

The excavation of an Early Bronze Age cemetery at Barns Farm, Dalgety, Fife

Trevor Watkins*

with contributions by Mrs Lin Barnetson, Miss A S Henshall,
Dr Dorothy Lunt, Ms Ellen McAdam, Mrs Fiona Roe,
Ian Shepherd and Dr C C McCawley

1. ABSTRACT

As the result of a chance find in February 1973 an Early Bronze Age cemetery of six cists and three graves was excavated at Barns Farm, Dalgety, Fife. Besides the stone cists and the earthen graves a variety of pits and two hearths were found. The cemetery, on the round top of a small hillock, had finally been sealed by a round barrow of scraped up soil. The total assemblage from the cemetery included three Food Vessels, one Beaker, a battle-axe, a shale necklace, jet beads and pendants, various flint tools, a copper or bronze knife, a copper or bronze awl or reamer; in addition there were several derived neolithic sherds and a few very small pieces of flint. The cists and graves contained inhumations and cremations, in some cases simultaneously deposited in the same grave. The experimental reconstruction of one of the cists suggested that the scale of the social group necessarily involved in the construction of such cists might be as large as eight persons engaged for three days. It is also argued that one of the graves at least contained a coracle reused as a coffin.

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* Dept of Archaeology, George Square, Edinburgh.

3. SUMMARY

It may be helpful to commence the report with a brief summary in order that those who wish to know only the outline of the discoveries may find it simply while those who wish to delve more deeply may do so with some sense of perspective. This section closes with the few general comments concerning the internal and the radiocarbon chronology of the site which can be made.

Some neolithic activity on the site may be inferred from the presence of several sherds of neolithic pottery. No structural remains can be clearly linked with this first phase of activity, with the exception of a pit with a fill of seashells (Pit 1), which may be attributed to the tenuous neolithic phase on the grounds of its third millennium bc radiocarbon date and two scraps of pottery.

The major phase of activity on the site, as far as identifiable remains are concerned, was its use in the Early Bronze Age as a small hilltop cemetery (see fig 2 for plan of site) where the dead were buried, some after cremation, in a variety of burial structures, often with more than one occupant per structure, and accompanied by a variety of grave-goods. During this phase fires were lit, pits were dug and filled, and cists and graves were constructed and used. Three of the larger pits were found to contain human teeth which were the only surviving part of the original contents, which were human heads. From Pit 2 came dental evidence of at least three individuals, a person of about 23, another in the late teens, and a child of approximately 3 years of age. The same pit incorporated scattered fragments of cremated bone, though whether this was a token or an accidental inclusion is uncertain. Pit 3 revealed dental traces of a person aged about 18 to 20, and another child aged about 3 years. The third pit with traces of human teeth was Pit 6, where the head of a child between 8 and 12 years of age was identified. Pit 6 also contained small amounts of cremated bone representing the remains of another young person aged between 6 and 12 years. Pit 8 contained enough recognizable fragments to allow the conclusion that it, too, had housed a deliberately inhumed cremation; the individual concerned was probably adult.

Cist 1 contained a tightly contracted male body, aged in his early twenties at death, together with a quantity of cremated bone tucked in a corner of the cist at the time of construction. The cremated remains represent a person, possibly female, in her mid-twenties. The head of the inhumed corpse rested on a piece of animal hide and the two burials, which must be thought of as contemporaneous, were accompanied by a Food Vessel and a stump of reindeer antler. Cist 2 contained some bones and teeth in a disturbed state, representing a person aged 25 to 30 at death. In addition, perhaps as the result of cross-mixing with Cist 5 when three of the cists were discovered and rifled in the early 19th century, a tooth of a child of 9 to 11 was present. Surviving from the grave-goods were a chipped stone strike-a-light, a perforated whetstone and a chisel-like artefact fashioned from a piece of very soft stone.

Cist 3 had also been disturbed and contained the fragmentary remains of an inhumed body, adjudged to have been male and on the evidence of the bones and teeth to have been aged 24 to 26 at death. In this cist there were also found two small discoid scrapers. Cist 4 was undisturbed, but the contents had been damaged by the collapse of the capstone. The cist contained the tightly contracted body of a woman aged 30 to 32 at death. She wore a necklace of shale disc beads and was accompanied by a Beaker. In addition two pieces of two broken jet pendants lay on the floor of the cist, which, like the floor of Cist 1, was made of small, white, quartz pebbles. Cist 5 was a small, narrow cist lying parallel and close to Cist 3. In its disturbed condition it still contained some bones and most of the teeth of a child of 11 or 12 years of age, and a few teeth and some bones of a person aged over 25 years. The only artefactual remains were a pair of perforated jet spacer beads from a four-stranded lunulate necklace. Cist 6 was a small, square, box-shaped cist

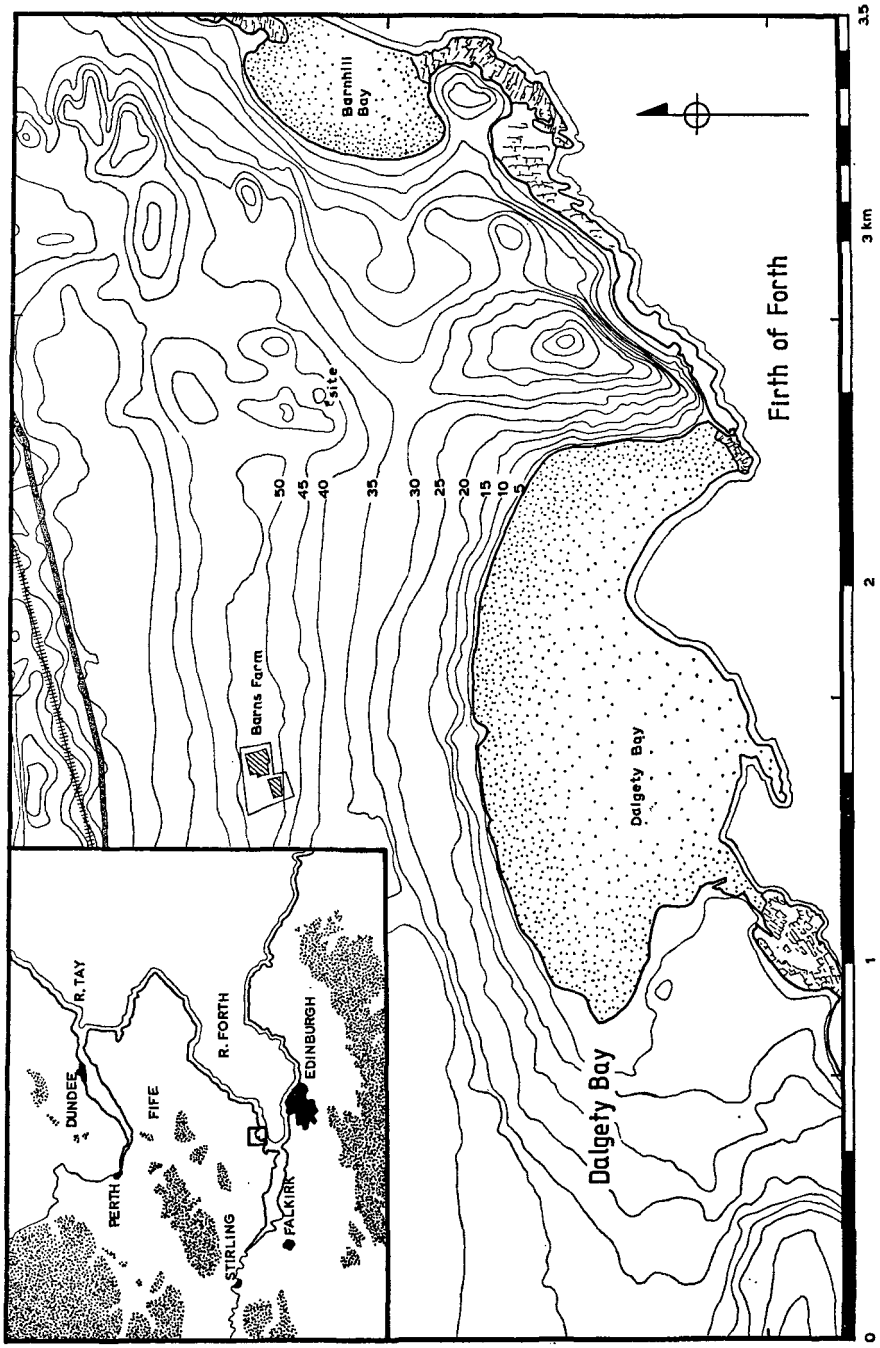


FIG 1 Barns Farm, Dalgety, Fife. Location map

with flaring sides, a stone floor at the base and a second stone floor half-way up. It contained a considerable quantity of cremated bone and a tiny copper awl or reamer.

Amongst the cists were three earth graves each with both an inhumation and one or more cremations placed together in coffins. Grave 1 contained traces of a flexed corpse lying on its right side (aged on dental evidence between 17 and 24) and three deposits of cremated bone representing three individuals, one of whom was a juvenile. It seems very probable that a Food Vessel found nearby had been recently ploughed out of Grave 1, and a stone battle-axe of Woodhenge type was found in the grave. A small fragment of another Food Vessel was also incorporated, presumably by accident. Grave 2 likewise contained a flexed inhumation, aged on dental evidence 18 to 20 years at death. There was also a single deposit of cremated bone, a Food Vessel, and an accidentally incorporated neolithic sherd on the floor of the coffin, and a deposit of fish at a higher level in the grave fill. The coffin, like that of Grave 1, was of an organic material, which in this case was identified as leather; it is argued that the coffin was in its original use a coracle. Grave 3 had been badly damaged but it is believed to have resembled Grave 1, with an assumed inhumation, an attested cremation, a coffin, a copper or bronze dagger in a sheath and two flint knives.

There is no reason to think that most of the pits and the two hearths do not belong to the cemetery phase of activity of the site. Adding the heads from some of the pits to the inhumed and cremated remains from the cists and graves (but omitting the small amounts of cremated bone from some of the pits) the 'population' of the cemetery is about or above 20. The figure must remain imprecise if only because of the unknowable implications of the 'extra' teeth in Cists 2 and 5 and the imprecision over the number of heads in the pits. Once the cemetery had been used to the extent described it was sealed by the construction of the barrow, which had been removed before excavation began but which can to some extent be reconstructed. In the absence of the barrow it is impossible to say if there were any secondary burials inserted into the mound. The only other activity observable on the site was the 19th century discovery and rifling of three of the cists; one or two fragments of clay pipe stem in the backfill of these disturbed cists accord with the record in a late 19th century book of local history and antiquities of the discovery of a burial site at that location.

Since there is no stratigraphic link between any two features of the cemetery phase each remains a discrete element, and no internal, relative chronology can be built for the cemetery from that source or from the finds or from the radiocarbon dates. It seems that, where there were multiple burials in one cist or grave, these were simultaneous. The six cists exhibit considerable differences from one another in detail, and there is no evidence to suggest in what order, over what length of time, or in accordance with what logic they were sited and made. Equally, there is no means of establishing any chronological relationship between them and the graves, or among the graves. If one assumes that the highest point of the hill-top was used first then Cists 1 and 2 were among the earliest burial structures. In that case the graves should be seen as secondary to the first cists, but their relationship to the later cists remains indistinct. Granted our inability to perceive any significant distinctions of this kind it is necessary to conclude that the cists and the graves belong to a single, general phase of burial activity. While exhibiting little evidence of chronological relationships to one another the cists and graves nevertheless clearly respected one another; one may suppose that later burial parties could see where earlier activity had taken place and took pains to avoid infringing these earlier burials. On occasions there appears to have been some attempt at alignment: Cist 5 lies parallel to and alongside Cist 3, and the three graves are on the same general alignment. Cists 2, 3 and 5 had been disturbed, apparently around the middle of the 19th century. Their capstones, presuming that they had been provided with them, were missing, and their contents, including the human remains, had been removed and some portion of

it returned together with much soil and some stones. None of these three cists contained pots, but each had some part of its original assemblage, and all contribute to the general, homogeneous assemblage of the cemetery phase.

Three radiocarbon dates (see Section 17) were obtained from samples relating to the cemetery phase. Human bone from Cist 1 proved difficult to date on account of the loss of suitable material from the bones through active leaching in the ground. The result of $2746 \text{ bc} \pm 85$ (SRR-700) is impossible at present to accommodate for a cist with a Food Vessel. Substantial quantities of featureless bone were used to produce a useable sample of only 150 mg. A similar sample from the body in Cist 4, again using large amounts of undistinctive human bone, yielded only 30 mg and gave an even more anomalous date of 3737 bc, far too early to be tenable for a context including a late Beaker. This last date was undertaken only tentatively, and, because of the procedures which were necessary to obtain any result, the laboratory considered the result invalid; it does not have a serial number and will not be published in *Radiocarbon*, and it is not listed in Section 17 here. From carbonised wood from one of a set of refilled pits (Pit 10) a date of $1846 \text{ bc} \pm 80$ (SRR-528) was obtained, which accords well with expectations for a late Beaker and Food Vessel site. A fourth sample of marine shells from Pit 1 gave a date of $2761 \text{ bc} \pm 50$ (SRR-529), according well with expectations for the date of the neolithic phase of activity.

4. PRELIMINARIES

Before entering into the detail of the individual features and finds it is necessary to consider a number of general matters by way of introduction.

The site whose excavation is described here was rediscovered on 20 February 1973 when ploughing revealed what was later called Cist 1. The ploughman contacted the farmer, who telephoned the National Museum, whence came the request to the present writer to investigate the report. At that time the author lived very close by, and was able to visit the site and begin work on Cist 1 the following day. In conversation with the farmer it was learned that heavy earth-moving equipment had been used some months before the ploughing to reduce the level of the top of the hilltop. It seemed likely that some sort of barrow had been unwittingly removed exposing the cists and other features to the ploughing. Within two or three days of the start of excavation it became clear that there were other features in the immediate vicinity, and when it was discovered that these were cists and a number of pits it was proposed to the Inspectorate of Ancient Monuments that the excavation of the site should be adopted as a funded rescue excavation. Throughout the rest of that university term, at weekends and as opportunities could be made during the week, and with the assistance of archaeology undergraduates from Edinburgh and a growing and enthusiastic band of weekend volunteers, the work was carried on until full-time excavation could begin in the Easter vacation. That latter phase of work was completed by 9 April, by which time the whole hilltop had been cleared and cleaned by hand, and all the features described here were substantially excavated. A final, brief episode of activity on the site took place in early October 1973 when the stone structures of the cists were dismantled and removed, and complete excavation of the pits in which the cists had been built could be undertaken. As a culmination of this phase of the work came the reconstruction experiment described below (section 12, pp[114]seqq).

At this point I gladly acknowledge my very great debt of gratitude to all those who gave their help and advice so fully and so readily, often at short notice and some inconvenience. Their names are too many to record individually, friends, neighbours, undergraduates, research students, concerned amateurs and professional colleagues. The Department of the Environment,

which at time housed the Inspectorate of Ancient Monuments, acted with commendable speed and positive enthusiasm to make available money, equipment and workmen when needed. That zeal was matched by the helpfulness of the landowner in allowing the excavation to take place in the middle of a growing crop. The National Museum of Antiquities of Scotland made freely available the resources of their conservation and research laboratories. This generous and enthusiastic support has continued beyond the excavation, as this report demonstrates, and I signal here my indebtedness to those who have contributed so selflessly to the analysis of the results of the excavation and this publication. To all of them I offer my thanks, and the often-used 'we' in this report should not be taken to be a pretentious 'I', but understood as a genuine token of the corporateness of both the digging and the thinking.

The site, now completely destroyed, lay close to the north coast of the Firth of Forth at National Grid Reference NT 178 842, on Barns Farm in Dalgety parish, Dunfermline District, Fife Region (see fig 1). The cemetery crowned the top of the central of three small and inconspicuous hillocks set close together about 1.75 km south-west of the village of Aberdour and 1 km east of the edge of the new town of Dalgety Bay. Although only about 50 m above sea level the site commanded a panorama from west through south to east: to the south-west lay the stretch of water known as Dalgety Bay and beyond that the narrows at Queensferry, to the south-east Barnhill Bay and across the Forth the line of the Pentland Hills, Arthur's Seat, and on clear days the East Lothian coastline as far as North Berwick Law. While the view *from* the site was spectacular, the view *of* the site from round about was quite the reverse: from almost every position the little hillock was difficult to spot among the other small rises and against the background of higher ground of the line of hills to the north. The headland between the two bays and the hillock on which the site sat are composed of an intrusive basalt, the surface of which may degrade to form a fine, gritty subsoil of compact consistency and a clear, orange-brown colour. This makes an excellent subsoil on which to excavate, though the soil conditions are very destructive of all organic materials.

It would be convenient to explain at this point the frequent references throughout the following pages to the 'previous excavation'. It appears that the excavations reported here resulted from only the rediscovery of a site already known locally and cursorily explored more than a century ago. Three of the cists, numbers 2, 3 and 5, had been located, turned over, and some of their contents were removed. I am very grateful to Kenneth Reddie MA, an Edinburgh archaeology graduate, for bringing to my attention what is surely the relevant reference, which he had found and recorded in his MA dissertation. It is worth quoting here *in extenso*. J C R Buckner wrote in his book *Rambles in and around Aberdour and Burntisland*, published in 1881, (p 25, *sub verbum* Donibristle):

A mile distant from Aberdour, a short way past St Colme House, the residence of the Earl of Moray's factor, is a reputed sepulchral mound from which a stone coffin and several earthen vessels containing human remains are said to have been unearthed when the tumulus was dug into about the year 1840. The mound is situated in a park immediately adjoining the drive on the north. Half a mile west from the tumulus is DALGETY.

The former Dalgety, it should be explained, lay at the eastern extremity of the new town of Dalgety Bay. So far as can be discovered this is the only reference to the 1840 excavation, and no indication exists of where the finds were placed. Buckner's informants in general were the ' "oldest inhabitants" and intelligent natives who were able to give him much curious information'. Two elderly inhabitants of Aberdour who visited the excavation assured me, quite separately and unprompted, that they had been told of the site and its general location in their youth, a daunting

lesson in the reliability of folk-memory and the occasional gaps in our official archaeological system, whereby a 'known' and explored site can avoid reaching the official records.

Buckner's note of the site and its excavation became known to us only towards the end of the excavation, and thus it in no way affected the planning and execution of this investigation. In the early stages the excavation strategy was developed simply and strictly *ad hoc*, concerned at first only to rescue the contents of a cist and its structure, and then to expose and explore a growing series of new features. An arbitrary square was cleaned to the undisturbed subsoil surface around Cist 1; then similar arbitrary areas were cleared around other cists and pits as they were noted in the ploughsoil. The next stage was the decision to clear the ploughed soil from the hilltop area, about 700 square metres in all. The clearing was done by hand, first to produce an area that embraced all the then located features, and then expanding outwards in all directions until there was a reasonably broad 'sterile' band between the outermost features and the excavation's edge. In addition four soundings were extended to the NE, SE, SW and NW in order to discover any peripheral features at or beyond the edge of the barrow or cemetery.

Each detected feature was excavated as a separate entity. The undisturbed cists were simply cleaned, recorded, emptied and later dismantled completely and cleaned back to the original sides of the construction pit. The disturbed cists proved much slower to dig and were excavated and recorded in plan with great care until one began to yield clay pipe fragments. After that, it must be admitted, less care in three-dimensional recording was taken. On occasion the pits were hard to define, having been refilled with the material which had been dug out to form them; and in those circumstances it was hard to choose section lines. However, most pits were sectioned and the largest was dug in quadrants for a while, although only one pit was found to have a fill which was not entirely featureless and homogeneous throughout. The graves were excavated in plan rather than in section, because at the outset the grave-pits were hard to define and needed some vertical exploration before it was confirmed that pits indeed existed; and then plan-excavation was continued because in our ignorance of what we were excavating and in those acid soil conditions it seemed dangerous to tackle portions of the base of a feature when (and it turned out to be so) there might be a whole body reduced to a shadow. In Grave 2 the interior of what became the coracle-coffin was excavated first, leaving the outer parts of the lower grave fill in place in order to reveal the shape of the organic container.

In order to provide wind and weather protection to particularly delicate features (for example Grave 2 and Cist 4) the Ancient Monuments workmen put together two light, wooden-framed, polythene-covered shelters. These allowed work to proceed on two features at any time, regardless of frost, wind, rain or snow. In addition the Department of the Environment provided a portable generator and an ultra-violet light source once the nature of the human remains in Grave 1 was revealed. It was then possible to pause at any stage in the excavation and black out the shelter over Grave 2 and cause any exposed portion of the normally invisible bone remains to fluoresce faintly. The fluorescent patches were marked and then planned before excavation continued. Another very useful aid was supplied at their suggestion by the National Museum Research Laboratory. Dr McCawley put together a simple phosphate testing kit for use in the field, and once more the portable shelters proved their worth since tests could be conducted alongside the source of the samples with very rapid feedback of information and no break in excavation. The best use of the kit was in checking at intervals in a grave's fill to see when high phosphate levels were reached. The kit was used in Grave 1 and again in Grave 2 both before and while the body was being 'revealed' in order to warn of its presence and to plot its position.

The excavation team fluctuated wildly in size and ranged as broadly in experience. For the most part it was about six, of whom almost all were already very competent, experienced excava-

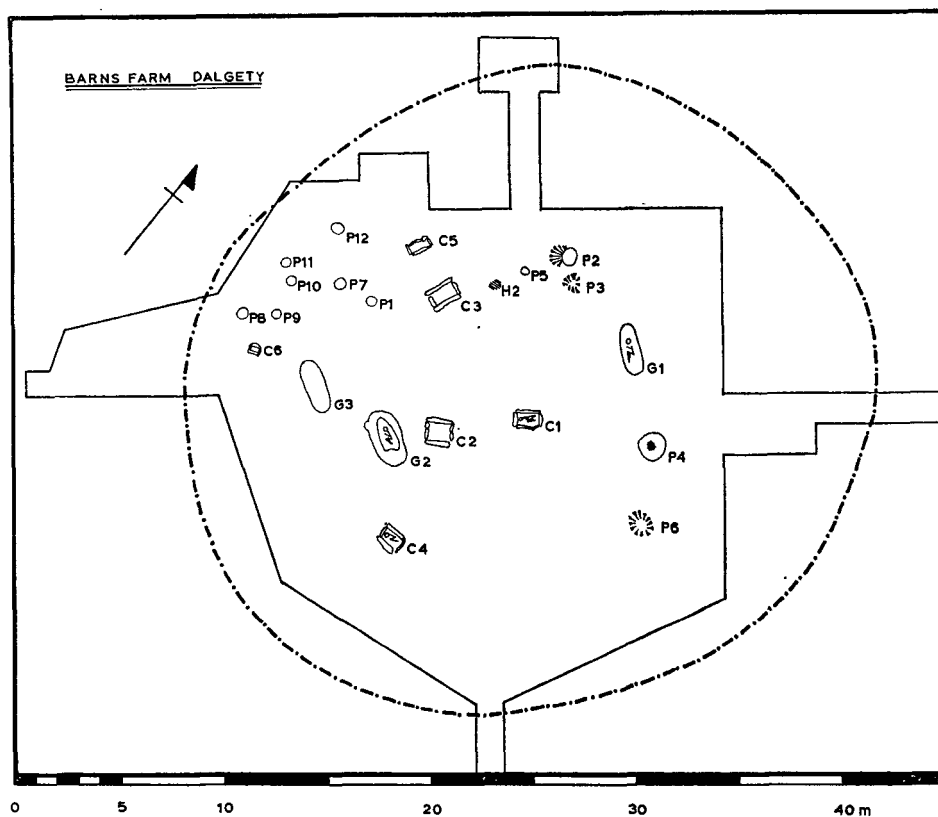


FIG 2 Barns Farm, Dalgety. Site plan. C=Cist; G=Grave; H=Hearth; P=Pit

tors. At weekends many offers of help were taken up, and up to twenty people might be on site, many of them quite inexperienced, but willing nevertheless to help in shifting the considerable overburden of disturbed soil. In addition the Department of the Environment supplied the services of two of their workmen for a while in order to clear the ploughed soil and produce an excavation surface. The present writer supervised throughout, took all the photographs and wrote the field records; various hands were responsible for the surveying, planning and drawing of profiles. The main plan was produced by plane-table survey. A 30 m baseline was laid across the site from south-west to north-east, and individual features or their subsidiary baselines were trilaterated to the main baseline.

The finds from the excavation were claimed for the Crown by the Queen's and Lord Treasurer's Remembrancer and placed in the National Museum of Antiquities of Scotland. The excavation record, consisting of a master notebook, field drawings, photographs, a card index of small finds and drafts of the report, is placed in the Scottish National Monuments Record in Edinburgh. The form of this report is first to describe the excavated features grouped into categories, which are treated in alphabetic order—the barrow, cists, graves, hearths and pits. Next the human remains are described, the dental data by Dr Dorothy Lunt and the osteological by Mrs Lin Barnetson. In section 10 Ian Shepherd provides the descriptive account of the assemblage of grave-goods, incorporating specialist reports by Miss Audrey Henshall and Mrs Fiona Roe. There follow two sections concerned with particular graves: one describes the experimental

reconstruction of Cist 2 and the other is devoted to the probable identification of a coracle reused as the coffin in Grave 2. The next two sections deal with the comparative material against which the site must be set in perspective, the background to which the discoveries contribute their part: the cemetery as a set of structures and funerary practices is dealt with by Ms Ellen McAdam, while the assemblage of artefacts is discussed by Ian Shepherd. Dr McCawley's report on the examination and analysis of organic samples from the site appears as section 16, and the brief series of radiocarbon determinations conducted by Dr Harkness at the East Kilbride laboratory comes at the close of the report.

5. THE BARROW

According to the farmer owning the land, about a year prior to the ploughing which led to the discovery of the first cist a large quantity of soil was removed from the top of the knoll where the site lay. It was used to fill a wet hollow elsewhere in the field, and at the same time it served to reduce the steep upper contours of the knoll so that ploughing would be easier. Prior to this the field had been pasture for as long as local memory could recall, and was parkland in the 19th century (Buckner 1881, 25). The soil was removed by means of a scraper towed by a caterpillar tractor. From memory the farmer believed that 'about four feet' of material had been taken from the crown of the hill. The material was a mixture of dark brown and yellowish-brown soils and some stones.

Seen from the air the area where the soil was dumped was of the same colour as the cemetery area itself. The ploughing had cut into the subsoil and destroyed most of what was left of the old land surface, and much of the ploughed material removed by us must have been subsoil too. From the dumped soil an endscraper on a blade was recovered in field-walking.

On the site itself there were indications that the 30 centimetres depth of ploughed soil included patches of the lower parts of a buried soil profile. Since a year had intervened between the reduction of the knoll and the ploughing, grass and other plants had colonised the raw area, and doubtless clods of topsoil from beyond the scraped zone had been introduced during the ploughing. However, there were *in situ* examples of a soil different from the subsoil and the modern topsoil elsewhere in the field, a browner, finer soil, which graded into the subsoil. Around Hearth 1 in particular there was a patch of sticky, grey-brown soil with rust-coloured lines of iron-pan across it, the lower parts, apparently, of a thin, leached topsoil with here and there traces of the thin, very dark humus at its top. Downslope from Hearth 2 was found the lower part of a soil profile grading into the subsoil. Elsewhere at various points were noted slight traces of an old soil left *in situ*, while the ploughed soil in general contained far more brown soil than one year's weathering and plant growth could account for. In particular around Cist 1 there were quantities of brown soil, lighter in colour and consistency than the modern soil and a redder colour, but darker and softer than the subsoil. Everywhere these traces were disturbed and truncated, but they were enough to indicate the former presence of a buried soil.

In view of the presence on the top of the hill of the remnants of a buried soil, till recently buried by up to 1.25 m of material consisting of subsoil and more topsoil, one must conclude that much of the material removed represented an unnoticed round barrow, unnoticed that is by 20th century archaeologists. One reason why it may have stood unremarked for so long is that the site on which it stood was itself a small, domed hilltop, to which the barrow was added. The outline of the barrow, it would seem, had completely merged with the contours of the hill.

There is of course no means of knowing whether any 'secondary' burials were lost in the removal of the barrow. Indeed, it is clear that in some parts the scraper had cut down into the

subsoil below the buried land surface. Grave 1 had probably been truncated, and Grave 3 survived as only a slight hollow in the subsoil, where presumably there had originally existed a pit of some depth. Both of these graves lay towards the edges of the cemetery, probably under the edges of the barrow, and they had been accordingly worse truncated than features nearer the centre of the barrow. It is quite possible that some features, which were even more peripheral or shallowly dug, were lost prior to the excavation. Our knowledge of the barrow is slight and inferential; we know that much of it was composed of subsoil, though no quarry ditch was found in the four soundings. We have the farmer's memory that there was also topsoil, though no amount of stone to speak of, and we have his estimate from memory of its height at the centre. We have no evidence of a definitive kind concerning the extent of the barrow or precisely where it was centred. As far as size is concerned we may suppose that the barrow covered at least all the 'primary' burials and associated pits, so that its minimum diameter was 23 m. At its maximum the barrow may perhaps have extended to the points in the soundings where we ran across a layer of field stones (see next paragraph); at this distance from the centre of the hilltop there was no trace of any barrow, giving a maximum diameter of 36 m.

There is some evidence for the existence of a coating of stones which covered the whole surface of the barrow and continued beyond its edge for some little way down the slopes of the hill. This evidence comes from two sources. In the first place the four soundings run out from the main excavation area in search of a quarry ditch or other signs of peripheral features all reached into areas of closely laid field stones immediately below the modern topsoil and close to the top of the subsoil. Once the outer edges of these stony bands had been located it was possible to see in the ploughsoil all around the site the curving perimeter of stone in the ploughed soil as it swung round the contour from one sounding to the next. Broadly speaking the outer edge of the band of field stones was marked by a ring of darker soil around the inner disc of light subsoil as seen in the aerial photograph taken at an early stage in the excavation (pl 3). The inner edge of the stones was ragged and irregular. In the NW sounding the stones were large, sparse and loosely set, plainly the survivors of disturbance. In the SE sounding, on the steepest slope, again only a few stones survived, and here the band had been disturbed by the plough and probably quite severely curtailed by the scraper before that. The stones in the SW sounding were extensive and close-set, but the inner edge was nevertheless ragged where the scraper had begun to cut into the site. In the NE sounding the inner edge of the band of stones was again irregular, but generally corresponded to a break of slope which may be interpreted as the point at which the scraper cut into the natural subsoil. In conclusion we may aver that beyond the edge of the barrow proper lay a ring of laid field-stones whose inner edge as excavated was merely the accident of where modern damage had begun. The question is whether there was simply a ring of stones laid like a band of rough paving all around the barrow, or whether there was a continuous coating of stones stretching over the entire barrow and beyond.

Owing to a strange chance it is possible to argue that the latter hypothesis is the more likely. About 1840, as we have seen (above, p 53–54), three of the cists were discovered and rifled. They had presumably had capstones, but these were removed and not replaced. After removing some or most of the contents of these cists our predecessors had apparently backfilled their holes and the open cists at the bottom of their holes. Their holes would have been dug through the barrow material, and the backfill in the cists should therefore represent a mixed sample of what they had dug through. The fill of the disturbed cists was noted as being a fairly dark brown soil, finer and a little lighter in colour than the modern topsoil. This matrix of soil contained a noticeably large number of rough lumps of stone, much more in quantity than was present in the modern soil round about. It is thus arguable that the backfill of the cists incorporated remnants of the barrow,

and included rather a lot of stones which may probably be restored as remains of a continuous stone capping of the barrow.

One may summarize our conclusions regarding the barrow as follows. The barrow covered all the excavated cists, graves and pits, which already existed set into the subsoil. The barrow may have housed 'secondary' burials, but we have no knowledge of these in the circumstances. The barrow was circular, very approximately 30 m in diameter (ie somewhere between the maximum and minimum figures quoted earlier) and about 1.25 m in height. It capped the hilltop, and, consisting of scraped up topsoil and superficial subsoil, it merged with the contours of the hill. This impression was apparently amplified by the spread of the capping of the mound with stones to include a ring beyond the barrow itself, so that the barrow appeared larger than it actually was.

6. THE CISTS

CIST 1

Cist 1 lay on the very crown of the knoll, at least as the hilltop existed after the earthmoving, and was probably marginally nearest to the centre of the barrow. (For the location of this and the other features on the site see fig 2.) To what extent it was the primary feature of the cemetery is very doubtful. The cist was the first to be discovered when its capstone caught the plough; the massive capstone remained intact though it slewed through ninety degrees, allowing the ploughman a glimpse of the interior. A mere five or ten centimetres of soil covered the capstone, the narrow margin by which the earth-moving equipment had missed destroying or at least wrecking the cist. The cist was first seen by the writer on the morning following its discovery; it was partly open, the capstone askew. Only a little soil and turf had fallen in, and the only disturbance to the structure of the cist caused by the movement of the capstone was the falling of a few flakes from the west end-slab, and the dropping of some of the clay luting. Together with signs of human bones a Food Vessel was visible inside the cist; it was said to have been intact when first seen, but was by then fallen into two large pieces. In fact on excavation it was found that there were some more very small pieces of the Food Vessel's base lying on the floor of the cist, and none of the breaks looked fresh; it seems probable that the pot was already cracked and in pieces when first seen by the ploughman, even if it was still holding together at the moment of discovery. Also visible at that stage were some of the stones which formed the kerb referred to below.

When excavation was complete and the cist completely dismantled it was possible to trace the shape of the pit in which the cist had been built with the exception of the very uppermost parts of the near vertical sides (see fig 3). The outline of the pit was only detected after the overall level around the cist itself had been reduced almost to the level of the tops of the slabs. The top of the pit had apparently been approximately at the level of the plough's disturbance, the original ground level presumably being marked by the kerb, some of which had survived. An old land surface at that level would have left the top of the capstone standing a little proud while the base of the capstone and the tops of the slabs forming the sides of the cists would have been subterranean.

In plan the pit seemed rather large and almost circular, though once the packing had been removed from behind the vertical slabs the shape made more sense (see pl 4). The other cist-pits were subrectangular in plan but the assembly of the slabs was different in those cists. The construction of Cist 1 required slabs of approximately equal length for all four sides, and thus the pit needed to be about the same in both its plan dimensions. In the other cists two long side-slabs were placed first, and then two short end-slabs were set between them at either end. In Cist 1 two long end-slabs were placed in position first, and then two long side-slabs were set between the

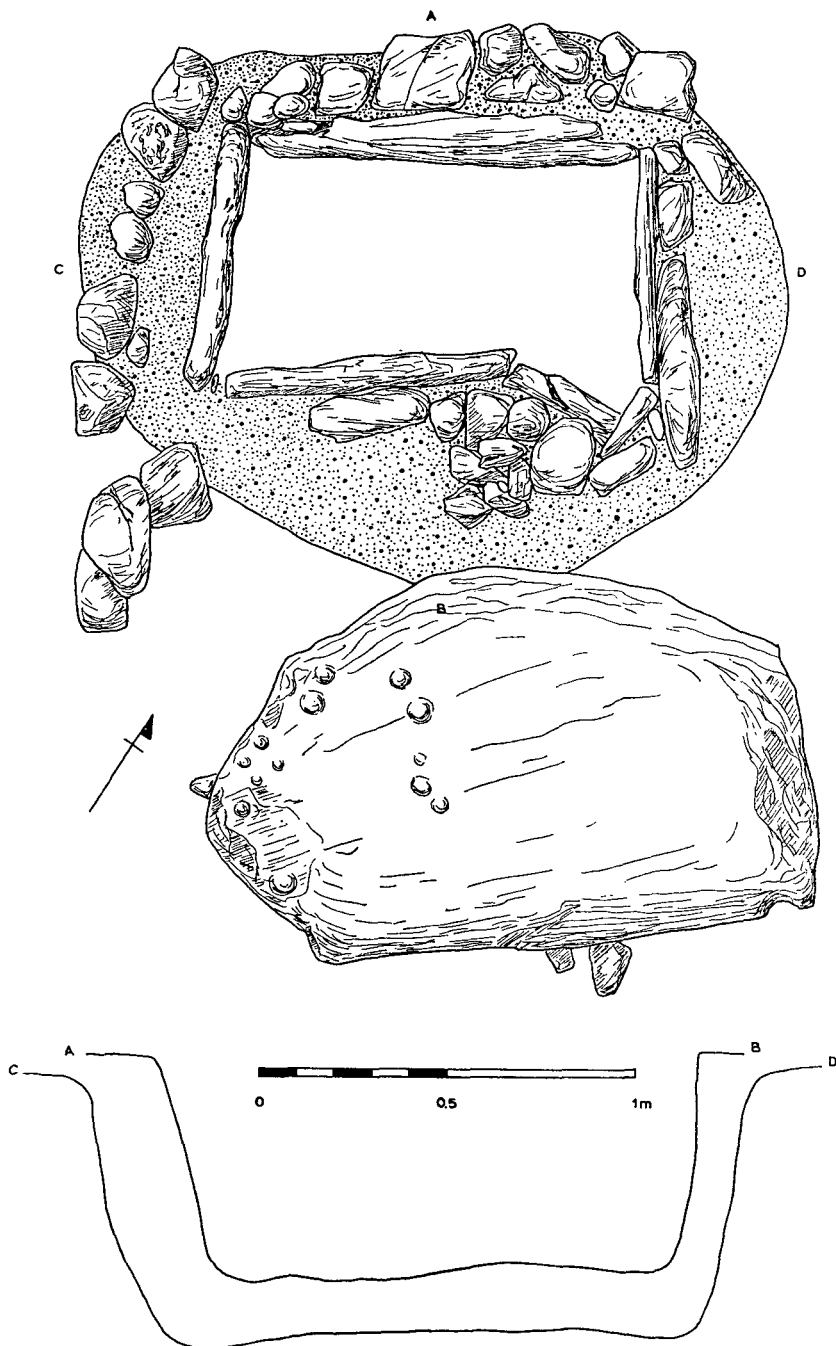


FIG 3 Cist 1. Plan and profiles. The capstone is shown as it lay after being pulled aside to allow excavation. It has been slewed through approximately 180 degrees

end-slabs. There is no obvious reason for the oval shape of the pit, however, which could have been much more straight-sided and sharp-cornered like the others. The profiles of the pit are of some interest (see fig 3). Not only were the sides extremely steep, but there was a slight hollow around the edges of the floor, leaving a raised, rectangular area within the cist on which the pebble floor was set and the body finally placed. There is no evidence to show whether it was found necessary to lower the slabs by undermining them once they were in the pit because of a slight miscalculation over the depth of the pit, or whether the bottoms of the slabs were deliberately let in a little below the general level of the floor in order to allow a neater finish when the pebble cobbling was laid to the sides. In view of the great care shown in other details of construction and the obvious competence in building displayed in most of the cists the second hypothesis is perhaps preferable: executed in the manner described the construction successfully concealed any irregularities at the bases of the edge-set slabs and produced a completely regular and continuous joint between the walls and the floor of the cist. In this regard Cists 2 and possibly 3 were likewise skilfully constructed, but Cist 4 had one very irregular side-slab which left a long gap at its base, into which one of the objects in the grave had infiltrated.

Cist 1 was also unusual in that six slabs were employed to form its four sides. The first slabs to be inserted were the end-slabs across the NE and SW ends. These were of white, sugary sandstone. The NE end-slab was backed by a second slab, a water-worn slab of sandstone, smooth with rounded edges, its upper edge making up for the deficiencies of the front slab, to which it was sealed by a packing of plasticine-like blue clay. The side-slabs were fitted between the end-slabs, the SE side being a single, thin slab of white sugary sandstone, and the NW side being formed by two slabs sealed together with blue clay. Again, the inner slab was white sandstone and the rear slab was of round-edged, water-worn red sandstone, the latter being necessary to form a horizontal top edge, especially where the inner slab's top edge declined towards the NE end. In comparison with the slabs forming the other cists constructed on a similar scale (ie excluding Cists 5 and 6) the white sandstone slabs of Cist 1 were thin, and some at least gave the appearance of having been freshly split from living rock. Most of the other slabs used on the site were thicker and none showed such fresh, unweathered surfaces as those facing into Cist 1.

Between the rear surfaces of the slabs and the sides of the pit a number of substantial lumps of stone was found, each wedged tightly into place. Their function seems to have been to hold the slabs of the cist in place while the spaces behind the slabs were filled. On the SE side of the pit, however, the propping stones were not tightly wedged and they were not the field-stones used elsewhere. The main stone was a sizeable block of white sandstone, and there were many chips of a second, smashed, sandstone block below and around it. The SE side-slab of the cist had split from top to bottom about two thirds of the way along its length towards the east end and had buckled inwards. This fracture seems to have occurred while the filling of the pit was in progress; clearly funerary preparations were at such an advanced stage that substitution was not considered practical or essential. Instead, the split was filled and smoothed over with blue clay when that material was being used for the luting of the cist.

Once the slabs were correctly positioned and propped in place the space behind the slabs was filled up with field-stones of various sizes. When the SE slab split and buckled the packing behind it must have subsided, but this deficiency was made good first with some of the surplus flooring pebbles and then with the remaining blue clay. Thus the packing of the pit was brought up to the level of the tops of the slabs; above that level subsoil was used, but that would have been introduced only after the capstone was in place. The pebbles of the floor were selected beach pebbles, chosen to be roughly the same size, about 3 to 5 cm in length; they were predominantly near white quartzite, and were loosely set in a thin base of soft soil. As remarked above, this floor

was carefully laid to run neatly and horizontally to the slabs of the sides. The angles at the corners of the cist were then packed with glutinous, plastic, blue clay, which was also used to seal the spaces between the tops of the two NW side-slabs and the two NE end-slabs.

The same clay had served to patch the crack in the SE side-slab and to lay a bed along the top edges of the slabs where the capstone would rest, closing the cist to all intents hermetically. Where the slewing of the capstone had not dislodged the luting, the clay was found still damp and uncracked, demonstrating on the one hand the effectiveness of the seal and revealing on the other hand that the interval between the completion of construction and the final sealing of the cist once the burials had taken place was a brief one. The underside of the capstone showed a continuous, rectilinear stain where its smooth surface had been sealed to the top of the sides of the cist by means of the blue clay strip. To emphasize the brevity of the interval during which the completed cist remained open it was observed that, during the first few days of the excavation, the last week in February, when the weather was cool and damp, the exposed clay soon began to crack.

The cremated remains which were found in the E corner of the cist must have been inserted before that angle of the cist was luted with clay, since some of the bone fragments were found outside the cist proper only as the stone structure was being dismantled. Practically half the amount of cremated bone had slipped or been pushed through a gap at the base of the angle between the two slabs. The clay luting failed to reach the bottom of this angle because the cremation was already in position.

Once the cist was prepared the uncremated burial must also have been inserted with little delay and the cist was then closed with the massive capstone. The NW edge of the capstone was straight and had lain almost parallel to the line of the NW side of the cist, overlapping it somewhat; elsewhere the irregular outline of the capstone spread generously beyond the cist beneath. Around the capstone a kerb of stones was laid. Along the NW side of the capstone the kerb lay tight against its edge, and around the SW and NE, too. The SE side of the kerb was badly disturbed by the moving of the capstone, and the E and S sectors had also had stones displaced. It was nevertheless possible to reconstruct the kerb's outline as having run in a wider sweep than the bulging side of the capstone. A possible explanation of the kerb and its eccentricity is advanced below (see section 12, p 114), where it is suggested that the kerb edged a small mound formed over the cist from the material left over from the digging of the cist-pit.

Upon the floor of the cist, a rectangular area of predominantly white quartzite pebbles measuring 1.05 by 0.55 m, lay the body of a male of about 18 to 20 years of age according to the dental evidence, or at least 23 years of age on the osteological evidence (see section 10, pp 84-6 for the slightly conflicting evidence; see pl 3 for a photograph of the body in the cist). The contracted body filled most of the available floor area. Pushed into the E corner of the cist so tightly that half of the remains were forced through a gap between the stones were the cremated remains of a person, possibly female, aged at least 23 at death (see section 10, pp 86-7). As already remarked the cremated body was put into the cist while the finishing touches were still being put to its construction. Accompanying the two occupants was a Food Vessel (fig 14), a stump of reindeer antler and a piece of animal hide. The Food Vessel had stood in the W corner of the cist behind the head of the inhumed corpse (top right corner of pl 3), and the piece of reindeer antler was found at the opposite end of the cist close to the position of the corpse's feet. (Mrs Barnetson kindly identified the reindeer antler.)

The dark material here identified as a piece of animal hide lay on the pebble floor of the cist at the SW end under the corpse's head; in size, plan and seemingly in function it resembled a pillow. Dr McCawley examined a sample adhering to a pebble, taken at some distance from the

human remains, and reported that the sample 'could be the degradation products of hide or leather' (see section 16, sample 1). On two pebbles from the floor the material had decayed to leave a brown residue in which traces of parts of hairs or bristles had been preserved. The body lay on its right side facing SE. The left shoulder had slumped back so that the upper torso lay almost on its back. The hips lay one above the other. Most of the bones which had been in contact with the floor were dissolved, and only parts of the more substantial bones of the left side, together with parts of the skull, some vertebrae, and the sacrum survived. Thus the position of the right arm was impossible to ascertain, but the left arm lay with the elbow on the hip and the lower arm at a right angle to the upper. The legs were together one above the other, the thighs drawn up at a very acute angle to the torso. The lower legs were tightly contracted so that the long bones of the upper and lower legs were parallel to each other, the heels close to the buttocks. In order to hold this position the corpse must have been bound. The full account of the remains of the corpse and the cremated remains is given in Section 10, pp 84-7. Portions of undistinctive bone from the inhumation were used to provide a sample for radiocarbon dating; only a very small quantity of useable collagen could be extracted and a date of $2746 \text{ bc} \pm 85$, which cannot be considered helpful, was calculated (see above, p 52; and section 17: SRR-700).

It is worth rehearsing the arguments for the contemporaneity of the two burials in the cist since it has not been a frequently observed phenomenon. In this instance one may infer that the cremation was placed in the cist when it was newly built, or indeed as it was being finished (see above, p 61). If the two bodies were not inserted on the same occasion then it was the inhumation which was secondary, and it must then be concluded that the cist was built in prospect of receiving an inhumation, which seems a little elaborate as an explanation. The conformation of the contents of the cist, the difficulty of raising the capstone to introduce a second body, and the single mark left on the underside of the capstone by the clay sealing, which was contemporary with the luting and the interment of the cremation, all point to the simultaneous burial of the two bodies. In this cemetery, as we shall see, the association of cremation and inhumation in the same grave in simultaneous depositions recurs (in Cist 1 and Graves 1, 2, and 3 to be precise).

CIST 2

It would seem that the farmer's earth-moving scraper had missed this cist, but the plough had scarred the stonework and fractured some of the slabs. Most of the damage, however, had been incurred in the rifling of the cist around 1840, when the contents, too, had been thoroughly disturbed. Cist 2 consisted of six slabs set on edge, but no capstone survived (see fig 4). The sides consisted of two slabs of white sandstone between 1.10 and 1.20 m long and about 190 mm maximum thick, standing some 0.5 m tall. The faces of these slabs were smooth and fairly unweathered, and it would seem that they had been split from living rock for the purpose. The short ends of the cist were filled with two slabs each, set end to end. In the disturbance of the last century the SW end-slabs had tilted inwards towards the centre of the cist, probably as the backfilling was in progress; one of the finds from the cist was located on the sloping upper surface of one of these slabs.

The floor of the cist was the bottom of the pit dug to house the cist; there was no sign that there had been a laid floor such as Cists 1, 3 and 4 possessed. The pit dug to house the cist structure was extraordinarily economical. The surviving lower part of the pit closely fitted the structure which was inserted into it; the shape of the pit was subrectangular, its straight sides only about 20 centimetres from the slabs, and at the corners, which were rounded, the slabs filling the curve very closely. Quite obviously the cist had been designed very carefully to the extent that a set of slabs must have been assembled at the site, measurements made, and a pit dug to allow the

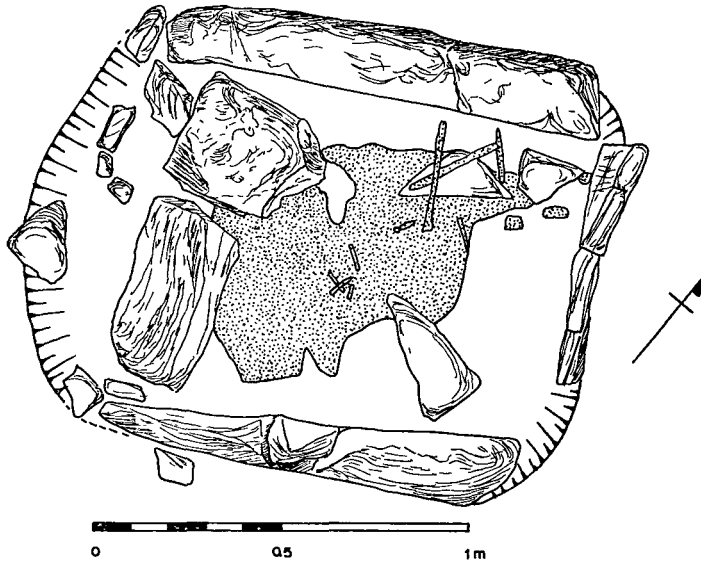


FIG 4 Cist 2. Plan

very minimum of wasted digging effort. Such an economy of effort presumes considerable confidence in the handling of large slabs, and particularly in the placing of these into the pit.

The contents of the cist were thoroughly jumbled. Scattered through the soil were the uncremated and poorly preserved bones and teeth of a person, possibly female, of about 25 to 30 years of age (section 10, pp 87–8). There were almost whole bones, fragments of bones, half a mandible, scattered teeth, all in total disarray. Clearly our curious predecessors had had little respect for the body, and not much concern for the careful recovery of the artefacts in the grave. What had been removed is not known, beyond the probability that a pot was among the finds (Buckner 1881, 25) mentions 'several earthen vessels' as having been found among the burials). The human remains had apparently been pulled haphazard from the cist together with the artefactual contents, and then tipped back in again as the diggings were being filled in. Along with the body, either unseen by the diggers or of no interest to them, were several small objects, whose exact find-spots in the cist are of no significance in the circumstances. These include a perforated whetstone (no 77, p 101; fig 15), a strange little smoothing tool or imitation chisel (no 76, p 101; fig 15), and a well-worn strike-a-light (no 86, p 101; fig 15).

One more observation remains to be made, which is that among the teeth collected from this cist were not only a number of those belonging to the occupant represented by the skeletal remains, but also one belonging to another person, otherwise unrepresented on the site unless the tooth belonged to the occupant of Cist 5. It is described by Dr Lunt (section 10, p 87) as having belonged to a child of 9 to 11 years of age, and it could be part of the incomplete set from Cist 5. The same phenomenon occurred in reverse in Cist 5, where two teeth and apparently some fragmentary bones (section 10, p 91) found in the cist do not belong to the youthful occupant of that small cist, but to a mature adult, again otherwise unrepresented on the site unless they belong to the occupant of Cist 2. Both Cists 2 and 5 were disturbed at the same time, and it must be emphasized that teeth and bones from the different contexts may have been mixed in the careless 19th century investigation. Unfortunately the dental evidence remains inconclusive in both cases: none of the 'extra' teeth in Cists 2 or 5 is duplicated in the other, but the resemblance

between the single juvenile upper right second pre-molar from Cist 2 and the teeth from the juvenile in Cist 5 is not good. Although there are precedents for the deposition of teeth with Early Bronze Age burials (see section 14, p 125), on the whole, in view of the presence of extraneous bones as well as teeth in Cist 5, it seems more likely that there was mixing of the material between Cists 2 and 5 in the 1840 investigation. And it deserves remarking in passing that, if there was mixing of the human remains, the possibility must exist that the artefacts, too, should not be ascribed unequivocally to the cists in which they happen to have been found in 1973.

CIST 3

Like Cist 2, Cist 3 had been opened, rifled and backfilled with no respect for the body. No capstone was found, and the interior of the cist had been refilled with brown soil and lumps of field stone. The soil of the refill was presumably a mixture of the barrow material above the cist and the then topsoil over the barrow. The stones, it has already been suggested (above, pp 57-8), may have been part of the barrow's original stone outer skin. Below the newly ploughed and disturbed soil in 1973 the surface of the ground around the cist was softer than the virgin subsoil, darker, and of a slightly browner and greyer tone; it would seem to have been the very base of the old soil below the barrow. The top edges of the cist slabs would therefore have been arranged to stand at the level of the base of the soil so that the upper surface of a capstone would have lain at or a little below the surface of the surrounding soil.

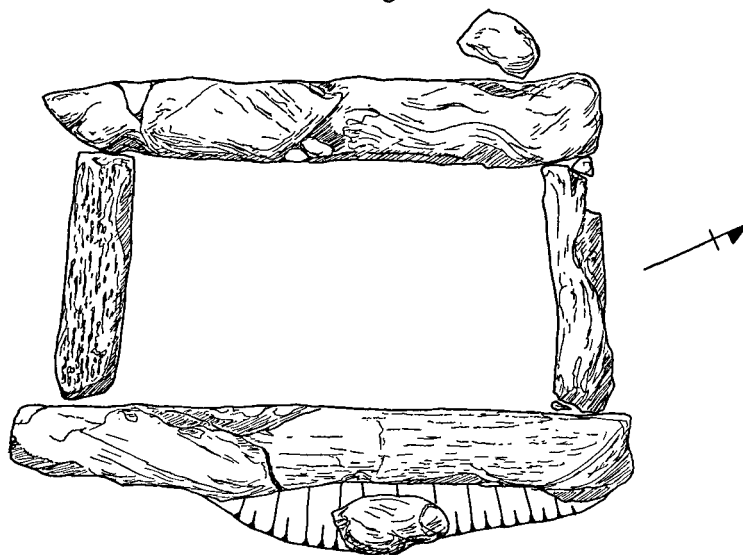


FIG 5 Cist 3. Plan

The remains of the cist itself consisted of four edge-set slabs, part of a cobbled floor of pebbles, and of course the pit in which the cist had been constructed (see fig 5 and pl 4). The cist contained parts of the robust skeleton, probably of a male, spread in disarray through the refill. On the dental evidence Dr Lunt concluded that the person was about 24 to 26 at death, while the osteological evidence led Mrs Barnetson to the conclusion that the person was at least 25 years of age (section 10, pp 88-9). Accompanying the skeleton were at least some remnants of the original grave-goods, together with traces of more recent acquisitions in the shape of fragments of clay pipe stem. The surviving grave-goods consisted of two thumbnail scrapers (nos 140, 147, p 103; fig 16). Also in the fill of the cist a few comminuted fragments of cremated bone were noted,

perhaps indicating the cist had, like Cist 1, originally housed both a cremated and an uncremated body.

The cist was built of four substantial slabs, two long side-slabs and two almost square end-slabs. The cobbled floor of the cist had been partially dug away, probably in the 19th century. Where the cobbled floor had been removed there was a half-oval of darkly stained burnt soil at the centre of the bottom of the cist, and there were more pieces of burnt soil brushed to the corners of the cist. When the surviving portions of the cobbled floor were removed no burnt soil was found, and the other half of the dark oval proved very tenuous. Since the cist had been disturbed and since no burnt material was found sealed below the surviving parts of the floor it is not possible to say with certainty that what was observed was an original phenomenon, but it is at least possible that a fire had burned on the bottom of the cist-pit during the construction of the cist and before the laying of the cobbled floor.

In plan the pit dug to accommodate the cist was rectangular with rounded corners. In length and breadth it was only some 25 to 30 cm larger than the cist itself. Its sides were nearly vertical and its base flat. The extraction of the slabs from this cist for the reconstruction experiment necessarily damaged the pit somewhat before it could be observed; in particular it was not possible to observe the junction of the sides with the bottom of the pit, or to see clearly whether Cist 3 was like Cist 1 in that the bottom of the pit below the slabs had been cut lower than the area of the main floor.

The packing of the pit behind the slabs was mostly of subsoil with occasional, and sometime large, propping stones, which had held the stone structure rigid until the backfilling was complete. Among the stones and soil small gobbets of blue clay were noted, although no trace of its use in the construction of the cist was observed. Small amounts of carbonized wood and hazelnut shells occurred too, and a single flint flake, confirming that the pit-packing was redeposited soil which included debris of earlier activity on the site. We can only infer that these activities, whatever they were, preceded the filling of the pit of the cist, but we cannot learn what was the relationship, if any, between them and the construction of the cist. In consequence the charcoal, which was in any case only a very small quantity, was not used for a radiocarbon date.

CIST 4

Although Cist 4 had escaped the attentions of the 19th century depredators it had been damaged either in the operation that removed the barrow or in the ploughing which led to the discovery of the site. The weight of machinery passing over had fractured the sugary sandstone capstone, which, together with a number of stones which must have been piled on top of it, had collapsed piecemeal into the cist damaging the contents (see fig 6 and pl 5). Nevertheless the finds represent an intact assemblage recovered *in situ*.

The structure of the cist was once again of four stones, the south side-slab being particularly massive (see fig 6). The side-slabs must have been inserted into the pit first, and the end-slabs fitted between them. The stones were not such a good selection as had been brought together for Cists 1 and 3. The south side-slab did not have a horizontal top edge, so that the capstone must have sat on it somewhat uneasily. The top edge of the slab fell away to the west, and there must have been a gap of increasing size towards that end, through which soil had percolated and piled up in the corner of the cist where the Beaker stood, thereby saving the pot from even worse damage when the capstone collapsed. There was no trace of this gap having been packed, which leads to the conclusion that the upper surface of the capstone of this cist must have lain at or below the old land surface, but certainly not above it, else there would have been an aperture. In support of this view it may be noted that there was no trace of the old soil around the cist, even

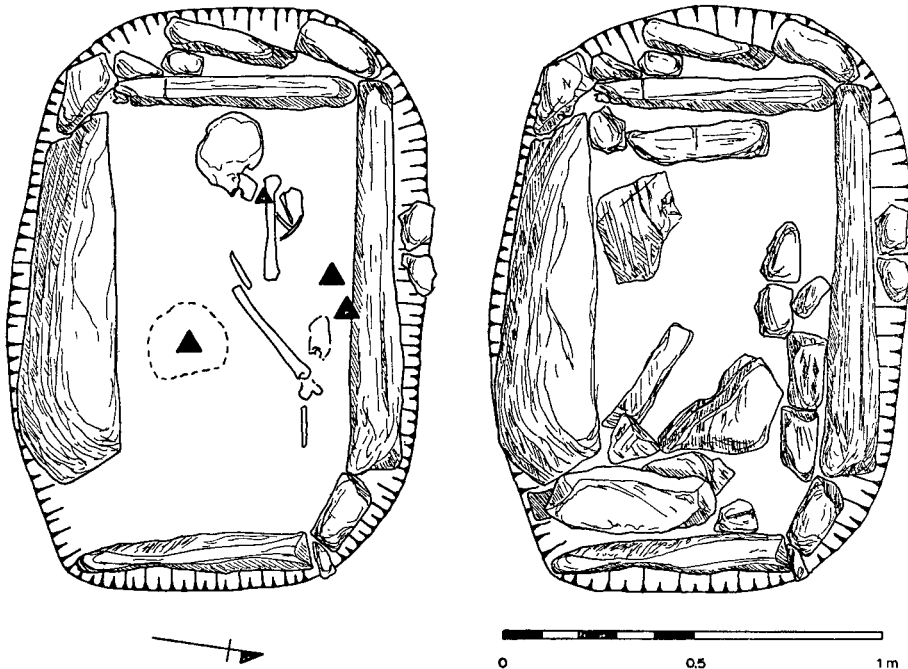


FIG 6 Cist 4. Plans. Right, before the removal of the collapsed capstone. Left, indicating the position of the body and grave-goods. Cf pl 5

though on the NE side undisturbed ground existed above the level of the top of the side-slab. All around the cist the ground was firm, undisturbed subsoil. The north side-slab also left something to be desired: its lower edge rose towards the east, leaving an increasing gap between it and the floor of the pit. This gap had been made good partly by raising the cobbled floor over the west end of the cist, and partly by packing two or three stones into the space. The result was none too neat by comparison with the best standards on the site, and it had allowed a broken jet pendant which had been put in the grave to slip off the floor and into the gap below the side-slab. The east end-slab was also not a good fit, and a long, thin piece of stone had been inserted vertically in the angle at the SE corner where the end-slab failed to meet the SW side-slab.

The pit in which the cist had been constructed was a close fit indeed. In plan its sides were slightly convex and its corners rounded; in section its sides sloped more than those of the two pits already described, and the floor was a shallow concavity. The packing behind the slabs of the cist was soft, uncompressed soil mixed with some field stones and a number of small slabs, not found in the packing of any of the other cists. The soil was soft simply because the slabs, thrust down behind the main structural slabs, had done the work of fixing the structure, so that the soil was merely filling the space and not acting as a packing to hold the structure rigid. The floor of the pit was raised very slightly with a little soil, into which the white quartzite pebbles were pushed to form a cobbled pavement. As already remarked the floor at the western end of the cist was doubly raised, for it had already been made up a little to compensate for the ill fit of the NE side-slab.

Lying on the floor of the cist in a tightly contracted position were the remains of the skeleton of a female of about 30 years of age (see pl 5). The person was robustly built for a female, and is

very tentatively estimated by Mrs Barnetson to have stood 1.57 to 1.62 m tall (section 10, pp 90–91). The body had lain on its right side, which had substantially decayed through contact with the floor. The legs were tightly folded so that the shins and thighs were practically parallel. There was an acute angle between the thighs and the torso. The left shoulder had collapsed down through the thoracic area so that the distal end of the clavicle lay near the base of the scapula and the proximal end of the humerus close to the vertebrae. The head had been pillowed on some blue clay, and tilted with a pebble so that the chin was tucked in and the face was looking down the cist towards the knees. This positioning of the head accounts for the better preservation of the cranium and mandible. The arms had been bent at the elbows so that the hands, whose bones had disappeared in common with all the other slight bones, had lain in front of the chest and below the chin.

The corpse had worn a necklace, and accompanying the body were three objects. Standing in the narrow angle between the lower legs and the south side-slab was found a Beaker (no 163, p 103; fig 17). It had been standing upright, and was badly damaged when the capstone collapsed, but the base and a large section of the pot close to the side of the cist still stood in position. Behind the lower back of the body, lying among the cobbles, was found the upper half of a broken jet pendant (no 148, p 104; fig 17), and another similar broken upper half of a jet pendant was discovered underneath the edge of the NE side-slab of the cist, as already described (no 149, p 104; fig 17).

The necklace worn by the body at its interment consisted of 210 disc beads of shale (no 162, p 104). From the few beads which could at first be seen as the cleaning of the cist began it was thought that an armband had perhaps fallen from the left upper arm when the string had decayed, but as the cleaning progressed, and as the bones of the left arm were lifted, the number of visible beads increased and their position showed that they had lain around the neck. This was confirmed when the mandible was lifted and a number of beads was found lying below *in situ*; also when the left clavicle and then the cervical vertebrae were lifted more beads were found lying in columns exactly as they had been on the string. Finally when the pieces of the broken cranium and the last cervical vertebra was removed, it was possible to see the files of beads crossing one another in what must have been the knot which fastened the necklace at the back of the neck (see pl 6).

It is important to distinguish between the necklace, which was worn by the corpse, and the jet pendants, which had apparently been tossed into the grave. The necklace was complete and was worn by the corpse, while the pendants were represented in each case only by the upper half. Although the floor of the cist was excavated scrupulously, and finally taken to pieces and removed stone by stone, no trace of either pendant's lower half was recovered. While the necklace was most closely associated with the corpse, the two half-pendants had not been worn by the body and were merely in the same cist. It seems reasonable to infer that the pendants had not been possessions of the corpse in the same way as the necklace. The one half pendant lay almost hidden beneath one of the side-slabs, and the other was behind the corpse's back. Since jet is soft such pendants, if broken accidentally, might readily have been reformed, so we may infer that the pendants had been deliberately snapped in order that part might be interred with the body; and presumably since part of each was not found in the cist it had been retained, perhaps as a memento. In this context it should be remarked that it was the perforated portion which was buried and the 'useless' part which was retained.

CIST 5

Cist 5 was the smallest of the cists containing inhumations (see fig 7 and pl 6): only Cist 6, a little box full of cremated remains, was smaller. It was built of five stones, laminar slabs of red

sandstone on average a mere 70 mm thick; even the thickest slab was only 120 mm across. The east side was composed of a single slab, but two shorter slabs set end to end formed the west side; these last slabs forming the west side were not laid quite in line but bowed at a slight angle. The ends of the cist were formed of one slab each. No capstone survived, probably because this cist, like Cists 2 and 3, had been found and rifled in the 19th century. The fill of the cist was dark soil and the contents were in disarray. The east side-slab had canted over into the partly refilled cist and was found at an angle of about 45 degrees. The pit in which the cist had been built was very small; there was only 5 to 8 cm clearance between the slabs and the sides of the pit. The profile of the pit was simple; its sides were sheer, its base concave and the angle between side and base rather rounded. The whole pit was simply made, for nothing more was required for such a small cist whose stones were comparatively light and easy to handle. Even so one of the two west side-slabs perhaps stood a little proud when the primary construction was finished; the dent in the subsoil beneath it showed where it had been let down a further couple of centimetres.

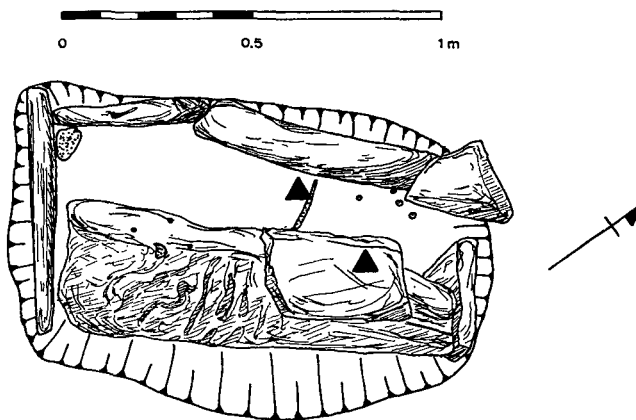


FIG 7 Cist 5. Plan. The SE side-slab is canted heavily inward. The triangles indicate the position of grave-goods

The cist was found to contain a few skeletal fragments and 22 teeth. Twenty of the teeth and some bones belonged to a juvenile who could be quite precisely aged on the dental evidence as 11 or 12 years old. The other two teeth are those of an adult aged over 25 years, and some of the bone fragments, all of which were poorly preserved, were thought by Mrs Barnetson possibly to have belonged to an adult. The two adult teeth were compared with the fragmentary set from Cist 2, and they do not duplicate any from that body; however, on grounds of wear pattern they do not necessarily belong to that set (see section 10, pp 91-2). The conclusion reached when Cist 2 was discussed (see above, pp 63-4), is repeated here: although there are precedents for the deposition of teeth in Early Bronze Age burials, in view of the possibly extraneous adult bones in Cist 5 it is perhaps less likely that Cists 2 and 5 are examples of tooth deposition, and more likely that human remains were cross-mixed in the 19th century backfilling. There were two other finds, a pair of undecorated jet spacer-plate beads from a four-strand crescentic necklace (nos 113a, 113b, p 104; fig 18). The bones, teeth and the two beads were hopelessly mixed in the earthy refill of the cist, and since the cist was so disturbed it is not possible to come to a conclusion as to whether the rest of the necklace was found and removed, whether it was lost unseen in the clumsy excavations of 1840, or whether the beads were the only ones deposited in the cist in the first place.

With the exception of Cists 5 and 6 the cists do not seem to have been laid out with any concern for each other beyond perhaps avoidance. Cist 5, however, was built close to Cist 3 (or *vice versa*), and parallel with it at a distance of about 2.5 m (mid-line to mid-line). If we suppose for the moment that Cist 3, the larger and the closer to the centre of the cemetery, was the earlier of the two, and if we allow that Cist 3 was marked, like Cist 1, by a small mound over the capstone (see section 12, p 117), then Cist 5 would have been set peripheral to that little mound. The parallel alignment of the two cists can only be explained by either the capstone of the first cist being visible and betraying the axis of the underlying cist, or the axis of the underlying cist being in some way marked by or on the mound. The simplest explanation of all is that the two cists were contemporary, and were built at the same time; that suggestion, however, raises other problems relating to the whole cemetery, for in other cists and graves contemporary corpses were placed in a single burial-place. With the evidence available no sensible answer can be reached.

CIST 6

The appearance of burnt and calcined bone at the base of the ploughed soil led to the discovery of the last of the six cists (fig 8). There was no capstone, nor any sign that one was missing. The structure of the cist began to appear only as the undisturbed subsoil was planed down in order to define the plan of what appeared at first to be a simple pit. Once more it is impossible to estimate the depth of the cist below the old ground surface, for no trace of the latter survived anywhere nearby. However, one may be sure that the cist itself, that is the stone structure, lay entirely below the former surface of the subsoil at the bottom of a pit.

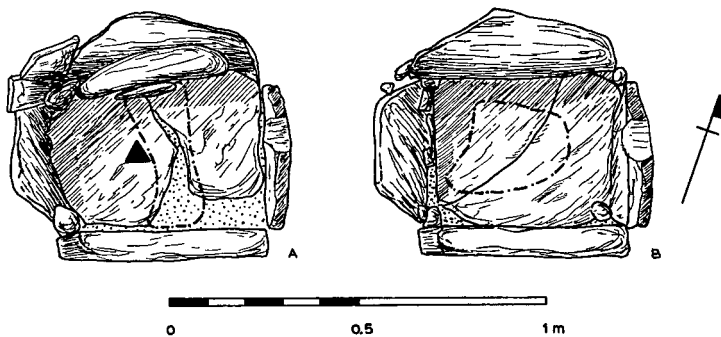


FIG 8 Cist 6. Plans. A. The upper floor, with the cremation upon it (broken outline) and the position of the copper awl (triangle). B. The lower floor, with the cremation deposit indicated by a broken outline

The pit was subcircular, about 85 to 95 cm in diameter, almost round-bottomed, there being a small flat centre to the floor. The structure of the cist consisted of four slabs set in the pit upon a floor of two, thin, slightly overlapping slabs. The side-slabs flared outwards somewhat. Part way up the cist, but less than half way up the height of the side-slabs, was another floor formed from one thin, oversized slab, which had been broken in half and laid in place with the two halves overlapping to make it fit. Cremated human bone occurred in small quantities below the floor slabs in amongst the little bone that had crept into the pit while the slabs were being put in place. Noticeably the cremated bone below the floor of the cist was not confined to the area immediately adjacent to the joint between the two floor slabs, which in any case overlapped and lay tight against each other; rather, it was generally spread on the floor of the pit, and must have

fallen or been placed there before or while the construction was taking place. In the packing of the pit behind the two adjacent side-slabs on the south and west sides there occurred more cremated bone, which, whether by accident or design, must also have been included while the cist was under construction. There is clear evidence, therefore, that the cremated remains were at hand while the cist was being built, even before the stones were set in place. The packing of the pit was mostly of soil, with the exception of four stones pushed down behind the SW slab.

Once the main structure of the cist was completed as so far described, cremated bone was poured in upon the floor. This pile was levelled off to form a stratum no less than 10 cm in depth, and on this was placed the second floor as already described. On top of this floor was placed an awl or reamer of copper or bronze (no 174, p 106; fig 22), which was then buried beneath a second pouring of cremated bone. This heap of bone reached above the level of the tops of the stones. Finally the pit was filled with a soil browner than the subsoil in which a few small fragments of stone slab were casually disposed. Little information about the body could be obtained from the comminuted remains; Mrs Barnetson could remark only that some of the cranium fragments display a certain robustness (see section 10, p 92).

7. THE GRAVES

GRAVE 1

Two or three days after work began on the site a Food Vessel was found damaged and incomplete in a clod of ploughed soil. Since there were already indications that the site comprised other features besides the cists a search was instituted up and down the direction of ploughing in the area where the Food Vessel was found in order to ascertain whether the pot had been torn by the plough from any still recognizable context. Eventually it became possible to discern a bath-shaped pit, refilled with subsoil, but visible by means of a very faint line around its edge and its fill distinguished by its slightly looser texture. As excavation proceeded empirically we were slowly convinced that we had found a grave-pit in which a body had been inhumed in a lidless coffin together with three deposits of cremated bone (see fig 9 and pl 7). Nowhere was the grave-pit more than 15 cm deep and on the NE side it was only 10 cm deep. How much soil the earth-moving equipment had removed in this area is not known, but the plough had certainly been working as much as 30 cm into this part of the site. With the exception of the Food Vessel all the contents of the grave which had not perished through organic decay had survived the ploughing it would seem, but there is nothing that can be said about the upper parts of either the grave-pit or the coffin.

The grave-pit had straight and parallel sides and semicircular ends. In profile, both longitudinally and latitudinally, it was rather flat-bottomed, with a sharp curve to the sides. How nearly vertical the upper parts of the sides may have been is of course not known, but the very sharpness of the curve between the bottom and the sides of the pit and the angle of elevation observed at the top of the pit as preserved were such as to suggest straight and almost vertical sides. The overall dimensions of the pit were 2.32 m in length by 1.15 m in maximum breadth. Some expansion may be expected to have occurred towards the mouth of the pit.

The coffin appeared as a dark brown stained soil, which when examined under the microscope revealed no remains of organic structure (see section 17, sample 1). The thickness of the sides of the coffin was often minimal, 5 mm or less. The floor of the coffin in particular was no more than a thin stain of no appreciable thickness. In plan the coffin was of the same general shape as the pit, as long as but somewhat narrower than it. In transverse profile it was U-bottomed, with the base

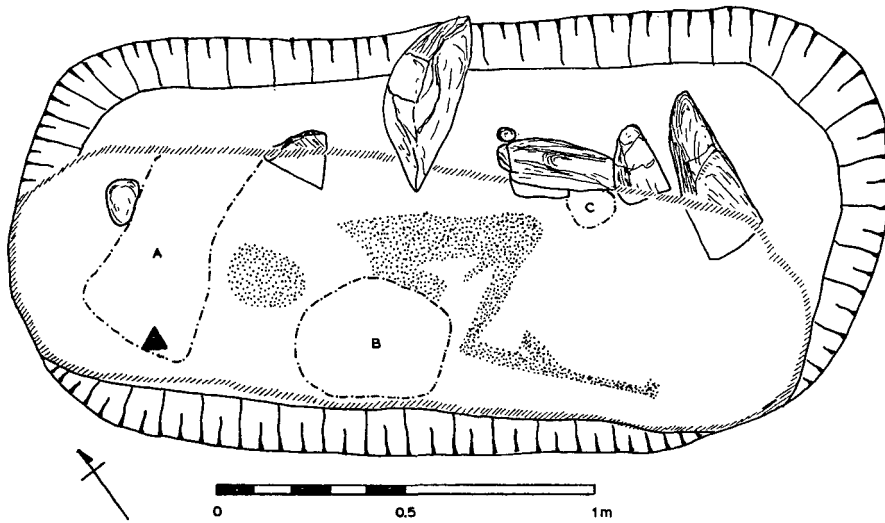


FIG 9 Grave 1. Plan. The three cremation deposits are labelled: A = Cremation 3; B = Cremation 2; C = Cremation 1. Cf pl 7

of the U a little flattened. The longitudinal profile of the coffin was indistinguishable from that of the pit itself. At either end the coffin's dark, stained soil lay against the sides of the pit, and the same was true of a stretch of the SW quadrant of the coffin. In short there was some indication that the coffin was to some extent flexible or pliant. The coffin had been placed in the grave rather towards the southern side of the pit, and it was chocked in this position with a row of stones under its eastern side. The largest, triangular stone in the middle of the east side of the coffin had in fact been caught by the plough and pivoted out of position; in the plan (fig 9) this stone is shown exactly as it was found. At the time of excavation its original position could be detected as a slight impression in the floor of the grave and the surrounding grave-fill, and in imagination it can be swivelled back so that its longest side lay under the coffin.

Although the coffin was amply long to have accommodated an extended inhumation the body was placed in a flexed position, the thighs at right angles to the torso, and the lower legs at right angles to the thighs. The body lay on its right side, facing approximately south, its arms lying bent in front of the upper torso, the hands covered by one of the cremation deposits. The body had disintegrated entirely with the exception of the enamel of the teeth, whose brittle crowns appeared as a line of ivory and white fragments. They were already badly damaged before excavation, but it was possible to salvage some in recognizable form. Dr Lunt ascribes an age of 17 to 24 years to their owner (section 10, p 92). The body was finally coaxed into appearing as a thin dark stain in the soil (see fig 9 and pl 7). Supposing that the dark stain in which the teeth appeared was the head, and using it as a positive reference for on-site phosphate tests, we proceeded to shave down the whole length of the coffin interior a couple of millimetres at a time. Low phosphate readings confirmed that we were not in the body area until more dark staining appeared. The resultant stain pattern, which we believe represents the decay product of the body, is illustrated from the field drawing in fig 9, and is supported by the photograph on pl 7 (though the colour version is more explanatory than the black and white). The organic samples from the body area are nos 9 to 15 in section 16, p 135.

Besides the inhumation there were three deposits of cremated remains in the coffin; their

locations are indicated on the plan, fig 9, but Cremation 1 had been removed before the photograph on pl 9 was taken. Cremation 1 was the first to be found, lying at the side of the coffin near its foot, against the propping stones. It was small in amount compared to the other two and lay spread in such a way as to suggest that it had been deposited without a container. The rather few fragments are parts of the skeleton of a small and delicately boned juvenile (section 10, pp 92-3). Among the dental fragments were molars which allow the age at death to be rather precisely fixed at 6 to 8 years of age.

The other two cremations were much more substantial in quantity and had been deposited in containers, to judge from their sharply defined shapes in the soil. Chemical tests failed to isolate any surviving and characteristic organic compounds which might have identified the container of one of the two cremations (see section 16, sample 8). From shape alone it appeared that Cremation 2 was put into the grave in a bag, basket or sack, giving it an almost circular shape; around the edge of the disc of cremated bone we believed we could see a very thin line of dark soil, but chemical finger-printing, scarcely surprisingly when the organic residues of the coffin and the cremation were also in the closest proximity, could not support this observation. Cremation 3 was in some sort of straight-sided container such as a box or trough, which had been placed across the top of the coffin beyond the inhumed corpse's head. While its not altogether straight and parallel sides were not prepossessing, in depth they persisted, inclining inwards and downwards for several centimetres. Cremation 2 was placed in the coffin on top of the upper arms of the inhumed corpse. In view of the quantity of cremated material, the small size of many of the fragments and their fragility, the whole cremation was removed *en bloc* and taken apart in the laboratory. Even so very little could be learned from the remains. Mrs Barnetson suggests that they represent someone slender and delicately boned (possibly female therefore) at least 18 to 20 years of age (section 10, pp 93-4). In amongst the solid mass of cremated bone debris was a bone bead which had also been burnt (see next paragraph). Like Cremation 2, Cremation 3 was great in quantity but very delicate; it too was removed *en bloc*, but very little could be made of it in the laboratory beyond that the individual represented was not fully mature at death (see section 10, pp 94-5). It seems scarcely conceivable that the grave could have been reopened to receive any of the cremations without causing detectable disturbance, and much more likely that the deposition of all the contents of the coffin was simultaneous. As we shall see, in the case of Grave 2 there is better evidence for the simultaneous deposition of the inhumation and the cremated remains.

Besides the multiplicity of occupants there were three artefactual finds in Grave 1. In addition the Food Vessel (no 2, p 106; fig 19) found nearby down the furrow in the ploughed soil should almost certainly be restored to this grave. Close to the face of the inhumed corpse there was a stone battle-axe of Fiona Roe's Woodhenge type (no 61, p 106; fig 19 and pl 10). It lay blade upwards and pointing a few degrees south of vertical, its handle visible as a darker, softer soil running for a few centimetres down the coffin across the top of Cremation 3 (at that stage of the excavation still undiscovered) and towards the hands of the inhumed body. The second artefact was the bone bead already referred to, which was incorporated in Cremation 2. It would appear to have been made from a piece of a long bone of some small animal; it was squared roughly in section and perforated longitudinally (no 193, p 108; fig 19 and pl 9b). The third was presumably

FIG 10 Grave 2. Plans. The lower plan was drawn at the point where the top edge of the coffin was seen. The broken outline describes the general area of small stones under which fishbones were found. The upper plan shows the coffin excavated; the cremation deposit is at the foot of the coffin and the Food Vessel was at the head; the traces of the inhumed body are planned as traced by phosphate analysis and fluorescing of the bone with ultra-violet light. Cf pl 8

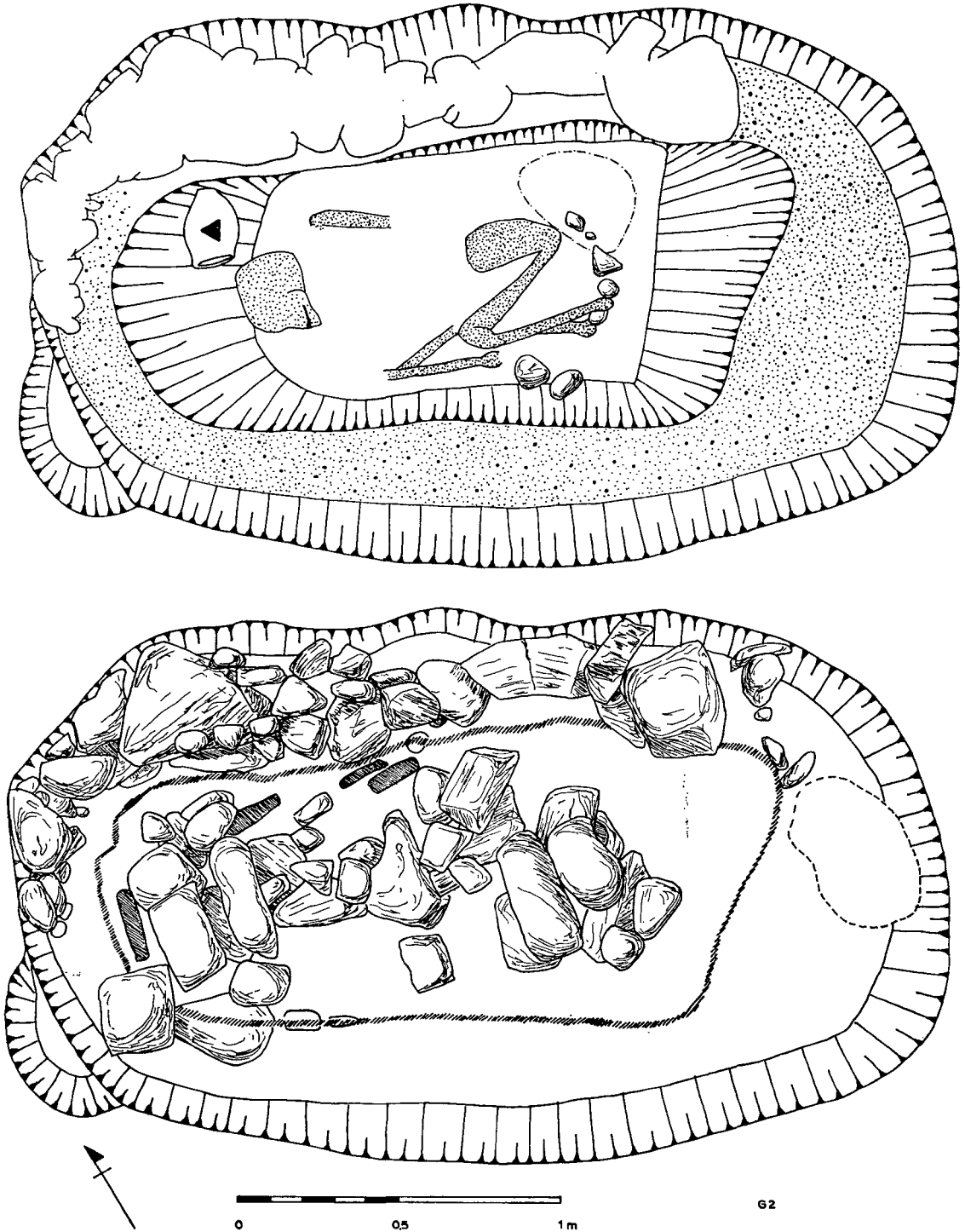


FIG 10

an accidental inclusion. In the floor of the coffin east of the thighs of the inhumed corpse and north of its calves was found a single small sherd of pottery (no 108, p 113; fig 22). It appeared to be derived from a Food Vessel, but it proved not to be part of the Food Vessel found nearby, and so does not help us to restore that vessel to the grave. Once again it is a fragment of evidence to show that there was other and earlier activity on the site, so that debris was available to be incorporated in pit- and grave-fills.

One unresolved question concerns the areas of multicoloured soil observed immediately above the level of the body in the coffin, particularly above the head and shoulders of the body and at the foot of the coffin. There were patches elsewhere within the coffin, but they were less extensive and their colouring was less intense. None were found outside the coffin. The colours were striking, bands of orange, shades of grey and grey-green, and occasionally a thin band of magenta. All of the bands were bedded horizontally or sloped gently downwards towards the centre of the coffin. By the time the samples were examined in the Research Laboratory of the National Museum the colours had faded and the samples appeared a nearly uniform brown. No chemical traces were found which could help to elucidate these observations (see section 16, samples 2 and 7).

GRAVE 2

As the excavation of Grave 1 was reaching its conclusion, work had already begun on Grave 2; but it was only after some time that it was realized that they might be variants of the same phenomenon. Grave 2 was also an earthen grave containing a coffin of organic material and the ultimate similarities with Grave 1 were considerable, but at the outset the two features appeared dissimilar, partly because a good deal of large stone had been used in the filling of Grave 2, but largely because Grave 2 had not been truncated by the earth-moving equipment to the same extent as Grave 1. Grave 2 had survived to a much higher level (see figs 9 and 10, and pls 7 and 8).

The grave-pit of Grave 2 was not for some time recognized for what it was simply because it first appeared as an area of stones, most of them large, water-worn pebbles and small boulders. Later we arrived at a level where we could distinguish the edge of the pit. Some time after that we found we could isolate a central core of stones from what we came to recognize later as a packing of stones down the eastern side of the pit. The two groups of stones were separated by a line of quite abnormally soft soil full of airspaces, which we subsequently discovered was one side of the coffin whose ends and other side we discerned as a thin, dark brown line in the redeposited subsoil fill of the grave-pit. In the end we were able to recover much of the plan of the coffin and some of its contents. Having made this brief introductory excursion following the progress of excavation and discovery, the best way to describe the grave itself is in terms of the sequence of events by which it was constructed and used, that is in the reverse order of excavation.

The pit which constituted the grave was large and oval in plan, 2.90 m along the axis and 1.73 m in maximum breadth. At the west end there was part of a small circular pit; its fill, like that of the grave, consisted of redeposited subsoil. Although the two pits overlapped, it was not possible to tell which was the primary pit; indeed they may have been contemporary. Nothing at all was found in the fill of the little pit. The grave-pit itself was preserved to a recorded depth of at least 0.5 m, but our excavation began below the base of the old land surface, of which no trace remained as we started work in this area, and we had removed some subsoil, too, before we appreciated the edge of the pit. The profiles of the pit (fig 11) underestimated the true depth therefore, but show that the upper parts of its sides would have been close to vertical, and that they curved relatively gently down to the bottom of the pit, itself gently concave.

The coffin had been placed practically central in the grave. It survived only as a replacement

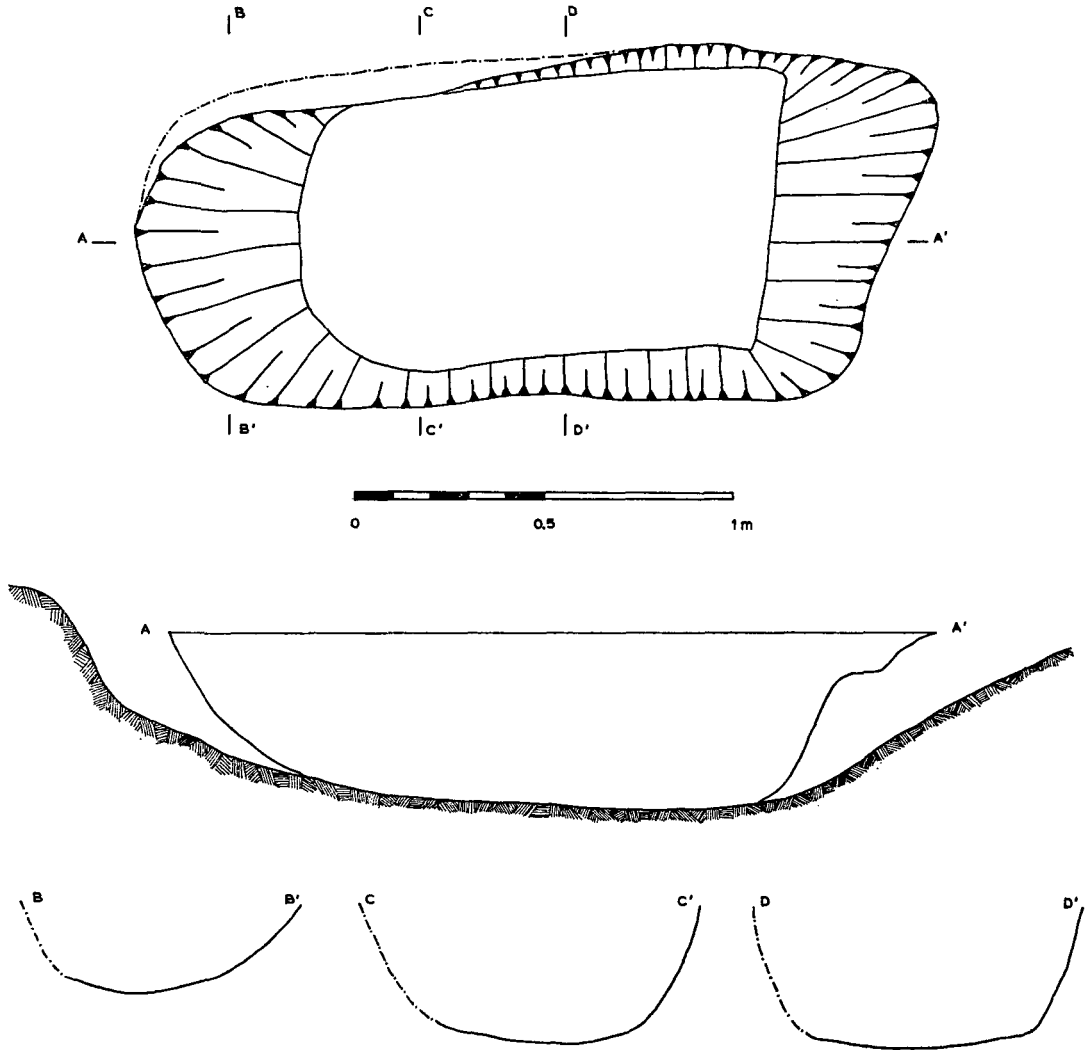


FIG 11 Grave 2. Top, plan of coffin. Middle, axial profile of coffin and grave-pit. Bottom, transverse profiles of the coffin

soil or a stain. Its north side had stood against the packing of stones along that side of the pit, and it was recognized as a replacement soil full of cavities. The rest of the sides of the coffin survived as a stain in the soil which could be followed by excavating the refill of the coffin. Thus the shape of all but one side could be recovered to stand at one time for photography (pl 8), but it is probably more readily appreciated by reference to the drawings and profiles (fig 11). The eastern end of the coffin was almost square, with sharp angles to the sides. The lower part of that end stood in a near vertical plane, and it was this end of the coffin that had apparently buckled as the grave was being refilled, for the upper part of the coffin-end inclined outwards asymmetrically. The transverse profile was U-shaped. The west end of the coffin was round in plan, a shallow U in transverse profile, and a gentle curve from near vertical towards the

horizontal in the longitudinal plane. The form was undeniably reminiscent of a boat, and in section 13 and elsewhere (Watkins 1980) it has been suggested that this coffin was a hide-covered coracle.

In the coffin lay a single inhumation, a deposit of cremated bone and a Food Vessel (no 194, p 109; fig 20). The inhumed body had decayed almost entirely, with the exception of the crowns of the teeth and one or two most unpleasant sticky patches where bone had not completely dissolved at knee and ankle. There was also a small area at the rear of the cranium where there was a noticeable difference between the fill of the grave and the replacement soil where the cranium had been. Other parts of the body were recovered partly by fluorescence induced by ultra-violet light and partly by means of on-site phosphate testing, though these traces were discontinuous. The dental remains are interpreted by Dr Lunt as having belonged to a person of 18 to 20 years of age (section 10, p 95). The body lay on its right side, facing approximately south. It was in a contracted position. The left shoulder had rolled back so the upper torso was lying with the shoulders flat on the floor of the coffin. Although this is scarcely a natural position of rest, one must remember that this corpse was buried in an unlidded coffin under a considerable weight of stones and soil. The left arm lay with the elbow close to the hip and the lower arm across the stomach area; as far as could be made out the right arm was folded at the elbow so that the hand was near the right shoulder.

The cremation deposit had been placed in a corner of the coffin in some sort of container such as a sack, bag or basket, which had retained it in a roughly circular shape. No trace remained to indicate of what material the container might have been made. The remains of the cremated person were in a very comminuted state, and all that could be concluded was that the individual was more than 15 years of age at death and may have been a young male (section 10, p 95). The Food Vessel was found at the rounded, western end of the coffin, lying crushed, with its mouth on the axis of the coffin and its base against the side of the coffin. It may have been placed in the grave standing upright and have fallen over and been crushed as the refilling of the grave proceeded, but it is rather unlikely that it could have stood upright where it was found in view of the steepness of the side of the coffin where the base was situated. It seems more likely that it was laid on its side in the position in which it was found, and for such a placing the Beaker grave near stone-hole 8 at Cairnpapple offers a parallel (Piggott 1948, 88).

The grave had been refilled with some care. The fill outside the coffin along the north side of the grave-pit consisted of large stones. The fill of stones continued round the west end of the grave. These stones had been slipped and wedged down to fill the space, into which only very small amounts of soil had subsequently percolated. At the east end the lower fill was entirely of soil, though there were groups of stones in the upper part of the fill. Preserved under one group of stones were a few tiny fragments of fishbones. The fill to the south side of the coffin was redeposited subsoil throughout. Among the stones at the west end of the pit were two, narrow, cylindrical cavities where, presumably, thin stakes, only about 3 or 4 cm in diameter, had rotted where they stood. Their sharp ends had been pushed into the subsoil at the base of the pit, the one for several centimetres, the other only very slightly. Neither stake would have stood firm unless held upright by the fill of the grave. The fill within the coffin had been placed with care. The inhumed body bore a great weight of stones carefully placed upon it in a heap. The uppermost stones of the heap were those that led to the discovery of the grave. The lowest stones had been laid precisely on the body in the coffin, as was discovered when, after the event, the various plan-drawings of the grave were superimposed for the first time. The rest of the fill inside the coffin was redeposited subsoil, with some admixture of topsoil especially towards the top. There were also traces of tiny charcoal flecks and minute chips of stone. One abraded neolithic sherd (no 78, p 111; fig 22) had

been included, presumably accidentally, in the coffin fill and was found on the floor of the coffin near the mouth of the Food Vessel.

GRAVE 3

The last of the three graves was also the most severely damaged (fig 12 and pl 8). It had been truncated by the earth-moving equipment, and then ploughed almost to the base of the grave-pit. Like the other graves the axis was roughly east-west, and like Grave 1 the grave-pit was bath-shaped with straight sides. The ends and to some extent the sides were extremely difficult to define when the feature was so truncated, and the outline on the plan should be regarded as approximate. The maximum recorded dimensions were 3.75 m long by 1.38 m broad. The south side of the pit was less than 5 cm high as excavated, and the north side was preserved to a maximum height of no more than 15 cm. The transverse profile of the grave-pit was U-shaped, the bottom being reduced to the most gentle of concavities. The long axis profile, like that of Grave 1, was flat throughout with sharp curves at either end.

If we had not already seen the stains, the replacement soils and generally had the experience of excavating the other graves first, we should not have made much sense of what little survived. Some areas of dark, soft replacement soil and scattered traces of stained soil we would interpret as damaged and partial evidence of a coffin, although there is little indication of its precise shape and size. Insofar as it was possible to judge, the coffin was probably bath-shaped, a little shorter and narrower than the grave itself. Some fragments of its floor and its east end and south side were found. At the west end of the south side was found a small quantity of scattered cremated bone, indicating that this grave, too, had apparently contained at least one cremation (see section 10, p 96. In the wreckage of the interior of the coffin no trace of an inhumed body was found, though in the circumstances, bearing in mind the damaged condition of the grave and the fugitive state of the bodies in Graves 1 and 2, this is hardly surprising and cannot be considered evidence of the absence of an inhumed corpse. Up and down the centre of the coffin nothing survived undisturbed by the plough, but if there had been a pot deposited in the grave it might have been expected to have been smashed and to have left at least one sherd either in the ploughed soil or in the bottom of the grave. In this instance the *argumentum e silentio* can perhaps fairly be offered as an argument for the absence of a pot accompanying the burial.

The central strip up and down the grave was loosely filled with disturbed soil and many stones. The stones were not large pebbles like those found in Grave 2, nor were they simply a line of chocking stones like that found in Grave 1. These were broken field stones which had presumably been a component in the grave fill. Such stones were found undisturbed along the north side of the grave-pit and to some extent along the south side also, and around both ends. From the number of them, their close setting, and their situation all around the presumed coffin, they would seem to have constituted the grave-pit packing, at least in the lower part of the grave-fill and outside the coffin.

About halfway along the south side of the pit three finds were discovered in close proximity to each other among the somewhat disturbed stones. The stones were still in position, even though some of them had been rattled by the passage of the plough. Somehow, tucked among them, the three finds had survived. Two were of flint, a plano-convex knife (no 87, p 111; fig 21) and a 'slug' knife (no 106, p 111; fig 21). Their survival is perhaps not so surprising as that of a flimsy copper or bronze knife-dagger (no 98, p 111; fig 21). Their positions were parallel to one another and side by side, points down at an angle in excess of 45 degrees.

The copper knife-dagger had been placed in the grave in a leather sheath (see section 16, samples 21, 22 & 23), which had been stuffed with some fine vegetable matter such as moss. Dr

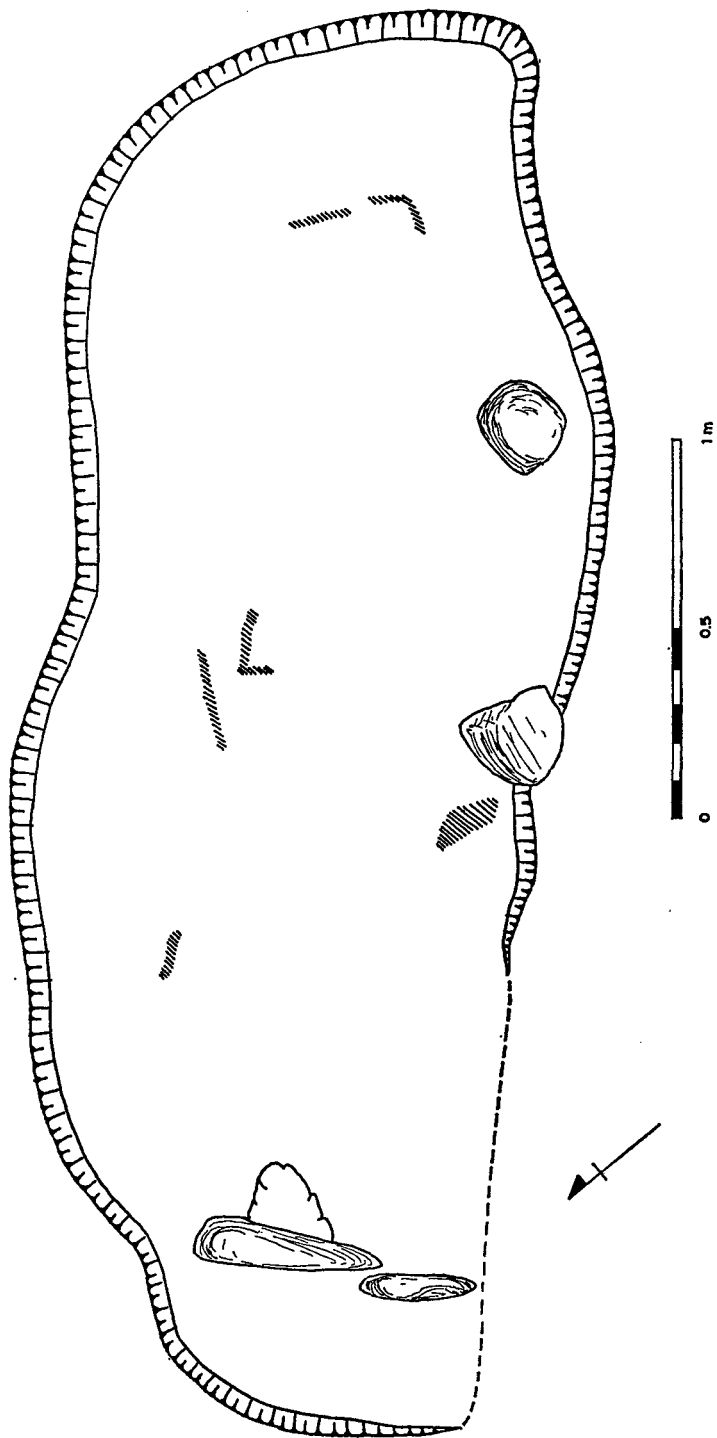


FIG 12 Grave 3. Plan

Alan Hayes of the Department of Forestry and Natural Resources at Edinburgh University was kind enough to examine the contents of the sheath, but could only confirm that the stuffing was probably plant material; no specific characteristics could be discerned. The dagger and sheath had been removed *en bloc* and they were removed from the block of soil in the conservation laboratory of the National Museum. The dagger had had a hilt, the organic material of which had entirely disappeared; all that remained were three tiny copper pins about 5 mm long and a millimetre thick. The pins were recorded and lifted before the copper blade was discovered, and indeed almost nothing of the dagger was seen while it was on site. The pins were found in loose soil, but seem to have been disposed in a small triangle whose narrow base was towards the heel of the dagger. They lay in an approximately horizontal plane, whereas the blade of the dagger was tilted at an angle. Although the heel of the blade of the dagger was gone one may conclude that the tiny copper pins were not the rivets that held the hilt to the blade, for they were surely too small and fine. Perhaps they were semi-decorative pins which had held the parts of the hilt together.

The physical relationship of the finds to the burials and their coffin is impossible to establish with any certainty because the burial itself had not survived. There was no trace of a coffin below the three finds or between them and the south side of the grave-pit. So far as could be seen they were probably placed in the packing at the side of the pit outside the coffin and indeed tucked almost beneath it.

8. THE HEARTH

Two hearths were found in the course of excavation, both of which announced their existence through the presence of burnt material in the ploughed soil. One hearth had been situated on the old ground surface, the other directly on top of the fill of a large pit.

HEARTH 1 had been the situation of a fire on the old ground surface. It consisted of a disc of comminuted fragments of charcoal, ash and blackened soil, about 0.5 m in diameter, about 2 cm thick at the centre and tapering off towards the edge. How much had been lost in ploughing is of course not known. There were no charcoal pieces of any size remaining, and there was no sign that the fire had baked the underlying soil. From the observation that the underlying material was subsoil it would seem that the hearth had been situated in a shallow hollow in the old land-surface. In and around the hearth were found three white quartzite pebbles such as were used in the cobbled floors of Cists 1, 3 and 4, one tiny bladelet of flint and a rim-sherd of typically neolithic form and fabric (no 21, p 111; fig 22); nearby were found a few scraps of cremated bone, but the fire did not seem to have been either large enough or fierce enough to have been used for cremation. The neolithic rim was found firmly in association with the hearth, but on the other hand the sherd itself was abraded, and the rolled rim had been removed: it can hardly be used to date the hearth, for it was obviously much worn before it reached the fire. The presence of the quartzite pebbles, which must have been brought from the beaches some distance away, and the survival of the apparently fairly insubstantial hearth would seem to support the view that the fire may more probably have been part of the activities associated with the Early Bronze Age cemetery than evidence of neolithic activity.

While Hearth 1 sat in the old ground-surface without obvious relationship to any other feature of the site, HEARTH 2 lay in a hollow on the top of the fill of Pit 4, and its burning would seem to have been the last phase in the sequence of activities associated with that pit and its filling (see section 9, pp 80-3 and fig 13). The hearth was circular as was the pit beneath. Among the material turned over by the plough from this immediate area was a little charcoal, much fine

ash and some purple soil. Below the soil disturbed by the plough more survived forming a concave disc of some thickness, though the material was little more than blackened soil with almost no visible charcoal component. The lowest part of the hearth consisted of some firecracked and heat-stained stones in the blackened soil, and the top of the soil of the fill of the pit had been baked hard for a few centimetres. The only find from the hearth was a very little burnt bone, though it is hard to think that such a small hearth would have been large enough to have been used for the cremation of human dead. From the fill of the pit below the hearth came a single sherd of Food Vessel, giving a *terminus post quem* for the pit and thus the hearth.

9. THE PITS

The pits were varied in size, shape and content, and are here dealt with in one section only for convenience of organization. They are described not in strict numerical order, but in sub-

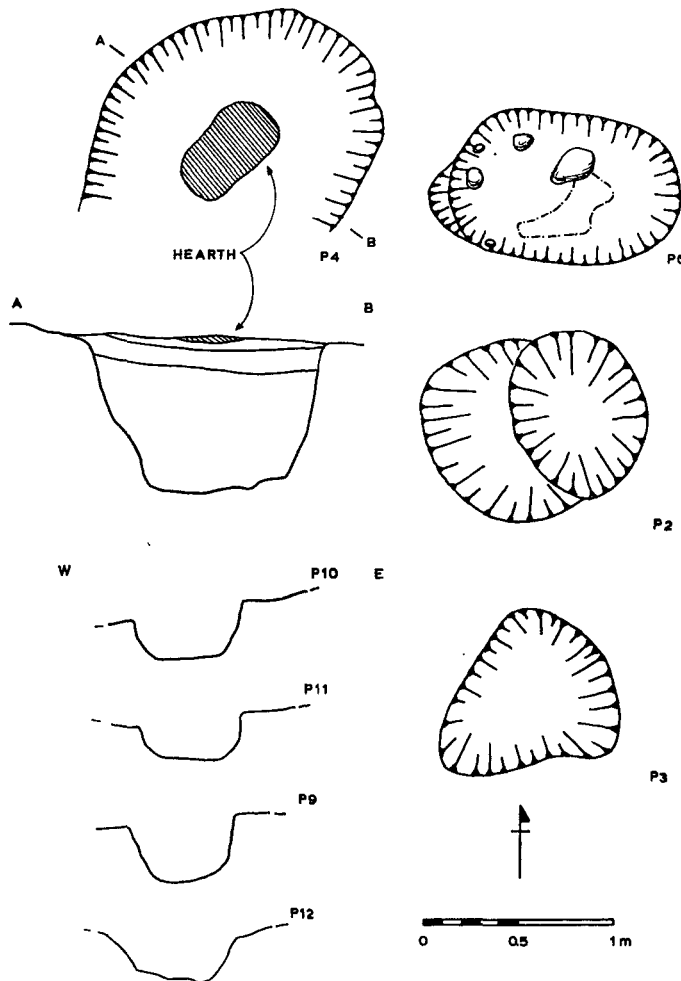


FIG 13 Pits. Plans, profile and section

groups which depend for the most part on similarity of content. The individual pits may be located on the site-plan (fig 2), and some of the profiles and a section appear on fig 13.

PIT 1, which proved to be unique on the site, was discovered because its fill of seashells had been ploughed up and was very conspicuous in the soil. Some of the hemispherical base of the circular pit survived intact below the ploughing. It had been dug to the base of the old soil, and as recorded after severe truncation it had a depth of not more than 10 cm and a diameter of about 30 cm. The fill of the pit was in small part a dark chestnut soil, but the greater part by far was common seashells, mostly whelks, but also a few mussels and limpets. Among the shells were two, small, featureless scraps of dark, gritty pottery with carefully smoothed surfaces. One sherd was disintegrated beyond recovery when found, and the other failed to survive until conservation could be tried. Both were probably neolithic judged by their fabric, and had presumably been included in the fill of the pit by accident. A radiocarbon date was obtained from a sample of seashells. Allowing for the fact that the sample was marine shell and in that respect unusual, Dr Harkness estimated the date of the sample at 2762 bc \pm 50 (see section 17; SRR-529).

Three pits, 2, 3 and 6, may be distinguished from the rest by the presence in them of human teeth. Pits 2 and 3 were close together, but of different shape; Pit 6 was similar to Pit 3, but was situated on the other side of the site. No evidence of date was noted for any of the pits of this sub-group.

PIT 2 was almost cylindrical, slightly oval in plan and round-bottomed. It was 0.6 m in diameter and 0.25 m deep below the undisturbed surface of the subsoil. The top of the pit lay eccentrically in a broad, shallow scoop. The featureless cross-section of the two pits did not allow us to determine if one had preceded the other, and it is quite probable that the two pits and their fills were contemporary; that is, first a shallow scoop was dug, and then a pit was sunk from within that scoop. In case they were not contemporary it deserves to be recorded that one of the sets of human teeth was found in the shallow scoop while all the rest occurred in the main pit.

The refill of the pit seems to be uniform with no indication that it was a natural silting; it seems to have consisted of the backfilling of the material dug out of the pit, namely subsoil, in which were mixed small amounts of a greyer, more clay-like substance, in which were chestnut-coloured flecks. To judge from the remnants of the old soil found in the vicinity of Hearth 1 (see above, p 79) the admixture may well have been the then existing soil minus its thin, dark humic top layer. There were neither tip-lines nor silting-lines in the section, and the whole refill seemed to have been dumped in a single operation. In this matrix a number of finds were made. There were specks of charcoal, a few larger carbonized fragments, which were clearly identifiable as hazelnut shells and even one or two kernels, and three small flakes of flint. There were also repeated finds of the fragile remains of the enamel of the crowns of human teeth. Many of them had been crushed and more were shattered as we attempted to excavate them. Even lifting lumps of soil when tooth fragments first appeared did not improve matters greatly, for shattered fragments were found even in the laboratory. Enough survived in recognizable form, however, to allow the identification of at least four individuals, a child of about 3, and three young adults, one aged 17 or 18, and two over 20 years of age (see section 10, pp 96-7). The teeth in this pit, and those in the other two pits in this group, occurred in the ground in dental arcades, of which at least parts were recognized (see pl 9). Indeed, in the light of the experience of excavating the graves we may be reasonably certain that the teeth were buried in the jaws, and that the bone and most of the teeth had dissolved leaving nothing but the brittle enamel of the crowns. And since both upper and lower teeth were present it is fair to conclude that whole heads were buried in the pit. On the other hand the pit was not physically large enough to contain four bodies, or even one body plus three severed heads. The conclusion can only be that a number of human heads were

buried in each of these three pits, although the possibility that other, disarticulated bones were also incorporated cannot be excluded.

Besides the human teeth, a few scraps of unidentifiable calcined bone were found. Whether the bone represents token burial of human cremations, accidental inclusions of cremated material, or is simply burnt animal bone cannot be determined. If the burnt bone were human cremation product then its presence in pits on a site where large cremation deposits were from time to time being handled would tend to suggest that these were accidental inclusions in the fill of the pits, and that the pits and their contents of human heads were another aspect of the activities in the cemetery area in the Early Bronze Age.

PIT 3 was immediately alongside Pit 2. It was a shallow, irregular scoop. In its upper levels, completely turned over by the plough, were some small slabs of sandstone, some of them reddened by fire, which drew our attention to the area in the first few days of excavating Cist 1. Below the disturbed soil the scoop was only between 5 and 10 cm deep. The refill was darker brown than the surrounding subsoil and included patches of stickier, greyer soil. The refill incorporated two flakes of flint, flecks of charcoal, carbonized hazelnut shells, and more human teeth, representing the heads of at least two individuals, a child of 2 to 3 years, and a young adult of 18 to 20 years of age (section 10, p 97). Finally, it was noted that the soil of much of the fill of this pit was punctuated by many tiny holes in a way which suggests that much fine organic matter in the form of fine rootlets or grass stems had decayed in the soil. It would seem that at least part of the pit's fill had consisted of turves, perhaps incorporating superficial debris from the site. As with Pit 2 there was not space in the pit to accommodate whole bodies, and we must conclude that severed heads or at most heads and some disarticulated bones were buried in Pit 3.

PIT 6 survived as only the shallowest of depressions, a mere 5 cm or so deep. It was oval in plan, about 0.7 m in diameter on the longer axis and 0.5 m on the shorter. It was filled with redeposited subsoil mixed with some dirty, yellowish clay and tiny specks of charcoal. The edge of the pit was ringed with chips of crushed white sandstone, and the refill contained unburnt human teeth and a little burnt bone and teeth. The teeth, of which only the enamel crowns survived, were found in a single clump and seem to represent the head of a child of about 8 or 9 years of age (section 10, pp 97-8). While this pit could have contained a whole body, the general similarity to Pits 2 and 3 suggests that once again the burial involved only a severed head or a disarticulated bone collection including the cranium and mandible. The small amount of burnt bone was poorly preserved and represented only part of the remains of an immature individual. The two crowns of teeth recovered with the cremated bone suggest an age of between 6 and 12 years (section 10, p 97). Since the pit had been severely truncated before excavation began it is not possible to say whether this was intended as a token cremation deposit.

The following three pits, 4, 5 and 8, have few positive characteristics. The presence of a Food Vessel sherd in one and burnt (cremated human?) bone in the other perhaps suggests that they belong to the cemetery phase of activity.

PIT 4 lay concentric with Hearth 2 (see above, p 79-80) and immediately below it. Apart from the pits dug to accommodate cists and the graves this was the largest pit found on the site. It was about 0.6 m in diameter and 0.42 m deep; in plan it was circular, in profile rather the shape of a truncated cone (see fig 13). The fill was mostly soft and sandy in texture, and of the same colour as the subsoil. At the top of the pit two fine silt-lines were noted. The lower was a streak of grey-brown colour, and the upper was a thin deposit of comminuted charcoal and ash. The lower fill of the pit was soft and uncompacted as if deposited all at one time. Apart from some charcoal and ash the only finds were a single sherd of brick-red ware of Food Vessel type and a rubbed stone.

PIT 5 had been rather a small pit, 0.35 m in diameter and only about 0.10 m deep as recovered in excavation. It was circular in plan and round-bottomed, and lay between Hearth 1 and Pits 2 and 3. Since Hearth 1 had survived practically on the old ground-surface and Pit 2 had probably not been much reduced by ploughing, it seems unlikely that Pit 5 was ever much more than a shallow pit causing a dent in the surface of the subsoil. The only contents were a very little burnt bone, from which nothing could be learned, and some ash in a matrix of grey-black, greasy soil.

West of Cist 6, which had announced itself by the appearance of cremated bone at the base of the ploughed soil, more calcined bone betrayed the presence of PIT 8. No finds other than the calcined bone were made. In plan the pit was somewhat irregular, in profile vertically-sided and round-bottomed. The calcined bone was concentrated at the top of the pit, the lower portions of which were archaeologically sterile, redeposited subsoil. Through the fill there were a number of broken and irregular stones, all of them quite small and none apparently linked with others in any structural formation. If this pit is correctly dated to the cemetery phase of the site it perhaps represents the 'poorest' of the series of burial types, one stage below the 'unaccompanied' cremation in a cist, for it did not even rate a cist structure. The cremated bone represented the remains of a robustly built individual (see section 10, p 98).

Another group, consisting of Pits 7, 9, 10, 11 and 12, may be defined in that all were found in proximity to one another at the western side of the site, and, apart from Pit 7, they have similar shapes, sizes and fills. Pits 10 and 11 each contained a neolithic sherd, and Pit 10 yielded enough charcoal for a radiocarbon date, which accords with the expected date of the Early Bronze Age cemetery activity. Presumably this group of pits contained derived neolithic pottery and represents some symbolic activity associated in some way with the use of the site as a cemetery.

PIT 7 was a shallow pit, oval in plan, about 0.5 m on its long axis and 0.3 m on its short axis, and only about 10 cm deep at its centre. It survived as a round-bottomed depression whose upper parts must have been destroyed in the ploughing. The contents of the pit as excavated were a dark soil with ashy clay and charcoal inclusions. The only finds in the fill were two scraps of flint and some fragments of calcined bone. The calcined bone, if it were cremated human bone, would tend to suggest that the pit was part of the cemetery phase.

PITS 9, 10 AND 11 were circular in plan, cylindrical in shape and round-bottomed; each was about 0.27 m in diameter and some 0.11–0.18 m in depth. All of them had dark, blue-black fills at the top, which gradually graded to a browner shade at the bottom. The fill in detail seemed to consist of soil of dark brown and blue-black tones, mixed with ash, charcoal and grey-blue clay. Pit 9 produced one thermally fractured flint flake. Besides more copious charcoal, Pit 10 produced a flint flake and a sherd of neolithic pottery (no 184, fig 22). From the charcoal a radiocarbon date of 1846 bc \pm 80 was obtained (section 17; SRR-528). The base of the pit was scorched in a patch not quite at the centre of the bottom; it was not enough to warrant the belief that a fire had burned in the pit, but something very hot, perhaps the embers of a fire, had partly baked one area. Pit 11 also produced one sherd of pottery of neolithic date (no 173, p 113), and a few small stones had been thrown in with the rest of the fill.

PIT 12 was not quite so regular in shape as Pits 9, 10 and 11. It was slightly oval in plan, straight-sided like the others, but flat-bottomed. On the bottom lay two flat stones side by side. The section above was completely amorphous: no tip-lines, silt-lines, recut lines or trace of a post could be seen, and generally distributed throughout the fill were small pieces of charcoal. Otherwise the only finds were a flat, hard stone, one of whose surfaces was slightly polished with use, a sliver of unburnt bone and yet another tiny flint flake.

10. THE HUMAN REMAINS

contributed by Dr Dorothy Lunt and Mrs Lin Barnetson

The dental remains from the cists, graves and pits were examined by Dr Dorothy Lunt and the osteological remains by Mrs Lin Barnetson. What follows are their reports, which have been interleaved here so that the reader may find all the pathological discussion of each body in one place. The sequence follows that of the main excavation report, that is, cists, graves and pits. In each case where both cremated and uncremated remains were found together the simple inhumation is dealt with before any cremations. The dental report, where dental remains survived, precedes the osteological report for each body. In general the dental remains were taken to Glasgow in packages for Dr Lunt to examine, whereas most of the osteological remains were laid out on trays direct from the excavation, and were kept in storage in Edinburgh, where Mrs Barnetson worked on them. The abbreviation FRN stands for 'field register number', and is used where the remains are dealt with as they were unpacked in the laboratory; in particular the abbreviation is used in the cases of the teeth from the pits, where it is believed that severed heads are concerned. At the end of the section is appended a table (Table 1) listing the occupants of the various features and giving the basic information about each. (Trevor Watkins.)

CIST 1

Inhumation

Thirty isolated teeth were received. All had suffered to some extent from *post mortem* destruction of the roots, and in some instances the dentine of the crown had also been destroyed. The enamel of the crowns was intact in most cases.

No tooth was duplicated and the correspondence in morphology of teeth from opposite sides of the mouth provides definite evidence that the teeth belonged to a single dentition. This dentition is complete except for the mandibular third molars. Since even small fragments of the other teeth have been recovered at excavation, and since third molars are teeth which frequently fail to develop, it seems probable that in this instance the mandibular third molars have not been lost *post mortem*, but were congenitally absent.

Several features of the dentition suggest an age at death of 18 to 20 years, and in this case it is unfortunate that the apices of the upper third molars have been lost by *post mortem* destruction, as their stage of development would have provided the best assessment of age.

The amount of root still present on the upper left third molar, and the appearance of the root, suggest that the stage of development of the root had at least reached (and possibly passed) a level usually attained about the age of 18. The crowns of the upper third molars show no evidence of wear; this would usually be taken as evidence that the tooth was erupting or had just erupted. In the present case such an assumption is doubtful in view of the probable absence of the lower third molars. There is no evidence of distal wear facets on the upper second molars, however, and such attrition facets would be present had the third molars been in function for any length of time.

The degree of attrition of the first permanent molars, and the degree of attrition of the second permanent molars, are both consistent with an age at death of 18 to 20, and the amount of wear of the anterior teeth does not conflict with this assessment.

On the whole, the enamel of the teeth is well formed and calcified, but some slight hypoplasia lines indicate that several minor metabolic disturbances occurred during the first six years of the individual's life. These could have been due to childhood fevers, or to episodes of malnutrition.

No carious lesion is present in any tooth.

The condition of the bones was remarkably good considering their antiquity, but all the pieces were fragile and 'soft', and many skeletal elements had disintegrated, surviving only as crumbs of bone. Portions of undistinctive bone debris had been removed from the remains to form a sample for radiocarbon dating (section 17; SRR-700).

The following bones could be recognized:

Limbs: Left

Scapula, fragment of glenoid cavity.

Humerus, virtually intact, epiphyses fused, total length 314 mm.

Radius, proximal end.

Ulna, virtually intact except distal end, which was missing.

Pelvis, ilium fragment, acetabulum fused.

Femur, head (fused) and distal fragment.

Patella, lateral articular facet visible, anterior face eroded.

Talus, fragment.

Calcaneum, eroded, only the articular surface for the talus is still visible.

Limbs: Right

Scapula, glenoid cavity and coracoid.

Pelvis, ilium fragment.

Femur, head and distal end.

Tibia, proximal end, epiphysis fused.

Left/Right (?)

Radius, diaphysis fragment.

Femur, diaphysis fragments.

Tibia, diaphysis fragments and small pieces of proximal and distal ends.

Ribs and vertebral column

Seven fragments of rib shafts.

Several fragments of thoracic vertebrae.

Several fragments of lumbar vertebrae including three fairly intact.

Vertebral fragments too fragmentary for positive identification.

Sacrum, virtually intact, 5th segment detached and present.

Cranium

Seven fragments of parietal, all eroded on outer surface.

Fragment of parietal showing parietal foramen.

Fragment of temporal.

Left mastoid process.

Right mastoid process.

Mandible

Fragment of left mandible with root holes for molars.

Summary

As there is no duplication of skeletal elements this is probably the inhumation of a single body. The right arm is missing, or rather has disintegrated, and the extremities (hands and feet) are also lost. Only the sturdier part of the right scapula is present. The body was noted by the excavators to have been placed in the cist on its right side, and, as observed, those bones in closest

contact with the floor have not survived. The 'slumping back' of the left shoulder had pushed the left scapula into the cranial region so the small fragment of glenoid cavity which remained was found in the laboratory packed together with the cranial fragments.

Preservation of the pelvis and legs was better on the whole than that of the upper body but as lower limbs are generally more robust there is often differential preservation. The sacrum was in excellent condition exhibiting only a small break between the bodies of the 1st and 2nd segments and the 5th segment was complete but detached. Segments 2/3 and 3/4 were firmly fused.

There was no evidence of disease or injury, but in view of the fragmentary condition of the bones it is unlikely that such signs would be clearly discernible. The fragments were all fairly light in colour with black mottling on most of them and the base (upper part) of the sacrum had an area of orange/brown staining on the left ala.

The state of fusion of the bones was indicative of a person more than 23 years of age and the pelvis and sacrum were those of a male. The other bones were robust in appearance though this is hardly a sound criterion for sex determination of such fragmentary remains. In view of the absence of indicators of stature a very rough estimate of height was derived from the relatively intact left humerus. Cist 1, therefore contained the inhumed remains of a male about 1.68 m (5 ft 6 in) in height and aged, probably, in his mid- to late twenties.

Cremation

There were five individual tooth fragments.

- (a) Fragment of root, not identifiable.
- (b) Fragment of root, possibly mandibular left first premolar.
- (c) Fragment of root, not identifiable.
- (d) Fragment of mandibular molar root, not precisely identifiable.
- (e) One root and approximately half the crown of a mandibular molar, probably first or second molar from the right side, but not precisely identifiable. The root apex is closed, which shows that the individual was over 10 years of age. Attrition seems to have proceeded into dentine on the buccal cusps, but the stereomicroscope shows that the specimen has been badly chipped and the exact attrition pattern cannot be determined.

There were a large number of identifiable pieces of bone, but also a large quantity of long bone diaphysis fragments and pieces of articular surface not identifiable to specific bones. Virtually all the bones of the skeleton were present in identifiable form.

Limbs (including hands and feet)

Scapula, acromion.

Humerus, two fragments of proximal end and four fragments of distal end, two of which show signs of epiphyseal fusion.

Radius and ulna, diaphysis fragments.

Ulna, proximal fragment; also left and right distal ends, fused.

Ilium and acetabulum fragments.

Left ischium fragment.

Femur head, fused; also a distal fragment.

Patella fragment.

Tibia, two fragments of proximal, fused; also several diaphysis fragments.

Talus fragment.

Calcaneum fragment.

Lunate (carpal).

First metacarpal, epiphyses fused.
 Three metacarpal/tarsal diaphyses (2 probably metatarsals).
 Two distal ends of metacarpal/tarsals, epiphyses fused.
 First phalanx, distal fused, probably 3rd or 4th finger.
 Distal end of phalanx, distal fused.

Ribs and vertebrae

First rib, fragment.
 Nine pieces of rib.
 Axis vertebra fragment.
 Lumbar vertebra fragments.
 Many vertebral fragments, not identifiable.

Cranium

Left mastoid.
 Right mastoid.
 Left frontal fragment (above orbit).
 Right mandibular fossa.
 Right maxilla fragment.

Mandible

Left ramus fragment.
 Left mandibular condyle.

Summary

Most of the fragments of bone were distorted and twisted in a manner characteristic of high temperature cremation. The long bones especially exhibited collapse and distortion. As epiphyseal fusion was noted on several pieces the age of this individual must have been more than 23 years. Judging from the 'slender' look of several of the pieces the individual may have been female.

CIST 2

Inhumation

A small portion of the left angle of the mandible had survived, bearing the second and third permanent molars ($\overline{78}$). Of 14 loose teeth from the cist, 13 appear to belong to the same individual as the fragment of mandible. These teeth have been identified as:

$$\left(\begin{array}{c|c} 65 & 567 \\ \hline 7543 & 1456 \end{array} \right).$$

All the teeth show extensive attrition of the occlusal surfaces, and the age of the individual at death is estimated on this basis to have been 25 to 30 years.

The remaining tooth provides evidence of another individual, as it had belonged to a child. This is an upper right second pre-molar ($\underline{5}$), with unworn crown and incompletely formed root. At the time of death this tooth was unerupted or just in the process of erupting, and the age of the child has been estimated as 9 to 11 years.

A carious lesion is present on the buccal surface of one of the molars of the adult.

The condition of the bones was good considering their age. There were fewer pieces than in Cist 1 and the fragments were more brittle and darker in colour.

Limbs: Left

Clavicle, ends broken off.
Humerus, diaphysis and proximal end.

Limbs: Right

Humerus, diaphysis and distal end, fused.
Calcaneum.

Left/Right (?)

Radius and ulna diaphysis fragments.
Tibia diaphysis fragment.
Fibula diaphysis fragment.
Long bone diaphysis fragment, not identifiable.
Two metacarpal fragments.
Carpal bone fragment.

Ribs and vertebrae

First right rib.
Six right rib fragments.
Three left rib fragments.
Crushed rib fragments.
Axis vertebra fragment.
Cervical vertebra.
Crushed lumbar vertebra.

Cranium

Frontal/parietal (?) fragment, suture visible.
Part of occipital showing foramen magnum.
Temporo-mandibular fossa.

Mandible

Ramus fragment.

Summary

The cist had been rifled in the 19th century and that must in part account for the scarcity and fragmentation of the remains. All the bones belonged to a mature individual, possibly a female though this is by no means certain. The vertebral epiphyses were fused, suggesting an age over 25 years. Although one child's tooth was also found there were no juvenile bones in the cist.

CIST 3

Inhumation

The crowns of five permanent teeth are present, together with a small fragment of another permanent tooth. The crowns can be identified with reasonable certainty as those of upper premolar, two upper molars and two lower molars:

$$\left(\begin{array}{c|c} 6 & 5 \\ \hline 8 & 7 \end{array} \right)$$

The teeth could all have come from the same individual, though there is no definite evidence on

this point. Judging by the amount of attrition of the molars, this individual was aged about 24 to 26 at death.

The bones were fragmentary and eroded, but on the whole possibly in slightly better condition than those in Cist 2.

Limbs: Left

Femur, diaphysis and fragment of proximal end (head).

Patella.

Talus fragment.

Calcaneum.

Limbs: Right

Tibia, in two pieces, ie diaphysis and proximal end, fused.

Talus fragment.

Left/Right (?)

Humerus, small fragment of head.

Radius and ulna, diaphysis fragments.

Fragment of acetabulum of pelvis.

Femur, distal diaphysis fragment.

Two very eroded fragments of fibula diaphysis.

Carpal fragment.

Tarsal fragments.

Vertebrae

Lumbar vertebrae virtually intact.

Cranium

Temporal fragment.

Fragment of mastoid process.

Summary

This cist had also been disturbed in the 19th century. Once again we have the remains of a single inhumation and all the bones are obviously robust in appearance. The state of epiphyseal fusion indicates an age of 25 years at least. Cist 3, therefore, probably contained a male in his mid-twenties.

CIST 4

Inhumation

The mandible is almost complete. The left half of the maxilla is complete but the molar region is missing from the right maxilla. Twenty-six permanent teeth are present, and show a degree of attrition which suggests an age at death of about 30 to 32.

There is considerable evidence of dental disease. A very large carious cavity in the mandibular left first molar has resulted in exposure and infection of the pulp, and in the development of large alveolar abscesses on both roots of this tooth. Fairly large buccal cavities are present in the other two molars in this quadrant. The single remaining mandibular molar (7) on the right side has a small occlusal cavity, and another small occlusal lesion is present in one of the maxillary premolars (5). One of the mandibular premolars (4) shows a dark discoloration of the crown, though no carious cavity is present. Perhaps trauma of the tooth has caused death of the pulp, though there is no associated bone lesion visible on X-ray.

The first and third mandibular molars on the right side have been lost during life, and the presence of continuing infection in the alveolar bone in these areas is shown by the irregular pitted surface: probably there were sinuses discharging pus into the oral cavity. The upper left third molar is also missing. This tooth could have been lost during life, but it is more probable that it was congenitally absent (ie had failed to develop). There is slight evidence of periodontal bone resorption in the molar region of the left maxilla. Elsewhere the periodontal condition is good, although moderate quantities of calculus (tartar) have formed on some teeth.

This inhumation had by far the best preserved cranium and mandible (see above, p 67). Little remained of the right side, and the leg bones were reduced to slivers and splinters. Some quantity of undistinctive bone was removed for the purpose of providing a radiocarbon dating sample, but the amount of collagen was very small and the laboratory procedures necessary to get any sort of estimate rendered the resultant date unacceptable (see above, section 3, p 52).

Limbs: Left

Scapula, acromion.

Clavicle, ends broken off.

Humerus, almost complete, distal end broken off but present, epiphyses fused.

Ulna, diaphysis.

Pelvis, fragment of ilium/acetabulum (region of anterior inferior iliac spine).

Femur, intact diaphysis, proximal and distal ends broken off and lost.

Limbs: Right

Scapula, acromion/coracoid.

Left/Right (?)

Many slivers of long bone diaphyses.

Vertebrae

Atlas vertebra fragment (part of left arch, posterior).

Cranium

Fragments of sphenoid, pharyngeal tubercle.

Two fragments of occipital and occipital condyle.

Eleven fragments of parietal.

Two fragments of zygomatic.

Twenty-one fragments of parietal and frontal, small fragments.

Right mastoid.

Left squamous-temporal including part of zygomatic arch and mastoid process.

Fragment of lambdoid suture.

Right mandibular fossa.

Maxilla, intact with full dentition. Broken off but present is a small piece of right maxilla with some teeth *in situ*.

Mandible, intact, lacking only the right condyle, full dentition.

Summary

This is a single inhumation. The bones of the right side have not survived except for the shoulder, as in Cist 1, and this body too was interred on its right side. The lower limbs had been reduced to splinters and slivers of diaphyses probably due to crushing by the collapse of the capstone.

Good preservation and consolidation of the cranium in the field made possible the partial reconstruction of the cranial vault in the laboratory. Part of the occipital (left and right) and parietal (right) region was reassembled and some reconstruction of the left side of the skull was possible (maxilla–mastoid). The maxilla and mandible were in extremely good condition with full dentition as at death. The missing molar region of the right maxilla was found during cleaning of the cranial fragments. It was also possible to take measurements of the maxilla and mandible but the only other measureable skeletal element was the humerus from which a very approximate estimation of height was derived.

Judging by the state of epiphyseal fusion this individual was more than 25 years old. This is definitely the most enigmatic skeleton from the cists as the bones of the cranium at first glance have the robust appearance of a male but exhibit many characteristics of a female. The mandible too is equivocal, exhibiting characteristics of both sexes, though the overall impression is, again, of a female. The limbs were not particularly robust, and the only pelvis fragment was unfortunately not sexually diagnostic. Cist 4, therefore, seems to have contained a robust but not large female in her late twenties or early thirties, possibly around 1.57 to 1.63 m (5 ft 2 in to 5 ft 4in) in height.

Measurements of Cist 4 inhumation

Humerus (left) c 298 mm in length, diameter of proximal end 41 mm.

Mandible: bigonial breadth—75 mm

symphysis height—32 mm

minimum breadth of ascending ramus—34 mm

height of ascending ramus—58 mm

Maxilla: internal length of palate—50 mm

external length of palate—61 mm

CIST 5

Inhumation

Parts of 22 teeth are present, and of these 20 appear to have belonged to a child. $\left(\begin{array}{c} 6 \ 43 \ 1 \ | \ 23 \) \\ \hline (\ 21 \ | \ 123 \ 6) \end{array} \right)$ had erupted but had not been in function for long, while $\left(\begin{array}{c} 7 \ | \ 5 \ 7 \\ \hline (\ | \ 5 \ 7) \end{array} \right)$ are completely unworn and have incompletely formed roots: these teeth had just erupted or were in the process of erupting. One of the deciduous molars (\overline{E}) was still *in situ* at death, though its root is almost completely resorbed and it was about to be shed. The crowns of two of the permanent third molars ($\overline{8}$) had been formed, but root development had not started. This stage of dental development would be reached at 11th or 12 years, which is suggested as the probable age of the child at death.

Two other teeth indicate the presence of another individual. They are an upper third molar ($\overline{8}$) and a lower incisor (\overline{I}): both show fairly marked attrition which would indicate that this individual was probably over 25 at death.

None of the teeth shows any evidence of caries.

Very few, fragmentary bones were recovered. These included:

Two long bone diaphysis fragments, eroded, possibly tibia.

Femur head fragment, epiphysis unfused.

Several cranial fragments.

Frontal fragment (orbit).
Three scraps of tooth enamel.

Summary

The femur fragment and probably one or two of the thin-walled cranium fragments represent a juvenile under 15 years of age, but the other bone fragments could belong to an adult.

CIST 6

Cremation

The human remains from Cist 6 consisted for the most part of comminuted, unidentifiable fragments. Seven tooth fragments were found but none is precisely identifiable. It was noticeable that the bone was dirtier than that from the other cremations, and eroded. The only pieces which could be identified were some long bone slivers and some pieces of a robust cranium.

GRAVE 1

Inhumation

Because of their obvious fragility the teeth of the inhumed body were removed from the grave in a block of soil, which was dealt with in the laboratory. The teeth on the surface of the mass of soil were so badly crushed as to be unrecognizable. Deeper in the soil mass, the crowns of the mandibular right second premolar and first permanent molar (65) were uncovered, still in the correct relative positions, but even within the mass of soil the crowns were so badly shattered that they could not be recovered intact. The presence of the second premolar in function indicates that the individual was probably over 12 at death.

The exact amount of occlusal wear could not be recorded, but the general appearance of the crowns suggested that there had not been a great deal of attrition and that the individual had not been older than 25 at death (and probably had been rather younger). Part of a lower incisor crown showed an amount of wear consistent with this age.

It is therefore suggested that Grave 5 contained the body of a person in the late teens or early twenties.

CREMATION 1

The dental remains recovered consisted of two complete molar crowns, six fragments of roots and two small unidentifiable fragments, sent to Dr Lunt in one package, and 12 fairly large fragments of roots and a number of smaller fragments, mostly of root but one or two of crown, sent in another package. Dr Lunt deals with the two packages separately.

In the case of the first package the complete crowns are those of four-cusped mandibular molars from right and left sides. They are similar in morphology and probably came from the same individual. They could be either second or third permanent molars and it is not possible to be certain which, though it is slightly more likely that they are second molars. They appear to be completely unworn. Examination at high magnification with a stereomicroscope shows that the cuspal morphology is extremely sharp and no unequivocal attrition facets can be seen. The left molar may show the very earliest signs of wear on one cusp but even this is doubtful. It seems most probable that the teeth were unerupted at the time of death and this would also explain why they have survived cremation better than the other teeth. The crowns have been completely formed but it seems probable that little if any of the root had formed.

If these are second molars, the most likely age of the individual would be 6 to 8 years; if third molars the age would be 12 to 14 years.

No information can be derived from the other dental fragments in the first package.

From the second package only one crown fragment is precisely identifiable, and this is the tip of a mandibular right permanent canine crown. It is completely unworn: what at first looked like a small attrition facet proved under the stereomicroscope to be a developmental pit just below the tip of the cusp. This suggests an age of less than 10 years and probably less than 9 years. It thus supports the identification of the molars in the first package as second molars.

There is part of what appears to be an incisor crown which also seems unworn, and may perhaps be the maxillary lateral incisor.

The other fragments in the second package cannot be precisely identified and provide no information, except that some of the roots are so small that they are almost certainly of deciduous teeth.

The following pieces of bone were identified:

Slivers of radius and ulna.

Carpal fragment.

Metacarpal (?) diaphysis fragment.

Metacarpal, proximal fragment.

Five phalanx fragments of which two resemble 3rd phalanges of the foot and one of the hand.

Cervical vertebra fragment.

Rib fragments, shafts.

Mandibular condyle.

Ramus fragment.

13 fragments of cranium, of which five display open sutures.

Summary

All the bone pieces are small and delicate and appear to belong to a juvenile.

CREMATION 2

Eighteen tooth fragments were recovered. Most are small fragments of root, but there are also at least six fragments of molar crowns. The two largest fragments can be pieced together to form about half of a tooth, but all the enamel has been lost during cremation and the tooth is so distorted that it cannot be recognized. The other fragments are also unrecognizable.

This was a large cremation, comprising literally thousands of small fragments and 'powdered' bone. The largest pieces were only 2 to 3 cm². Owing to the quantity of the bone to be dealt with it was totally impractical to attempt to identify every fragment. Positively identifiable elements were separated out during picking over of the remains and descriptions of these are limited to the kind of bone wherever it is represented by many fragments. In cases where only part of the bone could be identified, the recognized fragment is mentioned.

Scapula.

Humerus, diaphysis and proximal end.

Radius, diaphysis fragments.

Ulna, distal end fused, diaphysis fragments.

Pelvis, several fragments.

Femur, diaphysis fragments.

Tibia, diaphysis fragments.

Fibula, fragments of proximal end.

Phalanges, several proximal and distal ends and one complete 1st phalanx.
 Carpal and tarsal fragments.
 Rib fragments.
 Vertebral fragments, one complete thoracic vertebra.
 Cranial fragments, mostly cranial vault.

Summary

Most of the limb bones were present only as diaphysis fragments and the epiphyseal ends, apart from a few recognizable pieces, had been reduced to small fragments and crumbs. It is likely that the larger bones, such as long bones, pelvis and cranium, which did not break up on cremation, may have been deliberately broken. If such were the case some of the smaller bones should have survived intact, and certainly there were two undamaged bones, a first phalanx and a thoracic vertebra. There were also a number of relatively intact pieces of small and compact bones such as phalanges and carpals/tarsals.

Although few of the epiphyseal fragments were large enough to permit an assessment of the state of fusion, there was one ulna distal end exhibiting fusion and the phalanx fragments were all fused. The overall impression is that the bones are slender and delicate. From the bone evidence this may have been the cremation of a female at least in her late teens.

CREMATION 3

Four tooth fragments were recovered. These were:

- (a) Fragment of root, not identifiable.
- (b) Fragment of root with a little crown, perhaps a pre-molar.
- (c) Fragment of molar root (?).
- (d) Fragment of enamel of a premolar crown. This does not seem to have been cremated but looks more like one of the inhumed specimens. The tooth seems to have been relatively little worn.

This cremation is similar to Cremation 2 in that the fragments range in size from 'dust' to pieces about 4 cm². Again, on the basis of there being no obvious duplication of skeletal elements, this is assumed to be a single cremation. The sorting procedure is the same as that applied to Cremation 2.

Scapula, various pieces of blade.
 Humerus, diaphysis and head epiphysis.
 Radius, diaphysis.
 Ulna, diaphysis.
 Pelvis.
 Femur, diaphysis fragments.
 Tibia, diaphysis fragments.
 Astragalus.
 Calcaneum.
 Ribs.
 Vertebrae (none positively identified).
 Phalanges, pieces of 1st and 2nd.
 Cranium, several fragments and some with open suture.

Summary

All parts of the skeleton appear to be represented, and, although there are a number of pieces larger than any in Cremation 2, unfortunately none of them presents sound evidence of either age or sex. One small fragment alone (a humerus caput) indicates that this was not a fully mature individual. Again on a purely subjective basis these bones look like those of a young male, probably in his later teens.

GRAVE 2

Inhumation

The crowns, or parts of the crowns, of 28 permanent teeth can be recognized. Only the four lower incisors cannot be individually identified, though fragments of them are present. The teeth match well in morphology and have all belonged to the same individual.

Small wear facets show that all the teeth were erupted at death, but the degree of attrition is not great, and the probable age at death was 18 to 20 years.

There is no evidence of caries in any of the 19 complete tooth crowns.

Cremation

This cremation did not appear to be as crushed as those in Grave 1, and many pieces were identifiable to specific bones. The sorting procedure was the same as that applied to Grave 1 cremations.

The following bones could be identified:

Scapula, blade fragments.

Clavicle, diaphysis.

Humerus, fragments of diaphysis and a distal end.

Radius, diaphysis.

Ulna, diaphysis.

Femur, diaphysis fragments.

Tibia, diaphysis.

Fibula, proximal end.

Carpals, various fragments.

Phalanges.

Ribs.

Vertebrae, various fragments.

Cranium, various fragments, a few with open suture; left mandibular fossa; frontal fragment (above orbit) with supra-orbital foramen.

Summary

Virtually all the skeletal fragments are present, and, although no positive identification of the pelvis fragments was possible, there were many pieces of flat bone which could have belonged to the pelvis.

The bones were robust in appearance and the frontal fragment had a slight brow ridge. The epiphyses of the phalanges were fused, indicating that this individual was at least 15 years old. Disappointingly none of the limb bone fragments gave positive evidence of epiphyseal fusion. Once again this may be the cremation of a young male of at least 15 years of age.

GRAVE 3

Cremation

A small amount of cremated bone came from this grave under three different field register numbers, but since nothing of moment can be discovered from any of them they may be dealt with all together. They comprised:

- Several fragments of caput, either humerus or femur.
- Several fragments of long bone.
- 39 fragments of bone, all small scraps and unidentifiable.

PIT 2

FRN 32

This was a packet of tooth fragments. The crown of the maxillary left second molar ($\overline{7}$) can be recognized, and the degree of attrition of this tooth suggests an age at death of about 22 to 24 years. Other teeth are represented by small fragments of enamel, many of which show occlusal wear facets. The presence and extent of these wear facets indicate that these fragments were from the teeth of an individual over 20, probably the same individual as ($\overline{7}$).

FRN 49

The crowns, or parts of the crowns, of seven deciduous molars can be recognized $\begin{pmatrix} \overline{E} & | & \overline{DE} \\ \overline{ED} & | & \overline{DE} \end{pmatrix}$. Among the remaining tooth fragments, seven can be assigned to specific permanent teeth $\begin{pmatrix} 1 & | & 1 \\ 3 & | & 123 & 6 \end{pmatrix}$. Other smaller fragments have come either from deciduous incisors and canines, or from the incomplete deciduous molars, or from permanent crowns of the same individual, but cannot be identified with certainty.

The mandibular right first and second deciduous molars (\overline{ED} ; see pl 9), and the maxillary left first and second deciduous molars (\overline{DE}) were found to be still in the correct relative positions in the soil, and their position showed that the second deciduous molars had erupted before death. However, there are only very small wear facets on the first deciduous molars, and none on the second deciduous molars; it thus seems probable that the second deciduous molars had erupted only a short time before death and an age at death of about three years can be suggested. The crown of the mandibular left first premolar was obviously unerupted at death. Formation of the crown of this tooth is almost complete, a stage of development which would have been reached at three years of age. About half of the crown of each of the four permanent incisors present, and one third of the crown in the permanent canines, has been formed. This again is the stage of development of these teeth which would have been reached by the age of three years. Both the condition of the deciduous molars and the stage of development of the permanent dentition support the age estimate of three years.

Some of the enamel fragments present with specimen no 49 are from erupted permanent molars or premolars, and exhibit wear facets of an extent which suggest that they came from an individual over 20 years of age.

The 16 recognizable crowns or fragments of crowns from the specimens under this field register number are clearly derived from the same individual. The teeth are all of the permanent dentition and those which can be identified with certainty are $\begin{pmatrix} 76543 & 1 & | & 123456 \\ 8 & 65 & | & 5 \end{pmatrix}$. The mandibular right third molar appears to have been unerupted at death, and this, together with the relatively

slight degree of attrition of the first and second molars and of the premolars, suggests an age at death of about 17 to 18 years.

It seems probable that the smaller enamel fragments have come from other teeth in the same dentition.

FRN 50

No recognizable tooth crown is present in this specimen, the largest fragment being part of a lower permanent molar which cannot be referred specifically to any individual tooth. Most of the enamel fragments show portions of large wear facets, and in one or two there is some indication that an area of dentine had been exposed during life. This suggests that the individual had been aged over 20 at death, but an exact age estimate cannot be given.

FRN 39

Seven unidentifiable fragments of cremated bone.

FRN 46

Seven unidentifiable fragments of cremated bone.

FRN 51

Eight fragments of cremated bone, of which one is a long bone sliver.

PIT 3

FRN 30 and 33

It seems probable that the presence of two individuals can be deduced from the remains of the teeth found in this pit.

The crown of a maxillary left second deciduous molar (\underline{E}) which is virtually unworn, the incomplete crown of a maxillary left first permanent molar ($\underline{6}$), and fragments of the mandibular right deciduous canine and of the partially formed crown of a maxillary permanent incisor appear to have belonged to a child aged between two and three years at death.

Crowns of three identifiable mandibular permanent molars ($\overline{76|6}$) and fragments of at least two other show a degree of attrition consistent with an age estimate of 18 to 20 years.

Some of the small enamel fragments appear to be thin and probably represent other deciduous teeth from the child aged three. Others are thicker and show evidence of wear facets, and these probably are from the permanent teeth of the young adult.

PIT 6

FRN 156

The only two crowns which are complete are the maxillary right second permanent molar and the mandibular left second premolar. Both crowns appear to have been completely formed, but both are quite unworn and have obviously not yet erupted. This gives an age range of eight to 12 years at death. A large piece of labial enamel of a mandibular permanent incisor is present, and shows the three small tubercles which are present on the incisal edge at eruption and which wear away rapidly when the teeth come into function. As this tooth would erupt at about seven years it seems that the age of the child would fall in the lower part of the range, and an age of about eight to nine is suggested.

There is no evidence of dental caries in any of the teeth from the pits. This is not to say

that it did not exist—in the conditions found in the pits, with dentine destruction and fragmentation of the enamel, it is extremely unlikely that teeth attacked by caries could have survived in a recognizable state. On the other hand, most of the individuals in the pits appear to have been quite young, and they may well have had no carious lesions.

Cremation

The remains of this cremation were reduced almost to a skin on the soil matrix, but two crowns of teeth could be recognized.

Both cremated tooth crowns represent parts of human premolars. The more complete specimen (A) is the crown of a maxillary right second premolar, while the other (B) is part of the crown of a mandibular right first premolar.

The enamel surface of both crowns is severely crazed as the result of the cremation, and this makes early stages of wear more difficult to detect. But even with a stereomicroscope it is possible to observe no sign of occlusal or approximal wear facets on either tooth. The teeth are quite probably from the same individual.

The teeth may have been unerupted, just erupting or very recently erupted, and in the absence both of the jaw bones and of the teeth roots, it is impossible to say which. If the teeth were unerupted, the individual would have been aged between six and nine years (the lower limit is given by the stage of development of the crowns). If erupting or very recently erupted, the age would be about 10 to 12 years.

The following bones could be identified:

Several ribs (together) of an immature individual.

Two fragments of 2nd or 3rd phalanx.

Cervical vertebra fragment.

Left mastoid fragment.

Two cranium fragments, thin-walled and delicate.

One fragment of occipital, also delicate.

PIT 8

Cremation

Two root fragments and one fragment which is probably root plus part of the crown were recovered from this cremation. None is precisely identifiable.

Most of the root fragments have lost the tips of the apices so their developmental stage cannot be determined. When the apices are present, they appear to be closed, ie the roots were fully developed.

Although the material from this pit was logged under two field register numbers, so little can be discerned from them that they are here treated together. The following bones could be identified:

Fragments of long bone, humerus, radius, ulna, femur and tibia.

Fragments of metacarpal/tarsals.

Fragment of carpal/tarsal.

Distal 1st phalanx.

Fragments of cranium, robust in appearance.

Calvarium fragment, robust, and a piece of orbit.

Fragment of mandibular fossa.

TABLE 1

The 'population' of the Barns Farm Dalgety cemetery

Feature	Inhumation	Cremation(s)	Head(s)
C1	M 18-20/25+	F? 23+	—
C2	F? 25-30	—	—
C3	M? 24-26	—	—
C4	F? 30-32	—	—
C5	√ 11-12	—	—
C6	—	√	—
G1	√ 18-25	√ 6-8; F? 18+; M? 18-21	—
G2	√ 18-20	M? 15+	—
G3	?	√	—
P2	—	?	√ 22-24; √ 3; √ 17-18; ? 20+
P3	—	—	√ 2-3; √ 18-20
P6	—	√ 6-12	√ 8-9
P8	—	√	—
Totals	7 or 8	9 or 10	6 or 7

Grand total Between 22 and 25 individuals.

Note: Under 'feature' the codes used are C=Cist, G=Grave, P=Pit. Under 'inhumation' and 'cremation(s)' individuals are identified as male (M) or female (F) where possible; uncertain sexings are qualified by a query, and unsexed individuals are denoted by a tick. The estimated age at death is given where possible. Multiple cremations or heads in a single feature are listed in sequence. The problems raised by the 'extra' tooth in C2 and the 'extra' teeth and perhaps also bones in C5 are skirted by omission.

11. THE ARTEFACTS

contributed by Ian A G Shepherd

In this section the artefacts are described and where possible assigned to recognized types. At the end of each description the closest parallels to the object are cited, having particular regard to those which come from sites close to Barns Farm, Dalgety, but including references to sites throughout Britain. Where two or more similar objects occur in the same context, the comments follow the last in the group. The order in which the objects are described follows the order in which the features from which they came were described in earlier sections: thus all the objects from a particular grave or cist are grouped together. Where a pot was found it is described first. Artefacts of stone follow, and objects of other materials come last. Objects are numbered in serial order to facilitate cross-reference throughout the text; and for the sake of completeness the field register number (FRN) of each as well as the museum registration number in the National Museum of Antiquities of Scotland is given so that it can be identified unequivocally in the museum collection. The flints are described with the bulbar end held nearer the body and the dorsal surface uppermost. It should also be emphasized that the metal objects have not been analysed, and their description as 'bronze' is conventional. Besides the artefacts described here, for the most part elements in the furnishing of the burials, there were a number of other, small artefacts, especially in the form of flint flakes, which are not described here.

CIST 1

1. *Food vessel* (FRN 1; NMAS EQ 901; fig 14) in a hard buff-to-brown fabric 15 mm thick, with black stone grits c 3 mm in diameter visible on the exterior and interior surfaces. The pot survives almost intact and is 140 mm high, with a maximum diameter of 172 mm and an external rim diameter of 163 mm. The diameter of the base is 71 mm. From an internally bevelled and marginally everted rim the vessel expands gently through two ribs on its shoulder and then

narrows to a slightly footed base. On the inner edge of the rim bevel is a band of contiguous diagonal whipped cord maggots each c 6 mm long, while on the upper surface of the outer edge of the rim is a band of short diagonal cuts between 3 mm and 5 mm long and 5 mm apart. Between these embellished edges, the surface of the rim is slightly concave and is decorated with an average of three discontinuous channels, c 2 mm wide, similar to those on the body of the vessel. The outer angle of the rim and the two ribs are decorated with short, overlapping, oval, whipped cord maggots c 10 mm long. The rest of the outer surface appears to be decorated all over with horizontal channels; however, the channels are often not continuous, being built up in panels of up to five or six short strokes c 45 mm long, set one above the other. The implement used for this decoration may have been a single piece of wood rather than a multi-ended tool such as a comb, as there are identical ridges on the bases of the channels. On the base are three groups of roughly parallel slashes: they are faint, but do not resemble the channeling on the body.

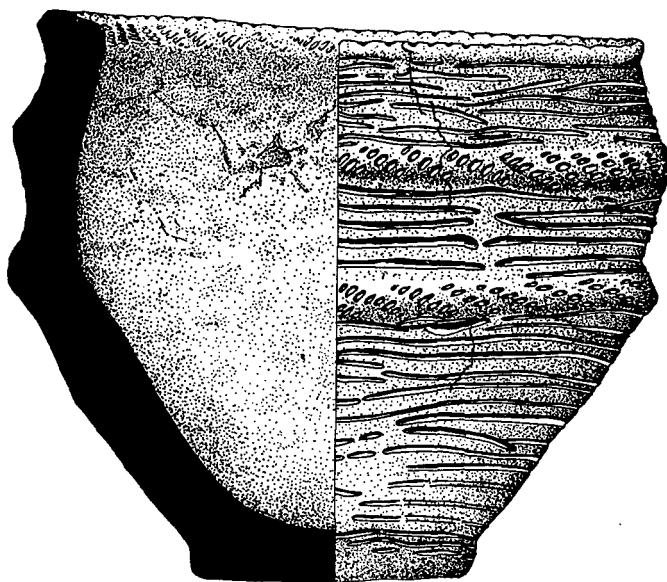


FIG 14 Cist 1. Food vessel. (FRN 1). Scale: 1:4

This food vessel is a Northern Tripartite Vase (Burgess 1974: 184, fig 29; Burgess 1980: 87, fig 3.1) and can be paralleled in vessels from the nearby sites of Pitreavie, Dunfermline (Beveridge 1886: 240, fig 2), Cist 3, Aberdour Road, Dunfermline (Close-Brooks *et al* 1975: 127, fig 3) and Gairneybank, Kinross (*Discovery Excav Scotl* 1970: 28). Also typical of this Northern Tripartite form are the pots from Cist 1, Patrickholm Sand Quarry, Larkhall, Lanarkshire (Maxwell 1949: 208–9, fig 3) and Garton Slack 75, Yorkshire (Mortimer 1905: 222–3; Simpson 1968: 200, fig 46.2). The burial with the pot from the last-named site is further similar to Cist 1 at Barns Farm, Dalgety, in being an inhumation accompanied by a cremation (Mortimer 1905: 222).

2. *Base of antler* (FRN 12; NMAEQ 902) Miss Barnetson has kindly contributed the following note:

A degraded piece of antler (?), approximately 42.5 mm in overall length. Unfortunately this object is somewhat squashed so that the 'coronet' presents an oblique face. The greater and lesser

diameters of the base are 26 and 18 mm respectively, but it should be noted that the degeneration of the outer surface is pronounced and the dimensions of the original would have been greater.

This most closely resembles a cast antler of reindeer (*Rangifer tarandus*) in that the base, where it would have been attached to the pedicle, is concave and not convex as in Red deer. Admittedly this inner, spongy part is usually first to disintegrate, but the Dalgety example does not appear to be badly eroded on the base although the burr (ie the bony nodules framing the coronet), have virtually disappeared. The outer part is composed of regularly striated bony material.

If this is indeed reindeer antler it must belong to the woodland as opposed to the barren-ground variety, the former having survived in Scotland into historic times.

CIST 2

3. *Flint fabricator or strike-a-light* (FRN 86; NMAS EQ 903; fig 15.86) a triangular secondary flake, 64 mm long, of pale yellow-grey flint with a keeled dorsal surface. The bulb has been removed and both edges are steeply retouched. The distal end is heavily worn to a slight nose and the whole piece has traces of 'handling polish' (cf the example from the Newmill Beaker burial as described by Bradley in Watkins & Shepherd 1980: 38).

Rods or stout flakes of flint with traces of heavy wear on one end are regularly found in cist burials. Those that can be interpreted as strike-a-lights have been discussed in Close-Brooks *et al* (1972: 126-7). The Dalgety fabricator or strike-a-light resembles those from Cairnhill, Monquhitter, Aberdeenshire (Anderson 1902: 768, fig 1) and Cist 2, Rungally, Fife (Tennant Gordon 1932: 68, fig 2.2). It is also similar to the one from the primary grave at West Overton G6b, Wilts (Smith & Simpson 1966: 131, fig 3.6).

4. *Whetstone/Pendant* (FRN 77; NMAS EQ 904; fig 15.77) 50 mm long in a hard, pale grey schist, it has been fashioned very regularly to a short rectangle and has striations on the sides: the lower third of one face has been lightly smoothed. There is an hourglass perforation 12 mm from the narrower end. Although this object appears to represent the surviving portion of a longer piece, the distal end being apparently snapped off, smoothing of the angles of this end suggests that the object was reused.

This object can be compared with the whetstone found with a thin bronze knife dagger in a collared urn (no 2) at Knockencrunge, Mid Torrs, Glenluce (Wilson 1888: 67, fig 1) and, rather more distantly, with a small range of pendants from cremation burials recently discussed by Shepherd and Cowie (1977: 117). The Wessex whetstones are generally more slender (Annable & Simpson 1964: nos 267-8, 345, 362 and 377).

5. *Burnisher* (FRN 76; NMAS EQ 905; fig 15.76) a rod, 58 mm long, fashioned from a rich dark brown stone-like material which is apparently iron pan. (The object was broken on recovery and the broken section was examined in the conservation laboratory prior to being repaired.) The proximal end bears traces of having been broken off a larger rod; the distal end has been ground to a gently curved edge. The underside has been heavily smoothed and bears striations angled slightly across the object.

This object is difficult to parallel: the only close comparison for its material known to the writer is the small finger-shaped piece of ironstone from a multiple cremation deposit (site 3, cist 2) at Patrickholm, Larkhall, Lanarkshire (Maxwell 1949: 210, fig 2.1), which also contained bone beads (see Grave 1 below). Although the spatulate object of clay from Knappers Farm, Kilbowie, Dumbartonshire (Davidson 1935: 371, fig 3.4) bears a superficial resemblance to the Dalgety object, it should be remembered that the excavator expressed reservations on its antiquity. In view of the evidence of use of the Dalgety object as a rubbing or burnishing tool, perhaps the

most illuminating connection would be with the range of 'sponge-finger' stones from beaker and dagger graves (Smith & Simpson 1966: 139-41, fig 6), which have been interpreted as components of leather workers' tool kits (although Clarke (1970: 219) refers to them as whetstones). Although the present length of the Dalgety burnisher is roughly half the usual length recorded for sponge-finger stones (Smith & Simpson 1966: 149-51), the piece has evidently been broken. Furthermore it does possess features which are closely similar to the distinctive traits of sponge-finger stones, namely a plano-convex cross-section, gradually thinning to a sharp end with a rounded outline (*ibid*: 136). The Dalgety burnisher is not so slender as many of the published

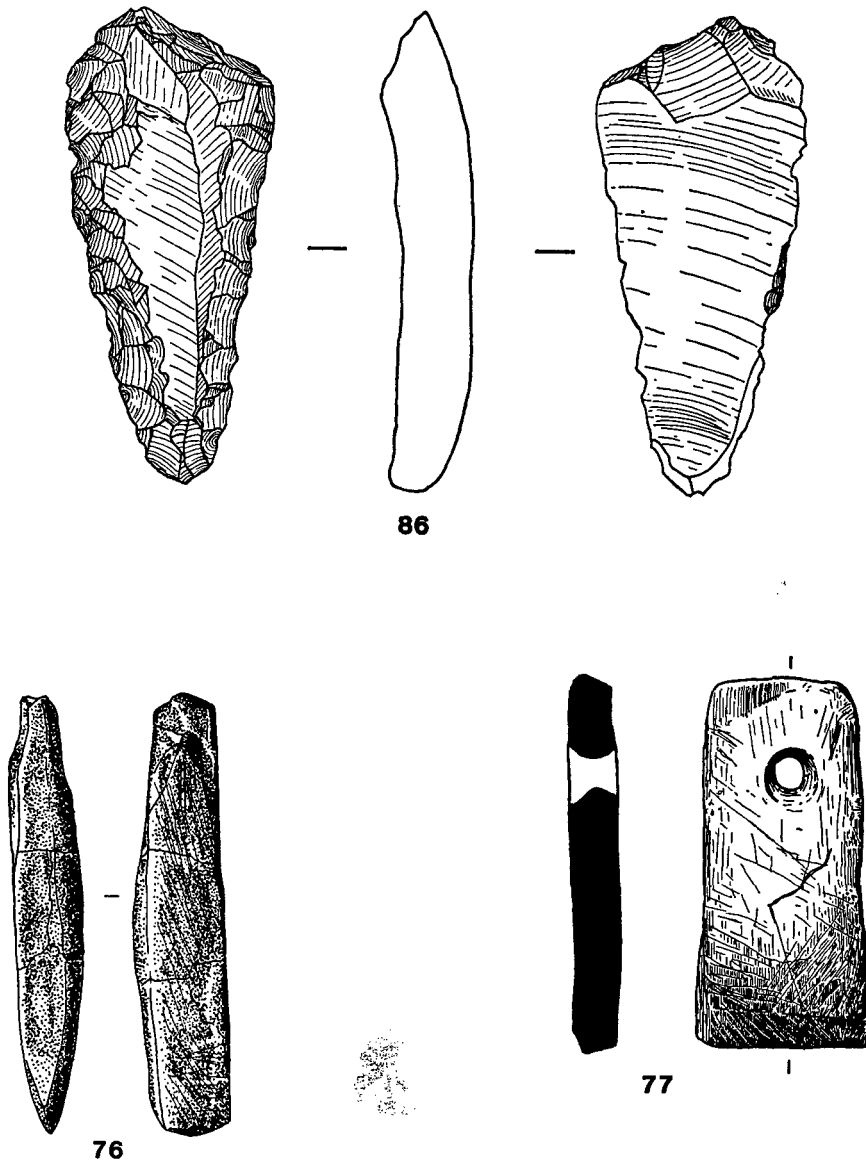


FIG 15 Cist 2. Strike-a-light (FRN 86), burnisher (FRN 76), and whetstone (FRN 77). Scale 1:1

sponge-finger stones, but even so bears comparison with the example from Wilsford G34, Wilts (*ibid*: 150, fig 6.10).

CIST 3

6. *Flint scraper* (FRN 140; NMAS EQ 906; fig 16.140) a secondary flake, 25 mm long, of dull pinky-purple flint with a zone of white which may indicate heat pre-treatment. The dorsal face has fine regular retouch, concentrated on the nose and the left edge.

7. *Flint scraper* (FRN 147; NMAS EQ 907; fig 16.147) a core rejuvenation flake, 30 mm in diameter, of grey-black flint with intrusions of white spall. Approximately half of the proximal circumference bears steep, irregular retouch and traces of use damage.

Discoidal flake tools made from pebble flint are relatively common occurrences in short cists. Two of the three 'thumb-nail' scrapers from the late beaker burial on top of the Dalladies long barrow, Kincardineshire (Piggott 1972: 36, fig 14.4 & 5) are fairly close parallels.

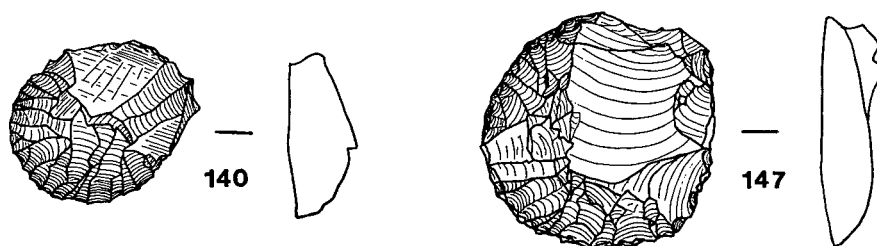


FIG 16 Cist 3. Scrapers (FRN 140 and 147). Scale 1:1

CIST 4

8. *Beaker* (FRN 163; NMAS EQ 908; fig 17.163) fragments with a light buff-brown slip over an orange fabric c 9 mm thick, whose interior is black and has crushed stone grits c 2 mm in diameter. The pot is 145 mm high and has an external rim diameter of 145 mm and a base diameter of 117 mm. This is an extremely squat, jar-like, beaker with a remarkable width-to-height ratio. Its body has near-vertical sides and a concave neck which flares slightly to a thin, square rim. The pot is decorated all over with an average of five uneven lines of large chevrons c 30 mm in height which have been roughly incised with an irregularly pointed tool 1–2 mm wide. The presence of smaller, fainter lines running parallel to many of the chevrons suggests that the tool had a ragged, uneven end such as a flint or twig. Furthermore, the decoration appears to have been hastily, or at least carelessly, executed, as the lines of chevrons frequently overlap or fail to form a regular pattern. The base is much damaged, but seems to be undecorated.

The beaker from Cist 4 is a particularly vivid illustration of the twilight of that ceramic type in Britain. It is an example of Clarke's Final Southern (S4) group (Clarke 1970: 234), Lanting & van der Waals's Step 7 (1972: 37, fig 4), and belongs with such Fife pots as those from Kirkcaldy (Childe 1944: 110–1, pl VII.2), Ashgrove (Henshall 1964: 168, fig 4), Grangehill Farm, Kinghorn (*Proc Soc Antiq Scot*, 8 (1868–70): 143; Clarke 1970: fig 1013), and Balbirnie (Ritchie 1974: 13, fig 3). It is closely similar to the S4 beaker from Dalladies, Kincardineshire (Piggott 1972: 36, fig 14.1). Its squat proportions, which typify one strand of late beaker development (Ritchie & Shepherd 1975: 26), are also similar to the S4 beaker from Lennoxlove, East Lothian (Clarke 1970: fig 1017). Clarke (1970: 241), commenting on such vessels, remarked that the quality of their execution varies in inverse proportion to the richness of the other grave furniture found with

them. The lavish gravegoods of jet disc-bead necklace and pendants in Cist 4 at Dalgety, paralleled by the S4/Step 7 find from Stoneykirk, Glenluce, Wigton (Mann 1902: 584–9), and the occurrence of such ‘sub beakers’ (Clarke 1970: 236) in stylish Scottish dagger graves as Ashgrove, Fife (Henshall 1964) or Linlathen, Angus (Anderson 1878: 448, 455 and figs 8 & 9; Henshall 1968) confirm this observation.

9. *Jet pendant* (FRN 148; NMAS EQ 909; fig 17.148) upper portion of a broken pendant in black, dense, well-polished jet, 29 mm long, c 4 mm thick, with a rectangular section. The perforation, which was drilled from one side, bears distinct wear-marks from the suspension string. The surface of the fracture is relatively matt, which suggests that the piece may have been broken shortly before burial, as jet loses its lustre when cut or broken (Shepherd 1979: 49).

10. *Jet pendant* (FRN 149; NMAS EQ 910; fig 17.149) upper portion of a broken pendant, 25 mm long, c 8 mm thick, in a similar quality of jet but with a thicker and more irregular section than its partner. The perforation has been drilled from both sides and bears heavy wear marks from the suspension cord. The flat surfaces bear striations from prolonged use.

Although several of the flat jet pieces with single perforations which accompany disc-bead and spacer-plate necklaces have been referred to as pendants, they are probably more properly to be regarded as fasteners: however, some other parallels can be adduced. A sub-triangular jet pendant found with a female inhumation in barrow 89 at Goodmanham, Yorkshire, although described as a ‘flat-plummet’, was only $\frac{3}{4}$ in long (Greenwell 1877: 297), while the jet pendant from Tan Hill, Wiltshire, is of a similar small size and is perforated laterally (Thurnam 1872: 510, fig 200). A closer parallel in terms of size, if not of shape, comes from the disturbed deposit in the S chamber of the Dunan Beag chambered tomb (ARN 7), which also contained a beaker/food vessel hybrid and a jet spacer-plate necklace terminal (Balfour 1910: 75–9; Henshall 1972: 304, 377). Two other chambered tombs have produced pendants, in late contexts, which may be relevant to Dalgety: they are of pumice but are similar in shape. One comes from Unival, North Uist (UST 34), in the chamber at the same high level which produced the grooved ware bowl (Henshall 1972: 309, 533); the other from under the blocking at the inner end of the upper passage of Taversoe Tuick, Rousay, Orkney, with 35 shale disc beads (Henshall 1963: 238, 251).

11. *Jet disc-bead necklace* (FRN 162; NMAS EQ 911) 210 disc beads of jet, diameters varying from 6 mm to 11.5 mm, the mean being 9.63 mm, and from 1 mm to 3.5 mm thick (the mean being 2.47 mm). 24.7% of the beads are 10 mm in diameter and 83.3% have diameters in the range 9 to 11 mm, which suggests a fairly precisely controlled manufacture. The beads exhibit a variety of drilling techniques: cylindrical, hourglass and subconical perforations are all present. Different stages of wear can also be seen: some perforations have marked string wear, while the flat surfaces of other beads bear fresh manufacturing striations.

Complete jet disc-bead necklaces are very rarely found in beaker graves: the Stoneykirk, Wigtownshire, find of 188 disc beads in an S4/FV hybrid of similar ‘sub beaker’ characteristics to the Dalgety beaker is the only other example (Mann 1902: 586–8). However, they are found in other contexts: for example at Greenhill, Balmerino, Fife, in a barrow which itself provides a good parallel for Dalgety (Hutcheson 1902: 646), and Harehope cairn, Peeblesshire, where 127 graded disc-beads were found in a cist burial (Jobey 1980:108), or further afield at Garton Slack 75, Yorkshire (Mortimer 1905: 223, fig 575) with a food vessel burial.

CIST 5

12. *Jet spacer-plate* (FRN 113a; NMAS EQ 912; fig 18.113a) a rectangular spacer-plate of dense jet, 34 mm long, with slightly convex ends. It is perforated by four parallel, evenly spaced holes, whose ends exhibit the characteristic concave wear from tightly strung beads.

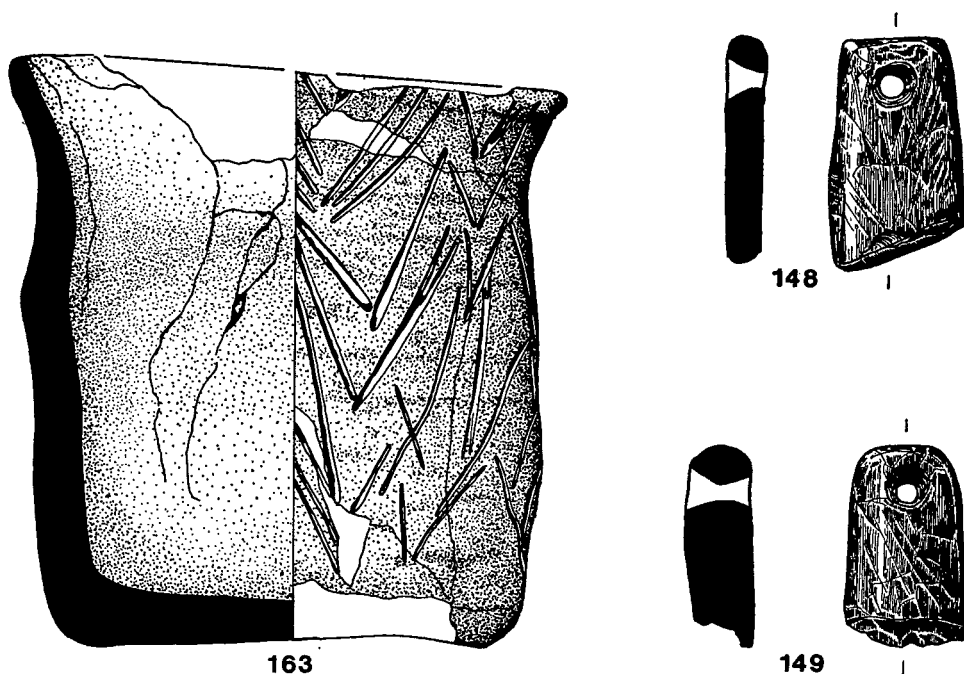


FIG 17 Cist 4. Beaker (FRN 163), broken jet pendants (FRN 148 above and 149 below). Scale: Beaker 1:4, pendants 1:1

13. *Jet spacer-plate* (FRN 113b; NMAS EQ 913; fig 18.113b) a kite-shaped plate of well-polished, hard jet, 33 mm long, with four parallel borings. The ends of the holes have heavy saucering, particularly on the innermost boring (at the narrow end).

Jet spacer-plate necklaces are well known in early Bronze Age graves in Scotland and have recently been listed (Morrison 1979: 45–8, following Coutts). The Dalgety find of two plates can be paralleled in the pair found in a cist at West Morriston, Legerwood, Berwickshire (Anderson & Black 1888: 395; Craw 1931: 101–2), and in the plain spacers in the Easter Essendy, Perthshire, necklace (Thoms 1980: 4, fig 3).

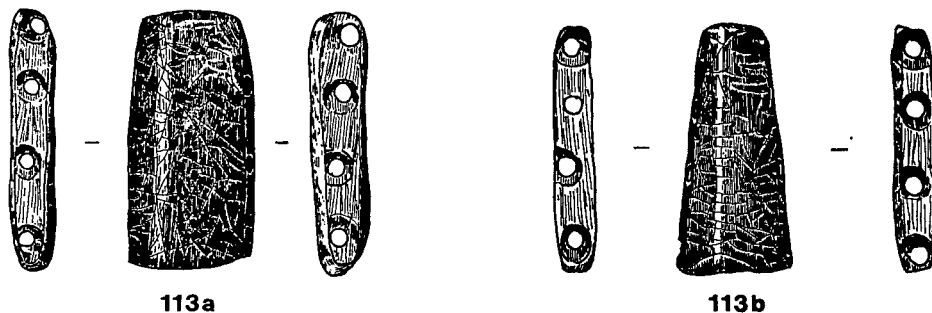


FIG 18 Cist 5. Jet spacer-plates (FRN 113a and 113b). Scale 1:1

CIST 6

14. *Bronze awl* (FRN 174; NMAS EQ 914; fig 22.174) parts of the tang and shaft of a bronze awl, surviving length 30 mm. The tang is rectangular in section, the shaft circular.

The awl in the nearby Kirkcaldy late beaker cist (Childe 1944: 111, pl VIII.1) provides a good parallel in its cross-sections. A distinction can be made between double-pointed awls, which were a long-lasting introduction of the early metal-workers, and single pointed awls with flat tangs, which appear increasingly in the British Early Bronze Age in contexts contemporary with the rich Wessex graves (Burgess 1980: 115; see also Simpson 1968: 200 and Clarke 1970: 261).

GRAVE 1

15. *Food vessel* (FRN 2; NMAS EQ 915; fig 19.2) fragments of a food vessel in a light red-brown fabric, 16 mm thick, with a black core containing some crushed stone grits (2 mm in diameter). The pot is 134 mm high with an external rim diameter of 143 mm and a maximum diameter of c 170 mm; the diameter of the base is 93 mm. The vessel rises almost vertically for 18 mm from the base and then swells out in a gentle curve to a shoulder groove, which is bordered by two ribs and crossed by one surviving perforated lug of a keeled section. The neck is concave and the rim sharply everted and steeply bevelled internally. Decoration of the upper surface of the rim bevel consists of three continuous lines of whipped cord impressions bordered by lines of small rectangular stamped impressions. On the exterior angle of the rim is a single row of worn triangular stamps, while on the neck pairs of lines of deep triangular stamps and continuous whipped cord impressions surmount single rows of these motifs. The ribs and the concave shoulder bear lines of triangular stamps and whipped cord. The single surviving lug has rusticated decoration on either face. From the shoulder downwards, decoration is made up of closely set zones of three linear motifs repeated in paired rows as follows: three undulating lines of whipped cord, a double row of triangular stamps, and three lines of short, lenticular vertical stabs each c 5 mm long. The base is undecorated. The triangular stamps appear to have been executed with a single-pointed tool, as many of the impressions are identical, particularly in having a 'nick' in their upper side. This process of individual stamping may account for the irregularity of many of the lines of decoration on this pot.

This Yorkshire Vase food vessel is similar in its shape and pierced lugs to the pot from Harelaw, Fife (Constable 1892:114, fig 1), and to an unprovenanced example from East Lothian (NMAS EE 83), while the Beley, Dunino, Fife, food vessel is also similar (*Proc Soc Antiq Scot*, 60 (1925-6): 21, fig 9). The triangular stamped impressions can be paralleled on vase food vessels from Cist 1, Denovan, Stirlingshire (Hunter 1971: 35, fig 3), and Cowdenhill, Bo'ness, West Lothian (Coles 1906: 316-7, fig 19), and on a beaker/food vessel from Mount Vernon, Lanarkshire (Simpson 1968: 36, fig 8.60). The association of a Yorkshire food vessel and a battle-axe in this Dalgety grave is paralleled at Calais Wold 23, Yorkshire (Mortimer 1905: 154, figs 398-9). True Yorkshire Vases are relatively rare in Scotland, but whether their presence in Fife can be explained as a relict of the coastal contact argued between the Northern beaker groups (Clarke 1970: 174) must remain for the moment unresolved.

16. *Battle-axe* (FRN 61; NMAS EQ 916; fig 19.61; pl 10) Mrs Fiona E S Roe has kindly contributed the following note:

The battle-axe from Barns Farm, Dalgety, is a slightly wedge-shaped specimen, with a convex outline, as seen in profile. It is flat on the top and bottom surfaces, and can be assigned to the Woodhenge group, with a butt approximating to the A butt shape (Roe 1966: 204-5). This battle-axe measures 97 mm in length, 64 mm in maximum breadth, and 37.5 mm in depth at the

shafthole. This is a curved hourglass shape, measuring 22 mm in minimum diameter. The greatest depth of the axe is near to the butt end of the implement, where the depth is 40 mm. The surface of the battle-axe has been polished, but there is damage both at the blade and the butt ends, though especially at the butt, in the form of pitting. Scratches on the battle-axe are of recent origin. The blade is considerably blunted. When the axe was washed it was found to be blackened on either side.

A petrological thin section of the axe was taken and examined by Mr Malcolm Fenton, who has kindly communicated his observations for inclusion in this publication. The axe has been given the Implement Petrology number FIF 9. It was found to be chlorite amphibolite. Mr Fenton believes that the axe was probably made from a locally found glacial erratic, since the geological sources of the rock are confined to the area north of the Highland Boundary Fault.

The new battle-axe from Dalgety appears rather short and proportionally broad when compared with battle-axes from the Woodhenge group. The average length for Woodhenge group battle-axes is 132 mm, and the average breadth is 56 mm. The index B/L, giving a value to the proportional breadth in relation to length (Roe 1966: 200), demonstrates the broadness of the Dalgety battle-axe: it has a value for B/L of 0.662, compared with 0.442 for Woodhenge group battle-axes in general. The average depth of Woodhenge group battle-axes, 41 mm, is closer to the same measurement on the Dalgety axe. However, as will be shown below, other short and squat battle-axes are not hard to find. Another point of interest to note is that the shafthole on the Dalgety battle-axe is positioned rather nearer to the blade than is usual for a Woodhenge group battle-axe. When this is calculated as a ratio, the value for Li/L on the Dalgety axe is 0.467, compared with 0.409 for the Woodhenge group as a whole (Roe 1966: 200).

Woodhenge group battle-axes are not uncommon in the Forth and Tay regions (Roe 1966: 216, map 1); indeed most of the early battle-axes found in Scotland come from this area. Compared with such classic Woodhenge group axes as those from Mugdrum Island, Perth (Roe 1966: catalogue no 422), one from Cairn 1 at Foulden, Berwickshire (catalogue no 376), another from West Calder, Midlothian (400), and probably the lost example from Craigengelt, Stirling (441), the new find from Dalgety appears noticeably broad in proportion to its width. However, battle-axes of similar appearance have also been recorded; examples are known from Monymusk, Aberdeenshire (353), Burnside Mill, Angus (357), Glamis, Angus (359), Thornton, Fife (391), and near Crieff, Perthshire (416). Further early battle-axes are known from south-west Scotland (Roe 1967).

A point of difference between the implements so far enumerated and the Dalgety battle-axe is that they all have a clearly defined blade whereas the Dalgety axe does not. Three further Scottish battle-axes with blunt blades, from Elgin, Moray (403), Rossie Law, Perth (425—this example with the addition of fluted ornament along the sides), and Murraytown, Sutherland (443), bear the closest morphological resemblances available in Scotland to the Dalgety battle-axe.

The reason why some battle-axes have such noticeably blunt blades may be simply that none was intended ever to be used as a cutting instrument. Even battle-axes in mint condition do not have really sharp blades compared with the blades of polished stone axes, and many appear to be quite unusable for cutting hard materials. Therefore, either they were not made as real tools for actual use, or they were used for purposes other than cutting, such as perhaps hammering. Among the really blunt battle-axes some do seem to be worn away at the blade end, including the Dalgety example, while others have clearly been manufactured with blunt blades, and seem to have remained unused. In addition to this, battle-axes often appear battered at the butt end,

as if they had been used as hammers or small mallets, and on the Dalgety axe the damage is in fact greater at the butt than at the blade end. Here the question that arises is that of how hard the battle-axe could be hammered, and against what, before it broke across the shafthole.

The blackening on either side of the battle-axe, if interpreted as burning, is strange since the weapon was found with a cremation burial, and apparently was deposited with the handle intact, so that it is unlikely to have become burnt on a funeral pyre. The black marks could therefore be connected with the way in which it was used. Similar markings or traces of use could be hard to detect on specimens in museums, which tend to be coated with grime, but the battle-axe from Murraytown, Sutherland (Roe 1966: catalogue no 443), has been noted as looking slightly burnt at the butt end. The Dalgety battle-axe retains the polished surface of a well made battle-axe, but before it was put into the grave it seems to have been used in some way that caused traces of battering at both ends. In this case, then, it was not only a funerary cult object.

Besides the Dalgety find there are five further finds of battle-axes recorded in association, or probable association, with food vessels. Two of these, like the Dalgety axe, belong to the Woodhenge group, and one is a Scottish find, from Cairn 1, Foulden, Berwickshire (Crow 1914; Roe 1966: catalogue no 376). The battle-axe was found on the ground surface, under the cairn. Two cists contained a food vessel, and it seems likely that this pottery was deposited at much the same time as the battle-axe. The other Woodhenge group battle-axe with a food vessel association, in this case a Yorkshire Vase, comes from Little Gonerby, Grantham, Lincs (Roe 1966: no 109; Phillips 1933: 128). The main interest of this battle-axe is its close resemblance to the Dalgety battle-axe, with its similar size and proportions, and the same blunt blade. The three other battle-axes recorded in association with food vessels are expanded at each end, and have been assigned to the Calais Wold group (Roe 1966: 233). Battle-axes from the Woodhenge group comparable to those associated with food vessels at Dalgety, Foulden and Little Gonerby have been recorded on three occasions in association with beakers of the Southern variety. The Woodhenge group of battle-axes takes its name from a battle-axe (235) associated with a Developed Southern (S2) beaker (Clarke 1970: no 1103) in the Durrington G67 barrow (Cunnington 1929: 148). The earliest of these three beaker grave groups is likely to be that from barrow no 37 at Garton Slack, East Riding, Yorks (Roe 1966: catalogue no 261; Mortimer 1905: 209), where the beaker belongs to Clarke's Primary Southern (S1) group. Thirdly, a battle-axe was recorded with a Late Southern (S3) beaker in a barrow at East Kennet (Roe 1966: catalogue no 224; Thurnam 1871: 410, fig 96). Finally, one may mention that Woodhenge group battle-axes have been found at the Ness of Gruting settlement in Shetland (Calder 1956). Three battle-axes were found there at House Site no 1. One is a Woodhenge group blunt form (437), comparable to the Dalgety battle-axe, but made of very soft, weathered stone. The two others are very small battle-axes, a broken Woodhenge group example (435), and an early intermediate form (436).

17. *Bone bead* (FRN 193; NMAS EQ 917; fig 19.193; pl 9) a square-sectioned burnt bone bead recovered during the laboratory examination of Cremation 2. It is 32 mm long, 7 mm wide and the perforation is 4 mm in diameter.

Although bone beads have been sporadically recorded from Bronze Age cremation deposits (Piggott 1958) precise parallels for the rectangular section of this bead are difficult to find. The beads in the Patrickholm, Larkhill, Lanarkshire, multiple cremation deposit are cylindrical, being probably made from human metatarsals (Maxwell 1949: 210, pl 36.2), while those from cremations at Milngavie, New Kilpatrick (Callander 1908: 218, fig 5) and Dalmore, Alness (Jolly 1879: 257, fig 6) are segmented. In view of the battle-axe found in Grave 1, perhaps the most satisfactory parallel is with the simple tubular bone bead from a collared urn containing a battle-axe and a bronze razor at Sandmill Farm, Stranraer (Anderson 1942: 82, pl 20.2).

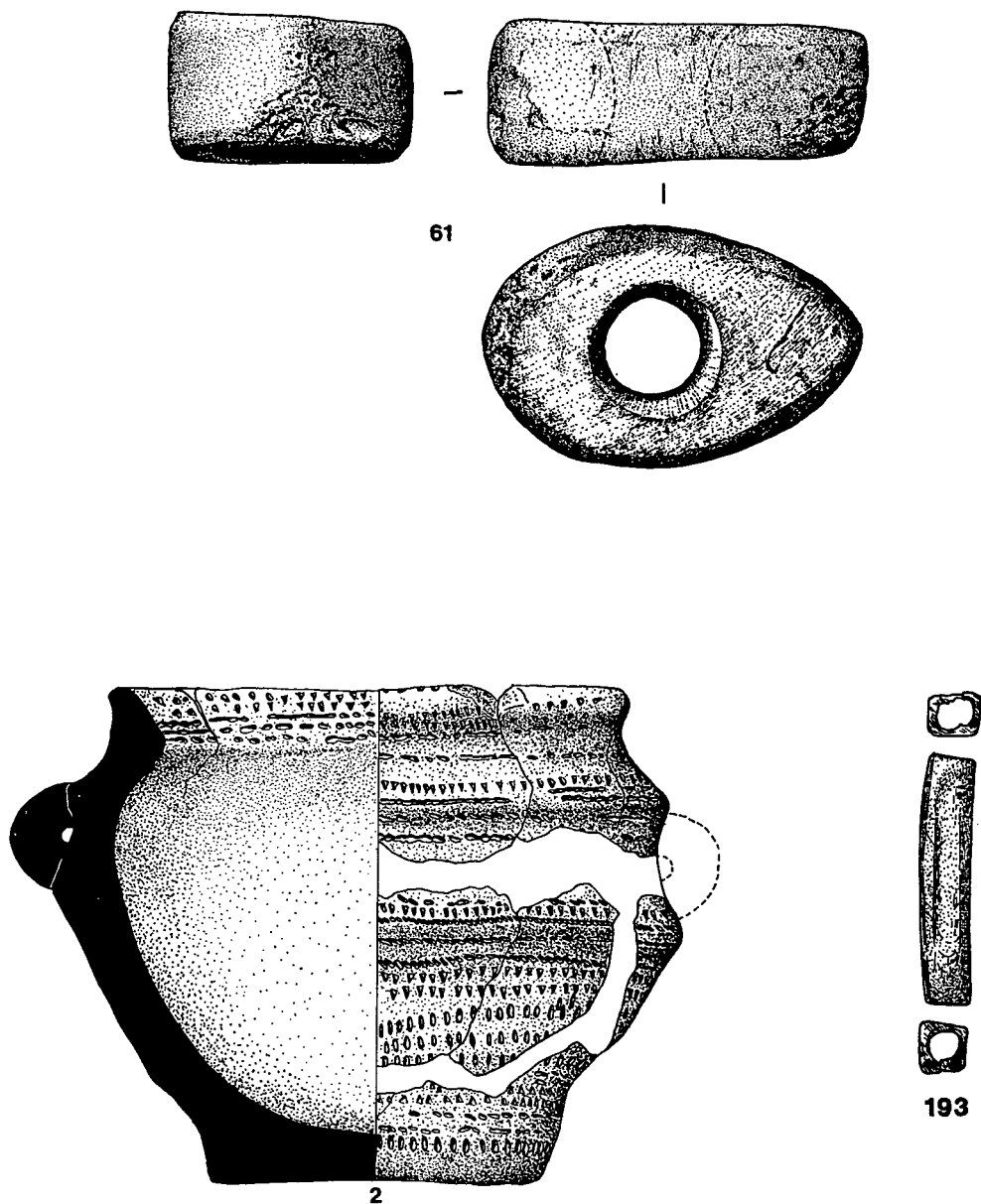


FIG 19 Grave 1. Battle-axe (FRN 61), food vessel (FRN 2), bone bead (FRN 193). Scale: battle-axe 1:2, food vessel 1:4, bone bead 1:1

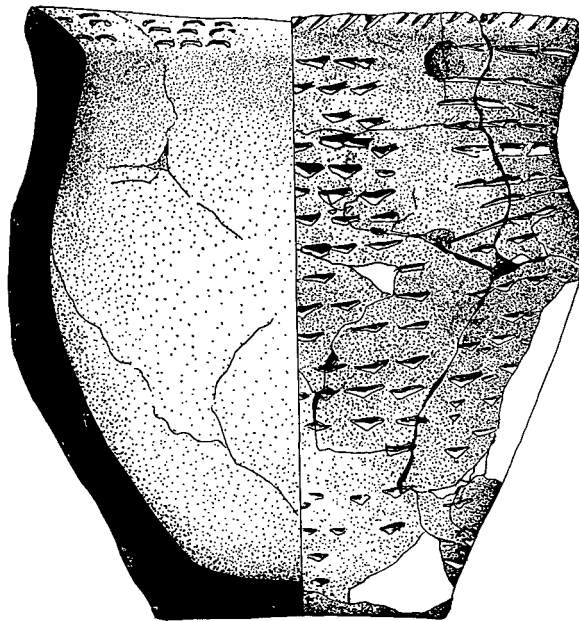
GRAVE 2

18. *Food vessel* (FRN 194; NMAS EQ 918; fig 20) in a thick (14 mm), hard, red-brown fabric with large stony inclusions up to 6 mm long. The pot is 160 mm high with an exterior rim diameter of 148 mm, and a base diameter of 80 mm. It is a tall, substantial pot with a flaring body, high shoulder, concave neck and a slightly everted rim which is gently bevelled internally. The

rim bevel is decorated with 10 panels of nine curved impressions (each impression c 6 mm long) arranged in rows of three. Although similar to thumbnail impressions, they were probably executed with a curved bone fragment. The surface of the clay in the areas between the panels and on some parts of the body retains signs of having been wet-hand-finished. On the outer angle of the rim is a row of diagonal cuts up to 10 mm long and 5 mm apart. On the neck, shoulder and body are c 20 slightly inclined rows of deep impressions, with straight upper edges and curved lower ones. They resemble horizontal fingernail decoration of 'cuneiform' type (cf Clarke 1970: 569) and were executed with a tool with a curved, chisel end. The average length of these impressions is 10 mm, but on some areas, particularly parts of the neck and shoulder, they are less deep and have been run together to produce a form of stab and drag motif. The base is undecorated.

This pot belongs to Burgess's group of Bipartite Vase food vessels (Burgess 1974: 184, fig 28; 1980: 87), which includes such tall shapes as Kirby Green Farm, Boarhills, Fife (*Proc Soc Antiq Scot*, 102 (1969-70): 295, fig 1), Hagg Wood, Foulden, Berwickshire (Craw 1914: 321-2, fig 3) and Knocken, Lesmahagow, Lanarkshire (Young 1897: 500, pl II.2). Its shape is also reminiscent of two of the pots from Brackmont Hill, Leuchars, Fife: the small, beaker-like urn no VI (Childe & Waterson 1942: 86, fig 2) and the lidded urn no II with the sharply flaring neck (*ibid*: 86, fig 2). The Dalgety pot must also be considered in relation to the beaker/food vessel hybrids (Clarke 1970: 236) on account of its tall profile, which represents the second strand in late beaker development (Ritchie & Shepherd 1975: 26), and its all over fingernail decoration of 'cuneiform' type. The anomalous pot from Idvies, Angus, which has a bevelled rim, tall, bipartite shape and all over horizontal decoration of lines of whipped cord maggots (Callander 1924: 24-7, fig 1) should perhaps also be considered in this context.

(For the neolithic sherd found on the floor of the coffin of Grave 2 see no 22 in this catalogue: the four neolithic sherds are dealt with together by Miss Henshall.)



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FIG 20 Grave 2. Food vessel (FRN 194). Scale 1:4

GRAVE 3

19. *Bronze dagger* (FRN 98; NMAS EQ 919; fig 21.98; pl 11) the fragmentary core (surviving length 60 mm) of a small rivetted bronze dagger, with a very slightly raised middle which does not amount to a midrib. The edges do not survive, nor are there traces of the hafting mark: however, three pins or rivets from 9 to 11 mm long were recovered (FRN 91, 126a & 126b). They are roughly square in section and one has a slight hammering facet at one end. Rather less than half the leather sheath also survives, on which the original profile of the knife can be traced. (See section 16: samples 21-4 for analysis of material of sheath, which can be seen on fig 21 and pl 11.)

Simple metal daggers are well known accompaniments to mid-to-late beaker and related graves (Piggott 1963): in the second Kirkcaldy cist a possibly slightly larger, though similar, dagger and its sheath were found (Childe 1944: 112-3), while a cist at Letham Quarry, Perth, produced a bronze blade with small rivets (Coles 1897: 183). The simple blades from cist burials under a cairn at Barnhill, Broughty Ferry, Angus, are good illustrations of the burial contexts of such finds: one was found on its own with a cist burial (Hutcheson 1887: 230), the other came from a cist with two gold discs which have strong Wessex affinities (*ibid*: 321, fig 3; Taylor 1980: 45, 49, pl 28K). The concentration of dagger graves in Fife has been remarked by Henshall (1968: fig 39).

20. *Flint knife* (FRN 106; NMAS EQ 920; fig 21.106) a substantial rod of grey flint, 90 mm long, 27 mm wide and 11 mm thick, the whole of whose dorsal surface bears fine pressure flaking; the edges show even finer ripple flaking. The ventral surface is slightly damaged.

21. *Plano-convex flint knife* (FRN 87; NMAS EQ 921; fig 21.87) a large secondary flake of fine grey flint, 76 mm long, 29 mm wide and c5 mm thick, which has been expertly retouched in long facets over its whole dorsal surface. The flaking is particularly fine towards the edges to achieve a denticulation which in a few places hinges over onto the otherwise smooth ventral surface. The flint is translucent at the edges and is the product of a most accomplished craftsman.

The substantial keeled knife invites comparison with examples ranging from late Neolithic to food vessel contexts (Atkinson *et al* 1951: 71-2; Simpson 1968: 198), whereas the plano-convex knife belongs to a well known series (Clarke 1932), which have predominantly food vessel associations (Simpson 1968: 198). The denticulation of the superlative plano-convex knife can be paralleled on similar knives from cists at Poltalloch, Argyll (Cregeen & Harrington 1981: 27, fig 4), and Dalmore, Alness (Jolly 1879: 254, fig 2). Nearer to Dalgety, cist 3 at Rumgally, Fife, also contained a very fine flint knife (Tennant Gordon 1933: 355). Longworth has recently stressed the Yorkshire (food vessel) connections of such denticulated forms (*in* Cregeen & Harrington 1981: 27).

Miss A S Henshall has kindly contributed the following descriptions and notes on the four neolithic sherds found on the site:

HEARTH 1

22. *Neolithic sherd* (FRN 21; NMAS EQ 922; fig 22.21). Rimsherd from a large bowl, the diameter in the region of 280 mm, the walls of the upper part being either vertical or slightly open. The heavy rim is rounded, thickened on the outside. The fabric is dark grey, hard, tempered with fine grits (? mainly quartz) giving it a harsh feel; the wall is 7 mm thick. The surface has weathered, but faint traces of fluting may be detected across the inner edge of the rim, and a smooth surface with some burnishing exists below the rim outside.

GRAVE 2

23. *Neolithic sherd* (FRN 78; NMAS EQ 923; fig 22.78). Small sherd from just below the rim of a bowl probably of similar size to 22. The rim has evidently been thickened on the outside:

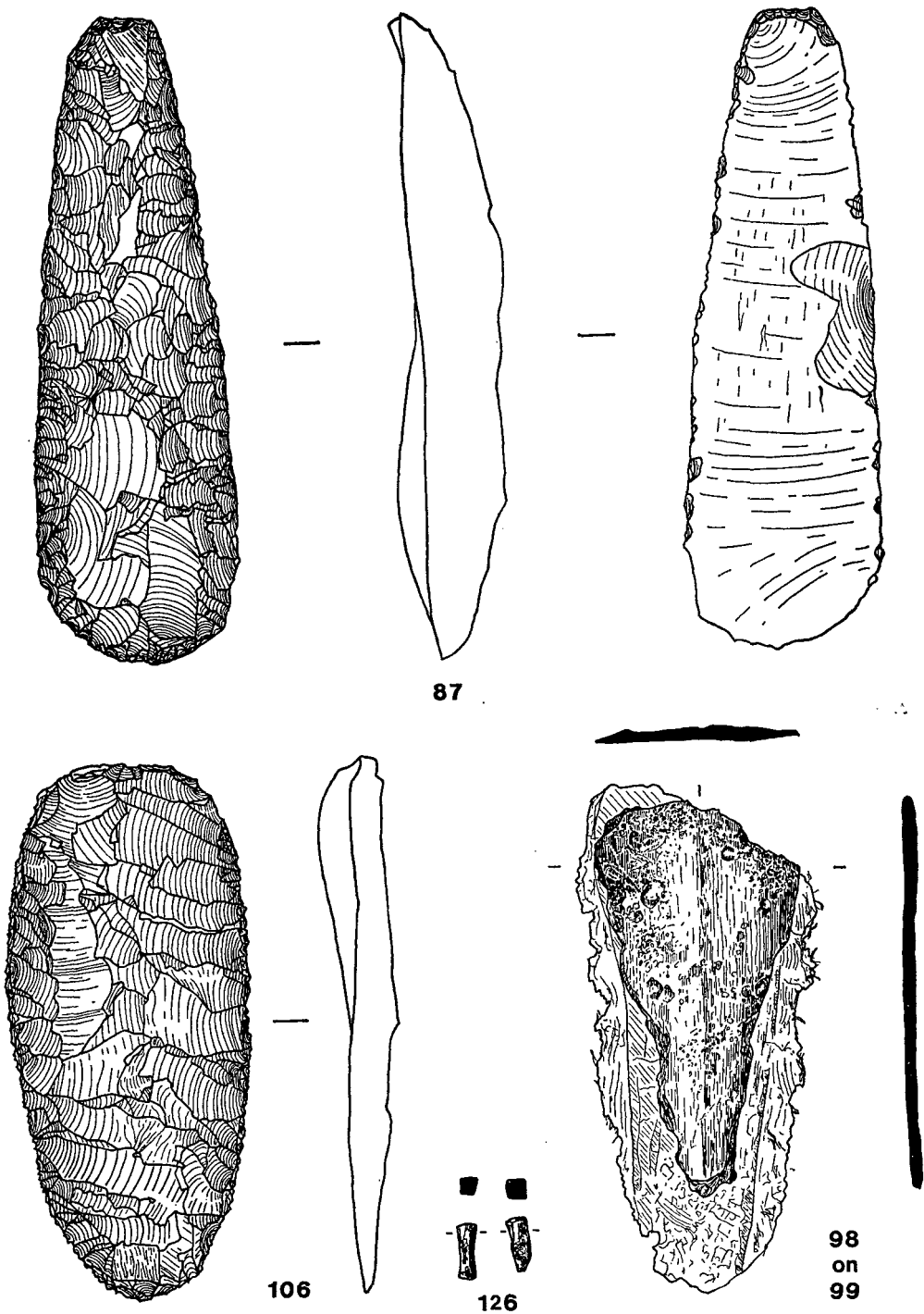


FIG 21 Grave 3. Flint knife (FRN 87), flint knife (FRN 106), bronze dagger (FRN 98) on sheath (FRN 99), and two rivets (FRN 126). Scale 1:1

the beginning of the curve of the rim is just preserved inside the sherd, and the sharp angle between the wall and projection of the rim just survives outside. The fabric is dark brown, hard, with a wider range of grit size and including many pale grits, smooth slipped surface somewhat damaged, 8 mm thick.

PIT 10

24. *Neolithic sherd* (FRN 184; NMAS EQ 924; fig 22.184). Wall sherd, the fabric very like 25 and possibly from the same pot, faint wide fluting on the outside.

PIT 11

25. *Neolithic sherd* (FRN 173; NMAS EQ 925). Wall sherd, hard black fabric similar to 23 but without the noticeable pale grits, fine slipped surfaces inside and outside, the latter shading to a mid brown, 9 mm thick.

All the sherds come from substantial well made bowls, the fabrics being hard, dark, fine-tempered, characteristic of the early neolithic tradition. The form of the bowls is not evident, but wall fluting such as that on sherd 24 normally occurs on carinated bowls. There are traces of fluting across the inner edge of the rim of bowl 22, but not across the upper surface of the rim. Possibly bowl 22 was once burnished, but, unusually with fluted bowls, there is no burnishing on the less worn sherd 24 and 25.

The sherds belong to the widespread early tradition, in recent years referred to as the Lyles Hill/Grimston series (Smith 1974: 106–8), or simply as the Grimston Style (Manby 1975: 48; Scott 1978: 56–60). This pottery is only sparsely represented in south-east Scotland though two considerable assemblages are known from farther north, at Boghead and Easterton of Roseisle, both in Moray (Henshall forthcoming a and b). At these sites there is much fluting of carinated bowls, but the rims are seldom as heavy as that from Barns Farm. The presence of pottery of this general style in Fife is indicated by a chance find at Calais Muir (in Dunfermline Museum) and a group of sherds from the fort at Clatchard Craig (not yet published in detail; see McInnes 1969: 26). In Midlothian a few stray sherds came from the Catstane excavations, and when publishing these five more finds were noted in east Scotland (Cowie 1978: 197). None of these was fluted. The nearest fluted pottery to Barns Farm is probably the bowl from Cultoquhey, Perthshire (Henshall 1972: 172 & 306).

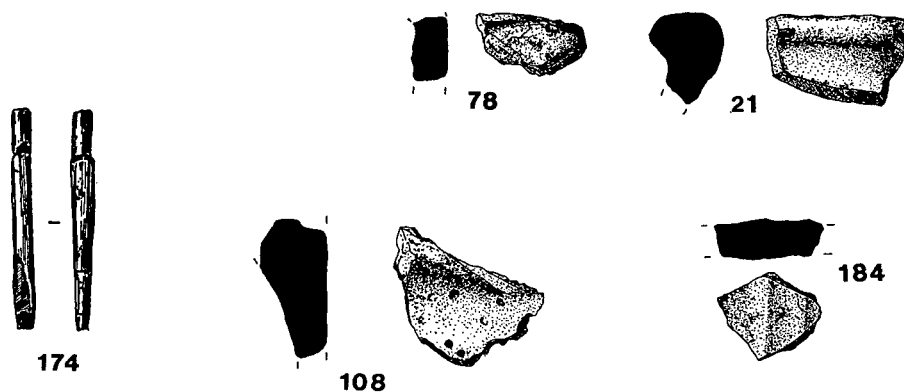


FIG 22 Cist 6. Bronze awl (FRN 174). Grave 1. Food vessel sherd (FRN 108). Grave 2. Neolithic sherd (FRN 78). Hearth 1. Neolithic sherd (FRN 21). Pit 10. Neolithic sherd (FRN 184). Scale 1:1

12. EXPERIMENTAL RECONSTRUCTION OF CIST 3

Part of the agreement with the farmer on whose land the cemetery lay was that in return for permission to continue and expand the excavation and its dumps in the middle of a growing crop we should remove all the heavy stone from the site after the excavation was complete and the crop was harvested. Thus all the cists were completely dismantled and their construction pits excavated in October 1973. One of the cists, Cist 3, was selected for a reconstruction experiment and with the help of the Ancient Monuments masons based at Aberdour Castle the four main stones and the packing stones were carefully extracted and ferried to Dalgety Bay Primary School. The Headmaster of the school, Mr J Cameron, had welcomed the proposal that the experiment should take place in the school grounds and had offered a space in the school's extensive, landscaped grounds where the cist could be rebuilt and remain as a unique educational resource.

The experiments took place on Saturday, 27 October 1973, and were carried out by a group of members of Edinburgh University Archaeology Society supervised by Dr Watkins and Ms McAdam. The description of the experiment in these pages supplements the brief notice already published (McAdam & Watkins 1975). The objects of the experiments were:

1. to test methods of moving the large and heavy stones
2. to dig the cist-pit at least in part using non-metal tools
3. to devise a method of setting the stones in place in the cist-pit
4. to measure the residual heap of spoil
5. to derive an estimate of the minimum labour force and the time necessary to construct such a cist.

The results were that the larger stones might be efficiently moved on rollers and the smaller on a simple travois type of arrangement, that the critical level of manning was eight, and that such a team would take about three days to gather the stones, construct the cist and complete the interment (exclusive of any time taken to locate and obtain the stones, and exclusive of any ritual activities associated with the task). Other results, such as the relationship between the use of modern digging tools and tools such as antler picks, emerge below.

It was during the actual excavation of the cists, in particular of Cist 1, that the idea of an experimental reconstruction was stimulated; and observations made during the excavation provided the parameters of the experiment. Doubtless many of the cists found each year in north Britain are minor constructions, and even if large employ quite small and easily managed stones. At Dalgety, however, four of the cists, not at all untypically, employed stones of impressive weights and dimensions; they were clearly selected to form sets, and would have required certain skills and numbers of people to bring them to the site and place them in position. The nearest exposures of rock and the source of appropriate, water-worn stones would appear to have been the beach about 0.75 km away and some 50 m below the altitude of the site; the mean gradient on such a route would be 1:15 or 7%. The pits in which the cists were built were extremely economically laid out so as to minimise the amount of soil to be removed; on the other hand such neatness implied some skill in setting the stones within the pit where there was no ramp by which to introduce them, and so little room to manoeuvre such heavy stones. It therefore seemed probable that the chosen stones would have been assembled on site and the pit dug quite precisely to accommodate that particular set. At an early stage in the excavation of Cist 1 it had been noted that there was an irregular kerb laid out somewhat eccentrically to the pit and apparently not entirely related to the outline of the capstone. It was speculated that this kerb might have been laid out around the edge of the miniature 'barrow' which would have resulted if the residue of soil dug out to form the cist-pit were thrown back once the capstone had been put in place.

The logical process of building such a cist can be broken down into a sequence of component tasks. Here an entirely constructional view is taken, which of course excludes any symbolic or ritual activity from consideration. The first component, locating and obtaining or shaping any stones, was omitted from the experiment on the grounds that no useful replication could be done and nothing learned by experiment in this regard, where our skills were particularly deficient. The stones must be transported to the site, a hole dug to accommodate the construction of the cist, the cist itself must be built, the burial deposited, and finally the capstone set in place and the excess soil removed or utilized. The rebuilt Cist 3 was to be left open, and in any case did not possess a capstone.

1. MOVING THE STONES

Only the four edge-set slabs were available for the experiment; no capstone survived, so the capstone of Cist 1 was used in the calculations but not in the physical experiment. The two smaller slabs for the short ends of the cist weighed about 100 kg (220 lb) each. The side-slabs were much larger and heavier. A table of dimensions and estimated weights (using standard civil engineering approximations) appears as Table 2. One may imagine that the lost capstone, if of the size of that of Cist 1, weighed about 1500 kg (1.5 tons). While such stones and the problems of moving and manipulating them pale into insignificance beside the more famous stones of Stonehenge (Atkinson 1956, Chapter 4), they nevertheless presented some sort of challenge to a group of twentieth century people, and it may be thought that the circumstance of building a short cist was a more common occurrence of Early Bronze Age life than was the building of henges and stone circles.

TABLE 2
Dimensions and weights of slabs of Cist 3

Dimensions (metric)	North side-slab	South side-slab	East end-slab	West end-slab
Length	1.35	1.63	0.60	0.70
Height	0.54	0.45	0.61	0.60
Thickness	0.20	0.34	0.10	0.10
Weight (kg)	364.5	623.5	91.5	103

The attempt to find an efficient means of transporting one of the smaller, lighter end-slabs produced an extended pantomime until it was discovered that one person alone might quite easily pull such a stone laid on the crossed ends of a pair of pliant saplings or branches in the manner of a simple travois. The simplest and most effective method of moving the larger slabs was to draw them with ropes across rollers. Rollers were made from Scots pine thinnings of 60 to 100 mm diameter (kindly supplied by the Forestry Commission); stouter poles of the same wood, about 2 m in length and cut across at one end with a diagonal cut, served as levers, which were useful for helping a stone around a corner or for correcting its lie on the rollers. Both large side-slabs were hauled along a short, level, grassy, measured 'course' and the various 'runs' were timed over a distance of 15 m, leaving space at either end for the stone to be started and stopped. The purpose of the experiment was threefold: to discover the optimal manning, to learn whether the difference in bulk between the two stones had any effect, and to obtain a range of timings from which the time over a long distance might be estimated.

The manpower was divided between 'haulers' and 'roller-operators'. It was found that two haulers were sufficient to move the stones on the even, level ground, and that two roller-operators could cope with the transfer of rollers from the rear to the front of the stone. Increasing the

number of haulers proved counter-productive as the greater speed of the stone only amplified the effect of errors by the roller-operators or inconsistencies between the rollers. Doubling the number of roller-operators certainly helped, although it required real efforts of concentration and teamwork to move accurately and in synchronism. Although an optimal team of four (two haulers and two roller-operators) could move the stone on the smooth, short test-course, it seemed reasonable to doubt whether such a minimal team could cope with the real distance of 0.75 km over natural terrain and uphill. We therefore went on to take the stones uphill, downhill, round corners, diagonally across the contours and around the contours of a 13% slope.

Uphill movement certainly required four haulers; strictly speaking two haulers could move the stones up the slope, but it was very hard work and it was especially difficult to restart once the stone stopped for any reason. With a little experience movement uphill, downhill and round bends became fairly constant. In order to achieve such continuity four roller-operators were found to be practically essential, if only because on a slope each roller had to be picked up as soon as it was free of the stone, and held in its new position until the stone engaged it. Further, a team of eight allowed freedom for one or two people to heave or lever the stone round a bend or over a minor obstacle. Surprisingly the downhill journeys were the most hazardous and slow: the haulers became 'restrainers' and the 'nose' of the stone cast around unpredictably, so that feeding the rollers became very difficult, while jamming of the rollers under the stone or misalignment of the stone on the rollers became frequent. Inevitably working the stone around corners or across the contours produced many discontinuities of movement, with the stone frequently slipping askew and needing to be levered back into position on the rollers, or the rollers becoming misaligned and jamming. These 'cross-country' transits were not timed over a precisely measured distance; it was merely noted that progress was in general at least twice as slow as in the 'ideal' situation on smooth, level ground.

In order to estimate the time involved in getting the stones from their supposed source to the cemetery we may first allow for the fact that the straight-line distance (about 0.75 km) was almost certainly impracticable, and detours would have been necessary to negotiate the steep slope up from the beach (there are raised shorelines behind the modern shore) and the steeper slopes on the seaward side of the knoll on which the cemetery was situated. A total distance of 1 km has been allowed. Averaging our better efforts with each of the two side-slabs over the level ground and multiplying the results to an equivalent for 1 km (and allowing for the gradients and irregular ground) we estimate that the optimal team of eight could have brought the lighter side-slab to the site in 1.5 hr, and the heavier side-slab in 2.25 hr. If we allow 3 hr for the heavier and more massive capstone we arrive at a total of 6.75 hr, to which must be added some time for the transport of the two, much lighter, end-slabs. We must also allow time for the return trips, rest-breaks and the inevitable snags. It would seem reasonable to think that, unless great urgency demanded it, so much heavy labour would be spread over more than one day. Since this task would require more manpower than any other part of the process we may define eight as the size of the team which needed to be available.

2. DIGGING THE PIT

The pits in which the cists were constructed at Barns Farm were deep enough to ensure that the base of the capstone sat substantially below ground level, but in plan they were remarkably economically laid out, allowing only a few centimetres more than the dimensions of the stones themselves. Our experimental pit was dug using simple tools such as an antler pick, a small wooden shovel and a bucket (to represent a basket), and the activity was measured and timed. The digging team consisted of three people, two digging and one emptying the bucket. Given the

restrictions of space in the pit it was impossible to speed the process by increasing the manpower. Based on our timing of the digging of a measured portion of the pit in this manner we estimated that the whole pit would have taken at least 2.5 hr to complete. Below the topsoil on the site of the experimental reconstruction we found made ground consisting of rubble and boulder clay. This made ground was still quite recent and was doubtless less compact than an undisturbed subsoil; it certainly would not have caused us to over-estimate the time for digging the pit. Since it has been noted that the pit was dug to accommodate the chosen stones, it follows that the stones were brought to the site before the digging of the cist began; therefore it would be unreasonable to streamline these first two processes and imagine that the cist-pit was dug by some of the team while others brought the two light end-slabs.

3. CONSTRUCTING THE CIST IN THE PIT

The time taken to insert the stones into the pit to form the cist and bring it to a finished state ready for the burial was two hours, and the task involved of necessity only four or five people. The small end-slabs had to be fitted between the long side-slabs (in the case of Cist 3, although it may be noted that Cist 1 was constructed in the opposite manner with side-slabs inserted between long end-slabs); it was obvious that in this case the side-slabs had to be in place first. Our method of getting the long, heavy side-slabs into place may or may not replicate the original method, but at least it worked smoothly, simply, safely and quickly. Each side-slab was slid into position on rollers alongside the pit on the side opposite its destined final position. The side which was to face into the cist lay downwards. Long levers were inserted between the rollers so that their ends overhung the pit. More levers were slipped under the stone from the other side. Now the stone rested on rollers with two or three levers pushed under it from either side. The levers on the side away from the pit were used to raise that side of the stone, while the other levers were depressed into the pit to become a ramp down which the stone could be gently eased until its edge reached its assigned position on the far side of the pit. The first stone was then levered upright and rested against the side of the pit, while the second side-slab was brought into position above it and then slid diagonally across the pit in the same way. With the two side-slabs leaning against the sides of the pit, there was enough room to lower the two end-slabs in slings. All four stones were levered into position to form the corners of the cist. A little time was needed to level the upper edges of the stones by undercutting here and propping up there, but soon it was possible to lock the four main stones in place with chocking-stones thumped down between the large side-slabs and the sides of the pit. The original pebble floor was relaid in half an hour while spoil from the pit was used to pack the spaces behind the slabs.

At this stage the cist would have been ready to receive the corpse with whatever ceremony. At last the capstone would have been rolled into place to close the cist, a task which, in view of the very large stone involved, may have taken another half an hour.

4. THE DISPOSAL OF THE RESIDUAL SOIL

Once the spoil from the pit had been used in part to pack the spaces between the stones and the sides of the pit the residue was measured prior to its disposal throughout extensive shrubby areas. Since the residue, assuming a conical heap, measured 3 m in diameter and 0.56 m high (perhaps after long-term natural compaction of the soil about 0.3 m), it would seem likely that it should be detectable on a site with optimal preservation conditions. At Barns Farm, Dalgety, of course, the final, all-covering barrow had been removed before archaeological excavation began; if it had not been removed such ideal circumstances for observation might have existed, and it might then have been possible to test whether the kerb around Cist 1 marked the disposal

of the residue of the spoil in the form of a miniature barrow over the capstone of the cist. Unless the spoil was spread about (as we had to do after our experiments), a heap of the approximate dimensions mentioned above would have remained, and it seems a neat solution to dispose of it over the burial and to conceal the capstone. In terms of the time taken, shifting such a small heap a short distance would take very little time, but the notion of miniature barrows over short cists must await testing in some future excavation.

5. TIME AND MANPOWER

The assembling of the major stones of Cist 3, we concluded, would have taken an optimal group of eight people about a day and a half. The remaining tasks of digging the pit and building the cist in the pit might be fitted into the latter part of the second day. The burial itself could have taken place at the beginning of the third day, and the remaining tasks (closing the cist with the capstone and disposing of the residue of soil) would not occupy more than an hour or two.

The more interesting conclusion to our minds was not that the quite commonplace task of constructing a short cist might occupy most of three days, but that such a relatively ordinary cist would have required the labour of eight able-bodied people. This number of persons is larger than the ordinary nuclear family could be expected to muster, and it implies that a larger social group than the nuclear family was involved. Again it would be no surprise to find that more than the most immediate biological relatives were involved in a funeral, but the implication of this experiment is that the larger group was actively concerned for three days on the strenuous and heavy work of construction. If time were of the essence two teams could have been employed in bringing the largest stones, but that would only double the size of the social group directly and actively concerned. It is commonplace to think in terms of communal involvement in Neolithic chamber tombs, the construction of the great cairns and barrows, and the building of the henges and stone circles, but it is gratifying to have some confirmation of similar communal activity even at the basic level of the single short-cist burial.

13. THE NATURE OF THE COFFIN IN GRAVE 2

The excavation of a boat-shaped coffin in Grave 2 is described above (section 7, pp 73-7; figs 10 & 11, pl 8). One inhumed body and the cremated remains of a second body were found to have been laid in a container or coffin of some organic material which had left a thin skin of stained soil as its only visible remains. Where the crushed Food Vessel had lain above the head of the inhumed corpse in the rounded end of the coffin a thicker deposit of dark brown, almost black soil was found; it had some consistency which held it together more firmly than the surrounding soil. A sample was taken and passed to the Research Laboratory of the National Museum of Antiquities of Scotland, where it was analysed by Dr C C McCawley. The sample was taken under the impression that the material was the decayed contents of the Food Vessel, and Dr McCawley was asked to examine the sample with a view to identifying the probably organic contents of a Food Vessel.

In the course of the early post-excavation work, as the profiles of the coffin were being built up on paper for the first time from the figures which were recorded during excavation, it became clear that the Food Vessel could not have stood upright in the position where it was found, and that it must have been placed in the coffin on its side. While a vessel on its side could still have acted as a container for dry goods if its mouth were covered, it was difficult to see how the material

of the sample could have got below all the sherds of the Food Vessel unless it were a liquid. An alternative hypothesis proposed itself: that the sample had been taken from the material of the coffin, which had been differentially and marginally better preserved from leaching under the double layer of sherds of the crushed Food Vessel. Dr McCawley's examination and analysis of the sample (see section 16, sample no 20) led him to suggest that the material might be leather. It is worth stressing here that Dr McCawley was not aware of the change in understanding as to the nature of the sample. He concluded that the sample represented the remains of leather both because of its characteristics under analysis and because of the similarity to another sample (no 1) which he had more readily identified as leather, namely the residue on one or two pebbles at the head end of Cist 1.

Accepting Dr McCawley's identification of sample no 20 as leather, and noting the reinterpretation of the material below the Food Vessel as part of the coffin, then we may conclude that the thin 'skin' of the coffin as preserved in the soil was the remains of animal hide. Such a material as hide or leather would require a frame, to which it would act as cover, but our archaeological evidence was entirely negative; neither at the gunwale nor elsewhere in the coffin was any framework noted. Here it may be added that the thinness of the coffin material puzzled us during the excavation and we were deliberately watching for any trace of thicker organic remains which might be interpreted as the main structural members. We must conclude that the frame of the coffin was of the lightest possible construction, something like basketwork, wickerwork or hoops of very thin, pliant wood. While it is quite possible that such a construction could have been made expressly to serve as the coffin for the purpose of burial, it is difficult to explain why it should have been made in that particular shape. An alternative hypothesis is that the boat-like shape of the coffin indicates that its use as a coffin was secondary, and that it was originally a boat. From that suggestion it is an easy step to discover that recent British and Irish coracles and currachs provide excellent analogues for the Grave 2 coffin both in shape, size and materials (see Hornell 1938 in general, and for a particularly close parallel see Watkins 1980, fig 5). In particular south-west Welsh coracles preserve the same square shape at one end, which is the fore end, and the same shelving, semicircular stern; even the dimensions are extraordinarily close. Accounts of traditional coracle construction tell that heavy animal hides were stretched over a very light framework of hazel withies (or basketwork in the only surviving Scottish example; see Fenton 1972). On the grounds of similarity of shape, size and materials used it is suggested that the coffin in Grave 2 was originally built and used as a coracle, a type of boat well suited to use in the shallow bays and sheltered waters of the north shore of the Firth of Forth.

Although it seems probable that the coffins in Graves 1 and 3 were of the same materials as that of Grave 2 there are to the author's scant knowledge no parallels for skin boats of coracle construction of that shape. It is suggested in the fuller treatment of this point (Watkins 1980) that in the light of the inferred coracle reused as a coffin at Dalgety it may be possible to identify or confirm two other possible coracle-coffins of similar early date, one (unpublished) found with a Food Vessel inhumation at Corbridge in Northumberland and the other in the Ancholme estuary near Ferriby (Clark 1952: 283). I am much indebted to Professor Piggott for drawing both these two possible examples to my attention, and to Professor J G D Clark, C W Phillips, Drs D J Breeze and J Gillam for much help. The recognition of coracles (if the identification proposed here and in Watkins 1980 is accepted) adds to the range of coffin types and to the use of boats as coffins in the Early Bronze Age in Britain (see Ashbee 1960: 86-90), as well as carrying back the documentation of British skin-boats or coracles into prehistory well beyond their earliest documentary record among Latin authors (conveniently collected by Hornell 1938, section 1, pp 6-9).

14. COMPARATIVE BACKGROUND: THE CEMETERY

contributed by Ms Ellen McAdam

INTRODUCTION

The cemetery at Barns Farm, Dalgety, demonstrated an interesting variety of features; some of them are without parallel in Scotland, while for others the list of comparanda would be both lengthy and dull. It has therefore seemed best to concentrate on aspects of the site which, though unusual, are not unique; these are the barrow, the presence of inhumations and cremations in one cist or grave, burials with oxhides and the occurrence of graves and cists on the same site. It has also seemed sensible for reasons of economy to restrict comparisons to Scotland. In many cases the original reports consulted are more than a century old, and a certain amount of interpretation or reinterpretation may have been necessary; accounts which seemed hopelessly vague or unreliable have not been included. Measurements given in the original publications have been translated into the nearest metric equivalents, often lending an air of spurious exactitude to what was probably a good round number.

BARROWS

Barrows in Scotland are heavily outnumbered by cairns. Since stone is one of Scotland's most plentiful natural resources, this is not surprising, although barrows may continue to escape detection as a result of their siting on the summits of natural hillocks, as was the case at Barns Farm, or because of ploughing or erosion. Indeed, most so-called 'flat' cists are situated at or near the top of a natural rise, and may have been originally covered with small barrows or cairns (McAdam & Watkins 1974).

Within Fife, a barrow was discovered in the last century in the course of forestry work at Calais Muir, near Dunfermline. The barrow stood on the summit of a natural rise and consisted of a mound of loose sandy soil (resembling the subsoil), about 12.2 m in diameter and 1.2 m in height, surrounded by a kerb of rough stones (Beveridge 1885: 247). Near the centre was a cist constructed of slabs set on edge. The joints were luted with yellow clay and the cist was sealed with a capstone the surface of which was only 0.76 m below the top of the mound, so that the side and end-slabs must have projected above the original surface of the hillock. The cist contained a Food Vessel which according to the original report 'accompanied an unburnt burial'. Around the central cist and at a higher level within the mound were found 10 more or less complete cinerary urns containing cremations, fragments of other cinerary urns, isolated deposits of burnt bone and quantities of charcoal.

A cairn which crowned the hill of West Mains of Auchterhouse, near Dundee, was investigated towards the end of the last century at the instigation of the landowner, 'a gentleman of antiquarian tastes' (Hutcheson 1897: 205). The cairn measured 19.2 m from north to south by 18.28 m from east to west; its height at the centre when excavated was 1.67 m, but it had probably originally been 2.13 m, as stones had been removed in 1887 to build a pillar commemorating the Golden Jubilee of Queen Victoria. Under this cairn and approximately central to it was a barrow 6.09 m in diameter and just over 0.6 m high at the centre, edged with a kerb of large stones whose average size was 0.91 × 0.76 × 0.45 m. The barrow was composed of fine black soil containing broken white quartz and is described as having been constructed in layers, each of which had been trampled firm. This may describe a mound built of turves. Throughout the mound there were traces of wood ashes, especially just around the central cist, but no bones.

The barrow covered a rather unusual cist built with one of its short sides left open and a short slab set across the middle so that the effect was of two compartments, one with an open side.

The joints were luted with clay and each compartment was covered with three slabs of stone (larger over the north-eastern than the south-western compartment) which were sealed with a 70 mm thick layer of clay. The side- and end-slabs were sunk only a few centimetres into the surface of the hill, and were supported by a small heap of stones, amongst which were fragments of two bronze implements. There can therefore have been only a few centimetres of mound material above the clay sealing over the capstones. Within the cist there were two heaps of cremated bone on the extremely uneven floor of the main compartment; next to one heap lay a midrib dagger. In the second compartment lay a third deposit of cremated bones, this time mixed with charcoal. The three deposits do not necessarily represent three individuals. Since only a section of the cairn and mound was excavated it is not known whether the cairn material represented a capping for the barrow or an extension of the site to accommodate further burials. The sizeable kerb around the primary barrow suggests that the monument was considered complete in that form, but it seems strange that the central burial should have been left protected by only a few centimetres of soil.

There is less information available about a barrow excavated in 1885 at Law Farm, Urquhart, Morayshire (Mackintosh 1891: 67). The mound was chiefly composed of sand and measured 18.9 m from north to south and 18.28 m from east to west; the height at the centre was 3.65 m. The central cist seems to have been similar in construction to that at West Mains of Auchterhouse, the slabs being supported by a heap of boulders, in this case 1.82 m in diameter and 0.45 m high. Surrounding this was a kerb of stones 3 m in diameter. The cist contained a contracted inhumation accompanied by a Beaker and five bone pendants.

More recently a complex barrow was one of three sites excavated by the Central Excavation Unit at North Mains, Strathallan, Perthshire (G Barclay forthcoming). Before excavation the mound was about 40 m in diameter and 5.5 m high. The complex construction of the barrow, with its large quarry ditch, doughnut-shaped ring-mound, post-circle, internal radiating wattle-fences and the odd construction of the core of the mound, will soon be described in detail in the imminent publication. Of particular interest in the context of Barns Farm is the covering of the barrow with a skin of boulders and the multiplicity of burials in various forms which the barrow contained or covered. Among the 10 burial deposits at North Mains were a grave (presumably an inhumation since only fragments of bone survived) with a Food Vessel and a necklace of jet disc-beads, an inhumation in a cist with a Food Vessel, several small cists containing the cremations of as many as eight individuals, and the cremations of single individuals with or without cists.

Although these four barrows vary considerably in construction, certain details recur. At Calais Muir and West Mains of Auchterhouse the barrows were sited on naturally rising ground, but as at Law Farm, Urquhart, they had central cists and boulder kerbs, features which were apparently absent at Barns Farm. The more complex monument at North Mains, Strathallan, on the other hand, seems to have resembled the Barns Farm barrow in having a covering of stones.

CISTS CONTAINING INHUMATIONS AND CREMATIONS

Table 3 lists the occurrences of cists containing both inhumations and cremations. The amount of information available differs, but in most cases the internal dimensions of the cist are given and these provide a rough guide to relative sizes, although for cists with similar internal dimensions the size and weight of the slabs used, and hence the amount of effort involved in construction, may vary considerably. Most of the cists were of average size, with the exception of Dunchragaig b (no 5 in Table 3), but several had features such as pebble flooring and luting, slab paving (Dunchragaig, nos 4 & 5), a grooved side slab (Poltalloch, no 7), and a heavy double capstone (Cavers, no 10), which would have increased the work involved. The cists show a

preference for orientations from NE/SW to ENE/WSW. Associations, where present, are predominantly with Food Vessels, with one jet spacer-plate necklace and one bone pin; in Scottish cists in general 30% of Food Vessels accompanied cremations, while there are only one or two examples of Beakers with cremations. Five of the 11 cists listed were found under cairns or a barrow, and eight were in association with other cists and burials, proportions which again reflect overall trends among Food Vessel cists.

It is not always possible to establish whether the inhumation and cremation were deposited simultaneously, as at Barns Farm, or successively. At Auchlin, Aberdeenshire (Table 3, no 1), the inhumation of the child took up only about half of the cist, but it was apparently undisturbed by the cremation, which seems to have been placed over its legs. At Balnabraid (no 3) the cremation was covered by a thin layer of clay on which the Food Vessel rested; once again, there is no evidence either way but the care taken to protect the cremation may point to a simultaneous deposition since if the inhumation were successive the burial party could easily have disturbed the cremation or cleared it out completely. There was some confusion surrounding the removal of the bones from this site following the original excavation, and although a young infant is identified in the report on the unburnt bones in addition to the adult there is no mention of it in the account of the excavation. It is of course possible that the small, fragile bones of a child could have been missed among the poorly preserved remains of the adult inhumation.

Both the instances from Dunchragaig (nos 4 & 5) are slightly doubtful. The inhumation on top of the capstone of the first cist was probably secondary to the construction of the cist, since its orientation was completely different. The cist itself was filled with a mixture of clay, sand and gravel throughout which were dispersed the cremated bones, some charcoal and the Food Vessel. Below a flagstone paving lay a flexed inhumation with its head to the NE. It is unfortunately not recorded whether the inhumation lay within the walls of the cist but in the absence of any statement to the contrary, and since it followed the orientation of the cist, it seems most likely that this was so. The inhumation and cremation would then have been deposited as parts of a single process, although separated by the paving.

The second cist in the cairn at Dunchragaig was exceptionally large; its sides were built of boulders, and in view of its size, its multiple burials and the absence of associations it is doubtful whether it should be ascribed to the Bronze Age at all, although according to Henshall it cannot be satisfactorily classed as a chambered tomb. The east end was clear, but there were the remains of more than one cremation on top of the paving at the other, more cremated bones under the paving some distance away, and an inhumation in the centre of the cist. The construction of the cist, with its massive capstone, is such that it is difficult to see how it could have been used for successive burials.

Very little is known of the first example from Poltalloch (no 6) beyond the details given in Table 3. It is not even clear whether the burnt and unburnt bones represent different individuals or merely a rather inefficient cremation of one body. This uncertainty also exists in the case of the second example from Poltalloch (no 7), where all the bone came from a circular deposit in the northern part of the cist which included burnt fragments of skull and the smaller long bones, and larger, unburnt fragments of long bones and 9 teeth, including a third molar. This could represent either the simultaneous deposition of a cremation and a partial inhumation, or the disturbance of an inhumation by a secondary cremation. A more or less complete jet spacer-plate necklace accompanied the burials; such necklaces are more usually found with inhumations.

At Almondbank (no 9) the inhumation was probably disturbed by the cremation, since the inhumed long bones were at one end of the cist and the cremation and Food Vessel at the other. The cremation in the Cavers cist (no 10), however, must have been simultaneous with the inhumation.

tion, since the left forearm was resting on cremated material while the right forearm was covered by it. This cist, which was under a cairn, must have involved a good deal of labour; not only was it covered by heavy double capstones, the upper of which was particularly large, but the cist-pit was cut into the rock of the hilltop on which it stood. The effort in this case was expended on behalf of individuals whose grave-goods consisted only of a bone pin, a perforated bone disc, and a flint arrowhead and thumbnail scraper.

At Camelon (no 11) the inhumation lay undisturbed, though badly decayed, on the floor of the cist with the Food Vessel beside the skull, while the cremation was spread through the sand of the filling. A parallel may be drawn between the cist and Dunchrugaig a (no 4), where the cremation was also dispersed throughout the fill of the cist. These two cists seem to represent the deliberate filling of the cist with fairly clean soil mixed with cremated bone.

A different practice was followed in the Auchlin, Balnabraid, Dunchrugaig b, Barns Farm and Cavers cists (and in the Barns Farm graves), where an undisturbed and apparently complete inhumation is accompanied by one or more discrete deposits of cremated bone, most probably deposited simultaneously and as part of one rite. Evidence for this practice is supplemented by the information from a cist at Horsbrugh Castle Farm, in Peeblesshire, where a partial inhumation in a cist was supplemented by two cremation deposits, representing three people, in the cist-pit (Petersen, Shepherd and Tuckwell 1972). Although these cremations were not within the cist itself, the care with which they had been positioned relative to the cist suggests that all the burials were deposited as part of a continuous process. Too few of the deposits listed in Table 3 have been subjected to expert examination to enable us to hypothesize the relationships among the individuals involved. At Horsbrugh Castle Farm the double cremation deposit comprised a child of about six years of age and an adult, but among the other examples there are children only at Auchlin and (doubtfully) at Balnabraid. This contrasts with cists containing multiple cremations or inhumations, where children or infants appear in about two thirds of known examples, though again some of the identifications are unreliable.

Any number of factors at which we can only guess may have determined which individuals were to be buried together and according to what rite. The inhumation may in cases of simultaneous deposition represent the last person to die, but not necessarily the most important member of the group. Time of year, manner of death, family relationships and social, religious or economic distinctions may all have played a part in deciding who was buried where, when, how and with whom.

STRAY TEETH

In addition to its combinations of cremations and inhumations Barns Farm may have produced in Cists 2 and 5 evidence of another bizarre practice, that of discarding teeth in other people's graves. Unfortunately the survival value of teeth is high, and the other skeletal remains so often fragmentary, that the presence of stray teeth may be difficult to detect, and, if detected, liable to misinterpretation. There is, however, at least one certain instance; at Kilmaho, Argyll, one of three cists in line from north to south contained the crouched inhumation of a middle-aged adult accompanied by a Food Vessel (RCAHMS 1971, no 77). In the area of the hands were two flint knives and a small riveted bronze knife. On top of the knife was a bronze awl with several human teeth.

There are other possible occurrences of stray teeth, but in each case the evidence is insufficient to preclude the possibility that the teeth were the property of the main burial. Like the Barns Farm examples there are examples where the evidence remains ambivalent. Perhaps future examinations of skeletal remains from Bronze Age burials will produce more evidence of this other

TABLE 3
Cists containing inhumations and cremations

Site	Context	Construction details and internal dimensions	Orientation	Inhumation	Cremation	Associations	References
1. Auchlin, Aberdeenshire	Found excavating gravel from rising ground	1.11 x 0.45 x 0.40 m	N/S	5-6 year old child crouched in NW corner, head S on right side	Adult in NE corner	None	Low 1904
2. Broomend of Criche, Aberdeenshire	In stone-filled pit under central monolith of stone circle. Cist and other burial deposits nearby	Not known. 3 cover-slabs	Not known	'Inhumation'	'Cremated human bones'	None	Dalrymple 1883
3. Balmabraid, Argyllshire	Under or near cairn with kerb of large boulders; 11 cists and other deposits	0.86 x 0.50 x 0.55 m. Capstone 1.37 x 0.91 x 0.50 m	NNE/SSW	Adult, head at N end. Infant (?)	Adult under layer of clay in SE corner on which Food Vessel rested	Food Vessel and 2 flint flakes next to feet of inhumation. Flint flake with cremation	Galloway 1919; Ritchie 1967
4. Dunchragaig, Argyllshire (a)	One of 3 cists under cairn c 30 m in diameter, including a small cist containing a cremation and Food Vessel	1.37 x 0.76 x 0.76 m. Paved with slabs	ENE/WSW	Inhumation on top of capstone lying E/W. Inhumation under paving, head NE	'Calcinced bones' in fill of cist	Food Vessel and flint flakes with cremation	Greenwell 1866
5. Dunchragaig, Argyllshire (b)	Ibid	2.28 x 0.96 x 1.06 m. Massive capstone 4.26 x 2.51 x 0.38 m. Boulder-walled. Paved with slabs	ENE/WSW	Inhumation in centre of cist on paving	'More than 1 burnt body' on paving at W end. More burnt bones under paving slabs c 0.75 m from W end	None	Ibid
6. Poltalloch, Argyllshire	One of 4 cists in a gravel terrace, one containing a Beaker and crouched inhumation, one a Food Vessel, and one a Food Vessel with flint knife and cup-marked capstone	Not known	Not known	Some unburnt bones and teeth, probably of 'young person'	Quantity of cremated bones	None	Discovery and Excavation in Scotland, 1961, 11

- | | | | | | | | |
|---------------------------------------|--|--|---------|--|--|---|--|
| 7. Poltalloch, Argyllshire | One of 3 cists in a gravel pit; another with grooved side slabs contained an inhumation and Food Vessel | 0.94 × 0.51 × 0.41 m.
Groove in west side slab at north end | NE/SW | 9 teeth of adult 20-22 and fragments of long bones, apparently unburnt | Adult; fragments of skull and smaller long bones, in centre of N half of cist | Jet spacer-plate necklace, flint knife, oak charcoal, ochre and quartz | Craw 1928 |
| 8. Barns Farm, Dalgety, Fife (Cist 1) | Under barrow with 5 other cists, one containing an inhumation with Beaker and jet disc bead necklace, and 3 graves | 1 × 0.60 m.
Clay lining.
Pebble floor | ENE/WSW | Contracted inhumation 18-20 on R side facing S | Young person in E corner | Food Vessel | |
| 9. Almondbank, Perthshire | One of 10 cists near the top of gravel bank, 2 containing jet disc and oblong beads and one further Food Vessel | 0.88 × 0.54 m.
Capstone 1.17 × 0.82 m | ENE/WSW | Inhumed long bones at SW end | Cremation at NE end | Food Vessel next to cremation | Discovery and Excavation in Scotland, 1973, 40 |
| 10. Cavers, Roxburghshire | Under cairn on summit of small hill | 1.12 × 0.76 × 0.68 m.
Double capstone: upper stone 2.18 × 0.86 × 0.45 m | NE/SW | * Young man under 23? on R side head SW | Cremation in heap in front of body covering R fore-arm: bones of L fore-arm resting on cremation | Bone pin opposite neck of inhumation. Flint arrow-head with cremation. Thumbnaill scraper. Perforated bone disc | Christison 1896 |
| 11. Camelon, Stirlingshire | On summit of rise | 0.91 × 0.48 × 0.45 m | NNE/SSW | Female 18-20. Skull at S end | Adult; in sand of fill, recovered by sieving | Food Vessel next to skull of inhumation | |

token burial practices. The pits containing human heads at Barns Farm remind us that, as with partial inhumations and token cremations, there were more ways of disposing of the dead than simple inhumation and the inhumation of cremated remains.

BURIALS WITH FUR OR OXHIDES

Table 4 lists burials in cists with fur or ox-hides. Only a few have been subjected to expert examination, but since in most cases it is stated in the original report that individual hairs or fibres could be seen, identification in general seems fairly certain; those that have been examined have almost all been identified as bovine, perhaps aurochs or European bison. The distribution is eastern, with only one example out of the 10 coming from the west, and, not surprisingly, the associated rite is inhumation.

In all four Aberdeenshire examples (Table 4, nos 1-4) the hide is described as covering the burials, which were accompanied by Beakers, or, in one case, a Beaker/Food Vessel hybrid. Two of the Aberdeenshire cists (nos 2 and 3) contained double inhumations. Elsewhere the hide or fur was placed under the body or head, or (at Masterton, no 9) over the entire floor of the cist; grave-goods included Food Vessels, daggers and a jet spacer-plate necklace. As a group the cists were unusually large, well above the average for Scottish short cists, and they were constructed with unusual care. Five were paved with pebbles (at Cuninghar, no 7, the pebbles covered only an area coinciding with the fur under the head of the burial) or with a slab (or at Broomend b, no 3, with both), five were luted with clay and two had a double capstone. Several others had unusually massive capstones. Only at Barns Farm was there apparently an artificial mound (inferred from the kerb around Cist 1); elsewhere the cists were found in natural knolls of sand or gravel, usually in the vicinity of other, unexceptional cists.

Construction details and grave-goods indicate that fur and hides are found in the graves of individuals of special status whose burials required unusual care and special effort. Little is known of the age range or sex of these individuals, though all seems to have been adult except at Broomend (no 3), where an adult and an infant occupied the same cist. Without such information, and probably even with it, one can only guess at the possible distinctions which entitled this group to command an unusual degree of attention from their communities to the construction and furnishing of their cists.

GRAVES

Only a handful of graves is recorded from the Early Bronze Age in Scotland compared with hundreds of burials in cists, and this is not surprising when one reads how slight were the traces of the Barns Farm graves. Even when protected by a cist an inhumation can decay completely and unusual conditions are required in Scotland for the survival of an unprotected inhumation.

At Cairnpapple there were two Beaker graves within the Period II henge monument which preceded the Period III cairn and cists (Piggott 1948). The first grave, near stone-hole 8, was sub-rectangular in plan and dug into the rotted rock; it measured 1.12 × 0.60 × 0.67 m. The acid soil had destroyed the burial, which from the size of the excavation may have been that of a child, and the grave contained only a Beaker. The second grave was more complicated; it consisted of a standing stone, a rock-cut grave measuring 2.13 × 1.22 × 1.45 m and a setting of stones around the grave. Stains on the floor suggested the former presence of an extended inhumation, but only the enamel crowns of the teeth remained. A wooden object had been laid over the face of the burial, which was accompanied by two Beakers (one with a wooden lid) and a large wooden object, possibly a heavy club. The cairn of Period III with its kerb of large boulders had apparently been deliberately sited so as to include this grave, arguing some religious continuity at the site.

TABLE 4
Burials in cists with fur or oxhides

Site	Context	Construction details and internal dimensions	Orientation	Oxhide or fur	Burial	Associations	References
1. Blackhills, Tyrie, Aberdeenshire	In gravel bank	0.91 x 0.60 x 0.53 m. Pebble floored	Not known	Burial covered by felled substance, seen under the microscope to contain hairs	Contracted inhumation of adult male, c 1.62 m in height	Beaker/Food Vessel hybrid	Callander 1908; Reid 1924, no 15; Clarke 1970, no 1431
2. Broomend, Inverurie, Aberdeenshire (a)	In gravel bank; 4 cists in all	1.60 x 0.76 x 0.76 m. Pebble-floored to a depth of 0.25 m. Clay luting	Not known	Both burials covered by 'matted substance'	2 flexed adult inhumations	2 Beakers, bone pulley-ring, 2 flint flakes, charcoal	Chalmers 1866; Anderson 1882; Clarke 1970, nos 1433-6
3. (b)	In gravel bank; 4 cists in all	1.27 x 0.66 x 0.78 m. Pebble-floored to a depth of 0.30 m over a flat slab. Clay luting	E/W	Adult and part of infant covered with brown fibrous substance c 95 mm thick	Flexed inhumation of adult, head at E end, on L side. Flexed inhumation of infant at W end facing E	2 Beakers, 2 flint flakes, charcoal, horn spoon	Chalmers 1866; Anderson, 1882; Clarke 1970, nos 1433-6
4. Parkhill, Aberdeenshire	In mound of sand and gravel with another cist containing inhumation and Beaker	Not known	Not known	A thin layer of matted substance largely made up of hair covered the bones	Adult male inhumation c 1.57 m in height	Beaker	1902; Reid 1924, no 4; Clarke 1970, no 1484
5. Lunanhead, Angus	In gravel knoll with 3 other cists, one containing an inhumation with Beaker and one an inhumation with Food Vessel	Not known. Double capstone	E/W	'Matted hairy-looking substance like fungus growth'	Inhumation	Jet spacer-plate necklace	Galloway 1876; Ewen 1941
6. Craignish Castle, Argyllshire	In raised beach with 2 other cists, one containing a Food Vessel (now lost)	c 1.21 x 0.50 x 0.50 m. Paved with single slab	Not known	Quantity of hair, identified in catalogue of NMA as bovine	Inhumation	Food Vessel. Thin-butted stone axe	Childe 1935
7. Cuninghar, Tillochally, Clackmannan	Near stone circle, possibly henge; one other cist nearby	1.44 x 0.76 x 0.60 m. Decorated capstone. Clay luting. Pebble-floored under fur only	NE/SW	Hairy substance under head; possibly stout	Flexed adult inhumation	Food Vessel	Robertson 1894; Coles 1898; Henshall 1963, 176
8. Barns Farm, Dalgety, Fife (Cist 1)	Under barrow with 5 other cists, one containing an inhumation with Beaker and jet disc bead necklace, and 3 graves	1 x 0.60 m. Clay luting. Pebble-floored	ENE/WSW	Hide under head of inhumation	Contracted inhumation 18-20 years. Cremation of young person	Food Vessel	
9. Masterton, Pitreavie, Fife	In slight knoll	c 1.60 x 0.96 x 0.73 m. Double capstone. Clay luting. Floor laid with earth gravel. Stake-holes in corners	E/W?	Bovine hide covering floor of cist, probably European bison or aurochs	Inhumation 20-25 years	Flat dagger. Bronze blade. Bronze armlets. Necklace of jet barrel and disc beads	Henshall & Wallace 1962
10. Bishopmill, Elgin, Morayshire	Not known	Said to be shaped like a coffin, 1.82 x 0.91 m, tapering to 0.30 m at each end	Not known	Portions of a skin, apparently that of an ox	Not known	Midrib dagger	Hay 1866; Stuart 1867 96

Nearer Barns Farm, a cairn at Greenhill, Balmerino in Fife, covered a variety of burials (Hutcheson 1901). The cairn itself was on the summit of the hill and measured about 15.24 m in diameter and 2.13 m in height at the centre, with a kerb of large stones. Slightly to the SE of the cairn's centre was a standing stone and to the W of this was a disturbed and empty pebble-floored cist with double capstones. Some 2.24 m N of this cist was a roughly rectangular grave dug into the subsoil and covered with a large slab. The grave measured only about 1.0 × 0.6 × 0.2 m and contained a Food Vessel and a miniature pot. There was no trace of a burial, but the grave could hardly have accommodated the inhumation of an adult. On the east side of the cairn a large flat stone covered a Food Vessel with a cremation, and there were other deposits which included a small empty cist 0.3 m square, cremations with or without Food Vessels, and 72 jet beads. Near the centre of the cairn the soil was darkened and contained charcoal, small white stones and pieces of quartz.

Nether Largie North Cairn in Argyll, one of the cairns in the Kilmartin linear cemetery, also produced traces of inhumation graves (Craw 1920). The cairn was about 21 m in diameter and 2.7 m in height; just north of the centre was a large cist (1.6 × 0.74 × 0.56 m) orientated N-S, with an elaborate arrangement of slabs over its massive capstone. It had contained an inhumation, only one molar from which survived, along with some charcoal and ochre. One of the end-slabs and the underside of the capstone were carved with axe-heads, and the capstone also bore about forty cupmarks. On the same alignment and 2.28 m S of this cist was a large slab 0.3 m below the surface of the ground and measuring 1.68 × 0.99 × 0.25 m, over which was a covering of large boulders placed at right angles to it. This slab may have been the cover of a grave, though there was no sign of a pit or burial in the gravel beneath. On either side of the S end of the slab at a distance of 1.52 m were two upright stones. To the NE of the central cist and parallel to the edge of the mound was an oval enclosure, 1.52 × 0.76 × 0.84 m, which may also have been a grave, although there was again no trace of a burial. It was filled with dark soil but contained only charcoal and an ox molar.

A number of burial deposits were found in a sand quarry at Mount Vernon, Glasgow (*Glasgow Herald* 13, 14, 16, 17, 18, 19 and 20 March 1928). One of the newspaper reports states that in all nine cists were found, but only six are given individual mention; five of these contained Food Vessels. There was also an uncisted inhumation, possibly in a wooden coffin.

Another sand quarry site at Knappers, Dunbartonshire, produced evidence of a long period of prehistoric use of the site for burials and other activities. Davidson (1934) reports 34 separate deposits from an area E of the Great Western Road including a boulder-walled cist, Food Vessels, Cinerary Urns, cremated and inhumed burials and a number of stone settings. In several cases inhumation burials were marked by stones: no 34 was an inhumation with boulders at head and feet, no 27 an inhumation marked by a single stone, and no 22 an inhumation marked by four stones in a line. Deposit no 4, a bronze dagger on a flat slab with traces of material resembling bone may represent another burial, but none of the undoubted inhumations were associated with finds other than flint, charcoal and perhaps ochre. The timber setting W of the Great Western Road, excavated by Ludovic Mann and recently reappraised (Ritchie *et al*, 1982) may have been a stake-circle formerly covered by a barrow or barrows.

More recently two Beaker period graves have been reported. A grave with traces of a coffin containing a Beaker and two chipped stone tools was found within a penannular ditch at Newmill in Perthshire (Watkins & Shepherd 1980). The grave was about 2 m long, 1.25 m broad and very shallow. There was little trace of a covering mound beyond a low heap of boulders over the grave itself. The small penannular ditch seems more likely to have been a demarcation than a quarry for barrow material. The site was that of the later settlement and souterrain of Newmill

(Watkins 1980), and the implication was that any small barrow there may have been had not survived to inconvenience that settlement. The denuded cairn at Harehope (Jobey 1980) was found to cover a presumed grave. The pit was 2 m by 1.5 m and roughly central to the cairn. No recognizable trace of a body was found, which is not surprising in the soil conditions, but there was a group of 33 V-perforated jet buttons, a belt fastener and a flint knife. The assemblage is a not uncommon Beaker one (the number of the buttons apart), and a radiocarbon date of 1875bc ± 95 (GU-1215) was obtained.

So far, the evidence for Early Bronze Age graves is insubstantial. Where skeletal remains survive, grave-goods are lacking, and *vice versa*. The only recurrent feature seems to be the placing of slabs or stones directly over the body. There are no parallels for the coracle and other coffins at Barns Farm, although some of the oval settings of stones in graves may have been chocking-stones for some sort of coffin. Further excavation will undoubtedly uncover more parallels for the variety and complexity of rites at Barns Farm.

The solitary short cist is not entirely typical of burial sites in Early Bronze Age Scotland. Fewer than 45% of cists occur singly, and that figure is probably an over-estimate, reflecting inadequate recording and the accidental nature of many cist discoveries. Beaker cists form a more or less homogeneous group, with a preference for E-W orientation, inhumation and a 'flat' site, without barrow or cairn. Other cists, especially those containing Food Vessels, show much less consistency: cremations or inhumations, or both, are found in cists on 'flat' sites, under cairns or barrows, or in linear cemeteries, with no particular preference for orientation. It appears that there was no common tradition of burial connecting users of Food Vessels, as there was for Beaker users. Or that the system of rules governing burial practices was so extensive and complex as to produce an almost infinite variation. In either case, the archaeologist called upon to excavate a single cist would do well to bear in mind the possibility that it constitutes only a fragment of a large and complex site.

15. COMPARATIVE BACKGROUND: THE ASSEMBLAGE

Contributed by Ian A G Shepherd

Although Barns Farm, Dalgety, has produced evidence of a diversity of burial rituals as well as a rich series of grave groups, these manifestations of early Bronze Age deathways are by no means unique. Within Fife itself, as Miss McAdam has demonstrated, can be found sites with a similar range of burial types: the cairn at Greenhill, Balmerino, with its pits, seven food vessels and a cist (Hutcheson 1902), being a particularly close parallel. Beyond Fife, in eastern Scotland, the Strathallan barrow in Perthshire, already mentioned (Barclay, forthcoming), and, further N, the barrow at Forglen, Aberdeenshire (Callander 1906: 280-3, fig 1), or, to the S, cairn no 1 at Foulden, Berwickshire (Craw 1914: 317-25, fig 2), all demonstrate a similar variety of burial modes beneath or within a covering mound. It is, however, to Yorkshire, to the great cemetery barrows of the Wolds, that attention must be turned to understand fully the cultural context of the Dalgety graves.

At Dalgety, it can be argued that the erection of the barrow represented the sealing of a cemetery of flat graves: in the Yorkshire Wolds 142 round barrows have been recorded as covering similar flat grave cemeteries, in 60 of which both inhumation and cremation rites were found (Petersen 1972: 26). Yorkshire connections can be discerned in several of the Dalgety artefacts, notably the plano-convex knife from Grave 3, the jet articles (Cists 4 and 5) and the Yorkshire Vase food vessel from Grave 1. More particular links exist between Dalgety and Yorkshire in the

conjunction of certain burial rituals and artefacts: in seven of the Wolds barrows food vessels and plano-convex knives have been found in graves containing both inhumations and cremations (cf Cist 1, Grave 1, Grave 2 and probably Grave 3) (Petersen 1972: 35, 54–5). Similarities can also be seen in the position of the bodies in the graves, Cist 4 demonstrating the classic orientation and position of a Beaker female (Tuckwell 1975: 101, fig 3), while Cist 1 and Grave 2 accord with food vessel burial patterns (Tuckwell 1975: 102). The hearths and pits at Barns Farm, Dalgety, also find Yorkshire parallels, notably in the pit with hazelnut shells and flint flakes on the pre-barrow turf-line at the Hutton Buscel 2 barrow, or in the hearths in the Wetwang Slack 4 barrow (Brewster 1980, 21).

Furthermore, the occurrence of boat-shaped graves/coffins lined with organic material at Dalgety brings to mind the series of complex, timber-lined graves in Yorkshire, and in particular, Mortimer's boat-shaped coffin fills (Petersen 1969: 262, footnote) and the possible correlation between plano-convex knives and wood linings (Petersen 1969: 263–5). Indeed, the description of the grave at Folkton 242, which consisted of a crouched adult skeleton in a shallow central hollow 'lined with wood' and accompanied by a food vessel, plano-convex knife and two scrapers (Greenwell 1890: 12; Petersen 1969: 263) could be a summary of any of the three Dalgety graves.

This is not to argue necessarily a direct Yorkshire/Fife axis throughout the early Bronze Age, although a pattern of exchange based on the E coast has been postulated in Northern beaker times (Clarke 1970: 174). However, the Dalgety artefacts and other attributes of the burials represent part of a wide network of ritual associations characteristic of late beaker and related contexts. For example, the conjunction of the male inhumation and the strike-a-light and possible sponge-finger stone in Cist 2 can be paralleled in several rich English (barrow) graves: at Corston, Somerset, with an S2(W) beaker (Taylor 1933: 130, fig 16); at West Overton 9b, Wiltshire, with another S2(W) beaker (Smith & Simpson 1966: 127, fig 3) and at Rudstone 68, Yorkshire, with a rivetted bronze dagger and jet articles (Greenwell 1877: 263–4, figs 14, 123–5).

The Dalgety assemblage fits into the (relative) date range indicated by these English graves, and although the four pots from Dalgety, comprising three general vase-tradition food vessels and one late beaker, exhibit heterogeneity of form, this is not exceptional when compared with other pottery assemblages from such Fife cist cemeteries as Pitreavie (Beveridge 1886: 240–7) or from such Yorkshire barrows as Painsthorpe Wold 118 (Mortimer 1905: 125–8). Furthermore, it can be argued that the food vessels in Graves 1 and 2 and Cist 1 at Dalgety antedate, or at least are contemporary with, the beaker from Cist 4. The Aberdour Road Cist 3 Tripartite Vase, which is closely similar to the pot from Cist 1, Dalgety, was found with fire-making equipment (Close-Brooks *et al* 1975: 123, fig 4) which first appears in beaker contexts in Lanting & van der Waals's step 5 (Ritchie & Shepherd 1973: 29); the battle-axe in Grave 1 with the Yorkshire Vase is Mrs Roe's Woodhenge type (see section 11: no 16), which first occurs in step 6 (Lanting & van der Waals 1972: 40); while the Bipartite Vase food vessel from Grave 2 (section 11: no 18) has been shown to have late beaker connections of its own. On the other hand, the Cist 4 beaker belongs to a morphologically and stylistically coherent group of very late beakers which can all be placed in step 7 (Lanting & van der Waals 1972: 40, fig 4).

The relative dating to between step 5, at the earliest, and step 7 which is suggested by the pottery does not conflict with the dates attributable to their associated artefacts; nor do the finds from the cists without pots at Dalgety fall outside such chronological parameters. In particular, the jet spacer-plates from Cist 5, the flint implements from Cist 2 and Grave 3, and the bronze dagger from the last-named burial, fit comfortably within such horizons.

Although there are as yet insufficient C14 dates from this period of Scottish prehistory on which to base any absolute chronology, the date of 1631 bc \pm 40 (SRR-292) from the femur of

the inhumation with the Aberdour Road food vessel already mentioned gives some indication of the food vessel horizon (Close-Brooks *et al* 1975: 135); whereas the horizon of step 7 beaker in Fife may be suggested by the date of 1330 bc \pm 90 (GaK-3425) from charred wood associated with the Balbirnie beaker (Ritchie 1974: 7). However, British beaker C14 dates are notoriously random, as evidenced by the putatively anomalous date of 1000 bc \pm 150 (Q-764) from vegetable material in the step 7 cist at Ashgrove, Fife (Henshall 1964: 174), in comparison with the date of 1680 bc \pm 90 (SRR-553), albeit from oak charcoal, with a similar incised beaker of step 7 at Dalladies, Kincardineshire (Stuart Piggott, pers comm; see also Piggott 1972: 36 and Burgess 1980: 81).

To summarize, the date range that can be suggested for the Barns Farm, Dalgety, burials, the relative richness and sophistication of some of the grave goods, and the diversity of the treatment of the corpses, invite comparison with a series of early Bronze Age graves beneath barrows in eastern and southern Britain, particularly in Yorkshire and Wessex (Piggott 1938: 102–6; Burgess 1980: 81–111; see also Savory 1972 for related evidence from western Britain).

However, perhaps the most instructive use that can be made of this range of evidence is not for chronological purposes, or for inference about social structure (*pace* Binford 1972; Chapman & Randsborg 1981), but, more directly, to demonstrate the articulation of grief, symbolism and belief, which were themselves reflections or distortions—deliberate or unconscious—of communal life in the second millennium bc. It is difficult to distinguish these three factors in the archaeological record, since they are only found within the residue of acts which clearly have some expressive or symbolic element in them (Radcliffe-Brown 1952: 153), whose meaning is invariably enigmatic.

However, one of the potentially clearest expressions of grief seen at Dalgety, reflecting possibly the direct participation of the mourners, is the placing of extraneous teeth in the grave (if that is indeed the case in Cists 2 and 5). This is not a unique occurrence: Miss McAdam has noted the example of Kilmaho, Argyll, and has alluded to others (cf Patrickholm, Lanarkshire, site 4, Cist 3 (Maxwell 1949: 211); burial 12, Knappers, Dunbartonshire (Davidson 1935: 361)). Such practices are possibly reflected in the curious collection of shaved eyebrow-hair from the Winterslow, Wilts, urn burial (Hutchins 1845: 23–6; Stoves 1948: 126–7) and surely represent forms of self-mutilation (ranging from scarification to garment rending) well known in the ethnographic literature (Huntington & Metcalf 1979: 32). With such parallels there seems little need to go as far as suggesting that the skulls were removed from Dalgety after burial and temporarily placed in a ritual site such as Balfarg (Burl 1981: 161).

The broken jet pendants in cist 4 at Dalgety could be interpreted as another expression of grief, or as a symbol of death, and recall the broken jet spacer-plate found in the fill of Cist 1, North Park, Inchmarnoch, Bute (Marshall 1963: 5). Another such enigmatic act is the deposit of fishbones in the fill of Grave 2, one that is paralleled in the food vessel cist at Embo, Sutherland, containing the remains of two adults, and a foetus, along with jet beads and a flint implement (Henshall & Taylor 1957).

Although active, and even violent, grief is perhaps demonstrated in some of the Barns Farm burials, the strongest impression gained from the Dalgety cemetery is of finality and repose. This sense of completion is reflected in the importance which the builders of the Dalgety cists and graves attached to securing burial places for their chosen dead, demonstrated by the statistics of group involvement and effort established by the experimental cist reconstruction (Section 12). Rather than temporary rituals, which involve the preparation of the new corpse for mourning or initial burial, and which are designed to come to terms with the liminal stage of death when the corpse is in an ambiguous state between life/completeness and death/corruption (cf Huntington and

Metcalf 1979: 97–8), the Dalgety burials reflect careful preparation, planning and formality. In particular, the careful grouping, in a variety of containers (Cist 1, Graves 1, 2 and probably 3), of several individuals, some cremated, some inhumed, suggests that the final or resolution phase (Huntington & Metcalf 1979: 101) in the funerary rites is represented here. A corollary of this suggestion is the observation that the activities associated with the initial treatment of the corpses, (eg cremation or dismembering) took place away from the Barns Farm hilltop. Just as the interment of a group of individuals, however related, in one of the Dalgety cists or graves may have marked the culmination of the funeral rites appropriate to that small group, so also the erection of the barrow may have represented the completion of the burial rituals of one particular social group. This brings to mind Petersen's suggestion that groups of graves containing multiple burials and occupying an area later sealed by a barrow should be regarded as 'family vaults', the number and sequence of burials in them reflecting the mortality rate of the particular population elements served by the individual grave during whatever stretch of time it remained physically and ritually accessible (Petersen 1972: 39; see also Petersen *et al* 1974: 52–4).

The precise rules governing the choice of final burial rite cannot of course be clearly adduced from the archaeological evidence. Binford (1972: 226) has suggested that age, sex, cause and location of death, social position and social affiliation were all relevant and resulted in differences in the treatment of the body, in the preparation of the disposal facility and in the burial furniture (Binford 1972: 232).

Distinctions can certainly be discerned at Barns Farm, Dalgety, in all three categories of variable (eg cremations found in the same container as inhumations were accompanied by a pot (Cist 1, Graves 1 and 2, though perhaps not in Grave 3); none of the three graves had any jet objects; certain bodies were orientated differently; some cists had pebble floors). Such correlations or differences are difficult to interpret, even with reference to ethnohistorical sources (cf O'Shea 1981: 49–52).

One feature of the Barns Farm mortuary evidence that is of great interest is the age structure of the burials (see Table 1, p 99). There are more children and young adults than adults: at least nine out of the 20 individuals whose ages could be estimated were under 20. The proportions are certainly unusual in, for example, the context of the Yorkshire cemetery barrows with which other features of Barns Farm have been compared. In these Yorkshire barrows sub-adults form an unexpectedly low percentage (30%) (Petersen 1972: 31, footnote), which cannot be taken as a true reflection of mortality rates in such early communities. However, it is generally accepted that the archaeological record cannot provide a true reflection of mortality rates, although the suggestion (albeit in an earlier context and related to a larger sample) that a high proportion of sub-adult burials may indeed indicate the mortality structure of an early population (Renfrew 1979: 165, 171) should be remembered in this connection. The corollary drawn from this observation, that all members of the population enjoyed equal rights to burial in the tomb (*ibid*) is of course more difficult to adduce from the range of burial types found at Dalgety.

The excavation of the Barns Farm, Dalgety, cemetery barrow has revealed a wide range of mortuary practices which reflect the responses of a Fife coastal community of the second millennium bc to the deaths of between 20 and 30 of their members over an uncertain span of time which is unlikely to be as long as several centuries. Several of the mortuary practices found here are rarely recorded: particular mention should finally be made of the possible coracle-coffin(s) (section 13 & Watkins 1980). It is perhaps premature to claim that such graves allow us the rare privilege of knowing rather than suspecting the religious concepts of these prehistoric people (Burl 1981: 161); however, there is no denying how vividly Barns Farm, Dalgety, demonstrates the numinous quality of early Bronze Age deathways.

16. REPORT ON THE EXAMINATION OF ORGANIC SAMPLES

contributed by Dr C C McCawley

Samples from the Barns Farm cemetery were submitted to the Research Laboratory of the National Museum of Antiquities of Scotland for examination and comment. Each sample was examined microscopically and analysed for pH, weight loss upon ignition, and phosphorus, manganese and nitrogen content. Other techniques used included thin layer chromatography. The analytical results are presented in Table 5; the descriptions and laboratory comment follow. The first number is the sample number given each sample in the laboratory; the second number, FRN, is the Field Register Number given the sample in the field. Finally the provenance of each sample is identified with the codes used throughout the report, whereby C stands for cist, and G for grave.

1. FRN 14. C1

Dark soil near head of body in cist. The sample has very high phosphorus (P) and manganese (Mn) levels, high organic content as indicated by the loss of weight on ignition, and a nitrogen (N) content significantly higher than the control samples. Thin layer chromatographic examination of the hydrolysis products of this sample showed a total number of amino acids greater than present in the control samples. No structural remains could be found.

TABLE 5

Results of analysis of organic samples. C=Cist; G=Grave; ppm P=parts per million phosphorus; % loss=percentage weight loss on ignition. All figures quoted are average values. Where no result is quoted it is usually due to sample insufficiency

Lab no	FRN	Context	Description	ppm P	ppm Mn	pH	% loss	% N
1	14	C1	Dark soil on floor	9600	5000	6.6	24.5	1.05
2	54	G1	Grey-green soil	500	200	7.0	9.9	0.1
3	61	G1	Stain on battle-axe	—	—	—	—	—
4	62	G1	Soil from perforation of battle-axe	3500	2500	7.1	16.5	0.26
5	63	G1	Handle of axe?	2500	600	7.2	12.0	0.92
6	65	G1	Soil adhering to battle-axe	1400	400	7.0	11.3	—
7	68	G1	Grey-green and orange soil	400	150	7.0	9.7	0.11
8	124	G1	Container (?) for cremation	4000	1200	7.1	19.6	0.22
9	109.1	G1	Body—lower gut	2000	2250	7.0	15.2	0.17
10	109.2	G1	Body—head	1300	900	7.1	28.4	0.12
11	109.3	G1	Body—mid-gut	2400	1500	7.2	14.2	0.15
12	109.4	G1	Body—leg 1	500	950	7.0	14.7	0.1
13	109.5	G1	Body—leg 2	3000	900	7.1	14.4	0.17
14	109.6	G1	Body—thighs	500	900	7.0	14.9	0.25
15	109.7	G1	Body—thorax	2400	1000	7.0	12.5	0.2
16	97	G2	Replacement soil of coffin	200	250	7.2	19.1	0.11
17	137	G2	Replacement soil of coffin	500	350	7.1	11.4	0.14
18	143	G2	Replacement soil in stakehole	750	400	7.2	10.7	0.13
19	125	G2	Dark soil below FV	4000	200	7.1	27.5	1.79
20	166	C4	Dark soil on floor	2500	600	7.2	16.8	0.32
21	92	G3	Dark material by dagger	2000	200	7.1	—	1.06
22	93	G3	Fibres in dark material	3000	200	7.1	—	1.1
23	99	G3	Wrapping of dagger	4000	100	7.0	—	1.25
24	101	G3	Material above dagger	4000	100	7.1	34.5	2.45
25	105	C6	Ironpan (?)	800	400	7.0	14.8	0.2
26			Control, local soil	200	500	7.1	9.6	0.02
27			Control, local soil	100	500	6.9	9.2	0.02
28			Control, local soil	100	250	7.1	9.9	0.01

2. FRN 54. GI

Soil stained grey-green from within the 'coffin' area. Analysis gave no indications that this sample had been organic in nature. The colour is possibly due to metallic ions fixed by the natural organic material (humus) of the soil.

3. FRN 61. GI

Battle-axe containing dark stain in the perforation. The stain was extracted with a range of solvents but no usable information could be obtained from any of the tests applied.

4. FRN 62. GI

Soil from perforation of the battle-axe. This sample was high in phosphorus and manganese, and the nitrogen was slightly higher than the control. The weight loss on ignition (16.5%) is slightly higher than the control and probably indicates some additional organic material. The results compare quite closely with those obtained from soils where wood had almost entirely decomposed and it seems probable that this sample contains the decomposed wood of the handle.

5. FRN 63. GI

Dark soil by battle-axe. Except for a higher P content there are no indications that this sample is anything but uncontaminated soil. There is a possibility that the sample included underlying cremated bone, which could explain the P content.

6. FRN 65. GI

Soil adhering to the outer surface of the battle-axe. No useful information was obtainable from the analysis and there seems no reason to believe that the battle-axe had been wrapped.

7. FRN 68. GI

Grey-green and orange soil with 'skin' of different material adhering. The 'skin' turned dark brown on exposure to air and was thought by the excavators possibly to represent the container of a concentration of cremated bone. Analysis and microscopic examination provided no means by which the original material, if indeed any had been present, could be identified. The orange soil was extremely high in iron and is most probably a 'natural' ironpan. Firing under both oxidising and reducing conditions gave in the former case the bright red colour of haematite and in the latter only a very small quantity of carbon black, thus confirming the absence of organic material.

8. FRN 124. GI

The excavators suspected that the sample represented part of the container of a circular deposit of cremated bone. This sample was quite dissimilar in appearance to the above sample, being a mixture of dark brown soil and a lighter sandy soil. The P and Mn contents and the weight loss on ignition are appreciably higher than the control samples and would suggest a higher concentration of organic material than normally present. The concentration of nitrogen (N) although at 0.22% slightly higher than normal is probably not sufficiently high for it to have been a proteinaceous material such as leather, which may seem to be the most likely material for such a container. Results very similar to these were obtained from a sample containing tree bark in recognizable quantities and this could, perhaps, offer an alternative suggestion. It must be stressed, however, that no direct correlation can be made between these two samples.

9-15. FRN 109.1-7. G1

Samples from the supposed body, taken from seven points on the stain. The samples were treated with solvents to extract any organic matter present, and these were examined by thin layer chromatography. The object was to detect any distinguishable chemical feature that would enable the investigator to distinguish between organic matter attributable to the dissolved corpse from a natural organic soil background. The particular area of interest was the lipid fraction (animal fats). One obvious point of difference would be the identification of the sterol cholesterol, which is characteristic of animal fats, from those of plants, of which phytosterol is the main example. In the comparatively short time available for the examination the only definite information was that those samples which derived from the body area contained a greater amount of extractable organic matter than the control samples. Natural soils contain between 1 and 6% lipids and hence identification of individual components above the background must prove very difficult. From the work so far completed there is a suggestion that these 'body' samples contain proportionately more triglycerides and sterol esters than the controls. This particular direction of research, the identification of bodily remains through the presence of characteristic organic components when no observable remains survive, and when the phosphorus profile is not conclusive, requires much detailed investigation before it can prove useful.

16. FRN 97. G2

Replacement soil of 'coffin'. This sample was thought to be the remains of a wooden coffin and was dark brown/black in colour and of a lumpy consistency. Analysis provided little information as to identity. Ignition left several particles of carbon. Although the sample is probably wood, no confirmative proof could be found.

17. FRN 137. G2

(No comment was offered on this sample. T.W.)

18. FRN 143. G2

Replacement soil from stakehole. This sample was supposed to represent decomposed wood. The colour was dark brown/black and the soil was of a lumpy consistency, very similar to the above sample. Again no pattern could be found whereby wood degradation products could be distinguished from uncontaminated natural soil.

19. FRN 125. G2

Dark soil below broken pot, possibly the contents. High phosphorus, high weight loss on ignition and high nitrogen content (1.79%) strongly suggest a high organic content. The sample location, appearance and analytical results are similar to those of sample 1, from Cist 1, which was thought to be animal hide. Both samples had a higher extractable organic content than other samples but thin layer chromatography produced no identifiable features.

20. FRN 166. C4

Dark soil among pebbles on cist floor below cranium and mandible. High organic content as shown by weight loss on ignition, solvent extraction and thin layer chromatography. It is probable that the stain is due to the sideways leaching of brain tissue, body fluids, etc.

21. FRN 92. G3

Dark material by dagger. Microscopic examination showed that the larger particles of this sample had almost a grain-like appearance and contained polysaccharide fibres running through

it, presumably part of the skin of an animal. Also present in the body of this material were small, transparent, balloon-like structures, which could, perhaps, be the remnants of blood-vessels and nerves. A piece of carbonized wood was present in the sample, but this was an isolated, twig-sized fragment, and was not likely to be the remains of a wooden sheath. The dark stain is likely to be the remains of a leather or hide wrapping or sheath for the dagger.

22. FRN 93. G3

Fibres in a dark material, possibly the wrapping of a dagger. There was no evidence for the material being of a woven, cloth-like nature, and the fibres are quite thick and appear to be of a cellulosic nature. The dark material adhering to the fibres has a 'solid' appearance, and is not an aggregate of smaller particles. Growing through these black pieces are more fibres, which could be the polysaccharide fibres natural to leather, or root material, which has been seen to grow through the structure of buried leather. No part of the sample was sufficiently well preserved to allow microscopic examination of a cross-section. The analytical results, with a nitrogen content of 1.25%, go some way towards confirming the probability of an original leather material. In confirmation thin layer chromatography of the hydrolysis products gave a pattern similar to that of the amino acids of leather but at significantly reduced concentrations.

23. FRN 99. G3

Wrapping of dagger. This sample was very like 22 above. No structural remains survived, but the sample is again thought to be leather or hide.

24. FRN 101. G3

Material above dagger, thought to be part of a wooden (?) sheath. Analysis shows the material to be almost certainly organic in nature, and the nitrogen content (2.45%) suggests leather or hide rather than wood. Examination under low magnification showed several pieces, black in colour, having the appearance of badly degraded leather and containing polysaccharide fibres often found in leather. The finer material adhering to the leather contained what looked like small particles of carbon, which behaved on ignition like carbon. This, however, is the only, rather insufficient, evidence for the suggestion that the dagger had a wooden sheath.

25. FRN 105. C6

Ironpan around an object, now decayed. A sample of the dark brown material that made up the inner (concave) surfaces of the several pieces was analysed. The results provided no indication of the original identity. Microscopic examination of the inner (original) surface showed a complicated tracery of fine holes with an almost sponge-like appearance. All of these pieces had a concave inner surface and the original object would have been approximately spherical in shape.

26. FRN 177. C6

Dark soil by copper awl. The very small fragment contained one or two fibres attached to a material very similar to the leather of the dagger wrapping or sheath (samples 21-24 above). The analysis was also similar and it is suggested that this is also a fragment of leather. The presence, immediately above the sample, of large quantities of cremated bone makes any identification difficult. (Analytical results relating to this sample are missing from the table. T.W.)

17. RADIOCARBON DATES

SRR-528	Carbonized wood	Pit 10	3796 bp ± 80	1846 bc ± 80
SRR-529	Marine shells	Pit 1	4711 bp ± 50	2761 bc ± 50
SRR-700	Collagen from bone	Cist 1	4696 bp ± 85	2746 bc ± 85

Notes:

SRR-529 represents a date calculated on the understanding that the sample was of marine shells. Dr Harkness of the radiocarbon laboratory attached to the SURRC at East Kilbride undertook a study of the isotopic abundance of carbon in modern marine shells which has led him to believe that the usual formula for calculating age does not apply exactly to marine shells. Consequently the date given here was calculated by normalizing the C-14 age relative to $\delta^{13}\text{C} = -25\%$, whereas the actual recorded level was $\delta^{13}\text{C} = +1.4\%$.

SRR-700 was a sample obtained from a quantity of decayed human bone from Cist 1. In the laboratory the sample yielded only 1.5 g carbon, but this was considered sufficient for the laboratory to have no reservations about the analytical aspects of the measured age. Nevertheless that result is about 1,000 years older than expected on archaeological grounds.

REFERENCES

- Anderson, J 1878 'Notes on the character and contents of a large sepulchral cairn of the Bronze Age at Collessie, Fife . . .', *Proc Soc Antiq Scot*, 12 (1876-78), 439-61.
- Anderson, J 1883 'Notice of urns in the museum that have been found with articles of use or ornament', *Proc Soc Antiq Scot*, 17 (1882-83), 456-59.
- Anderson, J 1902 'Notices of cists discovered in a cairn at Cairnhill, Parish of Monquhitter, Aberdeenshire, and at Doune, Perthshire', *Proc Soc Antiq Scot*, 36 (1901-02), 675-84.
- Anderson, J & Black, G F 1888 'Reports on local museums in Scotland obtained through Dr R H Gunning's Jubilee Gift to the Society', *Proc Soc Antiq Scot*, 22 (1887-88), 331-422.
- Anderson, R G S 1942 'A cinerary urn from Sandmill Farm, Stranraer, Wigtownshire', *Proc Soc Antiq Scot*, 76 (1941-42), 78-93.
- Annable, F K & Simpson, D D A 1964 *A guide catalogue of the Neolithic and Bronze Age collections in Devizes Museum*. Devizes.
- Ashbee, P 1960 *The Bronze Age round barrow in Britain*. London.
- Atkinson, R J C, Piggott, C M & Sandars, N K 1951 *Excavations at Dorchester*. Oxon.
- Barclay, G (forthcoming) 'Excavations at Strathallan, Perthshire', *Proc Soc Antiq Scot*, 113 (1983).
- Balfour, J A (ed) 1910 *The Book of Arran*. Vol 1. Glasgow.
- Beveridge, H 1886 'Notice of two cemeteries containing cists and urns on the estate of Pitreavie near Dunfermline', *Proc Soc Antiq Scot*, 20 (1885-86), 240-52.
- Binford, L R 1972 'Mortuary practices; their study and their potential', in Binford, L R, *An archaeological perspective*, New York, 208-43.
- Brewster, T C M 1980 *The excavation of Garton and Wetwang Slacks*. (East Riding Archaeol Res Com, Prehist Exc Rep, 2), (microform). Malton.
- Buchanan, M 1923 'Report on a Bronze Age grave . . . discovered last year at Camelon, Stirlingshire' *Proc Soc Antiq Scot*, 57 (1922-23), 243-6.
- Buckner, J C R 1881 *Rambles in and around Burntisland*. Edinburgh.
- Burgess, C 1974 'The Bronze Age', in Renfrew, C (ed), *British prehistory*, London, 165-232.
- Burgess, C 1980 *The age of Stonehenge*. London.
- Burl, A 1981 *Rites of the Gods*. London.
- Calder, C S T 1956 'Report on the discovery of numerous Stone Age house-sites in Shetland', *Proc Soc Antiq Scot*, 89 (1955-56), 340-97.
- Callander, J G 1906 'Notice of three urns of the drinking-cup type and other relics discovered in a mound at Forglen, Banffshire', *Proc Soc Antiq Scot*, 40 (1905-06), 279-90.

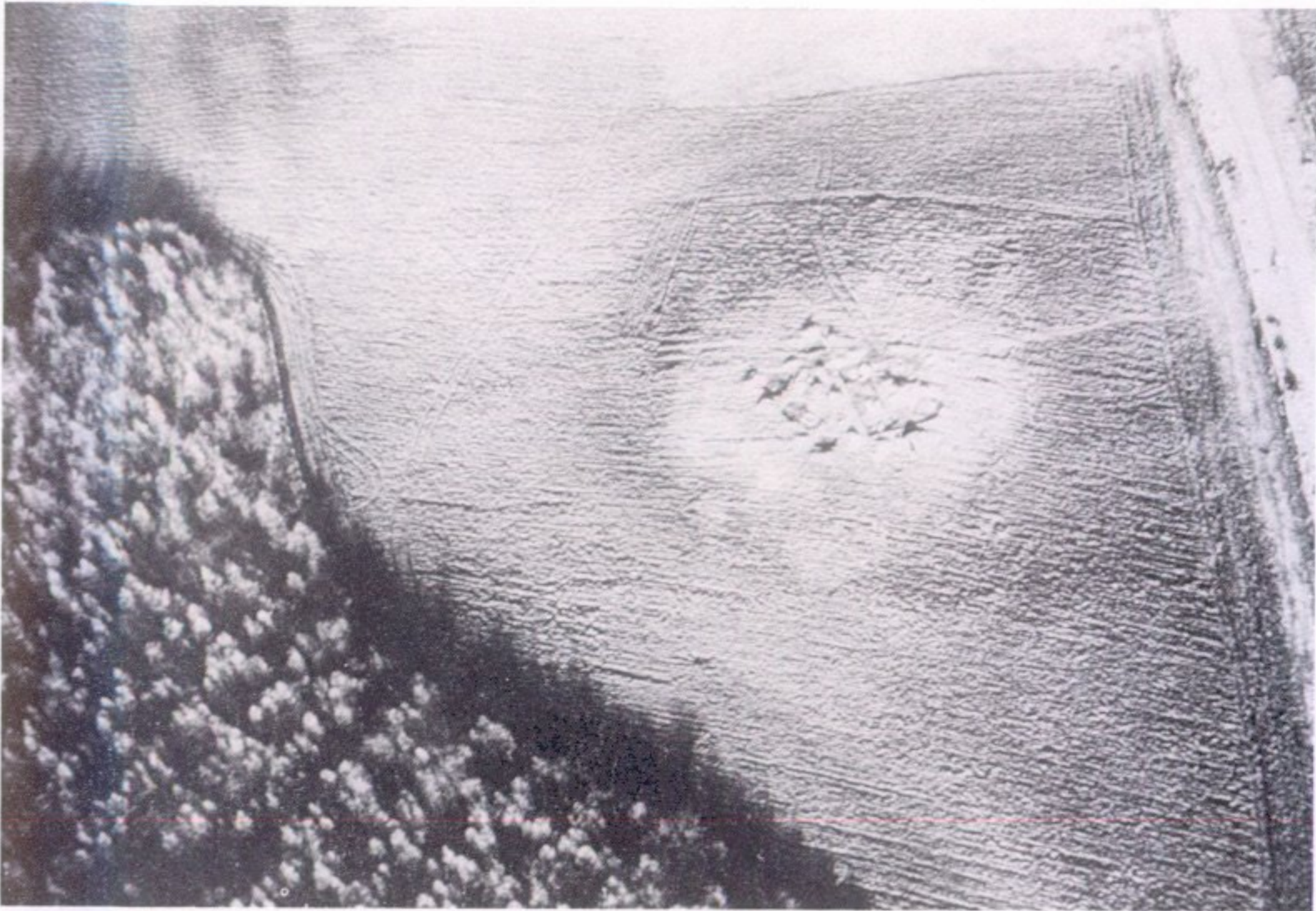
- Callander, J G 1908 'Notices (1) of the discovery of a fourth cinerary urn containing burnt human bones and other relics at Seggiecrook, Kennethmont, Aberdeenshire', *Proc Soc Antiq Scot*, 42 (1907-08), 212-22.
- Callander, J G 1909 'Notice of the discovery in Aberdeenshire of five cists each containing a drinking-cup urn', *Proc Soc Antiq Soc*, 43 (1908-09), 76-92.
- Callander, J G 1924 'A long cairn near Gourdon, Kincardineshire, and a Bronze Age cairn containing a short cist and an urn at Idvies, Forfarshire', *Proc Soc Antiq Scot*, 58 (1923-24), 23-27.
- Chalmers, J H 1868 'Notice of the discovery of a stone kist at Broomend, near Inverurie, Aberdeenshire', *Proc Soc Antiq Scot*, 7 (1866-68), 110-14.
- Chapman, R & Randsborg, K 1981 'Approaches to the archaeology of death', in Chapman, R, Kinnes, I & Randsborg, K (eds), *The archaeology of death*. Cambridge.
- Childe, V G 1936 Note on a donation to the NMAS, *Proc Soc Antiq Scot*, 70 (1935-36), 396-7.
- Childe, V G 1944 'Two cist burials at Kirkcaldy and their contents', *Proc Soc Antiq Scot*, 78 (1943-44), 109-14.
- Childe, V G & Waterston, D 1942 'Further urns and cremation burials from Brackmont Mill, near Leuchars, Fife', *Proc Soc Antiq Scot*, 76 (1941-42), 84-93.
- Christison, D 1897 'Notice of a burial mound at Cavers, Roxburghshire', *Proc Soc Antiq Scot*, 31 (1896-97), 188-99.
- Clark, J G D 1932 'The date of the plano-convex flint knife in England and Wales.' *Antiq J*, 12 (1932), 158-62.
- Clark, J G D 1952 *Prehistoric Europe: the economic foundations*. Cambridge.
- Clarke, D L 1970 *Beaker pottery of Great Britain and Ireland*. Cambridge.
- Close-Brooks, J, Norgate, M & Ritchie, J N G 1975 'A Bronze Age cemetery at Aberdour Road, Dunfermline', *Proc Soc Antiq Scot*, 104 (1971-72), 121-36.
- Coles, F R 1897 'Notices (1) of the discovery of a cist and Bronze Age blade at Letham Quarry, Perth', *Proc Soc Antiq Scot*, 31 (1896-97), 181-5.
- Coles, F R 1899 'Notices of the discovery . . . of a cist at Cuninghar, Tillicoultry', *Proc Soc Antiq Scot*, 33 (1898-99), 354-72.
- Coles, F R 1906 'Notices of standing stones, cists and hitherto unrecorded Cup and Ring marks in various localities', *Proc Soc Antiq Scot*, 40 (1905-06), 291-327.
- Constable, G W 1892 'Notice of further excavations in Harlaw Cairn, Fifeshire', *Proc Soc Antiq Scot*, 26 (1891-92), 114-7.
- Cowie, T G 1978 'Excavations at the Catstane, Midlothian, 1977', *Proc Soc Antiq Scot*, 109 (1977-78), 166-201.
- Craw, J H 1914 'Account of the excavation of two Bronze Age cairns in the parish of Foulden . . .', *Proc Soc Antiq Scot*, 47 (1913-14), 316-33.
- Craw, J H 1929 'On a jet necklace from a cist at Poltallach, Argyll', *Proc Soc Antiq Scot*, 63 (1928-29), 154-89.
- Craw, J H 1931 'Further excavations of cairns at Poltallach, Argyll', *Proc Soc Antiq Scot*, 65 (1930-31), 269-80.
- Craw, J H 1931 'Jet necklaces from the Borders', *Hist Berwickshire Natur Club*, 27 (1929-31), 96-103.
- Cregeen, E R & Harrington, P 1981 'Excavations at Poltalloch, Argyll, 1960-62', *Glasgow Archaeol J*, 8 (1981), 19-28.
- Cunnington, M E 1929 *Woodhenge*. Devizes.
- Dalrymple, C E 1884 'Notes of the excavation of the stone circle at Crichie, Aberdeenshire', *Proc Soc Antiq Scot*, 18 (1883-84), 319-25.
- Davidson, C B 1868 'Notice of further stone kists at Broomend', *Proc Soc Antiq Scot*, 7 (1866-68), 115-8.
- Davidson, J M 1935 'A Bronze Age Cemetery at Knappers, Kilbowie, Dumbartonshire', *Proc Soc Antiq Scot*, 69 (1934-35), 352-81.
- Ewen, J T 1942 'Two cists at Lunanhead, Fife', *Proc Soc Antiq Scot*, 76 (1941-42), 128-9.
- Fenton, A 1972 'The currach in Scotland, with notes on the floating of timber', *Scottish Studies*, 16 (1972), 61-81.
- Galloway, T H 1920 'Prehistoric Argyll—report on the exploration of a burial cairn at Balnabraid, Kintyre', *Proc Soc Antiq Scot*, 54 (1919-20), 172-91.

- Galloway, W 1878 'Notice of two cists at Lunanhead, near Forfar, containing remains of unburnt skeletons, etc', *Proc Soc Antiq Scot*, 12 (1876-78), 288-301.
- Greenwell, Rev W 1877 *British barrows*. Oxford.
- Greenwell, Rev W 1866 'An account of excavations in cairns near Crinan', *Proc Soc Antiq Scot*, 6 (1864-66), 348.
- Greenwell, Rev W 1890 'Recent researches in barrows in Yorkshire, Wiltshire, Berkshire, etc.' *Archaeologia*, 52 (1890), 1-72.
- Henshall, A S 1963 *The chambered tombs of Scotland*, Vol 1. Edinburgh.
- Henshall, A S 1964 'A dagger-grave and other cist-burials at Ashgrove, Methilhill, Fife', *Proc Soc Antiq Scot*, 97 (1963-64), 166-79.
- Henshall, A S 1968 'Scottish dagger graves', in Coles, J M, & Simpson, D D A (eds), *Studies in ancient Europe*, Leicester, 173-95.
- Henshall, A S 1972 *The chambered tombs of Scotland*, Vol 2. Edinburgh.
- Henshall, A S forthcoming a 'Report on the pottery from Boghead mound, Fochabers, Moray', in A. Burl, forthcoming.
- Henshall, A S forthcoming b 'The Neolithic pottery from Easterton of Roseisle, Moray', in O'Connor A & Clarke, D V (eds), *From the Stone Age to the 'Forty-five: Essays presented to R B K Stevenson*.
- Henshall, A S & Taylor, H W Y 1957 'A Bronze Age burial at Embo, Sutherland', *Proc Soc Antiq Scot*, 90 (1956-57), 225-7.
- Henshall, A S & Wallace, J 1963 'A bronze age cist burial at Masterton, Pitreavie, Fife', *Proc Soc Antiq Scot*, 96 (1962-63), 145-54.
- Hornell, J 1938 *British coracles and Irish currachs*. London.
- Hunter, D M 1971 'Two groups of cists at Denovan, Stirlingshire', *Glasgow Archaeol J*, 2 (1971), 31-8.
- Huntington, R & Metcalf, P 1979 *Celebrations of death. The anthropology of mortuary ritual*. Cambridge.
- Hutcheson, A 1887 'Notice of a burial place of the Bronze Age at Barnhill, near Broughty Ferry' *Proc Soc Antiq Scot*, 21 (1886-87), 316-24.
- Hutcheson, A 1898 'Notice of the discovery of a burial-place of the Bronze Age', *Proc Soc Antiq Scot*, 32 (1897-98), 205-20.
- Hutcheson, A 1902 'Notice of the exploration of a cairn of the Bronze Age in the Parish of Balmerino, Fifeshire', *Proc Soc Antiq Scot*, 36 (1901-02), 635-53.
- Hutchins, A B 1845 'Opening of a Barrow in Wiltshire.' *Antiquarian and Architectural Year Book for MDCCCXLIV*, 23-6.
- Jobey, G 1980 'Green Knowe unenclosed platform settlement and Harehope cairn, Peeblesshire', *Proc Soc Antiq Scot*, 110 (1978-80), 72-113.
- Jolly, W 1879 'Notice of the excavation and contents of ancient graves at Dalmore, Alness, Ross-shire', *Proc Soc Antiq Scot*, 12 (1978-79), 252-78.
- Lanting, J N & van der Waals, J D 1972 'British beakers as seen from the Continent', *Helinium*, 12 (1972, 20-46).
- Low, A 1904 'On the contents of short cists found in Aberdeenshire and neighbouring counties', *Proc Anatomical and Anthropol Soc of the University of Aberdeen* (1902-04).
- Low, A 1906 'On four short cists from Aberdeenshire', *Proc Anatomical and Anthropol Soc of the University of Aberdeen* (1904-06).
- McAdam, E & Watkins, T 1975 'Experimental reconstruction of a short cist', *J of Archaeol Sci*, 1 (1975), 383-6.
- McInnes, J J 1969 'A Scottish Neolithic pottery sequence', *Scot Archaeol Forum*, 1 (1969), 19-30.
- Mackintosh, G 1892 'Notice of the excavation of a sepulchral tumulus called the Law, in the parish of Urquhart, Elginshire', *Proc Soc Antiq Scot*, 26 (1891-92), 67-8.
- Manby, T G 1975 'Neolithic occupation sites on the Yorkshire Wolds', *Yorks Archaeol J*, 47 (1975), 23-59.
- Mann, L M 1902 'Note on the finding of an urn, jet necklace, stone axe and other associated objects in Wigtonshire', *Proc Soc Antiq Scot*, 36 (1901-02), 584-9.
- Marshall, D M 1963 'The Queen of the Inch', *Trans Bute Natur Hist Soc*, 15 (1963), 5-16.
- Maxwell, J H 1949 'Bronze Age graves at Patrickholm Sand Quarry, Larkhall, Lanarkshire . . .', *Proc Soc Antiq Scot*, 83 (1948-59), 207-20.

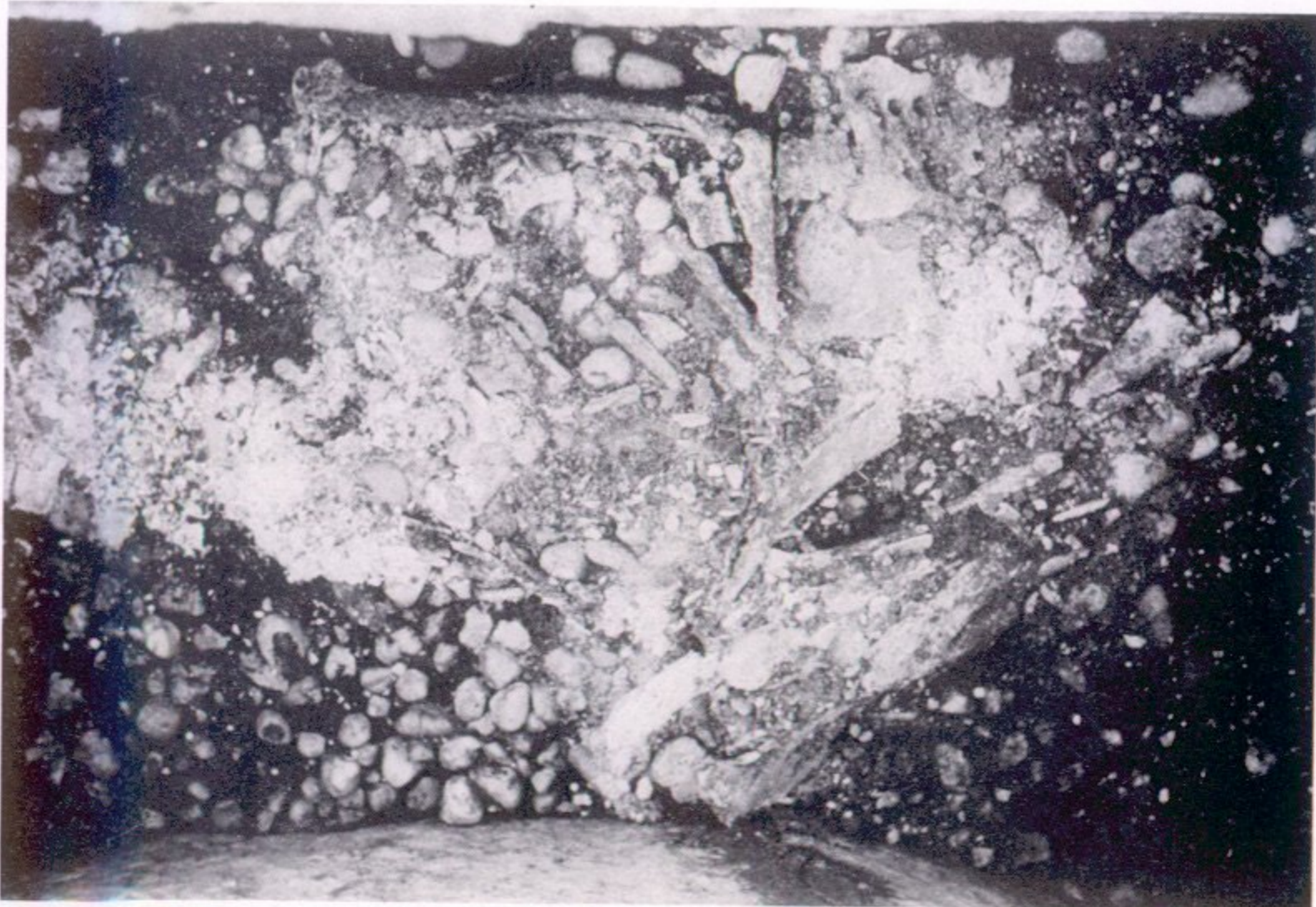
- Mitchell, M E C 1930 'Nether Largie chambered cairn, Kilmartin, Argyll', *Proc Soc Antiq Scot*, 64 (1929-30), 233-43.
- Morrison, A 1979 'A Bronze Age burial site near South Mound, Houston, Renfrewshire', *Glasgow Archaeol J*, 6 (1979), 20-45.
- Mortimer, J R 1905 *Forty years researches in British and Saxon burial mounds in East Yorkshire*. London.
- O'Shea, J 1981 'Social configurations and archaeological study of mortuary practices: a case study', in Chapman, R, Kinnes, I, & Randsborg, K (eds), *The Archaeology of Death*, Cambridge, 39-52.
- Petersen, F F 1969 'The Early Bronze Age timber graves and coffin burials on the Yorkshire Wolds', *Yorkshire Archaeol J*, 42 (1969), 262-7.
- Petersen, F F 1972 'Traditions of multiple burial in later Neolithic and Early Bronze Age England', *Archaeol J*, 129 (1972), 22-55.
- Petersen, F, Shepherd, I A G & Tuckwell, A N 1974 'A short cist at Horsburgh Castle Farm, Peeblesshire', *Proc Soc Antiq Scot*, 105 (1972-74), 43-62.
- Phillips, C W 1933 'The present state of archaeology in Lincolnshire, Part 1', *Archaeol J*, 90 (1933), 106-49.
- Piggott, S 1938 'The Early Bronze Age in Wessex', *Proc Prehist Soc*, 4 (1938), 52-106.
- Piggott, S 1948 'The excavations at Cairnpapple Hill, West Lothian', *Proc Soc Antiq Scot*, 82 (1947-48), 68-123.
- Piggott, S 1958 'Segmented bone beads and toggles in the British Early and Middle Bronze Age', *Proc Prehist Soc*, 24 (1958), 227-9.
- Piggott, S 1963 'Abercromby and after: the beaker cultures of Britain re-examined', in Foster, I & Alcock, L (eds), *Culture and Environment*. London.
- Piggott, S 1972 'Excavation of the Dalladies long barrow, Fettercairn, Kincardineshire', *Proc Soc Antiq Scot*, 104 (1971-72), 23-47.
- Radcliffe-Brown, A R 1952 *Structure and function in primitive society*. London.
- Reid, R W 1924 *Illustrated catalogue of specimens from Prehistoric interments found in the north-east of Scotland and preserved in the Anthropological Museum of Marischal College, University of Aberdeen*. Aberdeen.
- Renfrew, C 1979 *Investigations in Orkney*. London (= *Rep Res Comm Soc Antiq London*, 38).
- Ritchie, J N G 1967 'Balnabraid Cairn, Kintyre, Argyll', *Trans Dumfriesshire Galloway Nat Hist Antiq Soc*, 44 (1967), 81-98.
- Ritchie, J N G 1974 'Excavation of the stone circle and cairn at Balbirnie, Fife', *Archaeol J*, 131 (1974), 1-32.
- Ritchie, J N G & Shepherd, I A G 1973 'Beaker pottery and associated artifacts in south west Scotland', *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, 3 ser, 50 (1973), 18-36.
- Robertson, R 1895 'Notice of the discovery of a stone cist and urns at the Cuninghar, Tillicoultry', *Proc Soc Antiq Scot*, 29 (1894-95), 190-7.
- Roe, F E S 1966 'The battle-axe series in Britain', *Proc Prehist Soc*, 32 (1966), 199-246.
- Roe, F E S 1967 'The battle-axes, mace-heads and axe-hammers from south-west Scotland', *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, 44 (1967), 57-80.
- Royal Commission on the Ancient and Historical Monuments of Scotland 1971 *Argyll, and Inventory of the Ancient Monuments*. Vol 1, Kintyre. Glasgow.
- Savory, H N 1972 'Copper Age cists and cist-cairns in Wales; with special reference to Newton, Swansea, and other "Multiple-cist Cairns"', in Lynch, F, & Burgess, C (eds), *Prehistoric man in Wales and the West*. Bath.
- Scott, J G 1978 'The Neolithic pottery from Auchategan', in D N Marshall, 'Excavations at Auchategan, Glendaruel, Argyll', *Proc Soc Antiq Scot*, 109 (1977-78), 36-74.
- Shepherd, I A G 1979 'Bronze Age jet working in North Britain', *Scot Archaeol Forum*, 11 (1979), 43-51.
- Shepherd, I A G & Cowie, T G 1977 'An enlarged food vessel urn burial and associated artifacts from Kiltry Knock, Alvah, Banff and Buchan', *Proc Soc Antiq Scot*, 108 (1976-77), 116-23.
- Simpson, D D A 1965 'Food vessels in south-west Scotland', *Trans Dumfriesshire Galloway Natur Hist Antiq Soc*, 3 ser, 42 (1965), 25-50.
- Simpson, D D A 1968 'Food vessels: associations and chronology', in Coles, J M, & Simpson, D D A (eds), *Studies in Ancient Europe*. Leicester.

- Smith, I F 1974 'The Neolithic'. in A C Renfrew (ed) *British Prehistory*. London.
- Smith, I F & Simpson, D D A 1966 'Excavation of a round barrow on Overton Hill, North Wiltshire', *Proc Preshist Soc*, 32 (1966), 122-55.
- Stoves, J L 1948 'Report on hair from the barrows of Winterslow', *Wiltshire Archaeol Mag*, 52 (1947-48), 125-7.
- Stuart, J 1856 *The sculptured stones of Scotland*. Aberdeen.
- Taylor, H 1933 'A cyst of the beaker period at Corston, near Bath', *Proc Bristol Spelaeolog Soc*, 4, 2 (1933), 128-37.
- Taylor, J J 1980 *Bronze Age goldwork of the British Isles*. Cambridge.
- Tennant Gordon, J 1932 'Short cists at Rungally, Fife', *Proc Soc Antiq Scot*, 66 (1931-32), 67-8.
- Tennant Gordon, J 1933 'A third short cist at Rungally, Fife', *Proc Soc Antiq Scot*, 67 (1932-33), 354-61.
- Thoms, L M 1980 *Some short cist burials from Tayside*. (Dundee Mus and Art Gall Occas Pap in Archaeology, No 2).
- Thurnam, J 1871 'On ancient British barrows, especially those of Wiltshire and the adjoining counties. Part II. Round Barrows', *Archaeologia*, 43 (1871), 285-552.
- Tuckwell, A N 1975 'Patterns of burial orientation in the round barrows of East Yorkshire', *Bull Inst Archaeol Univ London*, 12 (1975), 95-123.
- Watkins, T 1980a 'A prehistoric coracle in Fife', *Int J Naut Archaeol Underwater Explor*, 9 (1980), 277-86.
- Watkins, T 1980b 'Excavation of a settlement and souterrain at Newmill, near Bankfoot, Perthshire', *Proc Soc Antiq Scot*, 110 (1978-80), 165-208.
- Watkins, T & Shepherd, I A G 1980 'A beaker burial at Newmill, near Bankfoot, Perthshire', *Proc Soc Antiq Scot*, 110 (1978-80), 32-43.
- Wilson, G 1888 'Additional notes of funeral urns, from Glenluce, Wigtownshire', *Proc Soc Antiq Scot*, 22 (1887-88), 66-70.
- Young, J 1897 'Recent archaeological discoveries in the parish of Lesmahagow', *Trans Glasgow Archaeol Soc*, n ser, 3 (1895-97), 498-503.

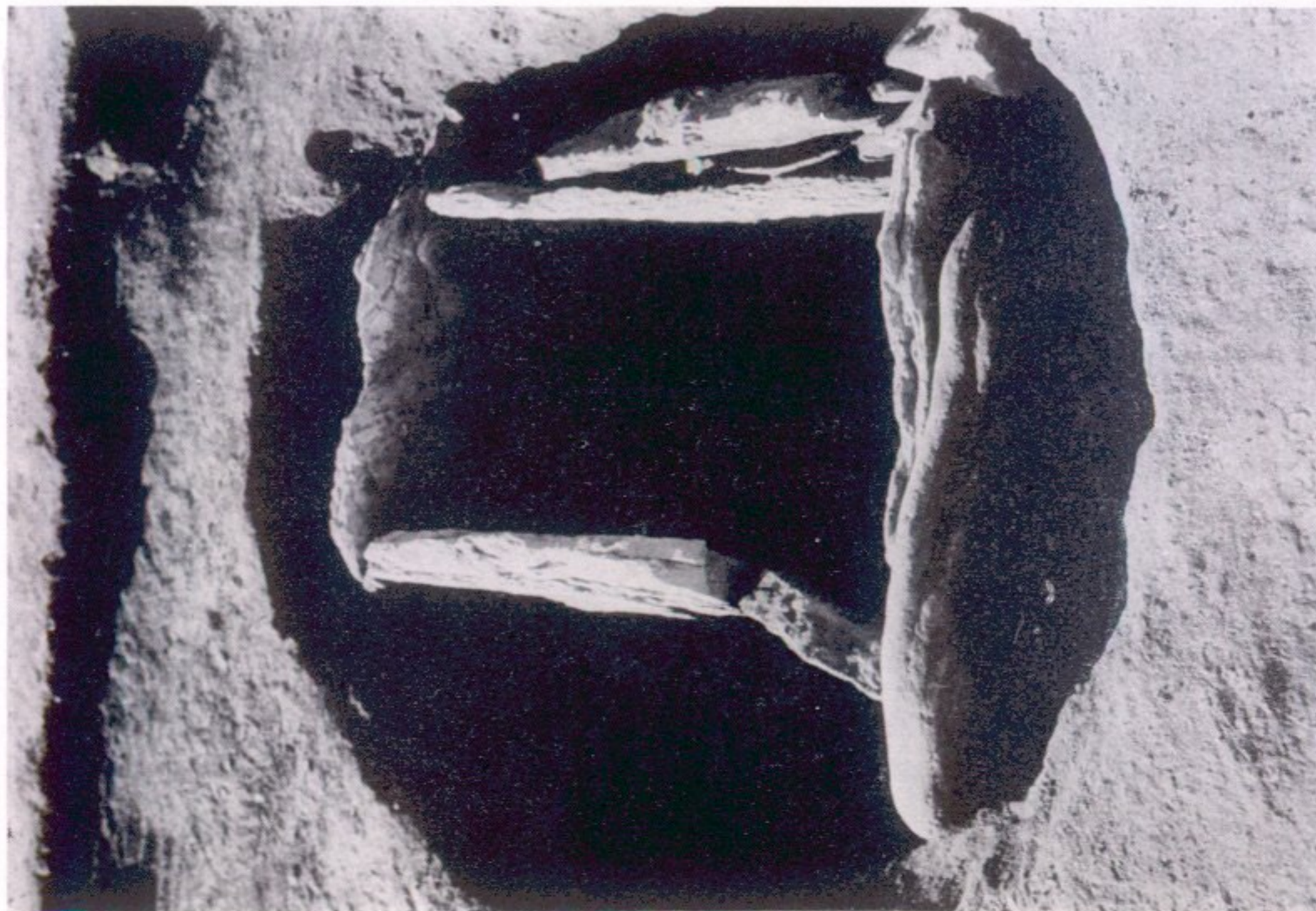
The Society is indebted to the Scottish Development Department (Ancient Monuments) for a grant towards the cost of this paper.



a Aerial photograph of the site at an early stage of excavation. North is to the upper left; the old driveway from Aberdour to Donibristle House (and now Dalgety Bay) passes through the right side of the picture



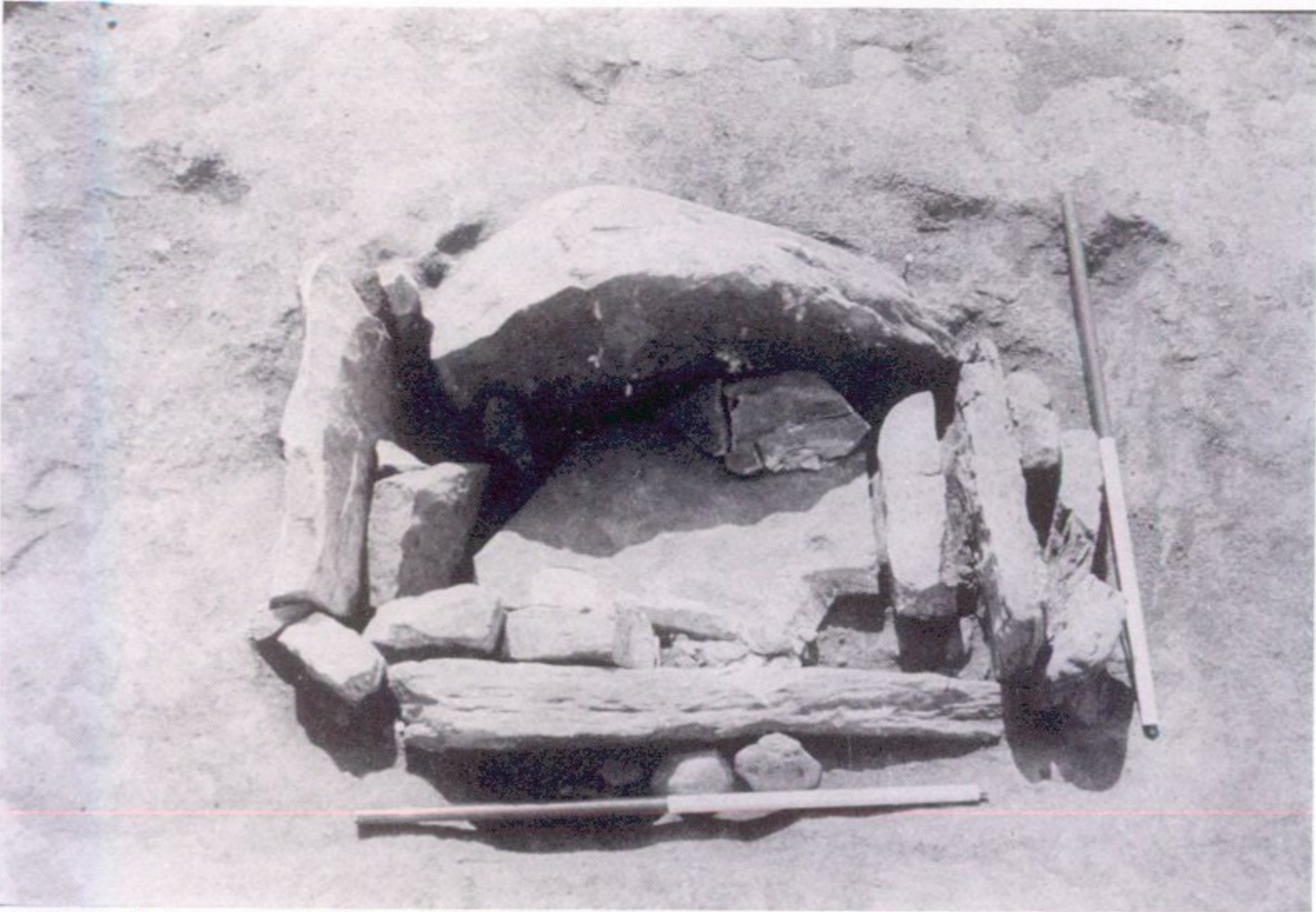
b Cist 1. The body *in situ*. The Food Vessel has been removed from the upper left corner of the cist as seen, and the cremation has been removed from the lower right corner



a Cist 1. The construction pit has been emptied of filling material to reveal the main structural slabs and the pit



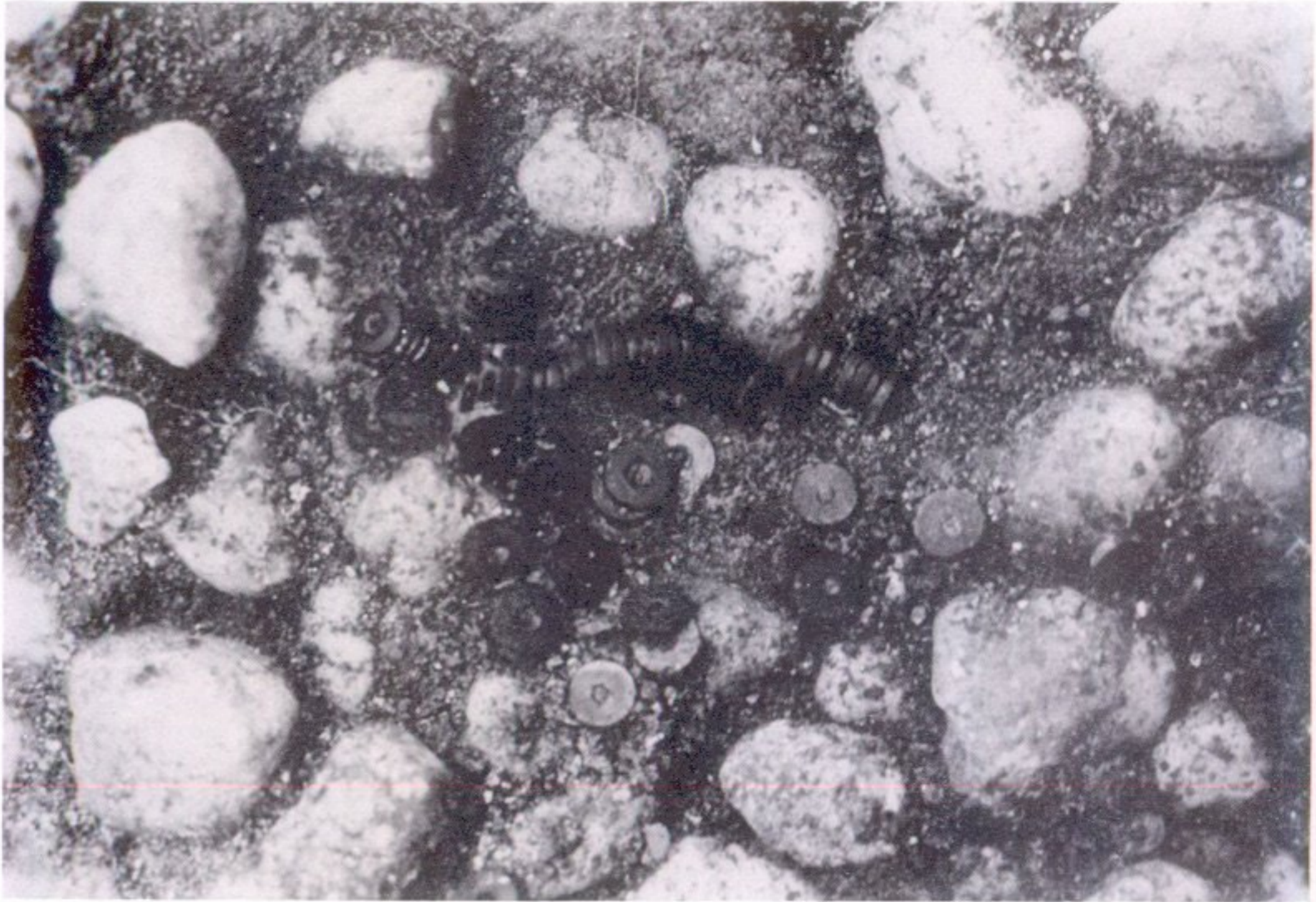
b Cist 3. The cist which was dismantled and reconstructed in the grounds of Dalgety Bay Primary School



a Cist 4. Before removal of the collapsed capstone



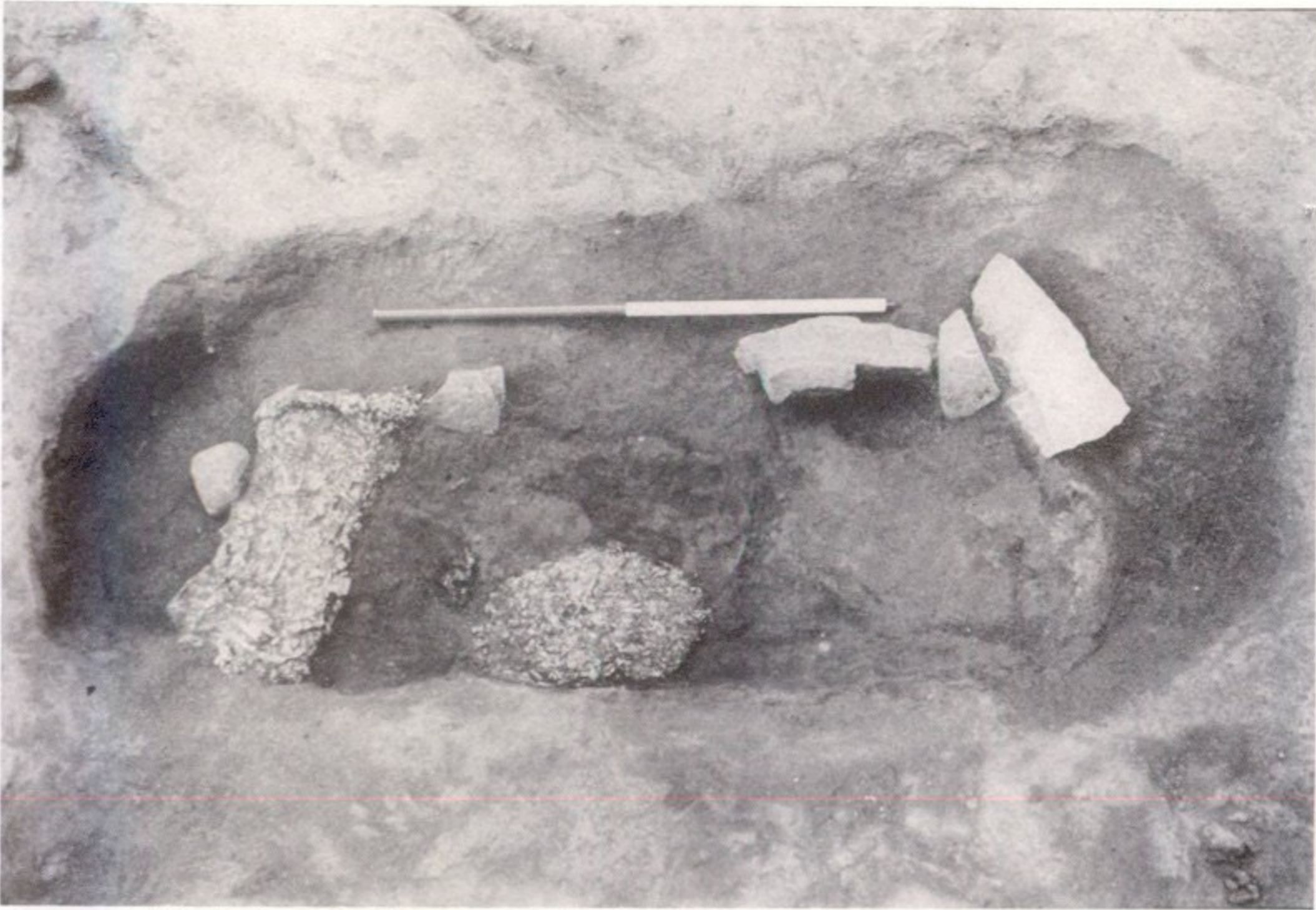
b Cist 4. The body *in situ*. The remains of the Beaker are supported in a plinth of soil at the lower right



a Cist 4. The knot in the necklace of disc-beads on the pebble floor of the cist at the back of the neck of the corpse after removal of all skeletal remains



b Cist 5.



a Grave 1. The battle-axe has been removed, as has Cremation 1. Cf fig 9



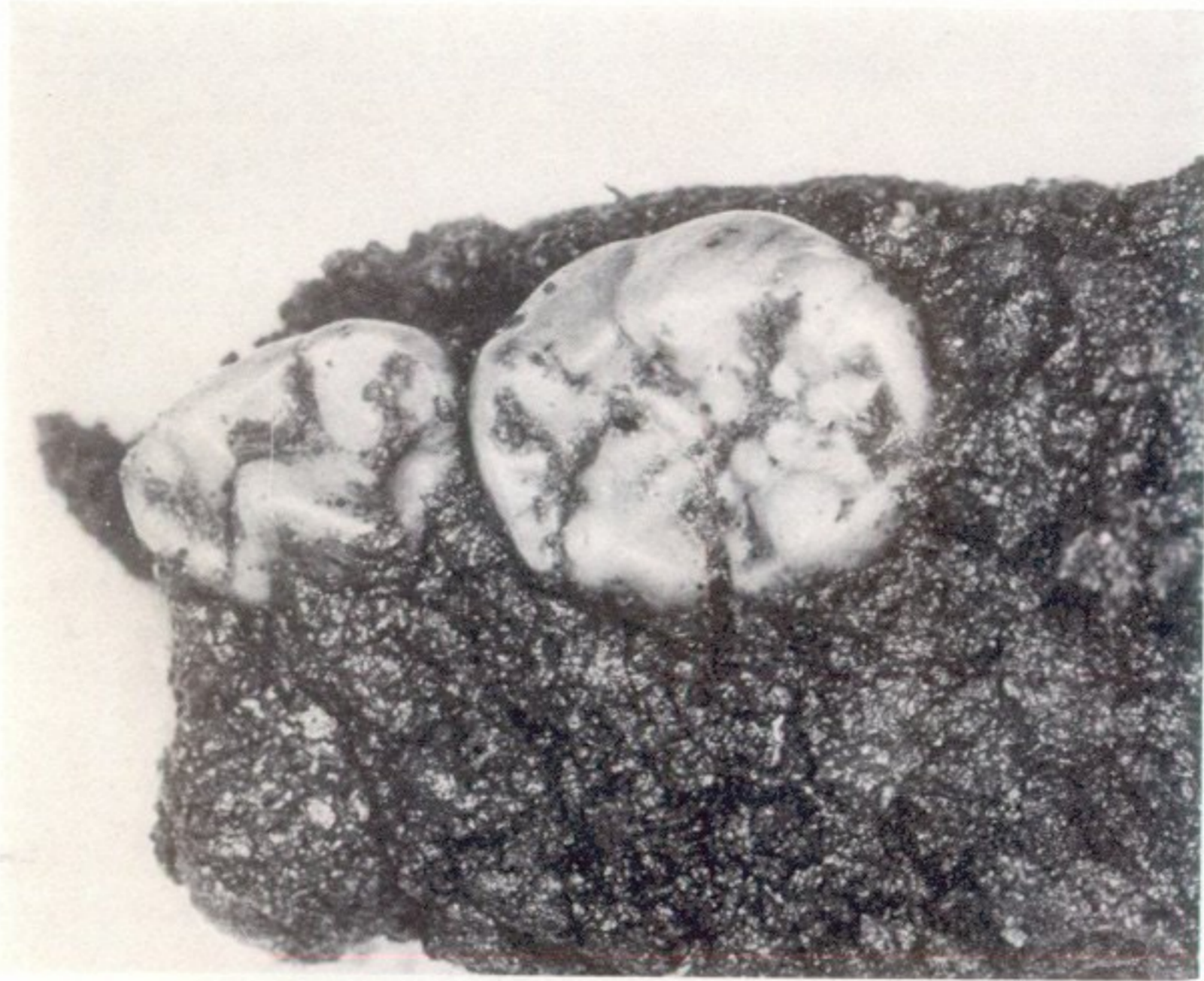
b Grave 2. At an early stage in the excavation of the grave-fill. The pile of stones on the corpse in the coffin is already clear and separate from the stone between the coffin and the side of the grave pit



a Grave 2. The coffin has been completely emptied except for the cremation deposit



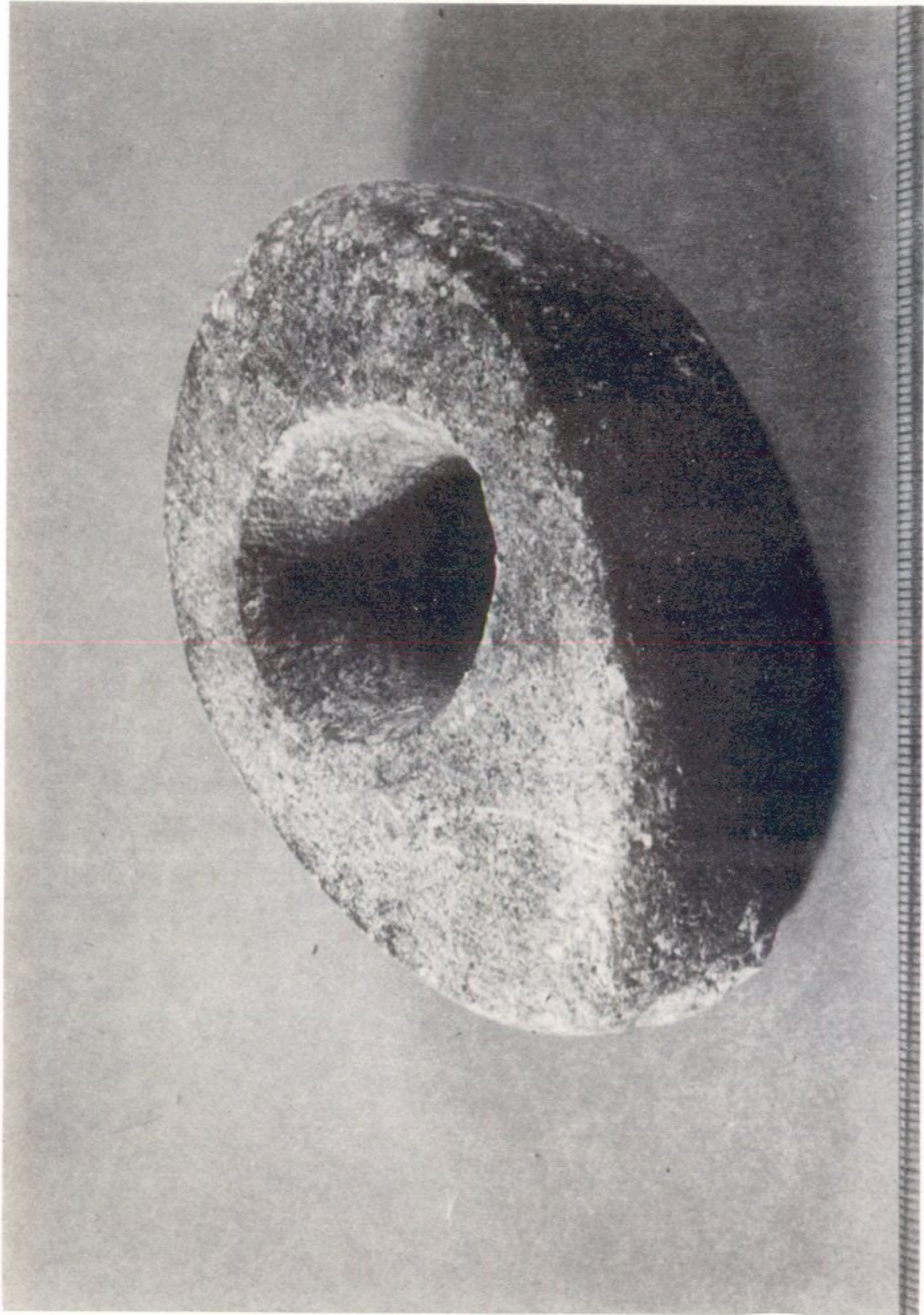
b Grave 3



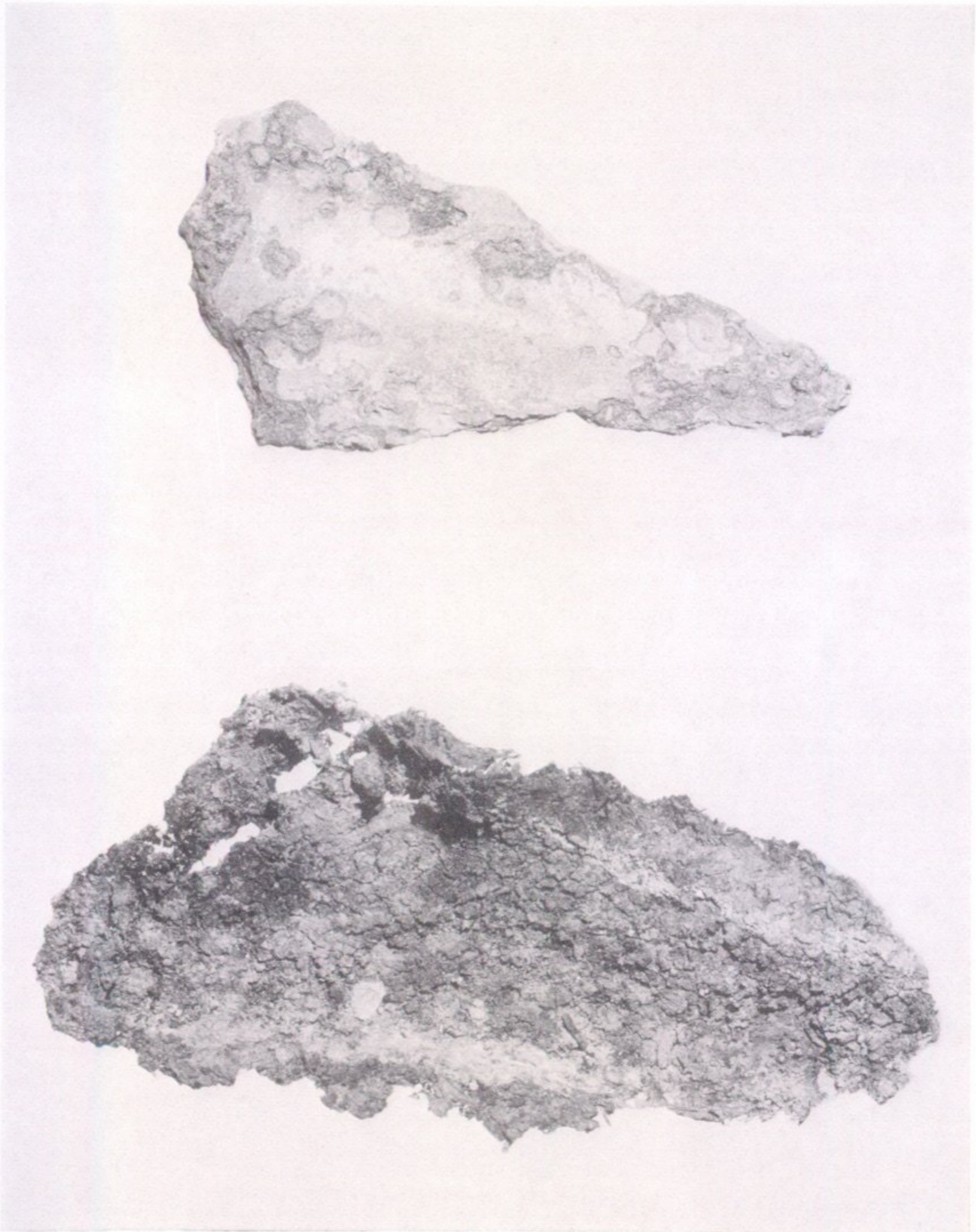
a Pit 3. Detail of teeth of an infant



b Grave 1, Cremation 2. Bone bead



Grave 1. Battle-axe



Grave 3. Dagger-blade fragment and leather sheath