Urned cremation burials at Carlinwell standing stone, Airlie, Angus

Melanie Johnson

with contributions by Sue Anderson, Ann Clark, Mike Cressey, Mhairi Hastie, Dawn McLaren and Jennifer Thoms

Introduction

An excavation was carried out following the toppling over of Carlinwell standing stone during the winter of 2010/2011. The stone is a Scheduled Monument (SM no 4315, 'Carlinwell, standing stone 720m WSW of Craigton'), and lies in farmland at 70m above Ordnance Datum close to the A926 to the east of Airlie, Angus (Illus 1; NGR NO 3208 5025). It is positioned on a knoll, backed by rising land to the north but with an open vista to the south where the land drops away.

The stone is recorded by RCAHMS (NO35SW 22) as being an unsculptured standing stone, measuring 2m high by 1.1m by 0.5m. In the 19th century, Andrew Jervise, the well-known local antiquary, noted that:

'North-west of Baikie stands a remarkable unembellished obelisk, upon the farm of 'Baitland'. Local story says that the name is a corruption of *Battleland;* also that there was a battle fought here at a remote period, and that some of the leaders were slain, and buried under the obelisk. I am told that the site of the obelisk was excavated by the late Rev. Mr Playfair of Meigle, about the end of the last century, and that human remains were got in the mixed earth and stones among which the obelisk is placed' (Jervise 1864, 348–9).

This earlier discovery of human remains suggested that further burials might be present around the base of the stone.

Photographic evidence (Illus 2) showed that the stone had a significant lean to the south prior to its fall in January 2011, which was probably exacerbated by the extreme cold weather conditions that winter. The excavation work, carried out by CFA Archaeology Ltd in March 2011, involved the excavation of a small trench to investigate the socket and a small area around it in order to facilitate the subsequent re-erection of the fallen stone. The fieldwork and post-excavation analysis were commissioned and funded by Historic Scotland.

Illus 2 *A view of the standing stone in 1977. (© Crown Copyright. Licensor www.rcahms.gov.uk)*

The excavation

The prone stone was photographed and its position surveyed prior to it being moved just beyond the excavation area. A square trench measuring 2m by 2m was excavated, centred on the disturbed surface remains of the stone socket (Illus 3–5). Large packing stones were visible on the south side of the socket, protruding through the topsoil.

The topsoil was very stony and shallow, measuring between 0.12m and 0.22m deep within the trench. At the base of the toppled stone, it was very compacted due to animal trampling. Natural subsoil comprised orange sands and gravels, and some disturbance from animal burrowing within the natural was noted on the east side of the trench.

Three features were fully excavated and recorded within the trench: the socket of the stone and two pits containing urned cremations.

The socket

The socket (002) was roughly oval in shape and measured 1.1m E–W by 0.8m N–S by 0.56m deep at maximum (Illus 3 C–D). The socket was only slightly larger than the circumference of the stone.

The lower fill (007) was yellow sand and gravel and was 0.3m deep. This lower fill was sterile. The upper fill (006) was a mid brown sandy silt and was 0.25m deep.

There was a re-cut on the south side of the pit, forming a shallow ledge measuring 0.7m by 0.4m in plan. The fill of this re-cut was indistinguishable from the rest of the pit's upper fill (006), but it contained the majority of the large packing stones and was possibly an earlier attempt to shore up the stone and prevent it from toppling as the stone had a significant lean to the south. There was a noticeable absence of packing stones in the remainder of the socket.

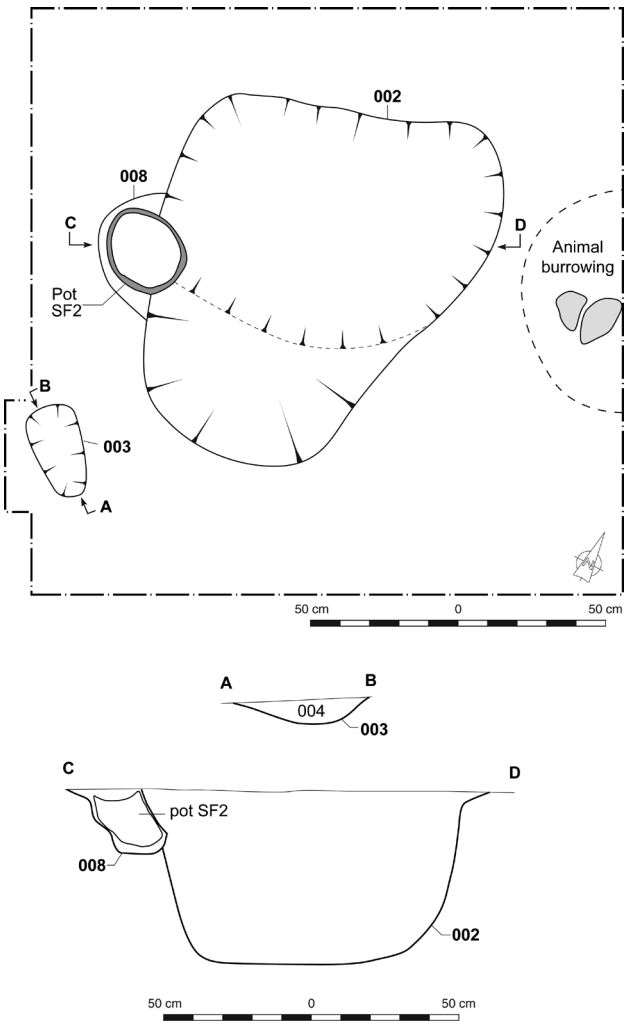
Pit 008

A pit (008) containing a Collared Urn (SF2) was recorded on the west side of the socket (002). This pit measured 0.21m deep and was only c 0.05m wider than the vessel on each side. The pit was destroyed during the removal of the vessel and the fill, a mid brown sandy silt, could not be sampled. It is not clear whether this pit (008) cut or was cut by the socket (002) but on balance the former seems more likely.

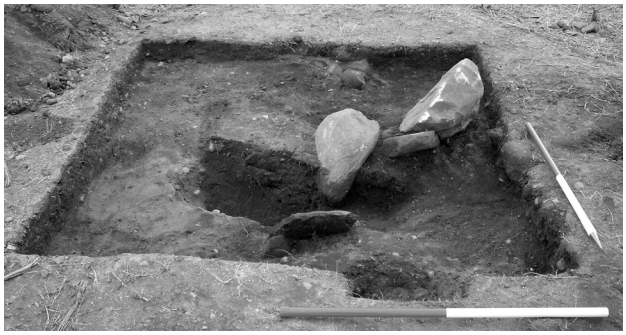
The vessel was inverted and lay directly on the base of the pit; it stood at a slight angle, leaning towards the west. The vessel's contents were removed in three spits and collected as bulk samples.

The pit, and the vessel it contained, were disturbed by a large flat packing stone which lay at an angle across the vessel. Sherds from the lower wall of the vessel were found in the upper spit, where they had been pushed by the packing stone.

The re-cut of the standing stone socket contained loose sherds of pottery and burnt bone, probably



Illus 3 *Site plan, section of pit 003 and profile of pit 002.*



Illus 4 *The half-sectioned socket from the west.*

Illus 5 *The fully excavated socket from the south.*

Illus 6 *The re-erection and the final position of the stone.*

derived from the cremation and urn in pit 008. This material appeared to have trickled into the re-cut following the breakage of SF2 by the packing stone.

Pit 003

A pit (003) containing a second Collared Urn (SF1) was excavated on the west side of the trench, some 0.25m from the standing stone socket and 0.45m from pit 008. The trench was extended slightly to enable its removal. The pit measured 0.25m long by 0.15m long by 0.18m deep (Illus 3 A–B). It was filled by a mid brown sandy silt (004).

The urn was inverted and lay directly on the base of the cut. The base of the urn was missing, probably due to ploughing action as the depth of topsoil over the vessel was only 0.15m. The urn was removed with its contents in place and the fill was excavated in the laboratory.

Reinstatement

Upon completion of all excavation and recording, the standing stone was reinstated within its original socket. The stone was installed vertically at the request of Historic Scotland, rather than replicating the marked southern lean (Illus 6). The original socket was enlarged to 1m by 1m by 1.5m deep, to allow a concrete socket to be formed for the insertion of the standing stone.

Prior to reinstatement, the correct orientation of the stone was verified from historical photographs. The stone was hoisted into a vertical position and lowered into the concrete socket. The stone was packed firmly into the socket using stone which had been excavated from the original socket, to allow free drainage, and the trench was then backfilled with soil.

The finds

Pottery
Melanie Johnson

Two Collared Urns were found during the excavation. Although lifted substantially intact, a number of detached sherds and fragments were retrieved from topsoil and the fills of all three features, either during the excavation or during the subsequent processing of samples.

SF1 is a small undecorated tripartite Collared Urn found inverted in pit 003; it has an internally bevelled rim (Illus 7). The vessel survives as 29 individual sherds weighing 522g. The base is missing but its collar is complete. It has a rim diameter of 130mm and survives to a maximum height of 95mm. The fabric is hard with small grit inclusions up to 5mm in size and tiny mica flecks, with a dark grey core and mid brown surfaces. The vessel was finely made with well finished, smoothed surfaces, and walls 6–7mm thick. A large seed impression was noted on the collar exterior. Some fine cracks are present.

SF2 is an almost complete but damaged tripartite Collared Urn with internally bevelled rim found inverted in pit 008 (Illus 7). It had been damaged by a flat packing stone, and a number of sherds from the lower body and base were found inside the upper fill of the pot and within the pit fill and adjacent stone socket and re-cut.

The larger part of the vessel weighs 3872g, with a further 27 sherds (799g) found within pit 008; these are all lower body sherds. In addition, 14 sherds (283g) were recovered from topsoil and fills of pits 002 and 008, including the only base sherd found for this vessel, from re-cut fill 006. A number of crumbs and small fragments which are likely to belong to SF2, weighing 664g, were recovered from processing of bulk soil samples.

The rim is internally bevelled and has a diameter of 250mm. The vessel is decorated with lines of twisted impressed cord: three parallel lines around the circumference of the rim bevel, and on the collar a zigzag motif with five parallel lines above the zigzag and a single line of cord below. The triangles formed by the zigzag motif are isosceles triangles, taller than they are wide. The joins between the ends of the lengths of cord are visible on the horizontal lines around the collar, some showing a slight overlap and another with a slight gap. Below the lowermost line on the collar are a series of unevenly spaced short diagonals aligned from top left to bottom right.

The vessel is badly cracked and survives as two large pieces and a number of sherds. The fabric is crumbly with some large rock inclusions up to 12mm in size, plus small grit and tiny mica flecks. It has a dark grey core, a brown interior and a brown to reddish-brown exterior. The walls are 10–15mm thick. The surfaces are very well finished, and the vessel is very clean with only one small patch of sooting on the collar. Striations are visible on the interior of the collar, indicating knife trimming.

The urns are typical of the Early Bronze Age, both in terms of their form and decoration and in the nature of their use and deposition as containers for cremations. Urn SF1 is small, and it is tempting to relate its size to the size of the infant it contained. However, urns of comparable size were found at Skilmafilly in Aberdeenshire but were associated with adults (Urn 005 was 170mm, Urn 024 was 130mm; Johnson and Cameron forthcoming). The rim diameters of most Collared and Cordoned Urns typically range between c 200–300mm (Longworth 1984).

Zigzag motifs and the use of twisted impressed cord are common decorative traits for Collared and Cordoned Urns of this period (Longworth 1984). Undecorated Collared Urns are also known from other sites, for example at Skilmafilly (Johnson and Cameron forthcoming), Lesmurdie Road, Elgin (Suddaby forthcoming) and Loanhead of Daviot (Kilbride-Jones 1936).

Medieval pottery
Sue Anderson

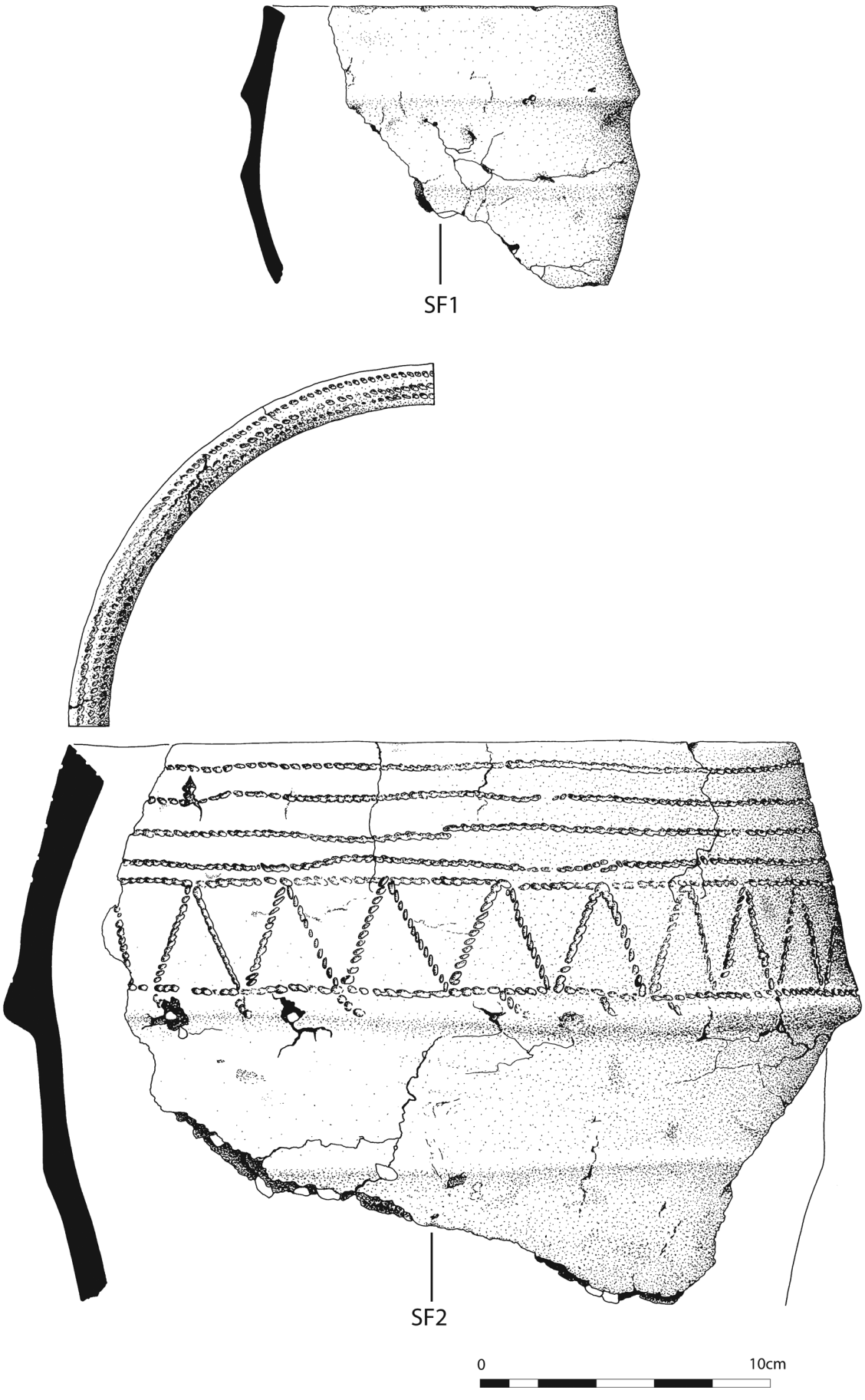
A tiny sherd of Scottish white gritty ware with a yellowish brown external glaze was found in sample <2> from the upper fill 006 of pit 002. This was presumably accidentally deposited during excavations in the late 18th century, probably from the surrounding ploughsoil.

Lithic artefacts
Ann Clarke

All three lithic finds are associated with urn SF2. A thumbnail scraper came from the upper fill of the socket (006); since the re-cut of this socket contained burnt bone and sherds of pottery from the decorated Collared Urn it is likely that the scraper, although unburnt, was also part of the original cremation deposit. From the upper fill of pit 008 came a tiny flint flake. A flat quartz pebble came from within the urn too.

The fine thumbnail scraper is made on an inner flake of honey coloured flint. Characteristic steep invasive flaking is located around the entire perimeter of the scraper except where it has been truncated by damage down the left side. There is a strong possibility that the tiny inner flake which is of the same coloured flint as the scraper may actually be a fragment from it. The tool may have broken at the same time as the urn was damaged by the insertion of packing stones, with the flint spall being all that was retrieved (through sampling) of the broken fragment. Alternatively the scraper may have been broken deliberately as it was put in the urn; the scraper must have been placed separately from the cremated bone as it is not burnt.

The quartz pebble was not used to any great extent though the narrow end appears to bear light faceting. However, given its size the inclusion of this pebble in the urn must have been deliberate and perhaps it was used to crush the cremated bone inside the urn. Quartz is often observed to be associated with Early Bronze Age funerary deposits though the practice has not been fully



Illus 7 *Collared Urns from 003 (SF1) and 008 (SF2).*

quantified or subject to synthesis and consequently we do not yet know precisely how quartz was involved in the ritual: whether as a tool for crushing bone, as a personal object that was carried in life and then deposited as a grave good or perhaps as an object to take into the other world. Quartz crystals were found in a Collared Urn at Pendleton, Lancashire together with a worked bone 'button' (Pendleton Past and Present n d) whilst Fraser Hunter contemplates the symbolism of some broken white quartzite cobbles in a feature associated with a cist cemetery at West Linton (Hunter 2000). Pebbles and flakes of quartz were also found within the cists at this latter site (ibid 125, 147, 151) and two quartz pieces came from a food vessel burial in Banff (Shepherd and Cowie 1977).

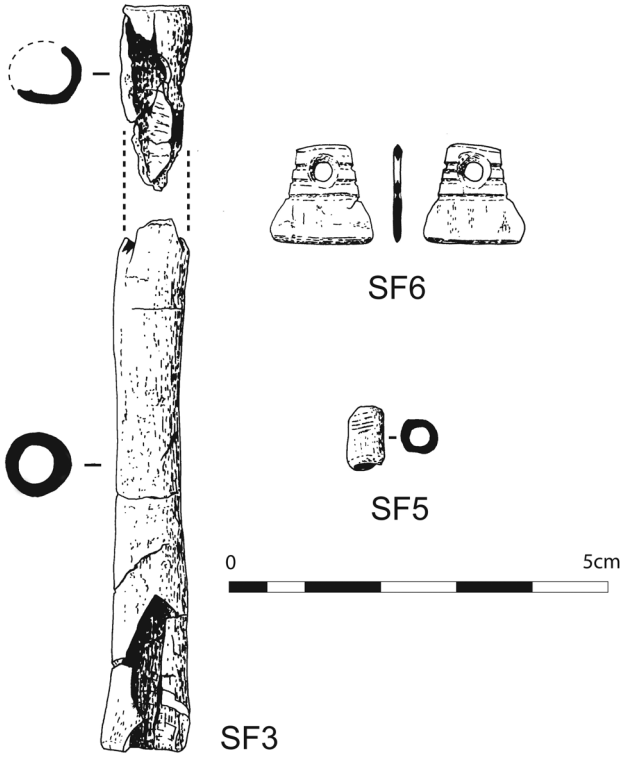
Bone artefacts
Dawn McLaren

Four calcined worked bone objects were found in association with the Collared Urns (Illus 8). The objects are heat-damaged, indicating that they had been burnt on the pyre with the deceased. Collared Urn SF1 (containing the remains of a six-month-old child) produced a tubular bead (SF5) and a decorated pendant or toggle (SF6); Collared Urn SF2, which had held the remains of a young adult ?male, contained a possible single-hole whistle (SF3) and the pointed end of a pin (SF4).

The pin fragment from urn SF1 can be paralleled in numerous Early Bronze Age graves featuring cremated remains, and is likely to have been used to fasten a funerary garment. A dated, complete parallel for the Carlinwell example is known from Burnfoot Plantation, Dumfries and Galloway; this, too, had been found in a Collared Urn (Sheridan 2007, fig. 14.11).

The worked bone ornaments associated with the cremated bones of a six-month-old child within urn SF1 are unusual. These consist of a small tubular burnt bead (SF5) and a decorated bell-shaped pendant or toggle-like fastener (SF6). The tubular bead has been manufactured from a small hollow bone, possibly from a bird, without significant modification to its shape. Fine linear parallel cut marks on at least two surfaces are visible, and these are either decorative or the result of defleshing the bone. A similar simple bone bead, but lacking any surface markings, comes from an unurned deposit of cremated bone at Kirkburn, Lockerbie, Dumfries and Galloway (Cormack 1963, 127, fig 9c).

The bell-shaped decorated pendant or fastener is hard to parallel and its function is uncertain; it could, however, have been a toggle-like fastener for a funerary garment, analogous to the pin found in urn SF2 (Alison Sheridan pers comm). Alternatively, it could have formed part of a necklace, along with the bone bead. Only a few comparanda are known to the author, and none of these resembles this object closely. The first is a bone object, probably a necklace fastener, found with six fusiform jet beads, two jet V-perforated buttons and three tiny disc beads, possibly of jet, in a secondary



Illus 8 *Bone artefacts: SF3 from urn SF2; SF5–6 from urn SF1.*

interment in a round barrow on Hay Top, Monsal Dale, Derbyshire (Bateman 1861, 74–5; Davis and Thurnam 1865). This object splays out towards one end and the other end has a transverse perforation. The second is a rounded-trapezoidal object of jet, again found with fusiform jet beads, in barrow 4, Tan Hill, Wiltshire (Thurnam 1871, 509–10, fig 200). It, too, may be a necklace fastener; it has a lateral perforation through its narrow end. The third is a small wedge- or axe-shaped pendant, made from a flat sheet of bronze rolled to a tube at the top for attachment, found alongside cremated human bones within a Trevisker Ware vessel at Harlyn Bay, Cornwall (Jones et al 2011, 91–4, fig 3). The fourth object is a shield-shaped amber pendant with horizontal grooved decoration from Wilsford G.7, Wiltshire (Annable and Simpson 1964, 44, no. 149). The decorative ribbing on the Carlinwell object also finds parallels in a range of Bronze Age ornaments from Scotland, such as a collared bone toggle from Lesmurdie Road, Elgin (McLaren forthcoming); that particular example was associated with a Collared Urn and a radiocarbon date of 3410±45 BP (GrA-24854: Suddaby forthcoming; Sheridan 2007, fig 14.11). Although no exact parallels are known to the writer, it is assumed that simple ornaments made from worked bone and other organic materials were a more common facet of Bronze Age personal ornamentation than are represented by those preserved in mortuary contexts. The Carlinwell pendant or fastener, therefore, makes an interesting addition to the known repertoire of Early Bronze Age ornament types in Britain.

While pins, beads and toggles are not uncommon finds in Collared (and other Early Bronze Age) Urns, the possible whistle is a significant rarity. Only five, possibly six, Early Bronze Age parallels are known: Craigentinny, Edinburgh (Anon 1938, 20-21, fig 5); Eagleston Flat, Derbyshire (Walster 1994, 334, fig 12, no 257); Raven Scar Cave, North Yorkshire (Gilks 1985); Snailwell A round barrow, Cambridgeshire (Lethbridge 1949, 33-4); and Pennythorne Hill, Baildon, Yorkshire (Longworth 1984, 278, no 1585). A further possible example comes from Wilsford G23, Wiltshire (Clarke et al 1985, 120, 284, fig 4.52)

The Carlinwell whistle is the most northerly recognised example of this type, which has been usefully summarised by Walster (1994, 334). With the notable exception of the bone tube from Wilsford G23, Wiltshire which has three-holes (Clarke et al 1985, fig 4.52), all of the possible whistles are of simple form with a single hole. These have previously been thought to be capable of producing only a single note (Walster 1994, 334) but this is unlikely. Single-hole whistles or pipes are usually able to play at least two notes (Graeme Lawson pers comm). Their function as signals or decoys, used in hunting, rather than musical instruments, has been suggested (Megaw 1968, 335) yet the acoustical function of these objects has never been demonstrated. Very careful shaping of the sound-hole including the creation of a shallow platform around the margins of the sound/finger hole would be expected in order for sound to be produced (Graeme Lawson pers comm). In light of this it is unfortunate that most of the area around the hole of the Carlinwell example has been lost, although an encircling shallow bevelled edge is suggested, similar to those from Craigentinny, Eagleston Flat and Raven Scar Cave.

Apart from the whistle from Raven Scar Cave, all have been found in association with urned cremation burials. Like the example that is the focus for discussion here, those from Craigentinny, Snailwell and the possible whistle from Pennythorne Hill come from Collared Urn cremation deposits, whilst that from Eagleston Flat is associated with a Cordoned Urn. The Carlinwell whistle (SF3) was associated with a fragmentary bone pin (SF4) and the cremated bones of a young adult ?male within Collared Urn SF2. In only one other instance, at Snailwell A round barrow, was the whistle associated with other worked bone objects including nine perforated bone pins, two imperforate bone pins, an imperforate bone tube and a perforated fragment of antler (Longworth 1984, 158, no 104, pl 46c).

Although substantially complete, the Carlinwell whistle is missing fragments from both ends making it impossible to measure accurately the original length of the object. Similarly, the associated bone pin is also incomplete. These objects, like all the worked bone items from Carlinwell, were recovered during osteological analysis of the cremated human bone, so it is possible in this case to be confident that all the fragments of the objects present in the remains have been recognised. This may suggest that although most of the pieces were carefully collected after cremation, some were missed and not included in final deposition alongside the human bones. A date of 3510±30 BP (SUERC-36803) was obtained from the cremated human bone within urn SF2 (see below). This indicates that its use was contemporary with the possible whistle from Eaglestone Flat which has been dated to 3430±90 BP (OxA-3245: Barnatt 1994, 304).

Catalogue

SF3 Possible burnt bone single-hole whistle (Illus 8) Substantially complete but broken naturally hollow tubular bone, oval in section and gently flared at both squared-off ends which are damaged and incomplete. Although portions of both ends of the tube are present they no longer join, meaning that the original length is unknown. Traces of a single bevelled circular hole is present 9mm from one squared end but the fragment is insufficient to allow the diameter to be estimated. Faint abrasion marks from manufacture are present on the tube which is white and brittle and heavily heat-affected. The bone is likely to be a femur of a small land mammal, such as a hare (A Kitchener pers comm). Possible single-hole whistles are rare; only five other examples from Britain are known. A very similar example comes from a deposit of cremated bone at Craigentinny, Edinburgh (Anon 1938, 20–21, fig 5; NMS: X.EQ 443) associated with a Collared Urn and flints. Approximate L 86mm W 9–12.5mm T 8.5–11mm. Mass 7.35g. Context 009, fill of pit containing urned cremation burial (Urn SF2).

SF4 Tip of burnt bone pin Curving circular-sectioned tapering fragment of bone pin, broken mid-shank; the head and the extreme tip have been lost. The bone is white and brittle with severe cracking due to heat damage. There is no trace of polish and very few tool marks visible on the shank. Produced from a mammalian long bone or rib. Remaining L 43mm Diam 6–7mm. Mass 1.89g. Context 009, fill of pit containing urned cremation burial (Urn SF2).

SF5 Burnt tubular bead (Illus 8) Small tubular bird bone, naturally hollow with bevelled ends and sub-square in section. The only trace of modification to the bone is a series of fine shallow parallel cut marks on three faces concentrated towards the ends of the tube which are probably decorative. The natural longitudinal hollow (Diam 3mm) would have allowed the bone to be strung and used as a bead. L 8mm Diam 4.5–5mm. Mass 0.5g. Context 004, fill of pit containing urned cremation burial (Urn SF1).

SF6 Decorated pendant (Illus 8) Flat bell-shaped burnt bone pendant or bead, with narrow squared, straight-sided head which expands steeply to a gently curving plano-convex-sectioned end. A biconical bored perforation (Diam 2.5mm) is present towards the narrow squared end which is decorated on both faces by a series of three parallel horizontal incised bands; each of the bands continues onto the edges. This decoration is confined to the narrowest end of the pendant; the remaining surfaces are undecorated. Both faces are extensively abraded from manufacture but lack polish. The ends have been produced by cutting a

groove on both faces, snapping the bone across the cut and then abrading the fracture surface to produce a smooth surface. The surface of the bone has been so heavily modified that identification of species is not possible. L 13.5mm W 9.5–13.5mm T 2–2.5mm. Mass 0.54g. Context 004, fill of pit containing urned cremation burial (Urn SF1).

Cremated bone

Sue Anderson

Cremated bone was recovered from both urned burials (003, 008) and two other contexts (topsoil 001, stone pit 002) during the excavation. It is likely that the material in the other contexts was disturbed from the two burials, particularly from pit 008.

Methodology

The contents of the larger vessel (008 SF2) were excavated in spits (samples 7–9), whilst the contents of the smaller vessel (003 SF1) were collected as a single group (sample 10). Cremated bone was also recovered by hand (001) and from the fills of pit 002 in samples and by hand collection. The samples were wet-sieved and divided into <2mm, <4mm and >4mm fractions. In addition to the cremated bone, the samples contained pea grit and charcoal fragments, so the bone was hand-separated from this residue for weighing (although in some cases only a sample of the <2mm fraction was sorted, the remaining bone weight being estimated from the % weight within the sample). The bone from each context and spit was sorted into six categories: skull, axial, upper limb, lower limb, unidentified long bone, and unidentified. All fragments in the first five categories were counted and weighed to the nearest tenth of a gram, those in the sixth were weighed only. Measurements of maximum skull and long bone fragment sizes were also recorded. Observations were made, where possible, concerning bone colour, age, sex, dental remains and pathology. Identifiable fragments were noted. Methods used follow the Workshop of European Anthropologists (WEA 1980) and McKinley (1994 and 2004). A catalogue of burials and related data is included in the archive.

Quantification, identification, collection and survival

Table 1 shows the bone weights, percentages of identified bone from the two burials and two other contexts, and the proportions of bone identified from the four areas of the skeleton (skull, axial, upper limb, lower limb). Expected proportions are provided in the first row.

This shows that skull fragments are over-represented amongst the identifiable material, and that other areas of the skeleton are generally under-represented, although upper limb fragments were at the expected level in one case. It has been suggested that 'it should be possible to recognise any bias in the collection of certain areas of the body after cremation' (McKinley 1994, 6), but there is also some bias inherent in the identification of elements. McKinley notes the ease with which even tiny fragments of skull can be recognised, and conversely the difficulty of identifying long bone fragments. These figures can therefore provide only a rough guide to what was originally collected.

Mays (1998, Table 11.2) notes that the combusted weight of an adult skeleton has a mean of around 1500g for females and 2300g for males, whilst McKinley (2000, 404) states that the range is between c 1000–3600g. The largest quantity of bone in this assemblage came from pit 008. Even with the addition of fragments from 001 and 002 which probably belonged to the same individual, the total of 636.3g is well below the quantity expected for an adult male. The other burial contained the remains of an infant, but the quantity of bone is still rather low to represent a complete skeleton.

The cremation burials

The burials and additional material are summarised in Table 2.

The two burials contained the bones of two main bodies, but both appeared to have evidence for the presence of another individual. One small fragment of adult limb bone was present with the infant in 003, and a few fragments of abraded white bone with 008 may represent a second adult or possibly animal remains. In both cases it seems likely that this material was

Table 1 *Percentages of identified fragments out of total identified to area of skeleton.*

context	total wt/g	identified	skull	axial	upper limb	lower limb
*expected**			*18.2*	*20.6*	*23.1*	*38.1*
pit 003	53.1	39.2	66.3	9.1	7.2	4.3
pit 008	590.8	52.7	38.7	3.4	16.4	29.2
topsoil 001	6.2	100				100
pit 002	39.3	44.0	52.6	1.2	23.1	23.1

*expected proportions from McKinley 1994, 6

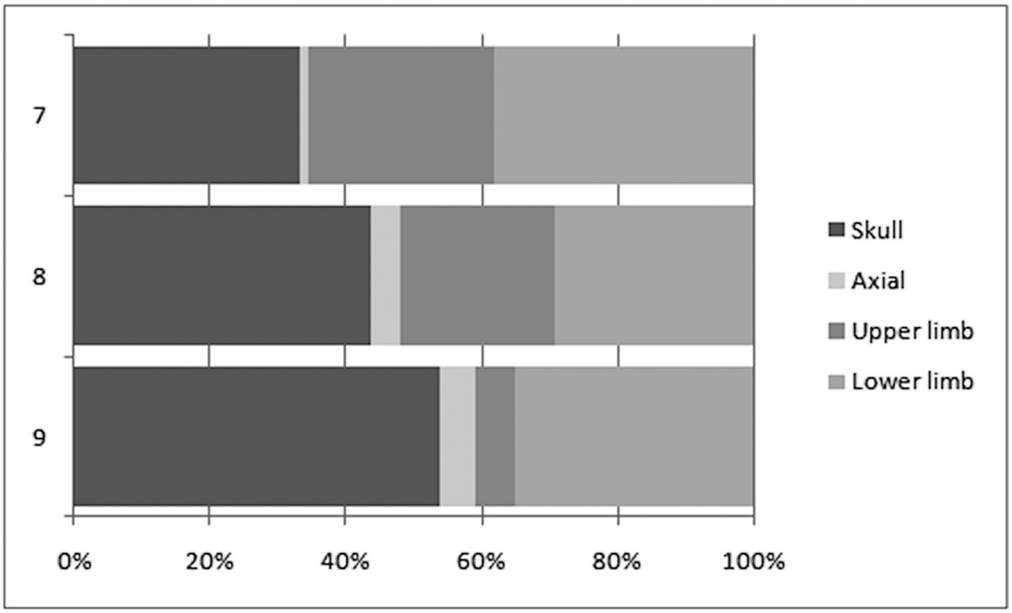
included accidentally, perhaps during collection of bone following cremation if the pyre site were reused. The fragments from 001 and 002 almost certainly belonged to 008. The minimum number of individuals in this assemblage is therefore two.

No major pathological changes were noted in either of the two individuals and, from the surviving dental remains, it appeared that no significant dental disease had affected them either. The presence of at least one wormian bone was noted in the adult individual, a non-metric trait which may be developmental or congenital in origin. Some cranial vault fragments of the adult showed signs of pitting/porosity externally, which may have been caused by an inflammation of the scalp or a deficiency disease in childhood, but could simply be normal anatomical variation.

Burial 008 was excavated in spits and the data collected could be used to compare the relative proportions of the four main skeletal areas throughout the vessel. This can sometimes provide an insight into the collection techniques following cremation. The distribution of elements within these three spit samples is shown in Illus 9. This shows that there was a change in the proportions of some areas of skeleton within the urn. The lowest level, sample <9> from the rim area of the inverted pot, contained more of the skull than was seen in the spits collected from higher up, whilst the quantities of upper limb bones were noticeably more frequent in the upper (base) and middle spits than in the lowest (rim) layer. Conversely the axial skeleton increases slightly from base to rim. The lower limb was frequent throughout, although proportionately

Table 2 *Summary of cremation burials and redeposited bone.*

feature	deposit	age	sex	notes
pit 003	004/010	c 6m		Fair condition but very fragmentary. Age based on calcification stages of twelve fragments of unerupted deciduous molar and canine crowns. Also one small fragment of adult limb bone.
pit 008	005/009	?young adult	??M	Good condition, several very large pieces of skull and long bone. Fragments of all major limb bones, skull including maxilla, ribs and a few fragments of vertebral facets. No large pieces of spine or other axial skeleton. 68 small and abraded fragments of tooth root; all root tips fully formed. Cranial sutures still open. No definite sexing evidence, but skull thick and temporal area with large muscle markings, teeth large.
-	001	adult	?	Good condition. 15 fragments (6.2g) of lower limb bones. Probably part of adult in pit 008.
pit 002	006/007	adult	?M	Fair condition but fragments relatively small. Includes skull, humerus, ulna, 5 tooth root fragments. Occipital crest appears robust. Likely to belong to adult in pit 008.



Illus 9 *Distribution of bones from the four main skeletal areas through 009 (pit 008).*

slightly less in the centre spit. The pattern may suggest collection of the extremities took place first, with little of the torso being collected until the pot was almost full. By this time most of the arms had been deposited, but there was still a relatively large quantity of the skull and legs to add. However, inversion of the pot during burial will have disturbed some of the remains, as will later settling, so the pattern only gives a broad idea of collection techniques.

The degree of fragmentation was relatively high for Bronze Age urned burials, particularly for the infant. Some of the largest and most intact pieces were from the upper spit (base) of the pot in 008, which may suggest that these pieces were more obvious to the collector. The largest long bone fragment was 88mm long (in sample 9). Few pieces showed signs of abrasion, other than the white fragments which may represent another individual as noted above.

The majority of bone in this group was fully oxidised and creamy white in colour. The presence of a high proportion of white bone indicates firing temperatures in excess of c 600°C (McKinley 2004, 11). Mays (1999, 159) noted that the uniformity of colour in the surviving bone at Ardleigh in Essex may be due to poor survival of less well cremated bone. In this group, few fragments of cancellous or 'spongy' bone were present, suggesting that the material was less well cremated and may have been lost through post-mortem decay. The abrasion of fragments which had been heavily oxidised to a powdery white may indicate that higher fired pieces were more susceptible to post-depositional changes in the acid soils.

Summary and discussion

The four groups of bone represent a minimum of two individuals. These consist of a young adult ?male and a six-month old infant.

The total weight of bone indicates that the entire skeleton is unlikely to have been present in either burial. Whilst this is in part due to scattering of the adult burial during later disturbance, it may also be due to incomplete collection following the cremation rite, and/or the poor preservation of incompletely cremated material following burial.

Very little pathological evidence was present in these remains, but this may in part be due to the lack of spinal and other joint remains in the adult. The few fragments of maxillary bone and tooth roots did not yield any evidence for carious lesions or abscesses.

Some insight into the cremation ritual can be gained based on the evidence of the colour of the bone and the degree of fragmentation. The spit-excavation of the large urn provided some evidence for post-cremation collection techniques. Most of the bone from this site indicates that firing probably reached the high temperatures normally associated with cremation. Although there is evidence for a degree of fragmentation, there were many large fragments and the breakage could simply be the result of post-depositional changes.

Faunal remains

Jennifer Thoms

Two fragments of non-human bone were retrieved from context 006 during sample processing. The bones are from a large rodent, most probably rat. The post-cranial bones of rodents are notoriously difficult to attribute to species without extensive use of reference material. Judging by their small size and the fact they were found in the upper fill of the stone socket, they most likely represent intrusive bones, accidentally incorporated into the context through movement by water, or burrowing by small mammals. The bones are a complete third phalanx and a fragment of an ulna (lower forelimb).

Archaeobotany

Mhairi Hastie and Mike Cressey

Ten bulk soil samples, retained during the excavation, were processed through a system of flotation. The floating material (flot) was collected in a 250μm sieve and then, once dry, scanned using a binocular microscope (mag x10–200). The material remaining in the flotation tank (retent) was washed through a 1mm mesh and then sorted for any archaeologically significant material.

The wood charcoal recovered from both the flots and retents were scanned and, where preservation allowed, the species of wood present was identified. Identifications were made with reference to CFA Archaeology's modern reference collection.

The samples contained small quantities of wood charcoal and occasional fragments of hazelnut shell. Two poorly-preserved fragments of hazelnut shell, no larger than 2mm in size, were recovered from samples taken from the fill of the socket (002). Small quantities of abraded wood charcoal were recovered from the majority of the samples. Most of the charcoal fragments were very small and were not suitable for identification. Where preservation did allow identification, small fragments of both hazel (*Corylus* sp.) and oak (*Quercus* sp) were recorded. The quantity of carbonised plant remains recovered from the samples was not sufficient to allow any further detailed analysis.

Radiocarbon dating

A single radiocarbon date was obtained from burnt human bone (femur) from burial 008 (Urn SF2), a young adult ?male (Table 3). The material was assayed by SUERC and calibrated using OxCal 4, to give a date range in the first half of the second millennium BC, 1916–1749 BC calibrated at 2-sigma. This date fits well with other radiocarbon dated cremated individuals contained within Collared Urns, such as those at Skilmafilly near Maud, Aberdeenshire and Lesmurdie Road, Elgin, Moray (Johnson forthcoming, Suddaby

Table 3 *Radiocarbon date.*

context	material	lab no.	radiocarbon age BP	calibrated date (BC) 1 sigma	2 sigma	$\delta^{13}C$
009 (Urn 2)	human bone, femur	SUERC-36803	3510±30	1886–1774	1916–1749	-24.0 ‰

forthcoming). The individual from urn SF1 was not dated as none of the bone fragments provided a large enough sample.

Discussion

The excavation at the base of the Carlinwell standing stone, despite being a small area, revealed not only the socket and secondary packing stones for the stone but also two urned cremation burials dating to the second millennium BC and contained within Collared Urns. The larger, decorated vessel contained the remains of a young adult ?male, along with a possible single-hole bone whistle, part of a bone pin, a quartz pebble and a thumbnail scraper. Bone from this cremation was dated to 1916–1749 BC (calibrated at 2-sigma). The smaller urn was plain and contained the remains of a six-month old infant along with a tubular bone bead and a decorated pendant or toggle.

The bone single-hole whistle is an especially significant discovery, being only the second such find in Scotland and one of only five (possibly six) Early Bronze Age examples in the UK. The decorated bone pendant is also an interesting find, with no direct parallels presently known, although it fits into the Early Bronze Age tradition of bead and pendant manufacture which can often be found associated with Collared Urns.

It is generally accepted that Collared Urns appear around 2000 BC (Sheridan 2003, 203). An extensive dating programme for the Skilmafilly cremation cemetery (Johnson and Cameron forthcoming) and dates obtained by the NMS Dating Cremated Bones Project (Sheridan 2003, 206) has provided a range of secure radiocarbon dates for Scottish Collared Urns which span the date range 2130–1500 BC. The new date from Carlinwell fits very well within this range.

Needham's synthesis of the dating evidence for the British Bronze Age (Needham 1996) presented a general scheme, in which he suggested that the period 2050–1700 BC saw a major change in funerary rite, with the introduction of urned cremations. While the burial practices of the first half of the second millennium BC are characterised by cremation burials, within this broad category there is a wide variety of funerary monuments and ritual practices, such as cairns, cists, flat cemeteries, enclosed and unenclosed cemeteries of various sizes, urned and un-urned cremation burials, and isolated discoveries. Cemeteries can include a mixture of urn types, a mixture of ages and sexes and urned and un-urned cremations within the same cemetery, inverted and occasionally upright vessels, and a variety of grave goods.

There are fewer instances, however, of urned cremation burials associated with individual standing stones. The pair of standing stones at Orwell, Perth and Kinross (Ritchie 1972) saw some limited excavation prior to the reinstatement of the stones following the toppling of one of them in the 1970s. Two cremation pits were recorded adjacent to the stones and a further double-tiered cremation was found deposited in one of the stone's socket. At Bogleys standing stone, Kirkcaldy, Fife (Lewis and Terry 2007), the stone is believed to date to the Early Bronze Age and excavations at its base prior to its removal revealed four cremation pits in the vicinity of the stone, but these were dated to the period 1252–920 BC. A further example is Lundin Farm (Stewart 1966), where a setting of four standing stones was excavated, producing a scatter of sherds of pottery, described by the excavator as Beaker but which are clearly part of a Collared Urn with geometric cord-impressed decoration on the collar. It is also interesting to note that the excavator mentions the presence of two dozen hand-sized quartz pebbles, hinting at an association of quartz with burials which is replicated o a smaller degree at Carlinwell.

It is also commonplace for recumbent stone circles to be associated with cremations, often under small cairns within the circle. At Loanhead of Daviot, Aberdeenshire (Kilbride-Jones 1936), an enclosed cemetery was located to one side of the circle with cremations placed in pottery vessels. At Tomnaverie, cremated remains were found in a layer which was interpreted as pyre debris from the primary use of the site (Boyle 2005, 42).

While it is not possible directly to associate the erection of the standing stone at Carlinwell to the same period as the insertion of the cremations, it seems likely that the two were related. Due to the small size of the excavation it is not possible to determine the full extent and nature of the associated cemetery: while the two excavated burials were both on the west side of the stone, it remains equally possible that these were the only burials at the base of the stone or that further burials survive in other directions beyond the edge of the trench. Foundation or dedicatory cremations are known at other standing stone sites, for example Ballymeanoch, Argyll, and Balbirnie, Fife (Barber 1978; Ritchie 1974), but at Carlinwell there was not a cremation deposit within the stone socket nor any other objects or materials which could be called a foundation deposit.

The re-cut and insertion of large packing stones which led to the disturbance of urn SF2 possibly occurred during the 18th century when Jervise (1864) recorded that human remains had been observed at the foot of the stone, although this re-cut could also have occurred at another date and may even have taken place in antiquity. This re-cut and re-packing of the socket may have been an attempt to rectify an already apparent lean to the south side; this lean was visible on photographs taken in the 1970s. The socket for the stone does not provide any clues as to the erection method for the stone.

While the primary purpose and date of erection of the standing stone is unknown, what is clear is that at some time during the first half of the second millennium BC the stone was used as a focus for the burial of urned cremations. The stone, although not in a very prominent position in the landscape when viewed from the north, did command wide open views to the south, east and west and would have been seen clearly from these directions in an unforested landscape.

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The site archive has been deposited with the RCAHMS. The finds assemblage will be disposed of through Treasure Trove procedures.

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Abstract
Two Collared Urns of Early Bronze Age date, containing cremated human remains and bone artefacts including a pendant and whistle, were discovered during excavation work at the base of Carlinwell standing stone, Airlie, Angus following the stone's toppling. Cremated human bone from one of the urns was dated to the first half of the second millennium BC. Following the excavation the stone was re-erected. The fieldwork and post-excavation work were funded by Historic Scotland.

Keywords
bone artefacts
Collared Urn
cremation burial
Early Bronze Age
standing stone

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