

## Excavation of two cairns, a cist and associated features at Sanaighmor Warren, Islay, Argyll and Bute

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with contributions by D Rankin, C Ellis, R Cowie, A Sheridan & K McSweeney

### ABSTRACT

*A rescue excavation in a machair blow-out at Sanaighmor Warren, Islay, recovered two urned cremations, one under a cairn comprised mainly of white quartz, and the other in a cist, associated with an orthostat. The cremations were radiocarbon dated to the Iron Age. The paper sets these finds in their local and regional context, and briefly discusses burial practices in the period concerned. The Sanaighmor Warren area is discussed in terms of its future archaeological potential. The project was funded by Historic Scotland.*

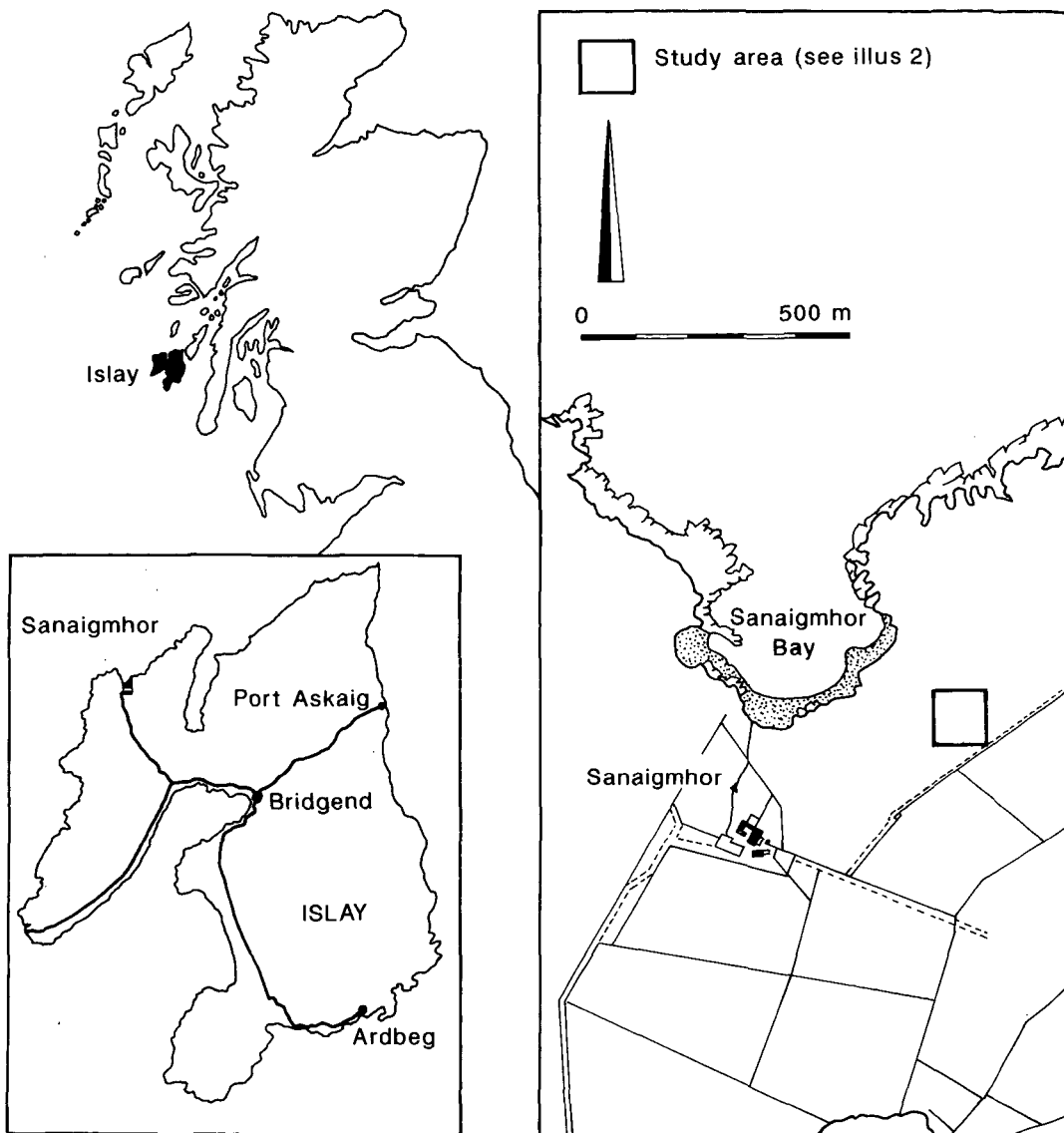
### INTRODUCTION

The Sanaighmor Warren area is constantly being eroded and has been the focus of intermittent surface finds and salvage excavations over many years. The salvage excavation of four discrete features was commissioned by Historic Scotland and undertaken in October 1996, by AOC (Scotland) Ltd. The site was discovered by Sheila Clark, the local Historic Scotland Monument Warden. The site lies within a Site of Special Scientific Interest and permission to excavate was obtained from Scottish Natural Heritage (SNH) as well as from the landowner, Islay Estates and the tenant, Petra Pierce.

The four features — a cist, two cairns (A & B) (NMRS NR 27 SW no 27) and a dyke — were associated with a palaeosol within an area of eroding machair at Sanaighmor Warren, Islay. These particular features were under imminent pressure from the over-wintering of cattle in the blow-out and winter storms. The cist and other features were surveyed, on behalf of Historic Scotland, by Headland Archaeology Ltd, who also recorded a spread of cremated bone next to the cist. The aims of this project were to undertake a salvage excavation to fully investigate the features and their relationship with the buried soil, and to assess the archaeological potential of the area for the benefit of future management policy.

In order to explore the potential presence of further monuments in the immediate environs a geophysics survey, consisting of caesium magnetometry and resistivity, was conducted by Arkenzol Soil Services. In addition to the geophysical surveys, a limited bucket auger survey was carried out to investigate geophysical anomalies and to determine the extent of the buried soil.

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ILLUS 1 Site location map (Based on the Ordnance Survey map © Crown copyright)

SITE LOCATION (ILLUS 1)

The site is located within a machair blow-out some 350 m to the north-east of Sanaigmhor Farm, and to the south-east of Sanaigmhor Bay, at the north end of the Rhinns of Islay (NGR: NR 2405 7085). The Rhinns are the western portion of Islay and are characterized by gently sloping hills, with occasional lochs in the lower-lying areas, the largest of which is Loch Gorm. The area is joined to the eastern two-thirds of Islay by the isthmus between the sea lochs of Lochs Gruinart and Indaal.

Sanaighmor Warren is one of the five areas of machair on the Rhinns, the others being Ardnave Point, Saligo Bay, Machir Bay and Loissit Bay, and, like the latter three, Sanaighmor lies at the head of a marine embayment. The immediate hinterland to Sanaighmor consists of low-lying pasture, but to the east the land gradually rises to the clifftop summit of Cnoc Uamh nam Fear (128 m OD). To the south and east the land becomes increasingly poorly drained with a consequent decline in the quality of the pasture. The land around Sanaighmor Warren generally consists of grasslands capable of producing an occasional crop (Bown *et al* 1982, 142–7).

The soil in Sanaighmor Bay belongs to the Links Association, whose parent material comprises windblown silica sand forming stabilized dunes with some undulating areas of raised beach and dune slacks. Humus-iron podzols with some non-calcareous regosols predominate on the stabilized dunes (Bown *et al* 1982, 104). The machair is a low-lying landscape dominated by two related land forms: semi-vegetated, active dunes along the coast and, further inland, palaeo-dunes forming undulating sand-hills, supporting unbroken mature grassland.

Machair is highly unstable and prone to wind erosion should the vegetation cap be breached. Once the turf cap is eroded the loose sand of the dune can be simply blown away, leading to rapid deflation of machair plains and the creation of blow-outs. The latter are, to a certain extent, self-perpetuating as wind-tunnel effects increase the erosive power of winds within the blow-out and channel the wind towards the eroding edge of the machair. The machair represents a highly mobile environment in which land surfaces can be both deeply buried and suddenly re-exposed over short periods of time.

#### ARCHAEOLOGICAL BACKGROUND

The area around Sanaighmor Bay has produced a diverse range of archaeological features and finds over the last 40 years, all of which had eroded out of the machair system. Three features have been subject to rescue excavation, but many more have simply been visited repeatedly and the state of erosion and resulting finds noted. This disparate record makes any kind of archaeological synthesis difficult, but the known range stretches from possible Bronze Age crouched inhumations in cists, through Iron Age activity, to post-medieval field systems (RCAHMS 1984, 59–60; DES 1979; NMRS NR 27 SW no 11). The majority of features have been funerary, ranging in date from the Bronze Age to the Iron Age or later, as follows: (a) a short cist containing a crouched inhumation (RCAHMS 1984, 59–60); (b) an extended inhumation in a pit, which may have been a denuded cist (DES 1974, 11); (c) a cremation associated with stones slabs and white quartz pebbles (NMRS NR 27 SW no 19); (d/e) two unexcavated short cists (NMRS NR 27 SW no 26); and (f) four human teeth associated with pot sherds and flint flakes (DES 1960).

It is unknown whether this cluster represents a significant concentration, such as a cemetery, or merely reflects the piecemeal nature of observation. There is certainly the possibility that further burials may have been associated with the extended burial recorded by Peltenburg & Booth (DES 1974).

The type of features range from the burials listed above to highly eroded putative settlement sites, for example a possible settlement site to the south-west of Sanaighmor Bay (DES 1974, 11), later recorded as an eroded artefact scatter (NMRS NR 27 SW no 4), isolated hearths (NMRS NR 27 SW no 17), metal-working areas and associated structural remains (DES 1979), and isolated finds. The rate of erosion is rapid with structures noted by this author in 1992 no longer visible in 1996.

## EXCAVATION IN 1996

## SITE DESCRIPTION PRIOR TO EXCAVATION (ILLUS 2)

The excavations reported here focused on a cist, two cairns and a dyke. Prior to excavation the cist consisted of three edge-set stones with a scatter of burnt bone, and a slight concentration of white quartz pebbles to the south-east. Cairn A was a substantial sub-circular concentration of large rounded and sub-angular stones. Cairn B, however, consisted of a very loose scatter of stones comprising white quartz pebbles. Dyke 1 was a linear spread of stones with no visible surviving coursing along its length. (A second dyke at the eastern end of the blow-out — Dyke 2 — was not excavated and appears to be a later feature.) All four features lay in wind-blown shell sand. No exposed ground surface was observed other than the eroding edge of a putative buried soil to the south of the cist.

## METHODOLOGY

Single-context excavation and recording techniques were employed, contexts were sampled for routine and bulk soil samples; the former are used to determine the soil chemistry while the latter are sieved to retrieve ecofacts and artefacts. The contents of two urns, recovered from the cist and Cairn B, were not emptied on site but excavated in spits under laboratory conditions at AOC (Scotland) Ltd.

Kubiena samples (ie intact soil blocks extracted for micromorphology analysis) were taken from exposed areas of the buried soils. A geophysical survey — by Arkensol Soil Sciences — took place prior to the excavation and the resultant bucket auger survey was conducted during the excavation. All the features, as well as the auger and geophysical survey, were located by total station in reference to the national grid.

## EXCAVATION RESULTS

*Buried soils (illus 2)*

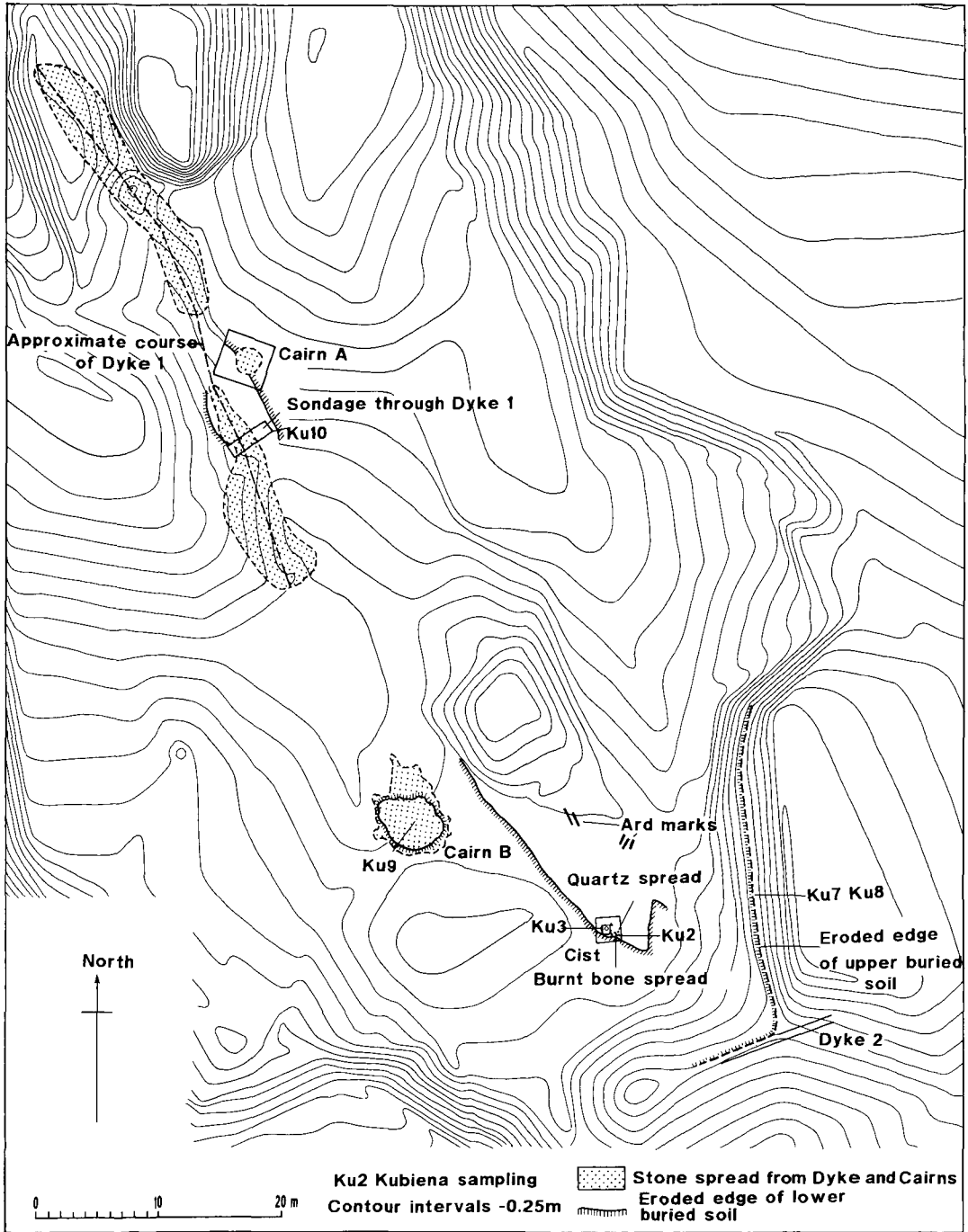
Two distinct horizons of buried soils were noted in the machair blow-out. One horizon was at the current eroded surface within the machair blow-out while the second, more recent, soil was preserved in the edge of the machair blow-out some 1.5 m above the lower soil.

The lower buried soil took the form of three separate fragments, all located around the various archaeological features. There was no physical link between these three fragments, and their only common traits were that they were at approximately the same height above sea level, and shared pedological characteristics (see Ellis, below). The largest area was uncovered around the cist and was at least 38 sq m; it continued on under the edge of the uneroded machair. Just to the east of the cist was a small patch of uneroded A horizon. To the north of the cist were two groups of negative features in the degraded Bh horizon, both interpreted as groups of ard-marks.

The more recent buried soil contained both a B and an A horizon, and appeared to be associated with a second dyke (Dyke 2) at the east end of the machair blow-out.

*The cist (illus 2–4)*

Four edge-set slabs of either metamorphosed sandstone or slate formed a cist measuring 0.6 m by 0.7 m internally, and up to 0.33 m in depth. No capstone was present, and no suitable stone was



ILLUS 2 General site plan

visible nearby. The four stones of the cist all leaned towards the interior, the eastern and western slabs supporting the northern and southern slabs. The base was marked by a single flat slab, which sealed an upright urned cremation below.

The cist had been built within a pit of uncertain dimensions, as its cut could be traced only on the western side. The fill of the cut on this side was a light brown soil, similar in nature to the Bh horizon (see Ellis, below). Elsewhere, the putative edge of the cut was marked by a concentration of stones towards the base of the edge-set cist slabs, assumed to represent packing.

The upper surface of the cist fill was contiguous with the Bh horizon and of a similar nature. The lower fill of the cist was a yellow sand, indistinguishable from the sand into which the cist and urn had been inserted. Samples from both the cist fill and the surrounding pit fill were found to contain cremated bone when sieved.

Several features were found in close proximity to the cist. Although no stratigraphic relationships were identified between the cist and these features, it is thought that their proximity is significant. They included: (a) an orthostat, with four packing stones, projecting just 0.2 m above the present ground surface; (b) a scatter of unstratified burnt bone, containing a copper-alloy ring (see Sheridan, below); and (c) a concentration of white quartz pebbles.

#### *Cairn A (illus 2)*

A putative cairn or stone spread, measuring 3.5 m in diameter and up to 0.2 m high, consisted of a loose concentration of stones. These were mostly rounded beach pebbles measuring up to 0.2 m. There were also some sub-angular stones present which tended to be larger than the rounded ones. The southern edge of the cairn overlay the edge of the degraded Bh horizon surrounding Dyke 1, but otherwise it lay upon featureless sand. The north-east quadrant of the cairn contained a lump of modern, cement-based concrete.

#### *Cairn B (illus 2, 5 & 6)*

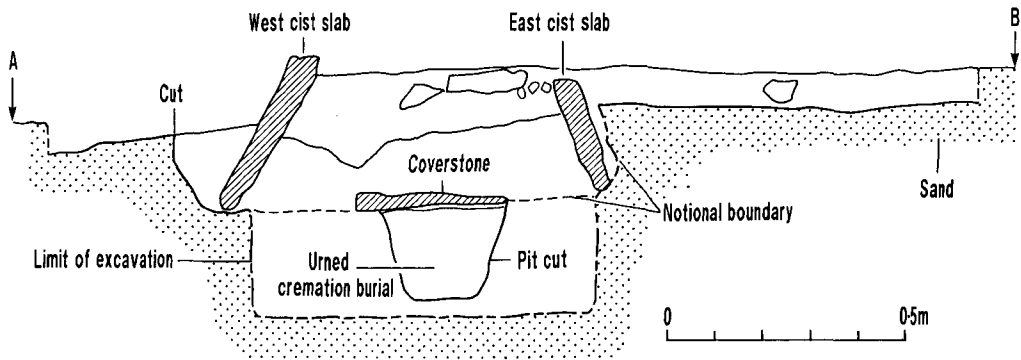
This cairn consisted of a loose scatter of stones measuring 6 m by 5 m, and comprised approximately 120 white quartz pebbles, the largest of which measured 0.14 m.

Below the cairn was a patch of eroded Bh horizon, slightly smaller than the cairn, and up to 0.12 m deep. Two negative features were present in this buried soil. Both features had indistinct edges and were filled with a uniform, mid-brown, sandy fill. Excavation did not clarify the origin or nature of the scoop, and did not penetrate through the buried soil. However, initial cleaning of the sub-circular feature revealed a circular shallow depression, up to 0.03 m deep and c 0.20 m wide, enclosing an urned cremation. Within the depression were up to 12 post- and/or stake-holes set in a ring encircling the urned cremation. The southern part of the circle contained a much more substantial post-hole containing four packing stones.

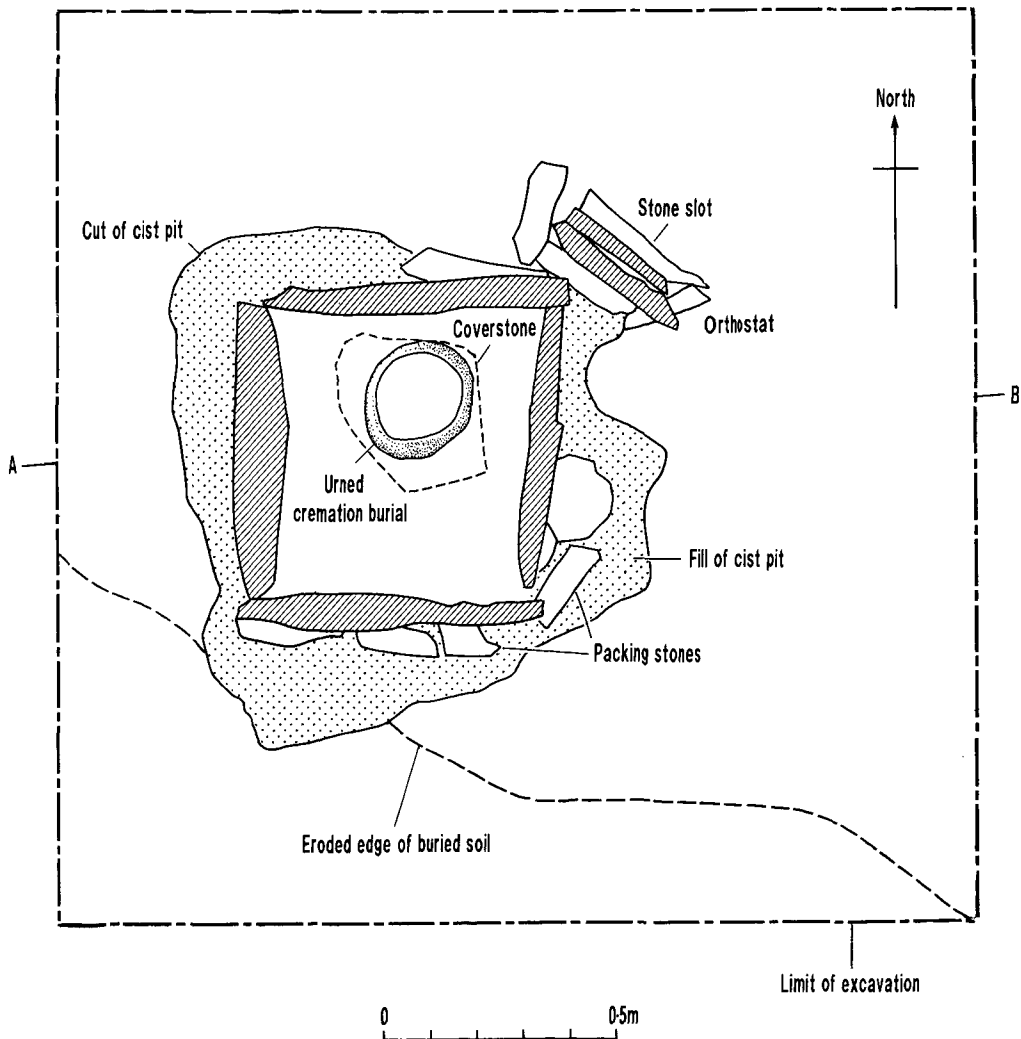
Excavation also revealed that the circle of post- and stake-holes had been cut on the eroded edge of the buried soil, implying that it had been eroded in prehistory (see Ellis, below).

#### *Dyke 1 (illus 2)*

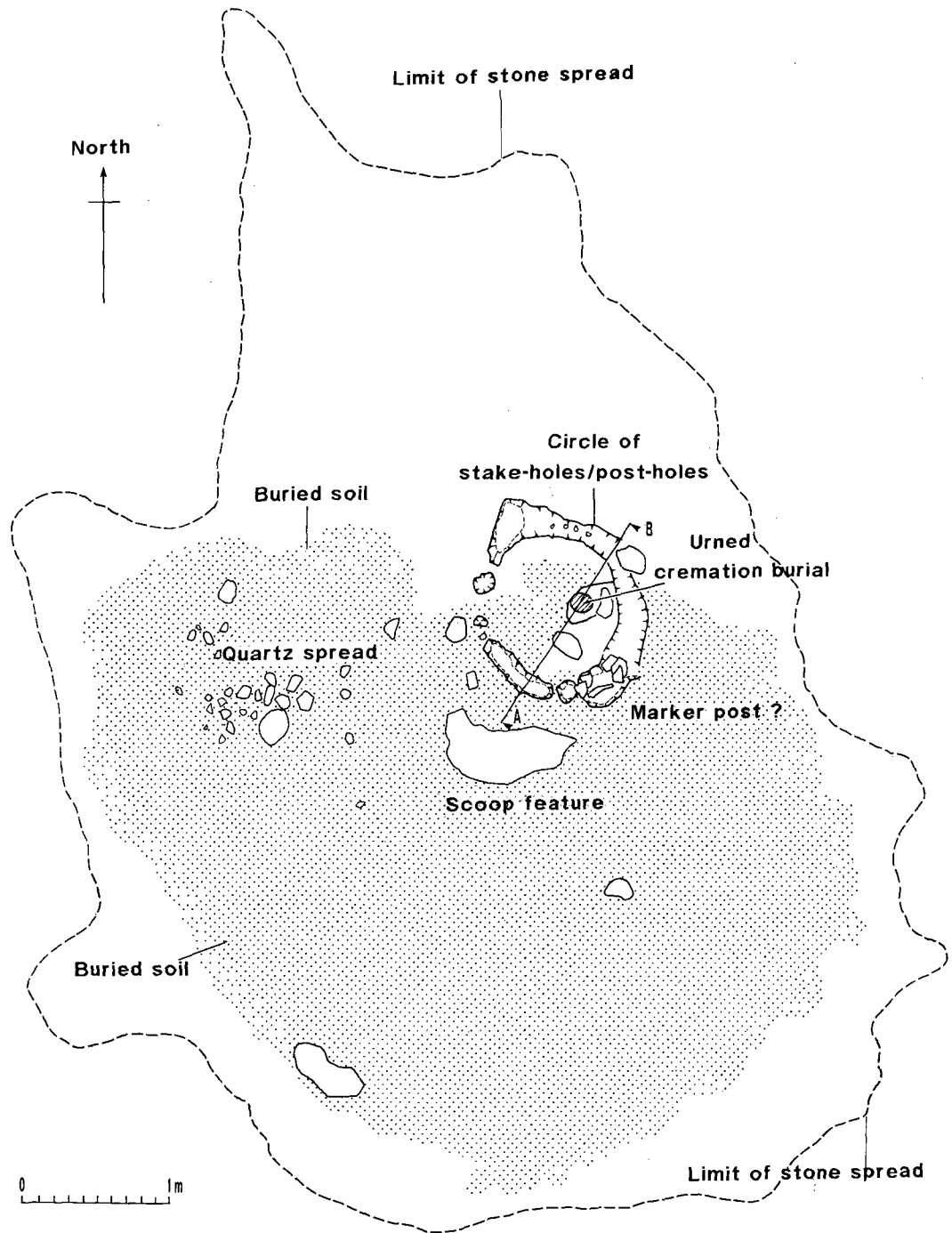
This dyke consisted of a single course of large flat slabs overlying a foundation of small to medium rounded pebbles. These smaller stones lay up to 0.25 m below the ground surface; however, no cut for a bedding trench was observed. The dyke is situated in the middle of a tongue of eroded buried soil some 0.6 m wide to the south-west of the wall and up to 2.0 m wide to the



ILLUS 3 Section through the cist

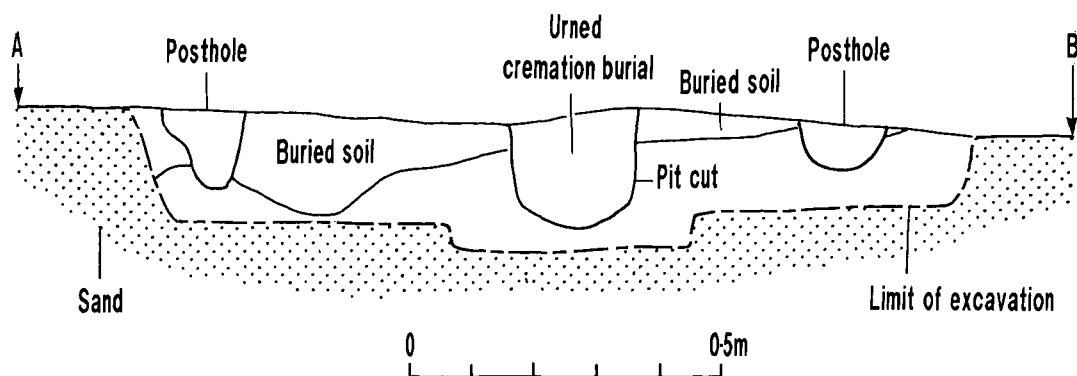


ILLUS 4 Plan of the cist



ILLUS 5 Plan of Cairn B





ILLUS 6 Section through the stake-hole ring and cremation pit in Cairn B

north-east of the wall. The buried soil on both sides of the dyke appears to have been sheltered from further wind erosion by the wall.

## RADIOCARBON DATES

Although the sieving programme yielded a small amount of charred material from the urn in the cist (see Rankin, below), the urn also included uncharred material, and it was felt that the cremated bone from the two urns would provide a more taphonomically secure date. The cremation was insufficiently hot to fully combust all of the collagen within the bones and some of it was only charred; it was this material which was dated.

The radiocarbon dates were obtained from the University of Arizona via the Scottish Universities Research and Reactor Centre (SURRC). The dates were calibrated by SURRC using CALIB and the results are listed in Table 1.

TABLE 1

Radiocarbon dates

Lab code	Sample material	Yrs BP	$\delta^{13}C$	Calibrated dates	
				1 sigma	2 sigma
AA-26244	Cremated human bone from the cist	1655 $\pm$ 50	-24.3‰	AD 340 – 428	AD 250 – 530
AA-26243	Cremated human bone from Cairn B	2300 $\pm$ 50	-24.5‰	400 – 374 BC	409 – 210 BC

Given that urned cremations are generally associated with the Bronze Age, the dates from the Sanaigmhor cremations may seem spuriously young. A similar problem was encountered at a Neolithic to Early Bronze Age site at Barrowhills, Radley, Oxfordshire, where cremated bone also yielded surprisingly young dates. In this instance it was suspected that an environmental contaminant may have been responsible (Hedges *et al* 1990, 220–1). However, Gordon Cook (pers comm) of SURRC could see no reason why the ages should be invalid as the pre-treatment processes which were used would have removed contaminants such as humic acid.

This, however, is not the conclusion of the pottery report (below), where Rosemary Cowie offers the opinion that the two urns, although without exact parallels, have more in common with Bronze Age pottery than Iron Age pottery. This author (MC) considers that the absence of any methodological criticism of the radiocarbon dates, taken with the lack of a detailed pottery

typology of Islay, means that the possibility that the radiocarbon dates are correct should not be rejected.

## POTTERY REPORT

Rosemary Cowie

The urns were catalogued according to the methodology outlined in PCRG 1992, following treatment by conservation staff at AOC (Scotland) Ltd. In the case of the larger vessel, thin section analysis was subsequently undertaken by J Senior, University of Durham. A copy of the full report has been lodged with the site archive at the National Monuments Record of Scotland (RCAHMS).

### DESCRIPTION (ILLUS 7)

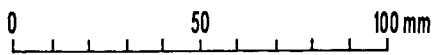
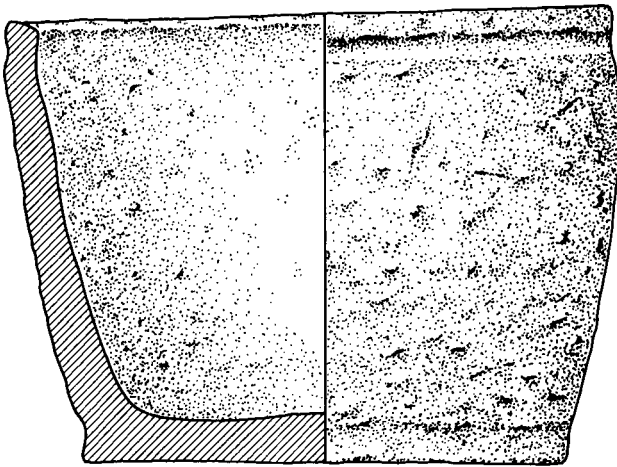
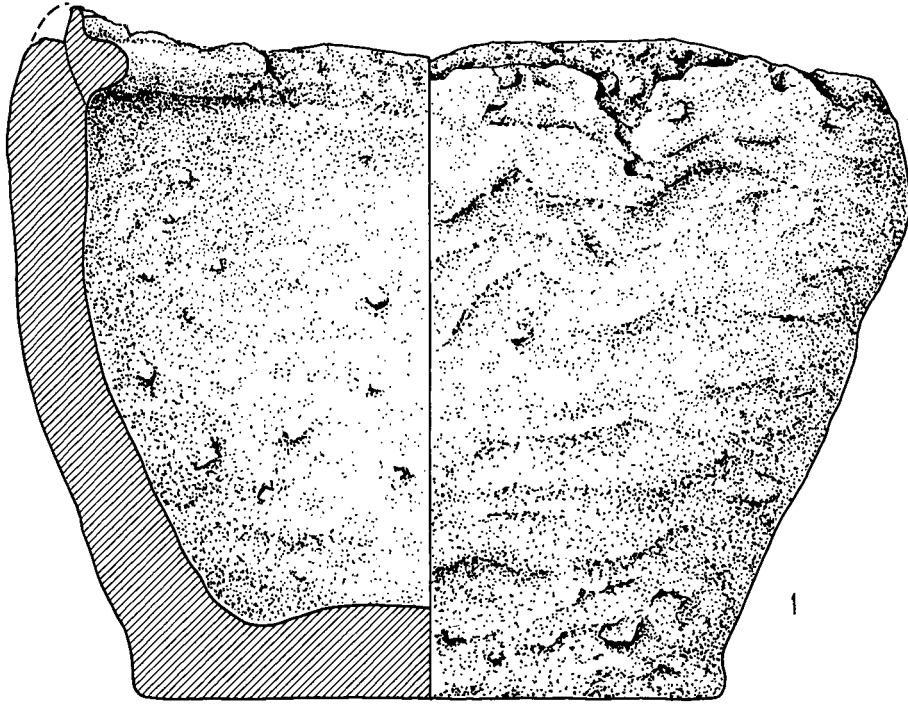
**Cist** The urn from the cist was found almost complete, inserted upright into the sand at the base of the cist. A stone lid sealed the contents of the pot. Its condition is poor — the body of the pot has split from rim to base into three main sections. The rim bevel is in fragments and the entire outer lip of the bevel has crumbled away, where the inherent weakness of a relatively poorly fired vessel has been compounded by the weight of the stone lid.

The pot has a simple, gently shouldered profile, its walls bulging out slightly from an upright rim before tapering unevenly towards a concave base. The vessel is entirely plain. The rim is 260–280 mm in diameter and has a broad, internally expanded bevel with a maximum width of 25 mm. The proportions of the urn are chunky, with walls of between 16–20 mm in thickness and a height not exceeding 186 mm. The irregular base measures around 180 mm in diameter and between 18–24 mm in thickness.

Thin section analysis of the pot by J Senior revealed that the clay had been tempered with angular fragments of olivine dolerite and angular crystal fragments of minerals resulting from the mechanical break-up of the olivine dolerite. The fabric is friable and the grits are coarsely crushed, with sizes mostly under 15 mm, although a few reach 22 mm. Sub-rounded, white quartzite grits up to 7 mm in size are also present and these may be a component of the clay from which the pot was made. The fractured core of two joining rim bevel sherds reveals the burnt-out impressions of ‘mats’ of very fine fibres of organic origin. Manufacture was crude and although no construction joins show in the break-edges, certain surface irregularities indicate that the pot was built by ring construction. For example, the rim bevel was added as a separate strip of clay to the uppermost ring of the vessel. The base was poorly attached, as indicated by the parting of the lower wall on the interior of the vessel. Numerous finger indentations pepper the vessel surfaces and grits protrude on the interior. The fine stippling of the clay surface of the exterior of the vessel may be the result of wiping, or it may indicate that the vessel was wrapped, to support it, during manufacture. The vessel is orange-brown on the exterior, dark grey on the upper part of the interior surface, shading to buff on the lower walls and base. Both colour, and the soft, friable fabric indicate that firing temperatures were low. Firing position is uncertain as there is considerable soot blackening on parts of the rim bevel but also lighter sooting over the underside of the base. There is also slight spalling around the edge of the base.

The coarseness of the fabric and the general crudeness of the vessel indicate that it is unlikely to have travelled any great distance from its point of manufacture to its place of deposition and it is quite possible that the urn was purpose-made for burial.

**Cairn B** The pot from Cairn B is complete and in reasonable condition, apart from three vertical cracks, running from the rim to within a few centimetres of the base, and a small amount of spalling on the underside of the base. The vessel measures 160 mm in rim diameter, 113 mm in height and 125–130 mm at the base. The rim is of simple, upright form, with a narrow internal bevel varying in width between 8–11 mm; the walls are 10–11 mm in thickness, increasing to 22 mm at the base. The vessel has a gently curving



ILLUS 7 Two urns: 7.1 from the cist and 7.2 from Cairn B

profile interrupted only by a shallow channel just below the rim edge, simply the result of manipulation of the clay during the forming of the rim. The pot has a slightly protruding foot owing to the presence of occasional finger indentations left during formation of the lower wall of the vessel. The vessel is otherwise completely plain.

The surface has a pimply appearance owing to the protrusion of numerous small grits. As the vessel is complete, the fabric could not be analysed in detail. The protruding grits, however, are mainly sub-angular, a discoloured dark, greyish brown and up to 11 mm in size, with a few reddish grits interspersed. In addition, small circular pores are visible in the fabric under magnification. Evidence for manufacture is slight — a hairline crack, which shows on the exterior and interior surfaces and runs roughly horizontally for some distance midway round the vessel, provides the sole suggestion of a construction join. The exterior surface shows a number of organic impressions and the rim bevel may have a burnt-out seed impression. Firing control was poor as indicated by the mottled colouring of both exterior and interior surfaces, which are mainly orange-brown with tinges of brick-red. A pronounced ring of sooting on the underside of the base may indicate that the vessel was fired in an upright position. There is also a small patch of fire-clouding on the exterior wall of the upper body and extending along the rim edge for a short distance.

## DISCUSSION

Discussion of the wider relationships of the two urns from Sanaigmhor is constrained by their simplicity of form and lack of decoration. When the two pots were examined initially, in advance of the radiocarbon determinations, the available ceramic parallels, their general context and, more particularly, their use as cinerary urns (in the classic sense as containers for cremated bones) combined to make a date in the second millennium BC the likeliest option. However, it was felt that the dissimilarities between the two pots could well reflect differing dates for their deposition. In the event, the radiocarbon dates of the samples of cremated bone from the two urns have both been found to fall well outwith the expected range. The urn from Cairn B has yielded a radiocarbon date with a range (at 2 sigma) of 409–210 cal BC and the urn within the cist a range of cal AD 250–530. However, from the ceramic perspective, there are still grounds for adhering to the original view. The arguments relate to burial rite and ceramic form.

### *Burial rite*

A brief survey of the scarce burial evidence for northern Britain in the Iron Age suggests there is nothing directly comparable to Sanaigmhor in terms of funerary rite (cf Whimster 1981, 172–4, 410–16; Armit 1997, 95–8). Outside the area under study, the sites of Broxmouth and Dryburn Bridge have produced a series of inhumations in grave pits dating to the later part of the first millennium BC (Hill 1982, 179–80; Triscott 1982, 122). From the early centuries AD there are a number of examples of inhumation in cists, principally in eastern Scotland (Armit 1997, 96) and, more rarely, multiple interments in cists, as at Lochend (Longworth 1967) and North Belton, near Dunbar (Crone 1992). Although occasionally accompanied by personal ornaments (such as brooches and pins) and other items (ibid, 166), no certain examples of accessory vessels are known. Cremation burials are also known. At Alnham, Northumberland, for example, an earthen barrow covered a cremation, which was associated with a bronze ring-headed pin of the first to second centuries AD (Jobey & Tait 1966, 29–33). Again, however, pottery is conspicuously absent. The few inurned Roman cremation burials known from Scotland have not been considered here.

Turning to Argyll itself, there is a single example of a possible Iron Age cremation inserted into a Bronze Age cist at Acharn in Morvern (Ritchie & Thornber 1988). The cist contained a

scatter of cremated bone throughout its contents, with a concentration of cremated bone in a small pit dug into the subsoil. Charcoal from the pit yielded a radiocarbon date (at 2 sigma) of cal AD 17–388 (GU-2070). The pit also contained flint and a few small sherds of pottery; the former was presumed to derive from the primary use of the cist, while the sherds were thought, on the basis of their fabric, to post-date the Bronze Age, an observation which was in agreement with the date obtained from the charcoal (*ibid.*, 96). The small vessel represented by the sherds has a simple rim measuring only 100 mm in diameter and bears no resemblance to either of the Sanaigmhor urns.

At Claggan, in Morvern, a group of three cairns was excavated and a number of radiocarbon dates were obtained from charcoal (Ritchie & Thornber 1975, 21–2). While Cairns 1 and 3 produced radiocarbon dates with a range in the late second millennium BC, charcoal from the old land surface under Cairn 2, yielded two dates with a span of 826–388 cal BC (SRR-593 & 599) (Ritchie & Thornber 1975; Ashmore 1997, 268–9, 272–3). Cairns 1 and 3 both contained cremations, whereas Cairn 2 had no trace of either cremated bone, nor other burial remains. The dates from Cairn 2 were considered by Close-Brooks (1995, 270) to be surprisingly late, and it was felt that their reliability was open to question in the absence of further radiocarbon determinations from other sites.

Finally, new light has been thrown on regional funerary traditions as a result of the radiocarbon dating of human bones recovered from the MacArthur Cave, Oban, to the mid to late first millennium cal BC (Saville & Hallén 1994). In discussing the results, the authors (*ibid.*, 721) tentatively suggested that these might be indicative of a wider pattern of later prehistoric cave burial in the region.

In summary, there is thus currently no body of evidence to suggest that the rite of depositing cremations within pottery vessels persisted in Scotland beyond the end of the second millennium BC. However, the Acharn cist highlights the possibilities for disturbance and reuse of earlier funerary structures.

### *Ceramic material*

The development of plain, handmade pottery is, as yet, little understood for most periods in the West of Scotland, and simple undecorated pots are notoriously difficult to date in isolation. Nevertheless, a combination of form and fabric usually allow pots to be assigned to broad date spans with some degree of confidence (Lane & Cowie 1997, 497). On this basis, the general characteristics of the two Sanaigmhor pots, particularly the urn from the cist, indicate affinity with the Bronze Age pottery of the region and dissimilarity to the available, but admittedly limited, Iron Age ceramic repertoire from the region.

With regard to possible comparative evidence from Iron Age sites, there is a striking lack of ceramic assemblages from the southern inner Hebrides and mainland Argyll, at least by comparison with the wealth of material from north of the Firth of Lorn (*cf.* Lane 1990, 108, 123). Islay lies outside the main zone of distribution of the style of decorated Hebridean pottery, Dun Cul Bhuirg, Iona being the most southerly site to have produced such pottery in any quantity (Ritchie & Lane 1980). The two main excavated sites in the region to have produced domestic assemblages of later prehistoric pottery are Balloch Hill in Kintyre (Peltenburg 1982) and Kilellan on Islay (Ritchie *forthcoming*). However, their value for comparative purposes is limited by their small size and the fragmentary nature of the material.

The Iron Age assemblage from Balloch Hill comprises a minimum of seven pots, only four of which have part of the rim surviving. The few recognizable forms include a miniature thumb

pot and a globular bowl, while a number of sherds are presumed to derive from coarse, bucket-shaped vessels (Peltenburg 1982, 174–7). Overall, the series of radiocarbon dates for the Iron Age (Phase 3) occupation has an unhelpfully broad range of 767 cal BC–AD 72 (GU-1033; HAR-2043) (Peltenburg 1982, 203–4; Ashmore 1997, 273, 275). The Iron Age pottery from Kilellan derives from site J/K, with associated radiocarbon dates ranging from 183 cal BC–AD 224 (GU-3515, GU-3516) (Ritchie forthcoming; Ashmore 1997, 272, 276–7). Although no vessel profiles from this assemblage could be fully reconstructed, an open bowl form with gently flaring walls appears to be present.

Finally, mention may be made of the small quantity of Iron Age pottery retrieved from an area of old land surface in the proximity of a hearth at Ardnave on Islay (Ritchie & Welfare 1983). Charcoal taken from the top of the hearth produced a radiocarbon date with a range (at 2 sigma) of cal AD 128–405 (GU-1443). The restored vessel is of globular form, with thin walls and an everted rim, and its fabric is organically tempered. In addition, a deposit of antler within the old ground surface associated with the same hearth yielded a date with a range (at 2 sigma) cal AD 343–619 (GU-1273). A further sherd of organically tempered pottery was firmly associated with this deposit (*ibid.*, 314–15).

Beyond the immediate area, small quantities of plain bucket- and barrel-shaped vessels were recovered alongside decorated Iron Age ceramics at Dun Mor Vaul on Tiree (MacKie 1974). This plain component — MacKie's 'Dunagoil Ware' — comprised plain vessels made in a gritty fabric, with uneven, pimply surfaces (*ibid.*, 157). Such vessels appeared in the two phases of occupation pre-dating the construction of the broch in the first century AD (Ritchie 1988, 37); they were present, in a slightly larger quantity, in the primary broch occupation layer and occurred, in much smaller quantities, in the later levels (MacKie 1974, figs 21–2, 161–2; 1997, Table 8.2, 168). Again, they have little or nothing in common with the Sanaighmor urns beyond the coarseness of their manufacture.

Given the ostensibly late date of the Sanaighmor cist (cal AD 250–530), it is also necessary to mention, if only to discount, the post-Roman 'Plain Style' of pottery current in the northern Hebrides during the second half of the first millennium AD (Lane 1990, 117). Best known from the Udal, North Uist, this tradition is characterized by plain bucket and shouldered jar forms, with pronounced tongue-and-groove construction joins.

In summary, comparison of the Sanaighmor vessels with the range of Iron Age pottery from the southern Inner Hebrides and mainland Argyll reveals no similarities, though admittedly this is hampered by the small size of the assemblages and chronological uncertainties.

Turning now to a consideration of comparative evidence for the Bronze Age, Cordoned Urns are the predominant form of Bronze Age cinerary urn in Argyll generally. There, wholly plain vessels are relatively uncommon, though early accounts of the discovery of unspecified 'urns' have always to be borne in mind (*cf.* Haggarty 1991, 89–90). Apart from Sanaighmor, the only other plain urn recorded from a funerary context in Islay is from Ardnave Loch, where the pot was discovered in pieces close to a cist containing cremated bones (Ritchie & Welfare 1983). The excavators considered that the urn had originally been placed within a protective covering of quartzite pebbles. Despite its smaller size, inturned, angular rim and flaring base, the squat profile of this vessel and coarse rock-tempered fabric are features shared with the urn from the cist at Sanaighmor.

A pair of cremation urns from Balloch Hill, however, invites closer comparison (Peltenburg 1982). The two urns had been placed upright in a cleft of rock; one contained a well-made and heavily decorated miniature vessel and all three vessels had clay seals. Despite the unusual oval plan of the plain urns, points of similarity include a broad, internally bevelled rim, similar height

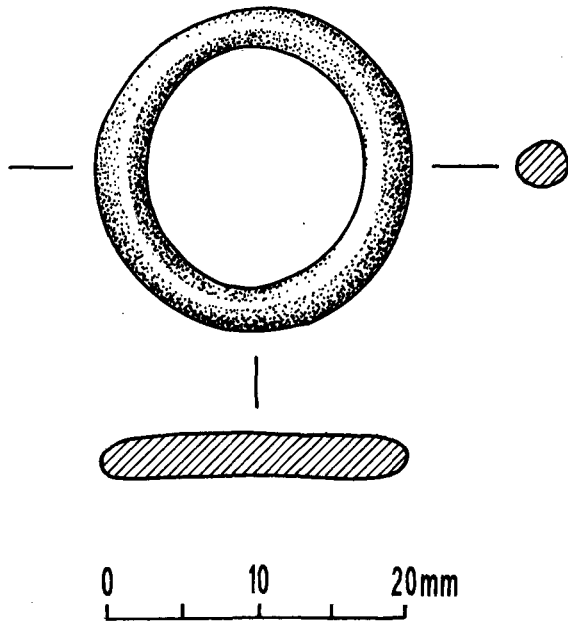
and wall thicknesses and a coarse fabric containing large fragments of rock temper. Indeed, Peltenburg proposed, on the basis of the poor quality of their manufacture, that the urns must either have been made on site or, alternatively, have been brought empty to the place of burial, perhaps supported on wooden trays, as suggested by a fragment of a wooden dish or tray preserved under one of the urns (*ibid*, 201). The broad internal bevel on these urns was considered functional in nature, being designed to provide adequate support for the clay sealings (*ibid*, 173, 201). In this respect, it is of interest that, at Sanaighmor, the urn was sealed with a heavy stone capping after deposition in the pit at the base of the cist, undoubtedly leading to the disintegration of its internal bevel. It may also be noted that J Senior's analysis of the urn revealed that the inclusions were of olivine dolerite which may well have been obtained locally, either as pebbles from glacial drift deposits or from the dolerite dykes in the vicinity of Ardnave, some 5 km from Sanaighmor.

The urns from both Balloch Hill and from Ardnave Loch were considered by their excavators to be without close local parallel; in each case, it was suggested that they could be considered variants of the class of 'bucket urns' described by Morrison in his corpus of the cinerary urns of south-west Scotland (Morrison 1968, 83–5; Peltenburg 1982, 173; Ritchie & Welfare 1983, 362). Morrison used the term 'bucket-shaped', essentially in a formal sense, to describe featureless, simple urns which are mostly plain but occasionally lightly decorated, generally deposited in an upright position and always associated with cremation (Morrison 1968, 84–5). The urn from the cist at Sanaighmor may also be seen as a local variant of this broad tradition. The Balloch Hill cremations yielded only one radiocarbon date, with a calibrated range of 1870–1460 cal BC (HAR-1902) (Peltenburg 1982, 203; Ashmore 1997, 265).

Turning to the smaller vessel from Sanaighmor, no closely comparable Bronze Age vessels are known to the writer from Argyll. However, the form of the rim is comparable to that of a rim sherd, with possible fingernail incision on the narrow rim bevel and slight pinching below the rim, from a house site at Cul a' Bhaile, Jura, dating to the late second millennium BC (Stevenson 1984, 145). Mention should also be made of the discovery of a few plain rim sherds and tiny fragments of cremated bone from a severely disturbed cairn at Kinlochaline, Morvern. Although on the basis of fabric, the sherds appeared to be related to pottery of the food vessel/cinerary urn tradition, Henshall considered that the rounded form of the rim made this attribution impossible to verify and concluded that no close parallels could be found for the vessel (Ritchie & Thornber 1975, 23–4).

Finally, mention must be made of the plain wares among the Early Bronze Age domestic assemblages from machair sites in the Hebrides. As yet, there is no ready point of comparison between the Sanaighmor vessels and the undecorated domestic wares apart from broad similarities with the coarse, profusely tempered fabric of pottery from sites such as Kilellan (Ritchie, forthcoming), Rosinish, Benbecula (Shepherd 1976) and Sorisdale, Coll (Ritchie & Crawford 1978).

To conclude, neither Sanaighmor vessel fits neatly into any of the well-known categories of 'typical' Bronze Age pottery. However, there are even fewer points of comparison with the limited body of Iron Age material. On balance, it is suggested that the second millennium still provides a better chronological context for the pots than that suggested by the radiocarbon dates. The dates alone provide insufficient grounds for proposing Iron Age funerary and ceramic traditions in the region that are wholly without parallel. The solution may be to envisage the reuse of ancient ceramic containers encountered on re-opening earlier graves. While this sounds implausible, the cist at Acharn offers a precedent for interment in a much earlier cist. Such a solution begs fewer



ILLUS 8 Copper-alloy ring

questions than wholesale dismissal of the arguments for the Bronze Age date of the pottery. Hopefully, future discoveries will help to settle the issue.

## COPPER-ALLOY RING

Alison Sheridan

### DESCRIPTION (ILLUS 8)

The ring is intact, slightly irregular in shape, and formed of cast copper alloy. The external diameter is 20.8–21.3 mm, width of band 2.5–3.1 mm, and thickness 2.4–2.9 mm. The band is a flattish circle in section. The object has a dark green-grey patina, with one blister patch and several speckles of reddish cuprite (a corrosion product). Non-destructive compositional analysis using X-ray fluorescence spectrometry (by Paul Wilthew, National Museums of Scotland) revealed that the principal elements are copper, tin and lead.

### DISCUSSION

The ring's size indicates that it could have been a finger ring for a narrow, adult-sized finger — although this is not its only possible function. The key question is whether it could have been part of the grave assemblage from the disturbed cist. It was found in an unstratified position, but amongst a spread of burnt bone which might have come from a secondary deposit in the cist. The ring was unburnt. Unfortunately, simple copper-alloy rings were used in Britain at various times in the past, between the first millennium BC and this century. Its composition is not particularly informative: while it is consistent with Bronze Age bronze, the absence of zinc does not rule out a much later date.



While both cremations have provided radiocarbon dates suggesting a late Iron Age date, some doubt has been cast over the validity of these dates and this author believes them to be unrepresentative. The urn from the cist offers some pointers towards an alternative date (Cowie, above). If the urn is indeed a local variant of the broad 'bucket urn' tradition, then — on the basis of an admittedly single radiocarbon date for the Balloch Hill comparanda — it could date to the first half of the second millennium BC (in calendar years). Similarly, the smaller urn from Cairn B could, on the basis of possible comparanda, date to the early second millennium (or even earlier). However, given the extreme paucity of comparative material and of dated second- and first-millennium BC funerary material from this part of Scotland, a later date cannot be ruled out.

Simple small copper-alloy rings similar to the Sanaigmhor example have been found in several late Bronze Age hoards in Britain and Ireland of the 'Ewart Park' metal-working phase, 950–750 BC. A hoard from St Andrews, discovered in 1990, is characteristic in that it contains multiple examples (22 plus fragments), but unusual in that remains of thread binding were present, some linking two or more rings (Cowie *et al* 1991). A possible function as part of horse harness gear has been suggested (eg for the examples in the hoard from Llangwyllog, Anglesey: Lynch 1991). To date no such ring has been found in a funerary context, although more elaborate penannular finger rings of gold have been found in a late second millennium BC cremation burial near Duff House, Banff (Coles 1964).

There is currently insufficient evidence to demonstrate whether the primary or secondary cremation deposit in the cist could have dated to the early first millennium BC (when these simple copper-alloy rings seem first to appear), but as noted above, the primary deposit could pre-date the ring by a thousand years. This, plus the fact that no funerary use of these simple rings is attested elsewhere, suggests that the proximity of the ring to the cremated bone could well be fortuitous. The ring could have been deposited during the first millennium BC, or it could be considerably younger.

## CREMATED BONE

Kathleen McSweeney

The following is a summary of a more detailed report and inventory which has been deposited with the project archive at the National Monuments Record of Scotland (RCAHMS).

## METHODS

Every fragment, including the smallest, was examined and sorted according to anatomical area. General methods of ageing and sexing used are those outlined in Bass (1987) and Brothwell (1981). The identification and assessments of age of dental remains is based on van Beek (1983).

## RESULTS

TABLE 2

Cremated individuals

Feature	No of individuals	Sex	Age
The cist	1	possibly female	c 25 years
Cairn B	1	unknown	10–30 years

**Cist** The bone's condition was poor and, apart from some small hand and foot bones, there were no complete bones. Fragment size was generally small. Some of the larger longbone fragments were about 55–60 mm long but the majority of fragments were 35–40 mm, or less. There had been considerable splintering, distortion and splitting of layers of bone. The poor condition of the remains meant that the identification rate 63% of the total weight was relatively poor.

The individual's age at death is estimated to be around 25 years. There was very little diagnostic evidence for sex. There was a slight hint of female sex in a fragment of frontal bone. Although this single fragment is insufficient to say with certainty that this was a female, a lack of any evidence for marked musculature or robustness indicates that this person is more likely to be female than male.

Most skeletal elements were present, and there were no duplicated bones, suggesting that the remains represent the full cremation of a single individual. The total weight was approximately 1186 g, within the expected range of McKinley's (1993, 284) study of modern cremations had they been found in archaeological settings (ie 1001–2422 g).

No pathological lesions were noted.

**Cairn B** The condition of these remains was poorer than those from the cist. There were no complete bones and fragment size was generally very small. A few pieces of longbone shaft were about 40 mm in length, but the vast majority of the fragments were 20 mm, or less. In addition, there had been considerable fracturing of bone with curved lateral splintering of longbone fragments and separation of cranial tables. These factors made identification of anatomical provenance difficult and accounts for the high proportion of unidentifiable fragments (49% of total weight).

As with the cist remains, there was no evidence to suggest that more than one individual had been deposited in the urn. Remains of skull, mandible, teeth, spine, ribs, scapula, upper and lower limbs, pelvis, hands and feet were identified. As most skeletal areas were present, at least in part, it would appear that these remains represent a fairly complete cremation of a single individual and not simply a token deposit.

The individual's sex is uncertain and age at death is estimated to be probably between 10 and 30 years of age.

The total weight of the remains was approximately 680 g, fairly light for a full skeleton but by no means unusual.

The poor condition of the remains made the identification and assessment of disease difficult. Lesions that may be pathological in origin were identified on six fragments of cranium. These fragments had slight pitting on their external surfaces which may be indicative of the presence of porotic hyperostosis, bony changes thought to develop as a result of anaemia (Roberts & Manchester 1995, 165–71). Anaemia can be caused by a deficiency of iron in the diet, or injury or disease. It is thought that the bony changes develop during childhood. However, the vault lesions in this case were only slight and without more positive evidence such a diagnosis can be no more than tentative.

**Other deposits** Unstratified bone from around the cist was very light in colour and had an eroded appearance, consistent with a history of inclusion in the wind-blown coarse sand overlying the whole site. Only a few fragments could be identified, some indeterminate longbone fragments and the roots of two teeth: an upper second molar, which gave an age in excess of 15, and an indeterminate tooth root which belonged to an individual over 11 years.

Bones from within the cut for the Cairn B urn were very small, on average only about 10–15 mm, and only a small proportion, 26% of the total weight, could be identified. The identified fragments consisted of a few pieces of cranium, indeterminate longbone fragments and some hand or foot bones. Three fragments of cranium had open sutural edges and were not inconsistent with belonging with those contained in the urn. Although general colour was slightly darker and fragment size smaller, these differences may be due to deposition in soil as opposed to in the urn.

## CREMATION TECHNOLOGY AND BURIAL PRACTICES

Although the size of the fragments from Cairn B are generally smaller than those from the cist, colour and fracture pattern of the material from the two urned cremations were very similar, and the following discussion applies to both.

The bones had been subjected to a fairly marked degree of cracking, twisting and curved lateral splintering. In addition, many cranial fragments had warped, causing the inner and outer tables to separate. This indicates that a high temperature was achieved during firing. Ubelaker (1978, 35) suggests that curved lateral splintering and marked warping can be indicative of bone being burnt soon after death. This suggestion, however, is difficult to support in an archaeological context.

The predominant colour of the remains was a light grey-white. The internal parts of some of the shafts of larger longbones were dark grey or black in colour, some cranial fragments were bluish, and some bones of the extremities, particularly feet, dark grey to black. It is known that the colour of bone changes with increasing temperature (Ubelaker 1978, 34) — the higher the temperature, the lighter the colour. Black colouring occurs when temperatures do not reach 800°C, while temperatures above 800°C produce calcined bone ranging in colour from bluish-grey to white. Furnaces in modern crematoria operate at between 820°C and 980°C (Wells 1960, 35). The grey-white colour of most bone fragments from this urn indicates that a temperature in excess of 800°C, and similar to modern crematoria, was reached during the firing process. The presence of black, grey and blue fragments indicate that combustion was not even throughout the skeleton. Poor calcination was evident among fragments of the skull, longbones and hands and feet, a common finding, suggesting that the body was probably burned in a supine position.

It would seem that following firing, the remains were carefully collected before being placed in the urn. No major skeletal parts were missing and many small bones and teeth were included. The weight of the remains of the cist were within the range expected from a modern adult cremation in an archaeological setting (McKinley 1993, 285). That of Cairn B, even if Context 105 is added, is lower than the modern range, but similar to average weights found by McKinley (1993, 285) in cremation cemeteries at Sancton and St Stevens.

It is not clear whether the small fragment size is due to the remains being deliberately broken after cremation, as most of the bone had broken along fracture lines produced during the burning process. McKinley (1993, 283) noted, however, during her examinations of modern cremated material, that cooled bone was slightly less brittle. It is possible that smaller fragment size is indicative of the burnt remains being disturbed before they were cool, but deliberate crushing cannot be ruled out.

There was no evidence for any stratigraphic sequence to the distribution of bone fragments within the urn.

## MACROPLANT REMAINS

Dorothy Rankin

The following is a summary of a longer report which has been deposited with the project archive at the National Monuments Record of Scotland (RCAHMS).

## METHOD

A total of 20 bulk soil samples varying between 2 and 16 l in volume, together with 12 special or purposive samples of < 1 l in volume, were processed using a system of flotation and wet-sieving,

adapted from the Sirāf system (Williams 1973). The identifications of weed seeds and cereals were made using modern comparative material from the reference collection of AOC (Scotland) Ltd. The nomenclature for wild species follows that of the *Flora Europaea* (Tutin *et al* 1964–80).

#### ASSEMBLAGE

**Carbonized** The species represented by carbonized remains include *Raphanus raphanistrum* L (wild radish), *Spergula arvensis* L (corn spurry), *Bilderdykia convolvulus* (L) Dumort (black bindweed), and *Carex* sp (sedge). The condition of the seeds was variable. Some were so degraded that it was only possible to identify them to genus or to family: *Vicia/Lathyrus* sp (vetch/vetchling) and Polygonaceae/Cyperaceae indet (knotweed/sedge). The majority of samples comprised of charred seeds, although other plant parts were also represented such as stem fragments, culm nodes and a possible rhizome. The majority of these were identified as belonging to the grass family (Gramineae indet). All the species identified are common weeds of cultivation.

**Uncharred** The uncharred seed assemblage included *Urtica urens* L (small nettle), *Galium verum* L (lady's bedstraw), *Rumex* sp (dock), *Ranunculus* sp (buttercup), *Carex* sp (sedge) and plant parts identified as Gramineae indet, belonging to the grass family. Of the seeds which could be identified to species level (*Urtica urens* and *Galium verum*), lady's bedstraw is associated with maritime dunes and clifftops and small nettle with nitrogenous friable soils of waste ground and cultivated land. They are likely to reflect the local vegetation of the site.

TABLE 3

Macroplant remains

	Spit Litres	Cist fill 21	Cist urn 9 <1	Cairn B subsoil 16	Cairn B post-hole 2	Urn in Cairn B 8 <1	Nat. sand 37	Cairn B scoop 9	A horiz. 11
Charred plant remains									
<i>Raphanus raphanistrum</i> L		2	1					1	
<i>Raphanus raphanistrum</i> L cf. <i>Raphanus</i> sp		1							
<i>Carex</i> sp: trigonous		1			1				
<i>Carex</i> sp: biconvex									
Polygonaceae/Cyperaceae indet.		1							
<i>Bilderdykia concolvulus</i> (L) Dumort								1	
<i>Spergula arvensis</i> L				1			1		
<i>Vicia/Lathyrus</i> sp			1	1					
Gramineae indet					1				
Gramineae indet		2	1				1		
Dicotyledon		1							
Indeterminate		1							
Uncharred plant remains			1	5		3	10		9

#### DISCUSSION

The macroplant assemblage was restricted to 'wild' species, commonly associated with cultivated/disturbed ground. These species are commonly viewed as weeds of cultivation, but they can also be crops in their own right, particularly the wild radish and the corn spurry. In Shetland the seeds of corn spurry have been specifically cultivated for human use and it is called 'meal plant' (Salisbury 1961, 246). Corn spurry was also found at excavations at Crosskirk Broch, Caithness,

where its presence indicated that it 'may have been exploited as food' (Dickson & Dickson 1984, 155).

In most cases the presence of uncharred material in the sampled contexts is considered to be the product of bioturbation, either through root action or animal activity. This would account for material through the surrounding contexts of all the features and the unsealed urn under Cairn B, and may even account for the fill of the cist's urn. Alternatively, the material may have survived *in situ*, due to the damp conditions within the upright urn.

## SOILS

Clare Ellis

The following is a summary of a more extensive original report which has been deposited with the project archive at the National Monuments Record of Scotland (RCAHMS).

### SUMMARY

The machair blow-out contained the remains of two different buried soils: a lower series of isolated fragments with which the archaeological remains were associated and an upper, more recent soil. The following analyses were undertaken to establish the precise nature and relationship of all the different soils on the site: soil thin section analysis to determine micromorphology, pH analysis, loss on ignition, phosphate analysis, calcium carbonate determination (these last four comprising 'routine' analysis), and magnetic susceptibility.

#### *Micromorphology*

Soil thin section analysis showed that the upper buried soil is a humus podzol comprising an Ah horizon with a gradual boundary to a Bh horizon. The sediments associated with the archaeological features at Sanaigmhor are largely the remnants of truncated Bh horizon(s). The lack of lateral continuity of the eroded ground surface (*the remnant Bh horizon*) across the site prevents the physical and therefore chronological linkage of the fragments.

Ap horizon material was only observed in one small area adjacent to the cist, and it is clear that all other contemporary Ap material has been eroded from the site. It is possible, though unlikely, that this ground surface may have been the active ground surface when the cist was constructed.

Thin section analysis was unable to define the original nature or origin of the fill of the irregular depression beneath Cairn B.

The fill of the pit in which the cist was built was found to be indistinguishable from the underlying sand. It is apparent that the cist cut into and through the Bh horizon which forms the present ground surface and continued into raw dune sand. The lack of organic matter in this fill indicates three possibilities: first, the A horizon topsoil may have been eroded prior to construction of the cist; second, topsoil was present but was not mixed with the backfill of the pit; third, organic matter was once present but has been translocated from the fill into the sand below. Of these three, the first possibility is considered the most likely.

#### *Routine analyses*

**pH** All the soils and sediments are alkaline. Within the upper buried soil the A horizon is slightly less alkaline than the B horizon; a similar relationship occurs between the A and B horizons located next to the cist. The sand from the two urns is less alkaline than other sands which were sampled. (The cist shows a slight increase of pH with depth, while there is a decrease in Cairn B.) This difference cannot easily be

explained; especially as it was assumed that the urn sand would be more alkaline due to the presence of fragmented bone. It is possible that the enclosed nature of the urns and/or the presence of porous pottery may have created a chemical micro-environment.

**Loss-on-ignition** All the soils are non-humic mineral soils. The organic content of the upper buried soil is low, although higher than for any other context. There is little difference between the A horizon next to the cist and the B horizon of the upper buried soil. The organic content of wind-blown sand is generally lower than from contexts next to the cist, thought to be degraded B horizon. The highest organic content was recorded in sands from the two urns, and in both vessels there is a slight increase of organic content with depth. This is probably an effect of settlement and the downward movement of organic material within the urns, similar to its natural downward movement in sandy soils. In this case, however, the base of the urn has acted as a natural barrier, preventing its continued movement.

**Phosphates** Available phosphate in the urns is high, due to the large proportion of minute bone fragments mixed with the sand. Available phosphates in other contexts are moderate and may indicate animal activity.

**Calcium carbonate** A high level of calcium carbonates in all of the samples analysed is a consequence of the shell component of the sand dunes.

### *Magnetic susceptibility*

The natural level of ferrimagnetic minerals in wind-blown machair soils is relatively low. The percentage of grains located close to the superparamagnetic/stable single-boundary domain is unusually high for sandy soils, but is interpreted as a natural effect arising from: (a) preferential accumulation of magnetic-rich dust; and (b) the presence of igneous rock fragments and accumulation and concentration through alluviation.

Significant magnetic enhancement of the soils by burning and inferred anthropogenic activities appears to be limited to three contexts: (a) the Ah horizon next to the cist; (b) the upper fill of the cist; and (c/d) the fills of the two urns. The magnetic enhancement of the urn fills is significant and from the results the soil can be interpreted as the remnant of burnt funerary material. The fill of the Cairn B urn has been affected by post-depositional pore water movement, accompanied by some magnetic dissolution.

## GEOPHYSICS AND AUGER SURVEY

The following is a summary of a longer report — by Arkensoil Soil Services — which has been deposited with the project archive at the National Monuments Record of Scotland. Arkensoil conducted resistivity and magnetometry surveys to determine the archaeological potential of the immediate environs of the excavation area. This survey was qualified by augering at 10 sample points through geophysical anomalies. Although potential archaeological features were identified, the results were inconclusive.

The geophysical survey (mostly resistivity) identified a series of features which coincided with: (a) geomorphic features (dune slippage edge); (b) modern features; and (c) a series of possible archaeological features. The archaeological features seemed to correspond to the buried soils recorded by excavation, Cairns A and B, Dyke 1 and the cist.

Other features were tested by augering, but no significant anthropogenic features were discovered. Augering may have identified a third, deeper buried soil, though this is uncertain. Its primary aim of testing geophysical anomalies and confirming possible archaeological features was unsuccessful because of a low density of sample points and difficulties in identifying the cause of the anomalies.

## DISCUSSION

### SEQUENCE

#### *Early soils*

All the features excavated were associated with fragmented patches of an eroded Bh soil horizon, probably the same horizon. While the relationship between the archaeological features and individual fragments of buried soil indicates no stratigraphic order, a sequence of events may be surmised from the relative states of erosion of each of the fragments. The ard-marks presumably represent cultivation when the soil was intact and stable. The small fragment of A horizon next to the cist indicates advanced erosion. Both Cairn B and the dyke were constructed after this, as no surviving A horizon is associated with them. A problem arises, however, as the radiocarbon dates indicate that the cremation in the cist is later than that of Cairn B. It may be either that the soil was differentially eroded or that the cremation in the cist represents a secondary deposit within that feature. Cairn A represents the most recent event, as it is constructed over the eroded remains of the buried soil associated with Dyke 1.

#### *Ard-marks*

The presence of so few ard-marks, none of them crossing each other, might appear to suggest that cultivation was not long-lived at the site. However, only a limited area was uncovered and the upper surface of the soil had been denuded. Thus a more substantial complex of ard-marks may once have existed, representing a long period of tillage. The magnetic susceptibility results suggest that the soil may possibly have been fertilized with burnt organic matter. While the plant macrofossil assemblage contained no cultivar remains, this does not necessarily equate with an absence of agriculture in the area, especially as the plant remains which were recovered may be predominantly recent intrusions. The date of the ard-marks is unknown.

#### *The cist*

The urned cremation itself represented the remains of one person, possibly female, around 25 years old, with no obvious indications of disease. As the remains represented most of the body, including many smaller bones, it seems likely that the cremated remains were carefully collected from the funerary pyre. The magnetic susceptibility results indicate that some pyre material was incorporated into the urn's fill, suggesting that the bones were not cleaned prior to their inclusion in the urn. These results also suggest that the cremation took place next to the cist. It is possible that the charred material present within the urn represents the remains of the pyre, perhaps kindling or even the remains of a basic floral tribute, comprising local 'weeds' placed upon the pyre. Again, however, given the presence of ard-marks, it is equally possible that this burnt material is simply a residual inclusion, representing some kind of fertilizer.

The urn was situated at the base of the cist, under a covering stone. This suggests the possibility that the cist was built after the urn was buried (notwithstanding the late radiocarbon date for the bone from the urn), though there was no evidence of this. The foundation pit for the cist had been cut through the eroded remains of a buried soil. The orthostat may have been a marker stone.

The origin of the bone found throughout the cist fill is again uncertain: it may either relate to another cremation burial, or perhaps even to ritual deposits of small quantities of bone. The

unstratified bone from above the cist cannot be linked to any of the other deposits, and given the absence of a capstone, may represent the remains of a disturbed cremation, either elsewhere on the site or within the cist itself. The copper-alloy ring may also originate from a disturbed cremation, although its association with the unstratified burnt bone may be purely coincidental. Sheridan (above) has argued for a Bronze Age date for the ring, supporting the possibility of a primary Bronze Age burial which was subsequently disturbed by the insertion of an Iron Age cremation.

The adjacent spread of white quartz cannot be explicitly linked to the cist, although their association with funerary contexts is a common one in all periods (Fisher 1997; Mitchell 1884).

### *Cairn B*

The ring of stake- and post-holes beneath Cairn B may represent either a small enclosure surrounding the urn or a timber structure built over it, subsequently covered in turn by cairn material. One larger, more substantial post-hole within the circuit of the circle may represent the remains of a marker post.

The cremation in Cairn B was of a single individual, of uncertain sex and aged between 10 and 30 years old. There were some indications of disease, possibly anaemia, though diagnosis was uncertain. It seems likely that the majority of the bone was picked from the pyre, rather than simply being a representative sample. The magnetic susceptibility results indicate that, like the cist burial, some pyre material became incorporated into the urn's fill, suggesting that the bones were not washed prior to their insertion in the vessel. There was no evidence of any floral tributes within the charred macroplant assemblage from this feature.

### *Dykes*

Neither Dyke 1 nor Dyke 2 corresponds to any feature on early editions of the Ordnance Survey (Argyllshire, 6-inch map, sheet CLXXXV) and therefore these probably pre-date the 1860s. Dyke 1 cannot be linked to the excavated features or associated with the ard-marks and its probable date is uncertain. Dyke 2 was linked stratigraphically to the upper, more recent, buried soil and is a more recent feature than Dyke 1.

### *Cairn A*

Within Cairn A was a lump of modern concrete, and the cairn itself had been constructed over the eroded remains of the buried soil next to Dyke 1. Assuming that this erosion is connected to the recent episode which formed the present blow-out, then the cairn is probably the result of modern dumping.

## IRON AGE CREMATIONS AT SANAIGMHOR?

While both the cist and Cairn B are without direct parallel, individual elements of their construction are paralleled elsewhere in Scotland, for example the use of white quartz in funerary contexts (Fisher 1997; Mitchell 1884). Similarly the ring of stake-holes round the cremation urn under Cairn B is partly paralleled at Brackmont Mill, Fife (Mears 1937, 268–9), and more closely at Meldon Bridge, Peeblesshire (Burgess & Speak, this vol). At the latter site a cremation burial enclosed by a ring of stake-holes was radiocarbon dated to 2900–2100 cal BC. The use of timber



posts to identify burials must also have been common in the past, although obviously these would have quickly decomposed *in situ*.

None of the elements present in either burial is chronologically diagnostic. However, the form of the cist, the form of the pottery and the rite of urned cremation are all generally associated with the Bronze Age, rather than the Iron Age, when inhumations within pits or cists is the more common burial rite (Hill 1982, 179–80; Triscott 1982, 122; Crone 1992). Yet the radiocarbon dates from the cremation bone in both urns indicates Iron Age burials. This raises three possible interpretations:

- 1 The radiocarbon dates derive from a mixture of material contemporary with the cist and younger material, or solely the latter (ie either intrusive cremated bone fragments or chemical contaminants, such as humic acid from the soil).
- 2 The radiocarbon dates truly reflect the date of the cist and its cremation, and thus these features represent a much later currency for this form of burial than is generally accepted.
- 3 the radiocarbon dates truly reflect the date when cremations were placed within the urns, but these are older, Bronze Age vessels, reused for Iron Age burials.

The bone was excavated under laboratory conditions and is taphonomically secure. The only possible source of contamination could have been humic acid but the presence of a covering stone over the urn from the cist militates against this, while laboratory procedures at SURRC would have removed any traces of this in any case (G Cook, pers comm). This author, therefore, dismisses the first interpretation.

Both Cowie and Sheridan (above) have argued against the second possibility on the basis of the pottery evidence and the lack of other Iron Age urned cremations; and Cowie has also allowed the possibility that the urns are Bronze Age vessels, reused at a later date. While the urn from Cairn B is robust enough to have survived reuse, urn from the cist was quite friable and is unlikely to have survived such treatment. Therefore, given the absence of detailed pottery typologies for Islay, and the presence of some parallels (below), this author is inclined to accept the second interpretation as the leading possibility.

The main burial rite in Iron Age Scotland appears to have been inhumation, often in cists (Armit 1997, 95–7). However, the argument for the survival of cremation into the Late Iron Age and Early Historic Period finds some support in the general literature (Jobey & Tate 1966; Breeze & Ritchie 1980; RCAHMS 1967, 30–1; Raftery 1994, 189), and is also a feature of Roman burials (Breeze & Ritchie 1980). Specific examples are rare but one may point to the cremation at Acharn, Argyll (Ritchie & Thornber 1988), where an Iron Age cremation was inserted into a Bronze Age cist and cairn or, more recently, a possible Pictish cremation site at Hermisgarth, Sanday (Downes 1997). It is also possible that many of the undated cremations recorded in Argyll are Iron Age, for example from the cist at Ardnave (Ritchie & Welfare 1983).

The reuse of earlier monuments for Iron Age funerary practices is less well supported in the literature though other rare occurrences have been detected, for example, at Sandyswells Hill, Aberdeenshire (Simpson 1946); Cairnpapple, West Lothian (Piggott 1948, 100); and Carrowbeg North, County Galway, in Ireland (Raftery 1994, 189–95). Other examples of general reuse of earlier funerary monuments include Sand Fiold, Orkney (Dalland unpub) and Traigh Bhan on Islay (Ritchie & Stevenson 1982). As a general phenomenon, the reuse of earlier monuments of various sorts in the Iron Age is also gaining greater credence (Hingley 1996; Armit 1997, 90–1). Finally, given the possible Bronze Age date for the copper-alloy ring, the third interpretation also remains a valid possibility.

## EROSION HISTORY

The particular blow-out in which the four archaeological features were exposed is approximately 75 m long and 52 m wide. It contains at least two buried soils separated by approximately 1.5 m depth of sand. The blow-out provides a sheltered environment and is used to over-winter cattle. It has also been used as a waste dump in recent years, and contains the remains of at least three cars, rolls of discarded fence wire and numerous cattle burials.

While this recent activity may have exacerbated the erosion, the Sanaigmhor machair system, approximately 32 ha in extent, has been eroding for at least the last 40 years. The first edition of the Ordnance Survey (Argyllshire, 6-inch sheet CLXXXV) was surveyed in 1862–7 and shows no erosion. An aerial photograph of the area taken in 1946 (1066/SCOT/UK49 (6/5/46) 3353: NMRS ref B28) shows several patches of erosion including three large areas of erosion to the east of Sanaigmhor Bay, the largest of which measures about 187 m by 33 m. A later photograph of the area taken in 1988 (All Scotland Survey 61288 (16/5/88) 166: NMRS ref C237), shows that these three areas have grown towards each other and that the same area of erosion by then measured about 216 m by 96 m. Interestingly, some of the smaller areas to the north appear to have become grassed over, and during the recent excavation it was observed that much of the area appears to be reseeding itself. In general, however, the evidence indicates that the main area of erosion is gradually increasing. The Ordnance Survey of 1981 (Sheet NR 27 SW at 1:10,000) indicates that around 4.5 ha (14%) of the machair was eroding.

At a basic level the range of archaeology at Sanaigmhor, from cultivation remains, through settlement to funerary deposits is typical of numerous other machair areas from the Inner Hebrides, for example Kilellan, Islay, or the Machrins, Colonsay (Burgess 1976; Ritchie 1981). These sites should not be confused with the Outer Hebrides sites where settlement has been and still is focused on a narrow coastal strip around the islands. This leads to complex, long-lived settlement sites, for example Hornish Point, South Uist, where occupation deposits covered some 1500 sq m and were up to 2.5 m deep (Barber *et al* 1989, 773–4). Other examples include Galson (DES 1996b) and Traigh Bostadh on Lewis (DES 1996a). Settlement in the Inner Hebrides does not appear to have been as concentrated as the Outer Hebrides. Therefore, while complex settlement and midden deposits can occur, for example at Ardnave, Islay (Ritchie & Welfare 1983, 304–13), they are not as extensive or as deep as Outer Hebridean sites.

None of the few excavated features from Sanaigmhor has demonstrated complex stratigraphy and no extensive midden deposits have so far been identified. Therefore, the Sanaigmhor area may appear insignificant when compared with Ardnave or Kilellan, Islay. However, this may simply reflect the manner in which features are discovered; remains are noted and then seldom revisited by which time considerably more has eroded and continues to erode. Eventually nothing is left apart from a disparate scatter of flint and pottery, like the settlement first noted by Newall in the 1960s and revisited by Peltenburg & Booth a decade later (DES 1974, 11). Thus the solitary hearth found at Sanaigmhor (NMRS NR 27 SW 17) may represent the denuded remains of a settlement similar to the Machrins, Colonsay (Ritchie 1981). Similar solitary hearths were also found at Ardnave, Islay dating to the Iron Age (Ritchie & Welfare 1983, 313–15).

Erosion to date has broken up 14% of the total machair system at Sanaigmhor Warren. The archaeological finds resulting from this, many of which have been simply noted rather than retrieved, have been rich and varied. This sample probably represents a typical example of the area's potential, and thus it is likely that a considerable number of well-preserved, complex, archaeological features remain in the area. There may be even earlier remains in the eroded areas

than described by this report: the auger survey identified a possible third buried soil horizon and the geophysics survey identified a number of possible features which were not investigated. The present machair landscape may conceal soil surfaces previously eroded in the past, as was the case with the B horizon under Cairn B. Therefore the archaeological potential of the Sanaigmhor area is great, although this must be qualified as Sanaigmhor represents the second smallest of eight areas of machair on Islay (Bown *et al* 1982), all of which have the potential to produce similar remains.

## CONCLUSION

Some 14% of the Sanaigmhor Warren machair system has been eroded over the last 40 years and a wide range of archaeological features has been observed in that area. These features range in date from the Bronze Age to the recent past. The excavations reported here have added detail to what was previously a general impression of the area, and have demonstrated its further archaeological potential.

The two urned cremations have yielded late Iron Age dates. While this may be somewhat controversial, there is no real evidence that either of the radiocarbon dated bone samples was contaminated. The survival of cremation into the late Iron Age has been demonstrated across Scotland and Ireland, as has the reuse of earlier monuments in the Iron Age, of which the cist may be a further example. The radiocarbon dates from the two cremations do not correspond with the pottery typology, but rather than dismiss these results out of hand, it is to be hoped that they will contribute to a re-examination of existing evidence in a search for further parallels.

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