Excavations at Cairnderry chambered cairn, Dumfries and Galloway 2004

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Introduction: the background to the project

Two different types of Neolithic chambered tomb have been identified in western Dumfries and Galloway. The first group have been described as 'Clyde' monuments and are characterised by multiple chambers set within a long cairn with a stone-built façade (Henshall 1972). Four of the seven Clyde monuments in Dumfries and Galloway (Cairnholy I and II (Piggott and Powell 1949) and Mid Gleniron I and II (Corcoran 1969)) have been excavated and these sites seem to originate from the early Neolithic, consisting of several discrete phases (as shown at Mid Gleniron by Corcoran 1969). The second group of monuments are the 'Bargrennan' sites, of which 14 have been identified (Henshall 1972; Murray 1992). These sites have a small chamber or chambers often with thin (often impassable) passages and are set within round cairns (Henshall 1972; Murray 1992). The only recorded excavation of a Bargrennan monument was at Bargrennan White Cairn in 1949 (Piggott and Powell 1949). However, the chamber had been robbed out and it has not possible to suggest a construction date for this site. Fragments of cremated bone and incised late Neolithic pottery were recovered from above the slabs lining the passageway, and charcoalised remains of oak, cremated bone and a flint 'fabricator' were found in a pit at the entrance of the passage (Piggott and Powell 1949, 150-1). It is not possible to tell if the later Neolithic finds date from an early or late use of the chamber and passage. Henshall produced a survey of all the monuments in 1972, and apart from Murray's (1992) reconsideration of the Bargrennan sites, little work has been done since. Vicki Cummings examined the landscape settings of the chambered tombs of south-west Scotland as part of her doctoral research and demonstrated that the Bargrennan monuments are not only structurally quite different to the Clyde sites but they are also located in radically different parts of the landscape (see Cummings 2001). The Clyde monuments are located in the lowlands on fertile land, while the Bargrennan sites are located in the marginal uplands of western Galloway (for further details see Cummings 2002). It is possible to interpret the differences between the Clyde and Bargrennan sites in two ways. First, the different distributions of these two monument types may suggest that the Bargrennan monuments were later in date than the Clyde monuments (this suggestion is favoured by Murray 1992). If this was the case it may suggest that people lived in the coastal regions in the early Neolithic and gradually moved inland over time. This model has implications for the origins of the Neolithic in this area and also for the economic use of the region throughout this period. Alternatively, the two monument types may be contemporary. There are several ways of interpreting this suggestion.

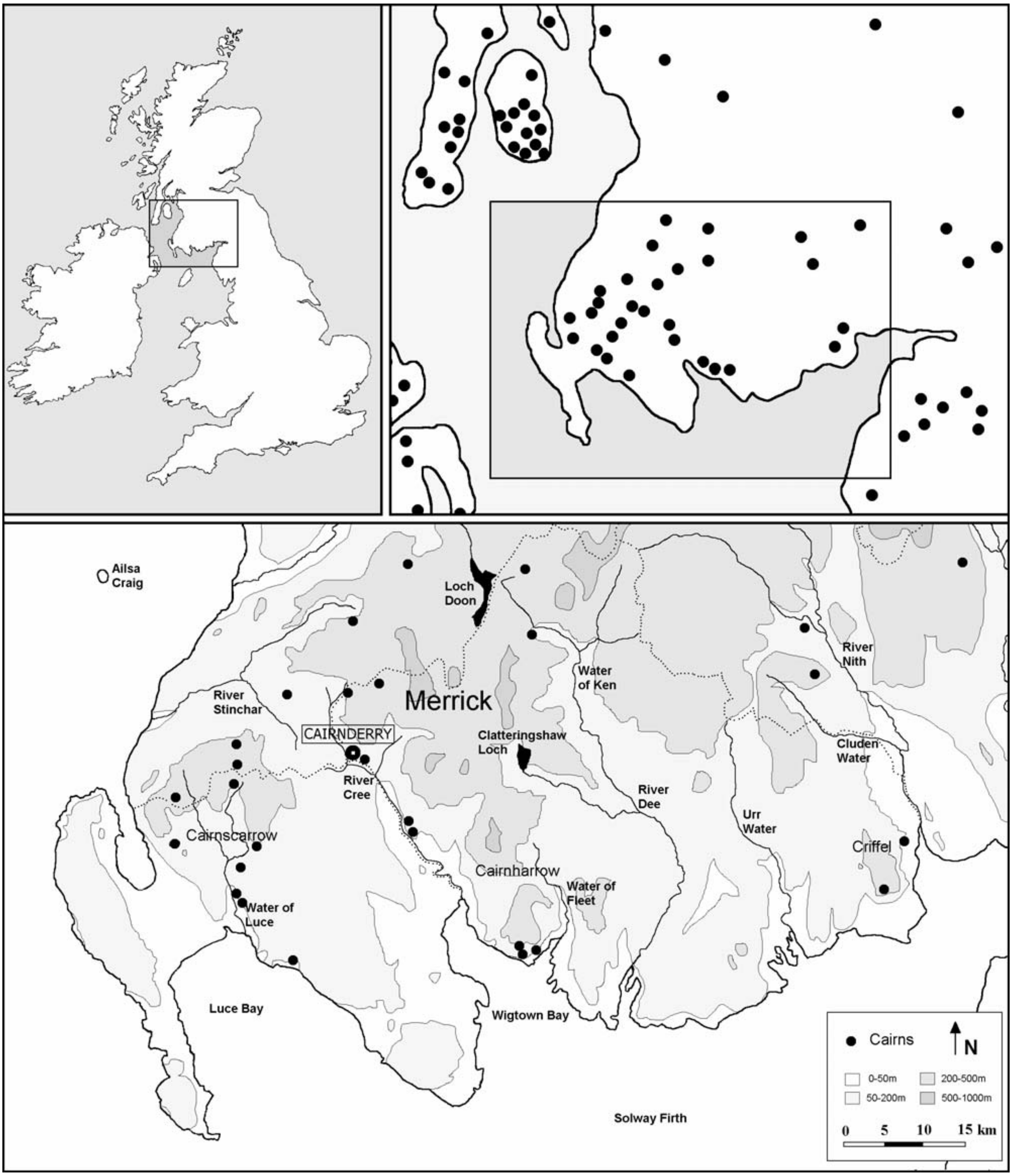

Figure 1. Location of Cairnderry chambered cairn in south-west Scotland (after Cummings 2002)

While it is possible to imagine two different communities living in Dumfries and Galloway and constructing different kinds of monument, it might also suggest that different parts of the landscape were directly related to different forms of monument. This may imply the uses of different locales in a seasonal round (people may have been moving inland over the summer months to follow game or to feed stock) or other connections between practices and places. A thorough programme of excavation of Bargrennan and Clyde monuments could allow some comparisons between Neolithic patterns of land use and those suggested by the robust evidence for seasonal use of the landscape by Mesolithic people (Cherry and Cherry 1997; Cole 1963; Cormack and Coles 1968; Edwards 1996).

The overall research programme

The dating of these monuments is crucial in developing our understanding of the origins and development of the Neolithic in this area. The excavation of a Bargrennan monument was initially proposed in order to attempt to get material for radiocarbon dating. However, due to the results of the second season at Cairnderry (see below), which produced substantial early Bronze Age reuse of the site, the research programme now also includes the aim of attempting to understand the history of use and reuse of these sites. It is anticipated that the results of these excavations would themselves form a new set of questions for further investigations into both sets of monuments and other Neolithic sites in the region.

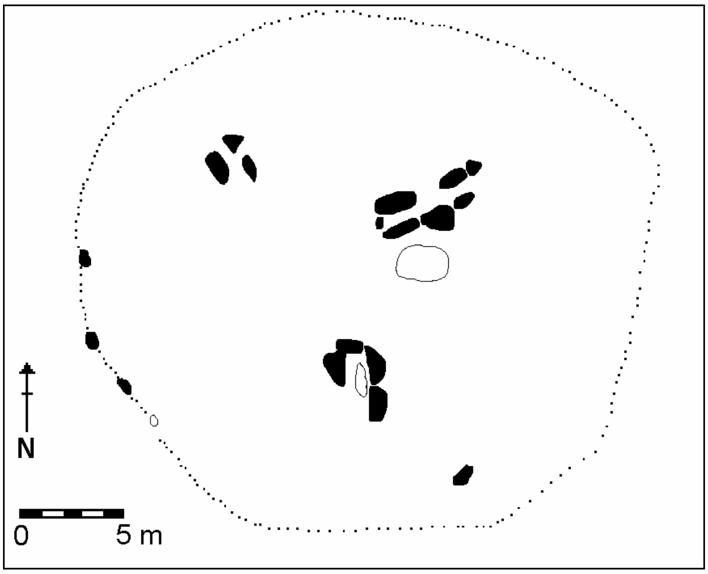

Figure 2. The plan of Cairnderry by Henshall (1972)

The location of the site

Cairnderry sits at the centre of the known distribution of Bargrennan monuments and has three chambers and passages set within a round cairn (Figures 1 and 2). The site is set on the side of a valley on the edge of Glengruboch Moor at 155m OD, above the River Cree. The site is presently on Forestry Enterprise land in the heart of the Galloway forest. Trees surround the monument on all sides, although these are due to be harvested in late 2004, and to the east the site is clipped by a forest track which has cut through some rubble external to the cairn. The monument is located just off the A714, eight kilometres south-east of Barhill. The site is close to a stream, Goat Burn, although the stream cannot presently be seen or heard from the site itself. The cairn itself is situated on a natural rise in the landscape, and the body of the cairn seems to fully incorporate the prominence of this knoll. Prior to excavation the extent of the cairn was unclear, but it is now evident that the diameter of the cairn is roughly 25m across west to east.

Because the monument is surrounded by trees on all sides it is difficult to ascertain precisely the parts of the landscape that would be visible from the site. Since the cairn is located on the lower reaches of Wheeb Hill it seems likely that the view to the north-west would be restricted. The Merrick Mountains would be visible from the site (this is a characteristic of the Bargrennan monuments: see Cummings 2002). Views to the south and west would also be quite wide-ranging, looking out to Barjarg Hill and the Barrhill pass.

Description of the monument

Prior to excavation, the monument was a large grassy mound covered with dense vegetation (mainly grasses and ferns), with a forestry road running immediately to the east of the mound. It was impossible to define the edge of the cairn, although it was clear that the monument had been disturbed in the past. Three chambers were visible at the heart of the mound, one to the north-east, one of the south and a third poorly-preserved chamber to the north-west. The north-east chamber survived as a number of slabs which defined a chamber and passage, and a displaced capstone lying to the south of the chamber. The southern chamber was the largest of the three and survived as several large slabs defining a chamber area, with the capstone lying on its side in the chamber. The third chamber survived as two opposing slabs which may be the sides of either a chamber or passage and a third displaced stone. In addition to the chambers, four large stones were visible to the west of the mound, and these are described by Henshall (1972, 448) as the remains of a possible peristalith. She also notes the presence of a stone a short distance from the southern chamber, which she also suggests may be part of a peristalith. In the previous seasons we exposed the area around this stone and found it to be part of the kerb. She marks four of the five peristalith stones as *in situ*. The site is surrounded by dense forestry in all directions which have severely disturbed or destroyed additional archaeological remains. A number of walls lie a short distance from the site, particularly to the west.

History of the site

The 1849 OS map shows a large sheep enclosure to the north-west of the cairn and a road running to the south of the site. Both these features also appear on the 1896 OS map. It seems likely that the cairn had been robbed in order to construct the sheep pens and road sometime prior to 1849, and possibly some of the dry stone walls. Henshall (1972, 448) records that the cairn was greatly reduced some time before 1896 when it was recorded in its present condition. She suggests that the cairn was robbed for road building materials (Henshall 1972). Forestry had just been planted around the site when Henshall visited the site and the monument survives today in the same state that Henshall found it 30 years ago.

Summary of results from the first and second seasons

In 2002 a small team conducted a preliminary investigation of the site. No excavation of any archaeological contexts was undertaken. Instead, we cleared away the vegetation and top soil from north-west part of the cairn in order to assess the state and extent of the cairn. We also opened a smaller trench to the south-east which revealed a kerb still *in situ*. We found that in most places the cairn survived at its lowest level, although it had obviously been heavily robbed in the past. In some areas, however, the cairn had been removed completely. In the area just to the north-west of the southern chamber the cairn had been robbed away leaving only stoneholes, and here we found very small fragments of early Neolithic carinated bowl.

In the second season we opened a trench in the southern part of the cairn. This included the southern chamber. We found that the cairn had also been severely robbed in the southern part of the cairn, in particular to the south-west were almost all of the stone had been removed. There was no sign of a kerb here: if one had ever existed it had presumably been robbed out with the rest of this part of the cairn. The cairn was better preserved to the south-east of the cairn, and here we uncovered some large stones still *in situ*. We removed some parts of the cairn to look for pre-cairn activity, which was represented by the occasional flint find which was diagnostically early Neolithic in date.

We examined the southern chamber. The capstone had fallen in at some point in the past, and we hoped that it had preserved some prehistoric material. We found that the chamber was built right on top of the land-surface, not cut into it – orthostats did not sit in sockets but on top of flat 'cushion' stones similar to those used to build the cairn. Within the chamber itself we found a series of paving slabs which we think represent the bottom of the chamber. Beneath these slabs two pieces of Arran pitchstone were found, diagnostically very early Neolithic, and possibly part of pre-cairn activity on the site. Unfortunately, no prehistoric archaeological material was found above the paving stones, which suggests that any deposits above the paving were cleared away, either in prehistory or in recent years. A loose fragment of long bone was found in the chamber, however, which was dated to the middle Bronze Age (see below) and hints at the possibility that the chamber was cleared out in the Bronze Age and reused for burials. These were subsequently cleared out, presumably in more recent times.

The biggest surprise from these excavations came from outside the kerb to the south-east of the cairn. Around the kerb were a series of large flat slabs, which seem to represent slipped drystone walling. Underneath these stones four pits were cut into the subsoil. Pit 4 contained a rather amorphous spread of charcoal and cremated bone from an adult (the full bone report is reproduced below). Pit 3 had not been fully excavated although it had produced the remains of a child aged about 5 years: it was completed this year (see below). Pit 2 was found adjacent to and partly cutting under one of the kerbstones: it seems that people had crammed large quantities of cremated bone from an adult and charcoal into the pit, pressing these against the underneath and face of the kerbstone. Finally Pit 1 was located at the point where the passage would have originally run from the chamber to the outside of the cairn. This pit was quite substantial and was crammed with cremated bone from an adult and large chunks of charcoal. In the centre of the deposit was an upturned collared urn and by its side a battleaxe. Lower down in the pit was a small, poorly fired pygmy or accessory cup. These finds date to the later part of the early Bronze Age and show that people were using the outside of the monument for funerary activities. This is a practice which is paralleled elsewhere in south-west Scotland at other types of monument, particularly at the Clyde monuments nearby.

Aims and objectives of the third season

The aims of this final season were:

-Firstly, to complete the excavation of the unfinished cremation pit (pit 3) left from the previous year.

-Secondly, we wanted to see if there was further Bronze Age activity around the south-eastern sector of the monument, but beyond the immediate area around the kerb.

Methodology

We opened a single trench to the south-east of the cairn, outside the kerb. We did not reopen any of the trenches from the previous year, apart from a small section around the unfinished cremation pit.

Excavation results

The trench contained no archaeological features. We found a mass of rubble (012) beyond the extent of the kerb, which lay over the orange natural soil (013 and 004). We suggest that this material was either:

1) Slipped cairn material from the main cairn itself

2) Cairn material removed from the cairn by people wishing to use the stone elsewhere (perhaps to build the road). They may have broken up the stone into smaller pieces.

3) A deliberate spread of material, perhaps deposited in the early Bronze Age, or later and relating to enhancing the visual properties of the outside of the cairn.

We would favour a combination of one and two since the soils surrounding the stone in 012 were quite different to 013, but there was no way to confirm this.

Figure 3. The spread of cairn material beyond the cairn. The two people are excavating pit 3.

There was also a thick layer of blue stone to the very south-east corner of the trench, which is identical in colour and fabric to the stone used to build the road next to it. We think this is a dump of material used for constructing the forestry track.

This year we were also able to complete the excavation of pit 3. Last year we had excavated the upper fills of this pit, and had begun to excavate a layer containing cremated bone (from a child: see below). This layer (060) contained more cremated bone. Below it was a silty charcoal layer (061), and above it a reddish layer containing lumps of charcoal and cremated bone (052). We suggest that these represent a single event, which sees the dumping of material from the cremation pyre. There were considerable similarities in the formation of this deposit and the deposits in Pit 1. These cremation deposits were then covered with stones (059) and the hole was left to silt (046). How long this silting event took is unclear, but at some point another feature was cut into the silt layer (cut 064). This feature (pit 5) contained further deposits of cremated bone (062) and charcoal (063). However, these deposits were quite unlike the other cremated remains. The bone fragments were so thin and tiny that we speculated that these bones may be the cremated remains of an infant. On top of these deposits which again we suggest are the remains of a pyre, was a burnt charcoal layer. It was onto this layer that the cairn then slipped.

Figure 4. The fully excavated feature ‘Pit 3’

Finds

There were very few finds from this season’s excavation. Five flints were recovered, which are consistent with the lithics found last year (i.e. early Neolithic in date: Amelia Pannett *pers. comm.*). A coin was also found dating to 1911. This may give us an approximate date for a period of destruction of this monument.

Discussion

This final season at Cairnderry confirmed that the early Bronze Age reuse was confined to the immediate area around the SSE-S portion of the cairn. The radiocarbon dates from the pits excavated for the most part last year (see Cummings and Fowler 2003; and below for the C-14 dates) suggests that these deposits were all made within a short period of time. Unlike early Bronze Age cairns/mounds elsewhere, deposits did not then spread out from the central and primary deposits.

The presence of a recut in the third pit is also interesting. Although the bone from the new pit remains to be analysed, the possibility that this is an infant burial on top of a child burial was posited on site. This shows that people knew where the first deposit was (which in itself suggests they either remembered the location of the first burial for a long period of time, or that the subsequent deposit happened only a relatively short while after the first deposit). Were these two children related? Or was this considered a fitting location for the deposition of immature remains?

Implications for future work

This season's work completes our research at Cairnderry and we have no further plans for any work at the site. It is clear that this site has been robbed over the years, and it is debatable whether we would find any further archaeological deposits, in particular that would answer our main research aim of dating the construction of these sites. However, the north-east quadrant of the cairn has been completely untouched, so that future generations have the opportunity to explore this monument further.

Specialist reports

In the past 12 months since the publication of the last interim report, a number of specialists have produced reports relating to the 2003 season at Cairnderry. These are included here for reference. They are:

-Radiocarbon dates
-Analysis of the cremated bone from four cremation deposits
-Analysis of the soil (micromorphology)
-Analysis of the lipids on the collared urn and pygmy cup
-Conservation of the collared urn
-Conservation of the pygmy cup

The previous interim report contained specialist reports on:
-The lithics
-The battleaxe
-The pottery

Radiocarbon dates

Samples were kindly selected by Alison Sheridan (National Museums of Scotland) and taken to the labs in Groningen. We would like to acknowledge our thanks to Alison Sheridan who arranged for one of our samples to be analysed without cost, as part of the cremated bone/battleaxe dating project, and for her help with this process.

The results

Pit 1	(GrA-26605)	3450 +-40 BP
Pit 2	(GrA-26509)	3495+-45 BP
Pit 2	(GrA-26510)	3495 +-40 BP
Pit 2	(GrA-26511)	3450 +-40 BP
Pit 3	(GrA 26513)	3450+-40 BP
Pit 4	(GrA 26514)	3515+-40 BP
Chamber	(GrA 26551)	3075+-40 BP

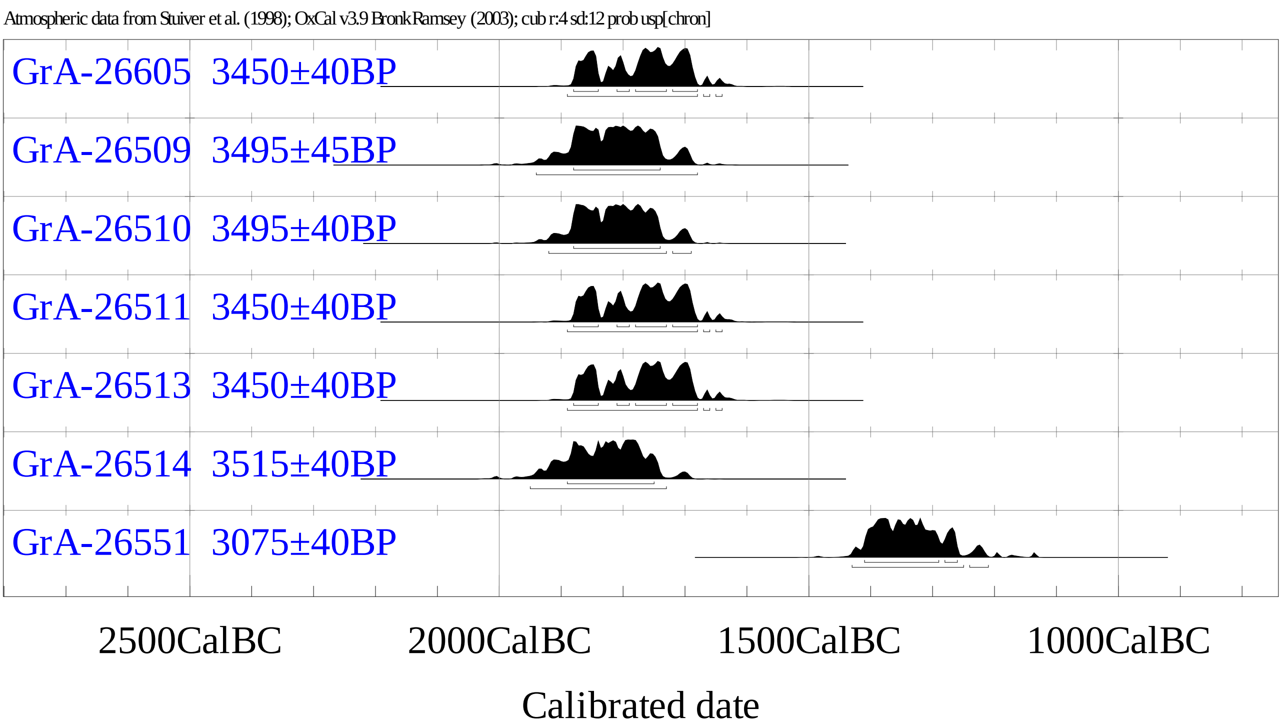

Figure 5. Calibrated radiocarbon dates

Interpretation

These results confirm that the deposits found around the kerb at Cairnderry are Early Bronze Age in date. The date from Pit 1 is entirely consistent with the dates suggested by Alison Sheridan for the battleaxe and collared urn. It is clear that the other pits were more or less contemporary with Pit 1, again dating to the latter part of the Early Bronze Age. Finally, the sample taken from the chamber suggests that the chamber was reused in the middle Bronze Age.

This indicates that the site of Cairnderry was in use for a considerable period of time in prehistory. We now have clear evidence of early Neolithic activity on the site, early Bronze Age activity around the perimeter of the kerb and middle Bronze Age reuse of the chamber.

Cremated Bone from Cairnderry

By Andrew T. Chamberlain (Department of Archaeology, University of Sheffield,

Summary

Bone from cremation deposits surrounding the chambered cairn at Cairnderry, Scotland was studied. The deposits contained the skeletal remains of an adult (Pit 1), a probable adult (Pit 2), a child aged about 5 years (Pit 3) and a probable adult (Pit 4). An additional probable adult may be represented by finds from the topsoil context 101. All material showed evidence of having been cremated at a temperature in excess of 600° centigrade, and it is likely that some material may have reached sustained temperatures of above 900° centigrade. Where identifiable, all bone material appears to be of human origin and there were no remains attributable to non-human fauna.

Introduction

The aims of the anthropological analysis of the cremated material were to establish the number of individuals represented in the assemblage, the skeletal part representation, demographic attributes (age at death and sex) and possible inferences concerning the pyre conditions and post-burning manipulation of the remains.

The amount of recoverable cremated bone (fragments >2mm) expected in a modern cremation of an adult individual is between 1000g and 2400g (McKinley 1993, 285). Archaeological cremation burials typically produce an average of 900g of recoverable bone from a single adult, but amounts can range widely from a minimum of <100g to a maximum of about 1500g, probably reflecting variation in the amount of skeletal material removed from the pyre site for subsequent burial. Archaeological cremation burials containing more than 1500g of cremated bone are likely therefore to represent the remains of multiple individuals.

During cremation, bone undergoes a progressive series of physical and chemical alterations with increasing temperature, resulting from the loss of water, oxidation and loss of organic components and dehydration and recrystallisation of the calcium phosphate component of the bone (Shipman *et al*. 1984; McKinley and Bond 2001). These processes are manifest through characteristic visible changes in colour, shrinkage of linear dimensions, distortion and heat-induced fissuring of the bone (Figures 6 and 7).

Analysis

Separation of cremated bone from soil and charcoal was accomplished either by hand sorting of dried samples (contexts **034** and **060**) or by gentle wet sieving of samples over a 0.5mm mesh (samples from all other contexts). Wet sieving has the advantage of allowing more complete recovery of bone, but the disadvantage of increasing the fragmentation of material with subsequent loss of diagnostic morphology. In particular, tooth enamel is very fragile after cremation and is particularly liable to destruction through sieving. Hand sorting of cremated fragments is time consuming, but is recommended when resources are available.

For all samples the total weight of cremated bone and the diameter of the largest fragment were recorded (data presented in accompanying Excel spreadsheet). Most of the larger fragments could be identified either as cranial, dental or postcranial long bone shaft fragments. Very little spongy (trabecular) bone was identified, and it is likely that if such bone survived the cremation process it would have been lost through post-depositional decay.

The largest bone fragments were unsurprisingly found in the contexts containing the largest quantities of bone: context **035** from Pit 1 had a largest fragment dimension of 59mm, and context **016** from Pit 2 had a largest fragment dimension of 65mm. The conjoined fragments of tibia from context **034** also total just over 50mm in length, and it is possible that these dimensions may provide an indication of the original size of cremated bone fragments at the pyre site. Tooth roots were identifiable in some of the samples (Figure 8), and a few intact hand phalanges were also identifiable (Figure 9). The presence of hand phalanges in cremation assemblages has been noted by other authors (e.g. McKinley and Bond 2001, 282) and may indicate that these skeletal parts detach from the body at an early stage of the cremation process and drop to the base of the pyre where temperatures are low enough to prevent their subsequent destruction.

All cremated bone material from Cairnderry showed evidence of having been heated to a temperature in excess of 600° centigrade, as evidenced by the light grey to white surface colouration and the extent of shrinkage, cracking and warping of bone cortical surfaces. The amount of shrinkage and cracking of fragments suggests that some material reached temperatures of above 900° centigrade. Incomplete combustion of organic material was observable only in the centre of fragments of thick bone cortex (Figure 7).

Pit 1 Contexts

Five contexts from Pit 1 were reported to contain cremated bone, but material from context **049** was not available for study. The total weight of bone from Pit 1 was 597g, consistent with the remains of a single individual, and more than half of the bone came from the primary fill context **035**. Fragments of long bone shafts were found in most of the sample bags, but cranial and dental fragments were localised within the deposit, being found primarily in samples 49A, 50 and 45B. The individual represented in the cremation deposit was likely to have been an adult, based on the size of the bone fragments, the presence of complete tooth roots and an alveolar fragment of the mandible which showed that the premolars had erupted completely. As with all of the Cairnderry material, the sex of the individual could not be diagnosed from the remains present.

Context	**Weight**	**Age/Sex**	**Identifiable material**
034	132g	?adult	mainly long bone; cranial in sample 49A
035	336g	?adult	mainly long bone; cranial & dental in sample 50

036	15g	-	long bone
048	114g	?adult	long bone, cranial in sample 45B
049	-	-	*material not examined*

Pit 2 Contexts

Two contexts from Pit 2 contained cremated bone, but nearly all of the bone material was recovered from the primary fill **016**. The identifiable material from this context included long bone fragments, cranial fragments and tooth roots, and on the basis of the size of the fragments and the fused distal epiphysis in the preserved hand phalanx it is likely that the remains are those of an older juvenile or adult.

Context	Weight	Age/Sex	Identifiable material
016	400g	?adult	long bone and cranial fragments; hand phalanx
055	8g	-	small fragments of long bones

Pit 3 Contexts

Pit 3 was incompletely excavated, but two of the contexts from this pit contained cremated bone. Very small non-diagnostic fragments of bone, totalling just over 1g in weight, were recovered from five samples from context **022**. Context **060** contained 41g of cremated material including long bone fragments and a single tooth crown of an unerupted upper permanent canine with the initiation of root formation, indicating an individual aged around 5 years old. This age attribution is confirmed by the fragment of a proximal metaphysis of a femur, which is of an appropriate size for a child of this age.

Context	Weight	Age/Sex	Identifiable material
022	1g		-
060	41g	Child	long bone fragments and unerupted tooth crown

Pit 4 Contexts

Pit 4 included two combined contexts, **027/037**, which contained 106g of bone. Identifiable fragments include parts of long bone shafts and a few cranial vault fragments – on the basis of the size of the fragments it is likely that the individual represented in these contexts is an older juvenile or adult.

Context	Weight	Age/Sex	Identifiable material
027	0.2g		-
037	106g	?adult	long bone and cranial vault fragments

Other Contexts

The topsoil context **101** contained cranial and long bone shaft fragments, with the interesting pattern that finds 1112 to 1123 were almost exclusively cranial fragments whereas finds 1124 to 1130 were almost exclusively long bone shaft fragments (however, there seems to be no spatial patterning in the coordinates of the find locations of the cranial and postcranial fragments). From the size and thickness of the cranial fragments it is likely that this material represents the remains of older juvenile or adult individual(s).

Small amounts of cremated bone were recovered from contexts **012**, **013**, **052** and **112**. These were all small (less than 20mm) fragments of cranial and long bone shafts, and little information can be deduced from them.

Context	Weight	Age/Sex	Identifiable material
101	23g		cranial and long bone shaft fragments
012	0.2g		-
013	0.9g		long bone fragment
052	0.7g		long bone fragment
105	0.5g		cranial fragment
112	1g		long bone fragments

Conclusions

If it can be reliably assumed that remains of a given individual are not distributed between pits, then the Cairnderry assemblage contains a minimum of four individuals. One individual (Pit 1) was definitely adult, and two others (Pit 2 and Pit 4) were probably also adult, as older juveniles are generally rare in skeletal assemblages due to this age category having the lowest age-specific probability of death. The individual buried in Pit 3 was a child with an age at death of about 5 years. A further individual may be represented in the topsoil context **101**, though this material might derive from a disturbed primary context. The high temperatures achieved in the pyres is consistent with other examples of Bronze Age cremation deposits.

Figure 6. Five conjoined fragments of a tibia from context **034**, sample 17. The bone shows a distinctive pattern of U-shaped or “chevron” cracking, caused by differential shrinkage of the bone during burning. Subsequent transverse fracturing of the cremated bone into five fragments may have occurred during or after transfer of the specimen from the pyre site to the cremation burial site.

Figure 7. Cross sectional views of the tibia fragments shown in Figure 1. The periosteal (external) and endosteal (internal) surfaces of the bone cortex are white in colour, but the dark grey colouration in the centre of the cortex shows incomplete combustion of organics in this part of the bone.

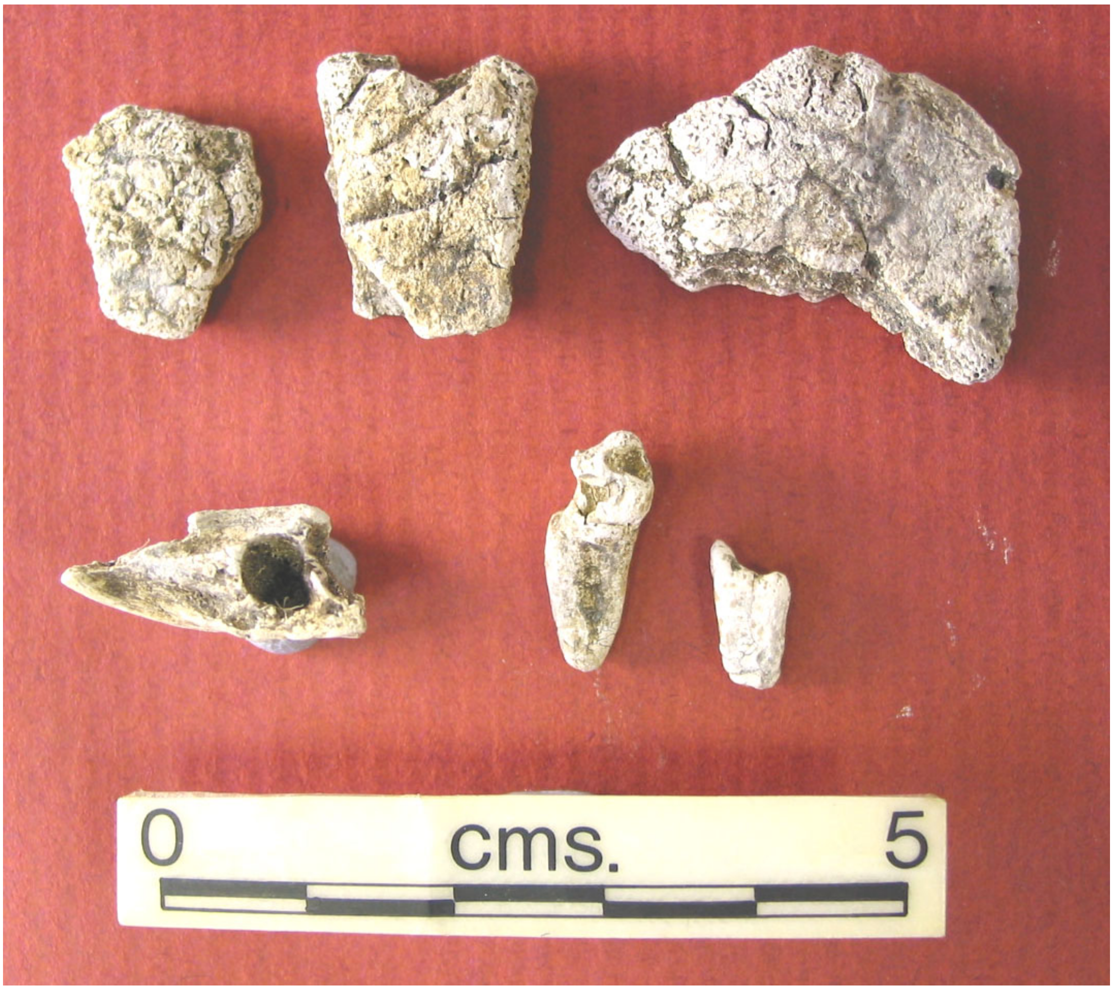

Figure 8. Cranial and tooth fragments from context **035**.

Figure 9. Complete distal hand phalanx from context **035**.

Interim report on the three thin sections from Cairnderry

By Donald Davidson (School of Biological and Environmental Sciences, University of Stirling)

Soils at the Site

The Soil Survey for Scotland maps the area in the vicinity of Cairnderry as having soils of the Minnoch Complex. These are soils developed on moundy morainic deposits consisting of Ordovician and Silurian greywackes and shales. The mounds of greywacke moraine (very stony, coarse textured, and strongly indurated) have mainly peaty podzols (Dod Series), some areas of brown forest soil (Linhope Series) on steeper slopes and some areas of peat on flatter mound tops. Peat occupies the hollows between the mounds and is generally between 25 and 100 cm in depth. The landscape is dominated with this peat with some peaty podzols coincident with better drained morainic mounds. It is on the latter that the site at Cairnderry is situated.

The thin section samples

Sample 1: from under the cairn. The aim was to determine if there was any evidence for the original soil. The soil is a highly disturbed remnant of what is likely to have been the upper part of the original Bs horizon. The Bs horizon origin is indicated by the reddish brown colour and the concentration features of organic matter and iron oxides in the form of fragmented iron pans. The interpretation is that the section exhibits a truncated profile of an original ironpan podzol; human activities through site preparation and cairn construction have resulted in the loss of much evidence for the original soil.

Sample 2: from the chamber. A very stony layer (context 101) over highly disturbed and bioturbated material (much excrement), interpreted as fill to the chamber (context 105). No evidence for the original soil other than the reddish brown colour in the lower part of the field exposure, suggestive of a Bs horizon.

Sample 3: from the passage area. The particular interest in this slide is the occurrence of material from context 032 which is light grey compared to the reddish brown material immediately below (context 004). Context 032 is dominated by large fabric units (coarse sand size) embedded in a dense groundmass (an open porphyric related distribution). Many of the stone fragments exhibit weathering. Of interest is the occurrence of carbonised material and charcoal as well as fragmented iron/organic matter concretions. No evidence for heating was found from examining the slide under reflected light. Fresh roots are abundant and rod shaped phytoliths are also present. Interpretation: no evidence was found to support an interpretation of an ash origin to the material in context 032. Instead, it is suggested that it is the remnant of a highly disturbed original eluvial horizon of a podzol (E horizon).

Report of residue analysis of visible residue, sherds and soil from a pygmy cup and collared urn.

By Ben Stern (Department of Archaeological Sciences, University of Bradford)

Samples

The table below shows the samples taken for analysis. There was no sample 8 (exterior surface, collared urn CD03, 045, 1169, base sherd) as the surface was very eroded and it was not possible to drill the original surface layer.

Pygmy cup
Sample 1, visible residue, interior, Pygmy cup CD03, base sherd with residue
Sample 2, ceramic sample, interior, Pygmy cup CD03, base sherd with residue
Sample 3, ceramic sample, exterior, Pygmy cup CD03, base sherd with residue
Sample 4, soil from Pygmy cup CD03, base sherd with residue
Sample 5, ceramic sample, interior, Pygmy cup CD03, side sherd
Sample 6, ceramic sample, exterior, Pygmy cup CD03, side sherd
Collared urn
Sample 7, ceramic sample, interior? (smooth surface), collared urn CD03, 045, 1169, base sherd
Sample 9, visible residue interior, collared urn CD03, 045, 1169, base sherd
Sample 10, ceramic sample, interior? Smooth surface, collared urn CD03, 045, 1169, body sherd
Sample 11, ceramic sample, exterior? Rough surface, collared urn CD03, 045, 1169, body sherd

Analysis

Sample preparation

The interior and exterior surfaces of each sherd were identified by the sherd curvature. Visible residues were removed by scraping with a spatula (and where enough visible residue was present this was also analysed). Separate 2 mm thick layers from the interior and exterior surfaces of each sherd were removed and powdered using an electric drill (*Dremel*) fitted with an abrasive bit. Approximately 0.1 g of the resultant sherd powders were accurately weighed and extracted with 3 aliquots of ~1 ml DCM:MeOH (dichloromethane:methanol 2:1, v/v), with ultrasonication for 5 min. followed by centrifugation to aid separation of the solvent and powder (5 min. at 2000 rpm). The extract was transferred to a clean glass vial. The solvent was then removed under a stream of nitrogen. Excess BSTFA (N, O- bis(trimethylsilyl)trifluoroacetamide) with 1% TMCS (trimethylchlorosilane) (*Pierce*) was added to derivatise the sample which was warmed overnight. Excess derivatising agent was removed under a stream of nitrogen. A known amount of internal standard (C_{34} *n*-alkane) was added and the sample diluted in DCM for analysis by GC and selected samples were also analysed by GC-MS.

For comparative purposes, a method control was included in the sample extraction, derivatisation and analysis. All solvents were of AnalaR grade. All glassware was rinsed with DCM three times prior to use.

Instrumental (GC-MS)

Analysis was carried out by combined gas chromatography-mass spectrometry (GC-MS) using a Hewlett Packard 5890 series II GC connected to a 5972 series mass selective detector. The splitless injector and interface were maintained at 300°C and 340°C respectively. Helium was the carrier gas at constant inlet pressure. The temperature of the oven was programmed from 50°C (2 min.) to 340°C (10 min.) at 10°C/min. The GC was fitted with a 15m X 0.25mm, 0.1   m OV1 phase fused silica column (MEGA). The column was directly inserted into the ion source where electron impact (EI) spectra were obtained at 70 eV with full scan from m/z 50 to 700.

Results

TMS derivatives of components were identified by their mass spectra and by comparative retention times. IS = internal standard (C_{34} *n*-alkane), P = phthalate plasticiser, C = fatty acid with carbon number and degree of unsaturation, = *n*-alkane, OH = alcohols with carbon number, x = *m/z* 147.

Pygmy cup

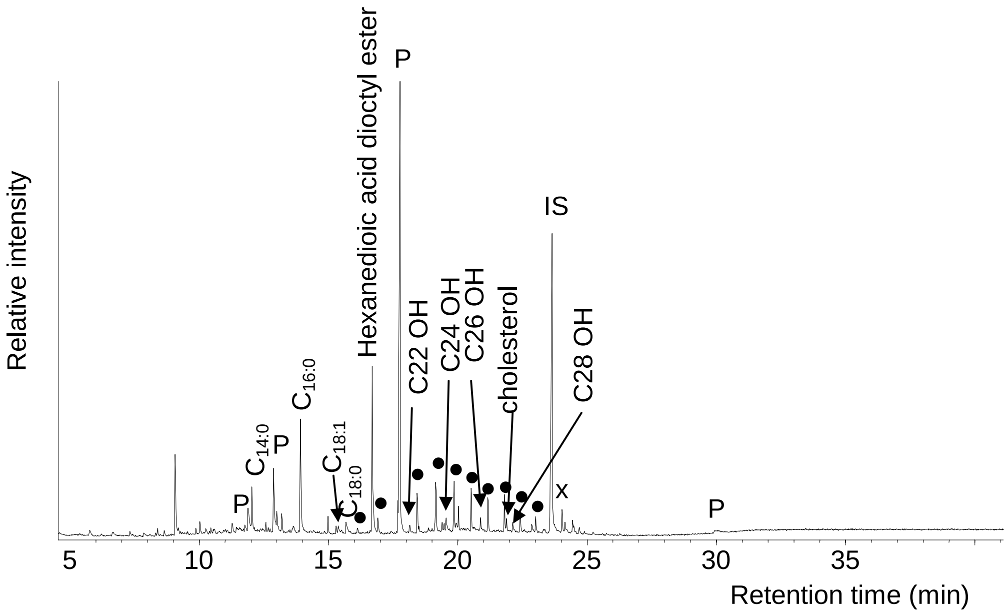

Figure 10. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 1, visible residue, interior, Pygmy cup CD03, base sherd with residue

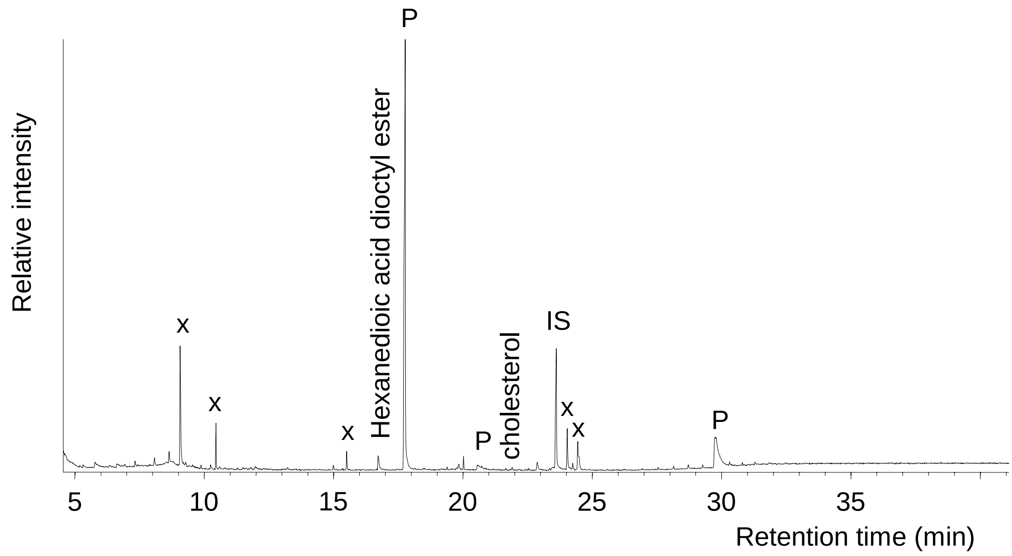

Figure 11. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 2, interior, Pygmy cup CD03, base sherd with residue

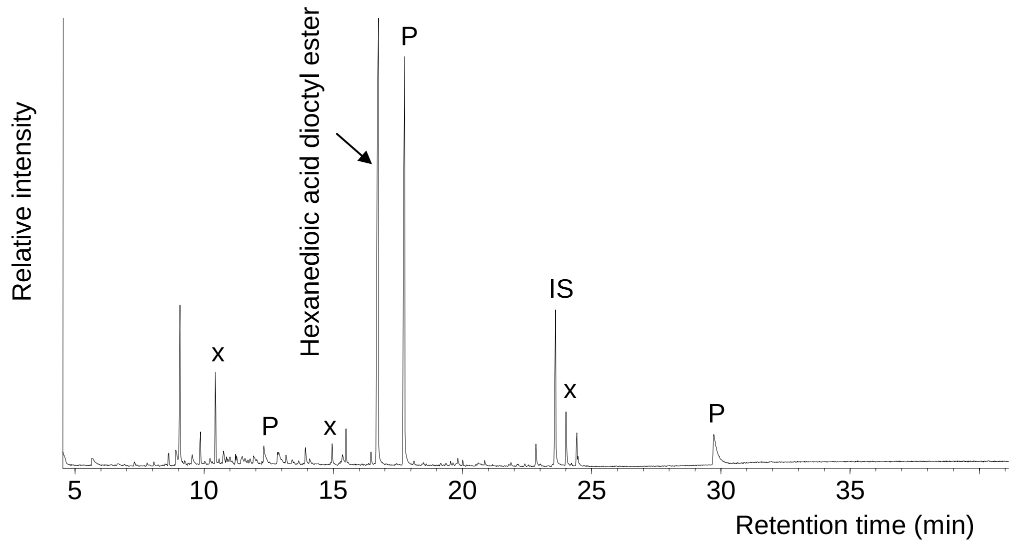

Figure 12. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 3, exterior, Pygmy cup CD03, base sherd with residue

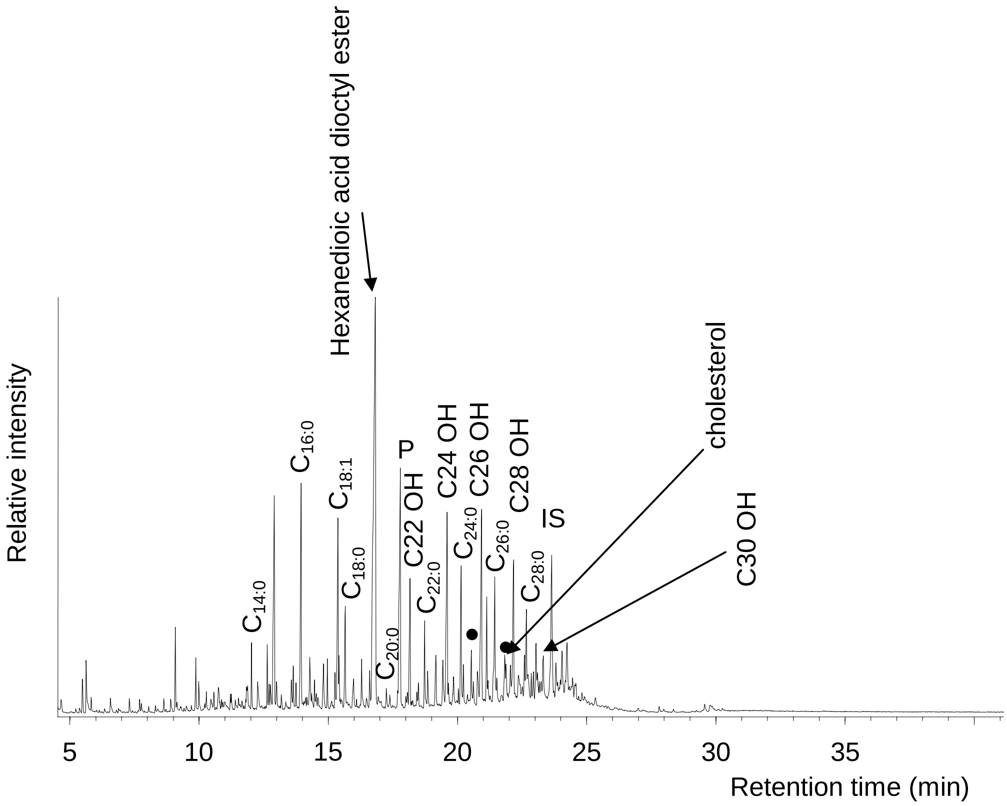

Figure 13. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 4, soil from Pygmy cup CD03, base sherd with residue

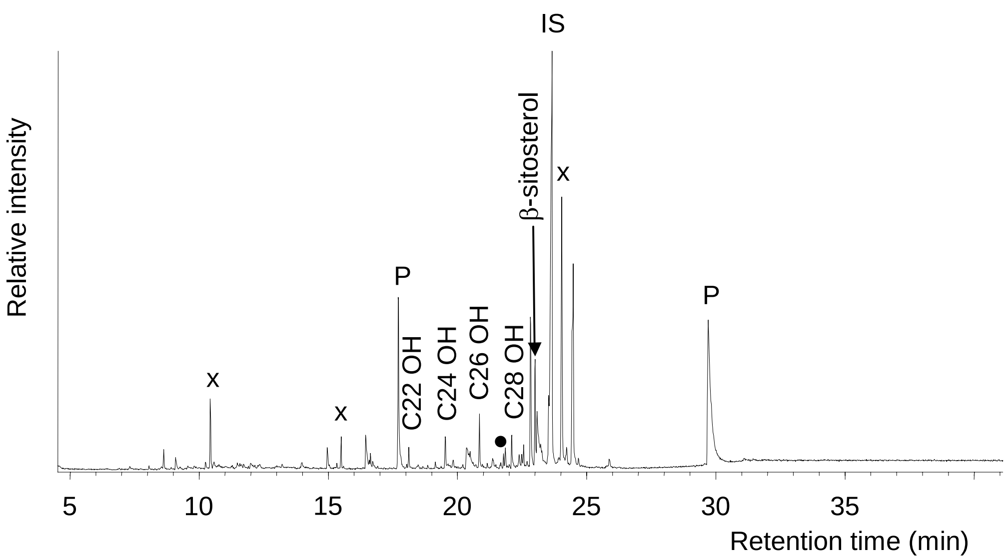

Figure 14. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 5, interior, Pygmy cup CD03, side sherd

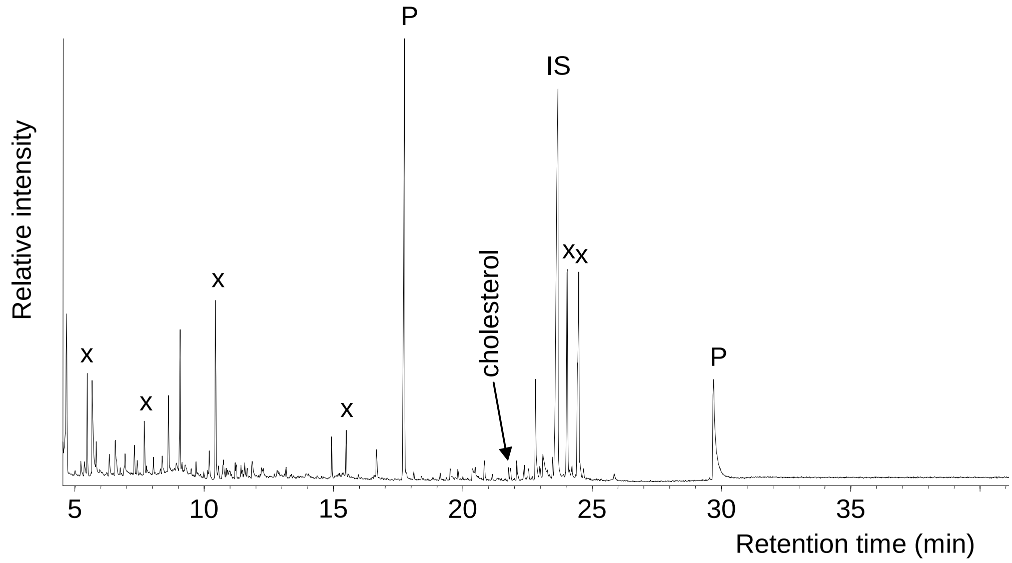

Figure 15. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 6, exterior, Pygmy cup CD03, side sherd

Collared urn

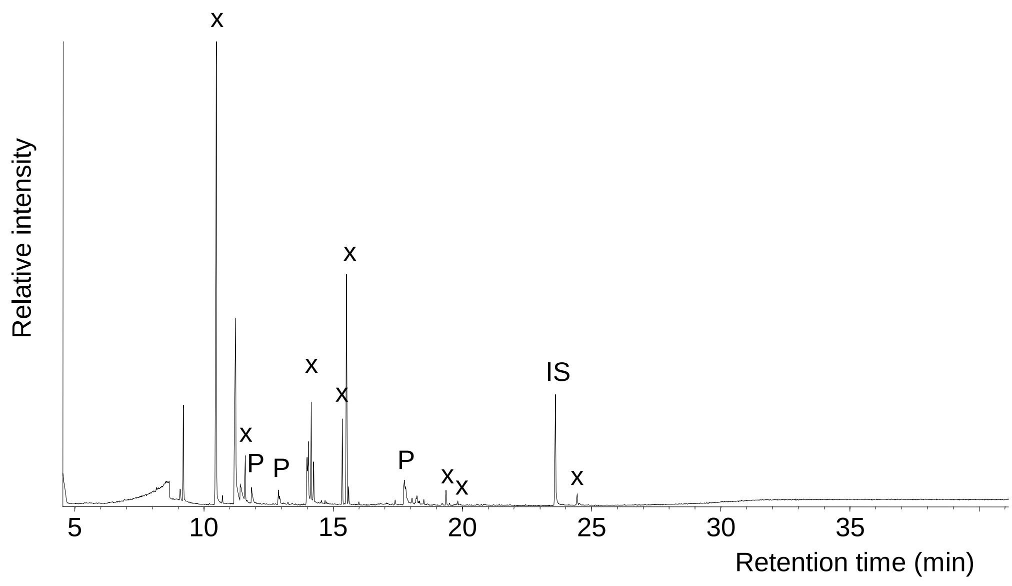

Figure 16. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 7, interior? (smooth surface), collared urn CD03, 045, 1169, base sherd

No sample 8 taken (exterior surface), collared urn CD03, 045, 1169, base sherd

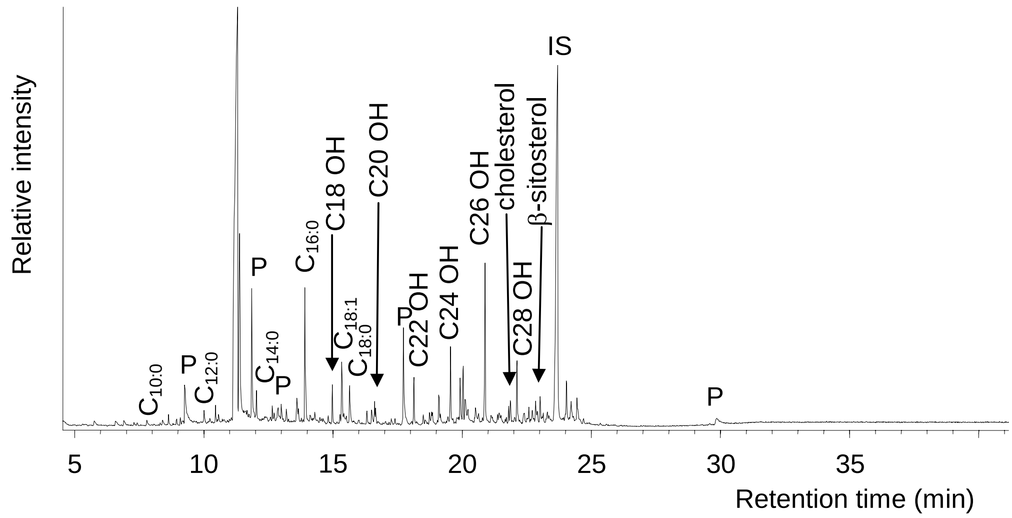

Figure 17. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 9, visible residue interior, collared urn CD03, 045, 1169, base sherd

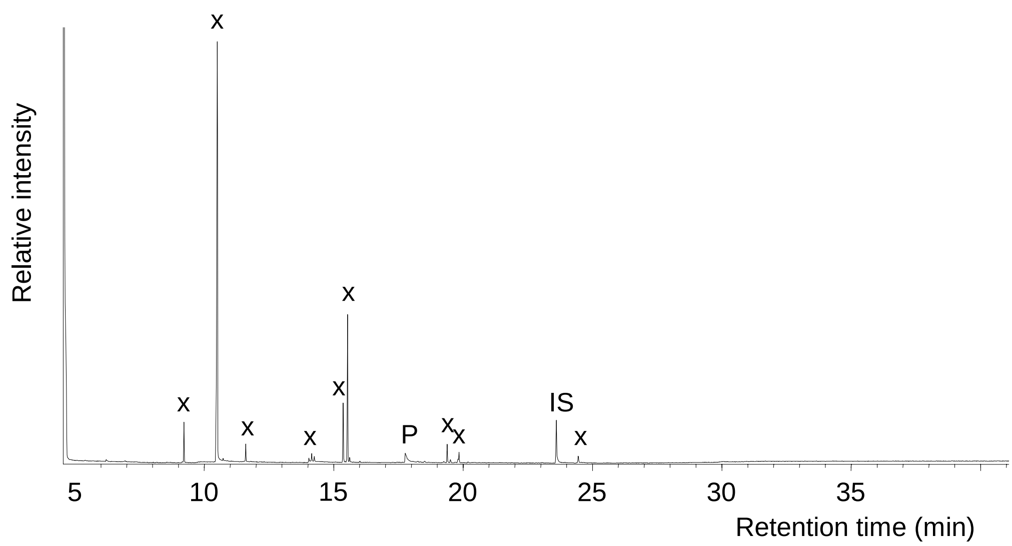

Figure 18. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 10, interior? Smooth surface, collared urn CD03, 045, 1169, body sherd

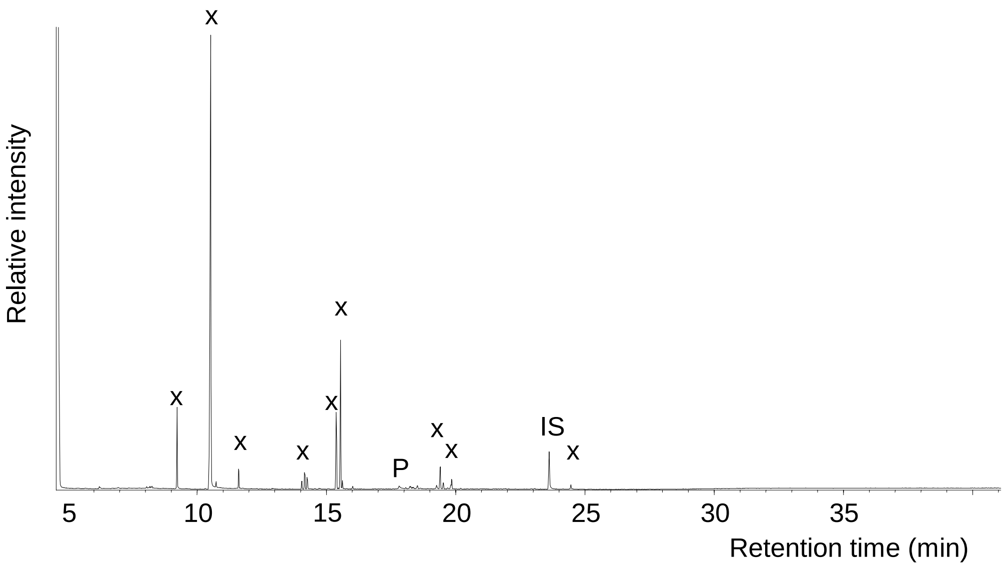

Figure 19. Total ion count (TIC) of the BSTFA derivatized solvent extract of Sample 11, exterior? Rough surface, collared urn CD03, 045, 1169, body sherd

Method blank

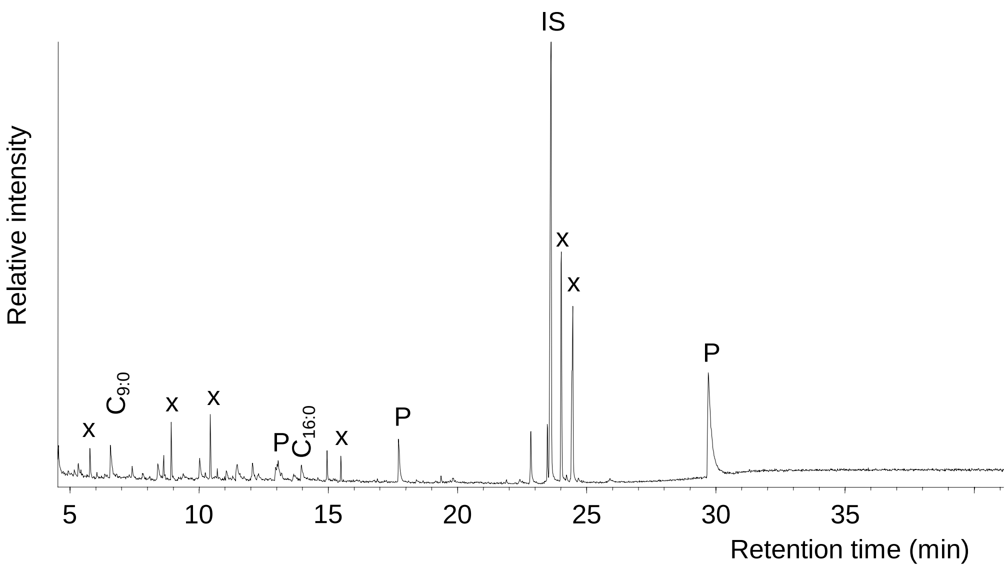

Figure 20. Total ion count (TIC) of the BSTFA derivatized solvent extract of

Method blank

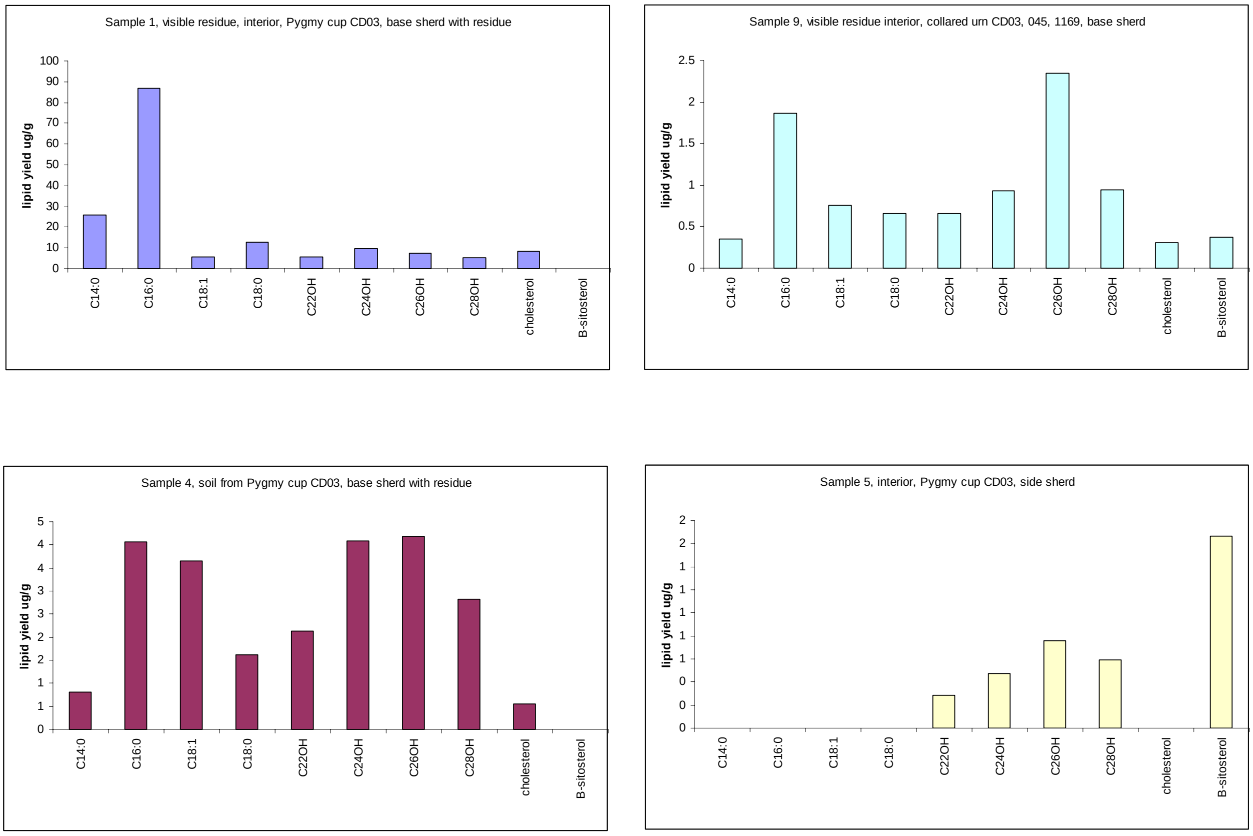

Figure 21. Quantified lipid yields (g lipid per g of extracted sample) for the major peaks from samples with significant lipid yields

Discussion

Contamination in the form of phthalate plasticisers (labelled P) is present in all of the samples. Two of these modern synthetic compounds can be sourced to the sample preparation methodology as they were also extracted in the method control (Figure 20). Plasticisers also originate from the samples, including the compound hexanedioic acid dioctyl ester which is only associated with the pygmy cup samples – I have not seen this component before, but I believe is also a modern plasticiser. There are also a number of silicone related compounds (characterised by their m/z 147 fragment ions, labelled x). These are from the degradation of septa or column within the GC-MS and are analytical artefacts. Although these components appear to be significant, they are visible because of the low lipid content of some of the samples. This contamination is also easy to recognise and does not interfere with the analysis of any authentic lipids.

In comparison to the method blank (Figure 20), four of the samples (Figures 12, 16, 18 and 19) yielded no authentic lipids. In addition, two samples (Figures 2 and 6) only yielded trace amounts of cholesterol. Cholesterol can be indigenous (indicative of animal products), although it can also originate from contamination due to handling of the sherds (no cholesterol was found in the method blank so contamination during extraction and analysis can be excluded). However, during handling the compound squalene is also commonly deposited. This was not found here, but it would be difficult to assign these low levels of cholesterol as representing the original contents. Therefore no authentic lipids were extracted from the ceramic of the base sherd of the pygmy cup or the body and base sherd of the collared urn.

Four samples produced more complex chromatograms (Figures 10, 13, 14 and 17). All of these samples yielded fatty acids and long-chain alcohols with even carbon numbers (which is how they are biologically synthesised). It is possible that these components originated from the hydrolysis of wax esters. Two of the sherds (Figures 14 and 17) yield -sitosterol, a sterol from plants. With the exception of sample 5, cholesterol was also extracted in low abundance from these samples. Quantification of the major lipid components (Figure 21) reveals significantly higher lipid yields from the visible residue from the pygmy cup. These samples were the visible residues from the interior of the pygmy cup and the collared urn, and the ceramic absorbed residue from the interior of the pygmy cup (side sherd). However, sample 4 is a soil sample associated with the pygmy cup and it is therefore a possibility that these lipids are from the soil.

The lipid distribution pattern across the vessels is rather unusual. There are lipids extracted from the visible residues on the interior of both vessel bases, but not absorbed into the underlying ceramic, the only ceramic absorbed lipids being from the interior of the body sherd from the pygmy cup. I would usually expect the preservation of authentic organic residues to be better for the ceramic absorbed lipids than the visible residues. Given this distribution pattern and their very similar lipid composition, it is likely that the visible residues and ceramic absorbed lipids may originate from the associated soil rather than the original vessel contents. This however assumes that the soil associated with the pygmy cup is the burial matrix for both vessels and one may expect that the associated soil would leave a lipid profile on the other sherds, including the exterior surfaces.

Summary

One soil, two visible and seven ceramic absorbed organic residues from a pygmy cup and a collared urn were solvent extracted and analysed by GC-MS. Six samples yielded no authentic lipids. Four samples yielded lipids of similar composition and carbon number distribution (fatty acids, long-chain alcohols and sterols). These lipids matched those of the soil sample and it is likely that the lipids originate from the soil rather than representing the original contents.

Microexcavation and conservation of burial urn

By Hege Hollund (Cardiff University)

This summary describes the conservation of a ceramic pot found in one of a number of secondary deposits containing cremations around the kerb and in front of the passage of the Neolithic chambered cairn. The pot was found upside down and lifted with its contents and adhering soil.

After the removal of large stones and soil that was lifted with the pot, the pot was turned the right side up for excavation of the contents. Excavation was done in 0.5-1cm layers, using a barbecue stick and small soft brushes. No artefacts were found. There was some charcoal and small pieces of burnt bone and a few larger stones. The contents have been retained for analysis. Most of the bone and charcoal was in the lower half of the pot (as it was in the ground). The largest pieces of bone are about 3x1cm. There was altogether around 17 grams of bone in the pot. There was also some bone and charcoal pushed up against the pot.

During excavation a water-soluble consolidant was put on fragile areas to strengthen them. Plastazote and plaster-of-paris bandages was used to support the pot physically during excavation.

The upper part of the pot is in relatively good condition, the rim is intact and a large part of the original surface is intact. It is however, severely cracked. The base was broken during excavation and some fragments are also knocked out from the side of the pot. There are 23 loose sherds probably originating from the base ranging from approximately 3x3.5cm to 1x1cm in size. The outside surface of one side is particularly degraded, possibly due to uneven firing. Roots have also grown through and around the pot.

There is no sign of decoration on the pot. It has two collars and is 10cm in diameter and 11cm tall. The pot is a collared urn typical of the period 1900 – 1700 BC.

The surface of the pot was cleaned carefully with dry soft brushes. Because of its fragility some soil was left on the surface and in the cracks. To strengthen the fabric a consolidant dissolved in alcohol was applied to the whole surface using brush and pipette. A higher concentration of the same chemical was used to strengthen the cracks and to adhere loose fragments. The particular consolidant was chosen because of its penetrating and strengthening abilities but also because it did not change the colour or appearance of the fabric dramatically, only causing slight darkening. The loose sherds are left untreated for future analysis.

Conservation Report for the Pygmy Cup

By Georgia Chela (Cardiff University)

Condition upon excavation

The pygmy cup was delivered to the conservation laboratory directly from excavation, covered with the burial soil and wrapped in cling film. The initial X-rays showed that it was multiply fragmented. Moreover, it was inferred that among the contents one would expect to find bone fragments from the cremation pyre- given that pygmy cups accompany Bronze Age burials, either inhumations or more often cremations and implied by the hollow tube-like and of low density shapes shown in the radiographs.

Where the ceramic fabric was exposed it allowed assessing that it had been poorly fired and subsequently was weak and fragile. The numerous ceramic fragments were kept in place with the supporting soil, whereas cracks penetrated the sherds and the edges were crumbling in places.

Conservation aims and objectives

The pygmy cup was primarily destined for lipid analysis as an attempt to illuminate its role in the prehistoric burial practice. The contents were to be excavated, examined and retained. The remaining sherds were to be cleaned from soil, yet the conservation treatment should by no means hamper the upcoming lipid analysis and thus no consolidation could take place prior to sampling.

Contents excavated

In the soil lump covering the exterior of the pygmy cup fragments of calcined bone were found. According to the burial decay profile for bone, the protein component has disappeared, burnt out at the cremation fire and disintegrated during the time of burial, leaving behind a brittle skeleton mainly of hydroxyapatite. Together with the bone charcoal fragments were also found, as well as in the interior of the cup. Bone however was only present at the exterior up to the level of the rim and not inside the vessel, apart from a small powdered piece that was found adhering on the interior surface close to the rim. The rest of the contents were soil mixed with pebbles and thin roots that had penetrated the ceramic fabric.

Investigative cleaning of the sherds and new finds

While mechanically cleaning the exterior surfaces of the pygmy cup using brushes, dental tools and IMS to soften the soil locally, it was discovered that the pygmy cup had been decorated with incised lines forming an abstract geometric pattern which is typical of Bronze Age pottery. The decoration survived only around half the perimeter of the cup, where the surface had been preserved. The rest of the side-wall sherds were weathered and their decoration had been lost. Photographs and drawings were taken to record this new find.

Another feature found upon cleaning, again characteristic of pygmy cups, were 4 deliberately made, perfectly round perforations that had been made at the level between the base and the body of the vessel by piercing a cocktail stick-type tool through the fresh clay. Only one of these had survived intact. Two more were detected between adjacent broken sherds, whereas from the fourth one only half its perimeter survived, the other half been lost due to the disintegration of the break edge of the respective adjacent sherd. The perforations were not made randomly; on the contrary they are situated in approximately equal intervals around the base, as at the edges of an imaginary cross. Moreover, upon exposing the sherds, their vulnerable, friable nature was confirmed. Throughout the body the colour of the ceramic varied from greyish brown to brick red brown, accounting for the differential firing and the subsequently variable state of preservation and stability of the sherds. The grey areas were best preserved, also bearing the decorative pattern. The reddish areas were less stable, crumbling, with the ceramic material mixed with soil. Apart from some inevitable loss in material, however, all the sherds were successfully cleaned from the adherent soil.

The pygmy cup had been in its fragmented state during burial. The break edges were therefore worn out with soil separating them from each other. Yet all the sherds were present and had been kept in position, supported and packed with the soil. Hence their relative position within the cup was known, thus enabling the reconstruction of the vessel. Concerning the raw material preparation, it was concluded that the clay had been initially mixed with fillers, both organic (such as plant matter) and inorganic (such as crushed shells or quartz) in order to compensate shrinkage during firing.

These filler particles were found carbonized throughout the ceramic fabric, or had completely sublimed during firing leaving their void impressions and a highly porous ceramic.

The two sampled sherds

The two sherds taken for lipid analysis were delivered back to the conservation laboratory after the scientist had taken his samples for both lipid and residue analysis. Fortunately and thankfully only the minimum amount of material necessary for the analysis had been removed. From each sherd an area of 1-2mm in depth and 1-1.5cm^2 surface area had been drilled from both the external and internal surfaces. The shape and break edges of the sherds were thus left intact with only a shallow hollow from each side attesting to the sampling.

Stabilization with consolidation

The friable, crumbling nature of the ceramic necessitated its stabilization in order to be able to withstand reasonable handling. Moreover, the decorative features discovered- the incised lines and the four perforations- advocated the preservation of the cinerary vessel as a representative and at the same time unique and elaborately made example of early Bronze Age pottery. The only way to re-establish and reinforce the cohesion and strength of the cup would be by consolidating with an organic polymer.

Mowital B30H was chosen as the consolidant. The formulation is based on a vinyl butyral-viny alcohol co-polymer in proportions 76:20 by weight. The concern about this material is its potential cross-linking and consequent insolubilisation upon ageing. Its major advantage though, which also advocates its common use in the consolidation of low-fired ceramics is the negligible change in appearance it induces to the coarse, matte fabric. Hence, given that the consolidation of such a friable ceramic cannot be realistically considered a reversible process anyway, Mowital B30H was selected. It was prepared as a 2% and 5% w/v solution in IMS. Each sherd received initially two applications of the first solution and five more consecutive applications of the second solution. Upon drying the sherds appeared as if not been treated, with their natural colour and texture retained, yet their strength was improved and their structural integrity secured.

Pygmy cup reconstruction

After having sufficiently stabilized all the sherds, the pygmy cup was reconstructed. All the basic sherds had survived and their relative position was known. Some material had been lost, especially around the break edges, yet most of the sherds were present to allow the complete reconstruction and yield the original shape and form of the cup. Paraloid B72 was used as the adhesive. This material, essentially an ethyl methacrylate/methyl acrylate (70:30) copolymer is renounced for its photochemical stability and endurance with age. It is expected to remain soluble even after 100-500 years under museum conditions and its thermoplastic character allows re-adjustment of the joined sherds, if necessary, with the application of moderate heat. Paraloid B72 also gave firm, durable joints.

This was the end of the conservation treatment for the pygmy cup. No gap filling was considered necessary since the gaps were too small and insignificant to pose a threat to the structural stability of the vessel. Moreover, the code of ethics dictates minimal intervention, especially when archaeological artefacts are concerned. The aesthetic improvement obtained with gap filling was thus not considered justified, when balanced against the potential adverse long-term effects of any foreign material added to the original. Conservation was completed by taking coloured photographs, both digital and conventional, of the reconstructed pygmy cup.

Figure 22. The reconstructed cup

Acknowledgements

These excavations were kindly funded by the Society of Antiquaries of Scotland, the British Academy, the Prehistoric Society, the University of Manchester and Cardiff University. Many people helped with the organisation and running of this project, and we would particularly like to thank: Andrew Burke, Aled Cooke, Liz Faulds, Oli Harris, Bob Jones, John Morgan, Phil Richardson, Geoff Shaw of the Forestry Enterprise and Chris Moore at Glentrool Holiday Park. Thanks also to the students and volunteers who worked so hard over the years to make this excavation a success.

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Appendix

List of finds

Find no	Context	Description	Co-ordinates
1200	001	Flint	E95.980; N478.100; H9.240
1201	001	Coin	E99.340; N487.180; H9.130
1202	013	Charcoal	-
1203	013	Flint	E91.699; N477.412; H9.446
1204	065	Charcoal	E86.100; N478.393; H9.573
1205	013	Flint	-
1206	003	Charcoal	E95.522; N480.881; H9.054
1207	013	Flint	E89.955; N481.560; H9.783
1208	013	Flint	-
1209	013	Metal ?	E93.402; N482.861; H9.580
1210	013	Pottery	E94.546; N482.961; H9.457

Contexts relevant to the interim report

A number of contexts were assigned to layers which were geological in origin, to fills of topsoil in shallow stone holes and to different areas of cairn material which were later subsumed under a single context. Fills of pits and cuts of stoneholes that are not discussed in this interim are not included.

001 is topsoil, thick with roots, very damp, very humic. The topsoil over the cairn is generally less than 10 cms thick, and in places the cairn stones (002) are exposed. The topsoil sits as a heavy water-logged layer above the stones, and does not drain well. 001 extends over the entire site, and can be up to 30cms deep outside the cairn.

002 are cairnstones. In most places only one course remains, in some places (002) was altogether absent. Size of stones varied but most were over 50cms in diameter and less than 1m in diameter. The stones were over 99% local greywhacke and gritstone, with around 1% granite boulders.

003 is a largely sterile and stone-free dull reddy orange shading lower down to a brighter burnt umber silty clay loam found between and beneath the lower course of the cairnstones. Thickness varied from absent under the base of stones to c4cms deep under the stones. It is possible that this was silting subsequent to the deposition of (002), or that this was part of a bedding layer and was deposited along with (002). This layer blended into (004), so it was difficult to distinguish between layers until the subsoil became very compact to trowel, or in areas where (032) was sandwiched between these layers. (003) was found only within the perimeter of the cairn, and was observed underneath kerbstones.

004 is the strong orange varying with depth to a very bright yellowish strong orange silty clay loam subsoil found across site and is the post-glacial b-horizon between the parent geology and the layers laid down in prehistory. It is anticipated that this would have been the soil immediately underneath the topsoil when the cairn was built, and it extends throughout the site including outside the perimeter of the monument.

005 is the olive-grey extremely compact pre-glacial clay parent geology, found in patches underneath the cairn.

011 are kerbstones. The largest is 40cm x 1m x 40cm. Others are higher but not as wide.

012 are broken and dislodged stones sitting within a loose soily dark brown topsoil matrix just outside the extent of the cairn. They may be dislodged and broken up cairn stones, and are generally flat and sharp along most facets, but also likely to include rounded surfaces. The local greywhacke is easily fractured, and stones may smash during normal displacement without deliberate attempts to do so with tools.

013 is a bright orange silty clay loam layer resting over 004 outside the perimeter of the kerb, and abutting kerb stones to a maximum depth of c. 50cms. (013) lay underneath the rubble (012) and contained differing slips of flat cairn slabs designated generically as (014). It is anticipated that 013 is the remains of a long-term soil formation process through which the humic a-horizon increased in depth, and then migrated upwards, leaving a widening layer of b-horizon underneath. (013) is the resultant b-horizon outside the monument which post-dated its construction, and continued throughout the period of cairn collapse, but was then sealed in by the deposition of the rubble layer (012).

Pit 3 (cut 018)

017 Back fill of pit 5. Contains some charcoal and dark soil. Cairn material slumped into this fill.

018 Cut of Pit 3; the top of the cut was planned at 100cm by 100cm. At the base it was recorded as 120cm x 80cm x 140cm deep.

046 Fill of pit (silting event?), a mid brown silty loam containing a localized lens of charcoal identified.

052 A friable red clay loam containing burnt bone and charcoal. Scorched soil, suggesting it went in soon after the main dump of hot cremation material.

059 A layer of packed stones at the top of the cremation deposit.

060 Fill of pit consisting of a loose mid brown sandy silt containing charcoal and cremated bone. There were thick layers or deposits of cremated bone within this layer.

061 The primary fill of pit 3 consisting entirely of charcoal and cremated bone. It seems to have been carefully packed into the underlying geology.

062 Cremation deposit in pit 5, containing significant quantities of cremated bone and charcoal.

063 The primary fill of pit 5 with no cremated bone but a few charcoal flecks in a reddy-brown matrix.

064 The cut of pit 5, 15cm x 13cm x 18cm deep.

Drawing register

Drawing number	**Details**
101	Pre-ex plan of trench G sheet A
102	Pre-ex plan of trench G sheet B
103	Pre-ex plan of trench G sheet C
104	Pre-ex plan of trench G sheet D
105	Pre-ex plan of trench G sheet E
106	NW-SE section pit 3
107	Plan of pit 5 in pit 3 (064)

108	Section of trench G
109	Section of trench G N facing
110	Section of trench G W facing
111	Plan of 012 in trench G
112	Post-ex plan of pits 3 and 5

Photographic register

Film 1 (colour and slide)

Frame nos	**Description**
1-8	012 rubble layer in Trench
9-12	012 rubble layer
13-16	Pit 3 in section
17	‘Cupmark’ on stone
18	Scratches on stone
19-20	Pit 3 061 removed
21-24	Pit 3 section complete
25-28	062 in pit 3, separate cremation (pit 5)
29-33	Pit 5 fully excavated
34-36	013 in south of trench

Film 2

Frame nos	**Description**
1-6	013 to SE of trench
7-10	Pit 3 060
11-13	013 in south of trench
14-16	Bedrock next to 013
17-21	Pit 3 top of fill 061
22-25	Bedrock to south of pit 3
26	W facing section pf 012 and 013
27	013 in north of trench
28	N facing section of 012
29-32	Area of natural in trench

33-36	Small trench, possible feature

Film 3

Frame nos	**Description**
1-2	Trench extension to SW
3-6	Section along baulk
7-10	013 in small trench
11-12	013 in plan and section
13-19	Pit 3 post-ex
20-25	Geology in small trench
26-36	013 final excavation of SE of trench

Sample register

Sample no	**Description**	**Context**	**Bags**
201	Bulk soil sample	052	4
202	Cremated bone	060	1
203	Charcoal and cremated bone	060	3
204	Burnt stone	059	1
205	Charcoal and burnt wood	060	1
206	Cremated bone	052	1
207	Bone and charcoal	061	1
208	Cremated bone	061	1
209	Bone and charcoal	062	1
210	Cremated bone	062	1
211	Soil sample	063	1
212	Cremated bone	060	1
213	Cremated bone	061	1
214	Burnt wood	061	1