Chapter 3: Earlier Prehistoric Finds

Earlier prehistoric pottery (Figs 28-29)
David Mullin, with a contribution by R A Ixer

A total of 6,600 sherds of earlier prehistoric pottery, weighing 7769 g, were recovered from a number of contexts across the site. Late Neolithic Grooved Ware was recovered from 30 contexts, predominantly from the fills of pits. A near-complete Beaker was recovered from the burial within ring-ditch 8454, and a fragmentary Beaker was also recovered from a burial in what appears to have been an unmarked flat grave (1402).

The pottery was recorded in accordance with the guidance published by the Prehistoric Ceramics Research Group (PCRG 1997), using a x20 hand lens. Four sherds were subject to detailed examination of their fabrics.

Grooved Ware

A total of 1061 sherds of pottery weighing 6432 g were identified as late Neolithic (2900-2100 cal BC) Grooved Ware (Table 2). The pottery was recovered from eleven pits, where it occurred alongside worked flint, animal bone, worked bone, antler and, in three cases, fragments of stone axes.

The fabric of all the vessels was distinctively very shelly, with additional limestone and frequent vesicles. Two sherds were submitted to Rob Ixer (see below) for thin-section analysis and were shown to be of clay from the local Jurassic formations.

It was difficult to distinguish between vessels as the fabrics were so similar, but at least three vessels were identified from rim morphology in pit 8455. Rims and base sherds were infrequent, but nearly all the wall sherds, and the interior of the majority of the rims, were decorated.

Table 2: Quantification of Grooved Ware

Pit	*No. sherds*	*No. contexts*	*Weight (g)*
8058	21	1	39
8064	286	8	2703
8164	17	1	10
8813	59	1	455
8392	69	5	138
8455	305	4	1673
8928	29	2	185
8931	3	1	29
9096	144	3	790
9100	98	3	292
9144	30	1	118
Totals	1061		6432

It was possible to reconstruct a complete vessel profile from context 8081 (Fig. 29, no. 1), which conforms to the Woodlands sub-style, as does the decoration on the majority of the other sherds. It was impossible, however, to estimate vessel volumes or indeed have any degree of certainty over the number of vessels represented. The vessel from 8081 has zoned decoration with a fingernail impressed lower section separated by a groove from a plain band. Above this are two grooves separating it from an area of 'lattice lozenge' decoration formed by strips of applied clay which enclose rounded lozenges. The internally bevelled rim is decorated on the inside by an applied strip of clay in a wavy line. This vessel also had at least two post-firing perforations below the rim. Post-firing perforations are recorded from Grooved Ware elsewhere in Britain, and it is generally accepted that they were used to repair broken vessels. Cleal (1988) has indicated that these perforations are more common on Grooved Ware than other traditions of prehistoric pottery and suggests that this implies that Grooved Ware had high symbolic value.

Similarly decorated pottery was recovered from context 9097, but a single sherd from this context is decorated with a chevron design (Fig. 29, no. 3). This has more in common with the Clacton sub-style, as does some of the internal rim decoration from other vessels and in particular the internal wavy line on the vessel from 8081. The latter can be directly paralleled amongst the assemblage from the type-site at Clacton (Hazledine Warren *et al.* 1936, 190 and fig 4).

Kingshill North is one of only a handful of sites within Gloucestershire from which Grooved Ware has been recovered; most Grooved Ware occurs in the area around Lechlade. The majority of this material has been recovered from pits, although possible Grooved Ware appears to have been associated with postholes and other features at Saintbridge, Gloucester (Darvill and Timby 1986, 54) and with tree-throws at Horcott Pit, Fairford (Lamdin-Whymark *et al.* 2009) and Cotswold Community, Ashton Keynes (Brown and Mullin 2010, 6).

At the Loders, Lechlade (Darvill *et al.* 1986, 31 and fig. 3), a single pit contained 83 sherds of Grooved Ware representing at least two vessels. Flint, animal bone and a sandstone rubber were also identified, with cattle, sheep, pig and red deer present within the animal bone assemblage. At a second site in Lechlade, Gassons Road (Boyle *et al.*

1998), a series of 15 pits were excavated, one of which (pit 165) contained fragments of at least six Grooved Ware vessels. At Roughground Farm, also close to Lechlade (Allen *et al.* 1993), four pits contained Grooved Ware, a quartzite hammerstone and bone points. Animal bone was also recovered from the pits. The final site from which Grooved Ware was recovered is the recently published assemblage from Cotswold Community (Brown and Mullin 2010, 6), where 13 pits contained small amounts of at least 24 vessels.

The style of the Grooved Ware at Kingshill falls within the Woodlands sub-style, comprising thin walled, tub-shaped vessels decorated with incised lines and converging cordons which is ordered horizontally (Wainwright and Longworth 1971, 238-240). Two vessels, from contexts 8081 and 9097, were decorated with the rare 'lattice lozenge' motif (Cleal 1995), which occurs on this sub-style of Grooved Ware. Other examples which are decorated in a similar way are known from Roughground Farm (Allen *et al.* 1993) and from two sites in Oxfordshire: Tolleys Pit, Cassington (Case 1982a, 124-5) and Barrow Hills, Radley (Barclay and Halpin 1999). The example from Kingshill North is the first confirmed example outside the Thames Valley. While the 'lattice lozenge' motif is uncommon, the Woodlands sub-style occurs widely across Britain from the type site close to Woodhenge, Wiltshire (Stone and Young 1948; Stone 1949) to Dorset (Green 1987), Suffolk (Fell 1952) and Yorkshire (Manby 1974). Cleal (1999) notes that Woodlands sub-style typically occurs in low numbers, usually one to three vessels in pits with other artefacts, and this is indeed the pattern at Kingshill North, where all of the pits containing Grooved Ware also contained worked flint, animal bone and stone axe fragments.

The identification of the vessel from Kingshill North as belonging to the Woodlands sub-style is dependent on the vessel shape and decoration. Some of the decoration overlaps with the Clacton sub-style, however, and it is becoming increasingly apparent that the two sub-styles share many traits, in particular vessel size and form, and that it may be more productive to consider them as aspects of a single tradition, perhaps with a degree of chronological patterning (Garwood 1999). The material from Kingshill North is significant in this respect, as it is somewhat earlier in date than other Woodlands sub-style material, falling within the chronological range of the Clacton sub-style (Garwood 1999, fig 15.6). Also significant in this respect is the chevron decorated sherd from context 9097, a decoration which is typical of the Clacton sub-style, suggesting typological as well as chronological overlap between the sub-styles.

The Clacton sub-style has only been recognised at a single site in Gloucestershire – Cotswold Community (Brown and Mullin 2010, 6) – and although small amounts are known from the Upper Thames Valley (Barclay 1999), the Durrington Walls sub-style is more common in the region. The Woodlands sub-style in the Thames Valley (Barclay 1999) is predominantly shell tempered, in contrast to the grog-tempered Durrington Walls sub-style. Barclay (1999) has argued that the use of shell was a deliberate choice and does not reflect local availability of raw materials or a technical choice related to improving firing properties of raw clay. This appears to be the case at Kingshill North as, although the shelly clay used in the fabric occurs locally, it appears to have been selected from a range of materials which would have been equally suitable for potting. This also appears to have been the case at Clifton Quarry, Worcestershire (Edwards 2007) where, although locally occurring, fossiliferous clay was preferentially selected for use in Clacton/Woodlands Grooved Ware. There is an interesting contrast in the use of fossil shell as a temper within Grooved Ware in the West Midlands (Edwards 2007) and the Thames Valley and the use of marine shell in Wiltshire (Cleal 1994), even on sites far from the coast. Clearly the incorporation of shell within the fabric of Grooved Ware vessels relates to the symbolic meaning of that material, although what that meaning may have been is difficult to detect. A further element worth consideration is the 'lattice lozenge' motif. The motif contrasts with the geometric decoration on other sub-styles of Grooved Ware and is unusual within a Clacton/Woodlands context. The decoration has been described by Garwood (1999, 157) as resembling a mesh or net and Cleal (1991, 144) has drawn attention to the presence of a similar design on antler maceheads of the Maesmore tradition. The design also closely resembles the bark of ash and willow trees, both of which can be used for basketry, or may have held wider symbolic meaning (Figure 28).

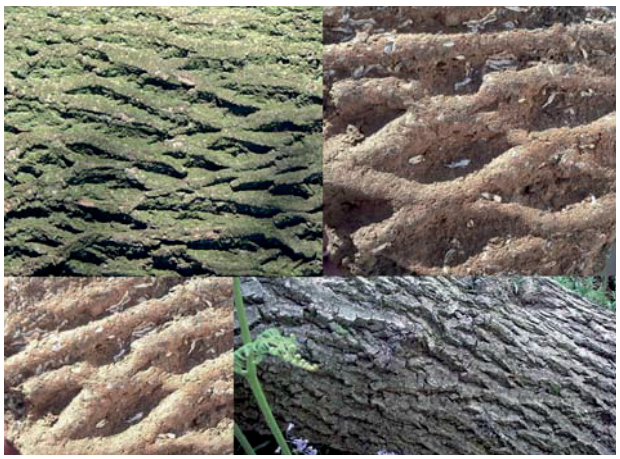

Fig. 28 Ash bark compared with the geometric motif of Grooved Ware

Beaker

A near-complete Beaker from context 8657, found alongside burial 8656 (group 8454), was represented by 75 sherds weighing 714 g. A single sherd of a

different Beaker was recovered from context 2404 in the 2006 evaluation, which is the same context as 8657. A small number of sherds of another Beaker were recovered from 2303, the fill of the ring-ditch surrounding the central grave 8588. A second Beaker burial (1402) was recovered during the evaluation and this was accompanied by 80 Beaker sherds weighing 391 g from a single vessel, which had a profile that could be reconstructed.

The Beaker from 8657 (Fig. 29, no. 5) was tempered with grog and limestone and in fragmentary condition, roughly 85% complete. This vessel can be assigned to Needham's (2005) S-profile class or to Clarke's (1970) 'East Anglian' group. The decoration is horizontally zoned and comprises horizontal lines of tooth-comb impressions with incised zigzags and chevrons. In-filled pendant triangles are present near the base. The form is closest to Clarke corpus no. 406 from Bromley, Kent, which also shares some decorative traits, but the decoration is more closely matched with Wessex/ Middle Rhine Beakers such as Clarke corpus no. 458 from Kinneff, Scotland.

The Beaker from 1402 (Fig. 29, no. 4) had grog and fine flint inclusions. This vessel had many old breaks and was incomplete, but it was possible to reconstruct a complete profile. This Beaker was more difficult to classify, but had a simple, slightly tapered rim, a long neck and very rounded belly and probably fits best within Needham's (2005) "Long Necked" class or Clarke's (1970) southern series. The decoration appears to be all short-comb impressions, but is very irregular and difficult to match with any other examples. The decoration was also very worn suggesting that the vessel was old when deposited and was possibly deposited as sherds.

Clifford (1937) listed a total of eleven Beaker sites from the Gloucestershire Cotswolds, the number having risen to 15 by the time of Clarke's (1970) corpus. At present, a total of 45 sites producing at least 104 Beakers have been identified within the county. The Beakers have been recovered from a number of different kinds of contexts, the most common being pits, where fragmentary Beakers appear to have been deposited alongside burnt material, worked flint and animal bone. The two funerary contexts from Kingshill North are significant, as Beaker burials are rare in Gloucestershire. Grinsell (1961, 14) lists only a single example from a barrow. This is surprising, given the large numbers of round barrows in the county (Grinsell 1961), but it is apparent that Beaker barrows are generally rare in western Britain. The dominance of Beaker finds from pits and other features, rather than burials, in Devon has been pointed out by Quinnell (2003), and this also seems to be the case in Cornwall (Jones 2005) and Somerset (Grinsell 1971; Lewis and Mullin forthcoming).

Beaker burials from Gloucestershire are known, but there is considerable uncertainty if these were recovered from flat graves or from denuded round barrows. At Barnwood, Gloucester, the skeleton of an adult male, accompanied by complete Beaker and flint knife, was recovered in 1927 (Clifford 1930; Clarke corpus no. 277) and a similar burial, again of a adult male, is recorded from Prestbury (Clifford 1938a; Clarke corpus no. 285). A Beaker from a possible flat grave is known from Slaughter Bridge, Bourton on the Water, where it accompanied the body of an adult female (Dunning 1937; Clarke corpus nos 278 and 279), and recent, although unpublished, excavations at Huntsman's Quarry, Naunton (Patrick Foster Associates 2000) uncovered a burial consisting of a crouched inhumation with an associated Beaker vessel and two unretouched flint flakes. It is not certain if this burial was located below a barrow. Fragments of a Beaker were recovered from a burial inserted into the mound of the long barrow at Sales Lot, Withington (O'Neil 1966), and again this burial appears to have been that of an adult male and was accompanied by a fragment of sheet bronze, possibly an ear ring.

In the Upper Thames Valley, a Beaker ring-ditch was located during excavations by Wessex Archaeology at Shorncote Quarry (Barclay *et al.* 1995). This contained a large sub-rectangular grave (grave 121) from which a poorly preserved skeleton and a Beaker, flint dagger, two flint knives and a flint flake were recovered. The skeleton was probably that of a mature male, and had been placed on its left side with the head to the north west. The Beaker was particularly crude and unevenly fired but was decorated with rows of comb impressions. An incomplete Beaker is also recorded from this site. This was recovered from another grave (1007), which contained the skeleton of an adolescent, a flint flake and a penannular bronze bracelet. Elsewhere in the Upper Thames Valley, excavations of an area of the Clemson Memorial Hall, Lechlade was undertaken by the Cotswold Archaeological Trust, and recovered evidence for two Beaker burials (Thomas and Holbrook 1998). The first was in a grave cut aligned approximately north-south and contained the skeleton of an older male and a Beaker, which, though appearing to have been broken in antiquity, held burnt material. The second burial at the site was 7.5 m north of the earlier burial and was in a grave cut aligned east-west. This contained the fragmentary remains of an older infant of 2-4 years buried with a Beaker. An unworked flint flake and a thin copper alloy awl were recovered from among the broken remains of the pot. Excavations by Oxford Archaeology at Cotswold Community School, Somerford Keynes, recovered fragmentary Beaker from a number of pits and from the fill of a ring-ditch, and a total of three inhumation burials were also uncovered at the site. Two of these were accompanied by near-complete Beakers, the other by a fragmentary Beaker, and an incomplete stone wrist guard or bracer was also recovered from one of the burials (Powell *et al.* 2010, 24-5).

A number of Beakers, initially thought to be from a pit associated with a bell barrow at Frampton on

Severn were excavated by Richard Atkinson in 1948, and are now lost, but recent analysis of the archive from this site (Mullin forthcoming; Clarke corpus no. 280) located fragments of another Beaker from below the old turf line of the barrow and suggested that the pit containing the Beaker was earlier than the bell barrow and did not represent a Beaker burial. Similarly, finds from a round barrow at Horsley, otherwise known as the Lechmore barrow, include fragmentary Beaker, but the precise context of this material is not known (Grinsell 1961, 119; Clarke corpus no. 282). An analysis of the finds held by Gloucester Museum (accession numbers A3087-8 and A3085-6) by the author identified a total of five sherds, two of which do not appear to be Beaker. The remaining three sherds are heavily abraded; one sherd is comb impressed, the others appear to be decorated with incised lines or comb impressions. Beaker was found in the round barrow at Ivy Lodge, Woodchester (Gardiner 1930; Clarke corpus no. 300), but again its precise context is uncertain and subsequent excavation by Clifford (1950) did not locate any further Beaker. Clifford (1937, 162) also records three sherds from a round barrow at Taynton excavated by Rolleston and housed in the Ashmolean Museum, but again the context of these finds are not clear.

Beaker is most frequently found within pits in Gloucestershire and is often associated with burnt material, worked flint and human or animal bone. Beakers found in these pits are often fragmented and the number of vessels represented can vary from two to over thirty. A cluster of such pits was excavated at Roughground Farm, Lechlade (Allen *et al.* 1993), where five pits contained a total of 200 sherds, representing at least 36 individual vessels. Over 150 worked flints were recovered from these pits, as well as two fragments of sandstone 'cushion stones' and four quartzite hammerstones and animal bone, including cattle and pig.

An excavation at Trinity Farm, Bagendon, undertaken by Oxford Archaeology (then the Oxford Archaeological Unit) during the A417 road improvement scheme in 1996 and 1997 also recovered a series of pits containing Beaker (Mudd *et al.* 1999b). Here three pits contained 164 sherds of Beaker pottery from at least 14 vessels. Pit 8 contained hazelnut shells, flint scrapers, cores and flakes, and some fragments of burnt limestone and hazelnut shells were also recovered from Pit 10. Large numbers of Beakers were also recorded at Cirencester Polo Club, Daglingworth (Nichols 2004), where a single pit contained 90 sherds of Beaker, representing a minimum of eight vessels. Animal bone, including cattle and possible wild boar was also collected from the feature.

A number of sites across the county have produced pits with smaller assemblages of Beaker. Three pits containing small amounts of Beaker, worked flint and burnt stone were excavated by Oxford Archaeology at Horcott Pit in the Upper Thames Valley (Lamdin-Whymark *et al.* 2009), and at Station Road, Kemble, work in 2001 by the Gloucestershire County Council Archaeology Service uncovered two pits containing eight fragments of decorated Beaker from two separate vessels and charcoal (Nichols 2001; Evans and McSloy 2006). Two pits containing quantities of Beaker pottery, flint and animal bone were excavated at Warren Farm, Toddington, one of these pits also containing charred hazelnut shells. Similar pits were excavated at Oxpens Farm, Yanworth. The sites at Toddington and Yanworth were excavated as part of the work on the Esso Midline Pipeline (Smith and Cox 1986). An archaeological watching brief undertaken by Cotswold Archaeology at Home Farm, Ebrington, revealed a rectangular, clay-lined pit containing a single sherd of Beaker (Cotswold Archaeology 2003), and single pits are also recorded at Totterdown Lane, Horcott (Pine and Preston 2004), Cirencester Rugby Club (Hicks 1999), Bredon Road, Mitton, Tewkesbury (Barrett 2004), and Netherhills, Frampton-on-Severn (Mullin forthcoming). Very fragmented Beaker is also recorded from Saintbridge, Gloucester (Garrod and Heighway 1984), where it was recovered from three postholes that also contained worked flint. A posthole containing fingernail impressed Beaker and worked flint was recovered during excavations along the Wormington to Tirley pipeline at Bank Farm Site B (Coleman *et al.* 2006, 21) and work at the GPO, Berkeley Street, Gloucester, also recovered some Beaker, although the context for this is unclear (Hurst 1972).

Curiously, Beaker has been recorded at Iron Age hillforts on the Cotswolds. A single Beaker sherd was found in the 1925 excavations at Leckhampton Camp (Burrow *et al.* 1925; Clarke corpus no. 283), although Darvill (1987, 84) suggests that this may, in fact be Iron Age in date. A Beaker sherd was recovered from the old turf line below the rampart at Shenbarrow Camp (Fell 1961; Clarke corpus no. 287). At Crickley Hill, Beaker was recorded from the old ground surface below the ramparts, where it was interpreted as potentially representing the remains of an occupation layer (Dixon 1994, 220).

Beaker was recorded from the interior of a number of Cotswold long barrows and this probably represents the deliberate backfilling of the passage, as recorded at West Kennet (Piggott 1962). At Eyeford (Clark 1925, 94), possible Beaker sherds were recovered from the mound above a cist near the centre of the barrow, and Beaker is also recorded from Swell VI and Swell VII (Clifford 1937, 161). Clifford (1937, 162) also notes Beaker from an unpublished excavation at the Westcote Heath long barrow, Great Rissington. Rather more securely recorded are the Beaker fragments from the antechamber at Notgrove (Clifford 1938b; Clarke corpus no. 284), where it was interpreted as forming part of material brought to the site to deliberately block the passage and entrance.

Two or three sherds of Beaker were recovered from the area of a burnt mound at Sandy Lane,

Charlton Kings, Cheltenham, although their identification is not certain (Leah and Young 2001). Possible Beaker sherds were also recorded from excavations at the henge at Condicote (Saville 1983). This pottery was recovered from the internal ditch and was mostly undecorated, but was identified as being associated with the Beaker series and potentially either domestic or coarse ware Beaker. Such Beaker is rare from Gloucestershire, but known from Horcott Pit (Lamdin-Whymark *et al.* 2009), Roughground Farm (Allen *et al.* 1993), Bank Farm, Dumbleton (Coleman *et al.* 2006) and Cirencester Polo Club (Nichols 2004).

Three sites have produced Beaker from ditches. At Rudgeway Lane, Tewkesbury (Walker *et al.* 2004) and Holme Hill, Tewkesbury (Hannan 1976), the Beaker was residual, and this is also probably true of Beaker from the Beeches, Cirencester (Young 2001). At Leaze Farm, Lechlade, Beaker and possible Peterborough Ware were found in a later feature (John Moore Heritage Services 2001), and a single sherd of Beaker was found in a Roman layers at Gloucester Business Park Link Road, Hucclecote (Thomas *et al.* 2003). Beaker has also been found in unstratified contexts on a number of sites, such as Shorncote Quarry (Hearne and Adam 2000, 35) and The Buckles, Frocester (Darvill 2000).

Clifford reported a find of a Beaker during the course of gravel digging at Shurdington Gravel Pit in 1935-36 (Clifford 1937; Clarke corpus no. 288), and O'Neil and Bunt (1966) recorded another found during the excavation of a water-main trench in Hall Road, Leckhampton. Further Beaker, probably excavated from near Homme House, Dymock, was also recorded from the catalogue of the sale of a miscellaneous collection of antiquities from a country house in 1964 (Clifford 1964).

Very few Beaker fabrics have been recorded in detail within Gloucestershire in contrast to those from northern Somerset (Russell and Williams 1998) and Wiltshire (Cleal 1995). The only material from the county to receive detailed petrographic analysis is that from Roughground Farm, Lechlade (Allen *et al.* 1993), where a total of three main fabric groups were identified. These consisted of grog-tempered (Fabric 3), grog-and-shell-tempered (Fabric 4) and flint-tempered (Fabric 5) wares with-and-shell tempered ware (Fabric 4) being the most common. This appears to have been used for all types of vessels at the site, with flint tempered fabric tending to be found in the larger and thicker-walled vessels and grog temper fabric used for the finer vessels.

Macroscopic work on the Beaker from burial 1 at Memorial Hall, Lechlade (Thomas and Holbrook 1998) identified grog, quartz and limestone in the temper, although the Beaker from burial 2 at the same site was entirely grog-tempered. A similar grog temper is also recorded from Gloucester Business Park Link Road, Hucclecote (Thomas *et al.* 2003) and the Beakers from both grave 121 and from grave 1007 at Shorncote were also grog-tempered (Barclay *et al.* 1995). A substantial sherd of fingernail impressed Beaker from Bank Farm Site B (Coleman *et al.* 2006, 38) was similarly grog-tempered while the Beaker from Bredon Road, Mitton (Barrett 2004) was grog-and-quartz-tempered, and the Beakers from Cirencester Polo Club were grog-tempered, grog-and-limestone-tempered, and grog-and-flint-tempered. At Trinity Farm, Bagendon, calcite temper was identified, alongside grog temper, grog-and-sand temper, and grog-and-limestone temper. The calcite temper identified at Trinity Farm appears to be the only recognised occurrence of this inclusion in Beaker in the county, although it is known from northern Somerset, where limestone was also exploited as temper (Russell and Williams 1998).

It can be seen that the Beakers from Gloucestershire are typically grog-tempered but can also have shell, flint, quartz and limestone added as tempering agents. Only a single example of calcite temper is known from the county and grog-and-limestone temper appears to be the most commonly occurring fabric type. It is uncertain if these inclusions relate to local potting 'recipes', handed down through generations of potters (Cleal 1995), or if they relate to the form and function of the vessels, with finer vessels tending to have a pure grog fabric (Allen *et al.* 1993). It is, however, noticeable that the inclusions in Beaker pottery from Gloucestershire contrast with those found in Wiltshire (Cleal 1995) where limestone is rarely used, and have more in common with Beakers from northern Somerset, where limestone was more commonly exploited, although Russell and Williams (1998) point out that Beakers from Mendip tend to be purely grog-tempered. The presence of flint in the fabric of the Beakers from Kingshill North, Roughground Farm, Cotswold Community and the nearby Cirencester Polo Club is suggestive of imported Beakers, as flint does not occur naturally on the Cotswolds.

Catalogue of illustrated pottery (Fig. 29)

1. **Lozenge lattice decorated Grooved Ware vessel** of the Woodlands sub-style from context 8081. Fossil shell fabric.
2. **Decorated Grooved Ware rim** of the Woodlands sub-style from context 8819. Fossil shell fabric.
3. **Chevron decorated Grooved Ware sherd** from context 9097. Fossil shell fabric.
4. **Long-necked Beaker** from context 1404. Grog and flint fabric.
5. **S-profile Beaker** from context 8657. Grog, fossil shell and limestone fabric.

Fabric descriptions *R A Ixer*

Introduction

Grooved Ware from pit 8064 (context 8081) and pit 9096 (context 9097) and Beakers from graves 8588 (context 8657) and 1402 (context 1404) were subject to examination. Initially the exposed surfaces, cut surface and thin-section of the four sherds (as

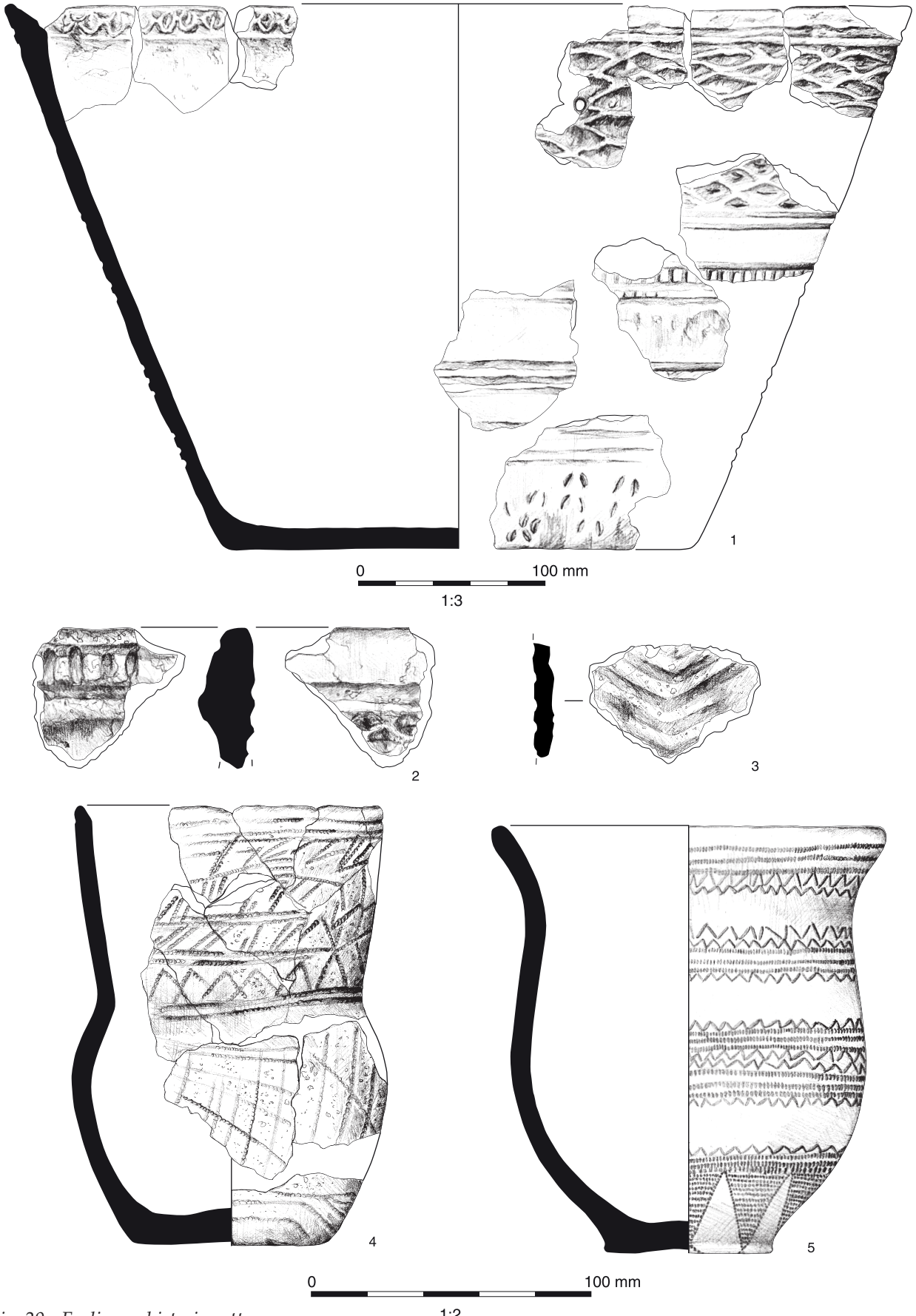

Fig. 29 Earlier prehistoric pottery

provided) were investigated using a x20 hand lens and the Geological Society of America rock-colour chart. A standard thin section was prepared from each of the pottery sherds (after impregnation with resin) and the sherds were investigated using transmitted light petrography. The emphasis of the report is on providing detailed petrographical characterisation of the sherds with an emphasis on their manufacture and the geographical provenance of the raw materials.

Local geology of Cirencester

Cirencester overlies the Middle Jurassic Great Oolite limestones, but immediately to the south lie the Cornbrash limestones and Oxford Clay and Kellaway Beds. As elsewhere, the Jurassic clays have little surface expression other than making for heavy soils. Drift deposits are present in the area and these include boulder clays with chalk flints.

Grooved Ware

The clay in both Grooved Ware pots is almost devoid of fine-grained, monocrystalline quartz and muscovite but carries abundant, small micrite and sparry calcite clasts, less than 0.2mm in diameter. The clay is therefore unusual and is perhaps a marl (a calcareous clay); it is unlikely to be a glacial clay but probably is from the local Jurassic formations.

The pots are ungrogged and it is quite possible that the pots are untempered and that a shelly clay has been fired, or the pots have been tempered with a range of different limestones and Jurassic fossil debris. Although the fossil debris is broadly similar in the two pots, the range of limestone is different. Fossiliferous limestones and shelly clays crop out/are present close to Cirencester, the latter especially to the south. All the components of the pots could be local.

Beakers

The clay in both Beakers has abundant, fine-grained, monocrystalline quartz and muscovite laths; muscovite is more abundant in the vessel from context 8657. The clay may be an unworked, naturally, silty clay or it may have been cleaned. It is probably not a deepwater Jurassic clay.

Both Beakers are heavily grogged and therefore clearly tempered. The grog has a cleaner clay (carries fewer, fine-grained non-plastics) than the main paste; this is especially true of the very clean clay within the grog of the vessel from context 1404. In both pots the grog and main paste carry the same non-plastic tempering material, namely flint/chert in the vessel from context 1404 and shell/limestone in that from context 8657. Very local inhomogeneities in the grog suggests that it is itself grogged (grog-in-grog).

The Beakers have temper in addition to the grog. The vessel from context 1404 has fine-grained angular flint and that from 8657 fossiliferous limestone; the fossil assemblage is Mesozoic in age. Both sherds share the same paste/main clay with quartz and muscovite and there is little that is diagnostic about this clay. However, it is unlikely to be a deep water Mesozoic clay. The flint in both the grog and main paste of the vessel from context 1404 may be from local drift material (boulder clay) so making the pot local, but as the main chalk outcrops (with their flint bands) are more than 20 kms to the south of Cirencester, the pot could be non-local. The shelly limestone in grog and main clay of the vessel from context 8657 is Jurassic in age and local Jurassic limestone crops out close to Cirencester.

Lithics *David Mullin*

Introduction

A total of 1764 worked flints were recovered from 102 contexts. The material was dominated by waste flakes, but scrapers and cores were recovered from pits containing pottery and other material (Table 3). The flint assemblage is the largest associated with Grooved Ware in Gloucestershire and has few parallels.

The flint was catalogued according to a broad debitage, core or tool type. Information about burning and breaks was recorded. Due to the high level of patination of the assemblage, it was not possible to identify raw material type, although some good quality black flint was noticed on fresh breaks. Cores were classified according to the number and position of their platforms, following Clark (1960). Core maintenance pieces were classified to the following criteria. Core rejuvenation flakes are pieces representing the removal of the top or bottom of a core in order to improve the flaking angle of the platform. Core trimming flakes are

Table 3: Lithics: identification and quantification (fragment count)

Description	*Total*
Primary waste	42
Secondary waste	85
Tertiary waste	816
Chips	361
Cores	10
Core rejuvenation tablets	16
Core trimming flakes	222
Narrow blades	14
Blade-like flakes and blade shatter	98
Microlith	4
Microdenticulate	2
Scrapers	50
Knife	1
Point	1
Misc. retouched flakes	5
Utilised flakes	32
Burnt flint	76
TOTAL	1764

flakes which remove a substantial part of a core in order to aid working by removing an imperfection in the core, a miss-hit or other impediment to flaking. The nature of any remnant flake scars on the dorsal surface of core trimming flakes was noted.

Flakes were classified following Saville (1990, 155), which allows an identification of the stage in the core reduction process to which the flake belongs. Terminations such as hinge fractures were noted. Chips are defined as pieces measuring less than 10 mm by 10 mm. Flakes were classified as blade-like or a s blades according to ratio length to breadth, with a greater length to breadth ratio being classified as blades. Mid-sections of blades with no bulb of percussion were classified as blade shatter (Andrefsky 1998, 81-3). Retouched pieces were classified according to standard morphological descriptions (Bamford 1985; Healy 1988; Bradley 1999; Butler 2005).

Worked flint recovered from the environmental sample residues was also recorded, while the presence of burnt unworked flint was noted but the material was not retained.

Results

Condition

The flint was generally in a good condition, and generally the assemblage was fresh and unrolled.

Raw materials

The high level of patination noted on all of the flint made identification of raw materials very difficult. However, a variety of materials could be noted from fresh breaks, indicating diverse origins such as good quality chalk flint and poorer quality gravel flint.

Technology and dating

The majority of the flint was recovered from pits which contained Grooved Ware pottery of late Neolithic date. Although the assemblage is dominated by waste – chips form 20% of the total assemblage (and 28% of the waste) – this probably reflects the retrieval of smaller pieces from the sieved fills of pits. Nevertheless, waste comprises over half of the assemblage in every pit, with the proportion of waste being over 70% in the majority of cases.

Cores and core-related pieces – in particular core trimming flakes and rejuvenation tablets – form the next highest proportion of the assemblage. This reflects the active maintenance of cores and the preparation of good flaking surfaces, although the high number of hinge and step terminations appears to reflect relatively low knapping skill. The cores tend towards blade, rather than flake-based technology and many have prepared and abraded platforms. There is also evidence for the use of both hard and soft hammers. The Levallois core from context 8393 (pit 8392) is noteworthy, as this technology is associated with the production of petit tranchet derivative arrowheads, dating to the late Neolithic; one such arrowhead was found in the topsoil at Kingshill North.

Scrapers were the commonest form of tool; every pit (with the exception of 8929 and 8164) contained at least one, while pit 8813 contained 21, a selection

Table 4: Lithics: quantification by type and context (fragment count)

Description	*8455*	*8813*	*8928*	*8930*	*9096*	*9100*	*9144*	*8058*	*8100*	*8064*	*8738*	*8164*	*8392*
Primary waste	40	17	4	3	-	2	-	1	2	-	-	1	-
Secondary waste	10	27	7	13	1	13	2	-	2	1	-	3	3
Tertiary waste	60	313	62	59	7	55	1	10	31	42	4	67	54
Chips	5	9	84	43	52	96	-	-	8	8	-	-	40
TOTAL WASTE (%)	85	72	92	81	71	82	27	58	60	64	50	88	83
Cores	1	3	3	2	2	-	-	-	-	-	-	-	1
Core rejuvenation tablets	-	2	2	3	1	1	1	-	-	-	-	-	-
Core trimming flakes	7	81	5	7	11	25	4	2	11	16	3	5	9
TOTAL CORE-RELATED (%)	6	17	6	8	17	13	45	11	15	20	37	6	8
Narrow blades	-	-	-	-	3	-	-	-	4	1	-	-	1
Blade-like flakes and blade shatter	10	29	3	9	4	7	1	3	5	3	-	5	8
Microlith	-	-	-	-	-	1	-	-	-	-	-	-	-
Microdenticulate	-	1	-	-	-	-	-	-	-	-	-	-	-
Scrapers	3	21	-	4	1	1	1	2	6	8	1	-	1
Misc. retouched flakes	-	1	-	-	-	-	1	1	2	-	-	-	-
Flint axe fragment	1	1	-	-	-	-	-	-	-	-	-	-	-
TOTAL	136	505	170	145	84	202	11	19	72	80	8	81	117

of which are illustrated in Figure 30. Very few other kinds of tools are present and miscellaneous retouched pieces are also rare. The end scrapers form over half the scraper assemblage, but side-and-end scrapers are also present. The angle of retouch varies, as does the size of each scraper, probably reflecting a toolkit used for a variety of purposes. Only one thumbnail scraper contemporary with the Beaker phase of the site was recovered, but this came from the topsoil and cannot be directly assigned to this phase.

Flakes of flint axes were recovered from ring-ditch 8597 (group 8454), pit 8747, and pits 8813 and 8455; that from 8597 comprised the butt-end of the axe.

A low proportion of the flint recovered from the site was burnt – less than 4% of the assemblage – and burnt material occurred in low numbers (less than 20) in all of the pits from which it was recovered.

Contexts

Nearly all of the flint was recovered from pits containing Grooved Ware pottery of late Neolithic date. Few earlier pieces were present (four microliths) and no certain later material could be identified (Table 4).

Discussion

The majority of the flint from Kingshill North was recovered from pits containing rich finds assemblages including Grooved Ware pottery, animal bone and burnt material. Lamdin-Whymark (2008, 121) describes the distinctive characteristics of Grooved Ware associated flint assemblages as a high proportion of retouched tools, high levels of burning and breakage and the presence of knapping debris, especially refitting pieces. Wainwright and Longworth (1971, 254-61) consider the most common type of flint tool from Grooved Ware context to be the scraper, followed by transverse arrowheads, serrated flakes and knives. Flakes and cores are also common among these assemblages. The lack of evidence for deliberate breakage of implements, especially scrapers, and the lack of formal tools or other retouched items and the few burnt items from the pits at Kingshill North is therefore unusual.

Although scrapers are the most abundant artefact type from the pits at the site, they form only a small proportion of the assemblage, the 21 scrapers from pit 8813 forming only 4% of the total content of the pit, which is dominated by waste flakes (72%) and cores (17%). The presence of a high proportion of

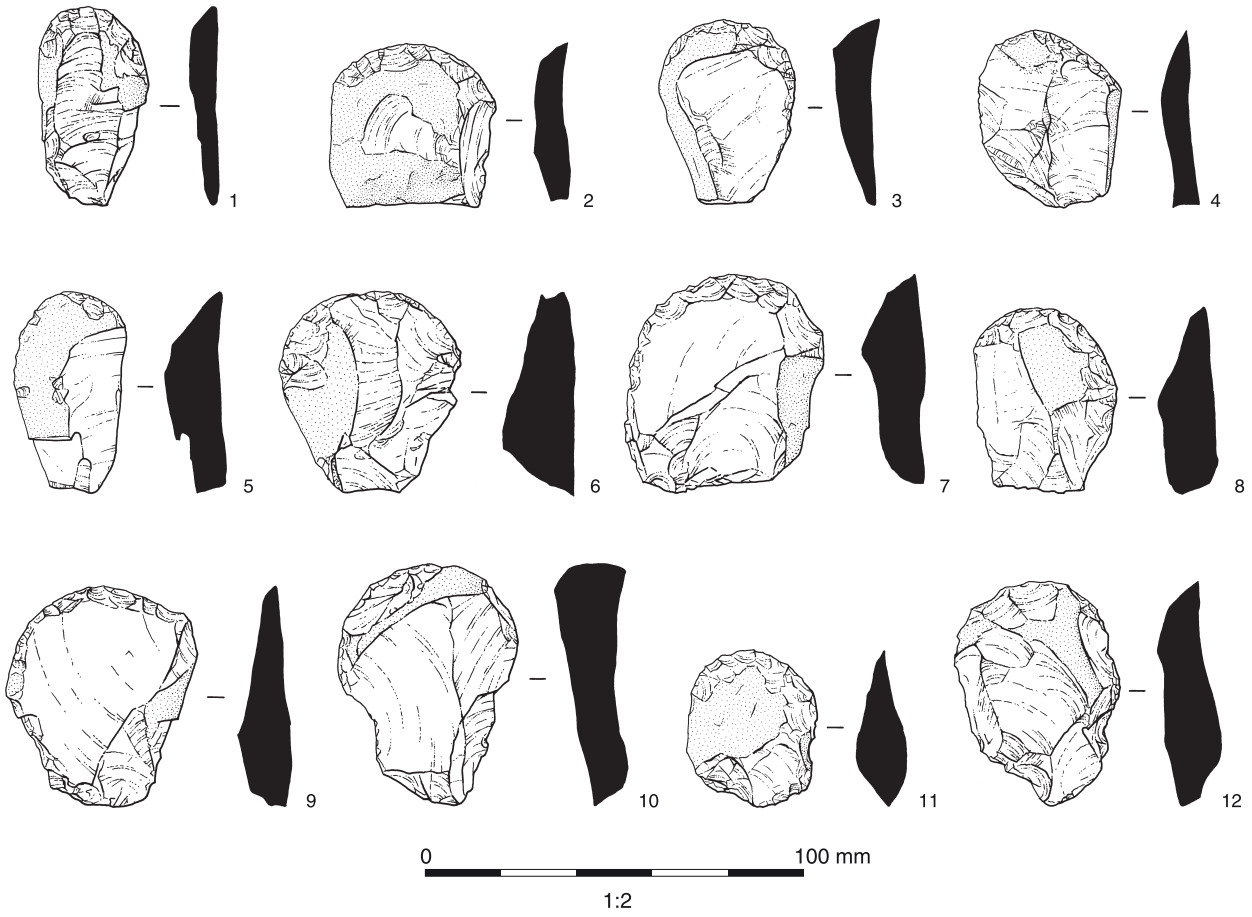

Fig. 30 Earlier prehistoric lithics

knapping waste is suggestive of deliberate working-down of cores for incorporation, along with their waste material, into the pit fills. There are, however, very few refits between flakes and cores within the pit fills, again an unusual aspect for a Grooved Ware associated assemblage. Few refits could likewise be found between assemblages from different pits, suggesting that each was filled in a discrete episode with no mixing of material between pit fills.

There are very few Grooved Ware assemblages from Gloucestershire with which to compare the pits at Kingshill North. A total of 675 flints were recovered from two fills of a pit at Frampton on Severn, Gloucestershire (Mullin forthcoming), but this contained no pottery. The pit was, however, radiocarbon dated to the late Neolithic. Many small chips were present in the assemblage, as well as six cores, 13 scrapers and two chisel arrowheads. At Clifton Quarry, Worcestershire, also in the Severn valley, two late Neolithic pits contained over 200 flints and over 800 chips (Mann and Jackson 2007). The flint here, however, was very fragmented and burnt. The assemblage contained a variety of tools including a fabricator, knife, retouched flakes and a scraper.

In the Upper Thames valley, to the south east of Cirencester, a total of 135 pieces of flint were recovered from pits containing Grooved Ware at Roughground Farm (Allen *et al.* 1993); most were in very fresh condition and of good quality chalk flint. The assemblage was dominated by scrapers and utilised flakes, but the pits also contained a high proportion of unmodified waste. At Horcott Pit (Lamdin-Whymark *et al.* 2009), two pits containing Grooved Ware were excavated. These contained waste flakes, an oblique arrowhead of late Neolithic date, and a side scraper, but the flint assemblages were much poorer than those at Kingshill North.

Catalogue of illustrated flint (Fig. 30)

1. **End scraper** from pit 8813
2. **End scraper** from pit 8813
3. **End scraper** from pit 8813
4. **End scraper** from pit 8813
5. **End scraper** from pit 8813
6. **End scraper** from pit 8813
7. **End scraper** from pit 8813
8. **End and side scraper** from pit 8813
9. **End and side scraper** from pit 8813
10. **End scraper** from pit 8813
11. **End scraper** from pit 8813
12. **End scraper** from pit 8813

Stone axe heads *Fiona Roe, with a contribution by Roger Taylor*

Introduction

Three pits (8100, 8455 & 8928) produced fragments of stone axe heads, and one pit (8813) produced a complete small stone axe. Pits 8813, 8455 and 8928 also contained Woodlands style Grooved Ware (see Mullins above). Pit 8100 produced no pottery but a radiocarbon date of 2863–2673 cal BC (95%; NZA-33140), obtained from a nutshell suggests that it should be of similar late Neolithic date. Three of the axes were made from Cornish greenstone and one flake was of Group VI Langdale stone from the Lake District.

Description

The axe heads from three of the pits were made from Cornish greenstones, a term used for altered igneous rocks. The details have been confirmed in two cases by thin sectioning, with petrological identifications by Dr Roger Taylor on behalf of the South Western Implement Petrology Committee (see Taylor, below). In the case of the thin-sectioned incomplete axe head from pit 8455 (context 8819, SF 10079), the description of the minerals suggests that although the rock could not be attributed to the Group I variety of Cornish greenstone, it nevertheless bears quite a close resemblance to it. This axe head consists of the butt end only and there are traces of battering where the break occurred, so that it seems as if the damage may have been deliberate. The second thin section, taken from one of two small axe fragments from pit 8928 (context 8929), indicates another Cornish greenstone with some similarities to SF 10079, but it probably did not come from the same implement. A complete small axe from pit 8813 is made from a slightly different material but Roger Taylor agrees as a result of macroscopic examination that it is likely to be another Cornish greenstone. It is clear that this late Neolithic community had some links with the South West, as discussed below. The fourth axe head, which came from pit 8100 (8098), is only represented by a thin flake without any surviving polished surface, but appears to be of the Group VI Langdale stone from the Lake District, a distinctive green-grey tuff that was widely used for axe heads.

All four pits with axe heads in them contained other finds, which help to demonstrate the wider picture, especially since there seems to be some correspondence between the occurrence of axe heads and especially large assemblages of pottery or flints. Pit 8455, in which the broken butt end of an axe head was found (8819, SF 10079) also contained 305 sherds of Grooved Ware, the largest collection of pottery from any of the Grooved Ware pits on the site (see Table 1). The highest number of flints, 505 (including 21 scrapers), came from pit 8813, which also contained the complete axe head (8814; SF 10077). In view of this, it is perhaps no coincidence that pit 8928, which had two small greenstone axe head fragments in it (8929), also contained a high proportion of flints amounting to 170 items. Artefacts of bone also seem to have had some significance in the deposits made in the Grooved Ware pits on the site. One key pit, 8813, with its complete axe head and large quantity of flints, also contained five bone pins together with a bone awl, a worked

rib and a spatula. The pins are not the more elaborate variety of skewer pin known mainly from burial contexts (Montague 1995) but simpler worked bone points. Another three such bone pins came from pit 9100, along with 202 flints, the second highest amount from the Grooved Ware pits. The deposition of animal bones is also of interest, with the occurrence of an articulated neonatal pig in pit 8455 along with an axe head fragment, while there is a predominance of bones of young pigs generally, including 51 bones found in pit 8928, which also contained two axe head fragments. Pit 8064, which had the second largest quantity of Grooved Ware sherds, also produced a bird bone, although unfortunately it has not been possible to identify it more closely.

By contrast, the pit in which the small flake of Langdale stone was found (8100) contained no pottery and only 72 flints, although a sandstone pendant was retrieved, along with an antler and a quartzite hammerstone which could have been used together for digging out the pit. There appears to have been less of consequence here, as if these items were considered to be more mundane. The flake of stone axe head material is so insubstantial that its presence in the pit could simply be fortuitous. It also seems less likely that the occurrence of flakes from polished flint axes in Grooved Ware pits could be of particular significance. These were found in addition to stone ones in pits 8813 and 8455, but were also recorded from two altogether different contexts, from 8596, the fill of ditch 8597, which is part of the Beaker ring ditch and barrow, and again from 8748, which is the fill of pit 8747 in an early Roman group of pits, 8895. Such finds, which are not uncommon, may merely represent the re-use of broken flint axe heads.

Catalogue of stone axe heads

1 **Axe head**, 2 fragments (Fig. 31, no. 1). Cornish greenstone. Pit 8928, context 8929

2 **Axe head**, complete (Fig. 31, no. 2). Cornish greenstone. Pit 8813, context 8814, sf 10077

3 **Butt end of axe head** (not illustrated). Cornish greenstone. Pit 8455, context 8819, sf 10079

4 **Flake from axe head** (not illustrated). Group VI Langdale rock. Pit 8100, context 8098

Discussion

The clearest indication of a meaningful deposit in a Grooved Ware pit comes from Clifton Quarry, Worcestershire, where excavations in 2006 revealed a group of six or more axe heads, which were mostly burnt and were associated with large sherds of Durrington Walls style pottery and numerous flints (Mann and Jackson 2009). The axe heads were made from varied materials, including the Group I Cornish greenstone, which was used for a burnt blade end broken into four pieces. This provides a useful indication that an incomplete Cornish axe might have been deliberately included in a particular deposit. Similar circumstances were met with at Boscombe Down, Wiltshire, where two Cornish greenstone fragments, possibly from the same axe head, were found in a pit along with Woodlands style pottery and a very large assemblage of flintwork that includes over eighty scrapers (Wessex Archaeology, in prep). Fragmentary axe heads founds in Grooved Ware pits frequently show traces of damage from burning, though others, including an example from Kingshill North (8819), seem to have been deliberately destroyed in a way that is replicated at Rotheley Lodge Farm, Leicestershire, where two axe heads made from Group XX (Charnwood) axe heads were broken up (Hunt 2006, 238).

Bone artefacts did not survive at Clifton Quarry but seem to have been a particular characteristic of the Grooved Ware pits at Kingshill North (see Mullin below, 'Worked bone and antler'). The assemblage of eight bone artefacts in pit 8813 contributes towards the apparent special nature of

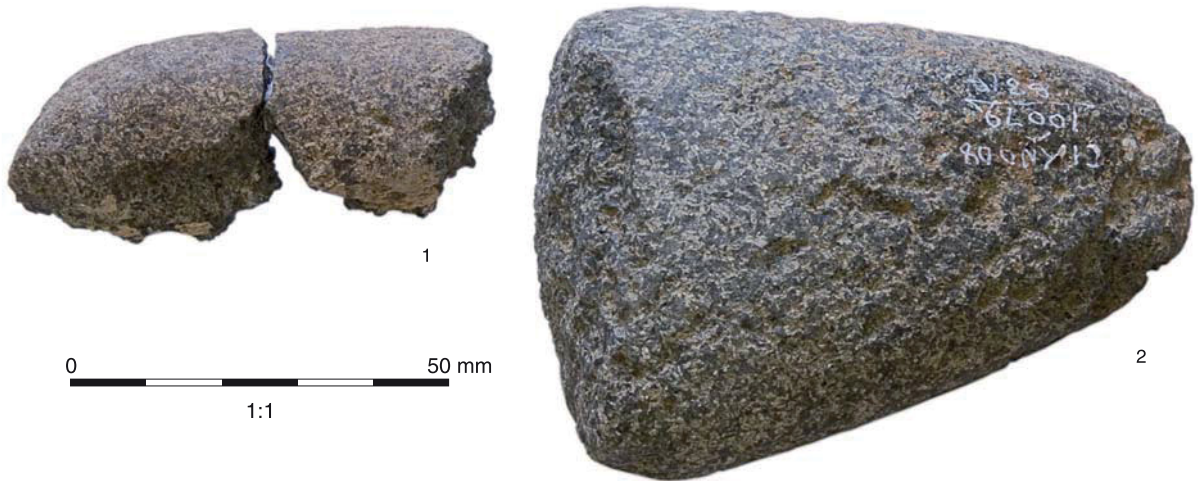

Fig. 31 Stone axes

the deposits in this particular pit. Bone pins have been found in some numbers at sites such as Durrington Walls (Wainwright and Longworth 1971, 181; Parker Pearson *et al*. 2009, 36), although they are not in fact of common occurrence in Grooved Ware pits. A notable exception is the pair of pits at Woodlands, near Woodhenge (Stone and Young 1948), which yielded three bone pins or awls. One of these came from Pit 1, which also contained a complete and high quality flaked flint axe and the damaged blade end of another, a Group VII example from North Wales. The assortment of finds from these pits also included abundant flints and fragments from sea shells, all of which are once again suggestive of a deliberate placement of some kind. A tentative conclusion can be made that other finds of fragmentary or damaged stone axes in Grooved Ware pits, but maybe not small flakes, may also have been of some contemporary significance, even though they may have had fewer special items associated with them

By no means all pits with Grooved Ware pottery in them also contain axe heads, whether complete or otherwise, but some 40 instances have been recorded to date (Roe 1999; Roe in prep a). Analysis of axe heads both from these pits and from other Grooved Ware associations shows that the largest proportion, some 49% of the non flint axe heads, were made from Cornish materials, whether Groups I and III greenstone, other unattributed greenstones or rocks on the borderline between the two (Roe in prep a and b). In this respect the finds from Kingshill North are entirely typical. Such axe heads may not have been obtained by direct contact with the south west, but rather by passing along the line from person to person in exchange systems that would have bestowed prestige upon the recipients (Bradley and Edmonds 1993, 12). The connections with Cornwall, even if tenuous, must have had some importance during the late Neolithic, as is also shown by the use of Cornish materials to make mace-heads (Roe 2001, 141). Axe head fragments of the same varieties of stone have also been recorded from major henge monuments such as Durrington Walls (Wainwright and Longworth 1971, 183), Woodhenge (Cunnington 1929, 77) and Stonehenge, where six pieces are known although here they are not from well recorded contexts (Clough and Cummins 1988, 157-8). In Gloucestershire Cornish materials (Groups I and III and greenstone) account for approximately 23% of the axe heads recorded from the county, being found in greater numbers even than the popular Langdale axe heads. Most of these finds are however undated and the axe heads from Kingshill North are the only ones known at present from Grooved Ware contexts in the county. Other examples though have been recorded in Oxfordshire, since a Group I axe head fragment is known from pit 917 at Barrow Hills, Radley, where bones of young pigs were also recorded (Barclay and Halpin 1999, 77; Roe 1999, 228) and a greenstone axe head came from pit P at Sutton Courtenay, along with finds that included five flint scrapers and a bone point (Roe 2003, 134).

Some recurrent themes can be detected amongst the finds from all these late Neolithic sites, including axe heads that were burnt or otherwise damaged, a preference for Cornish rocks, the deposition of large assemblages of pottery and of flints, especially collections of flints with numerous scrapers, while bone artefacts seem also to have had some significance. The preponderance of young pigs among the animal bone at Kingshill North (see Strid and Nicholson, Chapter 6 below) is another key point. The presence of these piglets calls to mind the suggested midwinter culling of young pigs at Durrington Walls (Pitts 2008, 16), and it could be that the winter solstice was being celebrated in a similar manner in Gloucestershire. The majority of the pits at Kingshill North did not contain axe heads or indeed very much at all in the way of finds, but six pits, five of which had very limited finds assemblages, did contain fragments of fired clay, which could have been utilized as oven linings, quite possibly within the pits. Burnt limestone that could have been used for heating ovens and for other methods of cooking was recorded at Kingshill North along with charcoal fragments; evidence for burning or ashy layers has frequently been noted in many Grooved Ware pits generally and could again be traces of cooking. It is possible that ceremonies were taking place which could have involved both the cooking and eating of young pigs and which may have included the subsequent deposition of stone axe heads along with the kitchen debris. There is much that remains mysterious at all these sites, but it is clear that the community at Cirencester was following traditions that were shared with other late Neolithic groups around the country.

Axe head petrology *Roger Taylor*

Stone axe from pit 8455, context 8819, SF 10079

Greenstone (Epidiorite). Amphibole, fibrous aggregates weakly pleochroic bluish green to nearly colourless. Pyroxene as occasional colourless cores within amphibole. Feldspar as diffuse altered areas between amphibole. Some indication of grain length up to 1 mm. Ilmenite, opaque granular aggregates tending to form skeletal crystals up to 0.6 mm. Leucoxene, pale brown mineral non-pleochroic non-birefringent areas and interstitial to some ilmenite aggregates. It has not proved possible to match this example to the published descriptions of Cornish axe groups with any degree of certainty. South Western Implement Petrology Committee Serial Number 1974/ G138.

Stone axe (two fragments) from pit 8928, context 8929

Greenstone with traces of relict ophitic texture

derived from a doleritic parent rock. Feldspar, extensively replaced by sericitic mica, plagioclase lathes with an original crystal length up to 0.8 mm. Amphibole, pleochroic, light bluish green to greenish buff, as aggregates completely replacing pyroxene. Some aggregates indicate the outlines of pyroxene crystals mainly less than 1 mm occasionally up to 1.5 mm long. Some amphibole also appears to invade and partially replace feldspar. Ilmenite, interstitial skeletal grains substantially replaced by leucoxene.

Other earlier prehistoric worked stone
Ruth Shaffrey

Late Neolithic

A small pebble found in pit 8100 (fill 8097) was deliberately pierced and suspended on a cord or string (SF 10054). This was apparently used as a pendant as there is evidence for suspension, but it was also modified along the lower edge, which is bevelled, although it is not clear whether this was deliberate or that it occurred through use. Neolithic contexts also produced a single hammerstone, broken at one end and with some percussion wear (SF 10095). This made use of a quartzite pebble of a type easily collected from local deposits of northern drift (Sumbler *et al.* 2000, 73).

Catalogue of Neolithic worked stone

SF 10054 **Pendant** (Fig. 32). Very fine-grained sandstone. Naturally flat pebble of slightly irregular shape. Pierced with small amount of wear in the top of the hole suggesting it was suspended on a slim cord or string. The lower end of the stone is bevelled possibly as a result of use wear. Measures 53 x 44 x 7 mm. Fill of pit 8100 (8097). Late Neolithic.

SF 10095 **Hammerstone** (not illustrated). Quartzite pebble, broken at one end and with some percussion wear Measures 57 x 59 x 49 mm. Fill of pit 9096 (9097). Late Neolithic (Grooved Ware).

Beaker to Bronze Age

Two chunks of limestone demonstrate no signs of having been shaped or used, but may have been collected with use in mind (SF 10058, 10059); they are naturally perforated, so could have been intended for use as weights (see discussion in 'Later prehistoric and Roman worked stone' below). No other worked stone was recovered from these phases.

Catalogue of Beaker to Bronze Age worked stone

SF 10058 **Pierced stone** (not illustrated). Shelly limestone. Unshaped and naturally perforated. Measures 57 x 53 x 22 mm. Fill of ditch 8559 (8558). Phase 2: Beaker – Bronze Age.

Fig. 32 Worked stone objects, phases 1 and 2

SF 10057 **Bead** (Fig. 32). Measures 6mm diameter. Fill of ditch 8528 (8529). Phase 2: Beaker – Bronze Age.

Earlier prehistoric worked bone *David Mullin*

A total of 16 worked bone objects were recovered from six contexts. The majority were recovered from late Neolithic pits, and a single object was recovered from the fill of the Beaker grave 8588. Objects include bone awls, pins and spatulae. Awls are defined as points made from longitudinal bone splinters where the articular end is retained as a handle. The ends are subsequently ground or polished to from a point. Pins are distinct from awls as they have their articular end removed and the shaft, as well as the tip, are polished or ground (Wainwright and Longworth 1971, 181). Spatulae are usually made from antler, although bone examples are also known (Smith and Simpson 1966, 134) and tend to be worked at both ends, either being finished in a rounded or chisel-like and pointed manner.

Late Neolithic pits

All the worked bone was recovered from pits which also contained Grooved Ware pottery, worked flint and other objects. Context 8057, the fill of pit 8058, contained the broken tip of a bone pin measuring 12 mm long. A broken tip, probably of a pin, was also recovered from context 8089, the fill of pit 8064. This also contained a bone awl with a broken tip and the chisel-end of a bone spatula made from a large mammal rib. Context 8814, the fill of pit 8813, contained the greatest number of worked bone implements, comprising a bone awl, fragments of five bone pins (although as these are fragments it is uncertain if some of these are also awls), a worked rib fragment and the rounded-end of a spatula. The spatula fragment is identical to the antler spatula recovered from Barrow Hills, Radley (Barclay *et al*. 1999, fig. 4.23), and appears to have been burnt and is not a part of the spatula from context 8057. The awl is made on a cattle metatarsal, while two of the pin fragments are from roe deer metatarsals. The worked rib (SF 10078) is highly polished along both surfaces and appears to have been shaped into a handle at one end. The two fills of pit 9100 (9101 and 9102) contained three bone pins. One of these (SF 10085) is of roe deer bone. Another (SF 10089/10090), though complete, was not identifiable to species.

Horn cores were recovered from pit 8058, which contained worked bone, but the horncores were from sheep, which were not usually exploited in the Neolithic period. Antler was recovered from 13 contexts, a total of four from late Neolithic pit 9096, three from pit 8930, two each from pits 8058 and 8100, with single examples recovered from pits 8064, 8738, 8813, 9100 and 9144.

Beaker burial

Context 8641, the fill of burial 8588 enclosed by the Beaker ring ditch (8454), contained a fragment of the tibia of cattle or deer with a smoothed and rounded tip. A fragment of deer antler was recovered from the ditch itself (context 8452); see Strid and Nicholson, Chapter 6 below.

Discussion

The assemblage of pins, awls and spatulae from Kingshill North is one of the largest from south-west Britain. The association of bone pins and awls with Grooved Ware is well-known and has been noted at sites such as Durrington Walls, Wiltshire (Wainwright and Longworth 1971, 181-185), Mount Pleasant, Dorset (Wainwright 1979) and Seven Barrows Gallop, Oxfordshire (Howell and Durden 1996). Grooved Ware pits are rare from Gloucestershire, but Grooved Ware and bone pins were found at Roughground Farm, Lechlade (Allen *et al*. 1993), where two broken pins were found in a pit. Further down the Thames Valley, three awls, a bone pin and two spatulae were found at Barrow Hills, Radley (Barclay *et al*. 1999). Two of the awls and the pin were associated with Grooved Ware, whereas the spatulae and remaining awl were recovered from Beaker burials. Awls are also known from the Thames Valley at Barton Court Farm, Abingdon (Wilson and Miles 1986) and Cassington (Case 1982a), and a pin has also been recovered from Vicarage Field, Stanton Harcourt (Case 1982b).

Antler and bone spatulae have been discussed by Smith and Simpson (1966, 134-9), who consider them to be male-associated grave goods with Beaker burials, possibly associated with leather working. They are rare in Grooved Ware contexts, all the local examples coming from Beaker graves (Barclay *et al.* 1999, 235), and none is recorded in the most up-to-date gazetteer of Grooved Ware finds in Britain (Longworth and Cleal 1999).

The worked bone from burial 8588 is unusual in this context, as although pins, awls and spatulae are well-known Beaker grave goods, worked bone is infrequently found with burials of this date and more usually takes the form of buttons and belt-rings (Clarke 1970, 260-265). The form of the worked bone object is unusual and may be some form of burnisher.

Catalogue of illustrated pins, awls and spatulae
(Fig. 33)

1. **Bone awl**, 125 mm long x 24 mm wide; context 8089, fill of pit 8064, Phase 1
2. **Bone awl**, 110 mm long by 27 mm wide; context 8814, fill of pit 8813, Phase 1
3. **Bone pin fragment**, 70 mm long x 10 mm wide; context 8814, fill of pit 8813, Phase 1
4. **Bone pin fragment**, 38 mm long x 11 mm wide; context 8814, fill of pit 8813, Phase 1
5. **Bone pin fragment**, 32 mm long x 12 mm wide; context 8814, fill of pit 8813, Phase 1
6. **Bone pin fragment**, 80 mm long x 15 mm wide; context 9101, fill of pit 9100, Phase 1

7. **Bone pin fragment**, 82 mm long x 11 mm wide; context 9101, fill of pit 9100, Phase 1
8. **Bone pin**, 157 mm long x 12 mm wide; context 9102, fill of pit 9100, Phase 1
9. **Bone pin tip**, 48 mm long x 6 mm diam; context 8089, fill of pit 8064, Phase 1
10. **Bone spatula fragment**, 53 mm long x 17 mm wide; context 8814, fill of pit 8813, Phase 1
11. **Worked rib**, 77 mm long x 14 mm wide; context 8814, fill of pit 8813, Phase 1
12. **Bone spatula tip**, 73 mm long x 37 mm wide; context 8089, fill of pit 8064, Phase 1
13. **Worked tibia fragment**, 87 mm long x 31 mm wide, context 8641, fill of burial 8588, group 8454, Phase 2
14. **Bone pin tip** (not illustrated), 12 mm long x 2 mm diam; context 8057, fill of pit 8058, Phase 1
15. **Worked roe deer metatarsal** (not illustrated), 30mm long x 10mm wide, context 8814, fill of pit 8813, Phase 1
16. **Worked roe deer metatarsal** (not illustrated), 39mm long x 10mm wide, context 8814, fill of pit 8813, Phase 1

Fig. 33 Worked bone objects, phases 1 and 2

Human remains from earlier prehistoric burials
Alistair Zochowski and Helen Webb, with a contribution by Angela Lamb and Jane Evans

Introduction

Standard anthropological and palaeopathological examinations were undertaken in accordance with published guidelines (Brickley and McKinley 2004). Condition and completeness were assessed and an inventory was complied listing all the elements that survived. Condition was scored with reference to published criteria (McKinley 2004,16). Estimation of sex was based on observations of pelvic and cranial morphology (Buikstra and Ubelaker 1994). Adult ages were estimated based on a combination of methods including those that refer to late fusing epiphyses (Scheuer and Black 2000), dental attrition (Brothwell 1981; Miles 1962) and the metamorphosis of the pubic symphyses and auricular surfaces of the pelvis.

Phase 2 – Beaker to Bronze Age

Skeleton 1403, grave 1402

This skeleton was in a poor condition, consistent with grade four of McKinley's criteria. This means that all bone surfaces were eroded, but the general profile of bones had been maintained (McKinley 2004, 16). The skeleton was very fragmentary and only between 25% and 50% of it had survived. Skull, long bones and pelvis were all present to some degree. There was also a juvenile right femoral head from another burial. The vertebrae, hands, feet and ribs were predominately absent.

The skeleton was estimated to have been an older adult at death (approximately over 50 years of age), based on the auricular surface. No other age indicators could be examined.

An unpronounced protuberance on the occipital bone of the skull suggested that the individual was possibly female. This feature was the only indicator of sex that had survived. Sex estimation using the skull is not as accurate as it is using the pelvis. Accuracy is further reduced if estimations are based on one skull feature alone (Buikstra and Ubelaker 1994). This estimate is therefore very tentative.

The skeleton completely lacked any maxilla or mandible, but 13 teeth were present. These were poorly preserved, exhibited heavy attrition and were difficult to identify. Among them was evidence for calculus and caries. Calculus was observed on the mandibular molars as a grey/white deposit on the enamel surfaces. Known colloquially as 'tartar', calculus is formed by the mineralisation of organic material and bacteria and, as such, reflects the lack of importance (or perhaps inability owing to illness) given to maintaining healthy teeth. It accumulates on the teeth faster when there is a high protein and/or carbohydrate diet, the bacteria favouring an alkaline oral environment. Calculus is a significant cause of periodontal disease and subsequent tooth loss. It is not possible to say whether the present skeleton had periodontal disease and tooth loss because of the missing jaw bones. Caries was present on the left and right second molars and first left molar of the mandible. Dental caries involves the destruction of the enamel surface, the dentine (internal part of the tooth) and cement (outer layer of the roots). This is caused by the acid produced by the bacteria present within dental plaque (Hillson 1996, 269). The cavities were large and affected the occlusal and lingual surfaces of the teeth.

Stature could not be estimated for this skeleton because the bones were too fragmentary to measure. No pathology or non metric traits were observed.

Skeleton 8656, grave 8588 (group 8454)

This skeleton was 75% complete and, with the exception of the vertebral column, was relatively intact. Bone condition was good, or grade two after McKinley (2004,16). Thus, there was moderate erosion on some bone surfaces. The sternal epiphysis of the clavicle had fused, indicating an age of at least 25 years (Scheuer and Black 2000). The degree of attrition on the molar teeth suggested an age of between 25 and 35 years. However, not all molar teeth were available to appreciate the full pattern of wear, thus this estimate is less reliable. Degenerative changes on the auricular surface of the pelvis indicated an age of approximately 30-40 years. Overall, it was concluded that this individual was a mature adult of between 30 and 40 years of age at death.

Sexually dimorphic features of the cranium had survived, including the right supra-orbital ridge and the occipital protuberance. These suggested a male. This was not corroborated by other characteristics; the anterior mandible was rounded suggesting a female, and the pelvis also had female characteristics. Given the greater accuracy of the pelvis over the skull in sex estimation, it was concluded that the individual was probably female.

The individual's dentition was almost complete and included a total of 19 teeth. All these teeth exhibited calculus. Using Ogden's (2005) system, mild periodontal disease was identified on the jaw bones. A single carious cavity was located on the mesial aspect of the 3rd left mandibular molar. There was also a small periapical cavity on the alveolar bone of the left mandible in the area of the first molar. The circumscribed margins of the cavity, coupled with its small diameter (less than 3 mm) are consistent with a periapical granuloma. Periapical granulomas, or foci of chronic inflammation around the apex of the tooth, arise when the pulp of the tooth is inflamed, secondary to caries or trauma. On the present individual an associated carious cavity was not observed. Cribra orbitalia was present on the right orbit and was graded as slight (type 1) after Stuart-Macadam (1991). Cribra orbitalia is believed to be caused by iron deficiency anaemia

(Stuart Macadam 1991), with dietary deficiency, malabsorption (due to gastro-intestinal infection or parasites), blood loss and chronic disease being among the main causes. Anaemia tends not to leave traces on adult bone (Stuart Macadam 1991) and, therefore, the example described here probably relates back to a time during the individual's childhood, the only time when skeletal lesions relating to this disease are manifest.

Other pathology includes osteophytosis, or new bone formation on or around joint margins. This was present on the vertebral column and on the right femoral head. It is extremely common, and is seen in association with several different conditions (for example, osteoarthritis and trauma), as well as on its own as a normal accompaniment to ageing. No other associated pathological changes were observed on the present skeleton. Limited areas of the skeleton were available for examining the presence and absence of non-metric traits. Of note was the presence of Allen's fossa on the left femur. This is a depression near the superior margin of the femoral neck, close to the border of the femoral head. In the past this trait was regarded as a marker of activity and was linked to rapidly descending steep slopes and / or walking on rough terrain. However, the extent to which its manifestation in bone is genetically controlled is far from clear.

The central Beaker burial was assigned context number 2405 in the 2006 evaluation, and a 5th metacarpal from a right hand and a pisiform bone from the left hand, both from an adult individual, were assigned to this context. The metacarpal was 100% complete and was graded as a 2 on the IFA scale (McKinley 2004). The pisiform was graded 1 on the IFA scale (McKinley 2004).

Funerary practice

Skeletons 1403 and 8656 date to the early Bronze Age or Beaker period. Both had been buried in individual graves, in a crouched position, in keeping with the burial tradition of this period. The older adult female, 1403, was buried within a large, N-S aligned sub-oval pit, cut into the natural limestone. The head, at the south end of the grave, had been heavily disturbed by a modern posthole. The individual had been buried in a crouched position, with the torso laid on its back, the arms crossed over the abdomen and the legs tightly flexed at the knees, both tilted over onto their right side. A complete, but fragmentary Beaker had been placed at the north end of the grave, just to the west of the feet. Mature adult female 8656 was buried on her right side with her legs flexed at the knees and her arms flexed at the elbows, her hands towards her right shoulder. Her head was to the south west of the grave, with her feet at the north east. The skeleton was buried within a sub-rectangular grave (8588) inside ring ditch 8454 and was accompanied by a Beaker. Both burials were buried in large graves. It is likely that this additional space would have created a greater opportunity for the visual display of the deceased and their grave goods to mourners at the grave-side, and probably represents an important stage in the funerary ritual preceding interment (Thomas 1991).

Skeleton 1903, grave 1905

This skeleton was moderately fragmented. The condition of the bones was poor with erosion covering large areas of bone surface as reflected by a grade four after McKinley (2004,16). Between 50%-75% of the skeleton had survived, all elements being present to some degree with the exception of the hands which were missing most of their bones.

Dental attrition indicated an age of between 25 and 35 years, but ante-mortem loss of some molars, combined with the loss if teeth post mortem, means that this is not a reliable estimate. Degenerative changes on the auricular surface suggested an age of over 50 years and is the age estimate assigned to this individual. Sex estimation was based upon observations of cranial features and one pelvic indicator. The sciatic notch on the pelvis was narrow and 'V' shaped, indicating a male (Buikstra and Ubelaker 1994, 18). This was corroborated by features of the skull including a pronounced occipital protuberance, square mandible and mastoid processes that were vertical and large, all traits that are seen in males (Schwartz 1995, 280). Overall the individual was robust with pronounced muscle markings.

Twenty-one teeth and both the maxilla and mandible were available to explore the dental status of the individual. All teeth were heavily worn and three (upper left molars) had been lost ante-mortem. Calculus was present on all of the mandibular teeth and the left maxillary central incisor. Four carious cavities were observed and involved mandibular and maxillary teeth. There was also a granuloma on the alveolar bone below the right first molar. This measured 3-5 mm in diameter and was probably associated with the caries that involved the first molar. Periodontal disease was present and was mild or severe. Overcrowding was noted for the mandibular incisors and canines.

Based on the maximum length of the left tibia, the individual was estimated to have been approximately 1.83 m tall. Non-metric traits included a septal aperture on right and left humeri. This is identified as hole in the olecranon fossa of the distal humerus. It is usually more common among females than males. Pathological conditions included cribra orbitalia on the left orbit (grade 1 after Stuart-Macadam 1991, 109). Osteophytosis was observed on the joint margins of the right knee (distal femur) and left shoulder. There was also evidence of degenerative disc disease in the cervical spine and osteoarthritis in the thoracic spine. Degenerative disc disease is identified in dry bone as increased porosity on the surfaces of the vertebral bodies. The condition is mainly caused by degeneration of the intervertebral discs and is associated with increasing age.

The individual was lying in a supine (on the back) position with his arms by his side and his left leg crossed over his right at the ankle. Inhumation burials of middle Bronze Age date are exceptionally rare within Britain, the most common practice being cremation, usually associated with Deverel Rimbury pottery. At the eastern end of the grave, just to the left side of the head, an articulated animal foot/leg was found, probably the remains of a joint of meat that had been deliberately placed within the grave. This is also exceptionally uncommon.

A complete, third proximal phalanx was found within a fill of grave 1905. Its condition was grade three using McKinley's (2004) system. The bone was from an adult and showed no evidence of pathology. It is possible that it belonged with skeleton 1903.

Strontium and oxygen isotope analysis

Angela Lamb and Jane Evans

Introduction

Two teeth each from two Beaker-period individuals (skeletons 8656 and 1403) were received by NIGL for isotope analysis.

Analytical method – Sr (strontium) isotopes

The available enamel surface of the teeth was abraded from the surface to a depth of >100 microns using a tungsten carbide dental bur and the removed material discarded. Thin enamel slices were then cut from the tooth using a flexible diamond edged rotary dental saw. All surfaces were mechanically cleaned with a tungsten carbide bur to remove adhering dentine. The resulting samples were transferred to a clean (class 100, laminar flow) working area for further preparation. In a clean laboratory, the samples were first cleaned ultrasonically in high purity water to remove dust, rinsed twice, dried down in high purity acetone and then weighed into pre-cleaned Teflon beakers. The samples were mixed with ^{84}Sr tracer solution and dissolved in Teflon distilled 16M HNO_3. Strontium was collected using Dowex resin columns. Strontium was loaded onto a single Re Filament with TaF following the method of Birck (1986) and the isotope composition and concentrations were determined by Thermal Ionisation Mass spectroscopy (TIMS) using a Thermo Triton multi-collector mass spectrometer. The international standard for $^{87}Sr/^{86}Sr$, NBS987, gave a value of 0.710250 ± 0.000006 (n=8, 2σ) during the analysis of these samples. Blank values were in the region of 100pg. Data are presented in Table 5.

Analytical method – Oxygen isotopes

Small fragments of clean enamel (15-20 mg) were treated to extract PO4 radicals and precipitated as silver phosphate, using the method of O'Neil *et al.* (1994). The fragments of enamel were cleaned in concentrated hydrogen peroxide for 24 hours to remove organic material and subsequently evaporated to dryness. The samples were then dissolved in 2 M Nitric acid and transferred to clean polypropylene test tubes. Each sample was then treated with 2 M potassium hydroxide and 2 M hydrogen fluoride to remove calcium from the solution by precipitation. The samples were then centrifuged and the supernatant added to beakers containing ammoniacal silver nitrate solution and heated gently to precipitate silver phosphate. The silver phosphate was, rinsed, dried and weighed into silver capsules for analysis. Oxygen isotope measurements on each sample were analysed in triplicate by thermal conversion continuous flow isotope ratio mass spectrometry (TC/EA-CFIRMS). The reference material NBS120C, calibrated against certified reference material NBS127 (assuming $\delta^{18}O$ of NBS127 = +20.3‰ versus SMOW; IAEA, 2004), has an accepted value of 21.70‰ (Chenery 2005). The reproducibility of NBS120C during this set of analyses was 21.70‰ ± 0.38 (1σ, n=8). Drinking water values are calculated using Levinson's equation (Levinson *et al*. 1987), after correction of +1.4‰ for the difference between the average published values for NBS120C used at NIGL and the value for NBS120B used by Levinson *et al.* (1987) (Chenery *et al.* in press). Data are presented in Table 5.

Discussion

The premolar and second molar teeth initially calcify between 1.5 and 2.5 years of age (van Beek 1983) and hence they record early childhood environment. The first molar starts calcifying at birth (van Beek 1983) and hence will record a pre-weaning signature for both Sr and oxygen. Individual 8656 has a PM2 Sr value of 0.70857 and an M2 value of 0.70872. The values are consistent with a childhood spent on chalklands typical of

Table 5. The strontium and oxygen isotope composition of Kingshill North tooth enamel.
DW = drinking water $\delta^{18}O$ values calculated using Levinson et al. (1987) according to Chenery et al. (2010).

Sample	*tooth*	*ppm*	*87Sr/86Sr*	*$\delta^{18}0$*	*1sd*	*drinking water*	*1sd*	*n*
CIKNO-08-SK8656	URPM2	36.81	0.708566	17.09	0.20	-8.06	0.44	3
CIKNO-08-SK8656	LLM2	35.96	0.708720	17.64	0.09	-6.87	0.20	2
CIKNO-08-SK1403	ULPM2	43.94	0.708939	18.10	0.16	-5.86	0.34	3
CIKNO-08-SK1403	LLM1	57.63	0.709620	18.70	0.06	-4.57	0.14	2

southern and eastern England. For individual 1403, the PM2 value of 0.70894 is also typical of chalklands, but the more elevated isotope composition of the first molar, 0.70962, is likely to be inherited at least in part from the mother and hence does not reflect the individual's childhood origin.

The drinking water $\delta^{18}O$ range in human tooth enamel of United Kingdom locals is estimated to be between -8.7 and -4.7. Individual 8656 records values of -8.06 (PM2) and -6.87(M2) consistent with a childhood in southern England. Individual 1403 records a value of -5.86 (PM2) suggesting the childhood origin in the more south-western region of England. The first molar from this individual gives -4.57. This 'warm' signature is probably due to a component of additional fractionation caused by a pre-weaning diet and corroborates the suggestion that the Sr signal is not recording the direct biosphere input.

Conclusions

The strontium isotope results for both individuals support a childhood founded on chalklands. The oxygen isotope composition suggests that 8656 could be from eastern or southern England, while 1403 is probably from more south-westerly areas. Such combinations of values do not exclude certain continental options, but the most likely origin of these two individuals is from the chalklands of England.