

NEW EXCAVATIONS ON THE MONAMORE NEOLITHIC CHAMBERED CAIRN, LAMLASH, ISLE OF ARRAN. IN 1961

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I. INTRODUCTION

THE Monamore cairn (N.G.R. NS 017289) is one of the group of chambered tombs distributed throughout south-west Scotland which are known collectively as either the *Clyde-Solway* group¹ or as part of the wider *Clyde-Carlingford* complex on both sides of the Irish Channel.² It was decided to re-investigate one of the Arran cairns because none have been examined since the chambers of nearly all of them were excavated by Bryce some sixty years ago.³ His method of excavation was simply to clear out the burial chamber – the possibilities held by the forecourt area were not then appreciated. Professor Bryce indicated before his death that Monamore was one site whose forecourt he had not touched and which might repay examination.⁴ Recent excavations in Galloway have shown that a great deal of information about Neolithic funerary activities can be gained by the careful excavation of the forecourt area⁵ and it was hoped that one of the Arran cairns might yield similar data.

A reconnaissance trip to the island in March 1961 suggested that at least two of Bryce's cairns, Carn Ban (NR 991262) and Monamore, seemed to have undisturbed forecourts and the latter was selected as being smaller and more easily accessible.

(a) Summary

Before the 1961 excavations the Monamore cairn was thought to possess only the vestige of a forecourt façade – Bryce's plan (fig. 3*d*) shows only a single stone to the south-west of the entrance – and was therefore presumed to lack this structural feature.⁶ The latest work has revealed a complete, slightly crescentic façade of eight orthostats separated by high quality dry-stone walling which had been entirely buried by earth (Pls. II, 3; III, 1). These forecourt deposits reached a maximum depth of 5 ft. and three main layers were visible. At the base was dark earth with Neolithic artifacts and charcoal spreads which had accumulated during the time the tomb was in use. This was covered by a massive stone blocking which was in turn overlaid by a deposit of sterile brown earth. It was concluded that the earth layers were produced by soil drift from the hill slopes above the cairn and that this was caused, in part at least, by some form of human activity. This sequence of deposits allowed the few artifacts found to be placed in chronological order. Some sherds of plain, bag-shaped vessels dated from the construction of the cairn while a sherd of slipped, fluted Lyles Hill ware was in the forecourt deposits and therefore later.

¹ Childe 1935, 21 ff. and Map 1.

² Bryce 1902, 1903, 1910.

³ Piggott and Powell 1949.

⁴ Piggott 1954, 152 ff.

⁵ Information from Dr H. Fairhurst.

⁶ Bryce 1903, 53; 1910, 72.

Soil and pollen analysis suggested that the tomb had been in use during the sub-Boreal climatic period or earlier and that the forecourt deposits had accumulated gradually. Two C-14 measurements implied that the tomb had been in use for a thousand years or more but conflicted to some extent with the rest of the evidence.

The finds are in the Hunterian Museum, University of Glasgow.

(b) *Acknowledgments*

I have to thank the Forestry Commission (Scotland) for permission to work on their land, for presenting the finds to the Hunterian Museum and for filling in the trenches and fencing off the cairn after the excavations. I am particularly indebted to several people who provided specialist information on certain aspects of the excavation – to Professor H. Godwin who arranged for the C-14 measurements: to Mr D. W. Brett of the Dept. of Botany, University of Glasgow, for identifying the charcoal samples and to Mr S. E. Durno of the Macaulay Institute for Soil Research, Aberdeen, for his valuable analysis of the pollen samples. Mr J. C. C. Romans, also of the Macaulay Institute, came to the site and was of great assistance over the interpretation of the soil features: he also undertook the extensive soil analyses in Appendix D. The project was financed with a grant from the University of Glasgow. I derived great benefit while writing the report from the advice, criticisms and suggestions of Dr J. X. W. P. Corcoran, Mr T. G. E. Powell and Mr J. G. Scott.

2. THE SITE BEFORE 1961

(a) *Previous work*

The Monamore cairn was examined and planned by Professor T. H. Bryce in 1901 and he found that the chamber had already been ransacked and its capstones presumably taken off.¹ His plan shows a chamber some 13½ ft. long with sides of three overlapping orthostats and with two septal slabs dividing it into three compartments (fig. 3*d*). Two tall stones flanked the entrance and two lower portal stones, at right angles to the axis of the chamber, stood behind these. A single stone to the south-west of these seemed to be the remains of a façade.

Bryce re-excavated the chamber. 'The soil thrown out was carefully riddled but only a few fragments of pottery, and some chips of Corriegills pitchstone, were recovered in the way of relics.' The pottery fragments had few diagnostic features (fig. 4).

(b) *Description of the site before excavation*

The cairn stands in a side glen running up from the south side of the main Monamore glen which comes down to the east coast of Arran just south of Lamlash (fig. 1). The site is some 415 ft. above O.D. on the downhill edge of a flatter terrace on the western slope of the side glen. The minimum angle of slope on the terrace is 10° except immediately in front of the cairn (fig. 3*c*). The entrance and forecourt are on the edge of the terrace while the body of the cairn runs back down the

¹ Bryce 1903, 53; 1910, 72.

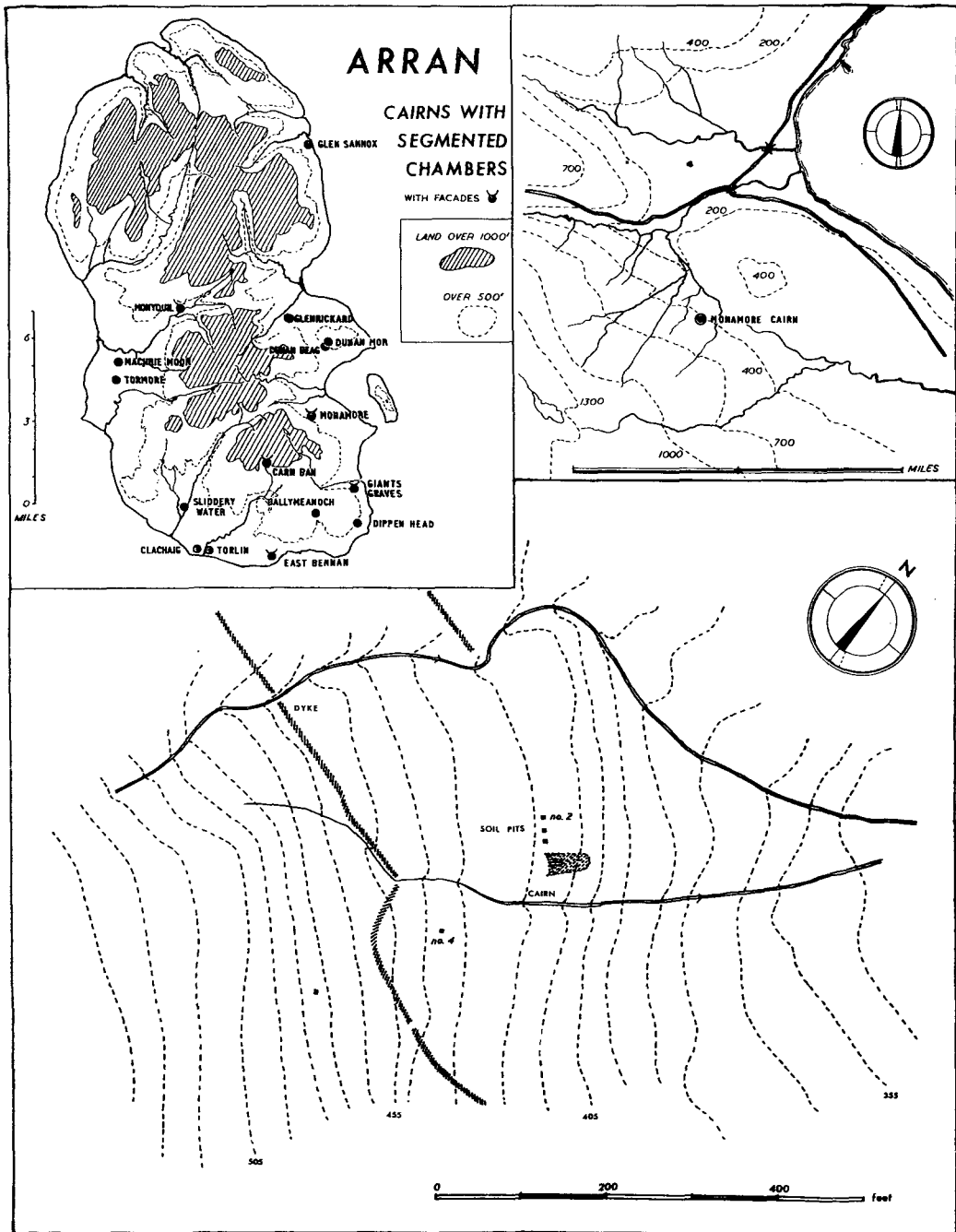


FIG. 1. Three maps showing Arran with the distribution of the chambered cairns, the general situation of the Monamore cairn and the appearance of the ground immediately around the cairn

steeper slope below it. On the terrace are clear indications of the ridges and furrows of early spade-cultivated plots and these extend northwards along the west slope of the side glen for a couple of hundred yards. At the north end of this cultivated area is a flat expanse of ground on the hillside, upon which stands a ruined rectangular building, presumably the old croft. A local informant said that it had been inhabited not many decades earlier.

In March of 1961 the visible parts of the Monamore cairn consisted of the chamber – full of debris to within a foot of the top of the side slabs – with two stones at its entrance and two taller portal stones in front of these. The third outlier was visible and the back of a fourth, further out on the same side, was almost covered by turf and was apparently not seen by Bryce. The fact that these two lateral stones were almost buried and that the level of the ground in front of the entrance was 3 ft. above the debris in the chamber suggested that most of the forecourt was buried. This proved to be the case.

The low mound of the cairn material was visible on either side of the chamber but its sides were not clear: it rapidly faded and became indistinguishable a few feet behind the end of the chamber.

3. THE EXCAVATIONS

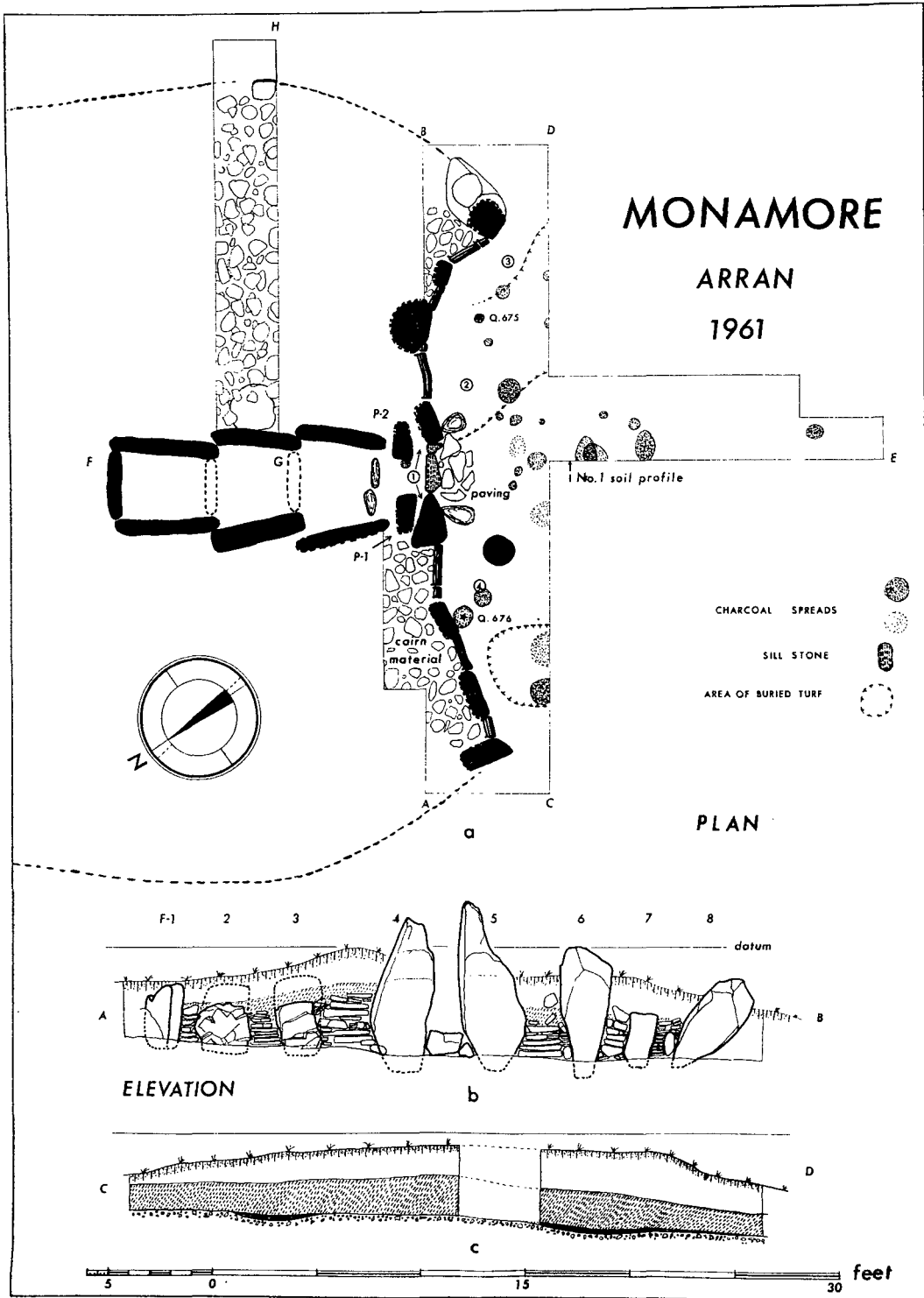
(a) *Deposits in the forecourt and entrance* (Figs. 2c and 3)

Thick deposits of soil had accumulated in the forecourt and up against the façade, almost completely burying it, and several distinct layers were apparent in it.

Pre-cairn phase. At the base of the deposits were found traces of a dark buried turf-line which overlay undisturbed sterile subsoil. The turf line was a black layer, from 2 to 3 in. thick, and it lay in two separate patches on either side of the tomb entrance. Charcoal fragments in it were submitted for C-14 count to the Botany School, Cambridge, but they turned out to be largely mineral ash and unsuitable for dating. After the removal of the overlying layers a test pit was sunk into the subsoil and revealed a well-developed podzol profile which probably extended back many centuries before the cairn was built. Details of various soil pits are given in Appendix H and discussed in section 4(a), p. 13. The soil profiles examined appeared to have been stable in pre-cairn times.

Phase 1. No actual deposits in the forecourt were referable to this period, that of the construction of the chambered tomb, though the sherds found between the pairs of portal stones (Appendix A, p. 25) certainly date from a construction phase. The cairn seems to have been built directly on the buried turf-line.

Phase 2. Lying on the buried turf-line where it was preserved, and directly on the subsoil elsewhere, was a thick deposit of grey earth (layer 4). In this were scattered fragments of pitchstone, a few potsherds, one flint artifact and small clear spreads of charcoal as well as many scattered fragments (Appendices, p. 27ff.). This layer reached a maximum thickness of nearly 3 ft. immediately in front of the mass of stones blocking the tomb entrance and it had accumulated to nearly 2 ft. in depth in front of the forecourt façade in places. The layer gradually dwindled



in depth up the slope of the hill away from the façade, being 7 in. deep at a distance of 21 ft. from the entrance and non-existent in a test pit on the same line 10 ft. further uphill. This grey Neolithic layer was homogeneous throughout with no clear indications of internal stratification and, since there were no clear traces of it in the trench cut into the body of the cairn (figs. 2*a* and 3*e*), most of it seems to have accumulated after the cairn and façade were built. The origins of this soil layer are discussed later (section 4(*e*), p. 19).

In the area of the forecourt excavated 21 distinct spreads of charcoal, and 3 thinner scatters, were uncovered at varying depths. Another patch was inside the tomb doorway. These spreads varied in diameter from about 3 to 13 in. and, though none of them contained much charcoal, what there was was concentrated into a limited and well defined area. There can be little doubt that each represents the debris of a small fire lit in the forecourt. Both dated carbon samples came from such spreads and not from isolated fragments.

About 130 fragments of pitchstone were found in the excavations and none of these had any traces of secondary working. A few were struck flakes but most were simply shattered lumps of various shapes and sizes. They did not appear in clear groups but were scattered more or less evenly over the whole area. The fragments presumably derive from the outcrop at Corriegills on the east coast and about 4 miles NNE. of the cairn. However, it is worth noting that other fragments, more worn and patinated than the ones in the forecourt and distinctly less glassy-looking, were found in brown sterile soil in a test pit north-east of stone F-1.

When the stone blocking layer in front of the tomb entrance (phase 3) was being removed it appeared at first to extend down into the Neolithic layer (fig. 3*b*). However, closer examination revealed that, whereas the slabs of the blocking layer were mostly set in a slanting position and in brown earth, those below in the grey soil were laid flatter, like a crude pavement. Moreover each side of this 'pavement' was bounded by a small boulder which had been placed leaning against an orthostat (stones F-4 and F-5) (Pl. II, 1): they appeared to have been positioned to hold the paving in place. A sill-stone was jammed inside the tomb doorway and this held the inner edge of the paving (fig. 2*a*).

This sill-stone was 14 in. high and firmly wedged between the tall orthostats; another stone wedged its base (Pl. II, 2). A section through the deposits on either side of it showed that it was a secondary feature and had been set in place after some grey soil had accumulated in the doorway (fig. 3*f*). The grey earth extended *under* the sill and into the chamber for a short way: there was a small patch of charcoal on it just behind the sill. From the section it appears that a pit for the stone, with a vertical back and a sloping front, had been dug into the thick layer of grey soil in the doorway. The sill-stone was then wedged into position with a smaller stone at its base and finally made firm with a little packing of brown earth and stones in front of, but not behind, it. The grey earth had subsequently accumulated on top of this packing.

Various artifacts were found in the grey earth layer; the pitchstone fragments have already been mentioned. In addition there were several sherds (fig. 4, Nos. 3,

4) and a flint knife (No. 6: Appendix B, p. 27). One of the sherds was a slipped everted rim fragment with faint vertical fluting on its inner surface (No. 3) and seems to be part of a Lyles Hill type of bowl. A dumb-bell bead of dark Prussian blue glass was also found, unfortunately when earth was being discarded. Judging from the excavations in progress at the time it came out of the grey Neolithic soil in front of the blocking layer. It is a post-Iron Age type of bead and its context is discussed further in Appendix C (p. 27).

Phase 3. Directly on top of the grey Neolithic layer was a stratum of packed stones mixed with loose brown earth (fig. 3*b*: layer 3). This stony layer reached a maximum thickness of nearly 2 ft. in front of the tomb entrance but gradually thinned out laterally until, in the outer halves of the forecourt, it was only about 6 in. thick (fig. 3*g*). The top surface of this blocking layer formed a crude pavement across the forecourt with a more or less level, though rough, surface (Pl. I, 1 and 2). Its front edge formed an approximately straight line joining the outermost stones of the façade. As if to emphasise the deliberate nature of this blocking three flat slabs were laid side by side in front of the sealed doorway and formed a short kerb along the front edge of the pavement (Pl. I, 2). Stones F-2, F-3 and F-7 of the façade were completely concealed by the blocking layer though the top edges of the first two were in fact showing, unnoticed, level with the rest of the stones. The blocking layer also seemed to be at the same height as the upper surface of the stone body of the cairn on the NW. side and the two surfaces were continuous when first exposed.

In front of the tomb door the blocking layer, formed of large slabs laid slanting up against the orthostats (Pl. I, 4: fig. 3*b*), extended well down below the upper limits of the grey Neolithic layer nearby (Pl. I, 3). The contrast between the large stones and brown earth forming the blocking rubble and the compact grey earth behind and beneath it was marked.

The section through the blocking in front of the entrance showed that there were faint traces of a buried turf-line immediately on top of the stone layer (fig. 3*b*). In spite of a careful search in the soil pits on the terrace around the cairn no trace of this turf-line was found outside the limits of the forecourt and it was only convincingly apparent in front of the entrance. Obviously this turf must have formed after the blocking was placed in position.

The only artifact associated with the blocking layer was a simple flint scraper which was found on top of the stones (fig. 4, No. 8: Pl. IV: Appendix B).

Phase 4. A thick deposit of sterile brown earth lay everywhere on top of the forecourt deposits described (fig. 3*b*, layer 2). No artifacts were found in it though a very few scattered fragments of charcoal were noted.

(b) Deposits inside the chamber

The burial chamber was re-excavated down to the subsoil but little of interest was found. The two large septal slabs lay out of position where they had been left by Bryce and no trace of floor deposits or artifacts was found. A description of the potsherds found in the chamber by Bryce will be found in Appendix A. However the floor of the chamber immediately inside the doorway had not been disturbed by

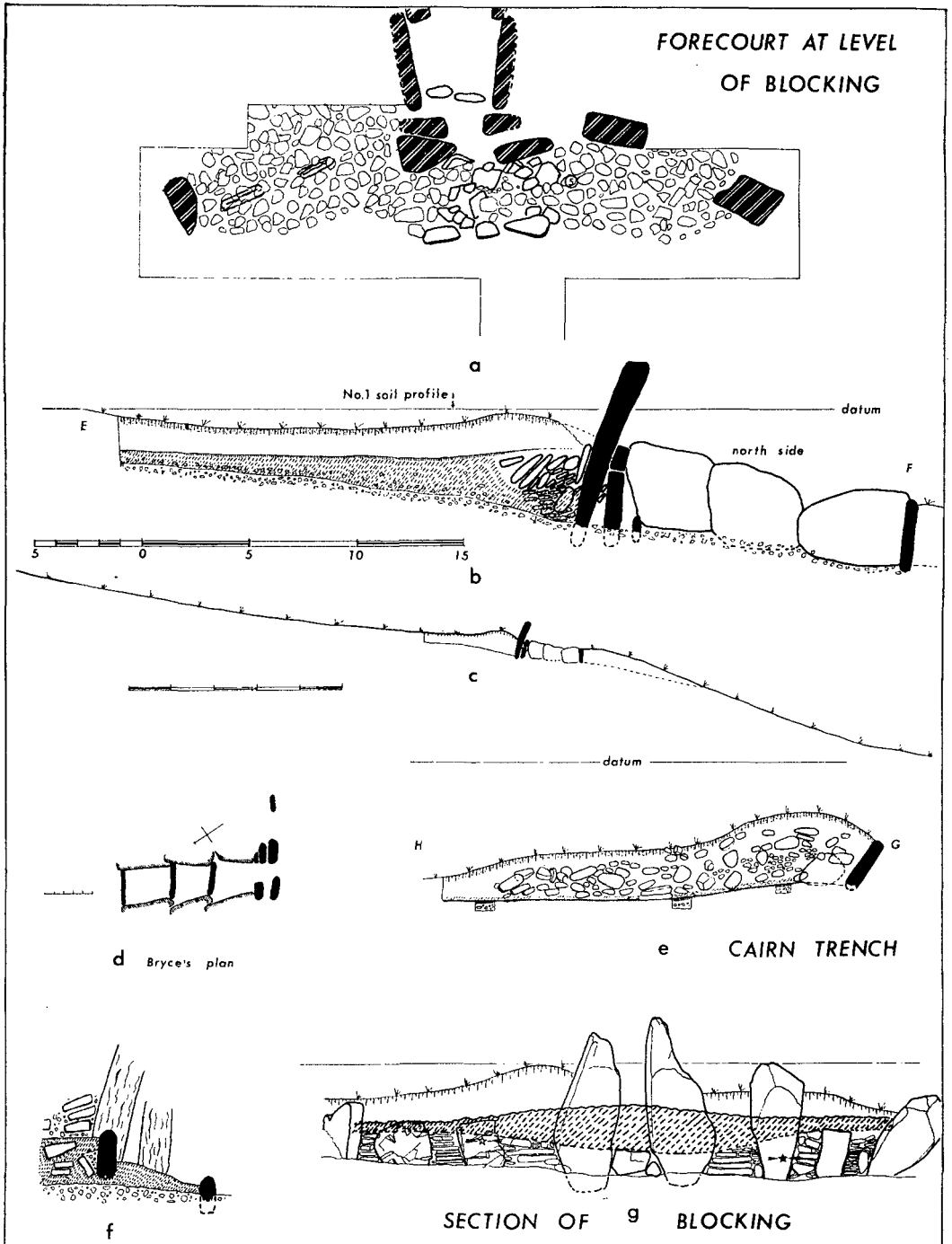


FIG. 3. Plan of the forecourt at the level of the blocking and various sections and elevations of exposed features: Bryce's plan of 1901

the earlier investigators and a thin layer of grey soil with one charcoal spread was found there. In addition two small stone slabs were set into the floor in line (fig. 2a and Pl. III, 3) and projected about 6 in. above it. They seemed to form a rudimentary septal slab and contrast strikingly with the massive septals further back.

Between stones F-4 and P-1 and again between F-5 and P-2 there was a gap of several inches which was filled with tightly packed stones and brown earth. So tightly were the stones jammed that they had to be prised out. In this rubble were found several sherds of plain, bag-shaped bowls of early Neolithic type which can only have reached their present position when this part of the cairn was built (fig. 4, 1 and 2: Pl. IV: Appendix A).

(c) *The cairn*

The mound of the cairn was apparent on either side of the burial chamber and for a few feet behind it but it was not possible to trace its outline accurately without more extensive excavations than those for which there was time. The one trench dug into the body of the mound, on its south side and running up against slab C-6 (fig. 3e), showed that its edge extended laterally beyond the limits of the forecourt façade. In this way Monamore seems to be similar to the Lang Cairn on Dumbarton Muir.¹ The rear part of the Monamore cairn may also be similarly wedge-shaped but it was not possible to be sure of this. Its overall length was estimated by probing and seemed not to extend more than 45 ft. back from the entrance to the chamber.

The cairn material reached a maximum height of 3 ft. 3 in. just behind the chamber side slabs but the top 9 in. or so may well be debris thrown out by the earlier excavators. The body of the cairn is composed of large, irregular stones and brown earth which appeared, from this one trench, to be heaped up without any visible formation. At the edge of the cairn, and in the west half of the trench only, were several stones which looked as if they might have fallen forward from a kerb of dry-stone walling but the evidence was not conclusive. The present height of the cairn material reaches only to the top of the side slabs of the burial chamber.

The underlying turf line was traced all along this trench. There was a thin, slightly darker layer on top of the old turf layer but no clear trace of any of the grey Neolithic earth which had accumulated in the forecourt: the thin layer just mentioned seems more likely to have been caused by the rotting of rank grass when covered by the cairn material. Samples taken from this buried land surface proved unsuitable for pollen analysis.

(d) *Description of the structure after excavation*

The façade. A total of eight orthostats were finally revealed in the forecourt façade of which four had been completely concealed. Dry-stone walling of high quality separated these uprights to form the familiar 'post and panel' appearance of this type of structure. The plan of the forecourt thus revealed was asymmetrical, forming a flat curve which was slightly more concave on the south-eastern side

¹ *P.S.A.S.*, xciv (1960-61), 315 ff.

(fig. 2a). All the orthostats except the first three were of hard sandstone: stone F-1 was a conglomerate while F-2 and F-3 were slabs of much softer, dull red sandstone. These last two had been badly fractured in antiquity, during the time the tomb was in use, and their entire surfaces were covered with the scars of angular fragments which had become detached, presumably by thermal action. During the few months that the excavation was left open several large pieces flaked off and were found lying on the ground in front. However no such fragments were found in the Neolithic earth layer during excavation. These two stones were thus probably considerably taller when they were first put up and the forecourt would originally have presented a more symmetrical appearance from the front than it does now when all the larger stones seem to be concentrated in the right half. The dry walling between stones F-3 and F-4 projects in front of the present face of F-3, confirming that much weathering has taken place. Stone F-7 was also exceptionally small but there was no evidence that it had ever been any other shape.

When the blocking layer was first exposed it appeared to extend behind the orthostats of the façade in the northern half of the forecourt. On further examination the tops of stones F-2 and F-3 were revealed and the layer of stones behind them appeared to be the undisturbed top of the stone body of the cairn. This again was hardly higher than the sides of the burial chamber. A large quantity of the brown earth in the forecourt (layer 2) made up the present height of the cairn immediately behind the façade. (Fig. 2b.)

The entrance. This was confirmed to be a double one with two portal stones immediately behind the two central uprights of the façade. The sill between stones F-4 and F-5 proved to be a secondary feature but two feet behind this was a rudimentary septal slab of two stones which was probably original. (Fig. 2a.)

The chamber. No new structural features were discovered except the small septal mentioned above. The chamber measured some 13 ft. in length internally and varied in width from 4 ft. 6 in. to 2 ft. 9 in. because of the overlapping side slabs. Its depth was about 3½ ft. from the top of the side slabs to the subsoil. There were no signs anywhere of the capstones which had presumably once covered it.

Except from Bryce's plan (fig. 3d) it was not possible to tell exactly how the two large septal slabs had been placed originally – presumably they were wedged between the inner slabs of the overlaps (fig. 2a). However they must have been some 2 ft. high when in position and must have rendered access into the rear compartments from the front of the tomb rather difficult. This question is discussed further on p. 22.

(e) *The weathering of the orthostats*

The two tall orthostats flanking the tomb entrance, stones F-4 and F-5, showed distinct zones of weathering on their front surfaces which reflect the different lengths of time for which the various parts of the stones had been exposed to the atmosphere since the façade was built. (Pl. II, 2.) Three zones are apparent and their two boundaries coincide with the top of the blocking layer and the modern turf-line respectively.

Zone 1. The basal zone of each stone was that covered by the grey Neolithic earth (layer 4) and the stones of the blocking layer. From the original ground surface to the boundary with the middle zone the stones were hardly weathered at all: their edges were rounded and their surfaces smooth. This zone represents the weathering which had taken place between the construction of the façade and the final blocking of the tomb.

Zone 2. The middle zone on the stones was only slightly more weathered than the lower: the surfaces were slightly rougher but the profile of the edges was more or less continuous between zones 1 and 2. There was however an almost imperceptible kink at the boundary on the inner edge of F-5. This zone represents the weathering which had taken place from the construction of the façade to the formation of the modern turf-line.

Zone 3. The upper parts of the two stones were extensively weathered: their surfaces were rough and fractured and both showed a pronounced step on their right edges where massive flaking had evidently taken place (fig. 2*b*: Pl. II, 1). These zones had been exposed to the elements ever since the façade was constructed and they have evidently lost a large part of their original volume.

Clearly the two lower zones on the stones have only been subjected to a fraction of the total amount of weathering that has taken place since the construction of the façade, and, as a corollary, most of that weathering must have taken place since the modern turf-line was formed. In the graveyard at the ruined chapel at Lamlash there are a number of ancient gravestones (N.G.R. NS 032323). Two of these, made of hard sandstone, were dated *c.* 1749 and *c.* 1812 (the inscriptions were weathered) and had thus been exposed to the elements for about 210 and 150 years respectively. Both stones exhibited a distinct roughening of their surfaces and the younger one had the beginnings of severe cracking and fracturing at its edges which will eventually cause large fragments to fall off. In view of the unknown factors influencing the weathering of these gravestones (the hardness of the rock, possible chemical action of the rain on their surfaces, intensity of the Arran winters and so on) no precise deductions can be drawn from these observations. Nevertheless it does seem that a sandstone slab, *under present climatic conditions*, might be so severely fractured and weathered after four or five centuries that its original surface would largely have disappeared. This would certainly have happened after a millennium. In any case marked roughening and cracking becomes apparent after a century or two. The relevance these observations have for the Monamore cairn is discussed in section 4(*b*) on p. 15.

(*f*) *Summaries of specialist data*

Pollen analysis (Appendix G, p. 28). Of the four samples taken only two yielded sufficient pollen for a count. The two useless samples were from the old turf-line under the cairn (trench IV) and from the old turf-line at the base of the forecourt deposits. A sample from the blanket peat on the hillside above the cairn proved to be of recent, sub-Atlantic, formation and a sample from the brown earth layer in the forecourt (layer 2) proved to be of earlier, probably sub-Boreal (zone VII*b*),

date. However the upper part of the diagram of the latter seems to overlap with the base of the sub-Atlantic hill peat. This presumably means that the upper part of layer 2 in the forecourt was formed at the beginning of sub-Atlantic times, that is, in the first half of the first millennium B.C.

Soil analysis. The analysis of samples from the several soil pits dug suggested that the Neolithic and later layers in the forecourt were, except of course for the blocking, the result of the gradual accumulation against the façade of material derived from the slopes above the cairn (Fig. 7; Appendix H). It also showed that the old ground surface below the cairn and forecourt had been little disturbed before it was buried by the influx of soil and this suggested that the accumulation of soil began at the same time as, or soon after, the construction of the cairn.

Soil Pit 4, above the cairn, showed a lack of obvious erosion of its profile but another, just above the dyke immediately above the cairn, showed a profile in which the B₂ horizon (just below the turf) had largely disappeared and the remaining original podzol profile been covered by colluvium. These two pits may thus provide an indication of the southward limits of the soil erosion.

The analysis of the phosphate content of the samples revealed that this was low and failed to supply positive evidence that the tomb was on the fringes of a cultivated or inhabited zone. Nevertheless the data are not inconsistent with such a situation. The buried profiles (base of No. 1 and No. 3; Appendix H) suggested that the soil in the area did not have a very high level of fertility when the tomb was built.

A relative indication of the early date of the construction of the tomb was provided by the depths of the maximum accumulation of iron oxide in the B₂ horizon in the undisturbed podzol profiles – the depth of this feature is a result of the length of time a soil horizon has been exposed to leaching. It was about 9 in. deeper in the profile taken on the open hillside (No. 4) than in that below the forecourt deposits (No. 1).

Radiocarbon dates. Two radiocarbon measurements were received for charcoal samples sent to Professor H. Godwin at the Botany School, Cambridge.¹ Both came from layer 4 in the forecourt, the Neolithic earth, the first being from near the base of the deposits and the second from just below and in contact with the stony blocking layer.

| | | |
|-------|-----------------|-------------------|
| Q.675 | 5110 ± 110 B.P. | (3160 ± 110 B.C.) |
| Q.676 | 4190 ± 110 B.P. | (2240 ± 110 B.C.) |

The older sample was from a dense patch of charcoal fragments in the Neolithic earth, about half way between the tomb doorway and stone F-8 (figs. 2a and 3g). It was some 7 in. above the underlying subsoil. The other sample came from a similar distinct spread of charcoal on the other side of the forecourt and, as was the case with the first, it seemed to be in deposits which had not been disturbed by clearance activities around the tomb doorway (section 4 (d), p. 18). There can be little doubt that, since it was practically touching the stony layer, this dense patch of charcoal was laid down only a short while before the tomb was finally blocked up and the forecourt area covered with stone.

¹ *Radiocarbon*, VI (1964), 126: Yale.

4. DISCUSSION

(a) The origin of the forecourt deposits

The extreme rarity of extensive accumulations of earth in the forecourts of chambered tombs combined with the fact that, at Monamore, these deposits contained most of the artifacts recovered and provided two dated charcoal samples, demands that close attention be given to the question of how this great thickness of earth came to be where it was. The explanation which was evolved as the excavation progressed, and which seemed subsequently to be supported by the data from the soil and pollen analyses, was that soil erosion had taken place on the hill slopes above the cairn in Neolithic and later times and that some of this downwashing soil had been arrested by the forecourt façade, which was eventually almost completely buried by it. Moreover from these first impressions it seemed likely that this influx of earth into the forecourt had occurred quite rapidly and that the tomb had therefore been in use for a relatively short time, perhaps only a century or two. The two C-14 dates seem to conflict with these initial deductions.

The clear stratification of the forecourt deposits, and the separation of the Neolithic earth (layer 4) from the post-blocking brown earth by a faint turf-line, strongly suggest that these layers accumulated gradually. The homogeneity of the deposits and the lack of any evidence of sudden deposition support this. The spreads of charcoal in the Neolithic earth – each a distinct but thin patch – can hardly have formed unless fires were lit from time to time on a forecourt surface which was subsequently covered by fresh influxes of earth. I consider that these charcoal spreads are a conclusive demonstration that gradual accumulation and not sudden dumping produced the forecourt earth layers. No doubt the deepness of the soil made the area in front of the tomb entrance damp and this would account for the absence of incinerated soil below each spread.

The sill-stone in the tomb doorway is also good evidence for gradual accumulation. There is no doubt that the basal stones in the section (fig. 3*b*) are distinct from those of the blocking above and were put there as paving during the Neolithic use of the tomb. They are plausibly explained as a device to prevent the earth which was accumulating in the forecourt from entering the tomb chamber and as a way of consolidating what must have been a slippery muddy patch outside the entrance. The section through the doorway (fig. 3*f*) makes it clear that the sill-stone was carefully inserted *into* earth which was already piling up in the entrance and that it was subsequently covered by the same grey earth.

The formation of a faint turf-line over the Neolithic deposits is also understandable if soil was continuously flowing downhill towards the forecourt façade during and after the Neolithic use of the tomb. The laying of the blocking stones perhaps produced a temporary equilibrium in the forecourt and prevented more earth from coming in until enough had banked up a short way up the slope to start the flow once more. During this interval turf would have formed and it must be significant that no other such turf lines were traced in either layers 2 or 4. Finally the soil pits dug further up the slope, while not providing conclusive evidence, do suggest that

the upper part of the old podzolic soil profile was being eroded off over part of the hillside above the cairn.

The pollen data, too, help to confirm that the soil accumulated gradually. The clear diagram showing changing proportions of plant pollens must indicate that the deposits concerned were not thrown in at random at one time but built up slowly. The differential weathering on the two tall orthostats suggests the same.

Alternative explanation. It has been suggested to me that the entire forecourt deposits were all placed in position at one time as an immense blocking layer and that the artifacts and charcoal samples are not therefore stratified in any particular order. This view deserves consideration not least because it would, if correct, fundamentally alter the entire interpretation of the site in almost every way. In this view the lower part of the deposits, the grey Neolithic earth, would consist of occupation debris scraped up from some domestic site nearby, thrown together into the forecourt and then covered by the mass of stones. Thus charcoal and artifacts in it would be a mixed group of derived material which need have no special stratigraphical relationship with the construction and use of the tomb. The shallow angle of slope above the cairn is mentioned as an objection to the gradual soil flow theory and also the fact that the spreads of charcoal were undisturbed even though it must have been a while before they were covered by the inflowing earth. There are indeed some inexplicable features in the Monamore forecourt stratification but there is no difficulty in showing that the evidence for gradual accumulation far outweighs any for sudden deposition.

The cause of the soil erosion. It seems quite clear that the hillside on which the cairn was built was stable in pre-Neolithic times. The soil pits showed that the podzol profile buried under the forecourt deposits was intact – even the old turf-line was preserved in places – and represents the persistence of stable conditions for many centuries before the arrival of the cairn builders. The other soil pits indicated the same. Moreover the fact that part of the old turf was preserved in the forecourt and that, in the areas in which it had been worn off, the underlying layers of the profile had only been slightly damaged, indicates that the accumulation of soil began very shortly after the construction of the tomb. Presumably the turf was worn away in the process of construction. This alone makes it highly improbable that the soil was a blocking layer – several decades at least must be allowed for the use of the tomb and during that time the turf should have re-formed. It is hard to resist the conclusion that the start of soil erosion and the construction of the tomb were brought about by the same agency, Neolithic man.

It is possible that the soil creep was partly due to the climatic changes which occurred in Europe at the end of the fourth millennium B.C.: the earlier C-14 date suggests that the tomb was built at approximately that time, the boundary between the Atlantic and sub-Boreal climatic phases (zones VIIa and VIIb). Some fairly pronounced vegetational changes mark this boundary over wide areas of northern Europe and, while the advance of the first Neolithic peasants certainly had something to do with this, natural events may also have played a part.¹ However, the soil

¹ Godwin 1956, 338 ff.

erosion above the Monamore cairn seems more likely to have been caused by human activity – the apparent coincidence of the construction of the cairn and the start of the soil flow seems fairly conclusive evidence for this. Also relevant is the suggestion provided by the two soil pits above the cairn that the erosion may have taken place over only a limited area (Appendix H, p. 30). The precise causes of the disturbance of the hitherto stable hillside are difficult to assess, particularly as the plausibility of the various alternatives depends on the exact relationship between the two C-14 dates and the forecourt deposits, itself uncertain. This problem is considered again in the section on dating below, and it is sufficient to note here that the erosion might have been caused by more or less continuous agricultural activities on the hill slopes during Neolithic times, either hoe-cultivation or grazing, or by a widespread disturbance of the surrounding turf at a single point in time, perhaps for a reason connected with the construction of the cairn.

(b) *The dating evidence*

Relative dating. The stratification in the forecourt and the evidence that the deposits there accumulated fairly gradually allow the artifacts incorporated in those deposits to be placed in chronological order. Thus the sherds from between the portal stones (fig. 4, Nos. 1, 2 and 5) clearly antedate those from layer 4 in the forecourt (Nos. 3, 4 and 6) which included a rim of a probable Lyles Hill ware bowl.

The length of time the tomb was in use is clearly of great importance, and unfortunately the various lines of evidence conflict to a certain extent. The general impression gained from the deposits and the weathering patterns on the two tallest orthostats was that the influx of Neolithic grey earth had taken place over a relatively short period. The absence of intermediate turf-lines inside this layer seemed highly relevant here, and, even if the lack of weathering on the two lower zones of the orthostats can be explained by milder climatic conditions in sub-Boreal times, this would hardly account for the lack of intermediate turf-lines in the Neolithic earth if this took many centuries to accumulate. Unfortunately no pollen data are available for this phase but the diagram obtained for the post-blocking brown earth layer suggests that this was accumulating in late sub-Boreal times and that it partly overlapped with the sub-Atlantic hill peat (Appendix G). If the same reasoning applies to this brown earth – that it must have accumulated fairly rapidly because of the absence of intermediate turf layers and the lack of pronounced weathering on the orthostat surfaces covered by it – it is hard to see how its accumulation could have continued down to the middle of the first millennium B.C., the start of zone VIII (sub-Atlantic), from some time in the third millennium. The same problem appears in more acute form when the two C-14 dates are considered in relation to the Neolithic earth layers.

Absolute dating. Taken literally the two C-14 dates from layer 4 in the forecourt mean that the Neolithic earth took over a thousand years to accumulate and that the chambered tomb was in use for the same length of time. The earlier date, Q.675 – 3160 ± 110 B.C., was from a spread of charcoal near the base of the layer but still some 7 in. above the subsoil. Hence the charcoal, if it was young wood used

for a small fire, should date from some time *after* the start of the accumulation of the layer and therefore after the cairn – or at least the forecourt façade – had been constructed. It is possible that the soil drifted into the forecourt rapidly in the early stages and that the date is not far removed from the building of the cairn but, on the other hand, the depth of Neolithic soil under this sample is a large proportion of its total depth here, and the second date, Q.676 – 2240 ± 110 B.C., suggests that the whole took at least a millennium to accumulate. The possibility must therefore be borne in mind that the construction of the cairn may have taken place a century or even more before the older C-14 date, perhaps nearer 3300 or 3400 B.C. At the moment there is no way of deciding which of the two possibilities is more likely to be correct: samples from the very base of the forecourt deposits, which might have dated the actual construction, proved unsuitable for analysis.

The second dated sample came from just below the blocking layer and, even allowing only the minimum time between the lower limit of the two standard deviation bracket of the older date and the upper limit of the other, there still remains a 22:1 chance that the two dates cannot be closer together than 480 years.¹ Equally they could be 1360 years apart! Unless there is something wrong with one of the samples – for which no apparent evidence was found during the excavations – there seems no way round the implications of the two dates. Moreover it must be remembered that the earlier sample was laid down some time *after* the earth began to accumulate.

The fact that there are only two carbon dates and that they are widely separated in age inevitably casts some doubt on their reliability and on their exact relationship with the various stages in the cairn's history. One can only accept the dates provisionally until more are available from other sites of the Clyde-Solway group and confirm or modify the impression these two give – that this local Neolithic chambered tomb culture was established early and lasted a very long time. In fact the late fourth-millennium date falls within the emerging pattern of the primary Neolithic colonisation of the British Isles² and this alone favours its acceptance although there appear at present to be some difficulties for the development of tomb and pottery types in south-west Scotland (section 4 (e), p. 19).

There remains the possibility that the dates are contaminated in some way but any such contamination is likely to be marginal because of the nature of the deposits. Both were compact spreads of very small charcoal fragments with little depth and they were undoubtedly the remains of small twig fires which had been lit briefly in the forecourt. Large lumps of older wood did not seem to be present although presumably some might have been dredged up from a peat bog and thus give a date which is too old. A few isolated fragments of charcoal occurred throughout the Neolithic layer – and a very small number in the post-blocking brown earth – but the spreads of 'hearths' stood out clearly. The occurrence of isolated scraps suggests that a small proportion of the charcoal fragments could be older but, in the case of the Neolithic layer, such derived fragments are likely to have come from the outer zone of the forecourt area itself and therefore also of Neolithic date. In any case

¹ *Antiquity*, xxxviii (March 1964), 53; fig. 1.

² Clark and Godwin 1962.

any such contamination is likely to have been very small since the actual spreads must have been buried by incoming earth fairly quickly.

The samples may, on the other hand, have been contaminated by younger material. A few live rootlets were noted during the excavations to have penetrated as deep as the buried pre-cairn land surface in front of the façade (Appendix D); in addition one or two worms were seen in the Neolithic layer. The latter might have introduced some younger charcoal and they probably account for the glass bead in the Neolithic level. But again any such contamination is likely to have been on a small scale since the charcoal spreads seemed to be undisturbed. All things considered, the stratigraphy of the forecourt and the appearance of the charcoal spreads make it extremely likely that they are closely related chronologically to the two points during the use of the tomb when they were laid down. Unless special pleading is introduced to explain away the earlier date it must be considered highly probable that the Monamore cairn was constructed towards the end of the fourth millennium B.C. Neither does there seem any way of avoiding the implications of the second date – that the tomb was in use for many centuries.

(c) *The forecourt deposits reconsidered*

Thus there would appear to be a certain amount of conflict between the different classes of evidence for the amount of time the forecourt deposits took to form. Until the C-14 and pollen data were available the evidence discovered during excavation seemed to imply that the tomb had been in use for a short period, that both the Neolithic grey earth and the brown earth above had accumulated fairly quickly until stability was reached and the modern turf formed. The lack of marked weathering on the two lower zones of the orthostats suggested the same. A span of two or three centuries, or perhaps less, for the use of the tomb before the blocking seemed not improbable. Then the carbon dates and the pollen data suggested that the period of soil accumulation might have to be stretched to two and a half millennia, from before 3000 B.C. until the onset of sub-Atlantic climatic conditions. Knowledge of the precise cause of the soil drift would certainly help in interpreting these contradictory data but unfortunately there is no direct evidence for any cause. The most obvious explanation is that some form of Neolithic agriculture was begun on the slopes above the cairn after it had been built or, alternatively, that these slopes were heavily grazed. This combined with either heavy rain or a very dry and windy climate might cause the soil either to wash down the slope or blow around as dust silting up any hollows.¹ Even so the amount of soil involved suggests that any such agricultural activity lasted for a short time. If it has to be spread over a millennium it must have been intermittent and no evidence for this – in the form of intermediate turf-lines – was apparent. Also the forecourt deposits strongly suggested that the soil drift continued after the blocking of the tomb – with a short local pause in the forecourt itself (p. 7) – down to sub-Atlantic times. It seems even more unlikely that

¹ Large quantities of homogeneous earth were found to have accumulated on the Iron Age site of Dun Mor Vaul, Tieve, and could only be satisfactorily explained as wind-blown deposits: *Antiquity*, xxxix (1965), 272.

the hypothetical agricultural activity would have gone on continuously for as long as that. Nevertheless this same patch of ground was cultivated in much later times. The rig-and-furrow marks of an old croft field-system cover the whole terrace on which the Monamore cairn stands and a ruined rectangular structure stands about 250 yds. down the side glen to the north-west of the cairn. As noted earlier the phosphate figures from the soil analyses, while not conclusive, are not inconsistent with the tomb having been on the outer fringes of a cultivated zone. Evidence for such a phenomenon in Wales has recently been presented.¹

Alternatively the soil drift might have been caused by quite a different agent. The apparent relative rapidity and short duration of the phenomenon might have been due to the ground above the cairn having been extensively disturbed at a single point in time so that soil flow began rapidly and then slowly eased off until new turf formed on the hillside. The construction of the cairn and the collection of stones and earth for the body of the mound is an obvious occasion for this to have happened and the collection of material for the blocking might supply a second cause at a later time. On the whole this explanation does seem more plausible – it seems likely that the material would be collected above the cairn and carried down to it as this involves least effort in carrying the loads. However the long time scale indicated by the C-14 dates and pollen data still poses some difficulties.

(d) *Two hypotheses*

In trying to integrate all the information obtained from the excavations and subsequent analyses two schemes can be constructed.

(1) *Long chronology.* Both C-14 dates are assumed to be correct and the soil drift to have been of short duration. The cairn was built towards the end of the fourth millennium B.C. and the resulting drastic disturbance of the hitherto turf-covered hillside caused much soil to slide or blow down and rapidly fill up the forecourt. The tomb interior was kept clear by inserting a sill in the doorway and the earth was no doubt periodically dug away from in front of the entrance. Human activity in the forecourt kept it from becoming turfed over even though the soil drift ceased, or became negligible, not long after the construction. The tomb was in use for between 500 and 1000 years and the bulk of the later activity occurred on the upper levels of the grey Neolithic earth layer (the sherds and flint knife were in the upper half of it). The lack of weathering on the two lower zones of the orthostats in spite of their long exposure is presumably to be explained by a milder sub-Boreal climate.

The blocking of the tomb ended the soil drift into the forecourt for a while and turf formed. The cause of the second phase of soil drift is not at all clear. If it was of short duration it should have started towards the end of the sub-Boreal climatic phase (from the pollen evidence) and have had nothing to do with Neolithic activity.

(2) *Short chronology.* In this case the stratigraphical evidence is reconciled with that from the C-14 measurements by arbitrarily assuming the earlier date to be contaminated, or derived from an earlier deposit. In this case the tomb would be

¹ Crampton and Webley 1960: I am indebted to Dr J. X. W. P. Corcoran for drawing my attention to this work.

built towards the end of the third millennium B.C. and have been in use for a century or so. Otherwise the interpretation is the same as in the long chronology.

In either case it is difficult to see how the impression that the two phases of soil drift were of relatively short duration – and continuous except in front of the tomb entrance – can be reconciled with the two thousand year history of the cairn suggested by the C-14 and pollen data. On the whole the interpretation using the long chronology seems to be the most plausible.

(e) *The structure of the cairn and its wider context*

In recent years the chambered tombs of the Clyde-Solway and Carlingford lough areas have been subjected to considerable study.¹ In particular the two most recent papers by J. G. Scott attempt a reassessment of the course of development of the chambered tomb culture of south-west Scotland. The following remarks are not intended to be more than an attempt to see how the discoveries at Monamore fit in with these new ideas.

One of the more interesting discoveries of recent years has been that some of the Scottish chambered tombs were constructed in more than one phase. A long cairn in Caithness excavated in 1961, Tulach an t'Sionnaich, was found to be a heel-shaped cairn with a long mound added to it² and the Mid Gleniron tomb, Wigtownshire, also proved to be of more than one period: again the long cairn had enclosed an earlier small one.³ Since no elaborate excavations were undertaken into the body of the Monamore cairn it must remain uncertain whether it is a single- or a multi-period structure but the possibility that it was built in more than one stage must be borne in mind when estimating its cultural context.

The most important structural features of Monamore are the complex (double) entrance and the flattish façade. Some years ago Scott suggested that the complex entrance was a stage in the development of the Clyde-Carlingford tombs – occurring between those with no façade and a simple entrance with portals and those with a façade and a simple entrance with portals (the entrance having reverted to the simple form after the appearance of the façade) – and this path of development was convincingly correlated with the movement of the tombs inland, from primary colonies on the raised beaches and alluvial gravels to later settlements on higher ground.⁴ More recently, and on the basis of a re-examination of the Beacharra tomb and the finds made in it in 1892, he has suggested that the south-west Scottish chambered tombs passed through three basic stages of structural evolution which can be broadly correlated with an evolving ceramic style.⁵ Simple segmented burial chambers without dry-stone walling come first and these are correlated with a pottery style termed Beacharra I. This earliest chambered tomb ware consists of simple, round, bag-shaped pots – some lugged – in the early Western Neolithic tradition.

¹ Piggott and Powell 1949; Piggott 1954, 152 ff.; Scott 1956, 47 ff.; Corcoran 1960; De Valera 1961; Case 1961; Scott 1962 and 1964.

² *Discovery and Excavation* 1961, 52: *Arch. News Letter*, vol. VII (1962), 155 ff.

³ *Discovery and Excavation* 1963, 51 ff.; Corcoran 1964.

⁴ Scott 1956, 47 ff. and table.

⁵ Scott 1964: I am most grateful to Mr Scott for having allowed me to read his important paper in advance of publication.

In the next phase, Beacharra II, appear new traits like trapezoidal cairns, flattish forecourt façades flanking the chamber entrance together with decorated, carinated vessels with constricted mouths. It is suggested that these new traits may be evidence of influence from the Severn-Cotswold group of tombs. Finally, in Beacharra III, would appear the tombs with deeply curved, semicircular façades like the well preserved but unexcavated example on Dumbarton Muir¹ – the associated pottery being decorated with impressed string or whipped cord. It is suggested that the deep façade may be the result of Irish influence. At one stage in this sequence complex, or double, entrances appeared, apparently as the result of local development.²

The Monamore cairn should probably fall somewhere in the middle of this sequence, perhaps in phase II, since it possesses the complex entrance with a flattish façade rather than a deeply curved one. In addition its topographical position – well inland and more than 400 ft. above sea-level – suggests that it was part of a secondary phase of colonisation by the Neolithic farmers. Childe thought that the earliest arrivals probably occupied the raised beaches and other land which was close to the sea and free of dense vegetation.³

However the potsherds associated with the construction of the Monamore cairn – jammed between the entrance orthostats – were of simple, bag-shaped vessels of the earliest western Neolithic type (fig. 4), and the sherds do not appear to have been old ones when they reached their final positions. The breaks are fresh and the surfaces largely intact although the pottery itself is soft and friable – the faint brushing marks on the exterior surface of one of the vessels are clearly visible (Pl. IV). These early sherds should be contemporary with the flat façade for, even if this façade was a secondary feature added at a later date to a simple burial chamber (a point dealt with below), the sherds must have been incorporated with rubble when it was added. This must be true unless the sherds are in fact somewhat older than the structure in which they are incorporated – unless, for example, they were the debris from earlier burials in the chamber which was cleared out at that time. However, an examination of the sherds which Bryce recovered from the burial chamber and which are now in the National Museum in Edinburgh (Appendix A (ii)) showed clearly that, while the vessel types from the chamber were not unlike those from the façade rubble, they were clearly not from the same pots. So the simple, bag-shaped pottery should still have been current in part of Beacharra II, after the introduction of the novel structural features.

While the structure of the cairn – single or dual period – is unlikely to affect to any great extent the relations between the structural features and the earliest pottery, some difficulties would arise for the status of the forecourt finds if two building phases were in fact involved. While the forecourt deposits appear to have accumulated *against* the façade, and therefore to be later than it, it might be argued that the façade had been inserted *through* the accumulating soil. Only by supposing such a happening – for which no evidence, in the form of a trench through the forecourt layers to take the façade, was observed – can the early carbon date be forced back to relate to a simple burial chamber without a façade. Nevertheless such an event

¹ *P.S.A.S.*, xciv (1960-61), 315 ff.

² Scott 1956, 47 ff. and table.

³ Childe 1935, 26.

cannot be ruled out entirely – the presence of the complex entrance might suggest the later addition of the façade.

Alternatively the lack of evidence for the insertion of the façade in the forecourt deposits might be explained by assuming that the latter did not begin to accumulate until after the façade had been added. Again this is possible though no definite evidence for it was observed. If further excavation demonstrated clearly that the Monamore cairn is a dual-period structure a late start for the forecourt deposits' accumulation would probably be more plausible than the insertion of the façade through them. At the moment there is not enough evidence to settle the question: all that can be said is that the appearance of the structure and the forecourt deposits during excavation suggested that the latter certainly post-dated the façade which itself rested on the old turf-line.

The relation of the C-14 dates to the cairn structure is thus not absolutely clear but it seems most likely at the moment that both charcoal deposits post-date the forecourt façade and that this type of chambered cairn ought to go back at least to 2940 B.C., the lower limit of the two standard deviation range on Q.675. Similarly the earliest pottery, certainly contemporary with the façade, ought also to be earlier than that date, assuming the charcoal sample not to have been significantly contaminated.

The evidence from Monamore does not, therefore, appear to conflict with Scott's sequence of tomb types and pottery styles except that the simple bag-shaped early Neolithic ware would seem to have still been in use in Beacharra II, after the forecourt façades had been introduced. If the C-14 date is accepted the structural innovations associated with Beacharra II – the trapezoidal cairn and the flattish façade – should appear in south-west Scotland at round about 3000 B.C. and the earliest simple chambers should therefore belong to the late fourth millennium. I am, at present, of the opinion that the Monamore cairn is a single period structure and that its topographical situation favours this view. The forecourt deposits and C-14 dates should therefore post-date it entirely. Nevertheless it must be remembered that all deductions from the C-14 dates must remain tentative until more are available – one radioactive swallow does not make a chronological summer.

(f) *Burial ritual*

Little direct evidence for funerary activities in and around the tomb was found. If the Neolithic forecourt deposits are, as seems likely, the result of an accumulation of earth from the slopes above the cairn then the artifacts in them were probably deposited as ritual scatterings. It seems improbable that they were derived from the slopes above, particularly since the charcoal patches cannot be thus explained. These are too compact and limited in area to have arrived with gradually drifting soil and they must be the remains of small fires lit in the forecourt over a period of time. There was no scorching of the earth under them but the lighting of a few twigs on what must have been damp ground would hardly produce this. Such temporary fires are best explained as somehow being associated with the burials which must have been made from time to time in the chamber.

As a working hypothesis it may be suggested that the burials in the tomb were accompanied by the lighting of small fires in the forecourt and, at least once, inside the tomb entrance itself; at the same time fragments of pitchstone were scattered in the forecourt with, less often, sherds of pottery and, once, a flint knife. The fact that none of the pitchstone fragments were even broken artifacts suggests that only the waste material was used in this way. Similar evidence for forecourt rituals was recovered from the chambered tomb of Cairnholy I, Galloway.¹

The perfect state of preservation of the forecourt façade makes possible some further deductions about burial practices at Monamore. Although the presence of stone dykes nearby suggests that the cairn has been robbed of stone no evidence for such robbing was found in the area of the façade itself. Had any stones been removed from immediately behind the façade it is most improbable that its delicately constructed dry-walling could have survived in the intact condition in which it was found. Neither did the layer of brown colluvium which covered the forecourt area exhibit the slightest sign of disturbance in the form of pits or other irregularities. Thus it seems certain that the height of the cairn material immediately behind the façade – it reached to the top of the dry-walling (fig. 3*a* and Pl. I, 1) – is the original one.

The trench into the body of the cairn revealed a similar situation (fig. 3*e*), though it cannot be stated with confidence that no stone robbing has taken place in this area. However the top of the stone and earth cairn material does present an approximately regular line and no obvious signs of robbery were seen. At this point the cairn material barely reaches to the top of the adjacent side slab of the burial chamber.

An interesting picture emerges from these observations. The stone body of the mound does not seem ever to have risen much above the sides of the chamber and any capstones which once covered the latter may always have been visible and above ground during the Neolithic use of the tomb. It is therefore possible that the capstones were not placed over the chamber until the final blocking and that the grave remained open throughout the period of its use – perhaps protected by a roof of wood and turf. Alternatively the capstones may have been placed in position and removed as necessary to admit the corpses. If the segmented chambers of the Clyde-Solway group are single period structures – that is if the segments were not added as they were needed – it is hard to understand how, in those with high septal slabs, burials could be made easily from the entrance into the rear compartments. If the capstones were removable the problem would be simplified.²

In recent years the excavation of several unchambered long barrows in southern England has yielded detailed information about the burial practices of their builders who must have been approximately the contemporaries of the chambered tomb people of the Clyde-Solway area. For example in the Nutbane long barrow in Wiltshire the dead had been laid for a long period of time in a wooden mortuary en-

¹ Piggott and Powell 1949, 112 ff.; Piggott 1954, 166.

² Another example of visible capstones occurs at Loughmacrory, Co. Tyrone: *P.P.S.*, xxvi (1960), pl. xviii, opp. p. 128. I am grateful to Dr J. X. W. P. Corcoran for drawing my attention to this site.

closure, covered by a small mound. Only at the end of the use of the burial ground was the wooden forecourt area burnt and a long barrow piled up over its remains and over the mortuary enclosure.¹ In this and similar cases the building of the barrow probably corresponds to the blocking of the forecourt of the chambered tombs – the final and permanent sealing up of the collective grave. Examples are known of mortuary enclosures which were never buried: Normanton Down, Wilts., is such a one.²

The orthostatic chambers of the chambered cairns ought to be the equivalent mortuary structures in areas with different resources of building materials: both they and the wooden enclosures seem to have been the receptacles for a series of burials made over a long period of time. In both cases the last of a long sequence of funerary acts seems to have been the permanent burial of the remains. The similarity between these final acts in chambered and unchambered collective tombs has recently been enhanced by the recognition that the chambers of some of the former had been deliberately filled with debris almost up to the capstones – the bones being at the base of a homogeneous deposit of earth and stones. West Kennet, Wilts., provided a classic example of this practice and its occurrence elsewhere was reviewed by the excavator.³ Several examples occurred in the Clyde-Solway group – Carn Ban in Arran and probably Beacharra and Brackley in Kintyre.⁴

Thus it is possible that the funeral activities at the Monamore tomb involved sporadic burials in the chamber over a long period, perhaps inserted from above in the case of the rear two segments either through a light wooden roof or by taking off the capstones as necessary. It is also possible that the final blocking involved the filling of the chambers as well as the fore-court but there is no direct evidence for this here.

(g) *Social function*

Should further work demonstrate that the two C-14 dates from Monamore accurately reflect a long period of use for the Clyde-Solway tombs it will be necessary to reconsider their social function. Childe thought that these tombs were the collective sepulchres for the entire local Neolithic community⁵ and at that time it was thought that the graves were in use for only three or four generations. However, if the use of Monamore must be spread over a millennium it seems highly improbable that a chamber measuring some 13 by 3½ ft. internally could have received all the local burials during that time, however small the community was: a few people only in each generation should be entitled to such an interment. If this was not so the tombs would have had to have been cleared out from time to time to make way for new occupants.

(h) *The finds* (fig. 4 and Pl. IV)

The stratigraphy of the site provided a useful sequence for the few potsherds found. The simple, bag-shaped early Neolithic bowls or cups come from a primary

¹ Vatcher 1959.

⁴ Bryce 1903, ff.; Scott 1956 and 1964.

² Vatcher 1961.

³ Piggott 1962, 68 ff.

⁵ Childe 1935, 54 f.

context, in the earth and rubble jammed between the entrance orthostats (fig. 4, Nos. 1, 2 and 5). The sherds in the middle part of layer 4 in the forecourt must be somewhat later than these (Nos. 3 and 4). One is a rim fragment of a hard, slipped vessel with a horizontally out-turned, bulbous lip – faint fluting can be seen on the upper surface. It seems to be a piece of Lyles Hill ware, a pottery style found more frequently in north-east Ireland than in south-west Scotland.¹ In Case's subdivisions of this class of pottery the Monamore sherd would probably fit best into his Ballymarlagh style in which bulbous, out-turned rims are commoner than in the Lyles Hill style itself. Both styles of course fall into an early, primary stage in the Irish Neolithic sequence, though, judging from Monamore, they are by no means the earliest of all.²

The other sherds from the same context – the middle part of the Neolithic earth – are softer, more friable and gritty and it is difficult to estimate the forms of the vessels from which they came (fig. 4, Nos. 4 and 6). The flint knife (No. 7) from the same layer is a standard component of the material culture of the local chambered tombs.³

Judged solely from its apparent context there is no reason to suppose that the dark blue glass dumb-bell bead is other than contemporary with the remainder of the artifacts found in the Neolithic forecourt deposits (phase 2). But the bead is certainly very much later, probably dating from the Dark Ages,⁴ and must therefore be intrusive. The useful observation that worms were in the lowest level of the forecourt can be brought forward to deal with this awkward anomaly.

October 1964

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¹ Piggott 1954, 167 ff.; Case 1961, 174 ff.

² A previous note on the C-14 dates from Monamore (*Antiquity* xxxviii (1964), 52-4) stated that the Lyles Hill sherd was in the upper part of the Neolithic layer and it can be inferred from this (e.g. Coles & Simpson in *P.P.S.* vol. xxxi (1965), 47-8) that the sherd could be dateable by Q.676 to near the end of the 3rd millennium B.C.. Though the sherd was not far below the blocking layer this was deeper at the point where it was found (Pl. I, 3) and the sherd was well down in the Neolithic layer as viewed as a whole and apparently in undisturbed soil (Appendix A). If much of the façade on either side of the entrance (where the blocking layer was deeper: fig. 3g) had been kept free of accumulating soil during the use of the tomb then the sherd might always have been near the surface of the layer and could be late. However if, as seems more likely from the sections, the earth was dug away from in front of the façade to take the blocking stones, the sherd was probably deposited well down in the Neolithic earth layer and is likely to be considerably earlier than the second C-14 date, perhaps by several centuries. One can only be reasonably certain that the sherd belongs to the later half of the period of use of the tomb.

³ List in Piggott 1954, 175.

⁴ Hencken 1951, 141.

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6. APPENDICES

(A) Description of the Pottery (fig. 4 and Pl. IV)

(i) *Pottery from the 1961 excavations.* Four separate deposits of sherds were found, two belonging to the period of construction (phase 1) and two to that of the Neolithic use of the tomb (phase 2).

From phase 1 were recovered four plain rim sherds and a number of other body sherds which were jammed in the stone and earth rubble between the two pairs of upright stones flanking the entrance. The rims all came from between stones D-1 and F-4 (Museum No. A.1961.20). Position (1) on the plan (fig. 2a) indicates the find spots. The sherds, varying from 7 to 9 mm. in thickness, are smooth and fairly hard, though the clay is coarse and gritty, and they feel slightly sandy in texture. The cores of the sherds are dark grey, some of the outer surfaces are light brown while the inner tend to be lighter grey. Clear striations are visible on the exterior surfaces of some, particularly No. 2 which is smoothed, almost slipped (Pl. IV). One sherd has fingernail decoration (No. 5). The sherds are extensively pitted, probably by the burning of tempering material during firing. There were no traces of grain impressions.

At least two vessels are represented in the rim sherds, both simple, plain, bowl-shaped pots or cups. No. 1 is a small cup with a rim bearing a slight interior bevel: the regular and even curvature of its rim suggests a diameter of about $4\frac{1}{2}$ in. The other rim sherds may be all from the second vessel although only one gives an approximate indication of its diameter and profile. They seem to be from a hemispherical bowl or cup whose approximate diameter may have been about $4-4\frac{1}{2}$ in. (No. 2).

In phase 2 several groups of sherds were deposited in the forecourt area. A single rim sherd of a hard-fired, burnished vessel came from position (2) on the plan (fig. 2a) (Museum No. A.1961.19). The clay is hard and brown-grey in colour with many small grits; the upper surface is dark grey and slipped or burnished and exhibits very faint vertical fluting (No. 3); the under surface is brownish. From the very even and regular curve of the rim the original bowl seems to have been about 10 in. in diameter with a sharply out-turned bulbous lip. It might belong to the north-east Irish early Neolithic pottery known as Lyles Hill ware and to either the Lyles Hill or Ballymarlagh styles within that ware (Case 1961). Its maximum thickness is 8 mm., minimum 5 mm.

The third sherd deposit was at position (3) on the plan and consisted of a number of small, friable

pieces of dark grey clay with many small grits and light brown, rough and gritty surfaces (Museum No. A.1961.13) (Nos. 4 and 6). Two different rims are present: the first is simple, rounded and out-turned (No. 6) while the second shows a marked thickening which reaches its maximum half an inch from the edge so that the upper surface of the rim is ridged. Both rims are too short for either the diameters or profiles of the original vessels to be reconstructed. The sherds are of the order of 7-8 mm. thick.

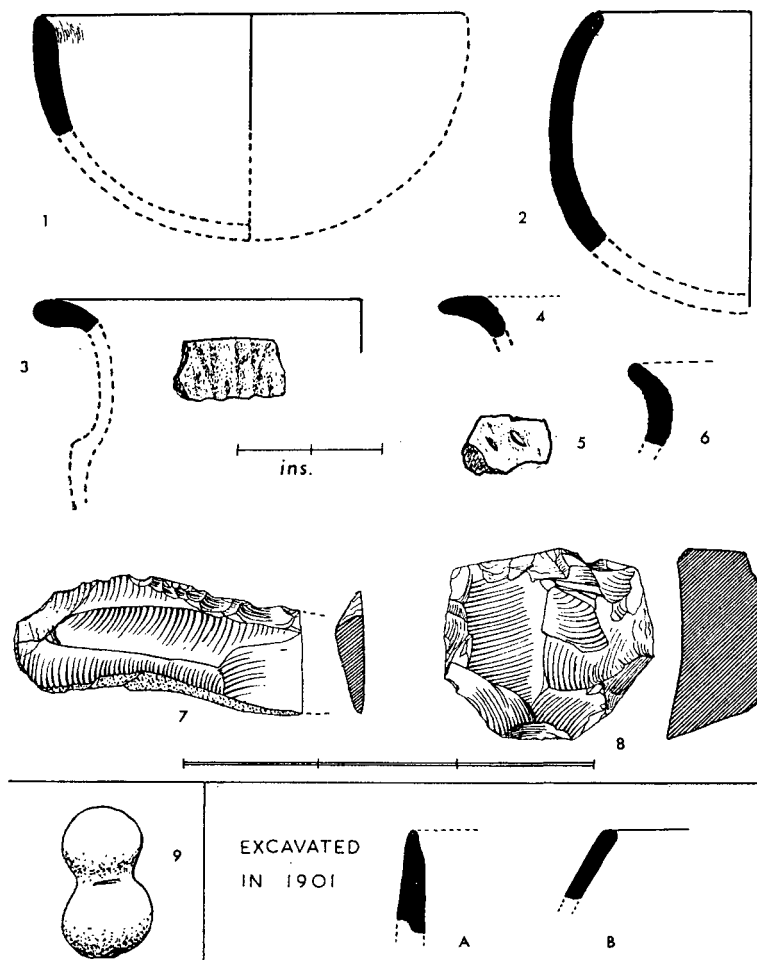


FIG. 4. The finds from the 1901 and 1961 excavations: pottery, flint scraper, flint knife and glass bead

(ii) *Pottery from the 1901 excavations.* The sherds are in the National Museum, Edinburgh (No. EO 272) and I am grateful to Miss Audrey Henshall for the description.

- (1) (fig. 4, A) A rim sherd of black clay with small grey grits, smooth grey-brown exterior surface, rough mid-brown interior: thickness 10 mm., 5 mm. at rim. Somewhat similar to the earliest 1961 sherds but definitely not from the same vessels.
- (2) (fig. 4, B) Rim sherd of dark brown, fine hard gritty ware with traces of a fine smooth surface: thickness 5-6 mm.

- (3) Two small wall sherds, gritty ware with quite large whitish, granite-type grits, very hard dark brown ware with pinkish brown surface, possibly re-burnt. Both probably from the same pot. Thickness 8-10 mm.
- (4) Two small wall sherds, friable heavily gritted dark brown ware with fairly small angular dark and quartzite grits, surface worn but buff to mid-brown in colour: thickness 8 mm. Probably from the same pot.
- (5) Small wall sherd of dark brown fairly hard ware with tiny white grits, the grits showing on the fairly smooth inner surface; outer surface mid-brown but almost all worn away: thickness 7 mm.

(B) *Flint*

(i) *The knife* (Museum No. A.1961.18) (No. 7). A broken flint knife came from the very top of the Neolithic forecourt deposits (phase 2), from position (4) on the plan. It must have been deposited at the very end of the tomb's use. The implement is a parallel-sided, struck flake of grey flint - presumably from a pebble since the light, creamy cortex is preserved along one edge. The bulb of percussion is clear but the striking platform has been removed by minute secondary flaking to form a rounded butt. The other end of the flake has been cleanly snapped off. The edge opposite the cortex back has been re-worked by pressure flaking to form a crude edge, presumably for cutting. Since one of these small flake scars is cut across by the broken end it would seem that the knife was already broken when deposited. It measures 55 mm. in length, has a maximum breadth of 21 mm. and a maximum thickness of 5 mm.

(ii) *The scraper* (Museum No. A.1961.17) (No. 8). A crude scraper of creamy white flint came from the top of the rubble of the blocking layer (phase 3) from position (5) (fig. 3a). The implement is formed of a thick flake on which the bulb of percussion and the striking platform are clear. Crude secondary flaking has produced a steep-sided, blunt scraper 34 mm. in length, 37 mm. in breadth and with a maximum thickness of 16.5 mm. A fragment of a fossil is preserved at one point.

(C) *Glass* (Museum No. A.1961.61) (No. 9)

One glass bead was found which certainly belongs to a much later period than the Neolithic finds. It is a dull Prussian blue in colour and in the form of a dumb-bell and, as described on p. 7, it was probably in the upper part of the Neolithic earth in the forecourt but in front of the edge of the overlying blocking layer. A faint brownish patina seems to have formed over the surface. The bead was apparently made from a drop of molten glass, squeezed in the middle and finally twisted off the parent blob. One end of the dumb-bell is perfectly round and smooth while the other exhibits a small twisted scar in the centre. Length 13 mm. and maximum breadth 8.5 mm.

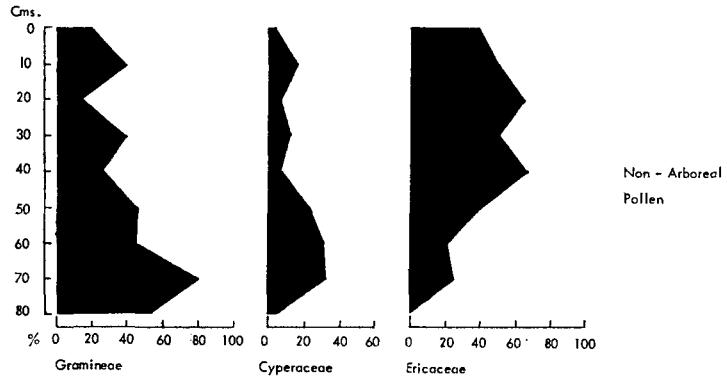
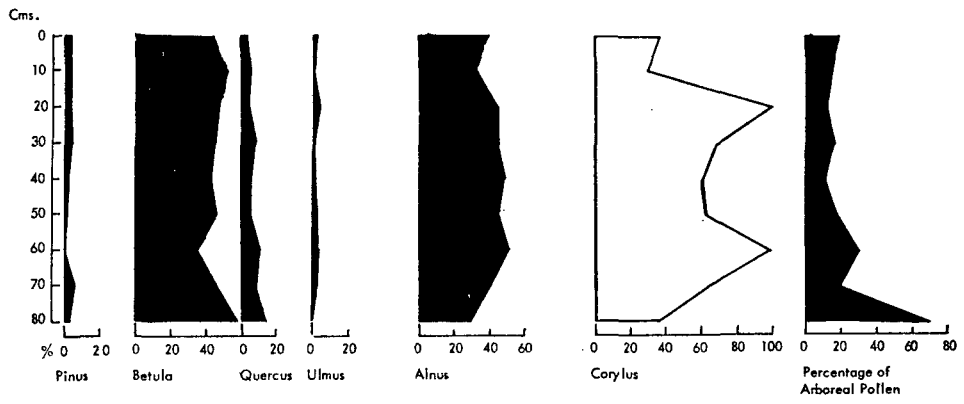
(D) *Pitchstone*

A total of 128 fragments of pitchstone was found during the excavations, the vast majority coming from the Neolithic forecourt deposits (phase 2). Of these fragments 120 appear to have been worked or shattered a short time before being deposited while the remaining 8 were unworked. No actual pitchstone artifacts were found and there were only 4 clearly struck flakes. The remainder of the fragments were shattered lumps of various sizes; a few may have been crude cores. Several lumps have a dull brown patina on them which suggests that they were picked up as loose pebbles rather than chipped off an outcrop (the nearest outcrop is at Corriegills, 4 miles to the NNE.). Several small, weathered fragments were found in the brown colluvium outside the area of the forecourt and were presumably derived from further up the slope. It seems likely, though, that the fresh fragments are debris from the manufacture of pitchstone implements which were deliberately scattered over the forecourt area at different times.

(E) *Quartz*

Eight fragments of quartz were found in the Neolithic forecourt deposits but none of them showed any sign of having been deliberately worked.

1. MONAMORE CHAMBERED CAIRN (Hill Peat): Arboreal Pollen



2. MONAMORE CHAMBERED CAIRN (Forecourt Deposits - Phase 4)

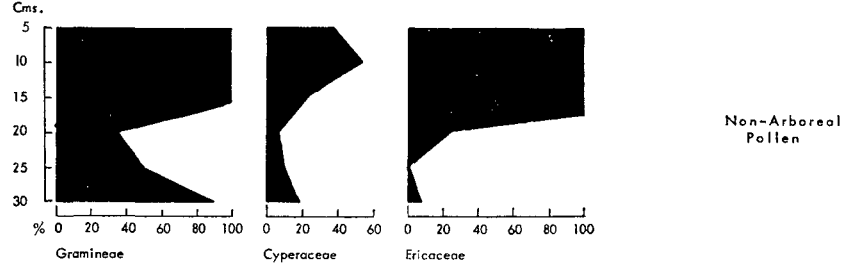
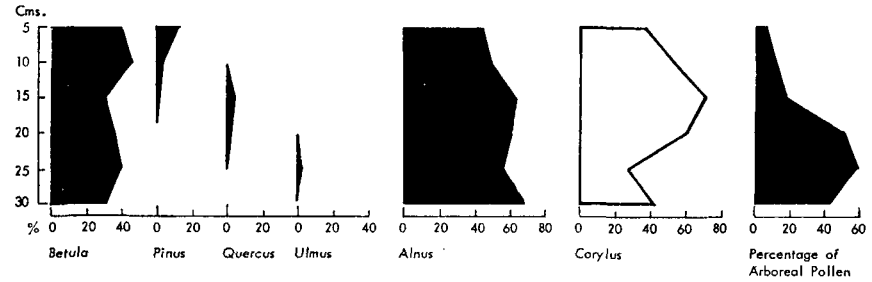


FIG. 5. Pollen diagrams from the forecourt deposits of the Monamore cairn and from the peat deposits further up the hill slope

(F) *Identifications of Charcoal Fragments*

Fragments of charcoal from the Monamore excavations were identified by Mr D. W. Brett, B.Sc., F.L.S., of the Department of Botany, University of Glasgow.

From the pre-cairn turf-line at the base of the forecourt deposits came pieces of *Betula* (birch) and *Quercus* (oak). From various parts of the Neolithic forecourt layer (phase 2) came fragments of *Betula*, *Quercus* and *Sorbus aucuparia* (rowan or mountain ash).

(G) *Note on Pollen Analysis of Samples from Monamore* by Mr S. E. Durno of the Macaulay Institute for Soil Research, Aberdeen. (Figs. 5 and 6)

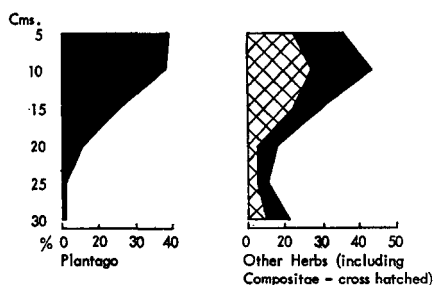
Sample (1): blanket peat from hillside above cairn

Sample (2): upper part of layer 2 in forecourt (phase 4)

'The blanket peat profile shows a typical pollen diagram of the sub-Boreal/sub-Atlantic periods (fig. 5). The sharp fall of arboreal pollen at the base of the diagram, together with a concomitant rise of Ericaceae pollen (mostly *Calluna*), is a common feature of Scottish pollen diagrams and indicates a rapid change of environmental conditions probably involving a combination of climatic,

3. MONAMORE CHAMBERED CAIRN (Forecourt deposits - Phase 4)

| Depth in cms.: | 5 | 10 | 15 | 20 | 25 | 30 |
|----------------------------|----|----|----|----|----|----|
| % <i>Artemisia</i> | 2 | | | | | |
| Garyophyllaceae | 2 | | 3 | 5 | 1 | |
| Compositae | 25 | 34 | 25 | 5 | 5 | 10 |
| <i>Galium</i> sp. | 2 | | | | | |
| <i>Plantago lanceolata</i> | 58 | 56 | 31 | 11 | 2 | 2 |
| Ranunculaceae | 2 | 6 | | | | 3 |
| Rosaceae | 10 | | | | | |
| <i>Succisa pratensis</i> | 3 | 6 | | | | |
| Umbelliferae | | 4 | | | | |



4. MONAMORE CHAMBERED CAIRN (Hill Peat):

| Sample number: | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|----------------------------|----|----|----|----|----|----|----|----|----|
| % Chenopodiaceae | | 2 | | | 2 | | | | |
| Compositae | | 3 | 1 | | 1 | | 3 | | 2 |
| Cruciferae | | 3 | 2 | 1 | | | | | |
| <i>Filipendula ulmaria</i> | | 7 | 4 | 1 | | | | 1 | |
| <i>Galium</i> sp. | | | | | | | | 1 | |
| <i>Hedera helix</i> | | | 3 | 2 | 1 | 2 | | | |
| <i>Plantago lanceolata</i> | | 11 | 4 | 4 | 10 | 3 | 4 | 6 | 2 |
| <i>Potentilla</i> sp. | | | 18 | 14 | 2 | 2 | | 9 | 3 |
| Ranunculaceae | | 6 | 1 | | | | | | |
| Rosaceae | 9 | 39 | | 1 | | | | | |
| <i>Rumex</i> sp. | | | | 1 | | | | | |
| <i>Succisa pratensis</i> | | 2 | 1 | | | | | | |
| Umbelliferae | | | | | | | | | 1 |

FIG. 6. More details of the non-arboreal pollen in the forecourt deposits and the hill peat

edaphic and anthropogenic factors which resulted in a great expansion of heath and a decline of forest. This trend started in the sub-Boreal period which has been dated as extending from 3000 B.C. to 500 B.C.

'The diagram derived from the tomb forecourt deposits shows the same feature of reducing forests and increasing heath but in this case the significant changes occur higher in the profile indicating that its lower part is somewhat older than the bottom of the blanket peat. In terms of chronology it could be said therefore that the forecourt material (brown colluvium - phase 4) is nearer to 3000 B.C. than the formation of the blanket peat.'

After examining the pollen diagrams some further points were raised with Mr Durno and the following observations emerged. Regarding the possibility of agricultural activity being carried on in the neighbourhood of the cairn after it had been blocked (there being no pollen evidence for its occurrence in earlier phases) and being reflected in the pollen record, the high frequency of *Plantago lanceolata* (plantain) pollen may be significant (fig. 6). This plant is associated with the practice of primitive agriculture (Godwin 1956, 166 ff.). The high frequency of Compositae pollen may also be relevant here in that this class of flora is associated with open rather than woodland conditions in the British Isles and high frequencies of it occur in Late Glacial times and also in the later phases of forest clearance by man after 3000 B.C. (Godwin 1956, 142). It is also interesting to note that both these pollens are far more frequent in the tomb forecourt sample than in the hill peat. Presumably this means that agricultural activities on this particular terrace were declining towards sub-Atlantic times.

(H) *The Soil Analyses*

The details of the analyses of soil profiles done by Mr J. C. C. Romans of the Macaulay Institute for Soil Research, Aberdeen, appears on pp. 31-34. The comments below are based on information supplied by Mr Romans: he has read them and considers them a fair summary of his views. The analyses were carried out by Dr H. G. M. Hardie and members of the staff of the analytical section of the Macaulay Institute.

The origin of the forecourt deposits. The high percentage of iron oxide in the clay fractions of the colluvium resting on the buried ground surface in the forecourt area and against the façade (the upper half of Profile No. 1; this Appendix, below, and fig. 7) suggests that this is in fact eroded podzolic B₂ horizon material. It is interesting to note that, due to the combination of high iron oxide content, high organic matter, high rainfall and the passage of an appreciable period of time there has clearly been some extra translocation of iron/humus colloidal material from this overlying colluvium into the buried profile. Nevertheless the 'kink' indicating the position of maximum iron oxide deposition in the B₂ horizon of the buried profile is still quite obvious.

The possibility of erosion from the hillslope just above the cairn is indicated by the observation that Soil Pit 4 (lying above and to the south-west of the cairn, though within the head dyke of the old crofting land) had a well developed B₂ horizon not dissimilar to the profile buried under the Neolithic layers in the forecourt; while another pit at about the same level and more or less immediately above the cairn had a very abbreviated B₂ horizon.

Proximity of the tomb to cultivated ground. The chemical analyses of the buried soil profiles suggest that the ground did not have a very high level of fertility when the tomb was built (the details of these analyses are not included in this Appendix: copies are preserved in the Hunterian Museum and in the Macaulay Institute). The total phosphate figures are low and the surface pH appears to have been between 4 and 5. There is no positive evidence that the soil erosion was caused by cultivation of the slopes above but some form of disturbance of the natural soil is suggested by the contrast between the intact buried profile No. 4 and the eroded one nearby. It could possibly result from overgrazing, primitive cultivation or some other disturbance. Thus the tomb seems likely to have been close to disturbed ground which, if utilised by Neolithic man, might have occupied a similar area to that used by the rig-and-furrow crofters many centuries later.

Relative ages. From the table of the clay analyses of profiles 1 and 4 it is apparent that the maximum accumulation of iron oxide in the B₂ horizon is about 9 in. further down in the control profile (No. 4) than in that buried under the forecourt deposits (No. 1), being 4-7 in. deep in No. 1 and 13-16 in. in No. 4. Though this difference may be slightly exaggerated by compression of the humic A horizon of the buried soil it does indicate a considerable relative difference in the time to which each profile was subjected to podzolic leaching and this is confirmed by the large quantity of iron oxide now present in the A₂ horizon of the buried profile. However, not enough data are available even to attempt to translate this difference into terms of absolute dating though this difference in iron oxide content does seem to support, in a general way, a long period of use for the tomb.

MONAMORE CAIRN - ANALYSIS OF CLAY FRACTIONS

| Profile of Depth | | | % | | | Molecular Ratios | | | |
|------------------|--|--------------|------------------|--------------------------------|--------------------------------|---|--|--|--|
| | | | SiO ₂ | Fe ₂ O ₃ | Al ₂ O ₃ | SiO ₂ /R ₂ O ₃ | SiO ₂ /Fe ₂ O ₃ | SiO ₂ /Al ₂ O ₃ | Al ₂ O ₃ /Fe ₂ O ₃ |
| Profile No. 1 | Brown Colluvium | { 1 - 4 ins. | 47.52 | 18.70 | 19.40 | 2.58 | 6.76 | 4.16 | 1.62 |
| | | { 10-13 ins. | 45.52 | 19.05 | 25.10 | 2.07 | 6.36 | 3.08 | 2.07 |
| | "Pause Turf" | { 17-20 ins. | 47.80 | 16.90 | 25.70 | 2.22 | 7.50 | 3.15 | 2.38 |
| | Dark Colluvium | { 20-22 ins. | 41.34 | 24.80 | 23.75 | 1.77 | 4.44 | 2.95 | 1.50 |
| | with charcoal & hearths & chips of pitchstone. | { 26-29 ins. | 40.44 | 18.25 | 24.00 | 1.93 | 5.90 | 2.86 | 2.06 |
| | | { 31-34 ins. | 39.34 | 19.65 | 28.90 | 1.61 | 5.33 | 2.31 | 2.30 |
| | A (0 - 2 ins.) | 36-38 ins. | 38.32 | 21.30 | 28.50 | 1.55 | 4.80 | 2.29 | 2.10 |
| | B2 (4 - 7 ins.) | 38-41 ins. | 36.04 | 24.70 | 29.60 | 1.35 | 3.87 | 2.07 | 1.87 |
| | B2 (11-14 ins.) | 47-50 ins. | 40.24 | 16.10 | 30.60 | 1.67 | 6.63 | 2.23 | 2.97 |
| | B3 (19-22 ins.) | 55-58 ins. | 45.08 | 13.30 | 30.60 | 1.96 | 9.04 | 2.50 | 3.61 |
| C (26-29 ins.) | 62-65 ins. | 48.01 | 12.70 | 28.80 | 2.21 | 10.11 | 2.83 | 3.57 | |
| C (30-33 ins.) | 66-69 ins. | 46.36 | 14.35 | 28.10 | 2.12 | 9.07 | 2.80 | 3.09 | |
| Profile No. 4 | A2 | 2-5 ins. | 50.26 | 11.95 | 27.30 | 2.44 | 11.15 | 3.12 | 3.57 |
| | B2 | 6-9 ins. | 45.08 | 14.95 | 28.10 | 2.03 | 7.97 | 2.73 | 2.93 |
| | B2 | 13-16 ins. | 39.56 | 17.05 | 28.10 | 1.72 | 6.15 | 2.39 | 2.57 |
| | B3 | 18-21 ins. | 47.06 | 12.85 | 26.10 | 2.33 | 9.79 | 3.06 | 3.20 |
| | B3 | 28-31 ins. | 49.30 | 11.60 | 24.70 | 2.61 | 11.25 | 3.39 | 3.32 |
| | C | 34-37 ins. | 50.40 | 12.30 | 24.00 | 2.69 | 10.90 | 3.57 | 3.05 |
| | C | 43-46 ins. | 51.12 | 11.00 | 23.80 | 2.82 | 12.33 | 3.65 | 3.38 |

Fig. 7. Table of clay fractions in the various layers of the cairn forecourt deposits and in Profile No. 4 further up the slope from the cairn

MONAMORE NEOLITHIC CHAMBERED CAIRN

Soil Analysis Details

- (1)
- Monamore Cairn No .1*
- (cairn forecourt deposits – point of profile indicated on section, fig. 3).

Topography: Local stopping terrace on hillside of banked-up colluvium.*Slope*: Near level at point sampled.*Aspect*: North-east facing slope.*Elevation*: c. 450 ft. above O.D.*Map ref.*: NS 017289.*Geology*: About 3 ft. of colluvium overlying pre-Neolithic soil profile developed on 'New Red Sandstone' till with some admixture from a broad felsite dyke underlying the site.*Vegetation*: A short grassy turf, with *Oxalis*, *Potentilla erecta*, *Geranium sp.*, with 15 in. high bracken cover.*Description*:

0-5 in. Very dark grey-brown 10YR3/2 fine sandy loam, with crumb structure, loose and friable, moderate stone content mostly small angular pieces of acid dyke rocks and sandstone up to 1-2 in. in size; roots plentiful, no worms seen, moist, no mottling, merges over 1 inch into

5-17 in. Reddish brown 5YR4/4 fine sandy loam, soft and slightly massive, breaks down under slight pressure to crumb and fine crumb; moderate stone content, sizes as above, mostly under 2 in. but occasional pieces up to 4-5 in.; roots frequent – including bracken rhizomes; no worms seen, no mottling, fairly sharp change into

17-20 in. Dark reddish grey 5YR4/2 fine sandy loam, massive, breaking into angular and sub-angular blocky lumps which break down under slight pressure to fine sub-angular blocky and single grain; stones as above; occasional live roots penetrate (no bracken rhizomes), no worms seen, moist, no true mottling – but some of the small stones are soft and rusty; merges over 1 in. to

20-36 in. Dark reddish brown 5YR3/3 fine sandy loam, massive, breaks under slight pressure to angular and sub-angular blocky lumps and then to fine sub-angular blocky: stones as above, 1-2 in. sizes are by far the most common; occasional roots penetrate to the base of this horizon, no worms seen, moist, no true mottling (some soft stones), fairly sharp change into

36-38 in. (Buried A horizon). Dark brown 7.5YR3/2 and 4/2 sandy loam, massive, breaks with slight squashing to fine sub-angular blocky; stones as above, very occasional roots present, no worms seen, moist, no mottling, sharp change into

38-52/53 in. (B₂ horizon). Reddish brown 5YR4/4 fine sandy loam, rather massive with weak crumb structure, breaking down under slight pressure to fine crumb structure; moderate stone content, stones being more variable in size and all angular, sizes up to 4 in. present of sandstone and felsite dyke rock (acid) – the latter very common locally; occasional roots present in the upper 2-3 in., no worms seen, moist, no mottling, merges over 2-3 in. into

52/53-65 in. (B₃ horizon). Reddish brown 5YR4/3-4/4 fine sandy loam compact and slightly indurated; stones as above – felsite steadily becoming more prominent, one small erratic of pitchstone; no roots, no worms, moist, no mottling, merges over 1 in. to

65-68/69 in. Reddish brown 5YR4/4 very stony fine sandy loam, soft and massive; the stones are mainly angular fragments of felsite rock with occasional erratics; no roots, no worms, moist, no mottling except at the very bottom just above the junction with the underlying felsite rock, where there are small rusty rotten pieces of rock; sharp change into

68/69 in. Highly cleaved felsite rock (dyke).

Identification of forecourt deposits:

0-17 in. brown colluvium and modern turf (phase 4).

17-20 in. buried turf-line on top of Neolithic layers (phase 3).

20-36 in. Neolithic accumulation (phase 2).

The black pre-cairn turf (A₀ horizon) is missing here.

(2) *Monamore Cairn No. 2 (control)* (12½ yds. NW. of forecourt excavations: freely drained profile).

Topography: Moderately sloping terrace of the cairn site.

Slope: 10°.

Aspect: North-east facing.

Elevation: c. 450 ft. above o.d.

Map ref.: NS 017289.

Geology: Shallow soliflucted till derived from 'New Red Sandstone' and felsite.

Vegetation: Grassy with bracken.

Description: The site has been ploughed rig-and-furrow up and down the slope (crofting cultivation); the profile has been sited under a rig with 12 in. of colluvium overlying the pre-Neolithic A horizon.

0-1 in. Dark reddish brown 5YR2/2 humose fine sandy loam, loose crumb structure breaking readily to fine crumb; occasional small stones; grass roots plentiful, no worms seen, moist, no mottling, sharp change into

1-5 in. Dark reddish brown 5YR3/3 somewhat humose fine sandy loam, loose crumb structure breaking readily to fine crumb; occasional small (1-2 in. sizes) and generally angular stones; grass roots frequent, bracken rhizomes frequent, no worms seen, moist, no mottling, merges gradually into

5-12 in. Dark reddish brown to reddish brown 5YR3/4 fine sandy loam, soft and rather massive but friable, breaks into sub-angular blocky pieces which disintegrate under slight pressure to small, sub-angular blocky and fine crumb; moderate stone content, mostly angular pieces of felsite up to 5-6 in. long with a few smaller sub-angular to round erratics; grass roots frequent (bracken rhizomes confined to the layer above), becoming occasional at base; no worms seen, moist, no true mottling though small pieces of weathered rock are rusty inside when broken; sharp change into

12-15 in. (Buried A horizon). Dark reddish brown 5YR3/2 fine sandy loam, massive, breaks down into angular and sub-angular pieces and under slight pressure to small angular fragments; moderate stone content, mostly small (up to 2-3 in. sizes), angular pieces of felsite; very occasional roots penetrate this layer, no worms seen - but this layer has formerly been subject to worm activity and is penetrated by old infilled worm channels (corresponding to old crofting cultivation period?) - moist, no mottling, sharp change into

15-26/27 in. (B₂ horizon). Reddish brown 5YR4/4 fine sandy loam, soft sub-angular blocky to crumb structure, breaks down to fine sub-angular blocky and fine crumb structure; moderate stone content, mostly angular pieces of felsite up to 4-6 in. sizes with some smaller rounded erratics (one basalt seen); occasional roots penetrate to 22 in. (mostly dead roots), no worms seen, moist, no mottling - the lower 3 in. of the layer is very nibbly and full of angular pieces of felsite; sharp change to

26/27 in. Highly cleaved and shattered felsite rock.

Note on erosion and accumulation of colluvium: The cause of the erosion may have been burning of slopes above to improve grazing - or some form of cultivation on this 10° slope (more above) under 40+ in. of rainfall.

The collected colluvium looks like B₂ horizon material from higher up the slope - even the dark Neolithic occupation layer has red-brown patches in it. The dark soil is the same material which has banked up against the block formed by the forecourt façade of the cairn and been well trampled on by people.

Elsewhere (at the same level as the cairn) on the terrace (No. 2 control) the colluvial layer is shallower, as there was nothing to stop eroded material going on downhill over the lower edge of the terrace.

(3) *Monamore Cairn No. 4 Control* (freely drained profile sited up the slope and SSW. of the cairn within the head dyke of the old crofting land: position 4, fig. 1).

Topography: Plain regular slope at the back of the terrace, rather steeper than the terrace itself.

Slope: $10\frac{1}{2}^{\circ}$.

Aspect: North-east facing slope.

Elevation: Between 450 and 500 ft. above o.d.

Map ref.: Approx. NS 017289.

Geology: Till derived from 'New Red Sandstone' and felsite.

Vegetation: *Calluna vulgaris*, *Erica tetralix*, mosses – probably not part of the arable plough land of the croft though within the head dyke.

Description:

- 0-2 in. (A_0 horizon). Dark reddish brown 5YR2/2 litter and fibrous humus, becoming rather greasy at base, roots abundant, no worms, very moist, sharp change to
- 2-6 in. (A_2 horizon). Dark reddish grey to reddish brown 5YR4/2 to 4/3 fine sandy loam with rusty rock spots 5YR5/8, massive to weak sub-angular blocky structure breaking under slight to moderate pressure to small sub-angular blocky; a few small stones up to 2-3 in. sizes; roots plentiful, no worms, moist, no mottling, merges over 1-2 in. into
- 6-17 in. (B_2 horizon). Reddish brown 5YR4/4 fine sandy loam with crumb structure, breaking under slight pressure to fine crumb; moderate stone content mostly angular stones up to 4-5 in. sizes, and some smaller rounded erratics up to 1-2 in. sizes, felsite with erratics of basalt, pitchstone and ?diorite; roots frequent, no worms seen, moist, no mottling, sharp change to
- 17-34 in. (B_3 horizon). Reddish brown 5YR4/3 to 4/4 fine sandy loam, compact and slightly indurated with some horizontal lamination; moderate stone content as above; occasional roots penetrate to about 25 in., no worms, moist, no mottling (occasional pieces of weathered stone are rusty when broken), sharp change to
- 34 in. + Reddish brown 5YR4/3 loam till (rusty pieces of broken stone 5YR6/8), compact and massive with some horizontal lamination; moderate stone content – rounded erratics are more common than in the upper modified/soliflucted layer; no roots, no worms, moist.



1. General view of the surface of the blocking layer in the forecourt – exposed after excavation



2. Close view of kerbing of forecourt layer in front of tomb entrance



3. Section of blocking layer between stones F-5 and F-6



4. Section and surface of blocking layer immediately in front of the tomb entrance – kerb removed



1. Area of paving in front of tomb entrance with two holding stones on either side and top of sill-stone behind. Blocking layer removed



2. Area in front of tomb entrance completely cleared: sill-stone exposed with its stone wedge at base, right



3. View of the exposed forecourt façade, south-eastern half



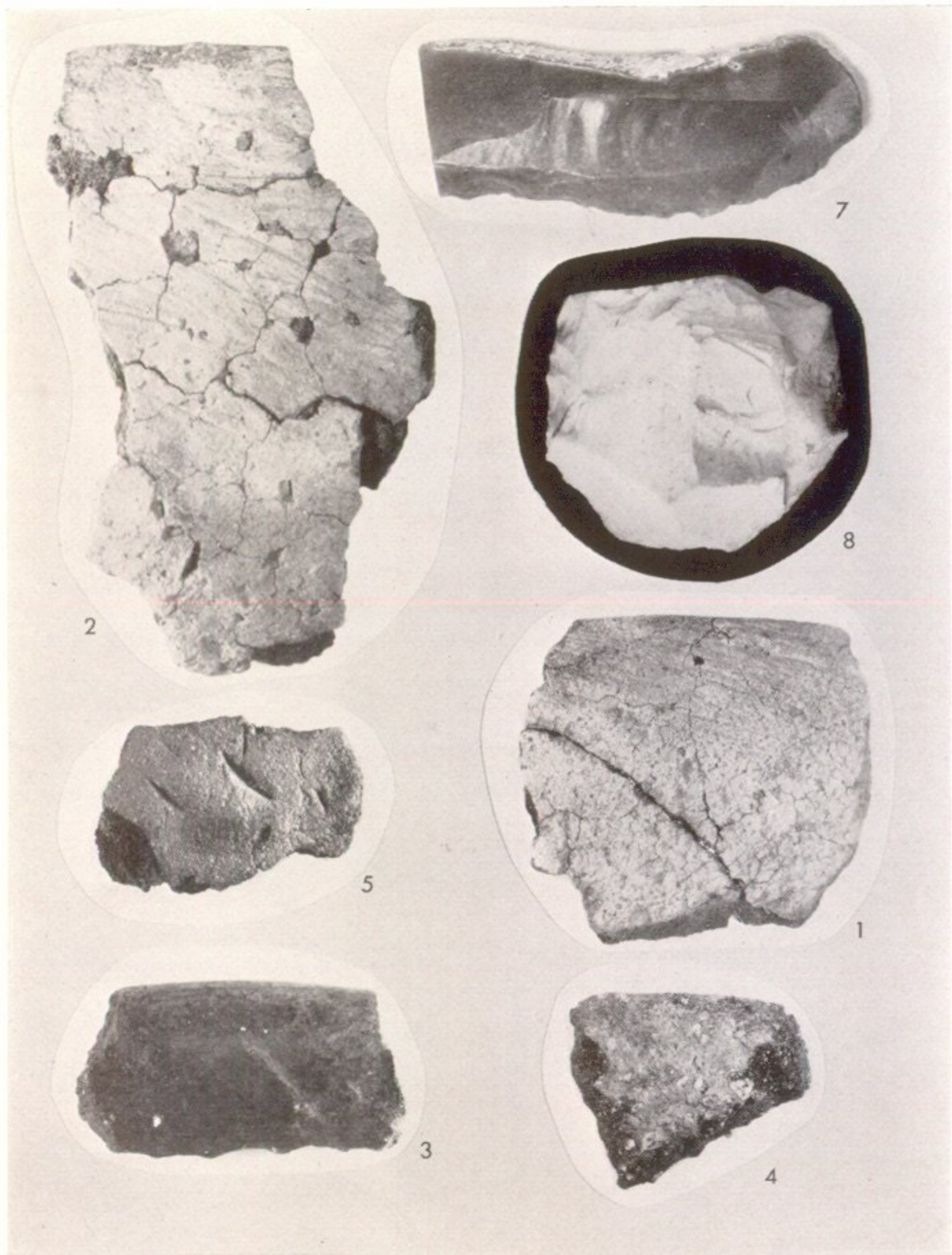
1. View of the exposed forecourt façade, north-western half



2. Detail of dry-walling between stones F-5 and F-6



3. Interior of burial chamber after clearance: from base to top are visible - fallen septal slab as left by Bryce, two stones forming rudimentary septal, two portal stones next to ranging pole and sill-stone at entrance



Finds of pottery and flint (numbers as on fig. 4)