

## Excavation of a Bronze Age burial at Mousland, Stromness, Orkney

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### ABSTRACT

*An earthen burial mound with a surrounding kerb was excavated in 1990. The central cist contained a cremation of an adult, possibly female. A polished stone axe lay outside the cist. A radiocarbon date from charcoal within the cist showed the remains to be of early/middle Bronze Age date. The cist and kerb were constructed before the mound, which was built up from successive deposits of turves and soil. Palaeobotanical and micromorphological analyses demonstrate the landscape to have been open grassland and heathland.*

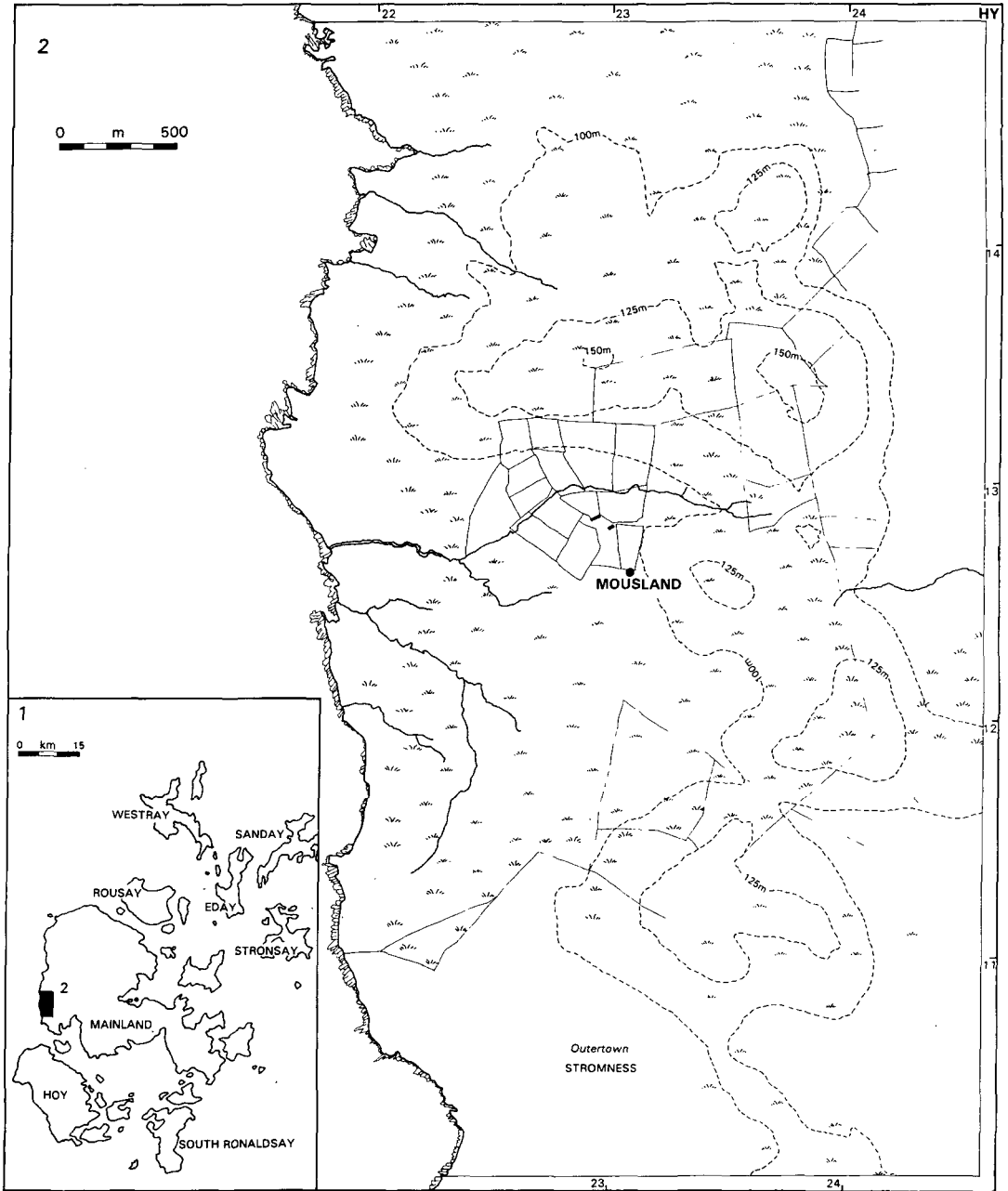
### INTRODUCTION

The burial mound was discovered by Mr Brian Chalmers, the farmer at Mousland Farm, western Mainland, Orkney, who came across the cist lid whilst levelling a low mound by machine. The site (NGR HY 23091264) was brought to the attention of the excavator by Mrs Anne Brundle, of Tankerness House Museum, Kirkwall. Excavation was carried out by a workforce drawn from excavations in progress at Barnhouse, Stenness, during the summer of 1990. The post-excavation work was funded by Historic Scotland.

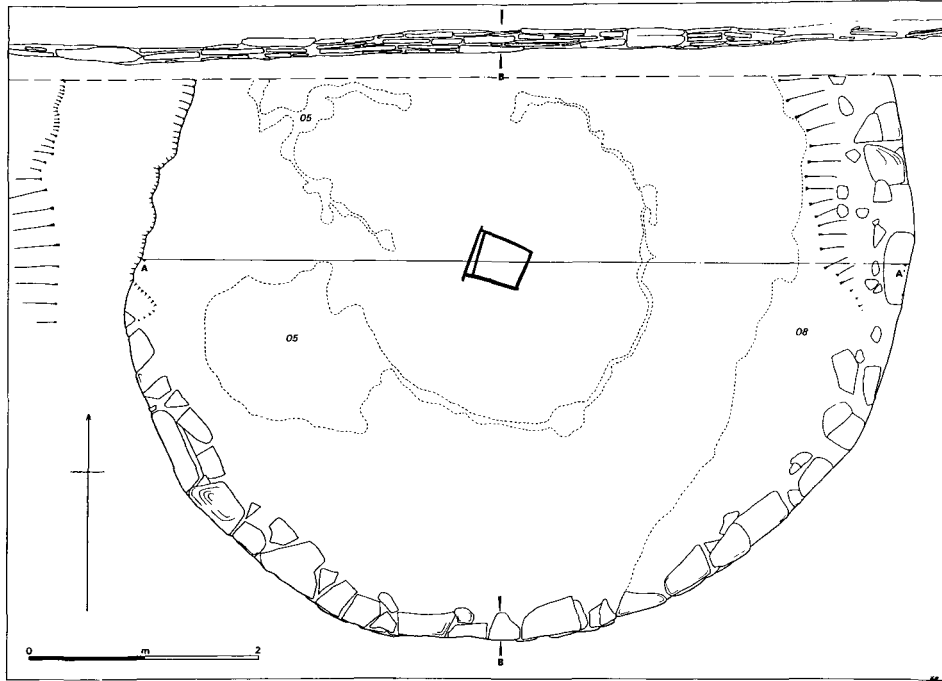
The site lies at 90 m OD, on the very edge of what is now marginal, slightly boggy ground. The mound is situated at a height of over 100 m OD (illus 1) on the west side of a ridge of Middle Old Red Sandstone which runs from north to south along the promontory between the Loch of Stenness and the sea. It lies 1.25 km from the sea, to the west, and to the south the high relief of Hoy is visible.

As far as could be ascertained, the barrow (illus 2) was an isolated feature, although time did not allow survey of the area around the monument. After cleaning the mound and the area outside the kerb, the contents of the cist were excavated, and a section was cut through the mound.

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ILLUS 1 Site location plan. Based upon the Ordnance Survey map © Crown copyright



ILLUS 2 Plan of the barrow; the elevation of the kerb is shown above the plan

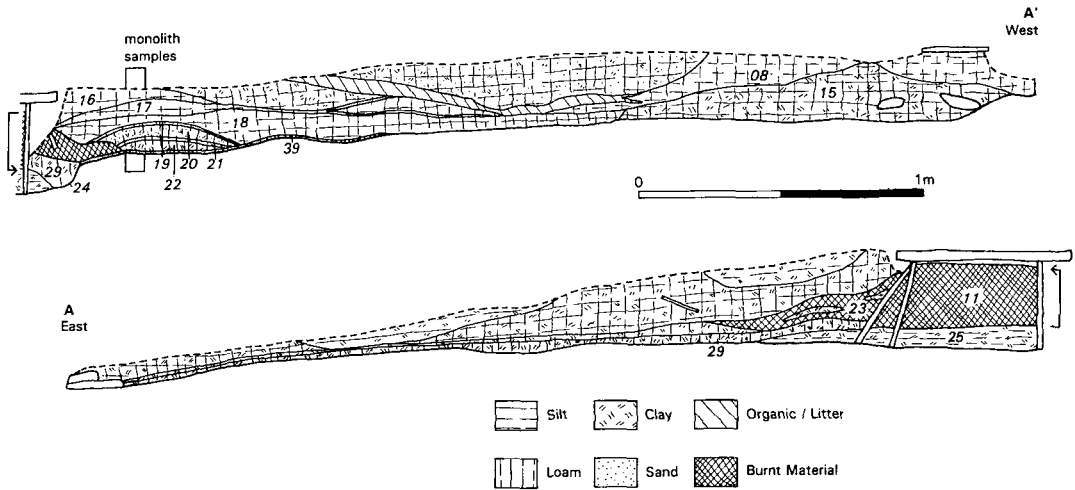
## MOUND SEQUENCE

### THE PREPARATION OF THE GROUND

#### J Downes & C French

A piece of gently sloping ground had been chosen for the location of the barrow. Micromorphological analysis of a sample monolith of soil from the section through the mound (illus 3) showed that the area covered by the barrow had been stripped of the contemporary soil profile prior to the construction of the mound, leaving only patchy remains of the original B horizon surviving (context 39, illus 3). This context comprised a homogeneous sandy loam with minor amounts of organic matter (including some charcoal), and a variety of textural pedofeatures indicating disturbance.

The very minor amounts of limpid clays present suggest some clay alluviation and the development of a brown earth. The dusty clay coatings indicate some minor soil disturbance (Macphail 1987), most probably from activity such as trampling by animals, and the construction of the mound. (The implications of this analysis for an understanding of the environmental history are discussed below.) After the turf and soil had been removed, a 0.1 m deep cut (24, illus 3) was made into the upslope side to level the ground for the erection of the cist.



ILLUS 3 Section through the barrow

## THE CONSTRUCTION OF THE CIST AND KERB

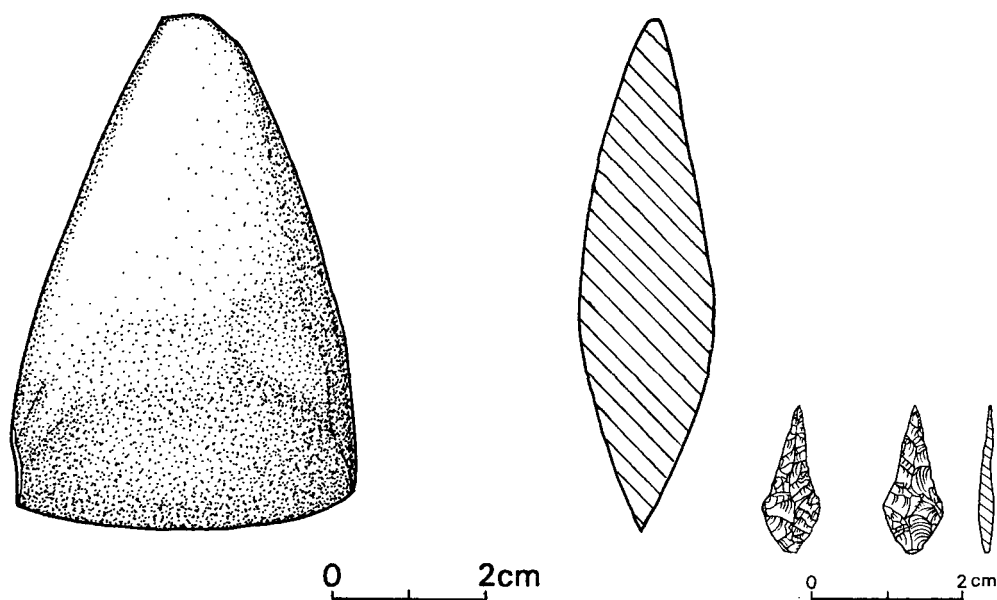
### J Downes

A spread of clay (context 25), 0.1 m thick and 1.1 m wide, was laid down around the bottom of the cist uprights to support the structure; this clay formed the base of the cist. The cist was built of sandstone slabs, and its long axis lay from east to west. Of the four slabs forming the sides, the west slab was set in slightly from the ends of the longer slabs, and a fifth slab leant up against the protruding ends at an angle, presumably to give the structure greater rigidity. At this stage the cist was a free-standing structure, projecting 0.22–0.24 m above the ground surface.

The stone slabs of the cist measured as follows:

	length	breadth	thickness
north slab	0.50 m	0.32 m	0.02 m
south slab	0.47 m	0.34 m	0.03 m
east slab	0.32 m	0.30 m	0.02 m
west slab	0.32 m	0.32 m	0.02 m
support slab	0.53 m	0.30 m	0.02 m
cist lid	0.60 m	0.55 m	0.03 m

Around the cist, a kerb with a maximum diameter of 6.8 m was constructed from thin slabs and larger stones, the largest measuring 0.75 m in length. The kerb was well faced to the exterior and was built four courses high on the south side of the barrow (illus 2). In other places (the east and north-west sides) the kerb comprised fewer stones, set into a bank of clay (15) and layers of turf (08), which could be seen clearly on the surface of the mound as a darker spread (illus 2); this was a maximum of 1 m wide. It was not possible to determine



ILLUS 4 Steatite axe and flint arrowhead

whether the cist and the kerb were built sequentially, or at the same time. However, they were both constructed separately from the mound. Outside the southern kerb of the barrow was some irregular paving (illus 6), comprising medium-size sandstone slabs pressed into the subsoil.

Amongst the paving lay a small flint arrowhead (illus 4). The arrowhead measures 27 mm long, 11 mm at its maximum width, and is 3.5 mm thick. It is of leaf-shaped (ogival) form, with an acute tip and pronounced shoulders. The arrowhead was shaped by fine invasive flaking, and is formed from flint which could be derived from a local source of beach pebbles (A Pollard, pers comm).

A small, polished stone axe (illus 4 & 5) was placed on the clay bedding outside the cist, half-way along and 0.15 m from the south-facing slab. The axe is of asymmetrical, faceted form (A Clarke, pers comm), and was made probably from talc schist (steatite) from Shetland (J Faithfull, pers comm). The axe measures 67 mm in length, 45 mm in width, and is 18 mm thick.

The axe was sealed by a compact layer of dirty clay soil (29) which filled in and levelled the cut for the cist (24), and spread westwards to the inner edge of the kerb. Laid upon the top surface of this clay soil, but present only around the south-west corner of the cist, was irregularly spaced paving made of medium-sized flat stones. The paving and clay surface formed a platform upon which the activities surrounding the deposition of the cremated material appear to have been carried out. The cist was filled with material from the pyre (11), which had spilled over the edges of the cist (23), and a trapezoidal stone lid was then laid on the cist.



ILLUS 5 The position of the axe in relation to the cist slab (on the right hand side)

#### THE CONTENTS OF THE CIST

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The cist was filled, probably rapidly and in one event, with material from a cremation pyre. On the clay floor of the cist was a layer of burnt bone 0.02 m thick, weighing 555.1 g.

This discrete deposit of burnt bone represented 95.6% of the burnt bone recovered, the remaining 4.4% (25.4g) being spread fairly evenly throughout the rest of the cist fill, which comprised burnt organic material, cramp (burnt vitreous material, or fuel ash slag), and fragments of burnt stone. The concentration of bone at the base of the cist probably represents the actual 'burial'.

A single adult was identified from the cremated bone, the age being assessed from the stage of epiphyseal bone and cranial structure fusion (McMinn & Hutchings 1985; Webb & Suchey 1985), and from the general degree of degenerative changes to the bone. The sex was determined as possibly female, deduced from the sexually dimorphic traits of the skeleton (Bass 1987), including the maximum cranial vault thickness '1a' and '1b' according to Gejvall (1981, but see also McKinley forthcoming (a) & (b)).

The vast majority of the bone was buff/white, but a few fragments were grey, indicative of incomplete combustion of the organic components of the bone. In view of the small number of these fragments, the incomplete combustion is likely to have resulted from oxygen deprivation to fragments that had become buried in fuel ash at the base of the pyre, late in the cremation process (see McKinley 1989 and forthcoming (a)).

The cremated bone was passed through a stack of sieves of 10, 5 and 2 mm mesh size to assess the degree of bone fragmentation within the cremation. Although approximately half the quantity of bone was collected in the 10 mm sieve, in general the fragments were relatively small. Fragmentation of cremated bone

occurs naturally during the cremation and collection processes; there is increased fragmentation whilst the bone is buried, particularly in unurned cremations (McKinley forthcoming (b)).

The total weight of bone recovered represents a maximum of 36.3% of the total weight of bone expected from an adult cremation, although c 10–20% of bone is usually lost as dust. Some other pyre debris was also represented within the cist, including fragments of burnt stone. Small fragments of burnt stone occurred randomly throughout the cist fill and in the spill outside the cist, but across the top of the cist fill, just underneath the top slab, was a close-packed single layer of larger burnt stones.

Larger pieces of charcoal were removed from the cist fill during excavation. These were identified as all being of birch (*Betula sp.*). A radiocarbon date was obtained from this charcoal:

GU-3186 1450±100 BC (uncal)

This supports the supposition that the burial was of early/middle Bronze Age date.

Following the extraction of the burnt bone and the larger pieces of charcoal and cramp, the material forming cist fill and the spill from the cist was soaked, and the seeds, stem and root fragments were floated off. These were equal in volume to less than a quarter the amount of burnt vitreous material. The macrofossil remains were identified as being of dwarf shrub/ericaceous and grassland plant communities. The species will be discussed further below; at this point it is sufficient to note that conditions appropriate for all the plants could have occurred locally and they were probably gathered as fuel not far from the cremation site. The proportion of burned soil within the remains of the pyre, and the incidence of rootlet and rhizome fragments, suggests that the plants were uprooted, or burnt as turves.

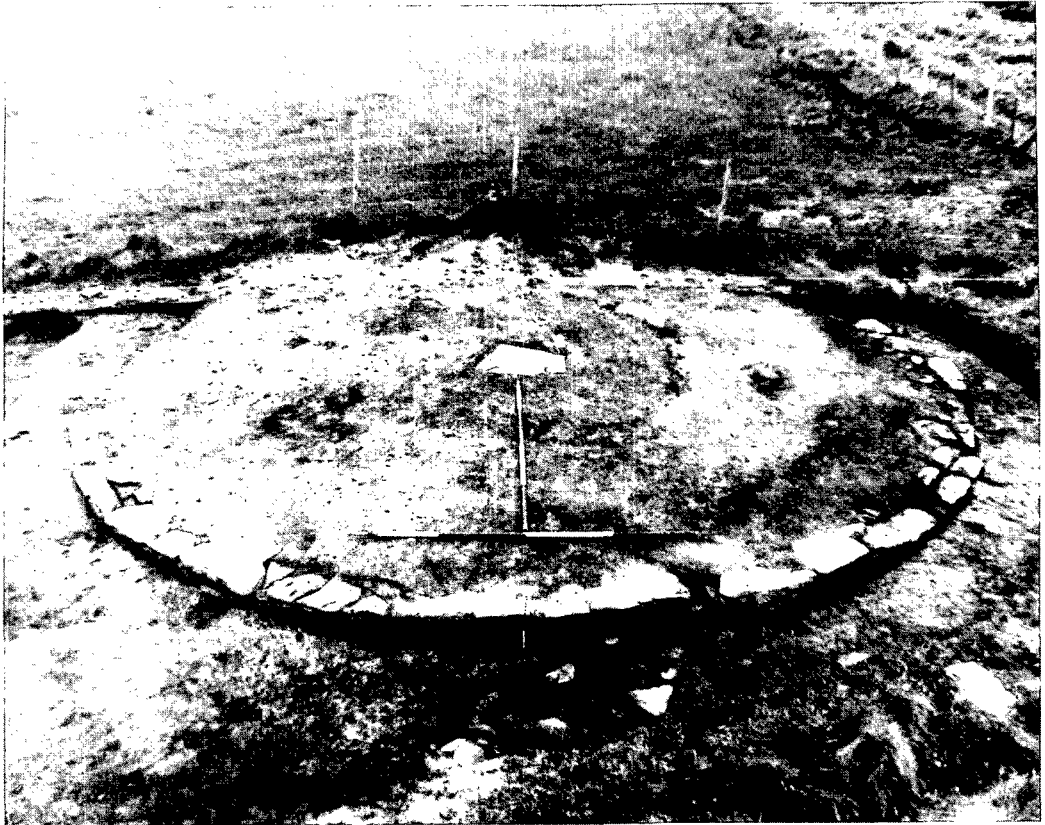
#### THE STRUCTURE OF THE MOUND

J Downes, C French, P Hinton & R Scaife

The space between the cist and the kerb was filled with deposits of material that had been removed from the area prior to construction of the barrow; other, similar material derived from the immediate vicinity of the barrow. These deposits were banked up at the kerb and around the cist before the intermediate area was filled in. The different coloured clays and organic material were laid in concentric circles, producing striking contrasts across the surface of the mound (illus 6).

Layers 19–22 (illus 3) represent the intact, pre-mound soil profile, but rather than being preserved *in situ*, the thick turves have been cut and stacked up during construction of the cist and kerb, and the activities associated with those phases. The turf was then restacked around the cist. By this time, the soil profile was composed of a thin, mor humic or acidic turf horizon (Ah horizon), and an underlying depleted, bleached (Ea) horizon, both of which are characteristic of a poorly developed podsol.

Contexts 16, 17 and 18 have been identified as redeposited turf and subsoil, typical of the material which comprises the make-up of the mound. Context 16 consisted of coarse loam and fine loam fabrics, the finer fabric having a greater clay content, but much less organic matter. It is probable that these fabrics represent a mixture of broken up turves and subsoil. Context 17 consisted of three zones; the upper surface comprised a very organic fabric, underneath which lay a relatively homogeneous turf fabric. It is suggested that this was a redeposited turf. The lower zone consisted of a very heterogeneous mixture of fabrics, as in 16 above, *indicative of redeposited turves and topsoil. It was the organic context 17 that contained the most substantial quantities of pollen in the profile.* Context 18 was essentially similar to context 17 immediately overlying,



ILLUS 6 Mousland barrow from the south

although the fabrics are partly mixed. This could be due to more faunal mixing, and/or to more effective mixing of the redeposited materials during the construction of the mound. The only context in the mound to differ markedly from those discussed above was context 05, in which a very black, organic, desiccated layer of what may have been leaf-litter seems to have been used in the make-up of the mound.

As the mound surface had been removed down to the level of the cist lid prior to excavation, it is not possible to gauge how much of the top surface of the mound was lost. It was therefore difficult to ascertain whether the mound had been covered by a capping of turf as at Quoyscottie (Hedges 1977, 130), but this is unlikely as a capping would have slumped over the edge of the kerb; no such slump was detected.

## THE ENVIRONMENT AND LAND USE

Much of interest can be inferred about the environment and land use both before, and at the time of, the construction of the mound. Although most of the original soil profile was truncated by the construction of the mound, elements that are characteristic of the original soil profile survived in the form of redeposited turf and soil. Also, the base of the B(w) horizon of a former brown earth



survived *in situ* underneath this redeposited material. The similarity of the flora from the upper layers of the mound structure to that of the preserved soil-profile demonstrate that these layers were derived from top soil removed from the local area. The pollen monolith column was taken from the mound at the same place as the sample for soil analysis (illus 3).

The pollen taxa derive largely from an open heathland environment. The mor humus (Ah horizon) is a peaty humus which was formed in leached soils and is characteristically associated with podsoils and acidic heathland-type vegetation. There is a general absence of larger tree and shrub types, illustrating an absence of woodland in the region immediately prior to the construction of the mound. The poor brown earth development of the original soil profile was probably due to the upslope location and the absence of woodland development in the preceding Neolithic period. A single record of lime (*Tilia*) in context 16, the uppermost context of the mound structure, is interesting but must represent long-distance transport from areas to the south of Scotland. Similar occurrences have been noted by Dickson (Bell & Dickson 1989, 117). The few sporadic grains of arboreal and shrub taxa are likely to have come from elsewhere and may have been borne distances. It must, however, be considered that a few isolated stands of birch, hazel, pine and oak may have existed in more sheltered areas such as gullies on the island. This general absence of arboreal vegetation has been noted from palynological work on Orkney and in the Hebrides (Moar 1969; Keatinge & Dickson 1979).

The vegetation on the site of the mound was an acid heathland dominated by ericaceous dwarf shrubs including ling (*Calluna*), crowberry (*Empetrum*) and heaths (*Erica*). This is substantiated by the plant macrofossil analyses of contexts 11 and 23. The herb taxa may also relate to this community with grasses such as *Molinia* (purple moor grass) which has also been identified in the macrofossil record. Typical of this northern heathland are the ferns *Selaginella selaginoides* and *Huperzia selago*, and here there are substantial and interesting occurrences of their spores.

In addition to the heathland elements, there is a very substantial record of plantaginaceous taxa, and especially of ribwort plantain (*Plantago lanceolata*). These, along with the grasses and a number of other herbs recorded (*Ranunculus* type, *Sanguisorba officinalis*, *Scabiosa*, *Succisa*), may be interpreted as indicative of areas of grassland. These two communities may have provided rough grazing and pasture grazing for livestock. Seeds of *Plantago lanceolata* have been recovered, in addition to the pollen record. *Plantago major/media* has been noted in the pollen record, but it is not yet possible to separate the two pollen taxa with certainty. The former is typical of trampled and disturbed ground. The latter (*P. media*) is characteristic of pasture near the sea; both of these habitats are possible sources.

There are sporadic records, through the structure of the mound, of cereal-type pollen characterized by large grains, thicker exines than wild grasses and larger pores and annuli. Although there can be morphological overlap with wild grasses of maritime habitats, these grains are considered to be from arable crops. As such, they may provide evidence of very localized arable agriculture in the near vicinity, or possibly of more extensive activity at some distance from the site. This will be confirmed only by further palynological work being carried out on Orkney. The remains of corn spurrey (*Spergula arvensis*), a common weed of cereal crops, were identified in the macrofossil analysis. Such cereal pollen and that of associated weeds may be liberated during crop processing. This also indicates the presence of arable cultivation, but not necessarily at the point of crop processing.

There is evidence to suggest that the Bronze Age environment as reconstructed from the palaeobotanical and micromorphological evidence was a product of the way in which the land had been used in the Neolithic and early Bronze Age. This is indicated by the podsolization observed in the old land surface. Podsolization was an important soil process in the late Flandrian, especially in the earlier Bronze Age period onwards in Britain, and should probably be associated with man's activities on heaths and moorlands as well as with climatic deterioration (Keatinge & Dickson 1979, 605).

The progressive deterioration from brown earth to brown podsolitic soil to podsol (Dimbleby 1962; Duchaufour 1977), the eventual depletion of soil nutrients, and acidification, are generally associated with the impact of early clearance and agriculture. None the less, there is no positive evidence to suggest that any arable use was made of the land at Mousland prior to the cairn construction. Instead, at this particular

location, the podsolization process was undoubtedly associated with overuse of the dominant natural grassland landscape by a combination of grazing, burning and turf cutting.

It has already been mentioned above that if *Plantago major* (rather than *media*), is present in the B(w) horizon and through the mound structure, is indicative of trampling by humans and/or animals – possibly grazing. The presence of minute charcoal fragments, in both the pollen preparations and the thin sections of the Ea horizon and B(w) of the former brown earth, also testifies to the burning-off of vegetation sometime prior to barrow construction. This process tends to perpetuate the cycle of increasing acidification and therefore the establishment of acid-loving plant communities associated with the podsolization process.

Significantly, the late Neolithic soils examined at the nearby settlement site at Barnhouse, Stennes, Mainland, were not podsolized by the time the settlement was constructed (French, *in Richards*, forthcoming), although this site is in a more low-lying setting than the cairn at Mousland. It is therefore suggested that by the earlier Bronze Age, brown-earth soils, which were at best only very sparsely wooded, were beginning to become podsolized, at least in this part of Mainland.

Changes in the Bronze Age environment and land use, as indicated by palaeobotanical studies from other parts of western Mainland, will be considered in the discussion below.

## DISCUSSION

Burial mounds attributed to the Bronze Age in Orkney number into the thousands, with a wide range of funerary rites in evidence. Very few of the burials have been dated, and the majority of excavations have focused on the contents of the cist rather than the structure of the mound or the area surrounding the burial, resulting in a collection of human remains and artefacts that are essentially devoid of a context.

The artefacts from Mousland can be seen within the sequence of events surrounding the interment, a sequence that can be determined from the results of the analyses of the mound and of the contents of the cist. The axe was laid down after the construction of the cist, and before the addition of the cremated remains. It was probably made specifically for placing in the burial mound. Its pristine condition, and the fact it had never been used (and, indeed, due its composition could never have been used), supports this conclusion. It is not, however, possible to ascertain whether the axe was made in Orkney, or closer to its source. Steatite vessels are common in Bronze Age funerary contexts in Orkney, but so far have not been discovered in a domestic context (Ovrevik 1990, 145); in the instance of the axe from Mousland, this soft rock has been used for an artefact which would not appear to be part of the domestic assemblage, and is also rare in funerary contexts in Orkney. Its position is most closely paralleled by the discovery of a 'spatulate polished sandstone object' a few inches below ground at the side of a cist containing a cremation near Cloddyhall, Sandwick (RCAHMS 1946, 288). This cist had been inserted at the foot of a much larger mound, possibly of chambered form.

It is suggested that the coarse stone objects that occur frequently at burial coarse sites can be contrasted with the type of deposit represented by the axe. These coarse stone tools are very often deposited after the human remains, and, furthermore, these offerings are often in a broken or worn condition. Into this class of objects and points should be placed, many of which have been found on the kerbs of mounds (Hedges 1977, 137–40), also stone choppers or mattocks, and hammerstones, all of which are found amongst domestic assemblages. There are several instances of these objects being placed on the lid of the cist, for example the two 'very rude stone implements' from the lid of the larger of two cists at Backakeldy, Holm (Marwick 1928, 265), and the (in this instance bone) hammer on the lid of a cist at Waterhall, St Andrews (RCAHMS 1946, 248). Although the axe at Mousland was also outside the cist, it was in place underneath the platform before the interment took place.

Between the Mousland axe and the coarse stone implements, the distinction can be drawn that the former represents an item that was produced for the occasion and was presented to the dead, whereas the latter was material with a long history of use that was effectively discarded by the mourners (Barrett 1993, 116). The arrowhead from outside the kerb at Mousland may fall into the category of material that was discarded, due to its somewhat worn appearance and its location in relation to the burial. Unlike the exotic material of the axe, it was made of material that was available locally. It is, however, of an unusual form that has no obvious parallels; with its long tip it is most similar to (much larger) ogival daggers (A Pollard, pers comm).

The cist did not stand empty long before the burnt material was placed in it, as the clay in which the cist was bedded was clean underneath the burnt bones. Hence the cist may have been constructed upon the death of the individual and may have stood empty only during the short time the body was prepared for cremation. The platform around the cist upon which funerary rituals were enacted appeared trampled, but otherwise free from debris. After the cremation, the partial remains of the pyre to be placed in the cist were picked out and sorted. Burnt bone, largely free from other pyre material, was placed at the base of the cist; a small amount of burnt bone, together with cramp, charred organic material and small fragments of burnt stone, filled the main body of the cist, upon which was placed a layer of larger pieces of burnt stone. The burnt stone comprised chips of sandstone similar to those commonly forming burnt mounds.

The filling of the cist suggests that the cremation pyre was close to the cist. It is difficult to assess if this was a consistent practice as such information has rarely been observed or recorded. Knowe 1 at Quoyscottie contained a large amount of pyre material within the body of the mound (Hedges 1977, 131), and the quantity of burnt pottery from the mound at Queenafjold, similar to that found within the cist (Ritchie & Ritchie 1974, 35), is perhaps indicative of pyre material within the mound. Spreads of cramp and burnt material around mounds to the north-west of the stone circle at Brodgar (Callander 1936, 445) have now been ploughed away, and similar material in other locations has presumably been destroyed.

There seems to have been no delay between the placing of the fired remains into the cist, and the building up of the mound around the cist, as the spill from the cist was sealed by mound material in a fresh and uncontaminated condition. Of the materials used in the construction of the mound and cist, the stones must have been brought from elsewhere, having first been dressed, while the clay and turf were derived from the immediate environs of the barrow, as was the turf and the small shrubs used as fuel for the pyre. The birch wood was available probably from only a limited number of sources; it and the body were probably transported the greatest distance to the cremation site. The birch wood could have been used as a bier which was then burnt on the pyre.

Moving from the funerary rituals, the significance of the form of architecture employed will now be considered; architecture which was, to some extent, structured by the events described above (and others that will remain invisible). Obviously, the funerary rituals were governed by the beliefs held by the mourners and, importantly, by nature of the ancestor rituals. However, the sequence of these events not only provided a temporal framework for the burial of the deceased but created an architecture which had a lasting and visible form. Hence the act of burial constituted an act of transformation which altered the state of the individual and the landscape.

The form of the barrow at Mousland represents a type of burial monument fairly common in Orkney, and falls into the category of 'ditchless, scrape barrows of composite form' (Hedges 1977, 141). In the report of the excavation of a middle Bronze Age cemetery at Quoyscottie, 19 excavated examples of this type from five cemeteries are discussed (Hedges 1977, 141–4). Among these examples are mounds with kerbs of irregular form constructed simultaneously with the barrows at Quoyscottie and Queenafjold (Ritchie & Ritchie 1974, 33–7); such kerbs are visible at

many unexcavated sites. A mound with a primary kerb, as at Mousland, was excavated at Trumland, Rousay, where a kerb ranging from three to six courses in height surrounded a mound of a very similar diameter to that at Mousland (Craw 1934).

It has been estimated that about half of the short cists in Orkney are set into natural hillocks or knolls (Ovrevik 1990, 135). In other instances burials (cremations and inhumations) are inserted into a cut into the ground and then covered by a mound. At Mousland, as at many other sites, the cist rests on the ground surface and is surrounded by the mound. Rather than utilizing or focusing rituals on a natural landmark or pre-existing monument, a hillock is artificially created; the 'burial ritual culminates in a conscious transformation of local topography' (Barrett *et al* 1991, 125). To understand in what way a monument or group of monuments restructured the landscape, it is important to know from which point it was intended that the monument should be viewed or approached most frequently. At Mousland it has been possible to determine the approach to the monument.

The ground upon which the mound was constructed slopes away to the west (towards the sea), and to the south. As has been noted above, the kerb is constructed solely from dressed stone (rather than turves/earth and stone), only on this southern side. The kerb rises up around this southerly part, which is the highest and best defined part of the mound, with the result that the mound is most visible to those approaching from the south. It is in a discrete part of the south side, outside the kerb, that paving is present (illus 6). This paving is located only in an area corresponding to the long axis of the cist, and it was amongst this paving that the flint arrowhead was located. It is probably of significance that the polished stone axe was also placed on the southerly side of the cist. Although it is not possible to ascertain at present the location of the settlement contemporary with the burial mound, it is possible to know to which position in the landscape the monument was made most prominent.

In Orkney it is easier to view a monument within something akin to its contemporary landscape than in most other parts of Britain; although the landscape has been extensively modified through human action, there have been no major environmental changes since the Neolithic (Davidson, *in* Renfrew 1979, 7). To a large degree, land that was 'marginal' in the Bronze Age is so today, and the choice of this marginal land for the location of many of the burial mounds has been noted (Hedges 1977, 152). There are frequent occurrences of mounds or cemeteries placed at the very edge of cultivable land, for example the Knowes of Trotty, a linear cemetery along the edge of heathland. The siting of Bronze Age burials has been interpreted as the avoidance of (more valuable) cultivable land (cf Ovrevik 1990, 140). The land upon which the mound at Mousland was placed, however, had been exploited, although never ploughed. In a treeless landscape the value of turves for fuel and for lining and roofing stone structures should not be underestimated; this would have conflicted with the use of the land for grazing which is why the heathland had periodically to be burnt off. The 'marginal' land required careful management, and was a fragile resource of fundamental importance, perhaps as valuable as the arable land. The siting of mounds was probably related to visibility in the landscape rather than to land use.

Radiocarbon dates from the bases of three locations of blanket peat on Birsay and at Harray, western Mainland (Keatinge & Dickson 1979) demonstrate that the peat was beginning to form at c 1450 BC uncal (Burns of Rusht and Mid Hill), and c 1050 BC uncal (Braes of Algath). At Burns of Rusht and Mid Hill, short-lived pasture vegetation immediately prior to peat development is seen as strong evidence for high grazing pressure on the hills at about this time. The presence of charcoal at the interface of the soil and peat is probably indicative of human activity involving burning.

Environmental evidence from Quoyscottie (c 10 km north-east of Mousland) presents a

picture of a mixed agrarian economy with a pastoral bias in the middle Bronze Age, although the agrarian practices were probably at a low level (Jones, R *in* Hedges 1977, 148–50). From the studies of the area around Quanterness, a regrowth of trees and shrubs on a small scale and a decrease in the number of herbaceous species around 1400 BC uncal is interpreted as ‘less deliberate interference with the landscape’ (Jones, *in* Renfrew 1979, 28). While mixed husbandry was still in evidence, from c 1500 BC uncal it was less consistently so. The cairn at Mousland was constructed at precisely the time when grazing pressure on this landscape was apparently high, and blanket peat was beginning to form on comparable nearby terrains.

## ACKNOWLEDGEMENTS

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## REFERENCES

- Barrett, J C, Bradley, R & Green, M 1991 *Landscape, monuments and society: the prehistory of Cranborne Chase*. Cambridge.
- Barrett, J C 1993 *Fragments from Antiquity: An Archaeology of Social Life in Britain 2900–1200 BC*. Oxford.
- Bass, W M 1987 *Human Osteology*. Missouri.
- Bell, B & Dickson, C 1989 ‘Excavations at Warebeth (Stromness Cemetery) Broch, Orkney’, *Proc Soc Antiq Scot*, 119 (1989), 101–31.
- Callander, J G 1936 ‘Bronze Age urns of clay from Orkney and Shetland’, *Proc Soc Antiq Scot*, 70 (1936–7), 441–52.
- Craw, J H 1934 ‘A mound containing short cists at Thrumland, Rousay, Orkney’, *Proc Soc Antiq Scot*, 68 (1933–4), 68–70.
- Dimbleby, G W 1962 *The Development of British Heathlands and their Soils*. Oxford.
- Dimbleby, G W 1976 ‘Climate, soils and man’, *Phil Trans Roy Soc London, Series B*, 275 (1976), 197–208.
- Duchaufour, P 1977 *Pedology: Pedogenesis and Classification*. London.
- French, C A I forthcoming *in* Richards, C C ‘Excavations at barnhouse and Maeshowe, Orkney: the Anatomy of a Late Neolithic Monumental Landscape’.
- Gejvall, N G 1981 ‘Determination of burnt bones from Prehistoric graves’, *Ossa Letters*, 2 (1981), 1–13.
- Hedges, M E 1977 ‘The excavation of the Knowes of Quoyscottie, Orkney: a cemetery of the first millennium BC’, *Proc Soc Antiq Scot*, 108 (1976–7), 130–55.
- Keatinge, T H & Dickson, J H 1979 ‘Mid-Flandrian changes in vegetation on Mainland Orkney’, *New Phytol*, 82 (1979), 585–612.
- McKinley, J I 1989 ‘Cremations: Expectations, methodologies and realities’, *in* Roberts, C A, Lee, F & Bintliffe J, *Burial Archaeology* (Brit Archaeol Rep 211), 65–76.

- McKinley, J I forthcoming (a) The Anglo-Saxon cemetery at Spong Hill, Norfolk. Vol VIII.
- McKinley, J I forthcoming (b) Cremations and Inhumations from the Cemetery of St Stephens, St Albans.
- McMinn, R M H & Hutchings R T 1985 *A Colour Atlas of Human Anatomy*.
- Macphail, R I 1987 'A review of soil science in archaeology in England' in Keeley, H C M (ed), *Environmental Archaeology: A Regional Review Vol.II*, HBMC Occ Pap No.1, 332-76.
- Marwick, H 1928 'Cist burials in Holm, Orkney', *Proc Soc Antiq Scot*, 62 (1927-8), 263-8.
- Moar, N T 1969 'Two pollen diagrams from the Mainland, Orkney Island', *New Phytol*, 68 (1969), 201-8
- Ovrevik, S 1990 'The Second Millennium and After, in Renfrew, A C (ed) *The Prehistory of Orkney*. Edinburgh.
- RCAHMS 1946 Royal Commission on the Ancient and Historical Monuments of Scotland, *Inventory of the Ancient Monuments of Orkney and Shetland*. Edinburgh.
- Renfrew, A C 1979 *Investigations in Orkney*. London.
- Ritchie, G & Ritchie A 1974 'Excavation of a barrow at Queenafjold, Twatt, Orkney', *Proc Soc Antiq Scot*, 105 (1972-4), 33-40.
- Webb P A O & Suchey, J M 1985 'Epiphyseal union of the anterior iliac crest and medial clavicle in a modern multiracial sample of American males and females', *American Journal of Physical Anthropology*, 68 (1985), 457-66.

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