

# The excavation of a henge, stone circles and metal working area at Moncreiffe, Perthshire

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## ABSTRACT

*The site was excavated in advance of roadworks on the M90 motorway. Four phases of activity were recognized.*

*Phase 1 A class 1 henge monument with a concentric ring of nine pits within. Beaker sherds were recovered from the ditch. A cremation lay outside the entrance.*

*Phase 2 A small burial cairn with contiguous peristalith of stones surrounded by a ring of free standing monoliths. The monument of this phase was almost completely destroyed.*

*Phase 3 A ring of eight free standing monoliths, graded in height from SW to NE; recumbent stones lay between the three tallest monoliths on the south-west arc. At the centre a possible ring cairn was accompanied by cremated burials in pits.*

*Phase 4 The centre of the monument was used as a metallurgical workshop for smelting iron and casting leaded bronze.*

## INTRODUCTION

### THE SITE

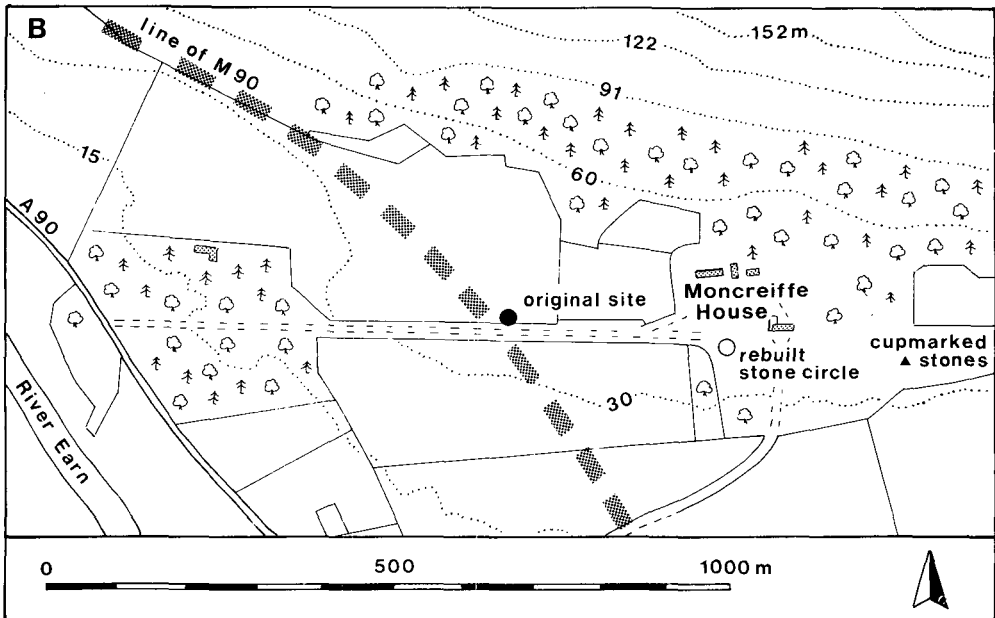
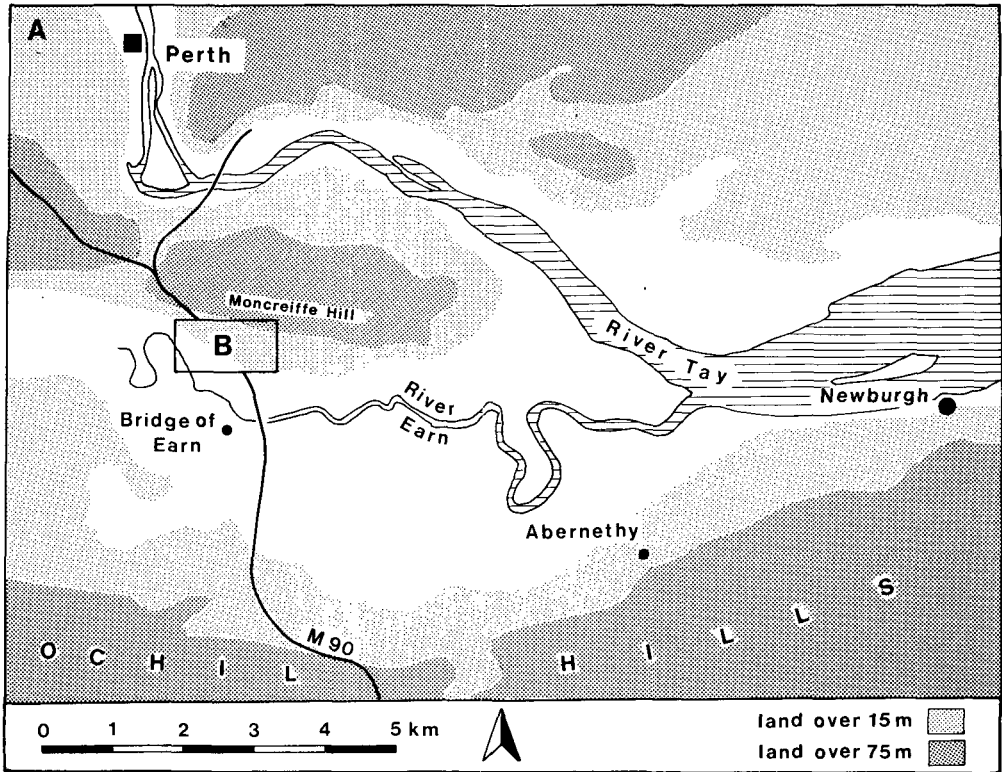
A circular setting of eight standing stones 400 m W of Moncreiffe House, Bridge of Earn (illus 1) was situated on the grass verge of the north side of the west drive (illus 2). The circle was approximately 30 m above sea level on a low glacial drumlin aligned E–W along which the former drive approached Moncreiffe House.

On either side there was open agricultural land. To the S the ground falls gently to the river Earn and beyond that the line of the Ochil Hills forms a continuous southern watershed extending from Rossie Law above Dunning on the W to Castle Law above Abernethy on the E. 250 m to the N of the circle Moncreiffe Hill rises precipitously to 221m, the long summit effectively blocking any view in this direction. To E and W the flat valley of the Earn would have afforded long uninterrupted vistas.

### INITIAL SURVEY

This showed that the eight stones of the circle had been deliberately graded in height so that the tallest stones stood on the south-west arc with the smallest stones opposite.

Stone IX (illus 3) was a granite boulder whose tip just protruded above the surface of the



ILLUS 1 Location map

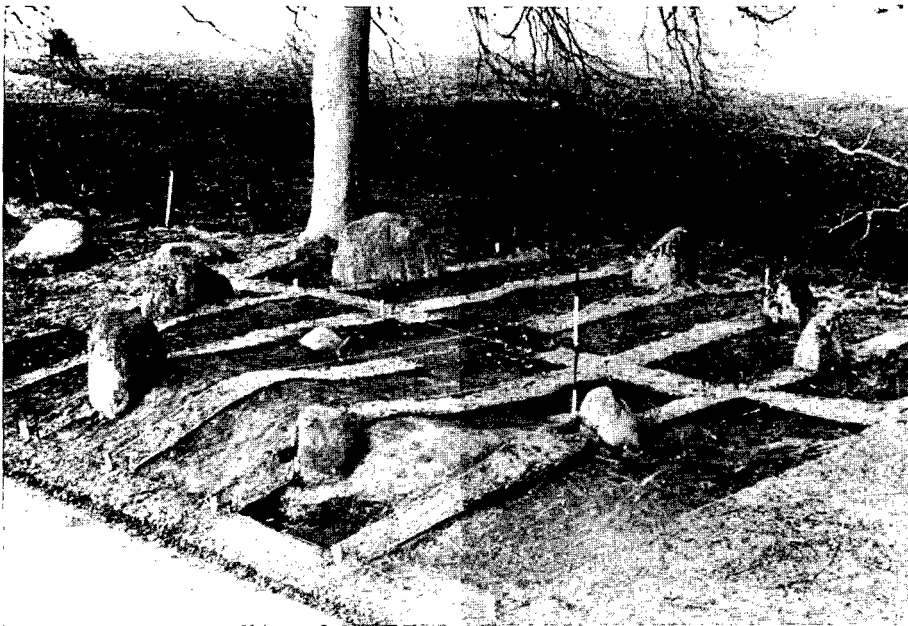
ground. Stone X lay prostrate at the centre of the circle. On its upper surface were 18 simple cupmarks (illus 13). This stone with 15 cupmarks is drawn upright as an illustration to Simpson's paper (1866) though the accompanying text refers to it as lying a few feet outside the circle.

In his plan Romilly Allen (1882) shows the stone lying flat beyond the fence which separates the circle from the field to the N. It is unlikely the stone ever stood upright as it bore no trace of differential weathering. According to *The Book of Moncreiffe* (Moncreiff & Moncreiffe 1929), the stone was placed at the centre of the circle after a tree which formerly stood there had been removed. This tree, either an oak or a chestnut, is said to have reached a height of 70 ft (Hunter 1883, 133) before being cut down. It had been planted to commemorate Sir Thomas Moncreiffe the seventh baronet (1822–79). The stone was said to have been moved from the centre of the circle to make room for the tree. But during the excavation no evidence of the root system of a tree of this height was found at the centre of the circle. Stone XI lay just beyond the western perimeter of the circle. This stone bore ploughmarks. Stone XII was prostrate. It had been used to carry one of the iron stanchions of the northern fence and thus lay outwith the perimeter of the circle.

Between three uprights of the south-west arc, Stones II, III, and IV, the tops of recumbent stones on their long axes were visible just below the turf.

## THE EXCAVATION

The circle (NGR NO 1328 1933) lay on the line of the planned M90 motorway from Edinburgh to Perth and in view of the eventual total destruction of the site a rescue excavation sponsored by the Scottish Development Department (Ancient Monuments) and with the consent of Miss Moncreiffe of Moncreiffe was begun on 1 April 1974. As an undertaking had been given to move the stones to a



ILLUS 2 The site at commencement of excavation

new site in front of and slightly to the W of Moncreiffe House (NO 1360 1933) it was possible to undertake total excavation.

A rectangle measuring 12 m × 11.5 m was laid out to enclose the circle (illus 3) and as there were no facilities for securing the upright stones in their sockets it was decided as far as possible to hold the eight stones in uncut baulks. To achieve this the enclosed area was divided into 12 rectangles each 5.5 m by 1.5 m separated by 0.5 m baulks. The rectangles were lettered A to M omitting I and lay equally to S and N of an east to west baulk. The corners of each rectangle were numbered 1 to 4 anticlockwise starting at the bottom left hand corner of each rectangle.

There were severe restrictions on a complete examination of the site. To the S the stones came to within 2 m of the tarmacadamed drive while to E and W of the site excavation was impeded by the root systems of 300 year-old beech trees. These trees had originally formed a hedge when the drive was made in 1670 but had been systematically thinned until they now averaged 12 m apart.

#### Dimensions

*Circle* Diameter north/south: 9 m  
Diameter east/west: 9 m

#### Stones

	HEIGHT	GIRTH	WEIGHT
Stone I	1.15 m	0.85 m	1 ton 12 cwt
Stone II	1.90 m	1.00 m	5 tons
Stone III	1.47 m	1.27 m	4 tons
Stone IV	2.00 m	1.35 m	6 tons
Stone V	1.30 m	0.95 m	1 ton
Stone VI	1.30 m	1.00 m	1 ton
Stone VII	1.65 m	0.95 m	1 ton 4 cwt
Stone VIII	1.75 m	0.90 m	1 ton 5 cwt

#### SITE PHASES: SUMMARY

There had been four phases of occupation of the site. The chronological sequence is numbered 1 to 4 as follows:

##### Phase 1

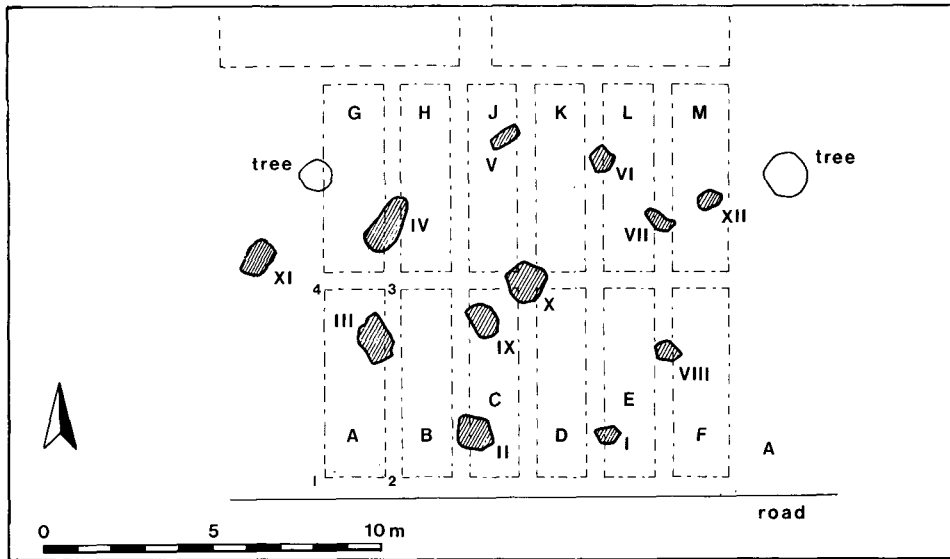
A single-entrance henge with entrance towards the NE. Lying within the inner lip of the ditch were nine pits concentric with the ditch. Fragments of decorated beaker came from the fill of the ditch.

##### Phase 2

A small burial cairn with contiguous peristalith of stones on their long axes had been surrounded by a ring of free-standing monoliths. This phase was almost totally destroyed.

##### Phase 3

The extant ring of eight free-standing monoliths was graded in height from SW to NE. Recumbent stones showed at turf level between the three tallest monoliths on the south-west arc. At the centre there had been a possible ring cairn accompanied by cremated burial in pits, much white quartz and fragments of cinerary urns and flat-rimmed pottery.



ILLUS 3 Plan of trench layout and stones

#### Phase 4

The centre of Phase 3 was destroyed and used as a metallurgical workshop for smelting iron and casting leaded bronze.

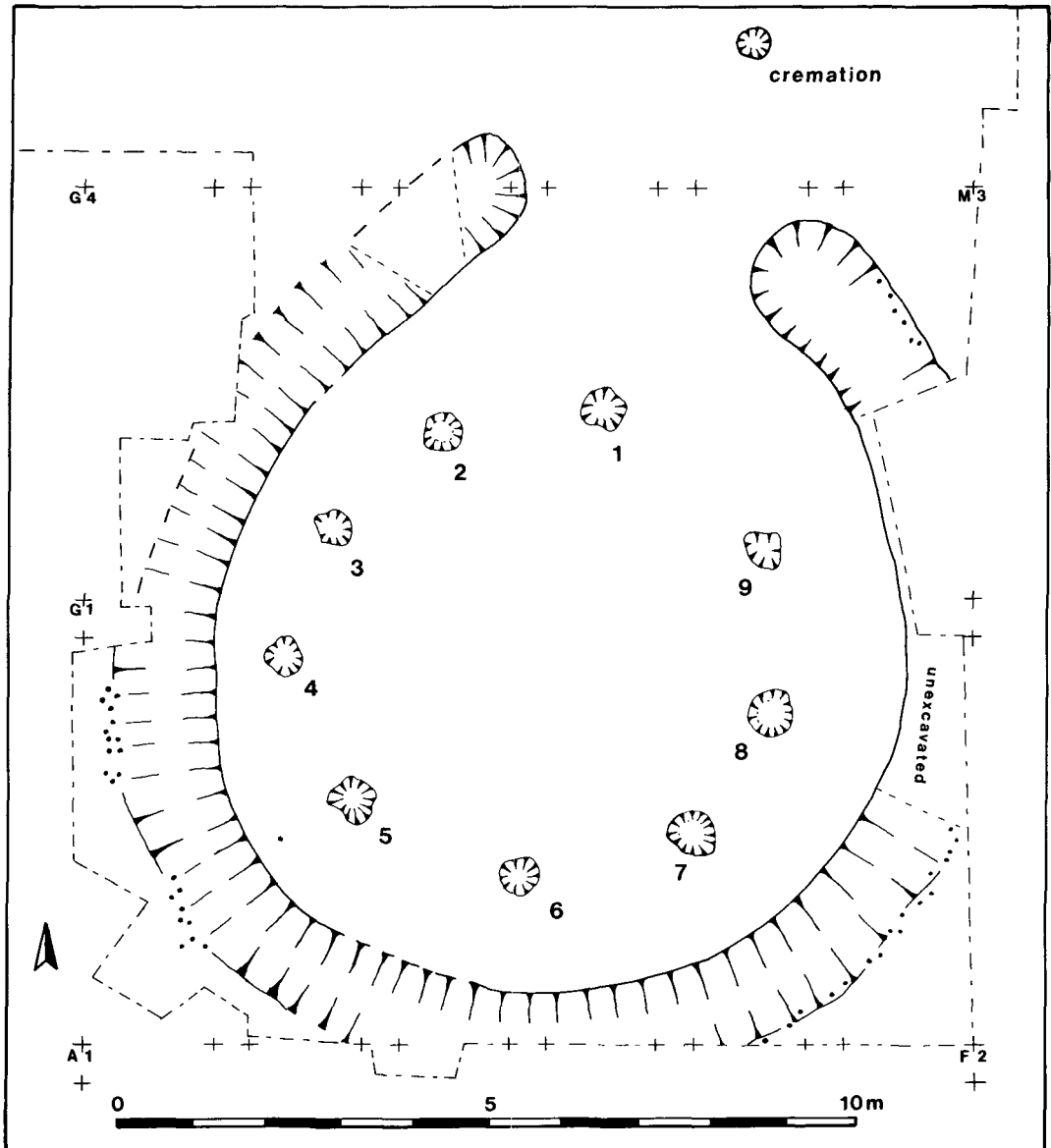
#### PHASE 1

The Class I henge had had a single entrance over an uncut segment of the ditch facing  $30^{\circ}$  E of N (illus 4 & 5). The original profile of the penannular ditch was U-shaped with flat bottom and vertical sides. It averaged 1.40 m in width at the top and was 0.50 m to 0.75 m in depth (illus 6). The terminals were rounded. The outwash from the initial upcast had formed the original silting but a later recut, 0.65 m wide by 0.22 m deep, had left a sharp V-shaped profile. The outline of the recut was defined by small angular stones which may have been the stony residue from the original upcast once the sandy content had been washed back as silt.

Remains of the initial upcast from the ditch were found as a low bank on the outer lip of the ditch. It took the form of reddish sand lying on undisturbed gravel. In an inspection pit the reddish sand was found to underlie the gravel.

On the outer lip of the ditch and at places just below the rim was a series of stakeholes set at an angle of  $45^{\circ}$ . As found they averaged 0.05 m in diameter and 0.16 m in depth (see illus 6). They appeared in line 0.25 m apart and in places in two lines alternating above and below each other. They ceased before the terminals and were not visible in all excavated segments of the ditch. The ditch was particularly difficult to excavate because of the beech trees' root systems, and sections, especially on the east quadrant, had to be left unexcavated.

The stakeholes pose a difficult interpretative problem. If they are an integral feature of the henge monument then it might be best only to record them and wait for them to appear in a later similar excavation. If on the other hand they represent a secondary use of the henge possibly associated with the recutting of the ditch because they themselves are in silted material then some



ILLUS 4 Plan of the henge: Phase 1

attempt at explanation is called for. They can only have supported the flimsiest of timber which from the angle would have sloped inwards across the ditch. The recut ditch might have held vertical timbers in support of those angled across. But to what purpose? There was no evidence of occupation in the ditch and though cereal pollen was found in the stakeholes (Caseldine 1982) it is difficult to visualize what sort of shelter could have been made. The absence of any sizeable carbon from the ditch makes any timbered structure unlikely. The only possibility seems to have been a deliberate masking of the

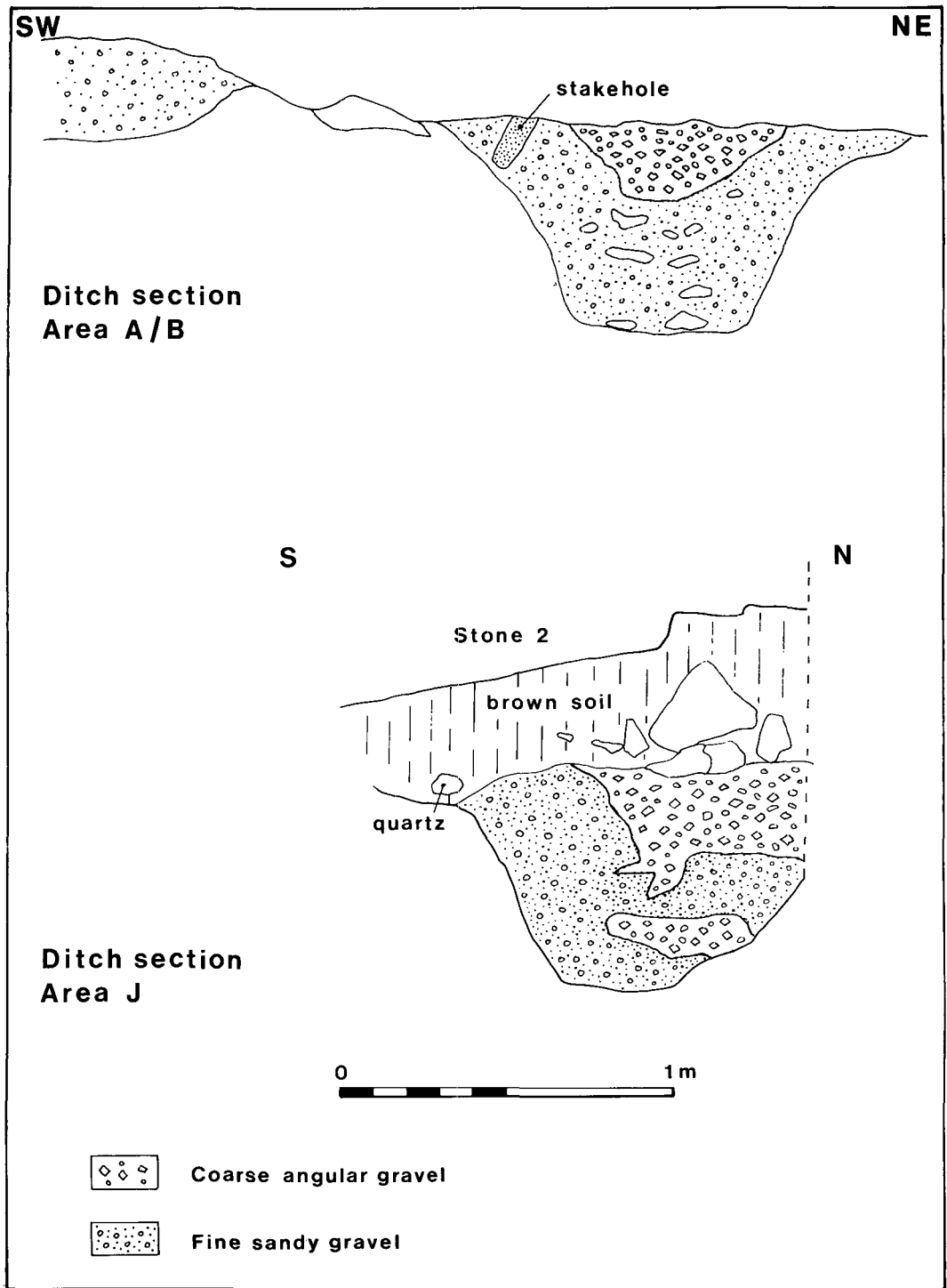


ILLUS 5 Phase 1 excavated (RCAMS)

ditch by using the available small alder wood. It is possible that the stakeholes represent only the bottoms of larger holes and that these may have been part of a hurdling to sustain the bank of upcast material perhaps from the recut ditch. Evidence for a device of this nature has come from one of the Priddy henges in Somerset (Tratman 1967). Here the excavation of Henge 1 revealed a series of small stakeholes set horizontally at the base and close to the Stone walls which maintained the bank. The parallel is not exact but the general impression of supportive hurdling is comparable.

A fragment of beaker pottery came from the fill of the north-west quadrant of the ditch together with a worked flint. Other beaker fragments came from the vicinity of Stone II of Phase 3 and were probably in the ditch backfill there.

The most impressive feature of Phase 1 was a ring of pits which lay just within and concentric to the inner lip of the ditch. The pits averaged 0.45 m by 0.5 m and 0.42 m in depth. Their fill was completely sterile and they were only distinguishable against the reddish undisturbed gravel as patches of darker loam. Pits 2, 3, 4 and 5 contained small packing stones and one had been dug down to a rock base. The rims were unbroken and if the pits had contained timbers or split timbers these must have been removed with infinite care.

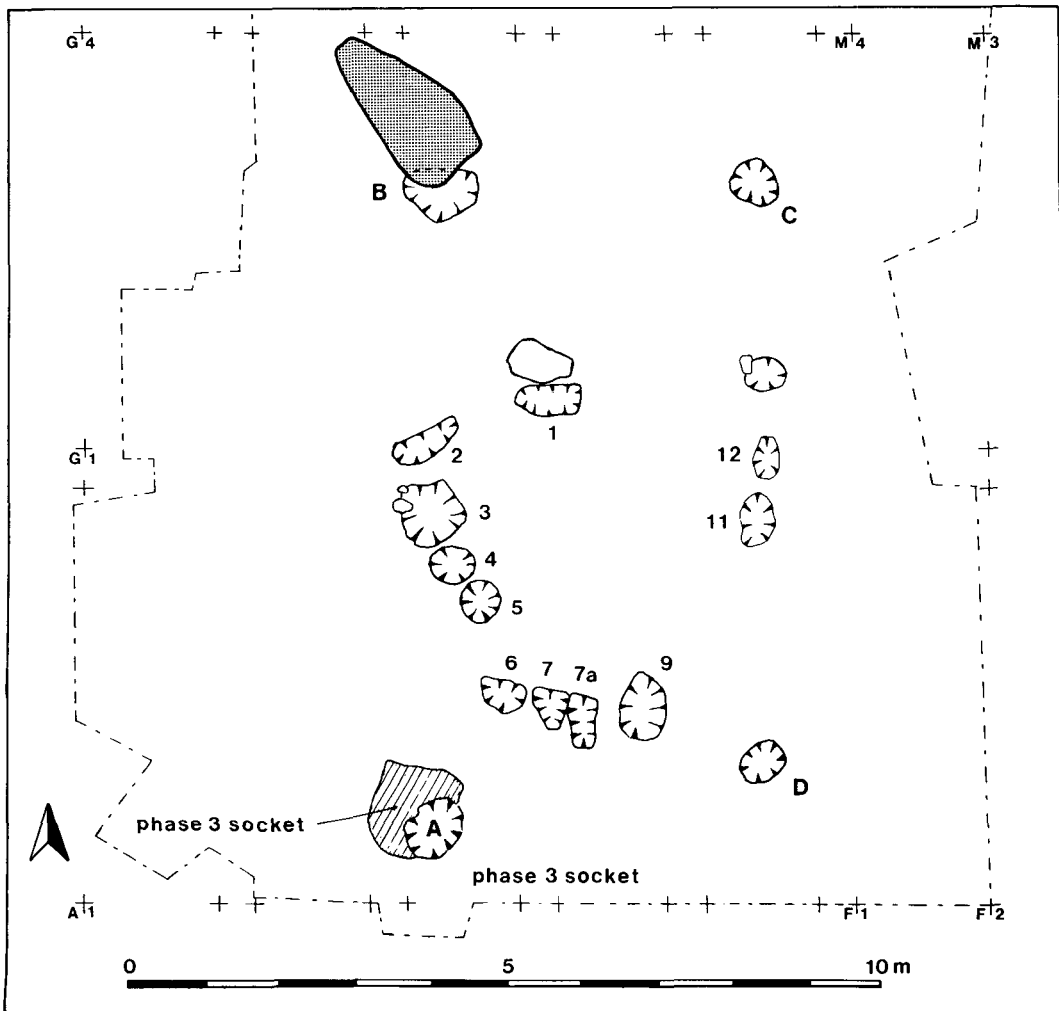


ILLUS 6 Sections of the henge ditch: Phase 1



If the uncut segment of the ditch acted as an entrance to the central area it is curious that one of the pits lay directly on this line. Also on the line was a bowl-shaped hollow 0.48 m by 0.48 m and 0.26 m deep. This was filled with finely comminuted cremated bone and included a child's tooth. This cremation deposit was subsequently mislaid. As a ritual burial it can be paralleled at Woodhenge (Cunnington 1929).

At the centre of the henge and visible on the surface of the reddish undisturbed gravel were 12 small stakeholes. Although six lay on the arc of a circle they cannot be said to form a recognizable pattern. They varied in size and depth from 35 mm by 40 mm by 60 mm deep to 0.25 m by 0.25 m by 0.16 m deep. These stakeholes have provisionally been assigned to Phase 4 as they bear some relationship to surface features of that Phase. Their appearance on the gravel surface of Phase 1 and the variation in size and depth suggest that they are in fact the bottoms of holes originally made at a higher level.



ILLUS 7 Plan of Phase 2

Finally proximity to water which seems to be a feature of the henge type of monument is confirmed at Moncreiffe by a layer of yellow sand at the base of the ploughsoil to the N of the site. Geologists suggest there was a stretch of still water, the result of glacial action, between the site and the foot of Moncreiffe Hill.

#### PHASE 2

There are certain elements in the Phase 2 evidence which require discussion. Remembering that the Phase 2 monument was destroyed by the evidence of Phase 3 it is not surprising that the hypothetical reconstruction has several gaps. The first consideration must be the evidence for a ring of free-standing monoliths. The first hint of this was given when Stone V of Phase 3 was found to have been set on a horizontal slab in order to control the height of Stone V relative to the stones of Phase 3 on either side. The prostrate stone (illus 7) had a markedly flat base and the shallow socket in which it had originally been set was found on the edge of the Phase 1 ditch.

After the monoliths of Phase 3 had been lifted preparatory to re-erection near Moncreiffe House it was possible to examine their sockets and in the socket of Stone II there was clear evidence of an earlier shallow socket.

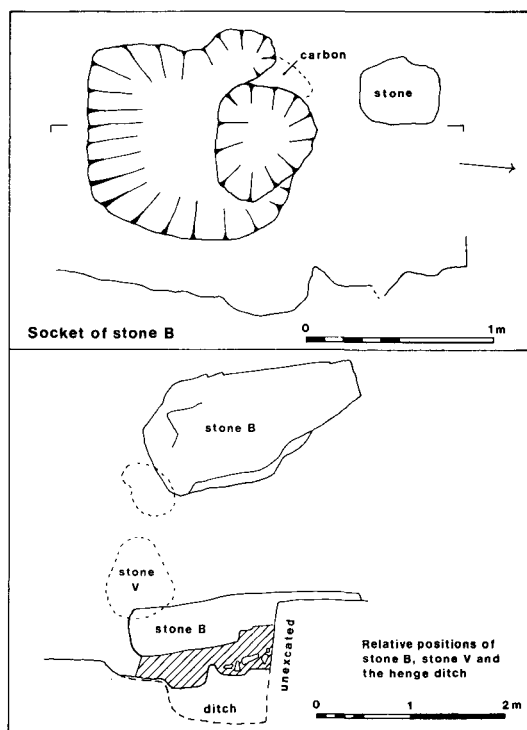
A third possible socket was located in the south-east quadrant of the henge. This was a patch of black soil possibly derived from the activity of Phase 4 measuring 0.66 m in length on an axis 70° E of N. The axis would fit a stone standing on the perimeter of a circular setting and would give a diameter of approximately 8.9 m when linked with the prostrate stone under Stone V diametrically opposite.

A fourth socket was found in the north-east quadrant 0.75 m in length and only 0.12 m deep. This area of brown soil containing three fragments of carbon was diametrically opposite the shallow socket under Stone II and 8.85 m distant. It lay across the infill of Pit 9 of the Phase 1 henge.

The shallow sockets were complemented by the discovery among the central cairn material of Phase 3 of four stones which gave the impression of having been neatly sliced off the end of monoliths to give a flat base (illus 8). The technique involving flat bases, shallow sockets and small packing stones is in marked contrast to Phase 3. Here the stones again tend to have flat bases in relatively shallow sockets but the use of packing stones is different. In Phase 3 the foot of the upright is sometimes undercut so that the socket is wedge-shaped and the upright supported by one or two large stones strategically placed against one or other wide face. A good example is Stone 1. The wedge-shaped socket had exposed the south-east face of the stone which had been carefully supported by the insertion of one long stone. Stone 6 had been undercut and the resultant gap in the socket had been filled with hand-sized stones. Only the very large Stone 4 had been set in a deep socket. Unfortunately it was not possible to make detailed examination of the Phase 3 stone-sockets as the process of lifting the stones did considerable damage to the socket outlines.

Having established a possible ring of at least four monoliths the next piece of evidence was for a small central cairn. The first indications of this were 11 shallow stone-sockets outlining an irregular circular area. These sockets had clearly held stones laid on their long axes to form a peristalith. The sockets were visible in soft brown loam which had accumulated on the surface of the henge monument subsequent to the backfilling of the ditch and central ring of pits. In Phase 3 these stones had been lifted and drawn back and were then laid on turf to form a contiguous peristalith on an increased diameter to surround a larger cairn.

Over the central area within the stone circle of Phase 3 were seven pits some of which held clear evidence of the residue of cremation or at least fire. But it was virtually impossible to say which of those pits belonged to Phase 2 and which to Phase 3. All that can be said is that two periods of destruction took place in the central area. The builders of Phase 3 destroyed and remade the burial cairn of Phase 2 and the metallurgists of Phase 4 destroyed the burials of Phase 3. The smashed urns



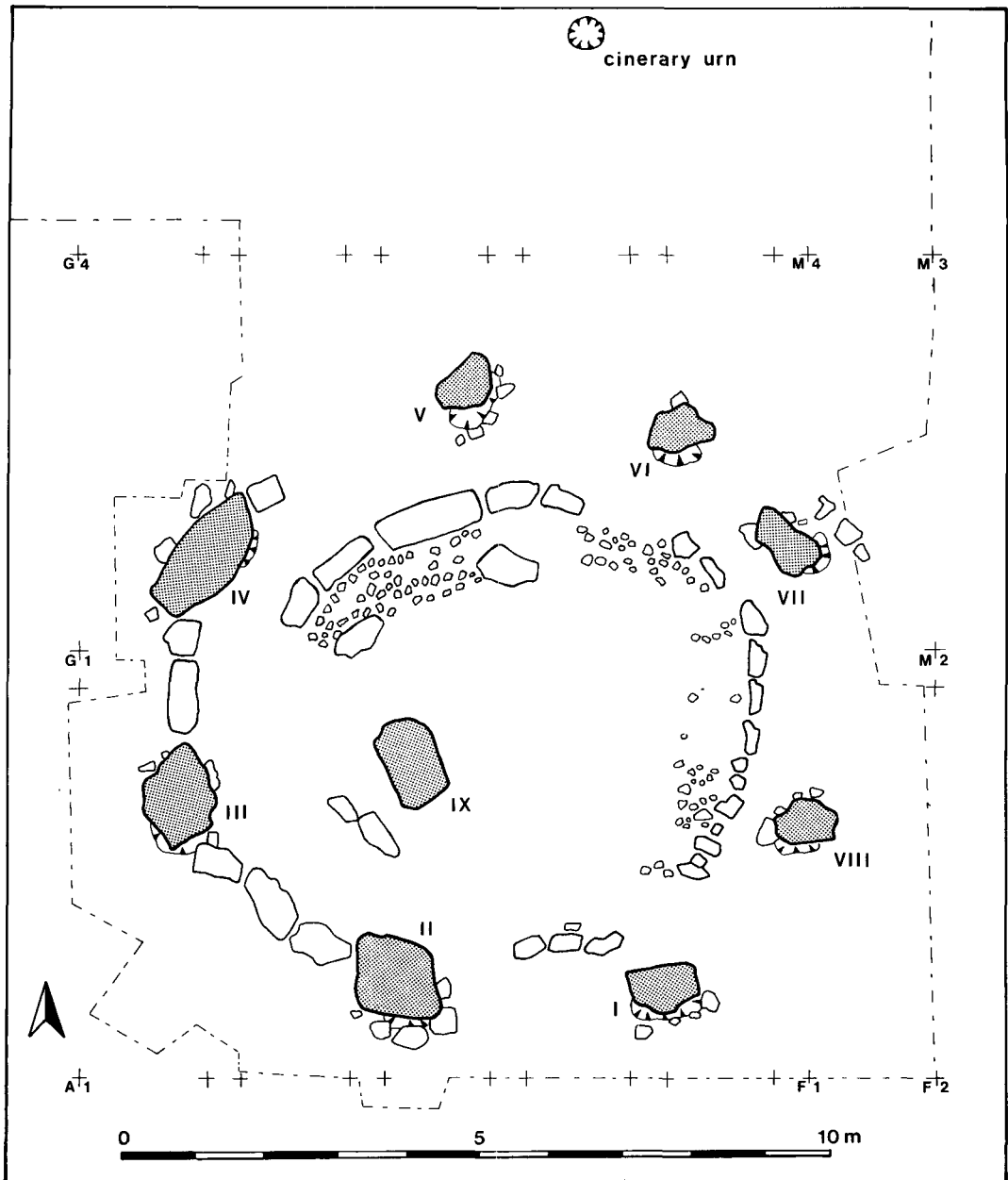
ILLUS 8 Sections showing i, socket of stone B and ii, relationship of stone V (Phase 3), stone B (Phase 4) and the henge ditch

were thrown into the north-east corner of the site. Pottery categories represented among the fragments were cordoned urns, Grooved ware and flat-rimmed ware. The cremations were scattered and were found all over the central area. Bone fragments used as a fluxing additive were found in the slag from the iron smelting of Phase 4.

### PHASE 3

The extant graded stone circle held few surprises. The graded stones with an emphasis on the south-west quadrant set the monument within its recognized category. The lack of a single recumbent stone above ground and its replacement by two smaller slabs on their long axes below ground level between Stones III and IV may reflect the difficulty of finding a suitable candidate for the recumbent in the north-east Scottish tradition. At the same time the burial below ground of these stones may have been the work of the Phase 4 metallurgists who built a shelter belt of turf and boulders along the southern arc of the circle. Buried recumbent stones may possibly exist in the graded circle at Ninewells near Dunkeld though in the absence of excavation it can only be surmised. The importance of grading is underlined at Moncreiffe by the care taken to adjust the height of Stone V by setting it on a prostrate slab.

It is very doubtful if the cupmarked slab (illus 13) was originally an integral part of the circle. It is known from *The Book of Moncreiffe* that it was moved and replaced in the 19th century but it is more likely to have been an outlier to the circle and may indeed have had no direct connection with



ILLUS 9 Plan of Phase 3

the circle, though cupmarks are part of the recumbent circle tradition. It is perhaps significant that in a ruined summerhouse to the east of Moncreiffe House there is a sandstone slab bearing a very complicated pattern of cup and ring marks. It has obviously been brought from somewhere and carefully protected. Perhaps the same motive was responsible for placing the cupmarked stone inside the stone circle.

At the centre of the Phase 3 monument there may have been a ring cairn. The enlarged peristalith of Phase 2 appears double in places. On the other hand a vast quantity of loose cairn material lay scattered over the central area and this was mixed with over 2cwt of white quartz, some of it water-worn pebbles and some deliberately smashed into angular pieces. The white quartz could have been obtained in the bed of the River Tay but not from the nearby River Earn.

Stone IX constitutes a problem which is not easy to resolve. This unwieldy granite boulder weighing approximately one ton lay in a shallow socket perhaps of its own making. It was found lying on the infilled sockets of Phase 2's peristalith so must be part of Phase 3. On the north side of the Phase 3 circle and outside its perimeter was a cordoned urn which lay inverted in a hole. The contents are described in appendix 1.

There are other similarly graded stone circles in Tayside (Stewart 1966) to which must be added a further example at Ninewells near the Loch of the Lowes, Dunkeld (NO 076 455). These graded circles must relate to the grading in the recumbent stone circles of north-east Scotland and ultimately to the same phenomenon at Clava (Burl 1971). The Tayside examples may indicate a movement of people or a transference of ideas south and west by way of Strathmore into the valleys of the Earn and the Tay. The people and ideas may have been forced out of north-east Scotland by settlement pressures created by the presence of makers of beaker pottery in the rich farmlands of the Dee and the Don. The C14 date on charcoal from a flat-rimmed urn found in the graded stone circle at Stone Wood was  $1200 \pm 150$ bc.

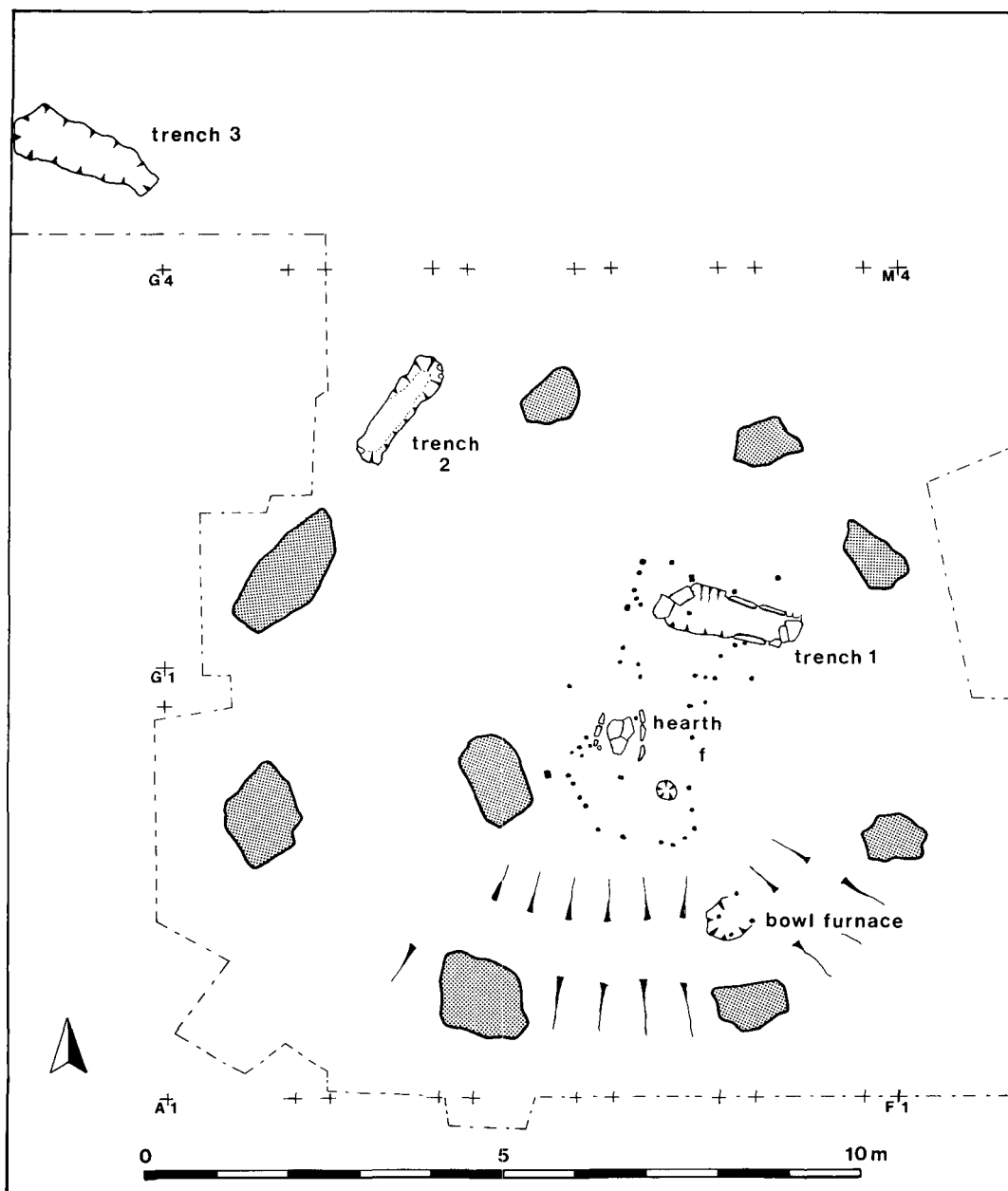
There are two associated phenomena which may be mentioned in support of the above hypothesis. First is the occurrence in Tayside of 16 examples of four uprights on the perimeter of a circle aptly termed 'four posters' by Coles and Simpson (1965) and accepted as a phenomenon related to recumbent stone circles by Burl (1976). Secondly the occurrence in Tayside of 26, now 28, paired standing stones (Stewart 1965). These could be a remembrance of the flankers to the recumbent (Burl 1976).

Finally the cordoned urn burial lying outside the Phase 3 circle to the north must be included in the Phase 3 occupation. The urn had been inverted in a pit, 0.59 m deep, below the surface but with no indication of its placement. The bottom of the urn had been sheared-off but the remainder plus some fragments and the contents were retrieved. There was no indication that the urn had been placed mouth down on a flat stone so there may originally have been a skin cover as there was no spillage of contents.

#### PHASE 4

Excavation of areas F and E soon revealed a phase subsequent to the graded circle of Phase 3. The early stages of excavation exposed an earth banking around Stones I and II and reaching as far as Stone VIII. The bank had been formed of piled turves which had decayed to a fine-grained greyish sand. The turves may have been thrown on to the eastern part of the site when the drive to Moncreiffe House was made in 1670. Alternatively the pile of turves may have been part of a shelter belt created along the southern and south-eastern quadrant by the metallurgists of Phase 4. Bedded into the bank just below the present-day turf-level were the remains of a wooden box with corroded iron nails and either a hay or grass lining. In the box were parts of an adult human skeleton probably male. The verdict of the Anatomy Department of Glasgow University was that the skeletal remains were unlikely to be older than the early 19th century.

Further excavation in areas F and E exposed a number of boulders below the decayed turf level. They had been laid indiscriminately between uprights I, II and VIII and at least one was badly cracked as though it had been carelessly thrown down. These stones were subsequent to the erection of the three monoliths of Phase 3 and formed the base of the shelter belt on the southern quadrant of



ILLUS 10 Plan of Phase 4: stones of Phase 3 shown for reference

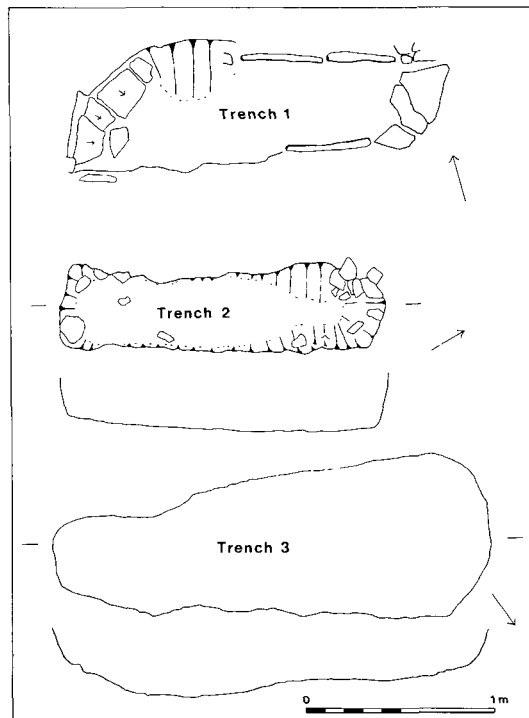
the site. The reason for this shelter belt became apparent when first a stone-lined hearth and then a bowl furnace were identified in the central area together with pieces of molten bronze and iron slag. The hearth consisted of a fire-cracked flat slab covered by compacted black soil in places up to 0.2 m thick and bordered on either side by stones on edge set in undisturbed soil (illus 10). The central stone had replaced an earlier setting of smaller flat stones. The hearth gave the impression of a makeshift

structure which had probably not seen much use. The side stones had little structural significance though being bowed outward from the central slab they would increase the functional area.

The stakeholes which had been seen on the undisturbed level of Phase 1 at the centre of the henge now appeared to have some relevance to the hearth and could have afforded some degree of staked or hurdled protection. Within the area thus defined which lay to the S of the hearth slabs was a pit 0.73 m in length and 0.23 m deep filled with black greasy soil containing many fragments of charcoal and a few pieces of cremated bone. At the bottom were a number of hand-sized pebbles heavily discoloured by burning. It is questionable whether this pit is in fact a cremation pit of Phase 2 or 3 which inadvertently has been made in the vicinity of the Phase 4 hearth. Its position within the area defined by the stakeholes and its proximity to the hearth make it more likely to be a feature of Phase 4 but it emphasizes the great difficulty in allocating the cremation pits to their respective phases.

Adjacent to the hearth was a second pit oval in shape and lined to a thickness of 0.1 m with a compact greyish white sticky clay. When the clay was removed the pit was found to have been lined with a very fine orange coloured sand. Cut into the clay lined pit were six small stakeholes some sloping downwards, some upright and some slanting across the mouth of the pit. These must have been to support tuyères in the bowl furnace. Nearby were found several pieces of clay crucible and a broken bronze chisel (appendices 1 and 4).

There were three enigmatic features of the site which appear to be connected with the Phase 4 occupation (illus 11). The first was a trench partly slab-lined in the north-east quadrant of the central area. The trench was filled with disturbed soil, flecks of carbon, some pieces of quartz and some



ILLUS 11 Features of Phase 4

cremated bone. At the base of the sloping slab at the west end was a narrow posthole (illus 12). The trench was 1.95 m in length, 0.3 m deep but too narrow (0.45m–0.56m) in width to have been a grave. It could never have held water but may have been used as a casting trench, or reheating hearth or for ore roasting. It showed no evidence of any of these uses.

A second trench, 1.5 m by 0.72 m and 0.32 m deep, lying to the W of Stone V of Phase 3 and on the line of the infill of the Phase I ditch, had been deliberately backfilled with hand-sized stones but no quartz. The stones were in three distinct layers and soil between the top and middle layers had percolated down from a topsoil layer. The bottom layer of stones lay on clean gravel. There were no flat lining slabs.

A third trench lay, to the NW, outwith the Phase 3 circle. It measured 2.32 m by 6.86 m and 0.34 m deep and had been cut to the top of the hard subsoil. At a depth of 0.22 m there were blackened gravel, flecks of carbon and a few fragments of cremated bone. The trench had not been backfilled by its upcast. The dry gritty gravelly soil was in marked contrast to the surrounding reddish loam.

If these trenches were part of the metallurgical operations then Trench 3 was dug first but was abandoned as being too far from the hearth and furnace and too awkwardly sited near the extant stones of Phase 3. The fill may have been from a left-over part of the Phase I bank or upcast from the ditch. Trench 2 was next but was never used as the stony infill was in position before any weathering took place. Trench 1 was part of the workshop. It was near the operational centre, easily reached and on the same level as the hearth and furnace. Its backfill was consistent with surface debris left after the cairns of Phase 2 and 3 had been cleared away.



ILLUS 12 'Trench 1', of Phase 4 looking W (note also stakeholes)



## POSTSCRIPT

In order to complete the examination of the site of the henge/circle before the total destruction envisaged by the road builders, it was decided to extend the excavation area northwards towards the foot of Moncreiffe Hill. The northern rectangle was 15 sq m. the dark ploughsoil was 0.39 m deep followed by 0.33 m of a light-coloured loam and below this either a red till derived from the underlying Old Red Sandstone or a water-laid yellow sand. Here was evidence of a stretch of water at one time adjacent to the site.

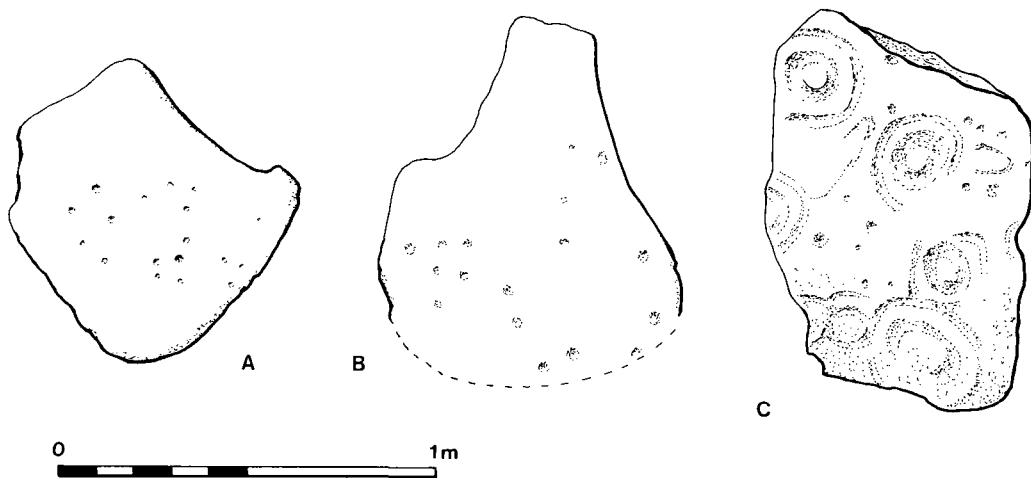
At the southern end of the rectangle and alongside the western baulk a large stone protruded. The loose soil dug from around it showed it had been deliberately buried in a hole. It was not possible to raise this stone or obtain its dimensions but the southern end was rounded and weathered, the western side exhibited plough-marks and the northern end had been sharply cut across to give a flat base and below this were a couple of boulder packing-stones.

## DISCUSSION

The significance of the site was twofold. First it confirmed the presence in Tayside of stone circles which had an affinity with the graded recumbent stone circles of north-east Scotland; how, when and why this affinity was established is a matter of controversy. Second the extended use of the site would never have been discovered but for the threat of total destruction resulting in total excavation and the lesson from this is obvious.

Structural details like the recut ditch, the stakeholes on the lip of the ditch, the contrasting stabilization of the monoliths, the reused perialith and the enigma of the three trenches are not in themselves an addition to knowledge, for in the fullness of time parallels to them will be found. What is of significance is the human story which has been revealed at Moncreiffe. The builders of the henge were prepared to respect certain ritual practices: they sited the monument near water, they gave it the required north-east orientation – yet they were prepared to cultivate grain within a stone's throw of a sacred precinct.

Subsequent settlers, while appreciating the sanctity of the monument, were prepared to modify it while making use of it for what was perhaps the most important aspect of their lives, burial of their dead. It was a relatively small burial place but they lavished considerable time, energy and care on it. The henge ditch and pits were carefully backfilled, not destroyed. The erratics as monoliths were



ILLUS 13 Cup-marked stones. A: Stone X. B and C: stones found near Moncreiffe (see p. 135)

brought to the site, prepared with flat bases and erected in shallow sockets with the help of small packing stones – a procedure requiring considerable expertise.

Then came newcomers into Tayside, people with a long tradition behind them and prepared to create an imposing funerary monument. The earlier ring of monoliths was disposed of but the peristalith of the small central cairn was reused by the simple expedient of pulling it back on to an enlarged circumference. Considerable trouble was taken to gather white quartz from the bed of the River Tay and scatter it on the burial cairn. The new ring of monoliths was carefully graded even to the extent of perching one on a recumbent slab in order to achieve the prescribed height. The south-west quadrant was emphasized by very large uprights weighing up to six tons.

Then came the final indignity. That a group of commercial craftsmen should have selected what they must have recognized as a site of sacred antiquity and turned it over to such mundane activities as smelting and casting is a commentary on a way of life culturally devoid of imagination. These people destroyed and desecrated and seemed to have taken a particular pleasure in smashing burial urns and obliterating a memory.

## APPENDIX 1: THE PREHISTORIC FINDS

Joanna Close-Brooks

### THE CINERARY URN AND ITS CONTENTS (illus 14)

- 1 Cordoned urn, 320 mm high, 270 mm rim diameter, 125 mm base diameter. Two cordons 65 mm and 125 mm below the rim. The neck and the internal rim bevel decorated with slanting impressions of a stout twisted string. Irregular in shape; restored from fragments.

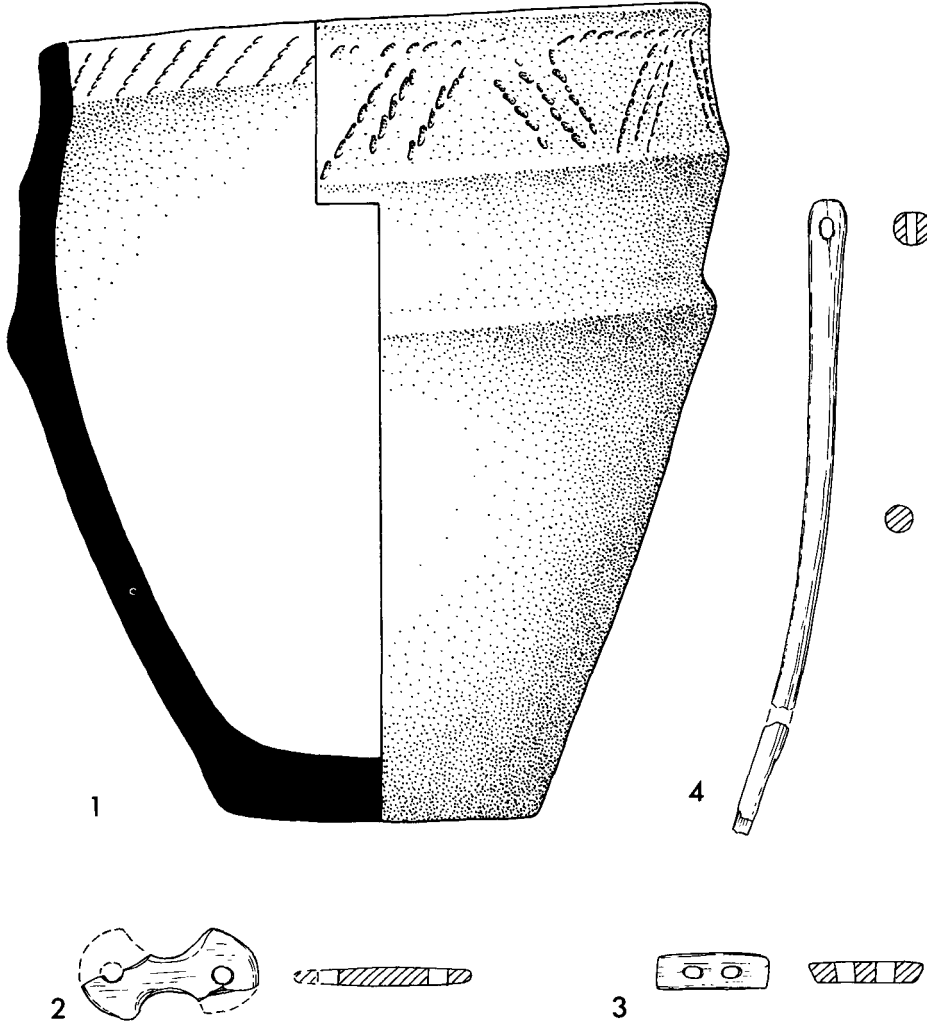
The objects 2–5 were found amongst the cremated bones in the inverted urn when it was emptied in the Conservation Laboratory of the National Museum.

- 2 Bone toggle with two perforations, 35 mm long × 4 mm thick, damaged at either end. Both ends were originally expanded into a semi-circle. Burnt.
- 3 Rectangular bone toggle with two perforations, 22 mm × 7 mm × 4 mm. Burnt.
- 4 Bone pin with perforated head, the tip missing, now in two pieces that do not join, 125 mm long overall, 7 mm wide at head. Burnt.
- 5 Two tiny fragments of distorted and corroded bronze. Too small to be identifiable but perhaps fragments of a blade rather than an awl.

The cordoned urn is of a familiar type decorated with oblique string impressions. Among numerous parallels may be cited two urns from a cemetery at Southfield, Leuchars, Fife (Coutts 1971, no 112a, b). The great interest of the Moncreiffe find is the association of two bone toggles, a bone pin and tiny bronze fragments with the urn. Such a group of associated objects is exceptional with a cordoned urn; only the group from Balneil, Wigtownshire, which includes a shouldered bronze chisel may be considered richer (Curle 1916). Even single finds with cordoned urns are unusual, the most commonly associated objects being small bronze blades.

Some 11 assorted bone objects which may be classed as toggles were known previously from Scotland in association with cinerary urns (almost all illustrated or referred to by Callander (1930), to which add Kilbride-Jones, (1936, 302)), of which only three came from cordoned urns, those from Seggiecrook, Aberdeenshire; Balnabraid, Argyll and a more recent find from Kinneil Mill, Stirlingshire (Marriott 1968). The new toggles from Moncreiffe swell the numbers to five bone toggles found in four cordoned urns, as opposed to six bone toggles found in five collared urns. A bone object from the earlier Bronze Age midden at Jarlshof, Shetland (Hamilton 1956, 15, fig 8:11) also seems to be a toggle and, if so, is the only Scottish example not found in a cinerary urn. Most of the toggles are of unique shapes but the smaller rectangular toggle from Moncreiffe is very similar to the toggle found with a cordoned urn at Balnabraid, Argyll (Ritchie 1967).

Only two previous associations of cordoned urns with bone pins were known; the group from Balneil (Curle 1916), which included a crutch-headed pin, and the simple bone pin found with an urn and a bronze blade in pit 26 at Kirkburn, Dumfriesshire (Cormack 1963, 127). Bone pins with perforated heads are

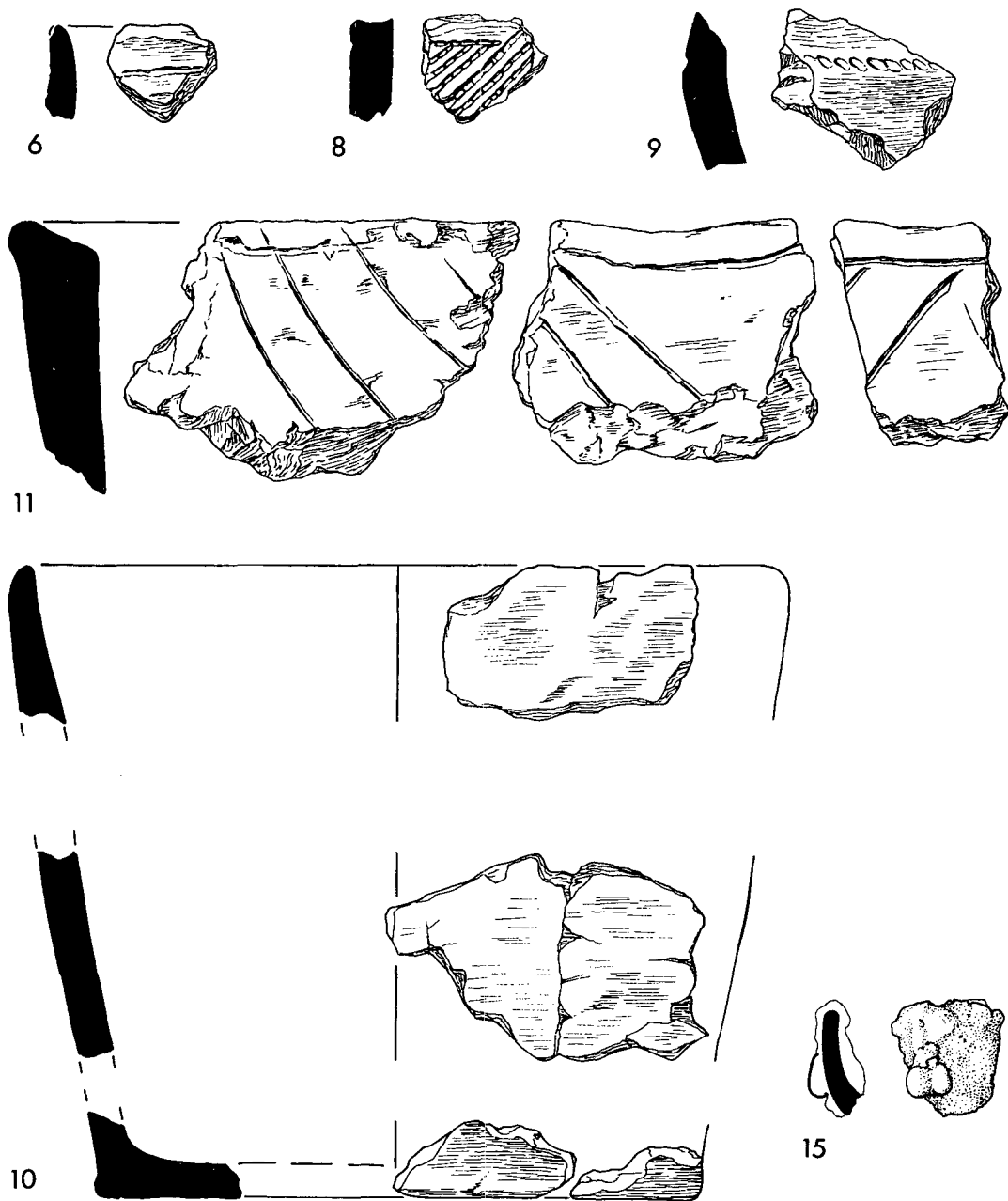


ILLUS 14 Cordoned urn and associated objects (scales: urn 1:3, objects 2:3)

paralleled only by two finds, one with a simple cremation in a pit, again at Kirkburn (*ibid*, 126-7) and another at Cairnpapple Hill, West Lothian (Piggott 1948, 110) found in urn 2, which may be classified as a collared urn, but which is quite similar to the Moncreiffe cordoned urn. There is no previous record of a toggle and pin found together with an urn in Scotland.

The recent publication of a corpus of cordoned urns from Ireland permits ready comparison with associations there. Eighteen out of 66 cordoned urns had associated material, and small bronze blades were again most numerous. Bone toggles are not known but five bone pins have been found with cordoned urns, including two perforated and one ring-headed example (Kavanagh 1976, 326).

Cordoned urns in Scotland have been discussed by Longworth (1963, 129-31) and by A S Henshall (*in* Marriott 1968, 95). The latter's comments on the Wessex Culture associations of cordoned urns as evidenced by a battle-axe and a crutch-headed pin are echoed by Kavanagh (1976) who draws attention to two Irish associations with battle-axes and to other finds of whetstones. These sparse indications suggest a context for cordoned urns in the 17th, 16th or 15th centuries bc (in uncorrected C14 terms), the latter part of the early Bronze Age.



ILLUS 15 Pottery (scale 2:3)

POTTERY AND FIRED CLAY (illus 15)

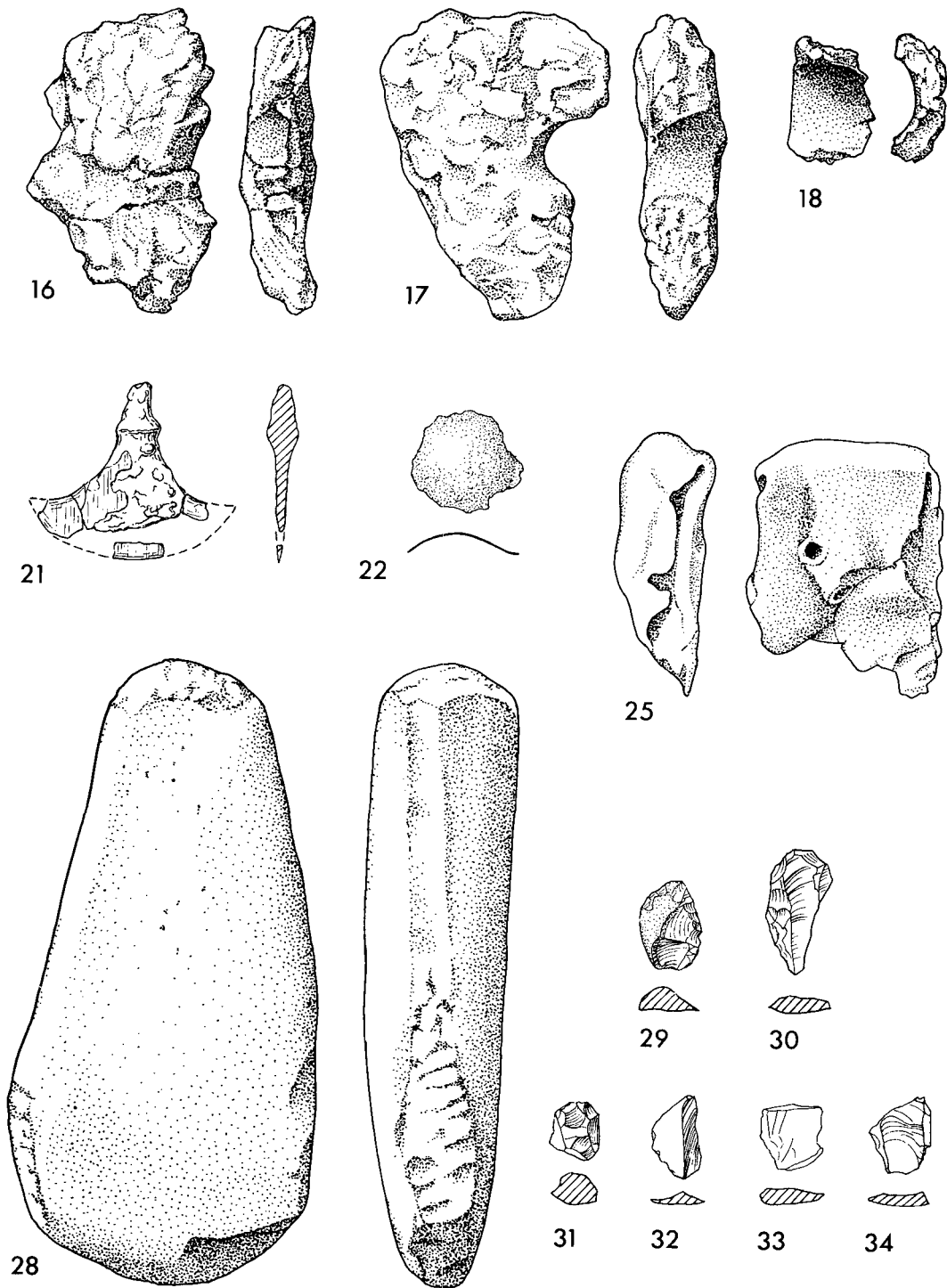
- 6 Rimsherd of beaker, dark chestnut brown, decorated with very brown horizontal lines, possibly cord-impressions. Six pottery sherds 0.20 m below recumbent stone between Stones 3 and 4.
- 7 Tiny wall sherd of beaker of similar fabric to 6. Same location. Not illustrated.

- 8 Body sherd of beaker, red brown outer surface, dark core, decorated with comb impressions. *From fill of north-west segment of henge ditch.*
- 9 Sherd of flaky ware with medium stone grits, brown outer surface, dark inner surface, decorated with a single line of twisted cord impressions on the carination. No parallel has been found for this sherd, but it seems most likely to be prehistoric, perhaps Bronze Age. The fabric is somewhat similar to no 11. *Pit 3, 41 G.*
- 10 Base, rim- and wall sherds from a bucket-shaped pot. Flaky ware, medium stone grits, buff outer surface, grey core, sooted over interior and on outside at rim; about 8 mm thick. An attempt has been made to draw a reconstructed pot from the sherds, but owing to their uneven curvature the exact profile and dimensions are uncertain. It is possible that the walls were not as straight as shown. In fabric and possibly in shape this pot resembles undecorated Grooved ware vessels, (eg Clarke 1976, 20, fig 7). However the bucket shape and pointed rim also occur in later contexts, generally impossible to date precisely, as at Dalnaglar, Perthshire (Coles 1962, fig 10, upper left; Coles & Taylor 1970, 97) and at Traprain Law, East Lothian (Hogg 1951, fig 56:17). The status of the present example is uncertain. *North-east quadrant, depth 0.80m.*
- 11 Three sherds and four fragments from the rim of an urn, probably a cordoned urn, in buff-coloured ware, darkened internally and heavily stone gritted; 12 mm thick. The rim is internally bevelled, and decorated on the outside with incised oblique lines and a single horizontal line. *North-east quadrant, 0.76 m.* (Further fragments from the rim of the same pot were found in the same quadrant, at 0.80 m (Phase 3)).
- 12 Wall sherds very similar to 11 above, and either from the same urn or from a pot of similar ware and thickness, were found as follows: (Ref 37) two wall sherds, south-west quadrant, 0.75m, numerous tiny fragments; (Ref 30) sherd and fragment; (south-east quadrant, 0.75m), two sherds and three fragments. None illustrated.
- 13 Sherd of hard yellow ware, 14 mm thick, heavily stone-gritted, probably another sherd of urn, but accidentally burnt. *Outer rim of ditch.* Not illustrated.
- 14 Small wall sherd, buff ware, darker core, stone grits, 9 mm thick (Day book 8.10). Not illustrated.
- 15 Fragment apparently from a small whitish clay crucible of about 30 mm diameter, with a slaggy deposit inside and of vitrified outer surface. There is a droplet of bronze on the outside, identified as a leaded bronze with significant traces of silver and antimony (33).
- 16–18 Three pieces of red baked clay, all vitrified on one side, 17 and 18 with traces of regularly shaped circular perforations. These seem to be parts of simple tuyères, rough lumps of clay that protect the nozzles of bellows at a furnace (50b).
- Such a simple device probably has a wide chronological range. An example associated with ironworking is known from the Roman fort at Carpow (Coutts 1971, 83, no 187 n (i)), while Dark-Age examples have been reported from the Mote of Mark (Swindells & Laing 1977, 123) and from iron-smelting furnaces at Garryduff, Co Cork (O'Kelly 1964, 101–2).
- 19 Large formless lumps of hard fired clay, 120mm × 110 mm×50 mm; and a smaller piece, 60 mm×50 mm, vitrified one side (Day book 8.10 and 9.10). Not illustrated.
- 20 Fragment of clay burnt bright red, 48 mm×45 mm×20 mm, vitrified to a glossy substance on one side. *From shallow pit in L.* Two small pieces of clay burnt red and vitrified one side came from area L. Not illustrated.

#### METAL (illus 16)

21. Bronze tanged chisel with collar-stop and concave-sided, expanded blade; much decayed, part of tang and blade missing. Surviving length 35mm, estimated width of blade c 50mm. X-ray fluorescence analysis showed the metal is a leaded bronze, but it is too corroded for precise analysis.

Small tanged chisels with stops are in Britain a characteristic feature of late Bronze Age hoards, and have also been found on settlement sites where they may date to the seventh or sixth centuries bc. They have been listed most recently by Roth (1974) and discussed by Burgess *et al* (1972, 217–18). The Scottish examples from known sites are from the Adabrock hoard, Lewis (Coles 1960, 127, p1 V, 2), Traprain Law, East Lothian (Burley 1956, 146, nos 11 and 12), Glenluce Sands, Wigtownshire (in NMAS, Cat No 1931. 647 and Cullykhan, Banffshire (Greig 1972, 231). Wilson (1863, 381, fig 54) illustrates an object from Strachur, Argyll, now lost, which may have been another such chisel. The widely expanded blade of the Moncreiffe example is best paralleled in Ireland (Burgess *et al* 1972, 217).



ILLUS 16 Other small finds (scale 2:3)

- 22 Shallow bronze boss, no original edges preserved, surviving width 25 mm. The metal is a lead bronze with significant traces of silver and antimony, and the object could be of any date from the late Bronze Age onwards. *From reddish gravelly loam under the modern ploughsoil.*
- 23 Minute corroded fragment of tin bronze. *D Pit II.*
- 24 Minute corroded fragment of tin bronze (33).
- 25 Folded piece of sheet lead, 58 mm×42 mm×16 mm, with two apparent rivet holes, one each side. Perhaps modern (23).
- 26 Piece of curved sheet iron, 45 mm×40 mm, with one original edge, and three fragments. Not illustrated (9).
- 27 Pieces of iron slag were recovered as follows (none illustrated):
- One large piece of low density cinder, 150 mm×140 mm×100 m. *11 – area of the central feature.*
  - Rounded furnace bottom, high density, 100 mm×90 mm×25 mm. *13 – area K.*
  - One piece, high density, possibly part of a furnace bottom, 80 mm×50 mm×25 mm. *15 c – from shallow pit in L.*
  - Small glossy piece, high density, 40 mm×20 mm×14 mm.
  - Part of a furnace bottom, high density, with rounded edges and one convex side 66 mm×56 mm×23 mm; fragment 58 mm×40 mm×22 mm and seven smaller fragments (9).
  - Part of a furnace bottom, high density, 70 mm×45 mm×35 mm, and eight small fragments. *12 – SE part of central area, S of centre baulk.*

Dr McKerrell comments on the slag: No traces of copper were noted so the slag is likely to be associated with iron-working. The presence of small pieces of fayalite-like slag, indicates definite iron-smelting.

#### STONE (illus 16)

- 28 Hammerstone made on a natural pebble. Abraded at both ends and also up the sides at the broad end; 137 mm×70 mm×31 mm.
- 29 Small stout leaf-shaped flake of yellow flint with some cortex left, 20 mm long, carefully retouched all along one edge on the dorsal face (6).
- 30 Flake of dark grey flint, 28 mm long, one edge accidentally broken, the other utilized for some purpose that produced a heavily battered edge. *28 – from fill of NW segment of henge ditch.*
- 31 Tiny nodule of pale yellow flint, apparently a core; 12 mm across. (4).
- 32–34 Three struck flakes of flint, yellow, white and pink, 16–18 mm long (4).

## APPENDIX 2: MEDIEVAL POTTERY FROM MONCREIFFE

### L M Thoms

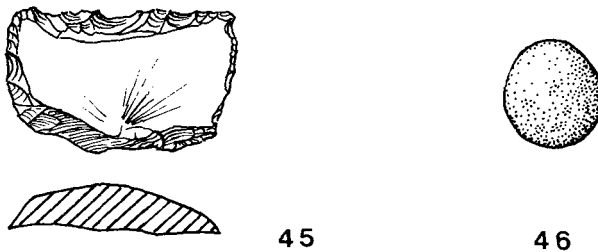
In all, 19 sherds were examined. The sherds are mostly very small and some are badly abraded. Ten sherds are in East Coast, white, gritty fabric, five are in a smoother, softer fabric and may be from the local Perth area, and two sherds are possibly imports from Scarborough. With the exception of two sherds which are most likely post-medieval in date all the material can be generally dated to the 13th or 14th centuries.

- 35 Small fragment of everted cooking-pot rim in white, hard, gritty fabric. Two small unglazed body sherds, similar.
- 36 Part of a strap handle in hard, gritty fabric (from narrow trench). Three glazed body sherds from jugs in similar fabric.
- 37 One base sherd from a jug, possibly, in hard, gritty fabric. Evidence of finger pinching on basal angle (from narrow trench).
- 38 One tiny rimsherd, unglazed, in gritty fabric.
- 39 Fragment of a strap handle in red, gritty fabric, Upper surface shows traces of green glaze.
- 40 Fragment of a small rod handle in hard, gritty fabric. Green glaze spots on upper surface.
- 41 Part of a ribbed, rod handle in soft, sandy, orange fabric. Slight traces of green glaze on the badly worn surface. Small body sherd similar.
- 42 Two small unglazed body sherds, smooth fabric.
- 43 Fragment of a ribbed, rod handle in hard, smooth fabric except where covered with a thick, lustrous, green glaze. Small body sherd similar. Both possibly imports from Scarborough.

- 44 Part of a strap handle, and a small body sherd, in hard, very smooth fabric. Both sherds have thick dark green/brown glaze. Post-medieval in date.

APPENDIX 3: MISCELLANEOUS FINDS (illus 17)

- 45 Rectangular grey gun-flint, retouched all round edges 30 mm long (4).  
 46 Small clay ball, irregular, approx 14 mm diameter. Dr David Caldwell suggests it may be a clay pellet for a cross-bow or a pellet-bow. Such balls are first recorded in Scotland in the second half of the 15th century and remained popular until the 19th century (15 – marbles).  
 47 Round lead shot, 17 mm diameter, possibly a musket ball (33). Not illustrated.



ILLUS 17 Small finds (scale 1:1)

APPENDIX 4: ANALYSIS OF METAL

H McKerrell

- 1 Bronze boss. This is a leaded bronze with significant traces of silver and antimony. Unlikely to be early or middle Bronze Age – anytime from late Bronze onward would be feasible.  
 2–3 Corroded fragments. Tin bronze. No impurities. Any period.  
 4 Corroded fragment. Leaded bronze. Significant traces of silver and antimony. Comments as per (1) would apply.

Two types of metal are present. The leaded bronzes are very similar and the two tin bronzes equally so. If the contexts would fit into the metal types they might be of differing periods – otherwise all probably late Bronze Age or later.

- 5 Various items of slag/cinder etc. No traces of copper thus likely to be only associated with iron working. The presence of (small) pieces of fayalite-like slag indicates definite iron smelting. Pieces of bone within some of the slag is reminiscent of other Scottish sites and seem to have been a fluxing additive.

A reasonable one-period conclusion which would fit all the metallurgic evidence would be for small scale Iron Age/Roman iron smelting and bronze casting (not smelting).

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