

# Machrie Moor, Arran: recent excavations at two stone circles

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*including specialist reports on:*

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Bone point

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Charcoal

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Geology and soil

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Residues on pottery & ardmark fills

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Chipped stone assemblage

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## ABSTRACT

*The HBM-sponsored excavations at stone circles I and II on Machrie Moor, Arran, revealed previous use of the land on which they were situated, with features dating back to the earlier Neolithic. The exact positions occupied by both stone circles were found to have been preceded by timber monuments, comprising several elements in the case of circle I. Evidence for fenced land divisions and ard ploughing between the timber and stone phases was also recovered. Both stone circles contained a single inserted cremation deposit. Stone circle I had been dug into in 1861 by James Bryce but circle II was previously untouched, having been almost totally buried in peat. The ceramic assemblage, although not extensive, produced examples of pottery traditions spanning over a millennium.*

## CONTENTS

Introduction . . . . .	53
Geology and Soil . . . . .	53
Historical Background . . . . .	53
Previous Excavations . . . . .	55
Introduction to the Phases . . . . .	56
Phase 1: Earliest features . . . . .	57
Grimston/Lyles Hill series pottery . . . . .	58

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Phase 2: Timber monuments	60
Site 1	60
Central setting	61
Main ring	62
Outer ring	63
Small sub-circular setting	63
Various pits and postholes	64
Large posthole	64
Site 11	64
Grooved Ware	65
Phase 3: Stakelines and ardmarks	67
Impressed wares	71
Beaker pottery	72
Phase 4: Stone circles	72
Circle 1	72
Circle 11	73
Phase 5: Inserted burials and other features	76
Site 1	76
Bone point	78
Urn	79
Site 11	79
Phase 6: Later events pre-peat	80
Phase 7: Later events post-peat	81
Phase 1: Discussion	83
Pottery	83
Phase 2: Discussion	85
Pottery	85
Phase 3: Discussion	86
Pottery	87
Phase 4: Discussion	87
Phase 5: Discussion	88
Bone point	88
Urn	89
General discussion	91
Chipped stone assemblage	91
Residues on pottery	91
Conclusions	91
Acknowledgements	92
References	92

## INTRODUCTION

Machrie Moor lies on the west side of the Isle of Arran at the end of the String Road which runs west from Brodick separating the mountainous north from the more lowland plateau-like south. The moor is notable for the number and variety of upstanding monuments preserved there, apparently representative of most aspects of life in prehistoric times. Sites interpreted as funerary, ritual and domestic are all present in the form of chambered tombs, stone circles and hut circles. Of the six known stone circles occupying an area less than 400 m by 150 m close to the abandoned Moss Farm buildings, two, numbered Site 1 (NR 9120 3239) and Site 11 (NR 9121 3241), the furthest east from Moss Farm, are discussed here (illus 1).

## GEOLOGY AND SOIL

The moor, which comprises an undulating, roughly triangular, area, is bounded by the Machrie Water to the north, the Shiskine Glen to the east and effectively the Blackwaterfoot/Machrie road to the west. An arc of much higher ground around it to the north and east creates a bowl effect. Machrie Moor is underlain by Permian sandstone which has a covering of consolidated glacial till with undulations in the till surface filled with sand. The till which underlies the site appears to be derived mainly from the local sandstones and varies considerably in composition, especially texture. This has led to variability in the soils developed in it.

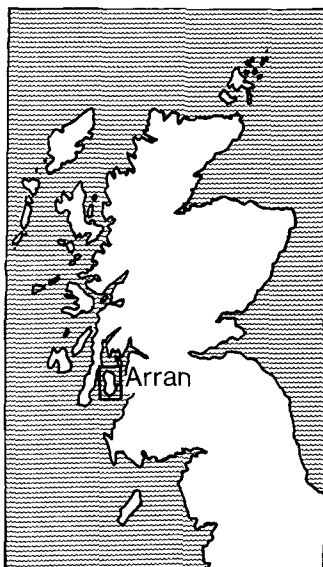
Parts of the moor have peat growth in basins over 3 m in depth but the area occupied by Sites 1 and 11 has a covering of blanket peat up to 0.7 m deep. At the east edge of the trench by circle 11 the peat changes from blanket to basin, the difference being that iron pan is present beneath the blanket peat impeding drainage but is absent from below the basin peat.

The modern soil is a peaty podzol with very poor drainage above a thin iron pan and free drainage below. Above the iron pan are the remains of the upper parts of the pre-peat soil mixed with the roots of peat plants and other organic matter. Immediately over the pan is a mat of roots and fine particles washed down from higher up the profile. The podzolization process has served to obscure the archaeological stratigraphy in two ways. Above the pan, root preservation and chemical reduction have darkened the soil and weakened colour contrasts while below the pan the red/brown colours of sesquioxide deposition have similarly reduced contrast. In addition, the iron pan itself was found to completely envelop some features, follow the cuts of others and occasionally to pass within features in a manner totally unrelated to their stratigraphy.

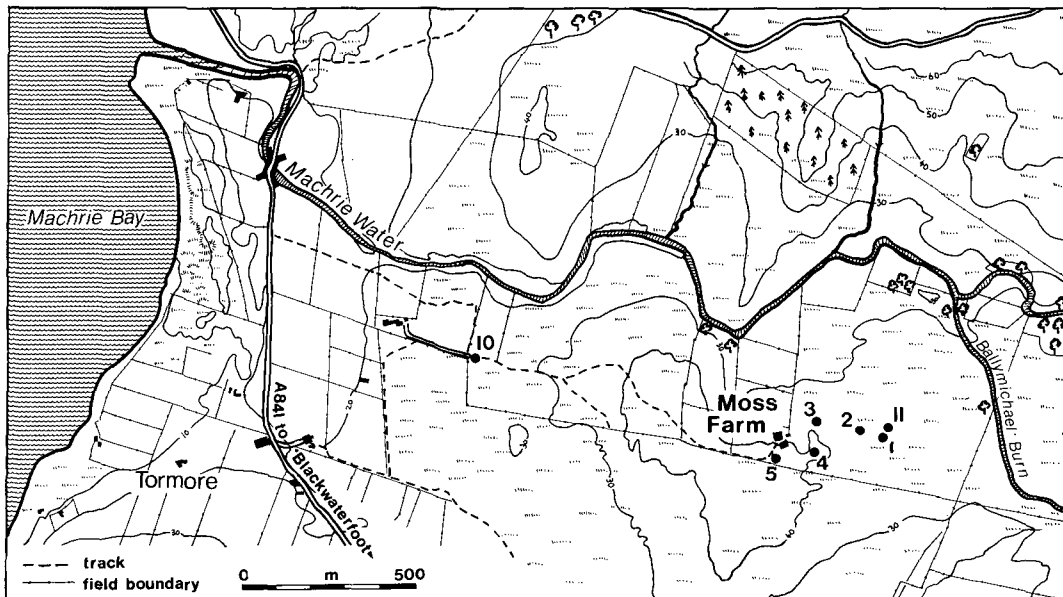
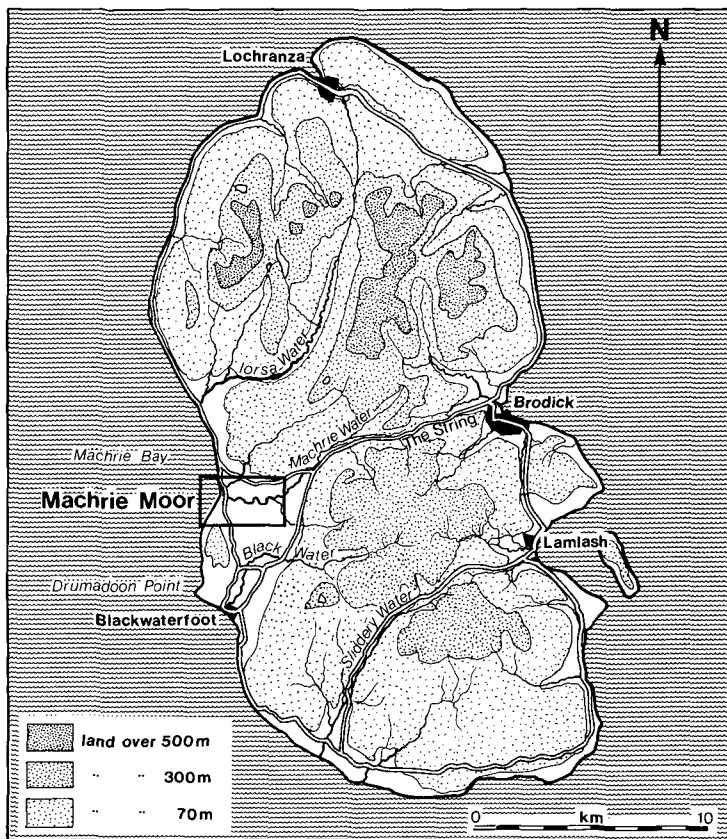
## HISTORICAL BACKGROUND

Five of the six stone circles by Moss Farm have been known for many years and were described by James Skene in 1832. His descriptions of these and other 'Druidical Monuments' on the moor were accompanied by a plan of their relative positions in addition to more detailed sketches of the group as a whole and of individual monuments (National Monuments Record SAS 464).

John MacArthur related the legends associated with the Machrie sites and described the five stone circles together with three other monuments in the vicinity which he believed were also stone circles. He provided sketches of two of the sites but no plan (1861, 40, 50–1). Rather more detailed descriptions of the five circles and five other monuments on the moor were published along with a plan by James Bryce following a survey he made of these and other



**Machrie Moor  
Stone Circles**



ILLUS 1 Location plan

Arran monuments in the summer of 1860 (1862, 502–4 and pl 17). Previous descriptions of some of the circles exist. The Revd J Headrick, for example, writing on various aspects of Arran in 1807, gives a clear account of the two circles with tall sandstone slabs, Bryce's nos 2 & 3 (1807, 154–5), and a painting by W A Nesfield depicting the best-preserved circle with tall slabs was first exhibited in 1828. MacArthur and Bryce, however, were the first to list all five circles together with measurements of their diameters. The measurements given by the two men did not agree, and although Bryce was consistently more accurate, even some of his figures have been revised by more recent surveys. Elements of their descriptions have been found to be inaccurate by subsequent writers such as Roy, McGrail and Carmichael (1963, 59).

The sixth circle of the group was recorded by the surveyors of the Ordnance Survey map (1st edn) of the area as 'a small circle composed of two stones' with a diameter of 19 ft (ONB 1864, no 2, 38). The site was then apparently disregarded for many years until Roy *et al* during their survey work on other circles in the group relocated it. This information was relayed to Dr Euan MacKie who published the site in his archaeological guide to Scotland as a circle completely buried under peat which had been located by probing (1975, 126–7).

An Ordnance Survey visit in 1977 refers to the stone circle not being visible but draws attention to four small stones embedded in the peat in the vicinity of the map reference given by the original OS surveyors. The largest stone was said to be 0.8 m high and the smallest 0.2 m high but their archaeological significance was stated not to be obvious. The final proof of the existence of this stone circle came when the site was stripped of peat during Dr Aubrey Burl's investigations in 1978.

## PREVIOUS EXCAVATIONS

Having attracted antiquarian interest, all five of the obvious stone circles by Moss Farm underwent excavation in the mid-19th century.

Circle 5, the double ring of granite boulders, was stripped of its peat and vegetation cover by MacArthur in 1858 exposing boulders and other large stones which he claims to have removed to a depth of 3–4 ft (c 1 m) without arriving at the original soil surface (1861, 51–2). In 1861 Bryce, noting that the interior of this circle had probably been previously disturbed, removed a complete floor comprising mainly small stones less than a foot in depth beneath a thin covering of turf. Directly beneath the stone surface he located two flat slabs on edge like the side walls of a cist but no end or cover slabs were located and the site produced no finds (1862, 509). A recent publication describes this feature within the rings as a cist (Stevenson 1985, 139) but there is no evidence that it ever was. From the amount of stone described, this site would seem to have been a cairn with boulder kerbs so it may have more in common with the Moss Farm Road encircled cairn, and that at Auchagallon further north (NR 893 346), than with the stone circles on the moor.

Circle 4 comprises four granite boulders and was excavated by Bryce in 1861. At the centre he located a cist with its capstone intact. Within it were found a tripartite Food Vessel, three flints, a bronze pin and bone fragments (1862, 511).

Although only one stone of circle 3 remains standing, the stumps of another five are visible on the ground. Probing during a survey by Roy *et al* suggested that the circle originally comprised nine stones probably all of sandstone (1963, 62–4). Bryce's excavations located a central cist in which were two flints and a pottery vessel which broke up on lifting but which showed signs of having residues adhering to its interior wall. Further south a second cist was located which contained two flints alongside a human skull and bones, the remains of a

crouched inhumation estimated from the surviving teeth to be less than 22 years of age at death (1862, 507–9, 517).

Circle 2, the most widely known of the group owing to its having three large sandstone slabs still standing, has other sandstone fragments around its circuit and also two large pieces of granite. An attempt had been made to convert these granite boulders into millstones but presumably they were abandoned as one has broken in two. The millstones were present when the Revd J Headrick visited the moor and were published by him (1807, 154–5) so their cutting could well date back to 18th-century agricultural improvements. Bryce estimated that this circle may originally have comprised seven or eight stones. His excavations located a central cist containing four flints and a tripartite Food Vessel. A second cist lying to the north of the first was found but proved to be empty (1862, 502, 506–7, 510).

At circle 1 MacArthur (1861, 51) and Bryce (1862, 502) noted only granite boulders but the survey of Roy *et al* recorded the true number of 11 stones: six of granite and five of sandstone (1963, 65). Bryce excavated at the centre of this circle and finding no cist there continued his trench towards the north-east but without success (1862, 511).

Dr Burl's excavations in September both of 1978 and 1979 were intended to determine the level of damage being done to the stones of the circles by grazing cattle and to prove or disprove the existence of the buried circle. The excavations were financed by Historic Buildings & Monuments, Scottish Development Department. Burl continued to use Bryce's numbering system for the sites, so the buried circle became Site 11. This site was stripped of peat and various features were investigated but the bad weather of the 1979 season prevented complete excavation. At Site 1 part of the circle to the north of Bryce's still visible central trench was stripped and features noted but their investigation was curtailed as a result of persistent waterlogging. The sites were covered with polythene and a layer of soil as it was intended to return to complete the excavation of the two sites.

In 1985 HBM allocated further funds for the resumption of the investigations at the two circles. From late April to mid June 1985 the excavations continued under the author's direction with the enlargement of the trench at Site 11 and the expansion of the trench around Site 1 to include all the stones of that circle. The exciting findings during this season warranted further investigation from mid April to early June of 1986 when the two trenches were incorporated into one large excavation area with additional small trenches around its periphery. Excavation was concluded in this year, although bad weather had hampered progress.

It was decided to amalgamate all the information gained from the recent excavations and publish it as a phased history of the sites from the earliest to the latest discernible events. I am very grateful to Dr Burl for giving me access to his site records.

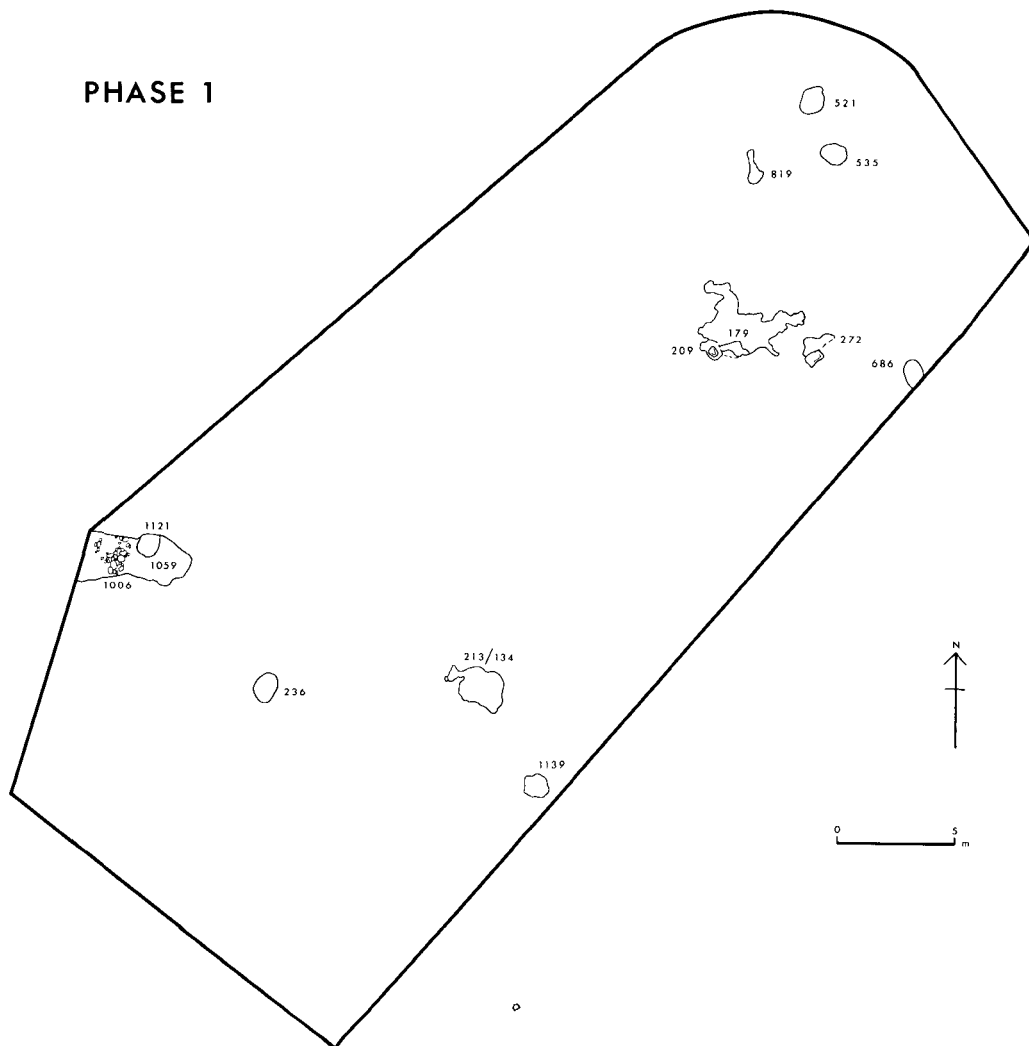
## INTRODUCTION TO THE PHASES

The stone circles were found to occur fairly late in the history of the sites. The phases of use of the sites given here have been based in the main on the stratigraphy recorded for Site 1, as the plethora of features at that site ensured more instances of direct relationships than occurred at Site 11. The same sequence of phases is assumed to apply to Site 11 even though in some cases it could not be proved. In some of the phases the terms Site 1 and Site 11 are used, since distinct groups of features, such as the stone circles, are visible but for other phases it is more appropriate to refer to the large 48 × 20 m trench encompassing the two sites as a whole and not assign features specifically to either site. The specialist contributions have been inserted where appropriate throughout the text.

### PHASE 1: EARLIEST FEATURES (illus 2)

The earliest features comprised mainly the remnants of pits truncated by later activity on the site but one early feature (F 1059), a substantial gully towards the south-west end of the trench at the west side, had been capped with stone and escaped much of the later damage.

Towards the north-east end of the trench a pit 1.2 m in diameter by 400 mm deep (F 521) produced a large amount of Grimston/Lyles Hill-type pottery representing six different vessels – 1, 2, 3, 4a, 5a, and 9 – four aphyric pitchstone flakes, one of which was serrated, a flake of flint, one of porphyritic pitchstone and some hazelnut shells. Charcoal collected from this feature – a mixture of alder, birch, hazel, oak and poplar – produced a date of 2870±50 bc (GU-2321). Close by was another large pit (F 535) 1.15 m × 950 mm × 400 mm deep which contained sherds including a rim from vessel 6, a core rejuvenation flake, a chip and a waste



ILLUS 2 The earliest features

flake in aphyric pitchstone, a finely retouched knife in flint and hazelnut shells. Charcoal from alder, birch, oak, blackthorn and Pomoideae (hawthorn, pear or apple) produced the early date of  $3550 \pm 70$  bc (GU-2320). A few of the sherds from this feature may be from vessel 3 which also appears in F 521 so the two features may be more contemporaneous than the dates obtained indicate. A further early pit (F 179) had been so disturbed by roots that its original dimensions could not be assessed. Its various fills contained a total of 44 pieces of flint and pitchstone including a class A2 core and an unfinished triangular arrowhead in porphyritic pitchstone, a core rejuvenation flake and a side and end scraper in aphyric pitchstone and an end scraper and a roughout bifacial tool in flint. Hazel and oak charcoal was also recovered. One of the fills of the pit (F 193) produced a rim sherd of Grimston/Lyles Hill-type pottery as did the fill (F 209) of the stonehole for stone 9 of circle 11 which cut into the pit. The two rim sherds are considered to be from vessel 1, the greater part of which was contained in pit (F 521). An early pit (F 272) was also cut by the stonehole for stone 8 of circle 11 and its original size masked. Grimston/Lyles Hill-type sherds of vessel 10 (not illustrated) from the pit were disturbed by the later feature along with five pieces of pitchstone, two chips, two serrated flakes and a denticulated flake.

A large oval shallow feature (F 686) by the east side of the trench produced two chips, a waste flake and a serrated flake all in aphyric pitchstone in addition to three sherds of Grimston/Lyles Hill-type pottery from two different vessels (4c, not illustrated, and 8 or 9). The only other pottery producing feature at the north-east end of the trench was a shallow gully-like feature (F 819), 1.45 m long  $\times$  0.3 m wide  $\times$  0.15 m deep which contained a wall sherd from vessel 4b but no other finds. Similar gullies were noted throughout the trench and also in a small sondage 11B opened east of the main trench. These gullies generally had fairly irregular sides and bottoms but they tended to be quite broad and not easily dismissed as caused by potential root or animal damage.

Towards the south-east of the trench (F 213/134) was a sizeable pit with a central area containing several large stones possibly representing the packing of an inserted posthole. The feature produced quite a large proportion of pottery vessel 14, attributed to Grimston/Lyles Hill ware, and a single piece of oak charcoal. Close by a large shallow pit (F 1139), 1 m in diameter  $\times$  just 0.1 m deep, contained sherds from the Grimston/Lyles Hill-type vessels 12a & b and 13, in addition to hazelnut shells and oak and hazel charcoal.

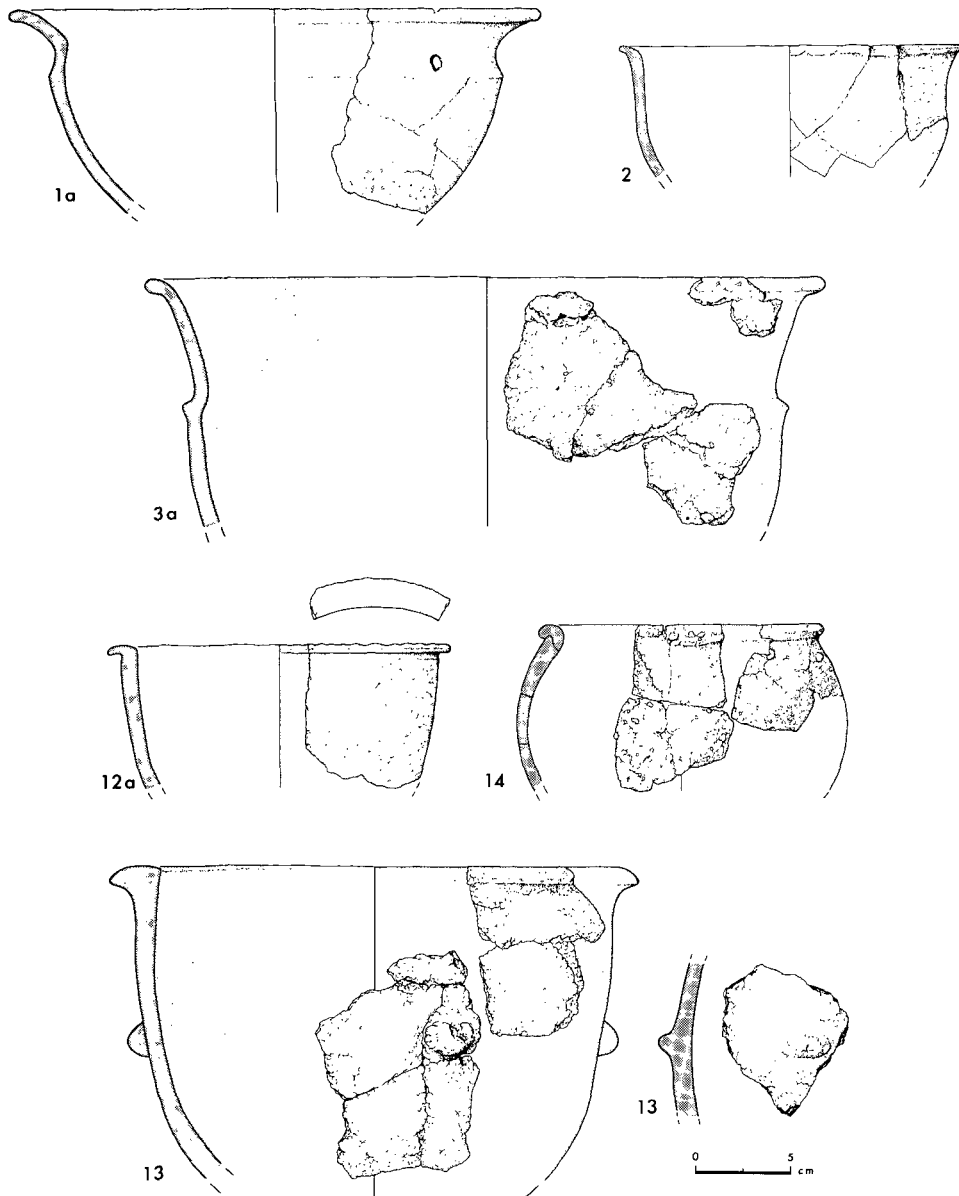
A further shallow pit 0.6 m in diameter  $\times$  0.13 m deep (F 236) had a black loamy fill which contained two sherds of vessel 15b and a flint waste flake in addition to a small quantity of oak charcoal. The gully (F 1059) at the west side of the trench extended into the excavated area rather like a ditch terminal. This feature had its fill cut into by various small pits. One of these (F 1079), which contained sufficient oak charcoal for dating, produced a date of  $2820 \pm 90$  bc (GU-2315) which constitutes a potential *terminus ante quem* for the gully itself. Another feature (F 1121) cut into the gully produced sherds of Grimston/Lyles Hill-type pottery vessel 16a. Some sherds in a very similar fabric occurred amongst the stones (F 1006) clustered on the top of the gully, as did several hazelnut shells.

#### GRIMSTON/LYLES HILL SERIES POTTERY (vessel nos 1–10, 12–16; illus 3 & 4)

The total number of pots in this small assemblage is at least 15 and is unlikely to be more than 20. The sherds from vessels not previously mentioned were retrieved from ploughsoil.

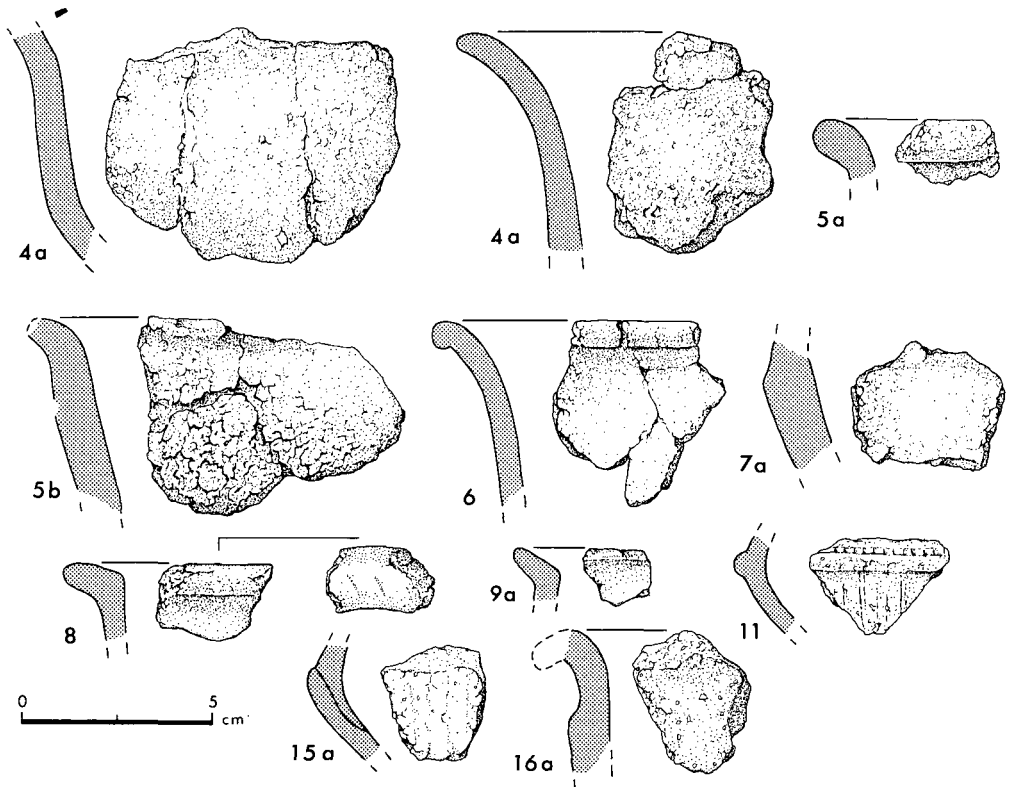
The round-based bowls are of both shouldered and plain forms, the former varying from at least 180mm to 360 mm in rim diameter, and the plain bowls having diameters up to 280 mm.





ILLUS 3 Grimston/Lyles Hill series pottery

The largest pot, 3, is of characteristic carinated form with a slightly everted neck and out-turned rim, and two more carinated pots are indicated by the single sherds 7 and 15. Pots 2 and 4 are of similar form except that the junction of collar and body is a gentle curve rather than a sharp carination. In addition pot 6 was probably carinated. Pot 1 is a shallower bowl with wide everted rim springing from a concave neck and sharply defined shoulder and internal angle; pot 16 may have been similar. Three pots, 12–14, are plain bowls, 12 and 13 with almost vertical sides, 14 of a more globular form. It should be noted that the precise rim angles of 4–9



ILLUS 4 Grimston/Lyles Hill series pottery (except 11 which may be from a Beacharra-type bowl)

and 16 are uncertain. The rims themselves are mainly simple and everted, sometimes rolled or with a modest flange, the exceptions being the wide flange of 1 and the heavy flange of 13.

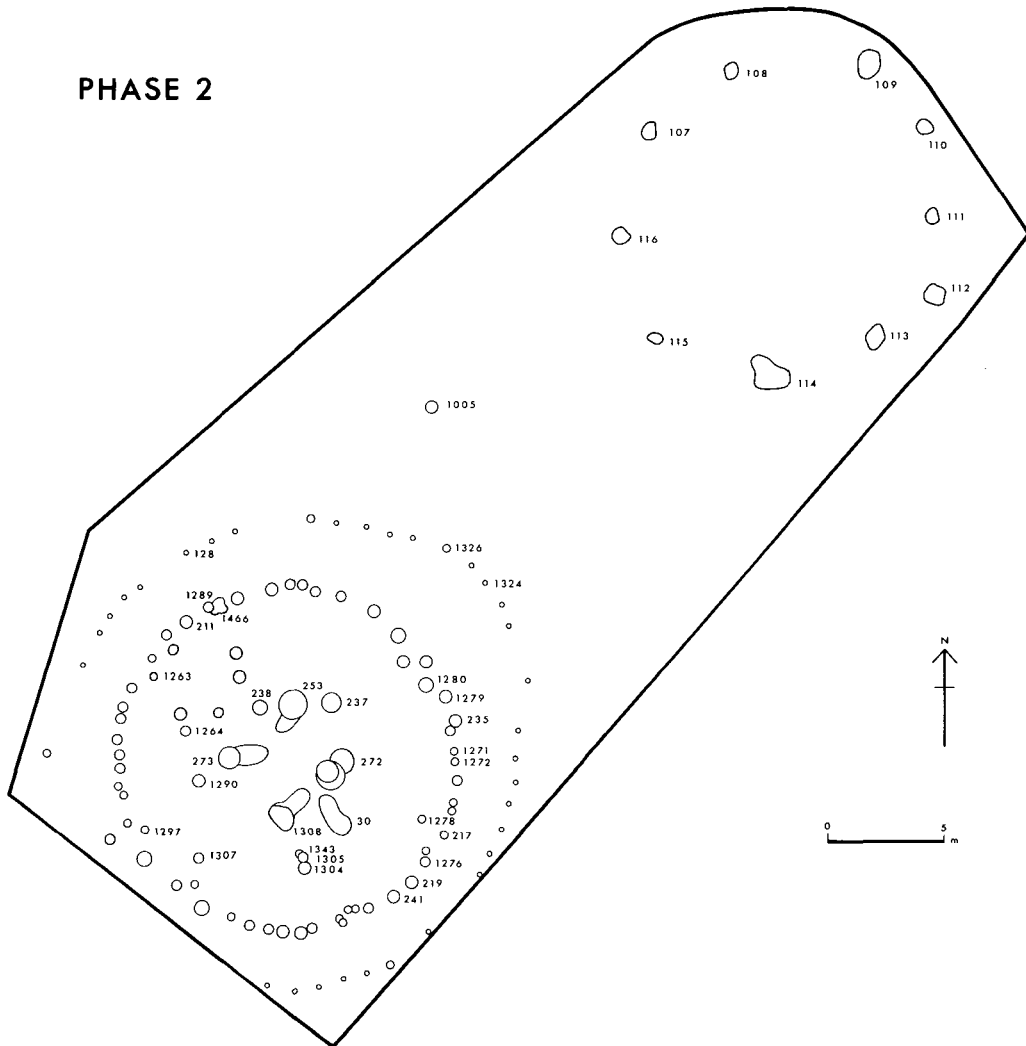
The only decoration consists of faint fluting across the rims of 8 and 12, and on the body of 15 (its upper part not being present). Pot 13 has two lugs surviving but the original number is unknown. On pot 1 there is a perforation through the neck.

The fabric is dark dull brown, hard, often gritty in texture and including pale tempering. Mostly the pots are carefully made with slipped surfaces, occasionally with slight burnishing, though none has the distinctive highly polished black surface found on some Grimston/Lyles Hill pottery. Sometimes the surface has been left rather rough with protruding grits, but this appearance is partly due to damage. There are a few small thin wall sherds of very fine quality. It is quite clear that the pots have been used.

## PHASE 2: TIMBER MONUMENTS (illus 5)

### SITE 1

At Site 1 three distinct timber elements were located: a central setting, a main ring and an outer ring. There was also a possible small sub-circular setting between the central setting and the main ring in addition to various pits and postholes which would seem to have belonged to this phase but which did not fit any regular pattern.



ILLUS 5 Timber monuments

Site 1 is at the south-west end of the trench and Site 11 at the north-east end. At Site 1 the elements of the potential small sub-circular setting have been given a heavier outline.

### Central Setting

The central setting comprised five postholes in a horseshoe-shaped arrangement 5.5 m in maximum length by 3.5 m in maximum width with the open end facing north-west. Three of these features had been disturbed to some extent by Bryce's 1861 excavation trenches.

Untouched by previous excavations, F273 was a circular pit partly outlined by three granite stones lying on its circumference. The fill of the pit proved to comprise many packing stones around the edge leaving a well-defined central post pipe with a relatively stone-free sandy loam fill which included lumps of redeposited boulder clay. At its east side a sloping round-ended ramp had been cut, presumably to facilitate erection of the post in the hole. This ramp had been backfilled with two boulders closest to the posthole and a large amount of

boulder clay over a layer of grey humic mixed soil which may have been buried turf and topsoil. F 273 produced one apyric pitchstone waste flake and two sherds of Grooved Ware from vessel 17b & d.

F 1308 lacked stone in its fill except at the junction of the posthole with its ramp which ran for 1 m in a north-easterly direction. The top of both elements of this feature had been cut by 1861 trenches. F 1308 produced no finds.

F 30 had been the subject of investigation during the 1861 excavation and was considerably overcut but enough of a shelf remained to indicate the original depth of the feature and part of its ramp which ran off to the north-west was untouched. The single find of a porphyritic pitchstone chip derived as it was from 1861 backfill could easily have come from another context.

F 272 was virtually sectioned by one of Bryce's trenches and what would probably have been its ramp had also been dug into. The ramp extended from the posthole towards the south-west but its original dimensions have been obscured. Stones within it concealed a Schweppes egg-shaped glass lemonade bottle discarded by one of Bryce's workforce. The posthole had a large amount of stone packing but the shape of a post pipe was visible.

F 253, like F 273, was undisturbed by previous excavation. It comprised a pit with stone packing with its ramp extending to the south-west. There was a boulder at the edge of the posthole at the beginning of the ramp and the ramp itself was backfilled with boulder clay mixed with topsoil and another boulder at its shallow end. The stone packing in the posthole had slumped into the post pipe leaving it less well defined than that in F 273. The collapse of the stone packing appeared to have resulted in surface black humic soil filling the depression. This black soil (F 239) contained a chert chip and a porphyritic pitchstone waste flake. There were also many fragments of burnt bone, four probably from the shafts of long bones but it proved impossible to be certain whether these were of human or animal origin. The most important finds from this context, however, were two sherds of Grooved Ware apparently from the same vessel as appeared in two postholes of the main ring as well as in F 273.

From the surviving evidence of post pipes it has been estimated that the timbers which once stood in these five postholes may have been approximately 0.5 m in diameter.

The postholes of the central setting produced no datable charcoal, so relative dating has been used to fix their place in the sequence. None of these postholes cut the earlier features from Phase 1 but the fills of F 253 and F 273 were cut by stakeholes of a stakeline belonging to Phase 3.

### Main Ring

The main ring comprised an almost perfect circle of 63 postholes c 14.5 m in diameter. The majority consisted of quite well-spaced single posts but some occurred in closely set pairs and others appeared to have been recut. Taking the recuts into account, there were probably about 53 posts standing at any one time. Several postholes had packing stones *in situ* but the majority had only a soil fill with charcoal flecks. Later activity on the site had tended to truncate these features. These surviving posthole bases varied in diameter from 0.2 m to 0.7 m and in depth from 0.14 m to 0.65 m. Where post pipes were discernible they suggested timbers averaging 0.15 m to 0.2 m in diameter with the largest one probably closer to 0.35 m.

Finds were more abundant within the fills of these features. F 1272 and F 1280 both produced one porphyritic pitchstone waste flake. F 217 produced three finds all in apyric pitchstone, a chip, a waste flake and a core rejuvenation flake reused as an end scraper. F 219

contained a porphyritic pitchstone waste flake and a flint unfinished triangular arrowhead reused as a borer. F 241 produced a flint flake with damage on its right lateral edge. These last four features also contained sherds of Grooved Ware pottery: F 219 and F 241, from the same vessel, 17, as was found in the fills of two postholes of the central setting; F 217 from vessel 21; and F 1280 from vessel 18. Grooved Ware sherds were also retrieved from postholes: F 1276, vessel 22, F 235 and F 1279, vessel 24, in addition to being found in higher levels where they had been translocated by later activity creating the stonehole for stone 1. Posthole F 235 also contained several fragments of burnt but unidentifiable bone, and a potential but apparently unused hammerstone.

Two of the postholes produced sufficient charcoal for radiocarbon dating. F 1271, with a mixture of oak, hazel and alder charcoal, provided a date of  $2520 \pm 50$  bc (GU-2316). A much smaller sample of purely oak charcoal from F 1280 gave a date of  $2030 \pm 180$  bc (GU-2325) in direct association with Grooved Ware. The main ring could also be dated stratigraphically since the positions of postholes F 1276 and F 1297 were overlain by stakeholes belonging to the Phase 3 stakelines and several postholes were sealed below patches of ardmarks also from Phase 3.

### Outer Ring

It seems likely that this ring continued outwith the excavated area, but a large portion of its circuit was recorded. It was roughly concentric with the main ring of postholes but between 2 m and 4 m outside it, slightly elliptical in plan with its axis north-east/south-west, and c 19.5 m in minimum diameter.

The 34 postholes recovered were mainly shallow, the deepest being only 0.26 m, and in some instances surviving only as a circular grey mark. The virtual obliteration of some of these features by later activity on the site may indicate that others could have actually disappeared. In contrast to the main ring, there were no pairs of posts or recuts visible, only single postholes usually spaced approximately 0.8 m to 1.1 m apart and only rarely greater than 1.2 m except where there were obvious gaps. Two retained some packing stones *in situ*. Estimates based on these and the best preserved of the other postholes would seem to indicate that timbers c 0.15 m in diameter stood in these features.

None produced any finds but a small sample of hazel and oak charcoal from F 1326 gave a radiocarbon date of  $2130 \pm 90$ bc (GU-2324). Relative dating also placed this ring within Phase 2 since the position occupied by F 1324 was overlain by a stakehole line from Phase 3 and F 128 had been cut into the uppermost fill of F 1059, the Phase 1 gully.

### Small Sub-Circular Setting

Towards the north-west side of the central setting and almost directly in line with the open end of the horseshoe was a small group of seven shallow postholes which did not extend beyond the main ring. The postholes were in a roughly circular arrangement of c 4 m diameter. The natural boulder clay within the area enclosed appeared to have been deliberately levelled. None of the features contained packing stones but it has been estimated that they could have held posts of c 0.2 m diameter.

Although in a stratigraphically similar position to the other post rings, it is conceivable that this small circle was actually erected earlier than the main ring; however, this conjecture is based on the position of only one of its constituent postholes (F 1466).

Only F 1263 produced a find, a large porphyritic pitchstone waste flake. The fills of all these features contained flecks of charcoal but not in sufficient quantity for dating.

### Various Pits and Postholes

Within the area enclosed by the main ring were located several features which did not fit into any particular arrangement.

The most important of these was F 237, a circular pit of 0.8 m diameter lying to the east of the central setting. Its virtually stone-free fill of black humic soil contained sherds of Grooved Ware from coarse vessel 19 in addition to five chips of porphyritic pitchstone, a flint waste flake and many small fragments of burnt bone. To the west of the central setting was F 1290, a smaller circular feature with a uniform grey fill which produced no finds. F 238, a large pit which cut F 236 of Phase 1, produced fragments of birch charcoal, burnt bone, an edge-damaged flake in aphyric pitchstone and a serrated flint flake.

The other features appeared as single postholes, eg F 1307 and F 1278, which were placed too far from the circuit of the main ring to seem part of it. F 1264 was just off the circumference of the small sub-circular setting and may have been related to it in some way. F 1343 and F 1304 were single postholes which were both cut by a third posthole F 1305 placed between them. None of these features produced any finds.

### Large Posthole

Between Site 1 and Site 11 there was a large posthole (F 1005) which may also belong to Phase 2. It consisted of a shaft 0.3 m in diameter  $\times$  0.81 m in depth with a few packing stones around the top. The post which stood in this hole would probably have been c 0.25 m in diameter.

### SITE 11

At Site 11 there were ten postholes (F 107–F 116). The spacings measured centre to centre between these features were by no means consistent, with the least gap between F 112 and F 113 at 3.15 m and the greatest between F 108 and F 109 at 6 m. The other measurements lay between 3.3 m and 5 m.

The diameters across the circle also varied considerably, with the shortest between F 108 and F 113 at 12.9 m and the longest between F 110 and F 115 at 14.7 m. The figure which resulted from the positions of the postholes was by no stretch of the imagination circular, with the east side appearing to have been quite angular.

The majority of the postholes were approximately 0.7 m in diameter  $\times$  0.45 m in depth but variations occurred up to 1 m in diameter and from 0.35 m to 0.52 m in depth. The largest of these features (F 114) had been badly disturbed by animal or root activity, therefore its ultimate size was not a true reflection of the original.

F 107, F 109 and F 115 each produced up to three finds of flint and pitchstone chips and flakes while F 114 contained a total of 14 finds including a porphyritic pitchstone core rejuvenation flake and five serrated flakes: three in pitchstone and two in flint; none aid the dating of the features and those in F 114 could have been introduced through later soil movement.

Only F 115 seemed to have packing stones within its fill. F 110 and F 113 may have utilised stones which protruded from the natural boulder clay sides of the postholes and F 108 had a few sizeable stones around its top edge.

The traces of post pipes had been preserved in some cases by later soil processes. Based on these it is estimated that timbers of c 0.3 m diameter stood in these postholes. None of

these postholes cut earlier features and although charcoal was retrieved from five of their fills there was insufficient for identification or dating. The placing of this circle in the site phased sequence relies therefore on the stratification and dates from Site 1.

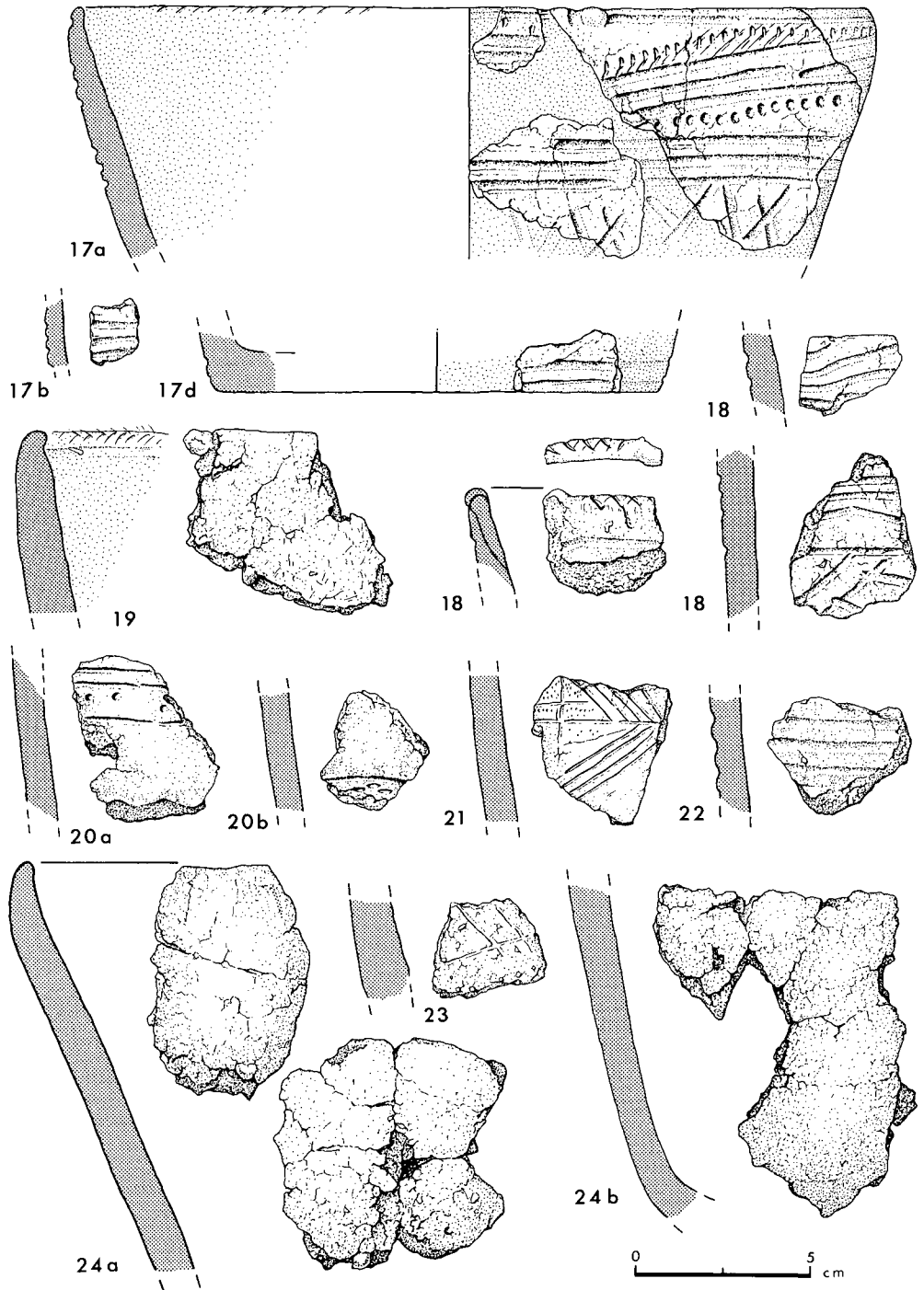
#### GROOVED WARE POTTERY (vessel nos 17–24; illus 6)

This group of sherds is associated with the Site 1 timber circles, coming from postholes of the main circle and central setting and from soil disturbed by the construction of the stone circle, with the exception of sherd 23 from F 10 which was a later field clearance cairn incorporating earlier material. Sherds of pot 17 came from two adjacent postholes of the south-east side and sherds probably from the same vessel came from two centre postholes. Sherds of 21 and 22 were separately in two other postholes on the south-east side. Sherds of 24 were in two adjacent postholes on the north-east side and with 20 in the overlying disturbed soil, and sherds 18 were in another adjacent posthole. Sherds 19 were in a central pit. It seems clear that these sherds represent a closed group of seven or eight pots, or just possibly as many as a dozen.

The pots have the usual straight walls of Grooved Ware, and 17 and 24 (which alone allow an accurate estimate of the rim angle) are rather open. The rim diameter of 24 was 180 mm, and of 17 and 18 was about 230 mm, and 19 was considerably larger. The base of 24 was roughly 100 mm in diameter, and that represented by sherd 17d was about 130 mm. The rims are thinned and slightly inturned except that of 18 which is rounded. Pot 19 is notable for the thickening of the walls from a normal 9 mm at the rim to an extraordinary 20 mm, and a base over 40 mm thick. The base angle of 24 is rounded, but the fragment of 19 is less so.

The fabric is mainly mid brown, shading to black on 17 and 20. It is heavily gritted, often with very large rock fragments, and except where worn is covered with a thick smooth slip. The sherds vary from very hard 21 to hard 17 to brittle 19. Some have broken along building rings, on 18 very cleanly.

The decoration of 17, 18, 20 and 22 is by grooved lines, on 17 and 20 combined with impressions. Enough survives of 17 to show an upper zone of triple lines almost certainly forming triangles, edged above by a line just under the rim and edged below by triple lines, with a lower zone of lattice. The line under the rim is interrupted by two small knobs which barely rise above the rim edge. The slanting grooves and lower horizontal grooves have occasional deliberate interruptions. The slanting grooves are elaborated by a fringe of slanting incisions and impressions of differing shapes. On the inner edge of the rim is a row of slanting nicks. Sherd 17d, probably from the same pot, has horizontal lines just above the base and a vestige of slanting line above. The small sherds of 18 are too small to elucidate the design which involved horizontal and slanting lines, sometimes in groups, and almost certainly in zones; immediately below the rim are faint and possibly unintentional impressions. On the rim edge is a double row of slanting nicks and remains of a knob. Sherds 20 retain horizontal lines with slanting or angled lines indicating use of the triangle (or lozenge) motif, combined with small round or elongated impressions. Sherd 22 has four more or less horizontal wide grooves, part of a very bold decoration. The wall sherd 21 bears part of a complex design carried out with fine deeply incised lines and pin-pricks. The multiple lines almost certainly formed diamonds which were subdivided, with some of the spaces infilled with dots. Pots 19 and 24 are undecorated outside, but inside the rim of 19 a double row of fine slanting incisions is emphasised by a rough groove below.



ILLUS 6 Grooved Ware pottery

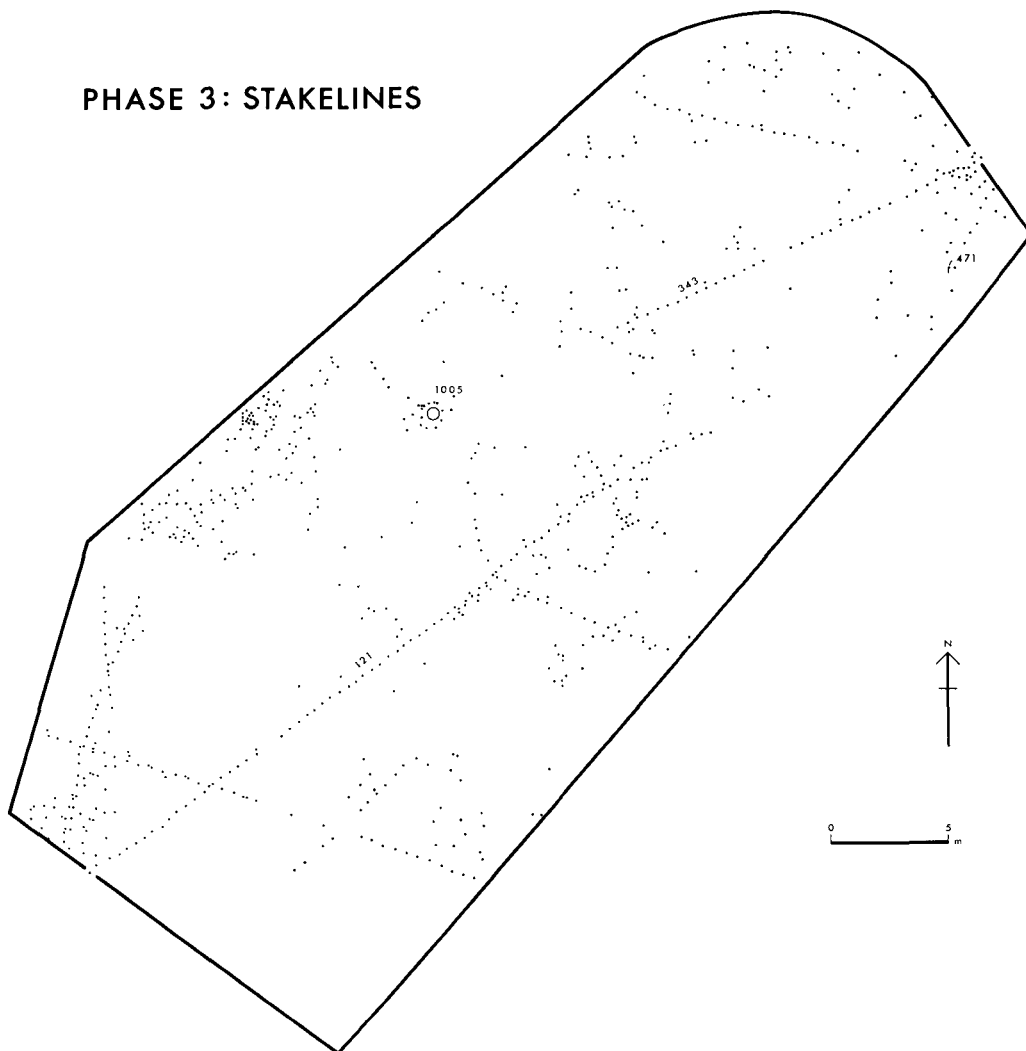


### PHASE 3: STAKELINES & ARDMARKS (illus 7 & 8)

The features dating to Phases 1 and 2 had all been affected to some extent by the activity in Phase 3 when the area had been subjected to extensive ard ploughing. The ploughsoil created contained large quantities of artefacts many probably ploughed out of the tops of existing features. The majority of flint and pitchstone finds from the excavation came from this context (illus 9 & 10) as did several pot sherds.

Based on the evidence of surviving ardmarks, ploughing had taken place in four main directions. The most commonly noted ran SW/NE but others ran NW/SE, E/W and N/S.

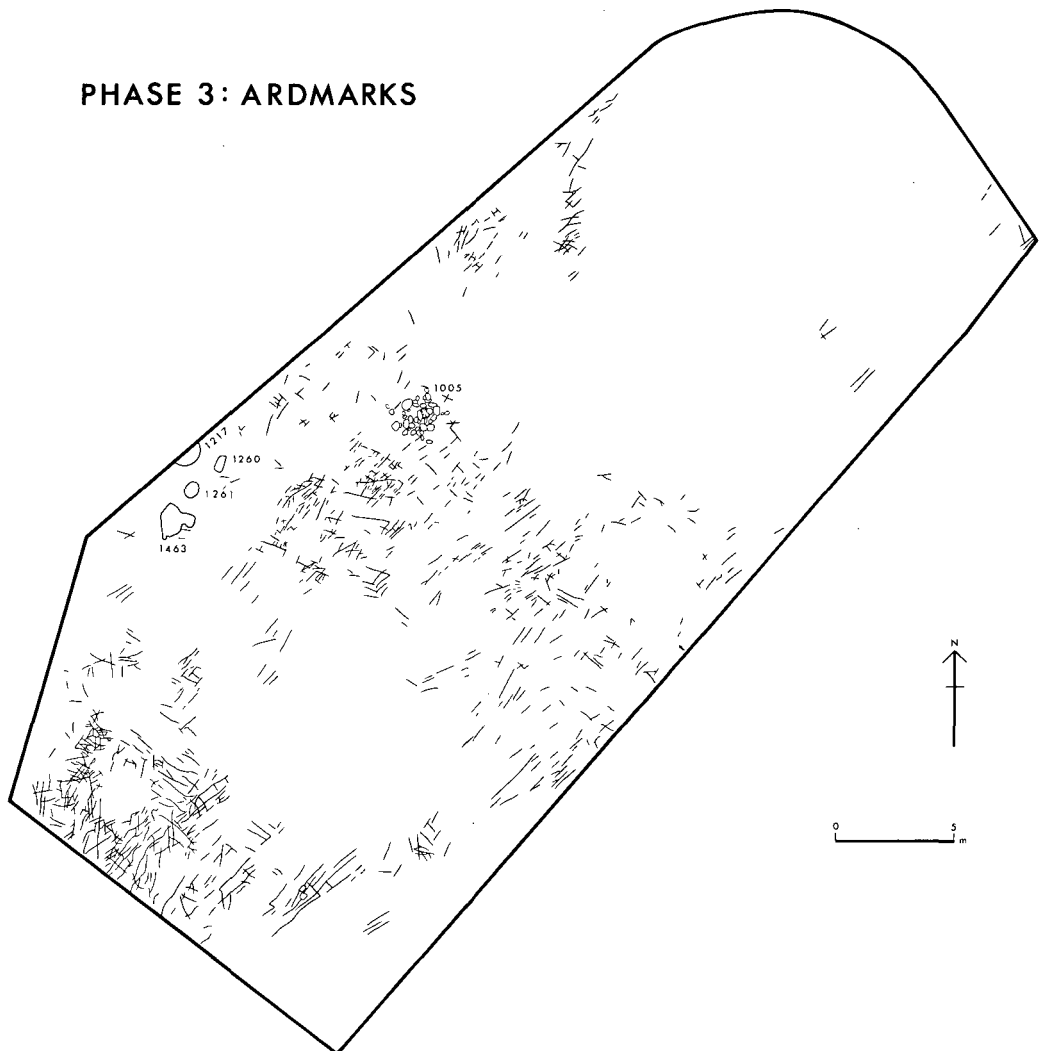
Samples of the fills of some of the ardmarks were analysed and a few were found to contain small quantities of pollen from the *Hordeum* (barley) group of the grass family



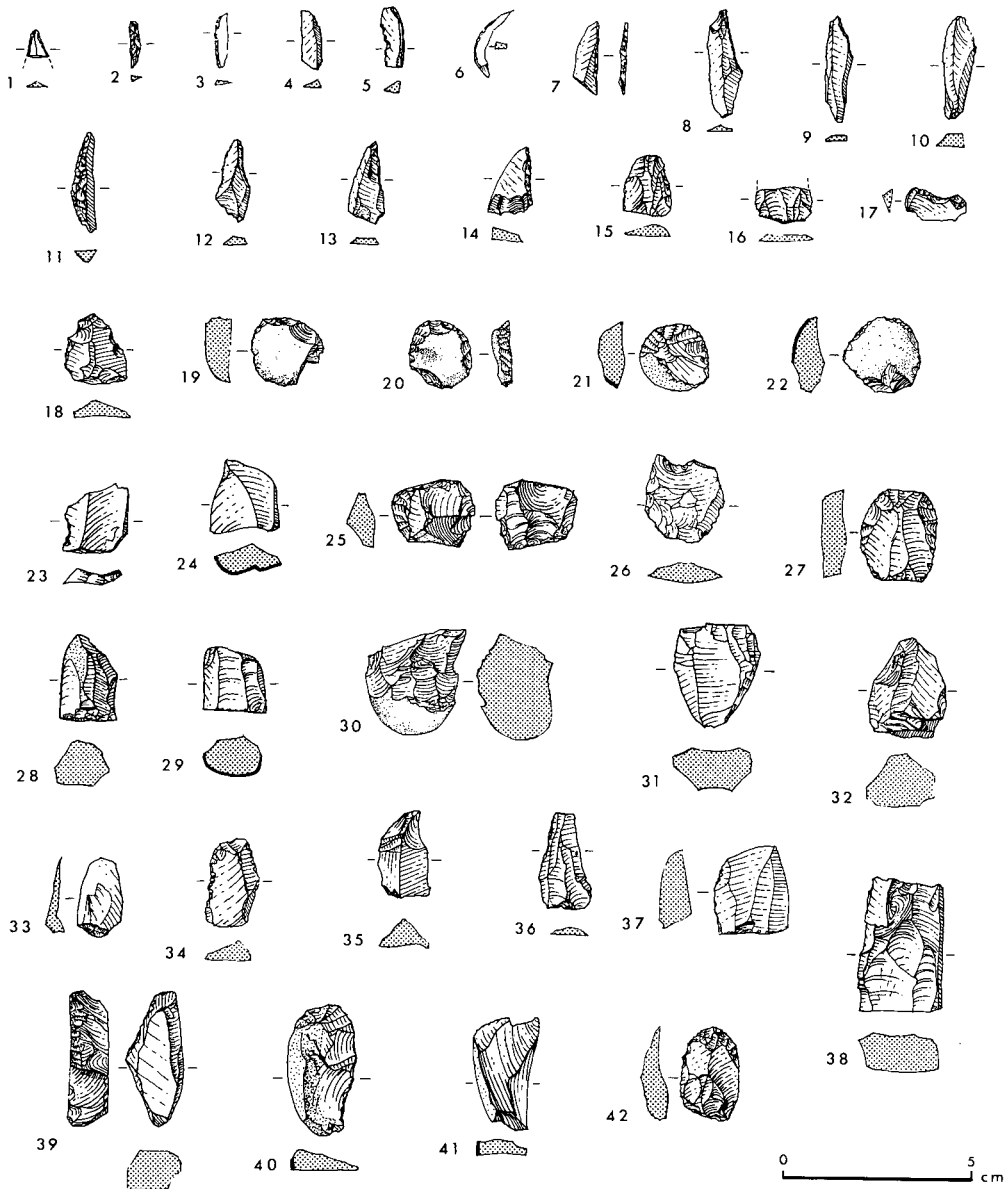
ILLUS 7 Phase 3: stakelines

indicating that it was either grown on site or at least present nearby. Evidence regarding land treatment was also gleaned from the samples studied. The presence of large quantities of algal spores within some of the samples suggests that the land was manured with seaweed. This is available at Machrie Bay c 2 km from the site. Bracken fronds were also identified without roots or rhizomes which would have been present if the bracken had been growing on site and been 'ploughed in'. The fronds themselves suggest that they could have been cut to use as manure, or more likely were bedding or flooring material reused as manure.

A number of small shallow pits especially towards the south-east of the trench had the same fill as the ardmarks in that area. These have been interpreted as the sites of stones disturbed or removed in the course of ploughing. The ardmarks survived only in the most recently opened areas. Parts of the site, which had been excavated previously and covered,



ILLUS 8 Phase 3: ardmarks and other features



ILLUS 9 Selection of lithics, mainly from ploughsoil

Microliths: nos 1-4, 7, 14

Retouched flakes: nos 5, 15-16, 23, 33, 41

Borers: nos 8-13, 35

Borer and notched flake: no 18

Miscellaneous tool: no 6

Scrapers: Concave nos 17, 24, 26

End nos 19, 25, 42

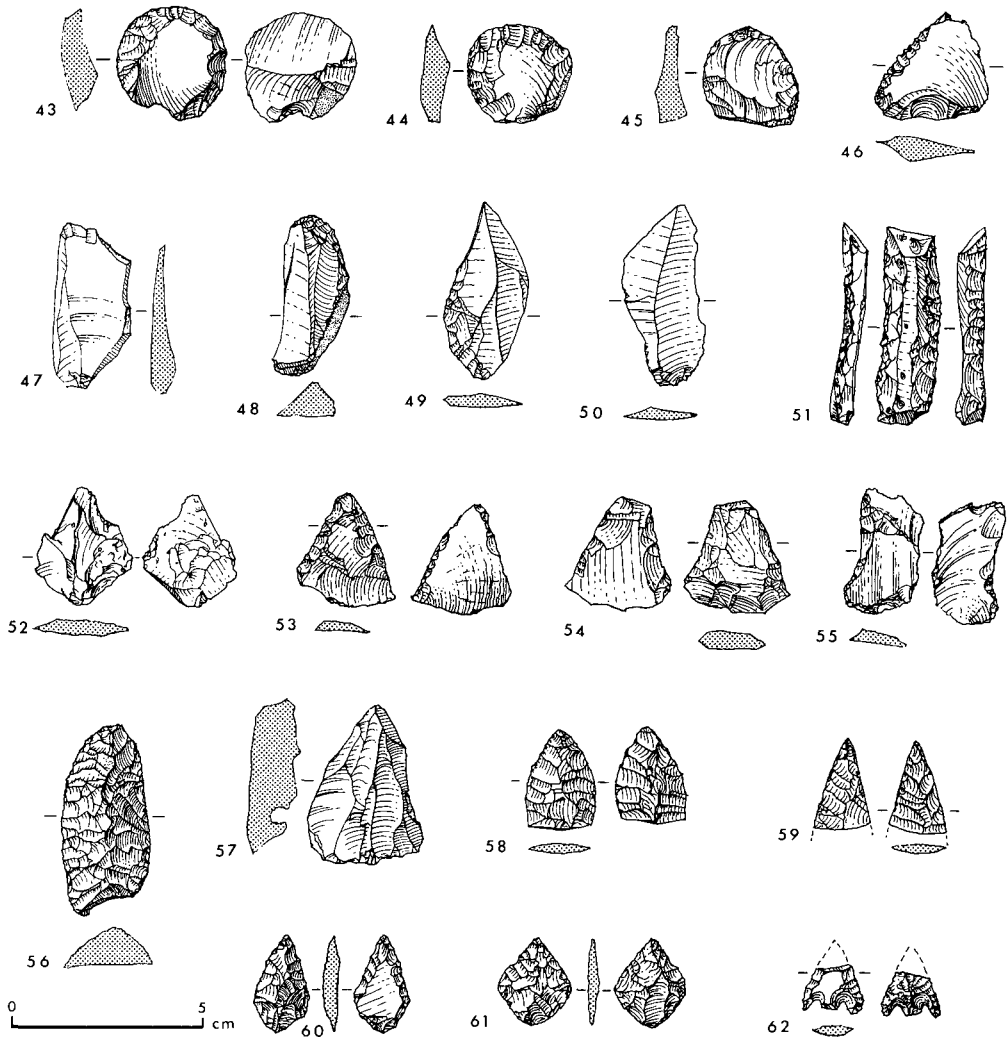
Thumbnail nos 20-2, 27

Side no 40

Knives: nos 34 (broken), 36

Cores: Class A2 nos 28-30, 38-9

Class A1 nos 31 (from Phase 5 central burial pit at Site 11), 32, 37



ILLUS 10 Selection of lithics from ploughsoil

Scrapers: Thumbnail nos 43-5

Oval no 48 (unfinished)

Concave no 52

Knives: nos 47, 49 (broken), 51, 55 (unfinished), 56 (bifacially re-touched)

Notched blade: no 50

Core: Class A2 no 57

Arrowheads: Triangular nos 46 (unfinished), 53, 54 (unfinished), 58, 59

Leaf shaped nos 60-1

Barbed and tanged no 62 (broken)

suffered from root penetration through the polythene and general weathering which was not conducive to the survival of such relatively insubstantial features.

Stakeholes were also numerous in this phase. Many were regularly spaced and arranged in lines which ran across the site in various directions. Two of the longest lines (F 121 & F 343) ran south-west/north-east while others ran more east/west or north/south. Several of the

stakehole lines must have pre-dated ploughing as they were sealed by patches of ardmarks, but in other cases stakeholes were observed cutting ardmarks. There was a fairly complex stratigraphy within this phase with neither all of the stakeholes nor all of the ardmarks attributable to a single event. The regular spacing within many of the lines of stakeholes at intervals generally from 0.45 m to 0.5 m led to the conjecture that these had held the upright members, or sails, for hurdle fences. Similar spacings between sails were found on hurdles preserved in the peat at the Somerset Levels (Coles 1977, 32). The majority of the stakeholes fell within the range of 40–70 mm in diameter and tapered towards the bottom indicating that the stakes had been shaped but not sharply pointed.

Although not on one of the recognized lines, a carbonized oak stake (F 471) which lay across the top of a stakehole was radiocarbon dated to  $1890 \pm 110$ bc (GU-2322). Two other dates were obtained from features which it was hoped would provide *terminus post quem* and *ante quem* dates for the junction point between two stakelines but the results proved to be statistically indistinguishable:  $1820 \pm 50$ bc (GU-2319) and  $1830 \pm 50$ bc (GU-2317).

Various other features were associated with Phase 3. A pit (F 1463) with a variety of fills situated close to the Phase 1 large gully (F 1059) was sandwiched between a complex arrangement of ardmarks and stakeholes and produced a sherd of Impressed Ware from fill F 1073, vessel 27, and Beaker sherds from fill F 1062, vessel 28. Other sherds from both these vessels appeared in the plough-disturbed top fill of the same pit (F 1033). The three fills contained a total of 17 pieces of flint and pitchstone including a large porphyritic pitchstone class F core  $98 \times 73 \times 58$  mm, a retouched flake and an end of blade scraper both in flint.

In the same vicinity were features F 1260 and F 1261. The former, although little more than a shallow oval depression, contained a chip, a retouched flake, three thumbnail scrapers and a side and end scraper all in flint in addition to pottery sherds from two Impressed Ware vessels 25 and 26 and from a Beaker 29. The latter, by contrast, was a round flat-bottomed pit in which a large flat stone had been buried. There was no pottery in the fill of this feature but finds of a chip and thumbnail scraper in flint were made.

An area of bright red burnt soil (F 1217) by the baulk in the same general area as the previously mentioned features may indicate the presence during this phase of an established hearth. The effect on the soil indicates an intensity of heat at depth not expected from other uses of fire, for example the clearance of vegetation by burning.

Also at this phase it would appear that a post still stood in the large posthole (F 1005). It may have been erected during this phase that an almost circular arrangement, c 1 m in diameter, of 10 stakes was erected around the post. The surviving stakeholes averaged 0.08 m in diameter and were from 0.1 m to 0.28 m deep. They presumably represented a slight protective fence. The fence was replaced, although not immediately, by stones which were piled up around the base of the post either to protect it or just as a convenient site for an accumulation of field clearance in a small cairn.

#### IMPRESSED WARES (vessel nos 25–27; illus 11)

The two pots 25 and 26 were quite large, about 290 mm and 230 mm in diameter. The decoration was by coarse comb impressions though on the latter the teeth impressions are so shallow that they look like light grooves in the damaged surface, and the implement used must have had only slight notches. Pot 25 has a thickened bevelled rim and a cordon more than 45 mm below. The walls of both pots are thick and the fabric is very heavily gritted and friable.

The rim form of 27 (its angle uncertain), and the organized decoration by finger-nail impressions, are unusual among Impressed Wares. The fabric is heavily gritted and similar to that of 25 and 26. On the other hand the decoration (but not the rim form) suggests a close link with Beaker coarse wares.

#### BEAKER POTTERY (vessel nos 28–30; illus 12)

The sherds of Beaker 28 were associated with sherds 27, and the Beaker sherds 29 with pots 25 and 26. The small sherd 30 was from ploughsoil.

The Beaker 28 has a long straight neck, and is decorated by multiple lines of coarse comb impressions in two zones probably of chevrons with horizontal lines below the rim, on the shoulder, and probably above the base. Beaker 29, with incised decoration, may have had a similar design but with a blank zone near the base, and criss-cross on the rim edge. Sherd 30 (not illustrated) is tentatively included with the Beakers on the strength of a single comb-impressed line.

#### PHASE 4: STONE CIRCLES (illus 13, 14 & 15)

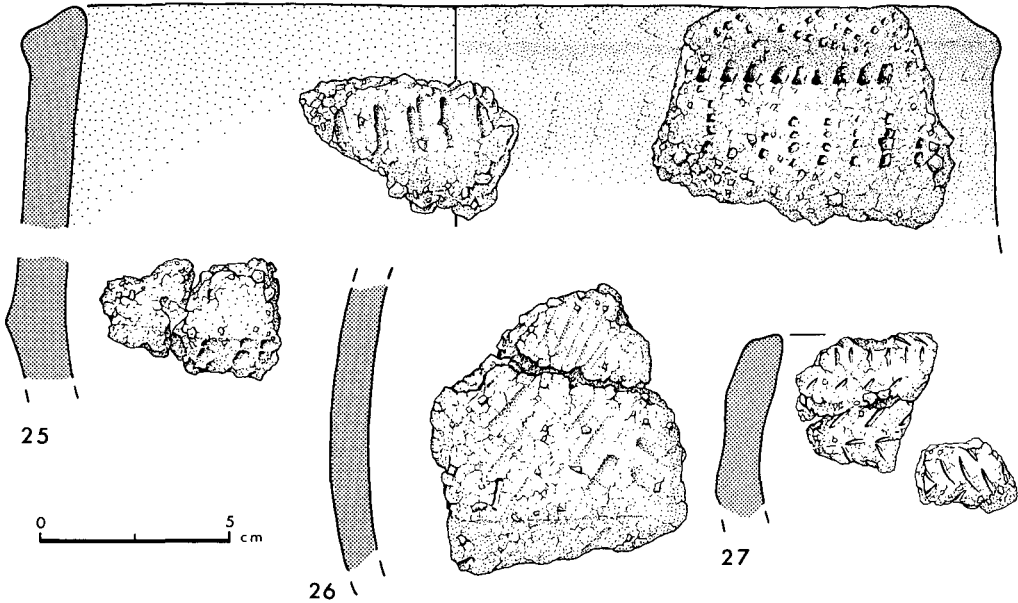
##### CIRCLE 1

The 11 stones of circle 1 comprise six large granite boulders and five smaller sandstone slabs placed alternately. It has been suggested that a sixth slab probably existed to complete the symmetry (Roy *et al* 1963, 65) but none was found during excavation. Between granite boulders 1 and 11 a potential position for such a stone had already been the subject of investigation by an unknown party before Dr Burl's stripping of the peat cover in that area began in 1978. Burl's trench located a feature virtually equidistant between stones 1 and 11 (illus 20) which may have been the stonehole for a missing twelfth stone, although its fill of sand contained no packing type stones. Of the generally pear-shaped granite boulders which had been erected with their more pointed end downwards, only stone 1 at the east side remained fully upright with stone 11 leaning outwards and requiring propping when its surrounding peat was removed. The other four granite boulders had fallen over in antiquity and were all but submerged in peat. All of the sandstone slabs remained upright and showed signs of weathering.

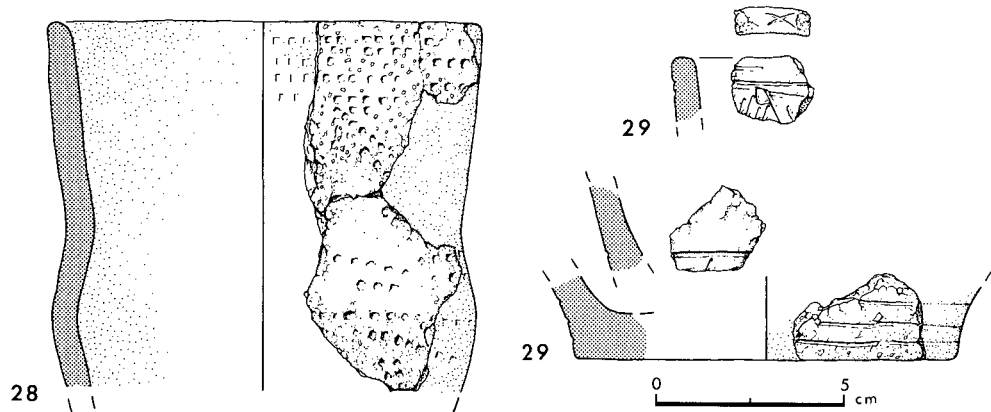
Stone 1 may always have been the tallest standing 1.5 m above the top of the mineral soil. The other granites were 1.45–1.6 m in total length so the difference in height when they were all erect was probably not very noticeable. The tallest sandstone slab was 8, at 0.84 m, and the shortest 4, at 0.58 m. The other three all stood 0.8 m high. The spacings between stones varied but the measurements given here were all made from the centres of the stoneholes to give the most accurate picture of the circle as first laid out. The greatest space mid-stonehole to mid-stonehole was 4 m between stones 1–2 and 4–5, and the least 3.3 m between stones 5–6, 9–10 and 10–11. The largest space was really between stones 1–11 at 7.1 m but if a twelfth stone existed then the spacings between the centre of its stonehole and those of stones 1 and 11 would be within the range stated.

The diameters mid-stonehole to mid-stonehole across the circle varied from 14.4 m between stones 2–8 to 12.7 m between stone 6 and the potential twelfth stone.

The stoneholes for the granite boulders were generally fairly shallow scoops which contained many head-sized stones into which the bases of the boulders had nestled. The



ILLUS 11 Impressed Ware pottery

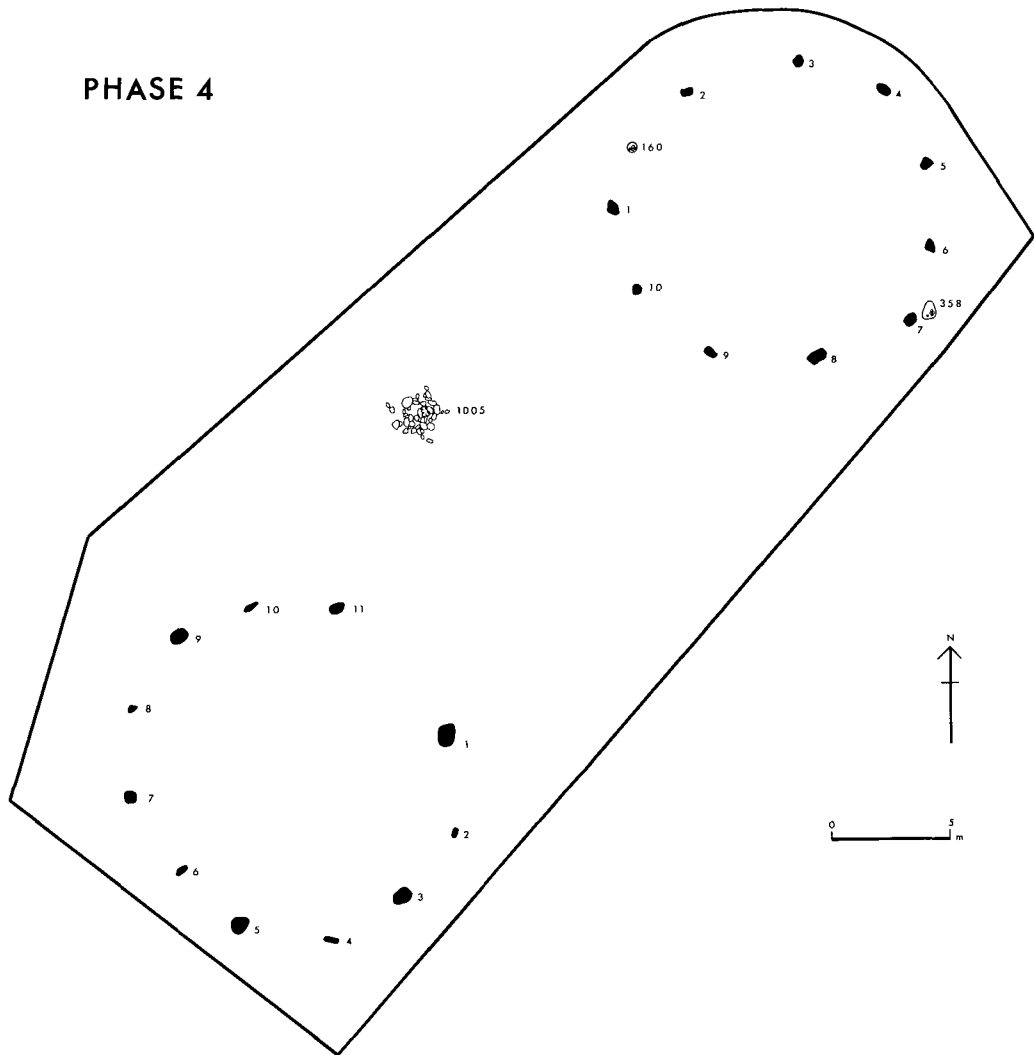


ILLUS 12 Beaker pottery

stoneholes for the sandstone slabs conformed more closely to the shape of the base of the stone and were furnished with stones acting as chocks. The sockets for all of the stones had been placed immediately inside the circuit of the postholes of the main ring except for stones 2 and 4 which were directly on the line. This has resulted in an arrangement rather more oval than circular.

#### CIRCLE 11

The 10 stones of circle 11 were all still standing when Dr Burl first stripped the site of peat in 1978. Nine of the stones were of sandstone while one, stone 4, was of granite. There did not appear to be any damage to the stones apart from natural weathering.



ILLUS 13 Phase 4: stone circles

Site 1 at the south-west end of the trench and Site 11 at the north-east end. The fallen stones of Site 1 are illustrated from the position of their stoneholes, ie as if they were still standing

The tallest stone, 1, at the west side stood just 1 m above the top of the mineral soil with stones 9, 8 and 3 the shortest at 0.45 m, 0.47 m and 0.5 m high respectively. Stones 2, 4, 5 and 6 grouped together at 0.57–0.59 m high while stones 7 and 10 were both 0.72 m high.

There would not appear to have been any attempt to grade the stones systematically by height from tall to short around the circumference or in diametrically opposed pairs.

The spacings between the stones also varied considerably. The gap mid-stonehole to mid-stonehole between stones 1–2 measured 5.7 m while that between stones 6–7 was just 3.1 m with the other measurements lying between 3.5 and 5 m.

There were also differences in the diameters across the circle with the greatest mid-stonehole to mid-stonehole between stones 5–10 at 13.6 m and the least between stones





ILLUS 14 Stone circle 1 during excavation: 1985 season (Photo M Brooks, Crown Copyright)

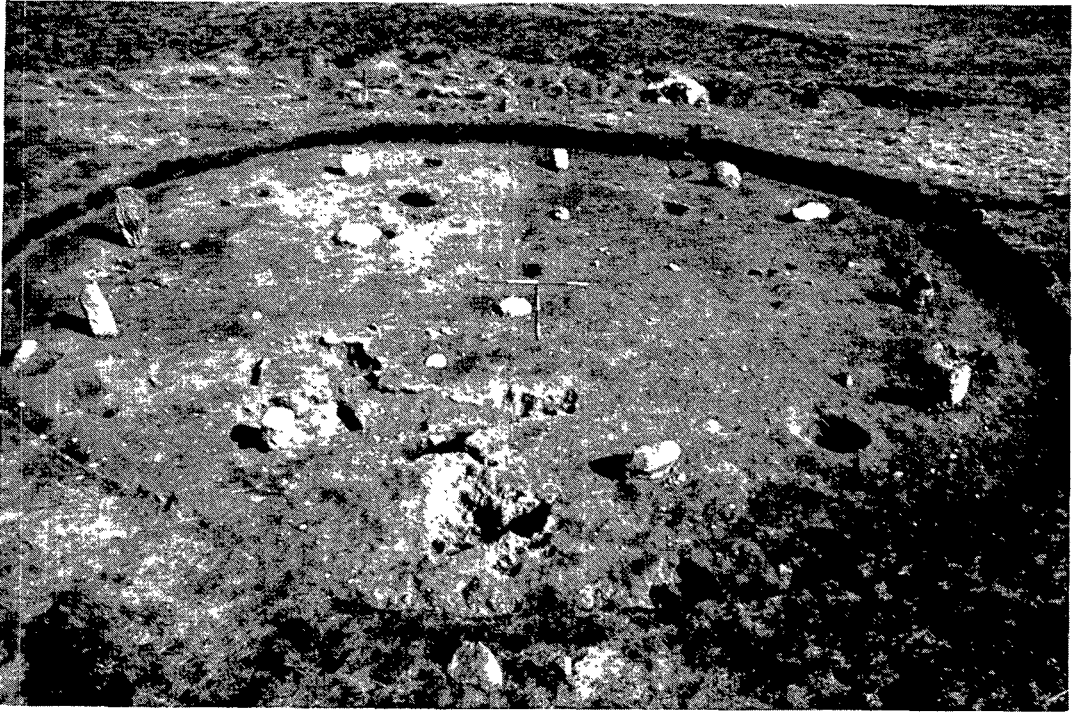
3–8 at 12.2 m. The result was a far from circular arrangement with stones 5, 6 and 7 not far from being in a straight line.

The stoneholes of circle 11 contained few substantial packing stones and those of stones 4, 5 and 6 had none at all. The majority of the stones were set c 200 mm deep into their holes but stone 4 was set deeper at 300 mm and stone 5 was probably set shallower as it had fallen over at some point between 1979 and 1985. Most of the stones of this circle had been placed virtually equidistant between a pair of the postholes of Phase 2 but stone 1 was considerably closer to posthole F 116 than to F 107.

The sandstone slabs of both circles had been obtained from the local Permian sandstone and may have been derived directly from an outcrop. The coarse granites on the other hand must have been derived from glacial outwash. The difference between the degree of weathering and erosion of the granite beneath and above ground was minimal suggesting that the granite boulders achieved their rounded forms before being erected. Outwash material was available very close to the site whereas the nearest granite outcrop was c 5.75 km distant. Some of the boulders retained evidence for deliberate additional shaping, for example at circle 1 the top of stone 1 had been pecked to make it flat and the base of stone 9 had been tapered by pecking.

The stoneholes for both circles had in some cases disturbed previous features. At circle 1 there was evidence that the stone packing in posthole F 211 had been rearranged to form part of the foundation for stone 9, and the sockets for stones 2, 7 and 10 cut areas of ardmarks. At circle 11 stone 5 interrupted a line of stakeholes and the stoneholes of stone 8 and stone 9 had cut into earlier features which contained Grimston/Lyles Hill-type pottery.

The positioning of the stone circles may be associated with stakeholes located immediately behind some of the stones of both rings. Where stratigraphy was available, these



ILLUS 15 Stone circle 11 during excavation: 1985 season (Photo M Brooks, Crown Copyright)

stakeholes pre-dated the erection of the stones. It may be that the general layout for the stone circles was first marked out using stakes. These stakes at 0.08–0.12 m in diameter were more substantial than those used for the fencing in Phase 3.

The erection of the stone circles is an event which is difficult to date owing to the lack of carbonized material within the stoneholes. A date was obtained, however, for F 358 of Site 11, a charcoal-rich feature to the north-west of stone 7 which was sealed by a layer that was cut by the stonehole for stone 7. The date of  $1740 \pm 50$  bc (GU-2323) for oak charcoal provides a *terminus post quem* for the digging of the stonehole for stone 7. Unfortunately, this was the only instance where the relationship between a stonehole and a sufficiently charcoal-rich feature was close enough to warrant submitting a sample for dating.

At circle 11 a feature located on the same circuit as the stones may also belong to this phase. F 160, situated at a similar distance from posthole F 107 as stone 1 was from posthole F 116, had a fill which comprised 50% stone. Although its fill was different it was of similar size to the other stoneholes and may conceivably have once held an eleventh stone. The presence of an eleventh stone would have reduced the large gap between stones 1 and 2 since the feature lies 2.6 m from stone 1 and 3.3 m from stone 2.

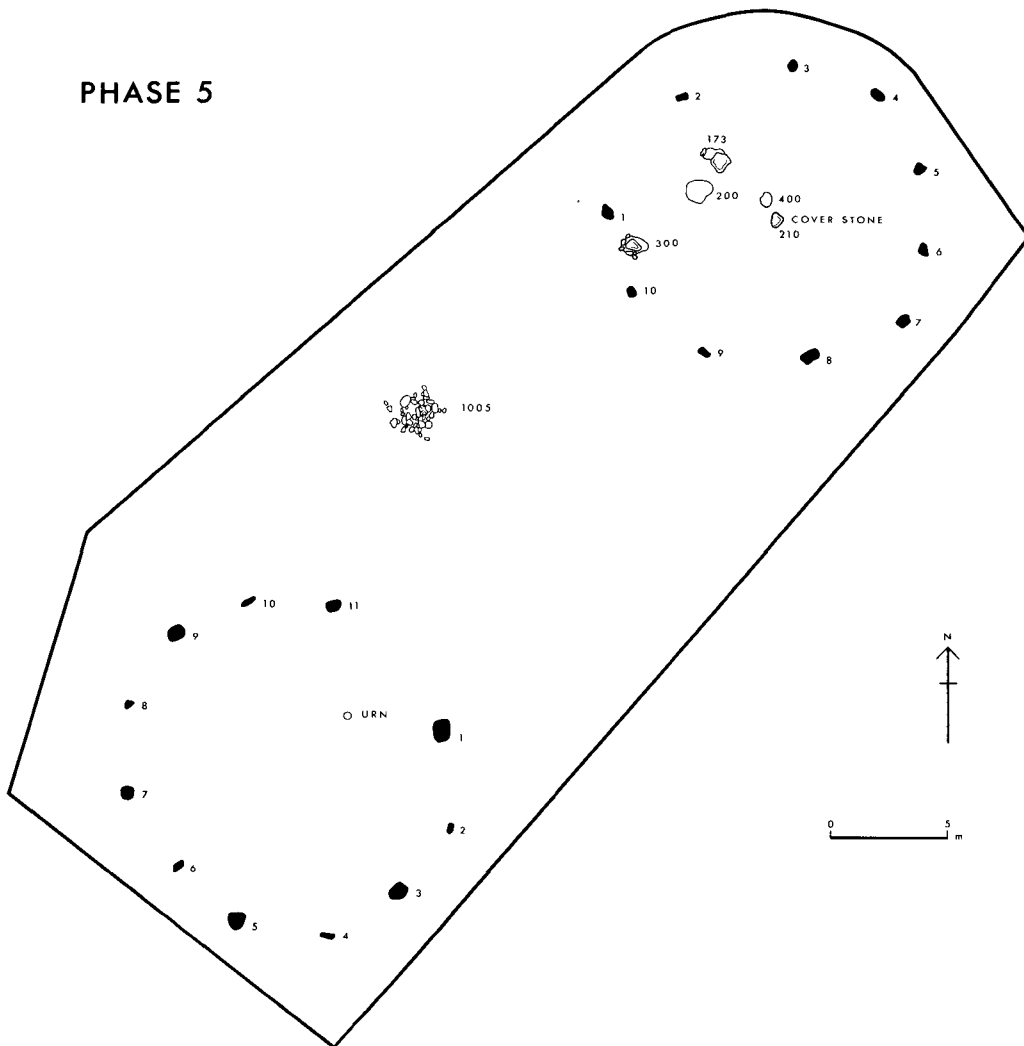
## PHASE 5: INSERTED BURIALS & OTHER FEATURES (illus 16, 17 & 18)

### SITE 1

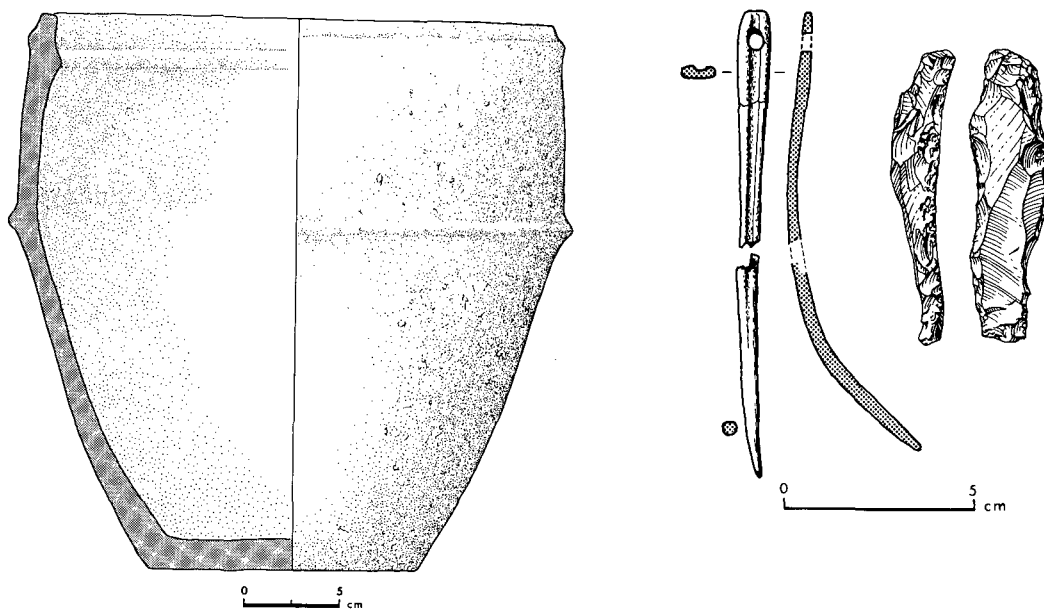
At stone circle 1, well off-centre in relation to the circuit of stones, was a pit c 0.33 m in diameter at the top. At a depth of c 0.2 m into the fill of this pit the broken base of an inverted

urn was located. The vessel proved to be a tight fit in the pit and contained cremated human bone, a burnt flint blunted back knife and a bone point (illus 17) found in pieces when the cremation material was being sorted.

The cremation itself would seem to have been of an adult tentatively aged from the mid-20s to 30 years. One of the criteria used to reach this conclusion was the presence of a probable third molar's roots; these usually complete their development from the 18th to the 25th year. In addition the epiphyseal rings of the vertebrae were fused – a process which occurs by approximately the 25th year. Of the 112 cranial fragments 39 had sutural edges including two or possibly three sutural bones. None of these showed any sign of fusing. The extent of fusion of the sutures is not now considered a very accurate means of estimating age but it generally begins at approximately the 30th year. The possibility of slight degenerative change



ILLUS 16 Phase 5: inserted burials and other features



ILLUS 17 Urn, bone pin and flint knife from Stone circle 1

in a lumbar vertebra and the unaffected thoracic vertebrae did not suggest an advanced age.

The assessment of the sex of the individual was much more inconclusive. The bones of the skull were far too fragmentary and warped by heat to show any diagnostic features. The sciatic notch of both innominate bones had survived but in a damaged condition. The angle of the right sciatic notch was possibly  $80^\circ$  which was more likely to be from a male individual and there was no evidence of a pre-auricular sulcus. On these grounds alone the cremation was of a male.

#### BONE POINT

The point, the original length of which is estimated as 132 mm, was made from the long bone of a small mammal, probably an ovicaprid. All articular surfaces had been removed but part of the marrow cavity survives. The bone was split to provide a long segment, which was then ground and trimmed in places with a metal blade to produce a long, straight point with what seems to have been a bluntish tip. The oval shape of the perforation suggests it was probably made by hand without a drill, though it is straight-sided.

The head is thin and flat-ended, with its sides expanding slightly at the oval perforation. The shaft is sub-rectangular, having had one edge ground and rounded, and the other trimmed to a flat surface. The tip is now slightly damaged but the shaft tapers towards it gradually, becoming circular-sectioned 19 mm from it. At this point there is a recent cut. The upper and lower surfaces have a small amount of grinding on them. Given its current condition it is likely that the original point would have had a lightly polished surface.

This is the sort of object which would have been used as a pin for securing clothing or as decoration, for example, rather than as a piercing tool, which tends to be stubbier, or a needle which need not be so long. Its burnt state implies that it was cremated with the human remains and gathered with them. This would suggest that the bone object was in or on clothing or goods accompanying the body when it was burnt.

## URN

The urn is bipartite with an upright, almost cylindrical upper portion with a gently rounded, or in places slightly flattened, rim. There is a pronounced internal cordon 20–25 mm below the lip: this cordon appears to have been formed by applying and modelling a strip of clay which has then been worked upwards to form the rim. The vessel has two moulded external cordons, one some 13 mm below the rim, the other around the shoulder. The fabric is very coarse and contains profuse angular grits up to 10 mm long. The inclusions protrude from the surfaces of the vessel which have been only roughly smoothed or wiped. In the interior there is a clear ‘tidemark’ some way above the base, demarcated by a pronounced colour change from reddish-brown in the lower portion to dark grey in the upper part: this colour change may be the result of firing or an effect of the contents of the vessel (for example, if the cremation deposit was inserted while hot). The exterior is reddish-brown. The vessel is 280 mm high with a rim diameter of 270 mm and a basal diameter, although incomplete, estimated at 145 mm.

## SITE 11

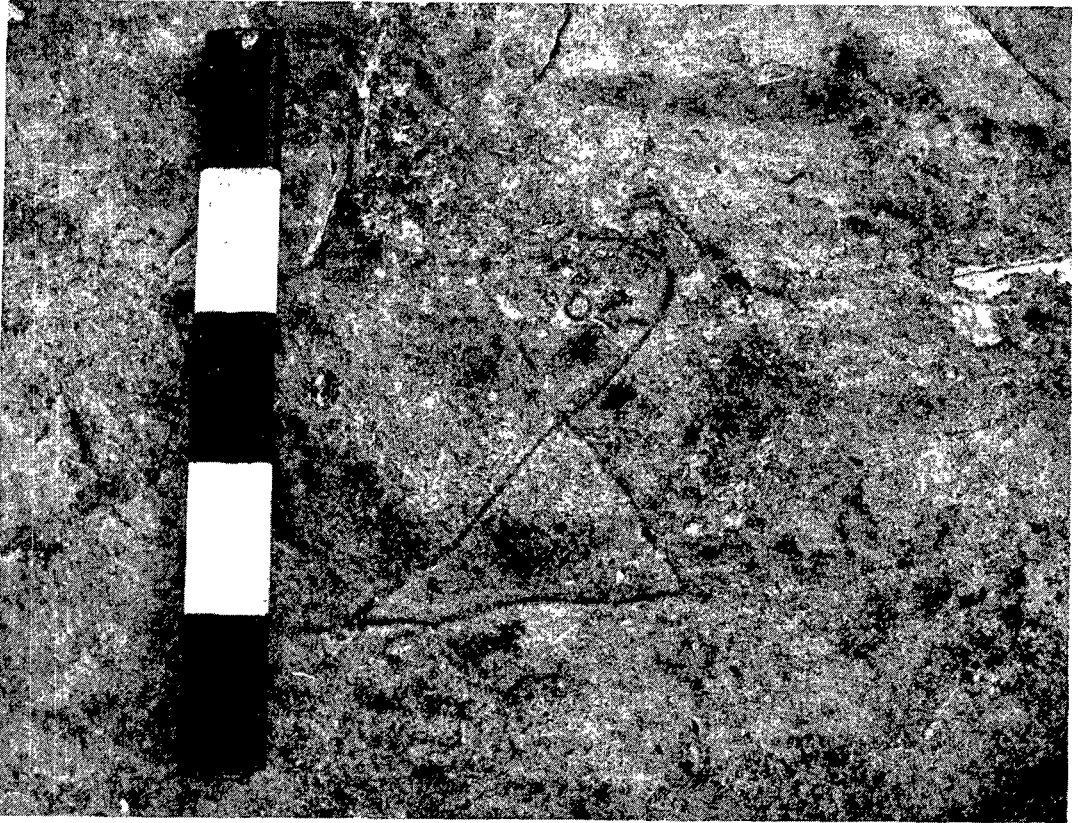
At the centre of stone circle 11 was a pit (F 400), c 0.58 m in diameter, which produced no finds and bottomed on to a large stone in the boulder clay subsoil after just 0.25 m. Beside it was a sandstone slab with a flat base and a slightly domed upper surface which covered a pit (F210) similarly sized to F 400 but deeper, which contained the cremated remains of an adult individual aged tentatively at about 30 years from various criteria including the epiphyseal rings of the vertebrae having fused; the third molar on the left side of the maxilla having erupted; and of the 25 fragments of the cranium showing sutural lines one was fused internally but not externally. The sex of the individual proved more problematic to assess as the only visible diagnostic feature was the posterior root of the zygomatic bone which appeared to continue over the auditory meatus on a fragment of the right temporal bone indicating that the person may have been male; but based on a single criterion this remains highly conjectural.

The bone was tightly packed towards one side of the pit giving the impression that it may have been contained within a bag or bound by some other retaining medium which had totally decomposed. Within the fill of the pit were a class A1 flint core (illus 9, 31), a retouched flint flake and a chip and waste flake in aphyric pitchstone. The central pit (F 400) may have been the original pit dug for the burial but abandoned when it proved to be so shallow.

An attempt was made to date both the Site 1 and Site 11 cremations by radiocarbon but unfortunately even though there was over 1.5 kg of bone in each sample the temperature at cremation must have been very high and insufficient of the protein fraction remained to furnish a date.

Other features within circle 11 were investigated as potential burials. F 200, a large boulder, was lifted to check for a pit or cist underneath but it would appear to have been a purely natural feature. Attention was drawn to this stone because of a symbol pecked into its upper surface. The symbol was composed of two triangles point to point with a small circle inside the smaller triangle (illus 18). Symbols pecked on stones are very difficult to date but with this circle having been buried under peat in antiquity its prehistoric origin is undoubted although closer association with any particular phase is not possible.

The large stones within circle 11 had had an effect on the surrounding soil which made them appear to be sitting in features. F 300, another large boulder, was lifted but also proved to be natural.



ILLUS 18 Symbol pecked on to boulder within stone circle 11. Scale 250 mm

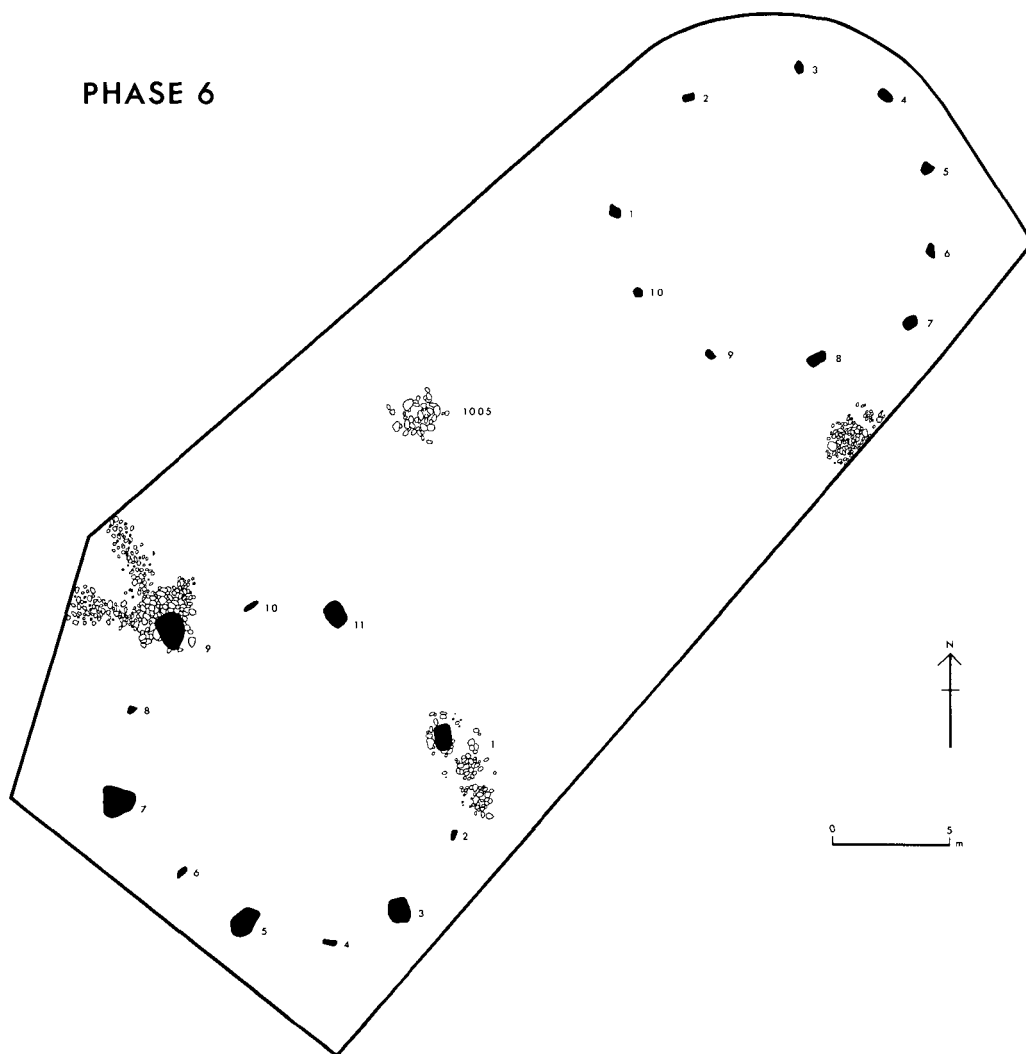
Between two large stones a similar dark stain (F 173) appeared but this seemed to incorporate a real pit containing a flint flake and charcoal flecks.

#### PHASE 6: LATER EVENTS PRE-PEAT (illus 19)

After the stone circles fell into disuse but before peat began to form over the sites there would appear to have been another phase of farming activity. The fallen orthostat stone 9 of circle 1 had a field clearance cairn built up against it and what seemed to be the remnants of stone field walls ran from it in two directions and continued to the edge of the trench. Another potential field wall ran up to the back of stone 1.

Field clearance material may also account for a spread of stone at the east side of the trench filling in a depression which would appear to have been boggy at this stage.

This phase, when the area was again cultivated as opposed to being just grazed, would seem to have occurred when peat formation was the natural soil process. The soil surface lacked an identifiable turf line suggesting that the soil changed from a cultivated mineral soil into peat. In parts of the site the lower levels of the peat were clearly and extensively stratified with dark and light bands, some of which contained mineral matter. This evidence of mineral redeposition after the initiation of peat growth suggests that erosion was in progress nearby, possibly indicating continuing cultivation or stocking. What it does certainly indicate is that on

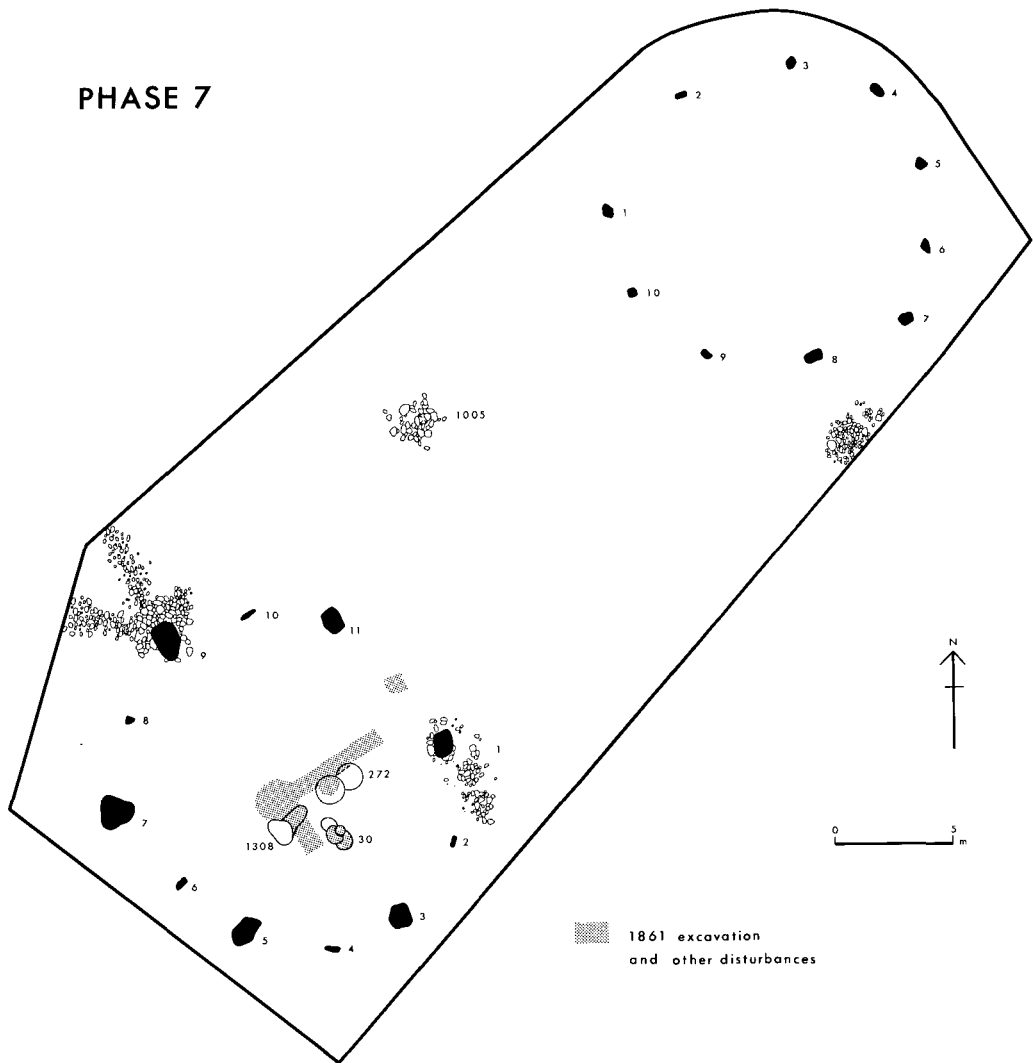


ILLUS 19 Phase 6: later events pre-peat  
Site 1 stones are represented as they appear today, ie with most of the granite boulders fallen

this site abandonment and peat initiation are not easily defined events. For this reason and also due to extensive cracking throughout the peat allowing the possible passage of contaminants, radiocarbon dating of a basal peat sample was not pursued.

#### PHASE 7: LATER EVENTS POST-PEAT (illus 20)

At Site 1 the most dramatic post-peat event was the 1861 excavation by Bryce. Not only did he dig a central trench and extend another north-east from it as he recorded, but he also continued his trench towards the south-east. He would also seem to be responsible for cutting a kind of sondage through one of the postholes of the central setting from Phase 2. Bryce's trench narrowly missed the pit containing the urn.



ILLUS 20 Phase 7: later events post-peat  
The depiction of Site 1 includes features from Phase 2 which were disturbed by the 1861 excavations

Peat cuttings were common on the moor and one large area to the east of the sites had included the south-east quadrant of circle 11 revealing the tops of three of its stones which might otherwise have remained undiscovered, since the only stone tall enough to protrude through the full depth of peat, stone 1, would hardly on its own have aroused suspicion as to the existence of a complete circle.

In the recent and not so recent past the moor has been used for grazing animals. Their tendency to rub up against available stones has created hollows around the bases of the stones remaining standing at circle 1 and threatened their stability. A programme of consolidation of the stones followed the recent excavations. The area of the trench has been left free of peat and grassed over leaving the stones standing proud above the ground surface. No attempt was made to re-erect stones which had fallen in antiquity.



## PHASE 1: DISCUSSION

The work of David Robinson (1981 & 1983) on pollen and macro-plant material from Machrie Moor peat cores suggested local anthropogenic burning of vegetation during Mesolithic times, however, despite the presence of a few microliths in the prehistoric ploughsoil, there was no conclusive evidence for Mesolithic activity within the excavated area. The earliest use of the site which had left any lasting trace dated from the Neolithic period. Although the early features did not seem to form any coherent pattern, they hint at a large-scale occupation of the once-fertile triangle which is now the moor, and help place the chambered tombs, two of which are situated just over 600 m from the trench, into the context of a Neolithic landscape.

The substantial gully (F 1059) possibly represents a henge feature lying largely outwith the trench to the south-west but no comparable feature was located within the trench which could be interpreted as an opposing ditch terminal.

It is difficult to assess whether the pits located were purely domestic or whether the fact that there were six different vessels represented in F 521 implies a 'ritual' element.

Similar pits containing Early to Middle Neolithic pottery form the first phase of activity at the Balfarg Riding School site, Fife (Barclay, forthcoming).

## POTTERY

The variety within this relatively small group of sherds together with their early date gives them considerable significance. Most of the sherds clearly belong to the Grimston/Lyles Hill Series, using this designation as a flexible general label as intended by Smith to encompass a wide geographical and chronological range in Britain (1974, 106–8). It can be expected that as the quantity of material from Scotland increases it will be possible to define local sub-styles with temporal limitations. The Machrie Moor pots are roughly coeval with three assemblages from north-east Scotland (Boghead, Moray, Burl 1984, 35–73; Midtown of Pitglassie, Aberdeenshire, Shepherd, forthcoming; Camster Long, Caithness, Masters, forthcoming), and these together with stylistically similar but undated sherds from other sites allow tentative definition of a sub-style in the north-east (Henshall *in* Burl 1984, 61). In the west of Scotland sherds of three pots from a pit at Newton, Islay, are also roughly contemporaneous (McCullagh, 1989). The Machrie Moor pots 2–6 and 15–16 are typical of the restrained versions of the Grimston/Lyles Hill style, and pot 3 must be one of the largest known. The proportions of the profile of pot 1 are unusual but clearly are an adaptation of the simple open carinated bowl form. Within the region of the Firth of Clyde the best parallels for these particular pots are in the much larger but more fragmentary assemblage from the domestic site at Auchategan, Cowal. Here the range of forms was restricted and fluting was very rare. Scott, in an extensive discussion in his publication of this pottery, felt that the single late date of 2300±110bc (I-4705) was not inappropriate (1978, 60), and support for this view can be found in the wide range of dates available from England. However the Newton sherds, with a date of 3015±60bc (GU-1952), provide close parallels for pots 2–4, 6 and 7. It thus appears that, as is to be expected, pottery of the Grimston/Lyles Hill series was in use in western Scotland as early as elsewhere, and at Machrie Moor it embraced a variety of forms; this being so, the content of the Rothesay style pottery (defined by Scott 1977, 29–37) and its relationships may have to be reconsidered.

In Bute two chambered cairns, Glecknabae and Bicker's Houses, have produced bowls similar to Machrie Moor pots 8 and 12 with their somewhat wider flanged rims (Henshall 1972, 306). In Arran there is at least an indication of the presence of specifically Grimston/Lyles Hill

pottery amongst the small amount of mainly undiagnostic sherds which came from eight chambered cairns (*ibid*, 376–94; ARN 7, 9, 11, 14, 15–17, 19). Two small sherds have fluting across the rim, and a single sherd from a concave neck is of such thin high-quality fabric that a comparison seems justified with the tiny wall sherds from Machrie Moor mentioned previously, but the contexts (if recorded) of artefacts from chambered cairns provide notoriously unsatisfactory evidence. A case in point is the wide fluted rim sherd from a deposit at Monamore dated before  $2240 \pm 110$ bc (Q-676), but by how long is debatable, and the soil in which it was found was re-deposited (MacKie 1964, 24fn). Sherds with internally bevelled rims like pot 9 can be found occasionally in Arran, Bute and Cowal in Neolithic contexts (*ibid*, 306, 303–5; ARN 9, 11, BUT 5, ARG 15).

Pot 13, found with 12, introduces the question of plain lugged bowls, those with simple rims generally being regarded as having an origin separate from the Grimston/Lyles Hill tradition (Smith 1974, 111). Three small pots of this type came from three chambers in south-west Arran, and larger partially decorated pots, presumably somewhat later in date, came from the chamber at Beacharra, Kintyre, and the domestic site at Townhead, Bute (Henshall 1972, 304, 305, 302; Scott 1977, 27, fig 12d). Lugged bowls were evidently a well-established form in the Firth of Clyde and, on the evidence from Machrie Moor, were assimilated into the dominant pottery style at an early stage, a step which occurred at about the same time in north-east Scotland where they were added to carinations as seen at Boghead and Midtown of Pitglassie. In the west also lugs appeared on carinations, on the undated but probably later Achnacree bowls found in chambered cairns.

The globular pot 14 from Machrie Moor at first sight looks out of place among the other sherds, but reference to the north-east Scottish, English and Irish assemblages shows that hemispherical plain bowls are a minor but widespread form amongst pottery in the Grimston/Lyles Hill tradition, occasionally the upper part is inturned to become somewhat globular, and rolled rims are known (Henshall 1983, 25, 27; Wainwright 1972, 24; Case 1961, 176–8). Even so a close parallel for pot 14 is hard to find in the west of Scotland, and little can be added to a brief survey of such bowls, all of which came from uninformative contexts (Henshall *in* Ritchie & Adamson 1981, 185).

A small unstratified sherd (pot 11) is from the sharply angled shoulder of a bowl decorated with grooved lines and nicks, probably a Beacharra bowl. There is considerable variety in both the techniques and designs used in the decoration of these bowls. The horizontal and vertical grooves on the Machrie Moor sherd are appropriate, but the short nicks are without precise parallel as is also the emphatic moulding of the shoulder angle. Beacharra bowls are not common and have a restricted distribution in chambered cairns in Arran, Bute, Kintyre, Benderloch, with one example from North Uist, and at only one domestic site, Townhead, Bute (Henshall 1972, 305, 306, 302, 308; ARN 16, BUT 5, ARG 27, UST 12; Ritchie 1970, 40–1, ARG 37; Scott 1977, 27). Evidence for the chronological position of these bowls comes from Beacharra where three of them were evidently more or less contemporary with two uncarinated bowls and the ‘developed’ lugged bowl already mentioned, an association which may be repeated at Townhead; also the condition of the six bowls from the Beacharra chamber and the single Beacharra bowls from Clachaig and Bicker’s Houses suggests that they were in the last deposits made in the tomb. At Achnacreebeag the sherds were pre-Beaker. This leaves the time-span of the bowls within the Neolithic very uncertain but association with the early Grimston/Lyles Hill sherds at Machrie Moor is unlikely, and a date as late as that suggested by the writer 20 years ago now seems equally unlikely (*in* Ritchie 1970, 41).

## PHASE 2: DISCUSSION

The stratigraphy was not refined enough to show whether the central setting, the main ring and the outer ring of timbers at Site 1 were all standing simultaneously or whether their erection predated, coincided with or post-dated the timbers at Site 11. As has already been mentioned, there was a possibility that the small sub-circular setting pre-dated the main ring. The ramps used to help with the erection of the posts of the central horseshoe-shaped setting seem to have been backfilled almost immediately. The only dating evidence for these large postholes was the sherds of Grooved Ware which found their way into the fills of two of them apparently after the posts had been withdrawn. The dates obtained from two postholes of the main ring and one from the outer ring were all on small diameter pieces of charcoal included in their fills, as no fragments of the original timbers survived. It is not possible to say whether the sherds of Grooved Ware associated with some of the postholes of the main ring were incorporated in the fills at the erection or the destruction of the ring.

The presence of timber circles below stone circles is by no means rare, noted previously for example at Croft Moraig, Perthshire (Piggott & Simpson 1971) and there is the potential that the other stone circles on the moor conceal the same sequence.

The large amounts of timber used in the circles highlight the local woodland environment at the time, known from the pollen analysis work of Robinson (1981), and also suggest that there was no shortage of tools or manpower to cope with the task.

The single post (F 1005) placed between the two circles has been the subject of much speculation. Two possible theories as to its function are that it somehow figured in the laying out of the sites or that it was some kind of totem pole. It certainly remained in position longer than any of the other timbers and was afforded protection from later activities by means of a fence and subsequently a stone cairn.

## POTTERY

In general, the form and decoration, and the pots lacking decoration, are unremarkable. The bold grooved technique, the use of triple or multiple lines, the impressions, the triangle or lozenge/diamond motif, and the decoration of the inner edge of simple rims, are all characteristic of Grooved Ware. The finely incised pattern of sherd 21 with the partial infilling of dots is less usual, though a somewhat similar treatment can be found for instance on a small bowl from Unival, North Uist, and on sherds from Rinyo, Orkney, and there are other scattered examples of dot infilling (Henshall 1972, 533; Childe & Grant 1939, 25, p1 xxii, 4, 5). Some exceptional features of the Machrie Moor sherds require comment. Rim knobs are known at present at only one other site in Scotland: Balfarg Riding School, Fife (Henshall *in* Barclay, forthcoming). At both sites the knobs seem to have been in pairs, though the total number on the pot is unknown. Decoration of the rim by a row of slanting fine incisions, as noted on pottery from Machrie Moor, is highly unusual in Scotland, occurring once as faint nicks at Balfarg and once at Quanterness, Orkney (Henshall *in* Renfrew 1979, 77). The unusual arrangement of the decoration in two contrasting zones as on pot 17, and the use of lattice on the lower part, may be seen among the larger pots at Balfarg Riding School, though zoned decoration, either with the lower undecorated or with a repeat of geometric motifs, is found at a number of sites, for instance Balfarg henge (Henshall *in* Mercer 1981, 129), and Quanterness. No parallels can be offered for the fussy fringes along the chevrons of pot 17.

An understanding of Scottish Grooved Ware is greatly hampered by the dearth of fully published assemblages of even moderate size. The scattered finds and the assemblages from

the Orcadian habitation sites (all conveniently listed in Wainwright & Longworth 1971, 300–6, and Kinnes 1985, 49–50) have shown the wide variety of motifs and decorative treatments which were available within this pottery tradition. The two assemblages from Balfarg, and the group of sherds from Arran, indicate the range which may be found within a single group. Each assemblage or group of sherds has an individual character, a fact emphasised by the contrasts between the two discrete assemblages from Balfarg. It appears that Grooved Ware formed very local sub-styles, themselves subject to change. The Machrie Moor sherds can be partly defined by two negatives, the absence of cordons or other plastic decoration, and of horizontal incised lines inside the rim. Both the knobs and the nicked rim decoration clearly indicate links with the widespread English Woodlands sub-style (Wainwright & Longworth 1971, 238–9). In discussing the Balfarg Riding School pottery, amongst which other features of the Woodlands sub-style are present, the author has suggested that this sub-style has a greater and more widespread presence in Scotland than has been recognized. The use of dot filling and fringed chevrons at Machrie Moor shows that here, as at Balfarg, other elements from the Grooved Ware repertoire and some individualistic features were a part of the local sub-style.

Comparisons with the Balfarg assemblages must not be stressed as they doubtless obtrude due to the very small amount of comparative material from the Firth of Clyde region, amounting to sherds of a single pot from Tormore, Arran, and sherds of two pots each from Townhead, Bute, and Knappers, Dunbartonshire, and other sparse unpublished sherds from the area (Henshall 1972, 372; Mackay 1950, 183–4; Ritchie & Adamson 1981, 187–8). The pottery from the two Balfarg sites was found in somewhat similar circumstances to the Machrie Moor sherds, at Balfarg henge (Mercer 1981) associated with a timber circle dated to the last four centuries of the third millennium bc, and at the Riding School associated with a ditched enclosure, possibly a henge, with internal wooden structures dating from the middle to the second half of the third millennium bc.

Sherd 23, being flat, appears to be from a base, but is puzzling in that its damaged surface bears finely incised lattice. It has been included here with the Grooved Ware as this attribution seems more likely than Beaker, though no parallel can be offered.

### PHASE 3: DISCUSSION

With the posts of Phase 2 removed the area reverted to being a gently sloping piece of ground with apparently no visible sign of ritual significance apart from the continued existence of the single post F 1005.

Superimposed on this land were stakelines which may be the remnants of hurdle fences. Those recorded head out of the trench on all sides and obviously represent just a small part of an extensive programme of apparently continuously changing subdivision of the land. Although we cannot distinguish neat fields, many of the fences presumably formed barriers between crops and stock. The timber required to construct the hurdles hints at large-scale woodland management. The ard ploughing, the purpose of which is sometimes questioned when it appears on ritual sites, would seem in this case to be solely for agricultural purposes since attempts were made to maintain soil fertility with seaweed and bracken frond manure. Large quantities of pollen from the chickweed, composite and ribwort families suggest further composting or the reploughing of land left fallow. The large number of criss-crossed ardmarks attest to the fact that ploughing, even cross-ploughing, took place on more than one occasion and that we are seeing more than just an initial sod-breaking episode.

The pit features from this phase with the association of two pottery styles again raise the question of what constitutes a normal domestic assemblage of finds as opposed to an assemblage with ritual overtones.

#### POTTERY

The forms of Impressed Ware vessels 25 and 26 seem to have been akin to the heavy pots from Luce Sands, Wigtownshire, which are bag-shaped with round or flattened (rather than flat) bases, listed and discussed by McInnes as her Class III ware (1964, 49–54, 68–74). Though the general appearance of some of the decoration is similar to that of the Machrie Moor sherds, the impressions are by whipped cord (coarse comb is very rare) and the same is true of the other sites with this class of pottery (listed by Kinnes 1985, 49). Vessel 27 with its unusual rim form and decoration could be compared with some of the sherds in the closed group of undoubtedly Late Neolithic pottery from Brackmont Mill, Fife (Longworth 1967, 67–75).

At Machrie Moor there is clear association with the late Beakers, not so surprising with vessel 27, but 25 and 26 appear to belong rather to one of the ephemeral Late Neolithic communities known mainly from the pottery recovered from the coastal midden sites or unassociated pits.

The form of 28, the decoration in two broad zones, and the use of coarse comb, all indicate that it belongs late in the Beaker sequence. The use of incision and the rim edge decoration on 29 are also late features. The relative scarcity of Beakers in the west of Scotland does not allow a detailed study of the later Beaker development in the way that is possible for the east of the country.

#### PHASE 4: DISCUSSION

It is during this phase of activity that apparently unlikely but stratigraphically proven events take place with the erection of stone circles over the exact sites of previous timber monuments which have suffered plough damage in the meantime.

This perhaps implies an oral tradition which recorded the precise locations of the timber circles. Although there may have been slight traces of hollows still apparent especially over the large postholes of circle 11, the stakes which seem to have been inserted to give the outlines of both circles were placed with great accuracy before the erection of the stones themselves. Roy *et al* considered circle 1 to be the most interesting and important of the three circles they examined on the moor (1963, 64). Their survey of the stones, buried to varying extents by peat, found that the figure which best fitted circle 1 was an ellipse of eccentricity one half which they believed showed up a wealth of harmonious relationships aimed at by the builders. They listed five points to highlight these relationships. First, the granite blocks and sandstone slabs were placed to oppose another of the same type through the centre of the ellipse; secondly, the blocks and slabs were set alternately around the ellipse; thirdly, the angles separating lines joining the stone centres to the centre of the ellipse were all about 30°; fourthly, both major and minor axes were terminated by stones so that there was overall symmetry in the construction with the major axis terminated by granite blocks and the minor axis terminated by sandstone slabs; and fifthly, owing to the eccentricity of one half the two foci by which the ellipse had been originally mapped out lay half-way between the centre and the ends of the major axis.

Of the five points listed, one and two survive, the third when measurements are taken from the centres of stoneholes shows angles ranging from 25° to 34° and, as for four and five, the major and minor axes when measured again from the centres of stoneholes are both terminated by sandstone slabs, if a twelfth stone existed, and do not lie at right angles to each other.

The attempt by Roy *et al* to explain the laying out of stone circle 1 was rendered inaccurate since some of their measurements had to be taken from the visible parts of fallen buried stones. Previous researchers at the site including Professor Thom were unaware of the other dimension involved in the placement of the stones which has now come to light, namely that of apparently aiming to get as close to the circuit of the previous timber circles as possible.

A consideration of the moor's stone circles by Barnatt & Pierpoint (1983, 101–13), which assesses their siting in relation to the astronomical potential of the area, suggests that accurate astronomy was not their aim but that at midsummer the sun would have risen at a prominent notch on the skyline which was visually centrally placed at the head of Machrie Glen from all six circles. This interpretation of the stone circles presumably applies equally to the timber circles present at Sites 1 and 11.

## PHASE 5: DISCUSSION

The insertion of cremation burials at both circles, that at Site 1 associated with a cordoned urn, makes them stand out from the other circles on the moor where Bryce's excavations recovered evidence for crouched inhumation burial in cists associated with Food Vessel pottery.

### BONE POINT

Bone points of various sorts are occasionally found with Neolithic and Bronze Age burials. That discussed here is one of a group whose association is primarily with cremations, and often with urns. Most of the points are burnt and included with the cremation deposit so it can be assumed that they accompanied the body in the pyre. Were this a regular practice, it is likely that only some of the objects burnt with the body would have survived and that those which have survived are the result of chance positioning during cremation. Several are fragmentary or incomplete either because part was destroyed by fire, not recovered for burial or not fully identified during excavation or post-excavation. For others it is impossible to tell what the tip was like, what shape the head was or whether it was perforated.

Nevertheless, several examples from Britain are worth noting as they provide a background into which the point from Machrie Moor fits. The closest parallels for perforated, rather than ring-headed, points are from an unurned cremation deposit in Pit 41 at the cemetery at Kirkburn, Dumfriesshire (found with a burnt bone bead (Cormack 1963, 119, 125, 127)), and in a Cordoned Urn burial from the ceremonial monument at Moncrieffe, Perthshire (with two bone toggles of different types and two fragments of corroded bronze (Stewart 1985, 142–3)).

Longworth (1984, 64) categorizes such objects as his type 5 pins: 'Thin perforated splinters of bone in which the articular end has been cut away and the top rounded off, the remaining broken surfaces usually smoothed but ground and polished only near the point.'

There are Collared Urn associations from Handley 29, Dorset (Longworth 1984, corpus no 419; this one having two perforations and found with flint tools), Lewes, Sussex (Longworth 1984, corpus no 562; along with a bronze ring, faience and amber beads, jet beads and rings and a boar's tusk) and St Twinnels, Pembrokeshire (Longworth 1984, corpus no 2084). Longworth (1984, no 372) places the point from Bloxworth Down 4a, Dorset (found with bone tweezers and amber and faience beads) in a miscellaneous category, but it would also seem to belong to this group. Assuming that the point from St Twinnels was burnt during cremation, all these vessels and pins were found with cremated deposits.

A similar, though unperforated, point came from a Cordoned Urn cremation burial at Brackmont Farm, Fife, with fragments of flint and a piece of bronze (Spence 1949, 227–9); and fragments of a cremated shaft possibly from such a point are known from Cremation Deposit 5, Aberdour Road, Dunfermline, Fife (Close-Brooks *et al* 1972, 129).

Although most parallels are from cremation deposits and urned cremations, a similar unburnt point with a perforated head was found with a secondary inhumation in a barrow at Irthlingborough, Northamptonshire. This had been placed in a pit and may have been contemporary with a primary, rich Beaker burial (C Halpin & J Humble pers comm). No good Food Vessel associations are known.

#### URN

The form of the vessel is largely unremarkable, although the presence of an internal cordon, rather than an internal rim bevel, is noteworthy. Where the original number can be established, the application of two external cordons represents the most frequent arrangement on such urns. On the other hand, the total absence of decoration is an uncommon feature of the corpus of such vessels, only six examples having been noted by Morrison out of the total of 33 cordoned (or closely related) urns from south-west Scotland (1968, 88–9). In Ireland, too, plain vessels are very rare in vessels of this type, accounting for only four out of the 66 such urns recorded by Kavanagh (1976, 319). In respect of its inverted burial position, however, the Machrie urn conforms to the normal burial practice for the type (cf Morrison 1968, 81–2) while the occurrence of an urn burial on an earlier ritual site occasions no surprise.

Cordoned Urns represented the second most common type (after Collared Urns) recorded by Morrison in his survey of cinerary urns in south-west Scotland, with 33 examples although classification was in some cases doubtful (1968, 88). In Arran, however, relatively few cinerary urns have previously been found, and in most cases little or nothing is known of the circumstances of their discovery, while the limitations of the surviving records of chance finds are further emphasized by the numerous vague references to discoveries of 'urns', now lost, in sources such as the Ordnance Survey Name Books, the *Statistical Accounts* or MacArthur (1861). A plain Cordoned Urn, similar in size and form to the vessel from Machrie, was found at Dippen, Kilmory, in 1875 while a larger urn, also undecorated but with three cordons, was discovered at Bellvue, near Shiskine in 1907 (Bryce 1910, 129–30, pl xxi, figs 46–7). A further plain Cordoned Urn, unfortunately unprovenanced but presumably from the island, forms part of the collection held by the National Trust for Scotland at Brodick Castle (unpublished). Slightly larger than the urn from Machrie but of similar form with two horizontal cordons, this vessel appears to have been associated with fragments of burnt bronze, probably the remains of a knife or razor. The only other extant recorded urns from Arran include a Collared Urn discovered at Ballymichael, Kilmory, 19th century, associated with burnt flint artefacts (Longworth 1984, 311 no 1967), while evidence of Irish-Scottish

contacts is provided by the rim sherd of a vessel found at Glen Cloy (MacArthur 1861, 16), of a form directly paralleled by Food Vessel Urns of the so-called Drumnakilly series found in Northern Ireland (Cowie 1978, 19; Apsimon 1970, 40–4). Finally, sherds of a cinerary urn of uncertain form found in the disturbed chambers of the Clyde cairn at Tormore, Kilmory (Henshall 1972, 193, 372), may point to late use of that site for funerary purposes, recalling the Food Vessel Urn inserted in a cist in the cairn material of the chambered cairn at Glenvoidean in Bute (Marshall & Taylor 1977, 18, 24–5).

In Argyll, as in Arran, Cordoned Urns predominate, having been found in neighbouring Kintyre at the cairn at Balnabraid, where a Bucket Urn was also recovered (Ritchie 1967, 87) and at Dalaruan, Campbeltown (Gray 1894); and further north, at Ardochy by Loch Etive (Donations, *Proc Soc Antiq Scot*, 74 (1944–5), 176) and near the McKelvie Hospital, Oban (Donations, *Proc Soc Antiq Scot*, 32 (1897–8), 58–9). In addition, various fragments of cinerary urns have been found representing vessels of simple bucket-shaped (eg Upper Largie, Kilmartin: *Discovery & Excavation in Scotland* 1983, 22–3) or indeterminate form (eg Oban, Gasworks Cave: RCAHMS 1975, no 98.4), while the many reports of unspecified ‘urns’ – although not all necessarily cinerary vessels – have once again to be borne in mind (for lists see RCAHMS 1971, 13–14; 1975, 14–15; 1980, 14; 1984, 16; 1988, 24–5). Particular mention may also be made of sherds of what has been identified as the lower part of a Collared Urn recovered from the chambered cairn at Nether Largie at Kilmartin explored by Greenwell (Greenwell 1866, 344–5; Longworth 1984, 311 no 1966), for currently this represents the most westerly occurrence of the type in Scotland. The group of Collared Urns recovered from a cairn investigated in the 19th century at Tomont End on Great Cumbrae, in the Clyde (MacGown 1883; Longworth 1984, nos 1960–2), is best seen as an outlier of the north Ayrshire distribution.

While not particularly common, Cordoned Urns are thus the most widespread urn type so far found around the Firth of Clyde and in Argyll. Although further discovery and excavation might change the picture, the relatively low numbers of cinerary urn burials in Arran, Bute and Argyll may in part reflect the enduring status of Food Vessels as the prestige pottery in this region: with the widespread adoption of cremation rite, the usage (and possibly even manufacture?) of this form of pottery may have been adapted to meet changing funerary ritual requirements. The tall Food Vessels which have been termed Machrie Vases may have been one local response (Scott, J G in Davidson 1967, 167–8), while deposition of the remains in enlarged Food Vessel Urns, as at Glenvoidean, may have been another.

In view of the relative rarity of associated artefacts with urn burials, the bone pin and flint knife/fabricator are noteworthy. Bone pins have only very occasionally been found with Cordoned Urns in Scotland (see above). In what may reflect a real exclusion, rather than simply a recovery bias, flint objects also appear to occur only very rarely with urns of cordoned form: the handful of associations in Scotland include a group of flint tools found with the vessels from Brackmont Mill, Fife (Spence 1949, 227–9), and a flint chip ‘in appearance not unlike the shape of a flint arrowhead’ found within a vessel from the Kirkpark urn cemetery, Musselburgh, East Lothian (Lowe & Anderson 1894, 64).

The inadequate recovery of so many earlier finds will undoubtedly have resulted in the loss of many such associated artefacts, especially when in a burnt and distorted condition: the urn from Machrie and its associated grave group therefore provide a valuable addition to the relatively scanty inventory of well-recorded urn burials from the Clyde region. In the absence of relevant radiocarbon dates from local sites, a conventional date range of c 1450–1250 BC may be suggested for this burial (cf Burgess 1986, 350).



## GENERAL DISCUSSION

The later events on site have already been elucidated and will not be repeated here.

### CHIPPED STONE ASSEMBLAGE

Of the 1,696 pieces retrieved during the excavation, pitchstone accounts for approximately 61% (1,039) with the following types represented – porphyritic 28% (481) and aphyric 33% (558). Flint accounted for 37.6% (637) of the assemblage with a small number of pieces of quartz, jasper and chert also present. All pieces of flint retrieved from these sites are corticated to some degree and correlation exists between degree of cortication and source of raw material. Furthermore the cortex which survives on the unused nodules is smooth and abraded, consistent with a beach pebble origin. Sources of pitchstone in Scotland are known from Eigg, Mull, Ardnamurchan and Arran. Arran has three source areas, but trace element analysis does not distinguish between these sources and this material is just referred to as Arran pitchstone. In general, pitchstones may be homogeneous in texture or may contain well-formed crystals of minerals. Pitchstones without such crystals are termed aphyric, while pitchstones with crystals or phenocrysts are termed porphyritic (O Thorpe, pers comm).

A certain amount of on-site knapping has taken place but the majority of primary working appears to have taken place elsewhere. It would appear that the majority of cores were intended to produce flakes with the minimum of effort. This is reflected in the flakes where the majority have a simple prepared platform. Morphologically and technologically the assemblages from Sites 1 and 11 fall in the tradition of flint working that had its origins in the Neolithic and which lasted into the Bronze Age.

### RESIDUES ON POTTERY

Sherds representing all the pottery styles retrieved from the site, with the exception of the urn, were noted to have residues adhering to their internal and occasionally also external surfaces. Sampling was undertaken before any reconstruction work on the pottery took place as the residues were friable. Subsequent analyses were undertaken by Dr Moffat. He made a distinction between samples which comprised solely micro- and macro-plant remains which were predictable from the local and regional vegetation, and those which had distinctive features such as clumped immature pollen probably from broken-up flower heads. The former category greatly outnumbered the latter. He concentrated his efforts on the samples which were atypical as these were more likely to be true residues of former contents. Hazel in the form of nuts or buds and cereals seem to have been important. In addition the use of birch sap and pine resin is conjectured. The particular combinations of herb pollens suggested that they were inclusions in honey. It was not possible to elucidate 'recipes' or the consistencies of the original contents.

Unfortunately, owing to problems with Dr Moffat's computerised data on the residues it has proved impossible as yet to make the various findings vessel specific.

## CONCLUSIONS

The recent excavations give a keyhole view of activity on the moor which constitutes one of the few extensive tracts of flat land on the Isle of Arran. The excavations, initiated to retrieve information about the stone circles, revealed a hitherto undemonstrated chronological

depth to the sites with the earliest features represented being of Neolithic date. Such features were not unexpected, however, since the chambered tombs in the area serve as constant reminders of organized Neolithic activity. The extension of the trench to include the ground between the two stone circles proved invaluable. Not only were sizeable fence lines of stakeholes revealed, but, in addition, the large posthole was located which, although its function was not ascertained definitely, was of obvious importance in the prehistoric landscape.

With regard to the stone circles themselves, these excavations have indicated the potential for error in surveys drawn at the level of the top of the peat especially if they are used as a basis for indicating the original layout régime. These two Machrie stone circles must also be added to the growing list of sites with precursive timber monuments with all that that implies in terms of continuity of settlement and ritual. In general terms, the recent excavations shed a little light on other aspects of prehistoric life in an area dominated by impressive field monuments and begin to fill out the bare bones of the land-use story set out by Robinson (1981) based on pollen analyses and usefully summarized by Hughes (1988).

The forthcoming publication by Barber on the nearby Tormore and Machrie North sites should further advance our understanding of the prehistory of this very important area.

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The site archive has been deposited in the National Monuments Record and the finds are housed in the Royal Museum of Scotland.

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