered from the overlying fill. The remaining sherds in this assemblage seem likely to be plain body fragments of the same vessels. The fabric of all of these sherds is identical and shows tabular voids (TV). These can be generally equated with the dissolution of shell temper in what is otherwise fabric group E.

A second basal hollow in the floor of the north 'quarry pit', F5263 produced a further assemblage of six Ebbsfleet sherds. These included P37, P38, P39, P46 and P47. These sherds were generally divided into a flint-tempered group of fabric F and a TV group otherwise equatable with fabric E.

The flint-tempered wares in F5263 were best represented by vessels P37 and P47. The latter is a body sherd of a small thin-walled vessel decorated with comb-scored weeps. The Ebbsfleet attribution for this vessel is drawn from analogy with shell-tempered vessel P46 which also comes from this context. This displays a rim which is regularly crenellated with whipped cord impressions

in the Ebbsfleet substyle. Nevertheless, other analogous comb-scored sherds at Etton suggest that a more generalised attribution to an unspecified element of the Peterborough tradition could be more appropriate for P47. Flint-tempered vessel P37 bears small indistinct shallow neck impressions which, due to its weakly concave profile, seems to claim inspiration in the Ebbsfleet substyle. The shell-tempered pottery in this same assemblage is best represented by vessels P38, P39 and P46. Vessel P38 displays the typical narrow concave neck of an Ebbsfleet vessel embellished with shallow cord impressions. P39 displays very similar features.

It seems that a further event concerning the deposition or discard of Ebbsfleet pottery occurs in phase 4.4.iS at the Long Mound. This phase is probably, but unproven to be, contemporary with the filling of the previous two features. The relevant sherds were found in a comparable position in the south 'quarry pit' where their stratification has been somewhat disturbed. They comprise no more than two small crumbs of TV fabric from F5266.

A vessel of some interest is the simple closed-form hemispherical cup P46 from F5263. This bears short line whipped cord 'maggot' impressions which have the effect of crenellating an otherwise simple rounded rim. The upper body of this vessel is regularly tooled with horizontal incisions which seem to have been comb-scored. It is possible that sherds P47, P48 and P49 also belong to this vessel.

Hemispherical cups with this profile are occasionally known in the Ebbsfleet substyle, although the particular horizontal scoring cannot be matched. Vessel 7 in an assemblage from Mixnam's Pit, Thorpe, Surrey, displays this form and is decorated with diagonal whipped cord impressions just below the lip (Grimes 1960, fig 72). Whipped cord impressions are commonly favoured in the Ebbsfleet substyle and diagonal rim-top impressions are well known on shouldered vessels of this series (cf Windmill Hill, Ebbsfleet vessels 251–255).

The presence of tall cavetto necks, carinated shoulders and the restrained use of line cord and whipped cord maggot impressions on the rim and neck could be well suited to an early stage in the development of the Ebbsfleet substyle. Other elements in this assemblage may draw inspiration elsewhere in the middle Neolithic, where the use of cord decoration, confined to simple expanded rims, is well matched in the shell-tempered bowls of the Abingdon style (Avery 1982).

A notable variant among the Ebbsfleet pottery at Raunds is vessel P1 from the ditch of the Long Barrow. This is distinguished by its hammer-shaped rim-profile decorated with oblique whipped cord decoration. Barclay (SS3.8.3) comments that this seems best suited to the 'more developed' or later Ebbsfleet products which have been postulated by Smith (1974b) and Whittle (1987).

Two dates of 3650–3370 cal BC (4770±45 BP and 4770±45 BP; OxA-7943 and OxA-7944) from F 5263 in the north 'quarry pit' of the Long Mound, place the production of a significant sample of these Ebbsfleet vessels in the third quarter of the fourth millennium BC. This date might be reasonably extrapolated to include those similar vessels in F5257 where the nature of deposition in the base of the north 'quarry pit' seems very much the same. Ebbsfleet pottery is also represented in the upper fills of the north 'quarry pit' (phase 4.4iiN) where sherds P48 and P49 provide two further examples of this style. The absolute dating of these sherds agrees well with a general timespan for the Ebbsfleet substyle, which can certainly be traced from the mid fourth millennium (Thomas 1999, fig 5.10).

Sherd P50 from a superficial context at the Turf Mound shows affinity with the Ebbsfleet sherds from the north 'quarry pit' of the Long Mound. This sherd was composed of fabric F and bone tooled impressions resembling those of P37. Due to its poor detail, the attribution of P50 is not secure. Somewhat comparable impressions were also present on sherd P51 from Barrow 6 where the identification is similarly provisional.

Mortlake Ware. Decorated vessels attributed to the Mortlake substyle are represented by some sparse sherds from the ditch of the Long Barrow. These thick-walled sherds have been examined by Alastair Barclay (SS3.8.3). No more than three vessels are present and all are tempered with shell. Sherds P3 and P4 represent either one or two relatively thick-walled vessels with a concave neck. A weakly in-turned rim is present and knotted cord ovals and whipped cord maggot impressions have been applied to the internal surfaces. These types of impression have a notable affinity with the Mortlake substyle yet in the case of vessel P5–6 they appear on an open-form vessel which is less readily placed within that group.

Fingernail and fingertip rustication is an outstanding feature of the Mortlake substyle and it commonly dominates the lower bodies

of pots of this series. From a superficial context at Barrow 6 comes the thick body sherd P52. This displays rustication compatible with the Mortlake substyle, and its tempering of comminuted shell is compatible with the other local examples of this tradition. Unfortunately, very similar fingernail rustication is also found in the Fengate style although, in such a case, a more straightened or conical body profile might be expected. Fingernail rustication is also favoured on domestic Beaker pottery and this means that a further alternative attribution cannot be entirely excluded (Bamford 1982). At Raunds, it is evident that similar shell tempering was also used in the local Beaker wares and this leaves the true identity of this sherd unresolved. Some ambiguity also applies to sherd P100 which was found in a Romano-British context. The whipped cord decoration on this vessel can be found in both the Ebbsfleet and Mortlake traditions yet the grog temper and the thickness of the vessel wall makes an early Bronze Age attribution more appealing.

Fengate Ware. A single sherd (P2) from the ditch of the Long Barrow has been attributed to the Fengate substyle (Barclay SS3.8.3). This sherd represents the thick-walled conical body of a Fengate vessel decorated with paired fingertip impressions. The fabric is tempered with coarse flint and quartzite.

From a probable Saxon posthole at the Turf Mound (context 6095) comes vessel P53. This is a bowl with a well developed convex collar of Fengate proportions but it is devoid of the characteristic decoration and the inverted conical body of this substyle. It is well matched by a vessel from phase 1C at Etton and attributed to the Peterborough tradition (Kinnes 1998, fig 203: no PR9).

Comb-scored pottery of the Peterborough tradition. The technique of comb-scoring had been employed contemporaneously with the Ebbsfleet Ware in feature F5253 and context 5261 at the Long Mound. It appears to have been employed on Ebbsfleet cup P46 and it is further attested by three small steep-walled sherds. These are illustrated as P47, P48, and P49. Most of these scorings have been cut horizontally by the potter but some sweeping curves are also visible and these confirm the use of a comb or similar tool to execute simultaneous incisions (eg P47 and P49). P47 is extremely thin-walled and well-fired and is oxidised throughout. This distinguishes it from the others.

The shallow comb scores on these vessels can be compared with a small number of sherds found at Etton where they have been accorded to the Peterborough tradition (Pryor 1998a, nos PR7, FG10, FG14, FG18, FG21 and FG35).

On sherd FG10 at Etton sweeping scores occur on the neck of a collared rimmed vessel of the Fengate style. Most of the other scored sherds at this site have also been attributed to this style although they really display too little of their profiles to confirm their actual form. At Raunds, the tempering of the comb-scored sherds can be contrasted with the Ebbsfleet ware, for they all show an exclusion of shell in favour of small quantities of flint filler. It is possible that these sherds represent no more than two vessels the profiles of which remain unknown.

Decorated bowl ungrouped within the Peterborough tradition. A vessel bearing incised decoration may belong to the Peterborough tradition. This is P55, a shouldered bowl of open form recovered from the inner ditch of Barrow 6 at a point where it was disturbed by a medieval well. With a mouth diameter of 180mm and a tapered and everted rim, this is one of the few Neolithic vessels at Raunds which seems to be specifically suited for drinking. Its prominent incised decoration comprises blunt slashes on the neck and shoulder. A different type of incision is to be found on the body of the bowl, where a finely scored lattice can be seen. This may have been accompanied by a weakly composed calyx or flame motif cut on its rounded base.

While incised lattice decoration is a known feature of the Ebbsfleet substyle of the Peterborough tradition its occurrence is not particularly common. At the type site, on the Ebbsfleet river in north Kent, it appears in modest use on the rims and necks of pots 1 and 3 (Burchell and Piggott 1939 figs 3 and 5). It also appears on the internal and external surfaces of the neck of a carinated vessel found at Mixnam's Pit, on the bank of the Thames at Thorpe, Surrey (Grimes 1960, 183, fig 6). On the north Kent examples the incisions are relatively broad and blunt and they seem to be made by a tool similar to that which has cut the short slashes on the neck and shoulder of P55. For the finely cut body lattice on P55 analogies are more difficult to find although the external neck incisions on Mixnam's 6 shows the same delicacy. Perhaps the addition of these fine lines represents a personal departure or 'signature' by the potter.

Grooved pottery and pottery of the Grooved Ware tradition

Sparse evidence for the use of Grooved Ware was recovered from pit 31820. Charred hazelnut shells in this feature have been dated to 2912–2667 cal BC (4210±70 BP; OxA-3056). This accords well with a known time trajectory for Grooved Ware which, in southern Britain, can be accommodated within the period 3000–2000 BC, while allowing that the true period could eventually prove to be somewhat shorter within this bracket (Garwood 1999a; Thomas 1999, fig 5.10). Two sherds from this pit (P60 and P61) represent a steep-walled vessel decorated with blunt grooves. The fabric of both sherds shows tabular voids which betray the former presence of shell.

From phase 2.2 of the Ditched Enclosure comes a rim (P56) Although incomplete, P56 reveals the tip of a tapered rim which is well suited to Longworth's (1971) form 14 in the Grooved Ware series. The exterior of this pot was capped with a band of round-bottomed horizontal grooves.

A further Grooved Ware vessel is represented by P63. This was recovered from a feature cutting the inner ditch of Barrow 5. This vessel exhibits jabbed pits which were probably contained within a groove-bounded zone. This sherd is composed of conjoined fragments recovered from contexts 47133 and 47082. Its shallow blunt tool-impressed pits bear some resemblance to the decoration of a Grooved Ware vessel in a pit assemblage at Storey's Bar, Fengate (Pryor 1978a, 83, fig 40 no 18).

A groove-bearing sherd, P58 (AOR 5242) was recovered from pit F6047 beneath the southern part of the Turf Mound. This bears parallel grooves scored diagonally into a relatively thin-walled vessel tempered with some 25% grog with a particle size mode of some 2mm. This sherd differs from its shell-tempered counterparts, being of a harder, reduced fabric. Its surface shows oxidisation penetrating some 20% of the thickness of the sherd. This context has yielded no other sherds but a charred hazel object, possibly a plank, from it is dated to 2470–2290 cal BC (weighted mean of 3920±BP and 3870±30 BP; OxA-7947 and OxA-8017; Bayliss *et al* SS6). Like the absolute date associated with P60 and P61, this date is readily compatible with the general dating of Grooved Ware in Britain (Garwood 1999a; Thomas 1999, fig 5.10).

In the upper south 'quarry pit' of the Long Mound conjoining sherds P57 and P59 bore some shallow blunt grooves of Grooved Ware type and they also showed a gritless fabric which is commonly characteristic of this tradition. Sherd P62 from a Romano-British ditch was grooved in much the same manner and displayed a soft mixed-tempered fabric of acceptable character.

The nature and context of the Beaker wares

Beakers of Case's style 2

Comb-decorated Beakers. Beakers decorated with simple horizontal lines or zones of comb-point indentations were associated with Barrow 1, Barrow 5 and later elements of the Turf Mound. Some further sherds of this type were also recovered from various locations in the Stanwick Roman complex where most seemed to be in redeposited contexts.

Arguably the earliest typological style of Beaker pottery at Raunds was that associated with activities at the Turf Mound. After excavation was complete it became apparent that, while Beaker sherds had been found in deposits of every phase from the pre-mound soil (phase 1.1) upwards, they were so tightly concentrated in a small area of the north part of the mound as to indicate that they had come from a pit cut through the mound which had gone undetected during the excavation. The retrospectively recognised feature was called pit D. It is impossible to tell whether pit D pre-dated or post-dated pit F6047 below the south mound, which has been dated to the mid to late third millennium BC.

While rim sherd P74 exhibits some minor differences in motif, all of these fragments from the Turf Mound showed close similarity in the style of their decoration. Arguably, there may also be some linking in their fabric. Where tempering ingredients were detectable these were found to be minor amounts of grog and sand, perhaps mixed in erratic quantities. These common elements of fabrication could allow most of these sherds to come from perhaps one or two beakers formerly contained within pit D. These sherds bear no more than simple horizontal lines of comb-point decoration but, in the case of P68 it seems that these lines had been deliberately contracted to create simple vertically spaced zones. This arrangement is otherwise found on Beaker P20 in the Long Barrow. The size of the other sherds precludes any confirmation of this simple zoning. A distinctive feature of these particular sherds may have been to be the use of a white chalky inlay to enhance the appearance of

the comb indentations; although the possibility of a post-excavation application cannot be entirely excluded. Beaker sherd P74, recovered from context 6111 in the Turf Mound, shows slightly more complex comb-point decoration.

Some scattered fragments of comb-point-decorated Beakers were found on the terrace. Body sherd P80, from a treehole post-dating the Avenue, might be attributed to Cases's style 2. Three were associated with the southern block of the second millennium Field System: P77 came from ditch 19; P82 came from ditch 26; and P86 was found in a posthole of the roundhouse between ditches 26 and 27. Although the exterior of P86 is too heavily eroded to reveal decoration, it character seems best fitted to comb impression. P75, P76, P78 and P8 all came from Iron Age or Romano-British contexts. These sherds were generally too small to be securely characterised but rim-neck sherd P78 showed sufficient horizontal and diagonally indented comb-point decoration to intimate compatibility with Case's style 2.

At Barrow 5, a comb-point-decorated Beaker, P83, was found in a disturbed burial along with five barbed and tanged flint arrowheads. The decoration of this Beaker comprised four bands of lattice motif bounded by plain lines and interspersed with plain zones. The choice of this scheme and the presence of a 'flame base' are characteristic of Clarke's Wessex/Middle Rhine group, but while these motifs are found in style 3 Beakers, the simple bell-shape is characteristic of Lanting's and Van der Waals' Steps 2 and 3. This places this pot within Case's style 2 (Case 1991).

Within the Romano-British site at Redlands Farm a virtually complete Beaker (P20) was found in a pit (Barclay SS3.8.3). This Beaker seems to provide a reasonable model for those other vessels which have been cited here but are represented by no more than individual sherds. A further Beaker of this type was present at Barrow 8 where a single body sherd (P17) was found in the ditch.

Where reasonably complete, these Beakers display an S-shaped or 'bell' profile on which comb-point decoration has been applied in horizontal lines in a manner which accords either with all-over decoration or with Clarke's motif group 1. On Beaker P20 from Redlands Farm the potter has shown a weak regard for the use of alternating plain horizontal zones, a style which is also just detectable amongst the sherds from the Turf Mound (P68). The tempering of all of these Beakers is characterised by the use of grog and sand and there is a significant absence of the comminuted shell which appears in other prehistoric vessels and Style 3 Beakers at Raunds.

On the Beaker from the primary grave in Barrow 5 at Irthlingborough, comb-point decoration was employed to produce motifs 1, 4 and 29 which are classic components of Clarke's Wessex/Middle Rhine style. This vessel, P83, is also best equated with Case's Style 2 although inclusion in Beakers of Style 3 is not unknown. The presence of fine morion quartz grains distinguishes this pot from its counterparts and hints that it may have been imported into the locality.

Incised Beaker pottery. At least one substantial domestic Beaker vessel (P64) seems to have been associated with a recut in the south 'quarry pit' of the Long Mound. No less than 51 sherds could be attributed to a large thick-walled Beaker decorated with a slashed 'herringbone' motif. This decoration superficially resembles fingernail incisions but it appears to have been executed with a sharp tool. The tempering of this vessel is highly distinctive, containing some 5–7% particles of a calcareous tufa crushed to some 2mm. No fitting sherds could be identified but the formal and textural characteristics of these fragments are sufficient to suggest a reconstruction as proffered in Figure SS3.79. From the fill of the north 'quarry pit' of the Long Mound comes evidence of a further large thick-walled Beaker with incised decoration. This is represented by sherd P65 which, although displaying a different fabric, much resembles the external appearance of Beaker P64. Incised decoration was also found on a single isolated sherd (P82) recovered from Stanwick.

Beakers of Case's style 3

Comb-decorated Beakers. From the primary burials in Barrows 1 and 6 come two complete Beakers of style 3. These have been decorated by means of the comb-point technique (P85 and P84). Unlike the Beakers of style 2, cited above, these were tempered with comminuted shell.

Beaker P85 from Barrow 1 is distinguished by an exceptionally squat carinated body and a tall 'chimney-like' neck. Its decoration comprises Clarke's motifs 17, 29 and 35 executed with comb-point indentations which, in this case, are infilled and enhanced with a white compound. Sarah Paynter of the Ancient Monuments Laboratory has analysed this material using X-ray fluores-

cence spectrometry and detected much higher concentrations of calcium in the infill than in the calcareous clay of the pot itself, concluding that the infill is likely to be calcium carbonate. A rim sherd of another comb decorated necked Beaker (P79) was recovered from the context 30414 in the first mound of this barrow.

From Barrow 6 at West Cotton comes the long-necked Beaker P84. This bears Clarke's motifs 31 and 32 executed in comb-point technique. A further technique employed on this vessel is sharp fingernail nicks which have been used to produce non-plastic rustication on the rim and foot. This additional decoration seems to betray a local regard for fingernail rustication, a technique which may have been drawn from a wider array of shell-tempered domestic Beaker vessels in which these particular fine wares may have been present.

From the Long Barrow, another style 3 Beaker with comb-point decoration is represented by a single body sherd (P13) from the upper fill of a disturbed pit (context 239). Alastair Barclay (SS3.8.3) observes that the geometric composition of the decoration on this sherd seems well suited to those motifs which are common in Clarke's Southern style.

The Beakers from Barrows 1 and 6 both come from graves with somewhat similar funerary goods. Beaker P85 from Barrow 1 was associated with a flint dagger, bone spatulae, jet buttons, an amber ring, a 'sponge finger', a chalk object, a stone wrist-guard, a boars tusk, a triangular arrow point and other flint tools. In Barrow 6 the associations with Beaker P84 included a further flint dagger, a jet button, a flint knife and flake and a chalk lump.

A further example of Case's style 3 may be represented by the tiny Beaker sherd P79 from a phase 7 context in Barrow 1. The form of this rim fragment hints at the flared neck profile of a 'developed' long-neck form.

Fingernail decorated and rusticated Beakers equated with Case's style 3. During the production of style 3 Beakers in Britain, the use of fingernail and fingertip decoration proliferated when plastic techniques of dragging and scraping became a favoured means of creating deliberately roughened surfaces. Such coarse finishes were particularly well suited to the larger domestic Beakers including those of pot-Beaker size (Lehmann 1967; Bamford 1982).

The persistence of non-plastic fingernail decoration amongst style 3 Beakers is well demonstrated by two complete vessels from Redlands Farm. The first of these is Beaker P12 which comes from the secondary inhumation grave of an adult female in the Long Barrow (context 131). This vessel survived only as base and body sherds but sufficient can be glimpsed of its bulbous body and tightly constricted waist to see that this was a long-necked Beaker of Clarke's Southern style and equatable with Case's style 3. The horizontal zones of close-spaced fingernail rustication on this pot correspond very well with the motifs employed some 38km downstream in the Nene valley at a Beaker domestic site at Fengate (Bamford 1982, 119, figs 36a and 36b). The shell inclusions in this Beaker imply that it was locally made in a tradition which was common to other style 3 Beakers in the study area. These include the comb-decorated and shell-tempered Beakers in the primary graves of Barrow 1 and Barrow 6.

Beaker P19 is a shell-tempered vessel found in a secondary child inhumation grave in Barrow 9 (Barclay SS3.8.3). The neck and body of this Beaker have been randomly decorated with vertically paired fingernail incisions, each applied in a 'crowsfoot' motif. Other paired incisions have been used to enhance weak horizontal cordons which are moulded at the upper and lower boundaries of the neck. Alastair Barclay (SS3.8.3) observes that this Beaker may owe some affinities to British pot Beakers, yet, while cordons and rustication befit such a domestic array, no truly close analogies can be found.

The early Bronze Age pottery

The nature and context of the Collared Urns and associated pottery of the Food Urn tradition

Urns with collared rims are particularly well known to us through their frequent selection and subsequent survival in early Bronze Age funerary contexts. The temper and decoration of these vessels show them to be a significant part of a larger ceramic tradition which also embraces those pots which antiquaries have traditionally termed 'Food Vessels' and 'Food Vessel urns'. This broader classification has since been termed the 'Food Urn' tradition (Tomalin 1988).

Collared Urns are well represented within the array of vessels selected for use in the early Bronze Age cremation burials at Raunds. They were found in Barrow 1 (P91 and P92), Barrow 5 (P90 and P94) and Barrow 6 (P99a and P101). In a central pit in Barrow 8, the five plain, thick sherds which came loose from a pot otherwise left *in situ* in

a cremation deposit (P18) do not provide evidence of a collar. Their calcareous temper is atypical of the Food Urn tradition which, in southern Britain, is almost exclusively confined to the use of grog. A further Collared Urn was represented by an individual collar sherd, P96, from the upper fills of the outer ditch of Barrow 6. This was decorated with left-hand cord impressions, as was P97, which seems to belong to either this or a similar urn from the same context. Cord with similar twists was also used to decorated a putative Collared Urn represented by a single fragment recovered from the inner ditch of Barrow 5 (P95).

A collar fragment representing a further urn was unstratified in Barrow 3 (P93). This was also decorated with left-hand cord impression. Another rim sherd of the Food Urn tradition, putatively that of a Collared Urn, was recovered from a superficial context in the Turf Mound. This sherd, P89, was impressed with comb-point indentations, a technique which is not particularly common in the decorative repertoire of Collared Urns.

The use of Food Urn pottery was attested by four fragments of a Food Vessel, P88, recovered from the Long Mound. These were found in context 5250 of the upper fill of the northern 'quarry pit'. These sherds were recovered within an area of 0.2 square metres and although they could not be joined their formal and textural attributes were sufficient to reconstruct a Food Vessel with a narrow shoulder groove of type 2A (Tomalin 1983 and 1988). This vessel was decorated with 'stab and drag' incisions which were cut below the rim. This decoration may have been accompanied by short impressed cord motifs set on the lower neck but the surface of the sherd was too eroded to provide positive confirmation.

All of these vessels were characterised by the use of grog temper which had been added, in modest quantities, to a soft, weakly fired fabric. This usually displayed a superficially oxidised internal and external surface. The use of cord impression was common on the larger collared vessels yet it was restricted to a limited array of motifs. These could be classified in Longworth's (1984) repertoire as motifs B, C, H and J.

Weak cognitive and pattern-forming abilities are characteristic of Food Urn potters (Tomalin 1995) and this makes the limited array of motifs at Raunds unsurprising. The winding of the cords which were used to produce the decorative impressions on the Collared Urns are also worthy of note. These impressions are best classified according to the scheme favoured by Hurley (1979, 6–7) who identifies left-hand cord as that which leaves impressions, or 'beads', of the strand segments rising towards top left. Conversely a right-handed cord leaves bead impressions which rise towards top right. In effect, this means that S-twists in the actual cord are right-handed while Z-twists in the actual cord are the result of left-handed windings.

The cord impressions on urn P92 from Barrow 1 and on urn P99a (AOR 3678) from Barrow 6 show left-handed windings while similar impressions also occur on sherd P96 (AOR 4565) from the ditch fill of this latter barrow. The impressions on urn P90 (AOR55241) from Barrow 5 and on sherd P9 from the Long Barrow represent right handed windings. This mixture of cord winding seems to be consistent with poorly disciplined motor-habit movements and these befit a ceramic tradition in which manual movements and cognitive skills were poorly organised (Tomalin 1995).

The smaller Collared Urns were those from Barrows 5 and 6. Urn P94 (55254/36224) from Barrow 5 was a plain vessel no more than 150mm in height. Urn P101 from Barrow 6 was of similar proportions and was also a notably poor specimen being carelessly decorated with a particularly clumsy rendering of Longworth's motifs B and J.

The ceramic stud or plug P99b found with Collared Urn P99a. The urn was found in context 3678 in Barrow 6 where it had been used to contain the cremation of a young and possibly female adult. Amongst the cremated bone was a small conical fired clay stud or plug. The resemblance of this fired clay object to early Bronze Age waisted bipolar jet studs cannot be overlooked. A notable group of seven of these items comes from the early Bronze Age settlement site at West Row Fen where Collared Urn pottery was in common domestic use (Martin and Murphy 1988, 356). Here a truncated pottery version has also been found and this is very similar to the West Cotton example (Edward Martin pers comm).

The terminals on the West Row pieces vary from conical to domes of both acute and weak profile. The width and outline of the cylindrical bodies can also vary from a broad and shallow concavity to a relatively deep and narrow groove, the latter resembling the form of a pulley. These graded variations seems to suggest that the precise shape of these studs may have been no more than a matter of personal preference.

The West Row pieces mostly display poor, and possibly unfinished, workmanship yet it can also be postulated that this group of seven actually contains three pairs. Notionally numbered from top left to bottom right on the published illustration the pairs can be identified as follows. Pair A – 2/5; pair B – 4/7; pair C – 1/3. The criteria for this grouping are based upon consistencies in the broadness or narrowness of the waist and similarities in the profile of the terminal.

The odd man out at West Row Fen is stud number six. This, with its pulley-like waist and conical terminals, can be best matched with the truncated or incomplete ceramic stud which has also been found at this site. Arguably, this ceramic product is the substitute for the missing component of pair D. This raises the possibility that the truncated or unipolar clay examples found at both West Row and West Cotton represent repairs or replacements for broken or lost bipolar studs which were otherwise composed of east Yorkshire jet.

A matching pair of complete bipolar jet studs are known from Wharram Percy barrow 70 where they were found lying close to the neck, or perhaps the ears, of a young female (Mortimer 1905, 47, pl ix, figs 74 and 75, 402). The terminals on each of these studs comprised one large and one small weak dome. A similar pair of jet studs has also been noted in an antiquarian collection which has been attributed to a barrow at Robin Hood's Bay near Bridlington (ibid). Another pair of studs, unusually ill-matched in size, was found with the inhumation of a putative young female in a barrow at Pinderdale Wood, Beadlam (Smith 1994, 21, 110, pl 23 (NYM 88)).

All of these Yorkshire examples can be favourably compared with a broader distribution of fired clay bipolar 'plugs'. Like the studs, these also display waisted sides but all of these are narrower and deeper and conform more closely to the pulley style. The terminals of these plugs seem to lack the clear conical profiles which are found in some of the studs and they usually show no more than a very weak or virtually flattened dome. A pair such as this was found in association with two Collared Urns and an accessory cup in Brenig barrow 44 in Denbighshire (Longworth 1984 cat nos 2023–4, pl 124). Single examples have also been found with Collared Urns in cremation burials at Gawsworth, Cheshire and Stanton Moor barrow 13, Derbyshire (Rowley 1977; Vine 1982, 408 no 999; Longworth 1984, 56 cat nos 134, 320 and 2023–4; Heathcote 1936). A further example was found in association with 'Wilsford Series' grave goods in the inhumation of an aged female in Preshute barrow G1a, Wiltshire (Manton barrow: Annable and Simpson 1964, 47, 68, 101, fig 1).

An alternative to the idea of a repair might see the truncated end of the uniconical clay studs as having been formerly terminated by some other component made of a less durable material. Such an arrangement seems implicit in the design of a pair of gold 'cones' found in Upton Lovell barrow G2e, Wiltshire (Hoare 1812, 98–100, pl X). Although these cone-headed items have slightly broader and less concave waists, they closely resemble the size and the general shape of the uniconical clay studs. The hollow nature of these thin gold shells certainly suggests that each was the facing or cover for a core component which has since decayed. If the rear or basal terminal was intended to be concealed from view then either of the two Upton Lovell 'cones' would be well at home as a capping for a stud such as West Row 4.

The conical gold studs from Upton Lovell were recovered with other sheet gold items and a Collared Urn in one of the better known examples of the Wilsford Series of 'Wessex graves' (Annable and Simpson 1964, 48, 103, cat no 231; Gerloff 1975, 161, pl 53: A, 3 and 4). Gerloff argues that the Wilsford Series represents an array of prestigious female burials which are attributable to the earlier part of the Wessex Grave Series (Tomalin 1988, 218, fig 8). It has been readily admitted that due to the poor quality of excavation, the anatomical evidence for sexing these burials is still unsatisfactory. The pairing of the two gold items at Upton Lovell and the further examples of pairing at Wharrham Percy, Robin Hoods Bay, Beadlam and Brenig all reinforce the case advanced by Mortimer (1905), Ashbee (1960, 110) and Lynch (1971) that studs and plugs were probably worn in the ears. At Wharram Percy; Beadlam; Stanton Moor 13 and the Manton barrow the skeletal evidence attests that the occupants of these graves were women. No examples of studs or plugs are known from proven burials of males.

A lid fragment. Three small fragments depicted as P87 are putatively part of a lid. They are composed of a soft, lightly fired fabric which is generally compatible with early Bronze Age workmanship. They come from an unknown context. Rims of lids of somewhat similar diameter have been noted in the domestic assemblage of Food Urn and

Biconical Urn ceramics at Hockwold-cum-Wilton in Norfolk (Tomalin 1983; Healy 1996, fig 85: P146 and P147). Lids have also been found on certain Food Vessels and on Aldbourne cups. Some of these analogies can show care in seating but they cannot claim the double seating ring seen here. The convexity of the upper surface suggests this putative lid may have been surmounted by a central knob or ring. Perhaps this item is a ceramic version of a wooden cap in the family of wooden receptacles which have been postulated as an inspiration for the fashioning of certain types of small accessory cup (Allen and Hopkins, 2000).

The nature and context of the later Bronze Age pottery

Whereas it was common in southern and central England for pottery of the Deverel-Rimbury tradition to be tempered with generous quantities of flint or grog filler, it was certainly less common for other choices of temper to be made. At Raunds, a divergence from common custom is certainly evident, for where the use and deposition of later Bronze Age pottery has been detected, it seems that the enduring use of the local shell tempering recipe had still been maintained. The persistence of this regional preference has been very well demonstrated by Allen and Hopkins (2000, 311, fig 8) who have traced the chronology of shell-temper usage in neighbouring Lincolnshire. Here there is a general and predictable increase in the adoption of grog tempering during the period of Food Urn production. This gives way to a reassertion of a shell tempering tradition during the late Bronze Age and early Iron Age.

Some further analogies can be cited for the anomalous use of shell in the Deverel-Rimbury ceramic tradition. At Bevan's Quarry round barrow at Temple Guiting, Gloucestershire, a long succession of cremation burials were deposited in urns which were all tempered with comminuted shell (O'Neil 1964). This was apparently obtained from the local outcrop of Kimmeridgian Clay. At Bishops Cannings Down in north Wiltshire, a comparable tradition had been employed by specialist potters exploiting the Kimmeridgian Clay (Tomalin 1992). In both of these cases it seems that we can detect the work of well-established specialist potters who were prepared to adopt and adapt to new pottery styles while retaining a steadfast adherence to their local recipes for the preparation of potting clay. At Raunds we may suspect similar arrangements where an enduring community seems to have been firmly committed to the consistent use of a particular local or regional clay source.

Pottery post-dating the use of Collared Urns was not common at Raunds. Modest evidence for the use of later Bronze Age pottery was apparent at the Long Barrow where a series of sixteen secondary cremations pits at the front of the barrow had produced the desultory remains of at least three flat-bottomed urns (P14–16). Although the bland bodies of these urns could offer no particular chronological distinction, the date of 1860–1420 cal BC (3320±80 BP; OxA-2989) for oak charcoal from one of the unurned cremations provides some general indications for this modest cemetery. In this case the use of old oak could, perhaps, place the use of these urns nearer to the close of the second millennium BC.

In each case only the basal portion of these shell-tempered pots had survived, and this proved insufficient to determine their form. Nevertheless, the proportions of urns P15 and P16 can be seen to be notably wide-based, thin-walled, thin-bottomed and characterised by a weak and well rounded undercurving foot. These characteristics draw a particularly close comparison with an anomalous shell-tempered urn found amongst an array of grog-tempered pots in the cremation cemetery at Conygre Farm on the Trent floodplain near Hoveringham in Nottinghamshire (Allen *et al* 1987, fig 6: no 7). The Conyers vessel shows a bucket-like profile and offers a convincing reconstruction for the truncated pots at the Long Barrow. Lying some 75km north of Raunds it may also represent an outlier to a potting tradition centred on the Kimmeridgian and Oxfordian outcrop.

At West Cotton, shell-tempered urns were present at Barrow 6. They included sherd P108, found in a phase 8 context. The shoulder profile of this single sherd indicates that this represents a bucket-shaped pot with a plain horizontal cordon. This vessel proffers a general affinity with bucket urns of the Deverel-Rimbury tradition. Its thick-walled proportions also offer a possible analogy for the reconstruction of pot P14 in the small cremation cemetery at the Long Barrow. Evidence of two further urns was found in superficial contexts in Barrow 6. This included sherd P109 which shows a thick-walled neck and slightly out-bent rim. This is, perhaps, best suited to an urn of biconical form. A similar reconstruction may be proposed for sherds P104–105 which seem to belong further example of this type.

Another significant find from West Cotton is sherd P106. This is a small portion of a flint-tempered lid. This fragment was recovered from a phase 4.2 context in the Long Mound. This item finds analogy with some rare lidded sub-Biconical Urns found in the Pasture Lodge cremation cemetery near Long Bennington, Lincolnshire as well as some lidded vessels found in south Wessex at Shearplace Hill and Cheselbourne, Dorset (Tomalin 1983). This lid would not be out of place on urn P107 which is represented by a single sherd which was also recovered from the Long Mound.

Stylistic analogies and chronological implications of the Neolithic pottery

The condition and the textural characteristics of the Neolithic pottery

Too little pottery was recovered from the principal Neolithic monuments at Raunds. Particularly disappointing was the lack of diagnostic pottery in primary contexts. A further problem arose from the tempering recipes which had been used in the production of the Neolithic pottery. At an early stage in the history of this site, a local potting tradition had been established in which comminuted shell was employed as the essential tempering medium. This tradition was sustained throughout much of the Neolithic and Bronze Age at Raunds. Consequently, it proved very difficult to use fabric analysis as a means of characterising featureless or badly degraded sherds. This impeded the quest for relative dating evidence.

Carinated bowls and the Grimston style at Raunds

Arguably the earliest pottery vessels at Raunds are a small number of shallow bowls with carinated shoulders showing affinities with the Grimston style (P22 and P21). These were all recovered from disturbed or derived contexts in Barrow 6 where they were residual. This style claims significance in this region in the fourth millennium BC. Here it was first perceived by Smith (1974b) to be, potentially, part of a broader theoretical grouping encompassed by her term 'Grimston/Lyles Hill Series'.

Herne (1988) has been dismissive of a long-enduring Grimston/Lyles Hill series and has argued that the aggregate of radiocarbon dates gives little support to the persistence of carinated bowls of the Grimston style after the close of the fourth millennium. This view is generally endorsed by Thomas (1999, 91, fig 5.1) who recognises a similar chronological restriction. Herne's definition of carinated bowls of the Grimston style is one in which a high quality undecorated vessel of open form is distinguished by an angular bipartite profile. These, he specifically differentiates from 'shouldered bowls' in which the carination defines an upright shoulder on the upper part of the vessel.

This distinction is particularly important when it is applied to the Raunds assemblage because it makes clear that vessels such as P22 are indeed shouldered bowls and not the specific carinated kind which Herne would specifically attribute to the early Neolithic. A close contender in form is bowl P31 but this also bears fingertip-impressed decoration which can be tentatively attributed to the Ebbsfleet substyle. Nevertheless, vessel P21 from phase 6.1 in Barrow 6 comes very close to the Grimston style and this Herne (1988) would confine to the fourth millennium BC.

The Grimston style is certainly present in the Nene valley where shell-tempered vessels of this type with lightly rolled lips have been recognised in association with the façaded rectangular mortuary structure at site C at Grendon (Gibson and MacCormick 1985). The remains of about a dozen bowls of this style were also recovered from a rectangular structure at Padholme Road, Fengate, where a date of 3330–2890 cal BC (4395±50 BP; GaK-4197) has been obtained (Pryor 1974a, 8–10, fig 9). The tempering of the Padholme vessels included 'blade-like vacuoles' which certainly seem to be an appropriate description for the slots left by dissolved shell. The rims in this assemblage were both tapered and rolled, indicating an interesting contemporaneity of these two slightly differing types. At Newark Road, Fengate, some further sherds of the Grimston style showed both rounded and slightly beaded rim forms (Pryor 1980, 95–6, fig 57: nos 1–4). Here the fabric description is equally tantalising, being described as 'vesicular' with finegrits and sand.

The large assemblage of plain Neolithic wares recovered from Broome Heath, Ditchingham, Norfolk offers a significant contribution to the interpretation of some of the pottery styles seen at Raunds. Certain plain shallow shouldered bowls at this site also show some discernable affinities with the Grimston style; particularly the presence of an everted rim with a small beaded or very slightly rolled lip. Since the publication of this material by Wainwright (1972), Herne (1988) has reconsidered these affinities. Comparison with the Grimston style was first evoked when the excavator perceived a

notable distinction between this pottery and the middle Neolithic vessels of the Mildenhall style (Wainwright 1972). This contrast was first drawn with the eponymous site some 60km to the west at Hurst Fen, Mildenhall (cf Smith 1956; Longworth 1960). This comparison gained some favour when it was recognised that the Broome Heath assemblage was devoid of decorated vessels. The sole production of plain wares had been a feature which had generally characterised the earliest phase of Neolithic pottery production in southern England.

On consideration, Herne was inclined to separate the products of Broome Heath from the Grimston/Lyles Hill Series, and, more specifically, from the Grimston style. This has left Broome Heath and some other smaller assemblages potentially standing as separate entities of the middle Neolithic. Unfortunately, the dating of these particular pots at Broome Heath could not be given an absolute fix. These have since been postulated as 'plain ware' elements standing within the general ambit of the south-eastern decorated styles. In Herne's view any connection between the markedly shouldered examples of these 'plain elements' and the Grimston style of the fourth millennium must be considered unproven. If this view is correct, there must be two chronologically distinct distributions in which an unquantified element of overlap might be suspected.

Perhaps the most appealing analogy between Raunds and Broome Heath can be found in the shared use of shallow plain shouldered bowls with everted tapering rims. These might be compared with vessels 4 and 5 at Padholme Road, Fengate (Pryor 1974a, 9). At Broome Heath this type of vessel was very largely outnumbered by similar vessels with either beaded or expanded rims. Nevertheless, they are seemingly represented by small fragments of tapering rims which are insufficient to show the nature of their lower necks and shoulders (Broome Heath P36, P326, P347). A significant pot is Broome Heath P257. This attests a presence, at this site, of plain shallow bowls with both marked shouldered profiles and rims of the tapering type (Wainwright 1972, fig 25).

The Mildenhall style at Raunds

At Raunds, the first ceramic group of the middle Neolithic to be considered is the Mildenhall style. This style of pottery was defined by Smith (1956) after early investigations had been completed on an unenclosed complex of pits and postholes at Hurst Fen, Mildenhall, Suffolk (Clark 1960). The pottery from this site provided greater clarity to a regional form which had been previous described by Piggott (1954) as the 'East Anglian bowl'.

At Hurst Fen, significant formal characteristics were recognised to be a heavy rim and a concave or straight neck. This usually sprang from a pronounced shoulder which might be pinched-out or 'stepped'. The decoration of these bowls displayed a number of distinctive features including the very common use of decoration on the top of the rim and on both the external and internal surfaces of the neck (Smith, 1956; Longworth 1960). The most common method of decoration has been described as 'incised lines' but in effect these are usually shallow blunt burnished grooves applied to surfaces which are also lightly burnished. The direction of these shallow lines is usually vertical or steeply inclined towards near-vertical. Lesser methods of decoration include bone and tubular (quill) impressions, fingertip impressions and a variety of stab and drag motifs.

At Hurst Fen, Briar Hill and Etton, the Mildenhall style is well represented, and in each case the exclusion of impressed cord decoration is explicit (Longworth 1960, Bamford 1985 – with later identification of the style by Kinnes 1998). At each of these sites a contingent of pots was tempered with comminuted shell, a material which immediately invites comparison with the favoured tempering recipe employed at Raunds. A second feature which is shared with Raunds is the production of brown burnished surfaces on relatively thin-walled vessels. These finishes may be plain or they may, occasionally, be gently scored, as attested by vessel P46 and body sherds P47, P48 and P49 from the Long Mound.

Is the Mildenhall style present at Raunds? If we seek the accepted decorative repertoire of the style there is very little evidence to demonstrate that it is. This is because the few burnished open bowls which offer potential examples of this style Raunds are surmounted with impressed cord decoration which is inappropriate to that series (ie P41, P42, P43, P44, P45 and P46). It should not be overlooked, however, that the manner in which this cord decoration has been applied is strikingly similar to the scheme for producing shallow incised decoration on similar rims on Mildenhall pots. (Compare Hurst Fen P43 and Etton M16, M79 M102).

This leaves us to consider shell and sand-tempered sherd P30 and shell-tempered sherd P29 from the Long Mound. The form of the first of these vessels can really offer no more than a possible affinity with the Mildenhall style, yet its phasing could signify an overlap with the Ebbsfleet substyle during a relatively early stage of the use of the monument. Sherd P29 represents a shouldered bowl with a vertical neck and short incised body decoration. Although the arrangement of the short incisions is somewhat different, this bears a notable likeness to sherd M175 which belongs to one of the shell-tempered vessels of Mildenhall style recovered from the causewayed enclosure at Etton (Kinnes 1998). Here the use of the Mildenhall style coincided with phase 1 activity at this site. This could be placed by a series of six radiocarbon dates (BM-2723–5 and BM-2889–90) within in the general bracket of 3800–3300 cal BC. In this phase the use of the Mildenhall style pre-dated the introduction of the Ebbsfleet substyle which was associated with Etton phase 2. This later phase at the causewayed enclosure has been associated with an absolute date of 2200–1940 cal BC (3680±35 BP; BM-2891) but this has been considered 'unacceptably late' (Ambers 1998, 349; Pryor 1998a, 352).

It is unfortunate that no datable ceramic evidence is associated with the construction of the Long Mound, The Turf Mound or the Long Enclosure. It can, however, be observed that carinated vessels comparable to the Grimston style were in use in the vicinity of Barrow 6 and that, by *c* 3650– 3370 cal BC, the pottery entering the north quarry pit of the Long Mound was mostly Ebbsfleet ware while a detectable trace of the Mildenhall style seems to have persisted. It might also be postulated that the Mildenhall style might be detected during phase 2.1 at the Long Barrow. Here, vessel P8, while attributed to the Ebbsfleet substyle (Barclay SS3.8.3) seems to offer marked affinities with the some of the Mildenhall vessels known to us through the assemblage at Spong Hill (Healy 1988, fig 71: P136).

The evidence offered by absolute dating suggests that the first stage of the Long Mound was constructed during the early fourth millennium BC with the erection of the Long Barrow, seemingly, following slightly later, in the mid fourth millennium BC. This ordering of the two monuments requires some caution due to uncertainties attending the date of the Long Mound (Bayliss *et al* SS6).

This time frame would accord well with a general trajectory for the Mildenhall style. At Etton it begins in the early to middle sectors of the fourth millennium BC (aggregated date 3950–3550 cal BC (BM-2723–4 and -2765). Other dates, more general for the style were obtained in earlier decades from bulked charcoal samples: 3990–3770 cal BC (5095±49 BP; BM-770) at Eaton Heath, Norfolk and 4350–3650 cal BC (5180±150 BP; BM-134) at Fussell's Lodge, Wiltshire. At Briar Hill, Northampton, the Mildenhall style represented in phases III-IV has been dated to 3950–3100 cal BC (4780±120 BP; HAR-5271).

The Ebbsfleet substyle at Raunds

At Raunds the Ebbsfleet substyle makes its debut in phase 4.4iN at the Long Mound. It is reasonable to equate this style with a timespan beginning in the mid to later fourth millennium cal BC (Gibson and Kinnes 1997). Elsewhere, with other elements of the Peterborough tradition, it persists until around the mid third millennium cal BC (Thomas 1999, fig 5.10). In basal hollow F5263 of the north 'quarry pit' at the Long Mound, Ebbsfleet pottery was associated with two dates of 3650–3370 cal BC (4770±45 BP and 4770±45 BP; OxA-7943 and OxA-7944). This is compatible with the earlier part of Ebbsfleet time trajectory.

Thomas (1999) reminds us that it is extremely unlikely that one Neolithic pottery style neatly replaces its predecessor and it is now evident that the timespans of the Ebbsfleet and Mortlake styles are largely contemporary, while the current radiocarbon evidence might arguably favour a retardation of a century or two before the Fengate style emerges (Thomas 1999, fig 5.10). Given that only one unambiguous sherd of Fengate style was recovered from the whole of the Raunds monument complex (Long Barrow ditch, context 164), we might speculate whether all major activities here may have been virtually over before any significant adoption or 'take-up' of the Fengate style could take place.

The absolute dates discussed elsewhere in this report suggest that the construction or the initial use of both the Long Mound and the Long Barrow might be placed in succession in the early to mid fourth millennium BC. The use of pottery of the Mortlake substyle cannot be detected in this phase and does not occur until it appears in association with the Ebbsfleet substyle when the secondary silts are accruing in the Long Barrow ditch. A further example of the Mortlake style may be present in a superficial context

in Barrow 6 (P52) but this fingertip-rusticated body sherd is too small to confirm its precise identity within the Peterborough ceramic tradition.

A notable assemblage of Ebbsfleet vessels at Raunds comes from the phase 4.4.iiN deposits in the north quarry pit of the Long Mound. It is here that vessels P32–33, P36 and P38 have been recovered. These shell-tempered pots bear neck decoration executed with short cord impressions generally arranged in tiers of opposed diagonal lines. The thin cavetto necks and the simple un-expanded rims are all typical of this style as indeed is the impressed cord decoration on such necks as represented by sherds P36 and P38.

The question of the date of the Ebbsfleet substyle has been raised at the outset of this discussion. In 1974, Smith was the first to suspect an inception in the fourth millennium BC. This proposal has since been supported by three dates from Gwernvale, Gwent, and Four Crosses, Powys. These place some early and putative examples of the Ebbsfleet substyle firmly in the second half of the fourth millennium (Gibson 1995b; Gibson and Kinnes 1997). Later examples of the style, considered by Thomas (1999), demonstrate persistence during, and possibly throughout, the first half of the third millennium BC.

At Etton, stratified association between the Mildenhall and Ebbsfleet substyles gives some ground to support a transition or interactive process. Sherds of both styles were recovered from the silts in the enclosure ditch in contexts associated with phases 1C and 2 at this site. The radiocarbon dates from Etton would place the production of these Mildenhall vessels a little before the mid fourth millennium BC. It might also be suggested that the very short incised lines on Etton sherds M131and M141 have been executed in imitation or 'anticipation' of cord decoration on Ebbsfleet pottery. Kinnes (1998) hints at comparable processes where greater use of punctuate impressions at Etton 'possibly anticipates later Fengate and Ebbsfleet usage'.

At Windmill Hill certain plain middle Neolithic bowls with deep concave necks were considered to carry Ebbsfleet traits and Smith (1956) commented 'that, except for the absence of cord ornament, they could easily pass for such and there is indeed some doubt as to their correct classification'. It should not be overlooked that Ebbsfleet ware at Windmill Hill accounted for some 40% of the decorated vessels. Here it was found in the middle fills of the ditches where it post-dated the primary use of the causewayed enclosure. In a later investigation reported by Whittle *et al* (1999), Lesley Zienkievicz (1999) has observed that the spatial pattern of Ebbsfleet usage and discard within this causewayed enclosure was notably restricted. This has suggested that 'the nature of activity in which this type of pottery was deposited had a different emphasis and meaning.'

At Raunds it might be postulated that the construction of the Long Mound could have coincided with a similar process when the shell-tempering and the burnishing and scoring techniques of the Mildenhall style were current while a demand for small well-decorated closed-form bowls with thin lips was taking effect. It might also be postulated that these changes may have been coincident with the introduction of cord decoration techniques, a phenomenon shared with the adjacent style zone in the Upper Thames region where the production of the Abingdon style was taking place.

Some affinities with the Abingdon style

A further element of interest in the decorated Neolithic pottery at Raunds is an affinity with the Abingdon style. The pottery from the causewayed enclosure at Abingdon was first identified by Leeds (1927), followed by Case (1956). Knowledge of this style was later expanded during the 1960s when this Thames-side site was further examined by Avery (1982). Avery was able to expand the sample of pots from this site to a minimum of 120. Of these, 95% were prominently tempered with comminuted shell (this is a fabric otherwise described by Smith (1956) as Abingdon ware 1). This tempering tradition places the array of pots at Abingdon in the same *modus operandi* as vessels of Mildenhall style found at Briar Hill, Etton and, to a lesser degree, Hurst Fen. The temper also makes a significant comparison with the pottery found in the Long Mound and adjacent features at Raunds.

A common use of expanded or T-profile rims is a notable feature at Abingdon. This, and the more restrained use of decoration, seems to have prompted the distinction of the 'Abingdon style' but archaeologists would be prudent to consider whether this array of pots is anything other than a particular regional and temporal product of a larger parent tradition which might otherwise include the parameters presented by the Mildenhall style. Smith (1956) was the first to consider this connection when observing

that some of the shell-tempered pottery at the causewayed enclosure at Maiden Bower (Beds) seemed finely divided between that which might be attributed to the Abingdon style and that which seemed attributable to the Mildenhall potting tradition.

Longworth (1960) pursued further aspects of this Abingdon-Mildenhall relationship when he compared the frequencies of rim types in the shell-tempered wares found at both of these sites as well as those found in the Whiteleaf barrow on the Chiltern chalk escarpment. In this exercise, a crude grouping into four simple families of rims was not particularly conducive to a detailed comparison. It certainly seems possible that Clark's work at Mildenhall may have more to tell about temporal differences rather than inter-site cultural compatibilities. This question of relationships was also addressed by Avery (1982) while Whittle (1987) has advocated the application of improved methods of discriminant analysis in order to tease out chronological, regional and functional differences.

A very simple measure of comparison lies in the preferred methods of decoration chosen by the potters at Abingdon, Hurst Fen and Etton. This shows that the potters at Abingdon had the same overriding interest in the use of incised diagonal lines followed by a preference for incised vertical lines. The common use of round or oval impressions was also favoured at all three sites. Measured by simple presence or absence, the methods of decoration showed 30% agreement between Abingdon and Etton and 40% agreement between Abingdon and Hurst Fen. The agreement between Hurst Fen and Etton was 60%. However the pot sample at these three sites showed notable variation ranging from a minimum of some 68 vessels at Mildenhall to 218 at Etton (Table SS3.114). This may have allowed minor decorative techniques to register at Etton while remaining undetected elsewhere. It is certainly interesting to note that Etton displayed four additional techniques, in instances ranging from 0.5% to 2.2%, yet none of these could be detected at the other two sites.

Table SS3.114. Ceramic samples at some key sites

	Min pots	*Vessels/sherds illustrated*
Hurst Fen	68	120
Etton	218	402
Abingdon	120	120

At Abingdon an additional method of decoration was the use of cord impression which accounted for some 16% of the potters' choices. The siting of the cord decoration on these pots was highly restricted, being confined to the tip of rim where it was arranged in a diagonal manner. This replicates the incised pattern which was predominantly employed on rims at all three sites.

Like certain sherds noted by Kinnes at Etton, it might be claimed that the Ebbsfleet substyle shows certain inherited attributes which may have been anticipated by the Abingdon style, but it must also be acknowledged than no Ebbsfleet pottery was recovered either at the Abingdon type site or from the Whiteleaf barrow. At Raunds, however, the character of rim sherd P41 with its convex neck and cord-decorated rim seems to follow particular attributes of the Abingdon style while sherds P42, P43 and P44 seem to represent very similar vessels or, possibly, some further components of a variably fashioned pot. Sherd P44 was found in association with Ebbsfleet vessel P36 in context 5252 in the upper fill of the north 'quarry pit' of the Long Mound, while vessels P42 and P41 came from the underlying hollows (phase 4.4.iN). Here it could be argued that an overlap between the Abingdon style and the Ebbsfleet substyle might be present and that this might be dated around the third quarter of the fourth millennium BC. This date is attested by two absolute dates of 3650–3370 cal BC (4770±45 BP and 4770±45 BP; OxA-7943 and OxA-7944) for F5263 in the base of the north 'quarry hollow' at the Long Mound.

Accepted nomenclature requires that the pottery from phase 4.4.iN at the Raunds Long Mound be classified as Ebbsfleet vessels, yet the shell-tempered fabric and the similarity of the surface textures prompts us to consider a certain homogeneity which transcends the choices which were made by individual potters when opting for particular decorative techniques and forms in the products that they were producing in Nene and the Upper Thames valleys.

Geographical, cultural and social implications of the Neolithic pottery

Early definitions of wares and styles

The shell-tempered sherds recovered from both Etton and Raunds exemplify current problems of describing and classifying the Neolithic pottery of central and eastern England. The concept of 'wares' or 'styles' of Neolithic pottery naturally evolved during

the first half of the twentieth century. This was a time when a small number of causewayed enclosures and excavated long barrows was seen as the primary and almost exclusive source of Neolithic ceramic assemblages or arrays. As these sites were slowly investigated it was inevitable that archaeologists would observe variation or differences between each array. Soon, these were to nurture the definition of perceived 'wares', each of which was largely based on the dominant forms observed at these principal type sites.

When Isobel Smith's *magnum opus* was nearing completion in 1956 this mode of thinking had become well established, yet by surveying and adding a wide array of lesser assemblages and individual finds to a comprehensive *corpus*, a new rationale became possible. This enabled the 'wares' of individual sites to be largely recast as 'styles'. In time, these might be confined within postulated chronological boundaries. Later, these chronological relationships were reviewed by Clark (1966), yet the notion that a few principal assemblages could define larger families of pots or 'styles' still persisted.

This problem has arisen once more at Etton where it has been perceived that 'an Etton style of pottery shows distinct differences from the type assemblage' (Pryor, Cleal and Kinnes 1998). Here, perhaps, it might be prudent to term the pottery at Etton as an excavated collection or site assemblage which has been recovered from a particular locale. Such an assemblage might accrue over a considerable period of time and it could acquire its components from a wide range of sources. Within this collection we can identify certain pots of different shapes and sizes which constitute a significant site array of the Mildenhall style. These pots should represent the functional requirements which pottery-makers and pottery-users considered important when they were repeatedly employing this particular type of ceramic product. Allowing for geographic and temporal variation it might be helpful to consider whether the eponymous pottery at Abingdon is a further site array of a broader parent style. Such problems concerning the merging of accepted pottery styles and the blurring of their perceived zones have been radically reviewed by Thomas (1999). He now concludes such styles to be 'the product of unconsidered and routinised ways of working rather than an overt symbol of identity'.

Earlier investigations into shell-tempered Neolithic pottery on the margins of the Jurassic limestone escarpment.

This report cannot attempt to review the classification of Neolithic ceramics outside the ambit of the Raunds study, but it does draw particular attention to the character and status of shell-tempered pottery in the Upper Thames, east Midlands and the Fen Edge. An early clue to the significance of this material emerged in 1954 when the shell content of some of the Whiteleaf sherds was examined by Mr C P Castell. This revealed a disparate content of fossil shell including the Upper Jurassic oyster *Exogyra nana* and the Cretaceous bivalve *Inoceramus* (Childe and Smith 1954, 221). Given that the Whiteleaf barrow is set on the crest of the Chiltern chalk escarpment the use of the latter Upper Chalk fossil is not too surprising.

In 1954 it was considered that the occurrence of these two species of fossil mollusc as a tempering medium might be indicative of the Chalky Boulder Clay as the potential source of the potters' clay. At Windmill Hill, Hodges (1965) pursued a similar line of enquiry when seeking to account for the notable quantity of shell-tempered vessels found within that causewayed enclosure. In essence, however, the main point had already been missed. The quantities of fossil shell filler contained within these pots far exceeded that which might be naturally integral within the clay. This could only mean that supplies of shell had been specifically sought, washed, gathered and stored as part of the potting tradition.

At Whiteleaf a perfectly usable potting clay is accessible in the Gault vale at the foot of the Chalk escarpment on which the barrow was situated but this source was incapable of providing the necessary shell. At Abingdon very different circumstances applied because, whereas the Gault could be readily found at this site, the Kimmeridgian Clay was also accessible in the vicinity, the outcrop being cut by the Thames. The latter clay offered a ready supply of fossil shell including the species *Exogyra nana*. At Hurst Fen the modest contingent of shell-tempered pots might possibly be derived from the Kimmeridge Clay which lies within a range of 18km, on the Isle of Ely. This might account for the modest quantity of shell-tempered pots recovered from this site. At Etton the nearest source of the same material lies 28km to the east, at March, but the Oxford Clay with its content of fossil bivalves is more readily accessible and can be found within just 2 km of the site. Neither at Mildenhall nor Etton has the species of the

shell inclusions been identified and this still impedes our understanding of the ceramic production.

At Raunds the Kimmeridge Clay was similarly less accessible, the nearest potential source lying some 32km to the south-east, in the neighbourhood of St Neots, where Saxo-Norman production of shelly wares was destined to flourish. However, the Oxford Clay and the Cornbrash are well-endowed with fossil shell, and could be accessed within a mere 3km. At Briar Hill and Grendon, where Neolithic shell-tempered pots were extensively employed, access could be readily gained to both the Oxford Clay and the shelly clay-marls of the Cornbrash. The latter have been notably exploited in the valley of the Great Ouse at Harrold, where the production of distinctive shelly wares was destined to flourish in both Romano-British and medieval times (Brown 1992b). This site lies 7km south-east of Grendon and 15km south of Raunds. Further Romano-British and fifteenth-century kilns were also producing shelly wares some 8km upstream from Harrold at Olney and Embleton (Brown, 1992b; Lyne, pers comm).

Where grog, flint and sand are readily available as perfectly suitable tempering materials, the specific pursuit and preparation of fossil shell by Neolithic communities in the Upper Thames and the Nene valley marks a technical choice of remarkable consistency. Whereas the form and decoration of pots can change due to social pressures, to unintentional or 'innate' variation, or to 'temporal drift', a much greater degree of constraint and consistency can be sustained in recipes used for clay preparation and firing. Once recipes of this kind have been learnt there is very little incentive for deviation or experimentation. Changes of this kind carry an unnecessary risk of failure in a task which generally seeks to satisfy no more than practical requirement.

The recovery and use of clay and shell supplies from geographically restricted sources

It is difficult to avert the suspicion that the shell-tempered Neolithic pottery of the Upper Thames and the Nene valley represents a discernable entity. We may suspect that this involved a few limited and favoured sources of potting clay and that the use of these sites gave rise to a specific tradition of pot-making in which a single recipe for clay preparation became the unifying link.

At Windmill Hill, shell-tempered pottery of 'fabric 10' offers an interesting comparison with practices in the Nene and Welland valleys, at Briar Hill, Etton and Raunds. This temper accounted for some 30% of the pottery from this causewayed enclosure (Smith 1956). Moreover, the fabric of these shell-tempered pots also contained traces of Oolite and this narrowed the potential source to some part of the Jurassic Limestone escarpment. Hodges found some difficulty in accounting for this choice of raw material and supposed that the pots had been manufactured at the clay source and then transported to the site. This view has since been reinforced in a reappraisal by Howard (1981) who has recognised superior technical and decorative characteristics as well as a certain stylistic conformity in the vessels of fabric 10. These are phenomena which seem to suggest transportation of this particular pottery from a specialist production centre located at least some 5.5 km away on an outcrop of Kimmeridge Clay (Howard 1981, 11–25). Of the remaining ten fabric groups at Windmill Hill, Howard has indicated that at least five, and possibly eight, could represent domestic products where raw materials could be extracted, and possibly transported, from local deposits of Clay-with-Flints and valley alluvium.

Some cultural and social implications of the shell-tempered pottery

Applied to the Neolithic communities of the Nene and Welland valleys, the Windmill Hill model for pot transportation versus clay transportation is certainly instructive. This suggests that despite the apparent homogeneity of the shell temper, we should not necessarily envisage a scenario in which pottery was supplied by a principal or centralised group of specialist producers. If this were the case we might expect far greater formal and stylistic conformity. Where shell-tempered pottery has been generously sampled in the causewayed enclosure at Etton, an exuberance of local products suggests that this may not be the case.

The Windmill Hill example suggests that the qualities and value of crushed fossil shell as a tempering medium were widely known and shared by certain Neolithic communities. These communities might exert considerable effort in order to obtain either pots or raw materials from this source. It can be argued that adherence to a specific clay preparation recipe betrays a strong cultural tradition but it must also be acknowledged that these traditions could also arise where specific patterns of specialist production

arose in particular localities which were naturally endowed with suitable clay.

Such conformity can be innately propagated when a potting technique is conveyed from mother to daughter in much the same manner as motor-habits and pattern-forming lexicons are cultural transmitted through instruction (Tomalin 1995). This presumption of gender-based communication is predicated upon general world-wide observations which suggests that the domestic production of pottery is heavily dominated by women. In a Bronze Age context at Raunds this is supported by evidence from Scour's Field where the rim of at least one vessel bears fingertip impressions which are certainly too small to be those of men (Tomalin 2006).

The specific pursuit of supplies of contemporary marine molluscs as a tempering medium has been identified in another group of Neolithic pottery, namely Grooved Ware (Cleal *et al* 1994). Downstream on the Nene, at Fengate, a sample of local Grooved Ware has been recovered from pits at Storey's Bar Road (Pryor 1978a, 69– 103). Here, much wider latitude is evident in the tempering of more than 160 vessels, where sand, grog, shell, flintgrit and vegetable tempering have been individually used and have also been commonly mixed.

In Wessex, Cleal (1995) has examined the incidence of a variety of tempering materials in Neolithic and early Bronze Age pottery. This has shown a principal division of choice between flint tempering and shell tempering techniques in the production of early/middle Neolithic bowls and vessels of the Ebbsfleet, Mortlake and Fengate substyles. With the exception of the Fengate category, the use of flint predominates in all of these styles in Wessex, yet the incidence of shell tempering remains high, being scored around 30% in each case. Cleal observes that shelly tempering commonly predominates at sites which lie either on or close to the Wessex Chalk but it is also evident at Windmill Hill and Hambledon Hill (Smith 2008) that shell was obtained from Jurassic sources.

At this latter site several sources can be identified for high quality pots tempered with Jurassic limestone detritus and fossil shell (Darvill 2008). Cleal rightly comments that 'it is unfortunate that there is not yet a sufficient body of specialist analyses of shell in earlier prehistoric pottery … and that patterns of contact, trade and movement … are still poorly understood'. Nevertheless, if we consider the palaeontological evidence gathered by Castell at Whiteleaf, it seems that fossil shell may well have been extracted from the Chalk for mixing with clay from another source.

Not far from Windmill Hill, we can find good evidence for the transportation of pot-tempering materials in a middle Bronze Age settlement at Bishops Cannings Down. Here, there is strong evidence to suggest that Kimmeridgian fossil shell was gathered and transported to this chalk hill top where it was stored in preparation for the production of large barrel urns. At this small farmstead a cache of fossil shell was found close to a round house in which Barrel Urns of Kimmeridgian clay were being used as storage jars (Tomalin 1992). In this case the fossil Mollusca were found to include *Ostrea*, *Nanogyra virgula* and *Modiolus*, all of which are attributable to the Kimmeridgian clay.

If we are to consider whether pottery rather than clay was transported between Neolithic sites in the Nene Valley and the Fen Edge it is worth alluding to the situation pertaining between the Thames-side sites at Abingdon and Staines. An admittedly long, but convenient, river journey of some 75km links these two causewayed enclosures yet downstream at Staines no trace of shell-tempered Abingdon ware has been found. Nevertheless, it should be observed that the affinitive traits with the Abingdon style seems evident in flint-tempered vessels P138–P140 and P151–P154 at Staines. In this case it seems that even where good riverine communication was available, the Neolithic shell-tempered pots of the Upper Thames region were not favoured as items suitable for transporting to the south.

At Raunds it is important to observe that causewayed enclosures representing significant human communities were sited some 28km upstream at Briar Hill and some 52km down-valley and overland at Etton. At Briar Hill most of the earlier Neolithic bowls have now been generally assigned to the Mildenhall style by Kinnes (1998, 209). These are shell-tempered products in which decoration is surprisingly rare. At Etton the Mildenhall style is particularly well represented by some 352 sherd/vessels, and here decoration is common and accounts for some 60% of the pots. Moreover the decorated pots at Etton seem to show few close affinities with those at Briar Hill. Collectively, this evidence from the Nene valley seems to conform with that on the Thames and it suggests that no discernable passage of pottery passed between the two communities by means of riverine traffic. Operating on the

very bank of the Nene, the Raunds community was also employing shell-tempered pottery. It is particularly disappointing to find the sparse recovery of diagnostic sherds precludes close comparison with either of these neighbouring sites (Tables SS3.115–118).

Differing patterns in the selection and use of pottery at domestic and funerary sites

Where inter-site comparison of Neolithic pottery assemblages has been sought, it has already been observed that problems can arise where there are marked differences in sample size. This is certainly the case when the very modest yield of sherds from Raunds is compared with the prolific assemblage at Etton. An important consideration in a comparison of this type is the nature of the depositional context. This is especially pertinent at Raunds where the principal scatters of the Neolithic sherds lay within secondary contexts at the Long Barrow and the Long Mound. These sherd assemblages are meagre in comparison with the pottery recovered of from most excavated causewayed ditched enclosures.

At Windmill Hill the array of pottery at the causewayed enclosure was complemented

Table SS3.115. The incidence of Neolithic shell tempering recipes at some key sites

This is a simplified analysis in which sherds of mixed temper have been rounded into parent groups which are shell-based, flint-based, grog-based etc

	Shell	*Flint*	*Sand*	*Grog*	*Other*	
Abingdon	95%	4.5%	0.5%	-	?	Approx
Etton	92.6%	1.3%	2%	-	4.1% dissolved	
Briar Hill	75%	1.3%	3.6%	16%	4% sandstone	Approx
Raunds	67.5%	14.5%	3.8%	5%	4.7% MT, etc	
Hurst Fen	3.5%	96.5%	-	-	-	Approx

Table SS3.116. Association between Neolithic pottery styles and fabrics at Etton

	Mildenhall	*Ebbsfleet*	*'Peterborough' (Mortlake?)*	*Fengate*	*Grooved Ware*
Shell	93%	86%	100%	97%	83%
Dissolved	5%	-	-	-	2.4%
Flint	6%	14%	-	-	-
Sand	0.5%	-	-	3%	14.6%
grog	-	-	-	-	-
Total sherds	405	7	12	68	41

Sample total 533

Table SS3.117. Association between Neolithic pottery styles and fabrics at Raunds

	Plain Bowl	*Mildenhall*	*Ebbsfleet*	*Peterborough*	*Mortlake*	*Fengate*	*Grooved Ware*
Shell	11.6%	2.3%	32.6%	-	-	-	9.3%
Flint	4.6%	-	14%	-	-	-	-
Sand	2.3%	-	-	-	-	-	-
Grog	-	-	-	-	-	-	2.3%
Mixed (MT)	-	-	2.3%	7%	2.3%	-	2.3%
No temper	-	-	-	-	-	7%	-

Table SS3.118. Incidence of identified Neolithic pottery styles at Raunds

Plain Bowl	*Mildenhall*	*Ebbsfleet*	*Peterborough*	*Mortlake*	*Fengate*	*Grooved Ware*
18.6%	4.7%	48.8%	7%	2.3%	?	18.6%

by the pottery recovered from the West Kennet long barrow. At the causewayed enclosure Dr Smith considered the pottery to comprise 56% storage pots, 41% bowls and 13% cups. The proportion of plain vessels on this site was some 73%. At the West Kennet long barrow the principal assemblage of sherds was recovered from the barrow forecourt where it was presumed to be associated with funerary activities such as drinking and feasting. However, a small number of pot fragments was recovered inside the burial chambers, and here the excavator considered that sherds rather than complete pots had been deliberately enclosed with the interments (Piggott 1962).

At these two Wiltshire sites the small convex cups or hemispherical bowls mostly display a mouth diameter less than 110mm. Their thin or in-turned rims commonly makes them particularly well suited for drinking purposes. The remainder of the vessels from these two sites have either thickened or out-bent rims and are quite unsuited to be raised to the lip for the consumption of fluids. In terms of size, the array of pots at West Kennet differed little from the neighbouring causewayed enclosure, although the incidence of larger vessels was certainly lower at the long barrow and the largest class was entirely completely absent. This observation is certainly pertinent to the Neolithic pottery at the Long Barrow and Long Mound where there is a virtual absence of vessels with mouth diameters exceeding 200mm as well as a sparsity of plain vessels.

An examination of further sites in the Nene valley region reveals some significant variations in the way in which shell-tempered Neolithic pottery was fashioned and employed. Some 10km downstream on the Nene, at Aldwincle, a subrectangular Neolithic mortuary structure (Site 1) was found to be set within a subcircular enclosing ditch (Jackson 1976). Like the funerary monuments at Raunds the yield of pottery was low. Some 14 vessels were identified of which some 57% contained cavities, characteristic of dissolved shell temper. In only one sherd had shell residue survived. The shell-tempered vessels included a plain rolled-rimmed bowl, presumed to have affinities with the Grimston style, and an array of poorly preserved fragments broadly attributable to the Peterborough tradition. An Ebbsfleet vessel tempered with flint was also recovered from a pit in a neighbouring ring ditch (Jackson 1976, fig 19 sherds 1–15).

Further down the Nene, the Padholme Road site at Fengate yielded some sparse fragments of plain carinated bowls which have evoked comparison with the Grimston style (Pryor 1974a, 6–10, fig 6). These were found in association with a subrectangular structure which was not too far removed in plan from the Aldwincle mortuary house and another at Grendon cited below.

On the edge of the Nene floodplain at Grendon, an array of some fifty Neolithic vessels, mostly represented by individual sherds, was recovered. Here, a further Neolithic funerary structure was found with a striking resemblance to the monument at Aldwincle (Gibson and MacCormick 1985; Chapman 1997). This site lies some 20km south-west of Raunds. All of the Neolithic vessels were recovered from site C, where their contextual and temporal cohesion is not entirely clear (Gibson and MacCormick 1985). There is a notable sparsity of decoration in this array, with tool incision, fingernail incision and cord impression being individually applied to just three pots (Gibson and McCormick 1985, figs 18–20: P44, P73, P49).

The remainder of the site array at Grendon is dominated by plain vessels of which about six can be recognised as carinated bowls with outstretched necks and rims. Like the vessels at Padholme Road, these have certainly offered appealing Grimston affinities. One of these is notably large, with mouth diameter of 400mm. Of a total of 41 vessels with fabric descriptions in this array, 83% are tempered with comminuted shell in the manner of the Raunds pottery. Indeed the descriptions of 'dissolved shell' and 'corkiness' are instantly familiar. The remainder comprise four vessels with flint temper and one with a flint-shell admixture.

Also upstream on the Nene, at a distance of some 16km from Raunds, lies the village of Ecton. Here, on the floodplain a small group of pits and hearths has been uncovered, as well as a subrectangular hollow perceived to be the site of a small Neolithic house (Moore and Williams 1975). Sherds of some twenty-six recognisable vessels recovered from this site have been attributed to the Ebbsfleet and Mortlake styles.

At least one of the pots in this site array is a straight-walled vessel with parallel scorings on the body (Moore *et al* 1975, sherds 16–19). This is a mode of decoration which is otherwise picked up in vessel P46 from the Long Mound and in vessels FG13-FG16 etc at Etton. It is particularly interesting to observe that, despite close proximity to Briar Hill and Grendon (both within 10km), all of

the vessels at this site are composed of flint-based fabrics with no trace of the shell tempering which is so characteristic of the neighbouring sites. With the exception of a small flat-bottomed cup, all of this pottery is decorated, a phenomenon which is somewhat surprising for an assemblage which is putatively of a domestic nature. One possible explanation could be that this was a transitory site used by a small group which was seasonally mobile. An alternative view might see this site as a modest ritual or funerary structure erected by such a group.

The riverside assemblage at Ecton makes a valuable comparison with further Neolithic funerary structures downstream from Raunds at Tansor Crossroads and Orton Longueville (Chapman 1997). The pottery from Tansor is meagre indeed, amounting to fragments of just three decorated vessels of the Peterborough tradition. All are tempered with grog and are seemingly devoid of shell or shell voids. It seems that here we may be observing a further site in which the fabric of the pottery differs from the favoured local tradition.

Another modest assemblage of decorated pottery has been found downstream at Fengate. This is the Cat's Water site not far from the subrectangular Neolithic structure at Padholme Road. These sherds come from isolated features and include two small thick-rimmed bowls decorated with incised decoration (Pryor 1984, 129–130, fig 96: 3, 4). From a neighbouring subsite at Vicarage Farm comes a single rim fragment which the excavator conditionally attributes to an Ebbsfleet bowl (ibid, fig 96: 1). This, too, is apparently shell-tempered and bears some resemblance in profile and external decoration to vessel P8 from the Long Barrow.

Some theoretical considerations and a case for functionalism

It has been observed that few pottery reports have attempted to raise discussion of prehistoric ceramics above the level of factual description (Thomas 1999). At Raunds and its neighbouring sites the presence of a highly distinctive tempering tradition provides a particularly appropriate focus for discussion.

Two issues seem particularly worthy of comment. In the first instance there has persisted a problem in distinguishing between the products of local or regional diversity and those formal and decorative features which have been the product of larger cultural processes in which convention and conformity have been sustained within a commonly recognised tradition. Why and how was such conformity maintained and to what extent was latitude permitted? These questions have always dogged and intimidated archaeologists who, nevertheless, have sought to recognise overt cultural signals and generic relationships in simple domestic products of clay. A *cri de coeur* issued by Ian Longworth (1990) has reiterated the comments of Reginald Smith who urged us to recognise that pottery 'is one of the best clues to date and ethnic relations' (Smith 1924). It seems that pursuers of this aim have been fated to stumble in the British Neolithic where the old site-based definition of wares has spawned style-zones which have neither met unanimous agreement nor understanding.

The Neolithic assemblage at Raunds is a particularly modest one yet the character of its shell-tempered vessels betrays the presence of a long-held regional potting tradition which has accommodated, or responded to, a variety of formal and decorative changes. In this respect Raunds and its neighbouring sites have offered us an almost unrivalled opportunity to examine pottery styles employed by a community which can be characterised by the consistency of its tempering tradition. Here we are able to see that formal and decorative traits which have other- wise been termed the 'Mildenhall style' and some which bear a resemblance to the 'Abingdon style' have been readily executed by this community. The Ebbsfleet substyle has been similarly executed in the same tempering tradition and we are prompted to consider the artificiality of our current classification and the cultural constructs we have been wont to place on them.

If all of these different shapes and finishes were so readily executed within one tempering tradition, could it be that some of these 'styles' are actually no more than functional differences within a broad and catholic parent tradition? Could it be, for instance, that Ebbsfleet bowls with their narrow everted necks and rims were designed for the serving and pouring of liquids in communal eating sessions and that Mortlake vessels with their thickened rims and rusticated bodies were primarily intended to be grasped with one hand and held at the waist while being used as a mortar or mixing bowl? The internal and external burnishing of Abingdon and Mildenhall bowls surely has some practical message to impart for, regardless of the temptation, who would care to drink or lick out the precious contents of a bowl in which the surface was coarse and earthy to the extreme sensitivity of the tongue?

Might Fengate vessels with their thick, tapering walls and heavily collared rims be particularly suited to partial burial as storage jars, while their heavy reinforced rims could facilitate their periodic removal and cleaning? Might the deep indented pits, so common in Mortlake and Fengate vessels, be particularly well suited to accommodating slip-knots for a draw-string or cover? Are the impressed cord designs on the rims of the Fengate vessels a reflection of their wicker lids and was this particular skeuomorphy eventually adopted by the makers of Collared Urns? It has been a common observation that the general scarcity of Fengate vessels has impeded adequate study yet if we consider such pots fulfilling a specialised function in the exceptional security offered by partial burial in a house floor, it would be surprising if many of these particular pots were commonly replaced in their domestic setting or, indeed, chosen for funerary use.

If the shell-tempered pottery of the Upper Thames, the Nene and the Welland is to prompt new discussions on functionalism we must surely consider whether cultural attitudes are reflected less in the shape and form of our pottery yet more in the purpose for which they were deployed. The longevity of the Ebbsfleet, Mortlake and Fengate pots and a perceived parallelism in much of the chronology of these styles has always perplexed those who have perceived an element of cultural identity in the production of each of these types of pot.

These difficulties can be readily assuaged if we accept the evidence at Etton and Raunds that these vessels may be little more than differing functional components in a single and long-lived pottery tradition. We should not forget that the distinction of these styles has been heavily influenced by the presence and character of decoration, yet this should, perhaps, be viewed as no more than a further optional choice where plain pots produced for storage and cooking might be differentiated from others which were designed for the more personal process of eating. It is in the latter process that a regard for embellishment and uniformity might be more readily expressed. Such a review of functional design has been very convincingly advocated in the study of Bronze Age pottery (Ellison 1981). The application of these principles to Neolithic ceramics offers much potential.

At Raunds it is difficult to test these functional possibilities because no sherds of significance were recovered from constructional phases of the Neolithic monuments. At the funerary monuments at Aldwincle and Tansor Crossroads, pottery was certainly sparse yet, given the argument that our principal styles of pottery could each have a specific functional use, we are bound to ask whether any of these uses might hold a particular significance for those engaged in funerary or monument-building activities. If the pre-monument and post-monument sherds at Raunds are drawn into consideration then it might be postulated that only local wares of relatively small size were normally used, and that these were best suited for food consumption or drink rather than the transportation or the cooking of food. Such a pattern could be compatible with short-stay visits. Analogies with modern monthly family visits to Christian tombs in southern Europe or single annual visits to Muslim family tombs in north Africa come to mind.

At Etton we are provided with a further reminder of why the quantity of pottery at the Raunds monuments may have been so low. This causewayed enclosure has produced a rare glimpse of some contemporary wooden vessels (Taylor 1998, 152–155). Two of these vessels (nos 4954 and 4960) appear to be of drinking cup proportions and one, with its in-turned rim, bears a notable resemblance to some of the plain pottery cups found at Windmill Hill (Smith 1956, fig 15: P47 and P50). We should recall that Windmill Hill cups were relatively sparse in the type site array (16%). They are also extremely scarce elsewhere.

This leads to the suspicion that cups may have been more commonly fashioned in wood rather than pottery; an argument which Clarke (1970) has advanced with some conviction in his discussion on Beakers. The second wooden vessel at Etton (4954) displays a narrow tapering rim which is also well suited for drinking purposes. A third vessel, apparently of bowl proportions, displays a simple bevelled rim bearing faint traces of incised decoration. This has been arranged in a manner which strongly reflects contemporary decoration on Mildenhall and Abingdon pots. This vessel is a further reminder that an absence or scarcity of pottery in the archaeological record at Raunds could have been promoted by the use of wooden vessels. In examining the low incidence of lithics, however, Frances Healy adds the caution (pers comm) that there appears to have been very little deposition of artefacts at all.

The second issue raised by the Neolithic ceramics at Raunds concerns some

detectable anomalies in the use of shell-tempered pottery in the Nene valley region. These anomalies have been noted at Tansor Crossroads and Ecton, where the site arrays have shown a striking absence of vessels of this fabric. At the former site it might be argued that the sample was simply too small to reflect the true presence of the local ware but at Ecton this argument is unconvincing. If tempering recipes are indeed culturally imprinted it is difficult to avoid the conclusion that at Ecton we are detecting the presence of a separate or intrusive group, for, given the longevity of the local shell tempering tradition, it is difficult to invoke a chronological explanation.

Our only alternative, at Ecton, is to consider whether special selection had taken place. Such a selection might be suited to funerary purposes where the unusual or exotic might be exhibited. The modest local funerary structures at Aldwincle, Grendon, Tansor and Orton Longueville offer a premise for this, yet it must be acknowledged that the wide scatter of sherds outside a notional mortuary house at Ecton is not particularly convincing.

At Briar Hill a small contingent of 1.7% of the pottery within the causewayed enclosure was flint-tempered (Table SS3.115), and we are prompted to consider whether this may have arrived by the same means as the pottery found at Ecton. A long established proposal has been that causewayed enclosures such as Briar Hill could accommodate periodic gatherings in which more distant communities might be participate and the social cohesion of the population might be reinvigorated (Harding 1995). South of the Nene, the course of the rivers Ouzel and Cherwell and the approach of the Icknield Way are all means by which such journeying and the movement of other potting groups might be directed into this region. Certainly, the effectiveness of such routes seems to be well reflected in the distribution of some significant contemporary artefact types such as stone axes (Clough and Green 1972 figs 7 and 8).

An impediment in any reconstruction of the social organisation of Neolithic Britain can be our modern and inherent regard for territory. Despite their training, Western archaeologists are still prone to see territorial configurations in almost every distribution map and this has surely coloured our view of British Neolithic pottery and its styles. To exorcise this vice, remedial archaeologists might be directed to pre-colonial Canada where intertribal protocols once permitted a temperate landscape to accommodate a very different pattern of human activity. Arriving in the St Lawrence river in the mid seventeenth century, early European colonists and missionaries were perplexed by the activities of differing Indian linguistic groups who seemingly claimed the same territory. Investigation eventually revealed that a shared attribute of these groups was a virtual disregard for territorial ownership outside the immediate domain of an individual campsite or settlement. Where newcomers arrived or where campsites were moved, an elaborate set of protocols allowed these groups to pass amongst each other with the minimum of social friction. Where infringements or competition occurred these could be adjusted by symbolic gestures and gift exchange. Where potential conflicts of interest arose, physical response could be careful measured according to tradition. In these situations male interests in wrestling could play a significant part.

Where the fertile floodplain of the Nene offered a habitat for permanent settlement and grazing, as well as a channel for human communication, a system of protocols and measured responses might regulate the behaviour of a sedentary population and those more mobile populations who might be drawn to rich fisheries and seasonal fowling opportunities of the fen edge. The construction of the Long Barrow at Raunds and the erection of other funerary structures such as those at Aldwincle, Grendon and Tansor and Orton Longueville may reflect something of this dichotomy.

It might be argued that, within this landscape, shell-tempered pottery could be produced in various ‘styles’ to suit functional needs while time might allow this ceramic tradition to ‘drift’ into innate or unintentional change. In such a stable or tolerant human environment the archaeologist has yet to ascertain whether the sharing of a shell-tempered potting tradition might arise from a general commonality of interests or whether this method of production might be no more than a product of local availability. If the latter is to be considered however, we should not overlook that the availability of grog, river sand and gravel flint was also ever present.

Behind the longevity of this domestic pottery tradition we might suspect the presence of a greater sense of group identity and inter-community bonding. Invoking arguments for the early imprinting of motor-habit patterns and the development of

pattern-forming lexicons it might be agued that the learning of shell-tempering recipes for the production of ceramics can betray the cultural extent of this larger community. These recipes may have been no more than a very minor and incidental part of a set of unifying behavioural patterns which once bonded the inhabitants of the Upper Thames, and the east Midlands. Archaeologically detectable pottery design and recipes for clay preparation have sincegained an importance of their own.

Of primary bonding elements such as language, dress or body markings we may now find no trace, but some of these unifying cultural traits may have differed little from the manner in which later occupants of southern Britain reached their own interactive social and cultural accord. Such bonding might be forged through mechanisms such as strong regional dialects. If we cite an analogy in Anglo-Norman England, then certain English counties can still demonstrate how powerful this role may be. The distinctive dialects and cultural traditions of Yorkshire, Lancashire, Devon and Cornwall immediately come to mind. Evolved differentiation of this kind may provide some of the background to a scenario in which the building of focal monuments and meeting places could acquire regional distinction. In his review of certain causewayed enclosures and cursus monuments in southern England, Harding (1995) has envisaged regional developments of this kind where the growth of an interacting human population and the pattern of settlement are nurtured by the nature of the landscape, and the accessibility of its resources.

Stylistic analogies and chronological implications of the Beaker pottery

The Beaker pottery

The Bronze Age pottery from Raunds was largely confined to a small number of vessels which were deliberately selected as grave goods. The primary burial contexts in Barrows 1 and 6 produced virtually complete Beakers while other Beakers were recovered from Barrow 9 and a secondary female burial in the Long Barrow. Pit F429 in the Redlands Farm Roman complex produced a further Beaker, while fragments of another were found discretely dispersed in the south quarry pit of the Long Mound. Beaker sherds were also recovered from within and around pit D in the Turf Mound.

Beakers of Case's style 2. Traditional typological arguments would identify the earliest Beaker pottery on the site as that which comes from a probable pit cut into the northern part of the Turf Mound. Most of these sherds (P66 – P73) carry general horizontal comb-point decoration arranged in simple horizontal lines. The decoration of sherd P74, with its hatched horizontal zone is slightly more complex. Some similar vessels with simplest comb-point decoration (P75 and P78) were also present elsewhere on the terrace. The fragmentary nature of all these sherds leaves some doubt concerning the vertical continuity of their decoration but neck sherd P68 seems to indicate that the horizontal lines of decoration were probably weakly contracted into zones interrupted by narrow plain bands.

It seems very likely that this pottery resembled the complete Beakers of the type found at Brixworth, Northants, and Kempston in Bedfordshire (Clarke 1970 figs 146 and 147). Confirmation of the presence of this motif at Raunds is to be found in Beaker P20 from pit F429 at Redlands Farm. This Beaker and the sherds from the disturbed pit in the Turf Mound all contain modest quantities of sand and grog and they provide a notable contrast with the tradition of shell-tempering which is present in both the Neolithic and Beaker pottery which has been recovered elsewhere within the monument group at Raunds.

Beaker P64 from the 'south quarry pit' of the Long Mound is a relatively large and distinctive vessel tempered with some 5% small angular particles of crushed tufaceous limestone. Given that Jurassic limestone is commonly found locally and that small particles often occur within the Oxford Clay, it is reasonable to suppose that this is a local product which is notably distinct from the common shell tempering tradition of the region. Horizontal and alternating zones of short diagonal slashes on the burnished surface of this Beaker resemble or imitate fingernail incisions. This pot has been conjecturally reconstructed from some 51 dispersed sherds one of which seems to indicate that the slashed zones were partitioned by twin lines of short vertical slashes positioned at mid-belly.

A further member of this arguably early typological group is Beaker P83. This was recovered from a disturbed grave in Irthlingborough Barrow 5 where it was accompanied by five barbed and tanged arrowheads. This is also a Beaker of Case's style 2. In earlier terminology it would have been described as a 'Wessex/Middle Rhine' or 'Step 2–3' Beaker. The four alternating

zones of horizontal and cross-hatched comb-point lines and the intervening plain zones present the effect or illusion which Clarke (1970) has described as 'zone contraction'. This decoration is very little removed from the zonal style of the sherds from the Turf Mound. Indeed, rim sherd P74 from the Turf Mound bears traces of this precise decoration and this unites the character of the material found at these two locations.

The 'flame' or calyx base and the weak S profile of P83 are typical of Clarke's 'Wessex' Beakers; the whole being very well matched by Clarke's figured examples from Wilsford, (Clarke fig 156); Brixworth (fig 146) and Fakenham (fig 176). The form of P83 with its relatively high girth point and its high reaching body convexity is very well matched by the Brixworth Beaker and another of 'Wessex' style from Brightwell, Berks (Clarke, fig 168). Like the other Beakers at Raunds, which are seemingly typologically earlier within this particular site array, this vessel shows no trace of shell temper. It does, however, contain a little morion quartz which is otherwise absent from other Beaker vessels at Raunds. This is a common enough mineral but its anomalous presence here carries some suggestion that this item may have been selected for the grave from material brought from outside the locality.

Beakers of Case's style 3. Beaker P84 had been placed in the primary burial in Barrow 6 where it was accompanied by a flint dagger, a flint knife, a flint flake, a conical jet button and a chalk lump. This Beaker marks a notable exception in the pattern of Beaker production and usage in the Raunds region. This is a very well accomplished coil-built pot of Case's style 3. It is composed of shell-tempered clay. Notable elements include a clearly defined waist, a tall vertical neck and a marked and highly distinctive low-slung neck cordon. The latter gives this Beaker a somewhat 'collared' appearance and it draws notable analogy with some of the long-necked Beakers of Clarke's 'Late Southern' tradition, most of which have been found in the Midlands and East Anglia. Particular formal analogy can be drawn with the Beakers illustrated by Clarke (1970) from Fengate, Cambridgeshire (fig 856); Deepdale, Staffordshire, (fig 862); Kew, Surrey (fig 875); East Harling, Norfolk (fig 877); Houghton, Huntingdonshire (fig 878); Clumber Park, Nottinghamshire (fig 984) and Loddington, Northamptonshire (fig 987). Cordons of this type are also commonly found on the handled Beakers of Case's style 3, where the cordon merges with upper junction of the handle. Here the cordon offers additional support to the luting of the handle and, given that many reconstructed Beakers are substantially incomplete, we may suspect that more of these cordoned vessels once bore handles.

On the neck of P84 the decorative scheme uses comb-point indentations to execute Clarke's motif 32. This can be compared with decoration on the neck-cordoned Beaker from Fengate (Clarke 1970, fig 859). This item comes from an associated group of five Beakers at Fengate in which motif 31 is also employed (ibid fig 856). This latter motif also occurs on this Raunds Beaker. These analogies are sufficient to demonstrate that this pot is very well at home amongst the stylistically later Beaker products of the Nene valley region.

Like the burial context of Beaker P84 in Barrow 6, Beaker P85 from Barrow 1 was recovered from a primary grave which included a flint dagger. This grave also contained jet buttons, an amber ring, a stone 'sponge finger', a chalk object, bone spatulae, a stone wristguard, a boar's tusk, a triangular flint point and flint tools. The Beaker bears little close resemblance to Beaker P84 other than a waisted profile, a tall neck and the common use of shell filler. A striking feature of this Beaker is the marked angular carination of its body, its excessively narrow waist and its tall chimney-like neck. A further distinction is the embellishment of its comb-point decoration where a white calcareous filling or inlay has been used to enhance Clarke's motifs 17 and 35 on the neck and motif 29 on the body.

Long, flared necks and weakly carinated bodies are by no means uncommon amongst 'Southern' Beakers which would now be classed as Case's style 3. Indeed, Bamford (1982) has considered this neck form to be a discernable characteristic amongst 'Southern Beakers' as well as their more developed form. When versions of this Beaker appear with a markedly carinated body they are far less common. The body of a long-necked 'Southern' Beaker from Grantham (Clarke 1970, fig 808) displays a notable carination, and there must be a strong suspicion that this particular shape betrays a constructional junction where two components of the pot have been luted together. It is interesting to see that the Beaker with the low neck cordon at Fengate (Clarke 1970, fig 859) has been cordoned at its mid-belly. This is a point where structural reinforcement may have

been necessary. The same technique can be suspected on the markedly carinated long-necked Beaker found at Houghton, Hunts (Clarke 1970, fig 878). Perhaps these are a particular product of regional diversity or variation in the Beaker pottery of the east Midlands and Fenland region.

At the Long Barrow a secondary Beaker inhumation burial was unusually sited in the body of the mound. Beaker P12 from this context had survived only up to the level of its waist but there can be little doubt of its overall form. While this Beaker displays a bulbous, rather than a carinated belly, its narrow waist is certainly reminiscent of Beaker P85 from Barrow 1. Barclay (SS3.8.3) observes that the banded fingernail (FN) decoration on this vessel is well matched in some of Clarke's 'Southern style' Beakers such as those from Harrowden in Bedfordshire (Clarke 1970, fig 782) and Ramsey St Mary, Huntingdonshire (Clarke 1970, fig 779).

Some further helpful analogies can be found in the domestic assemblages on the eastern edge of the Fens at Hockwold-cum-Wilton in Norfolk (Bamford 1982). Hockwold Site 93 has been perceived to be a circular house. It has produced sufficient sherds to reveal the presence of flared-neck Beakers bearing horizontal trains of FN decoration interspaced with plain zones (Bamford 1982, fig 1: sherds 006–008). These Beakers are remarkably similar to Redlands Farm P12. In scattered association with these vessels were long-necked Beakers with low-slung neck cordons and Beakers of uncertain shape with short alternating herringbone slashes (ibid, figs 1, 2, 3, 5). Both of these types find analogies in Beakers P84 and P64 at Raunds. At 'the Oaks' site at Hockwold some close analogies can be found for the comb-point decorated Beaker P20 from Redlands Farm and for sherds P66–P73 from the Turf Mound. Unfortunately, poor or confused stratification at this site makes evidence for association and dating unhelpful.

The relative dating of the Beaker pottery at Raunds

At Raunds, an outstanding question concerns the duration of the overall Beaker presence on the site. Traditional typological arguments would have supported a substantial period, perhaps of 200 years or more. This would have begun with the insertion of Beaker P20 in pit F429 at Redlands Farm; with the insertion of Pit D into the Turf Mound and with the use of Beakers over an area of the terrace later occupied by the Field System. Arguably later would follow the deposition of the Wessex/Middle Rhine style Beaker P83 in Barrow 5. After this would follow the construction of Barrows 1 and 6 and the insertion of their prestigious grave goods including the stylistically late Beakers P84 and P85. At the Long Barrow, the insertion of Beaker P12 with its associated shale arm-ring and basket earring would also belong to this later phase. It might also have been argued that the earliest Beaker presence on the site was one which was socially exclusive and eschewed the established Neolithic ceramic tradition of preparing shell-tempered clay.

A revised view of the Beaker ceramic evidence offers a very different scenario. Given the new extended duration period for older Beaker ceramic forms and styles, a younger commencement date and a shortened duration period might be proposed for Beaker activity at the monument complex at Raunds. There are good reasons to accept this proposal. At the Turf Mound some of the sherds belonging to Case's style 2 (P66–P73) showed white inlay in their comb-point indentations. This is an unusual technique which is repeated in the typologically later Beaker P85 from Barrow 1. The choice of this seemingly unusual mode of embellishment could hint at converging time-frames for these two stylistically differing Beakers, but we should also be mindful that this decorative technique could have been more common and persistent in its use. Frances Healy comments that acidic soil conditions could readily expunge this inlay from the archaeological record (pers comm).

At Fengate, the association of five Beakers noted by Clarke (1970, cat no 644, figs 855–859) shows that the motifs and styles of the Beakers in the primary burials in Raunds Barrows 1 and 6 are also known to be contemporary elsewhere. This allows further condensing of the period of Beaker activity. Finally, Beaker P12, found with the secondary burial of an adult female in Long Barrow, is demonstrably similar in its body shape and its decoration to vessels occurring together in the domestic assemblage at Hockwold Site 93 (eg Bamford 1982, 84 fig 1: P93.006–7 and P93.009). This same assemblage contains low neck-cordoned Beakers (ibid, P93.009, P93.012 and P93.018) which are arguably contemporary with the form of Beaker P84 in Raunds Barrow 6. It might therefore be argued that all the Beaker burials and structures at Raunds could

represent little more than two or three generations. Effectively, this could mean an 'Indian summer' when an episode of new constructive funerary activity produced an additional array of monuments which were capable of sustaining their enigma after a passage of four millennia.

The absolute dating of the Beaker pottery

Since the reappraisal of radiocarbon dates for British Beakers (Kinnes *et al* 1991), some extreme misgivings have arisen concerning the conventional typological ordering of these pots. Persuasive and reassuring as the old typologies have been, their chronological standing has now been undermined by the realisation that while old has led to new, old has also co-existed and, indeed, persisted with new.

The evidence for this reappraisal nevertheless rests upon radiocarbon dates which are themselves imprecise and have been obtained from organic materials which may not necessarily be of an age which is contemporary with the pottery. This dilemma has been ably summarised by Harrison who comments that 'prehistorians must now recover their confidence in detailed stratigraphies for seriating typological complex artefacts.'

At Barrow 5 at Raunds, a terminus ante quem could be found in a date of 2140–1880 cal BC (mean of 3625±40 BP and 3680±100 BP; OxA-7950 and OxA-3120) for phase 4.2 at this site. This was obtained from animal bone in a pit cut into the barrow mound. This feature post-dates the deposition of Beaker P83 in what appears to be the disturbed primary burial.

For the absolute dating of the style 3 Beaker pottery, assays were obtained from Barrows 1, 6, and 9 and from the Long Barrow. At Barrow 1, Beaker P85 was associated with three radiocarbon dates of 2890–2460 cal BC (4100±80 BP; OxA-4067); 2400–2030 cal BC (3775±45 BP; OxA-7902) and 2200–1920 cal BC (3681±47 BP; UB-3148). These came, respectively from a boar tusk, oak sapwood from the coffin/cist and bone collagen from the adult male primary burial. Here it seems as though the boar tusk may have been an heirloom, while the remaining two dates seem to favour a burial towards the close of the third millennium BC. A date as early the twenty-second century BC might allow some sharing of the technique of white inlay which is otherwise evident in the style 2 Beaker pottery P67–P72 from the Turf Mound.

At Barrow 6 a date of 2130–1820 cal BC (3608±41 BP; UB-3311) was obtained from the bones of the adult male which was accompanied by Beaker P84 in the primary burial pit. This favours usage set closely around the transition between the third and second millennia BC. At Barrow 9 a date of 2140–1780 BC (3610±50 BP; BM-2866) was obtained from the bone collagen of the child buried with Beaker P19. At the Long Barrow another bone collagen sample was used to obtain a date of 1890–1630 cal BC (3450±45 BP; BM-2833) for the adult female buried with Beaker P12.

In general terms, the absolute dates suggest that the style 2 Beaker pottery at Raunds may have been in use after the mid third millennium BC, while the style 3 Beaker pottery was probably in use around the close of that millennium. Beaker P19, dated in or after the nineteenth century BC, could have been one of the last Beakers to be used in an inhumation burial at Raunds. If a minimal period of Beaker activity was sought amongst the absolute dates obtained at this site then a period between the twenty-fourth century BC and the nineteenth century BC might be advocated.

The stylistic analogies and chronological implications of the Bronze Age pottery

The typological background to the Food Urn pottery

Amongst the early Bronze Age communities of the British Isles, the Food Urn tradition can be defined as a widespread phenomenon in which pots of closely related styles were produced in relatively soft fast-fired fabric. These pots have been formerly described by antiquarians and archaeologists as 'Food Vessels, Food Vessel Urns Encrusted Urns, Collared Urns, Trevisker urns, Cordoned Urns' and 'form 3 Biconical Urns' (Tomalin 1988). Common or shared elements of this tradition are a very high regard for the use of grog tempering recipes and an adherence to a simple and limited lexicon of straight-line decorative motifs.

It has been argued that the latter have been acquired and sustained through an early learning process which imbued motor-habit and pattern-forming behavioural traits (Tomalin 1995). Pottery of the Food Urn tradition was recovered from Barrows 1, 5 and 6. Further sherds of this tradition were recovered from a secondary context in the Long Mound (P88) and in Barrow 3 (P93).

On the grounds of its typology, Food Vessel P88 may be proposed as the earliest item of

the Food Urn tradition to be deposited in the Raunds monument complex. This vessel comes from a disturbed secondary context in the Long Mound where it can do no more than attest an early Bronze Age presence. It has been argued elsewhere that the typological development of Food Vessels can be ascribed to four developmental stages denominated by forms 1, 2A, 2B, 3 and 4 (Tomalin 1988). The chronological ordering of these forms appears to lie *en echelon* with a particular parallelism being recognised between forms 2A and 2B. These two forms represent a typological development from the grooved and stopped Food Vessels of form 1. Form 2A Food Vessels are distinguished by the persistence of a simple channelled shoulder groove. This is represented by a single sherd in vessel P88. In this sherd the breadth of the groove seems to be generally broader than those which are interrupted by form 1 stops.

Since the study of some key settlement sites at Killelan Farm, Islay and Hockwold-cum-Wilton, Norfolk (Burgess 1976; Bamford 1982, Tomalin 1983; Healy 1996) it has become evident that Food Vessels and 'Food Vessel Urns' are contemporary components of unified domestic arrays. In these arrays, pottery of a common style was produced in a divergent form, where shape was been adjusted to suit a graduated scale of sizes. This divergence from small to large has produced two familiar forms which, collectively, might be termed the 'Food Vessel/Urn style'. At the larger end of its size range, this style can also include Encrusted Urns (Burgess 1976).

A perplexing aspect of the over-arching Food Urn tradition is the role and chronological position of Collared Urns. A general consensus reached since Ian Longworth's corpus (1984) would see the relatively rare occurrence of shoulder grooves and stops on Collared Urns as one of the early traits of that series (Burgess 1986). This evidence would support the ideas that the development of form 2A Food Urns generally pre-dates the emergence of the Collared Urn style.

An outstanding problem is the relationship between the Food Vessel/Urn style and the Collared Urn style when examined in the domestic context. At Hockwold, where discrete domestic scatters were recovered by field walking and minor exploratory excavation, Food Vessel/Urn sherds were recovered with late Beaker fragments but with a notable absence of Collared Urn sherds. At the domestic site at West Row Fen near Mildenhall, Suffolk, the reverse has been found to be true. Here, a substantial and well recorded domestic assemblage produced a generous array of Collared Urns of all sizes. Here, there was a virtual exclusion of pots of the Food Vessel/Urn style while the occurrence of some notably small Collared Urns seemed to obviate any need for Food Vessels. It is now difficult to avoid the conclusion that although these two styles are very closely related, they are either subculturally or chronologically distinct. The latter relationship seems the more probable.

The early Bronze Age pottery and the Food Urn tradition at Raunds

Urn P90, used as an inverted cover over a cremation in Barrow 5, is one of the small number of Collared Urns which demonstrates clear affinity with the form 1 stopped and grooved products of the Food Vessel/Urn style. Since the publication of Ian Longworth's corpus of 1984 this feature has been rightly identified as a specific 'early trait' (no 5) by Burgess (1986).

Analogous stopped grooves can be found on the Collared Urns illustrated and listed by Ian Longworth (1984) at Charlton, Worcestershire (corpus no 653); Wetton, Staffordshire (corpus no 1421); Gloucestershire? (corpus no 599); Pentraeth, Gwynedd, (corpus no 2148); Winterbourne St Martin G31, Dorset (corpus no 508); Winterbourne Steepleton 19c, Dorset (corpus no 513); Peacehaven, East Sussex (corpus no 565); Acklam Wold 2, North Yorkshire (corpus no 1070); and Winterbourne Stoke, Wiltshire (corpus no 1738). The Charlton example confirms its borrowing from the style of Food Vessel pottery by displaying a set of four individually moulded feet.

According to its typology, urn P99a from Barrow 6 lies in the middle to late period of Collared Urn production as defined by Burgess (1986). This is inferred from the presence of late traits 4 and 5. An interesting attribute of this urn is its unusual finger-tipped shoulder. This decoration must be seen as distinct from the vestigial stopped grooves of the Food Vessel/Urn style and it can be best interpreted as a trait borrowed from contemporary Biconical Urns. A comparable example with fingernail decoration on the shoulder was recovered from barrow T12 at Tynings Farm, Mendip, Somerset (Longworth 1984, corpus no 1399, pl 21h). This was found amongst a small group of secondary cremations, two of which were enclosed in shoulder-finger-tipped Biconical Urns (Taylor 1933; Taylor 1951; Tomalin 1983).

The conical clay plug, or putative ear piece (P99b) associated with this urn has already been discussed, and it finds a number of analogies among bipolar plugs which have also been found in association with Collared Urns. Most of these associated pots are best equated with Burgess' middle group or phase of Collared Urn production (Burgess 1986) although the example from Brenig 44 shows only two of Burgess' traits and these are both 'late'. Analogies have also been drawn with two unipolar studs found in a poorly defined relationship with a Collared Urn in the Wilsford Series cremation burial at Upton Lovell barrow G2e (Annable and Simpson 1964, cat nos 230–231; Longworth 1984, corpus no 1710). This unusual plain pot displays the early trait of a retained vestigial neck grooves of Food Vessel Urn style.

Collared Urn P92 from Barrow 1 generally resembles urn P99a from Barrow 6 and, given the similar presence of late traits 4 and 5, it would not be unreasonable to proffer a similar chronological position in the middle to late period of this style. Both urns bear Longworth's motif C on the collar, executed with left-hand cord impressions. P92 also bears the same decoration on the neck and it is unfortunate that insufficient of the pot survives for us to tell whether finger-tipping had been applied to the shoulder.

Collared Urn P101 from cremation F3219 at Barrow 6 was associated with Pomoideae charcoal dated to 2130–1820 cal BC (3610±40BP; OxA-7866). This is a small, carelessly decorated vessel which has seemingly been selected from the inferior sector of its contemporary domestic array. Its short line decoration on collar and neck (Burgess' early trait 2) makes a claim to an early date, and this is perhaps borne out by its shell-tempered fabric. Although this recipe claims a long and well-favoured local pedigree. it is still highly unusual in the Collared Urn series. This urn also bears a deep 'hat-like' collar and a continuous curving inner profile. These are late traits (nos 4 and 7) in the Burgess scheme (1986) and, like the temper, they produce a confusion of attributes.

Collared Urn P94 is another example from the smaller end of the Collared Urn size range. This displays just a single early trait in its convex-profiled collar. It also shows an inferior finish which is somewhat similar to P101 but it is unable to show the unusual shell-tempered fabric.

Collared Urn P91 from Barrow 1 is a tantalising enigma due to its incomplete state. This was a large urn containing the cremated remains of an adult and pubescent child. It was also accompanied by a horn-hilted copper alloy dagger which can be typologically dated around the twentieth century BC (Needham SS3.3.1). A surviving portion of shoulder displays traces of Longworth's motif J executed in with slashed incisions. A single small spall also shows the same motif on a portion of lower collar but in this case the pattern is executed in impressed cord. This fragment is so small that there must remain a suspicion as to whether this may belong to a separate accompanying vessel. The contrast in decorative techniques gives some support to this suspicion although the consistency of motif seems more reassuring. A comparable juxtaposition of cord-impressed and incised techniques in the same motif can be found in the same relative positions on a Collared Urn at Llanboidy, Dyfed (Longworth 1984, corpus no 2054, pl 13a).

Some single dispersed sherds provide further evidence of the use of Collared Urns at Raunds. From Barrow 3 comes a collar fragment, P93, showing weak upward projection at the collar base. This is best attributed to the early to middle period of this style (Burgess 1986). Another sherd (P102) appears to be a portion of neck decorated with an incised lattice compatible with Longworth's motif L. This type of neck decoration is often favoured in Longworth's north-western style of Collared Urns and it is well illustrated by examples from Middleton Smerril, Derbyshire, and Stanton Moor, Derbyshire (Longworth 1984, corpus nos 284 and 308). Collar fragment P96 from Barrow 6 is slightly more developed, but might still be placed in Burgess' middle period of Collared Urn production.

Vessel P103 can claim only questionable membership of the Food Urn tradition. Its fabric is atypically tempered with comminuted shell. The form of this pot bears general comparison with a number of small plain accessory cups which have been found in association with Collared Urns. This cup was recovered from a posthole in trench B119. It comprises a single fragment of a vessel with a mouth diameter of *c* 100mm. Analogies for this cup can be found in association with those Collared Urns listed by Longworth (1984) at Leuchars, Fife (corpus no 1839); Frampton G4, Dorset, (corpus no 407); Ford, Northumberland (corpus no 1047); Kirton in Lindsey, Humberside, (corpus no 744); Blore with Swinscoe, Staffordshire (corpus no 1414); Durham

(corpus no 533); Coniston (corpus no 197); and Allerston, North Yorkshire (corpus no 1078). Given the common presence of Collared Urn pottery at Raunds, the occurrence of P103 is not remarkable. Moreover, its fabric can be favourably compared with the unusual shell-tempering of Collared Urn P101 from Barrow 6.

Pottery of the later Bronze Age

Viewed through the remnants of its pottery, the later Bronze Age presence at Raunds is tantalisingly unclear. The later Bronze Age pottery of the east Midlands has been well examined and reviewed by Allen *et al* (1987), when carrying out some particularly valuable textural and petrological studies on a substantial array of ceramics found in flat cemeteries at Coneygre Farm, Thurgaton, Nottinghamshire, and Pasture Lodge Farm near Long Bennington, Lincolnshire. Some further cemeteries of this type have been noted by Allen at Grantham and Freiston in Lincolnshire and at Chapel Brampton in Northamptonshire (Moore 1971; Moore 1973). The arrays recovered from the cemeteries at Coneygre and Pasture Lodge farms have shown that the style of the later Bronze Age pottery of the east Midlands is generally similar to the Deverel-Rimbury tradition of southern England. Moreover, the common use of grog temper suggests that much of this pottery may have been closely associated with the process which was responsible for the emergence of form 3 Biconical Urns in the south.

One feature common to this process of development has been the occasional use of lidded urns. In the south of England this specialised type of pot is represented by a substantial, but fragmentary, lid found in the Deverel-Rimbury domestic assemblage at Shearplace Hill (Tomalin 1983, fig 43). This seems to have been fashioned to cover a pot with a mouth diameter of at least 240mm. Lids up to 140mm in diameter are known in the domestic Biconical Urn assemblages at sites F49 and F50 at Hockwold (ibid, 365) while those with diameters of some 110 and 117mm are in evidence at Coneygre Farm (Allen *et al* 1987, fig 13: 1A/B and 4A/B). Collectively, these lids seem to suggest that only urns of relatively modest size were covered in this way. On some rare occasions in the east Midlands, these vessels were occasionally selected as cremation receptacles. It would not be unreasonable to suspect sherd P106 from the Long Mound to belong to a pot of this type.

From phase 5 of the Long Mound comes pot P107. This is the top of a sub-biconical or bucket-shaped urn with a rim form which is well at home amongst the cremation receptacles of the east Midlands (cf Allen *et al* 1987, rim form III). These pots raise the question as to whether some of the unurned cremations which were secondary or peripheral to the Raunds round barrows were also of later Bronze Age date. The same might be postulated for the cremations buried outside the Long Barrow. The scarcity and the fragmentary state of the middle Bronze Age pottery from these sites would certainly be consistent with the history of mound degradation, ploughing and warren construction which can be traced at Raunds.

Experimental studies of cremation processes by McKinley (1997b) remind us that pyre-goods rather than grave-goods can be consumed and abandoned through the burning process and that the end product of ash and cremated bone can easily discarded and dispersed on-site. This 'total-waste' procedure provides a significant alternative to the custom of urn burial and it is one that can easily elude the archaeological record. If urn burial was no more than an optional choice in cremation procedures it is easy to see how the Neolithic and Bronze Age field monuments at Raunds could persist in attracting funerary practices while leaving very little trace in the archaeological record of the later Bronze Age. Activity of this period also seems to be evident near the north-eastern terminal of the Long Mound where vessel P108 was recovered from a superficial context at Barrow 6. This, too, is a pot of the Deverel-Rimbury style.

Cultural and social implications of the Bronze Age pottery

Pots of the Food Urn tradition

At Raunds, the succession of pottery styles leads from Beaker to pots of the Food Urn tradition. Of the latter, the earliest is arguably Food Vessel P88 in the Long Mound. The secondary context of this pot is generally unhelpful and it tells us no more than the fact that bowls or 'vessels' of modest size, suitable for food or possibly drink, were employed on this site. Due to its fragmentation we are unable to tell whether the shoulder groove on this vessel was continuous or whether it was interrupted by stops. Regardless of this uncertainty, it seems reasonable to suppose that the date of this pot was probably closely akin to the grooved and stopped Collared Urn P90 from Barrow 5.

These two pots provide a salutary reminder that our vision of the array of contemporary domestic pottery employed by the Bronze Age community at Raunds has been hopelessly impaired by a dependence upon those very few vessels which were chosen for use as cremation receptacles. This question of an 'unseen' array has been well discussed by ApSimon (1972) and Cowie (1978), while some tantalising glimpses of these domestic repertoires has been gleaned from the settlement sites at Kilellan Farm, Islay; Hockwold-cum-Wilton, Norfolk and West Row Fen, Suffolk (Burgess 1976; Bamford 1982; Healy 1996; Martin, pers comm; Tomalin forthcoming). Downstream from Raunds, at Peterborough, further glimpses of the domestic array have been revealed in the succession of excavations carried out at Fengate. Here, some very modest sherd assemblages recovered from pits and ditches at the Newark Road subsite have revealed a local array of Food Urn pottery, where cord decoration and the use of grog recipes are favoured (Pryor 1980, 21–128). The mouth diameters of Collared Urns at this site do not exceed 200mm, but there are too few examples to permit valid quantification.

For the purpose of statistical comparison with the Raunds pottery, the most informative early Bronze Age ceramic assemblage is that from the settlement site at West Row Fen. Here, a small group of round houses was accompanied by a liberal scatter of Food Urn pottery. Most the sherds at this site seem to be the result of random breakages and discards, where pots had been used in a general activity area in an open space outside the houses. A striking feature of this assemblage is the very high preponderance of Collared Urns, which seem to have been used to virtual exclusion by this community.

When 'presumed' Collared Urn or incomplete collared sherds are included in the count, these amount to some 82% of the total number of Food Urn products at the West Row site. These pots occurred in a broad spectrum of sizes where mouth diameters ranged from 100 to 400mm. Within this range a predomination of relatively small Collared Urns could be detected with mouth diameters set between 100 and 200mm. Within this group a slight preference peak could be discerned with mouth sizes set around 150–160mm. This peak makes a close and significant comparison with the national incidence of Food Urn pots chosen for funerary use. These, according to ApSimon (1972) and Cowie (1978), show a preference peak set around a mouth diameter of 180mm when Food Vessel Urns were employed. The closeness of these two peaks seems to suggest that when pots of the Food Urn tradition were chosen as funerary receptacles they were generally taken from the most popular size in everyday use. At Raunds, the range of selection is broader for, while the mouths of two of the funerary Collared Urns lay within the range 115–130mm, the remaining three were set at 220mm, 350mm and 380mm.

At West Row Fen a marked fall-off could be seen in pots exceeding 200mm in diameter. A few persisted with mouth diameter up to 260mm, and just one large vessel of storage jar size could be identified with a mouth set around 350mm. At Hockwold-cum-Wilton and at Kilellan Farm, where non-collared Food Urn pottery was employed, the pattern was very similar, with just a few large vessels of storage jar proportions creeping up to a maximum mouth size of some 400mm. The Scottish example was perhaps exceptional in producing unusual and distinctive shouldered jars to fulfil this top end of the size range.

The evidence offered by the domestic size range suggests that three classes of receptacle might be recognised in the Collared Urn array. At the top end of the size range lie very large Collared Urns which might be postulated to be storage jars. These exhibit mouth diameters ranging between some 280 and 400mm. In their domestic setting these seem to be notably rare. On occasion, these were able to find their way through the funerary selection process and this seems to be well demonstrated at Wimborne St Giles G17, Dorset, where a substantial Collared Urn with a mouth diameter of 360mm was chosen as a cremation receptacle (Annable and Simpson 1964, 118, fig 502).The rim of this particular urn is perforated with a series of holes which seem to suggest that, in its domestic role, this pot could be capable of storing commodities such as grain or flour which would require the enduring protection of a well-fitted lid or fabric cover.

The second class of collared receptacle comes from the middle of the size range where pots accord with the favoured mouth diameters of 150–180mm. Sherds of these pots were liberally dispersed in the open activity area outside the houses at West Row Fen. Here, it seems reasonable to propose that they were probably employed in the everyday process of cooking and serving. In middle Bronze Age contexts Ellison (1975

and 1981) has perceived a somewhat similar division of ceramics where vessels of this size have been termed 'everyday ware'. It is from this range of vessels that the Raunds cremation receptacles seem to have been taken.

The final class in the Collared Urn size range seems to concern pots with a mouth diameter below 130mm. These might be loosely equated with the 'fine wares' which Dr Ellison perceived in later Bronze Age domestic contexts. Due to the absence of obvious alternatives at West Row Fen it might be proposed that the pots in this lower end of the size range were 'fine wares' earmarked for personal use. There are, nevertheless, some difficulties with this interpretation. The clumsiness of the thick-rimmed collars makes most of these pots quite unsuitable for sipping, while the presence of an internal moulding can completely pre-empt any effective attempt at tilting and drinking. The rim of Food Vessel P88 is similarly unsuited to the drinking process, although Hawkes (1977) has raised the interesting and unprepossessing prospect of a community using its Food Vessels to suck and savour the dubious delights of an alcoholic porridge called frumenty.

The general problem of drinking from vessels in the Collared Urn array might be overcome by the use of small, straight-sided cups such as vessel P103 or a small cup with an incurved rim such that which might be represented by vessel P98. It is perhaps no coincidence that this form of plain cup has been found in common association with Collared Urns (Longworth 1984). At Porth Dafarch on Anglesey, a Collared Urn cremation burial of a young adult and child was accompanied by a small decorated carinated cup (Longworth 1984, pl 9d, corpus no 2105). This unusual accessory vessel of tazza form was equipped with a tapered and everted rim which was particularly well-suited for drinking. At Icklingham, Suffolk, another Collared Urn was accompanied by a plain convex cup which was also very well suited for drinking purposes (Longworth 1984, pl 29b, corpus no 1454). In a Collared Urn burial at Alphamstone, Essex, the cremation and its urn were accompanied by two small accessory Collared Urns, one of which displayed a tapering rim and a continuous curving inner profile. This particular product was also well suited for imbibing (Longworth 1984, pl 61 corpus no 568).

Given this array of evidence, we seem bound to conclude that the general repertoire of domestic Collared Urn pottery made very little provision for the consumption of drink in the quantities and manner facilitated by Beaker pottery. This is a distinction of some importance and, unless drink came to be served in non-ceramic containers of an unknown kind, it might be reasonable to question how the consumption of intoxicant liquids was handled by those early Bronze Age communities whose pottery was dominated by the Collared Urn style. The evidence offered by Raunds vessel P103 suggest that small cups may have fulfilled this role. Counterparts found in association with a number of Collared Urn burials in southern Britain give some support to this possibility. These small vessels could also indicate that individual quantities of apportioned drink may have been substantially reduced. This could reflect the influence of a new and intoxicating potency. In essence, drinking practices of the early Bronze Age may have shifted from pints to shorts.

The evidence offered by residue analysis

To pursue the question of ceramic design and usage, the possibility of organic residue survival was investigated in a small selection of Neolithic and Bronze pots at Raunds. These investigations were carried out at the Universities of Liverpool and Bristol under the direction of Dr Richard Evershed with analyses by Carl Heron, Stephanie Dudd and Mark Copley (SS3.8.2, Table SS3.110).

One Neolithic vessel yielded detectable lipid residues. The shallow decorated open-form bowl P55 is one of the few Neolithic vessels from Raunds which was equipped with an everted and tapering lip suitable for sipping and drinking. This was found to contain degraded animal fat identified as ovine (eg sheep) adipose and to have been heated to over 300°C. It seems that the residue in this vessel must be derived either from the dispensation of hot drinks or from a fabrication process in which new pots were first impregnated by the application of a hot fatty sealant.

Where the residual lipid content of the Beaker pottery was investigated, degraded animal fats were also found in vessels P64, P84, P83, and P85, but in none of these could high temperature use be detected. In most of these analyses the nature of the fat residues could not be determined but in Beaker P84 from Barrow 6 the contents were identified as a ruminant diary product.

Of particular interest was the investigation of the long-necked Beaker P85 from Barrow 1. Earlier examination of this Beaker had found that the interior displayed an

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