



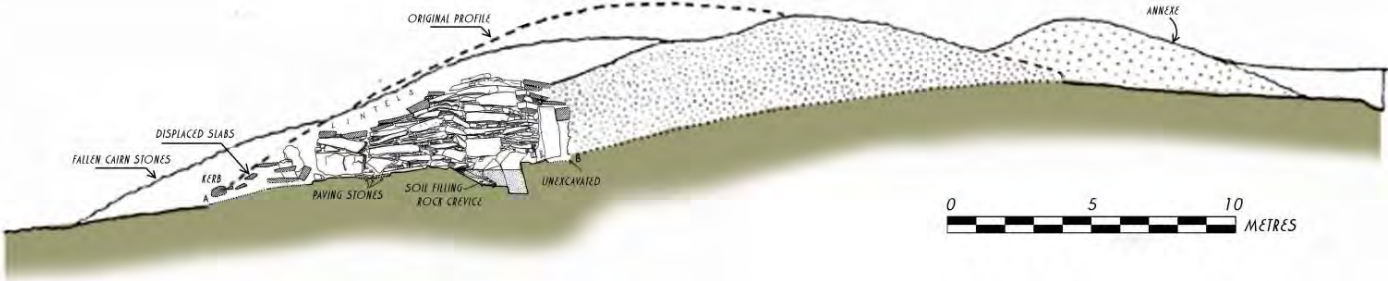
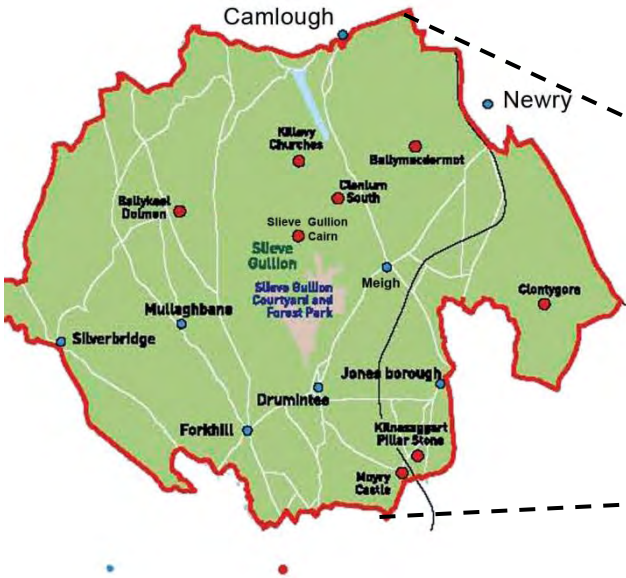
Slieve Gullion Passage Grave

Structural Review for Newry and Mourne Council

Project: 6509

Date: February 2014

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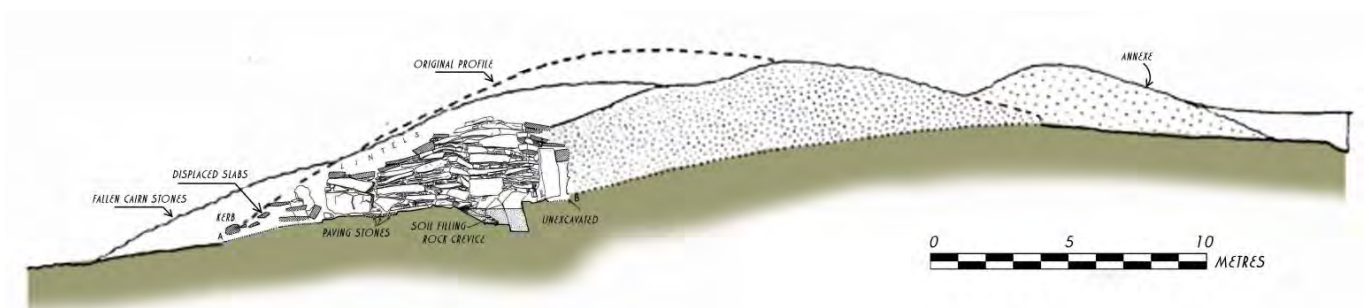
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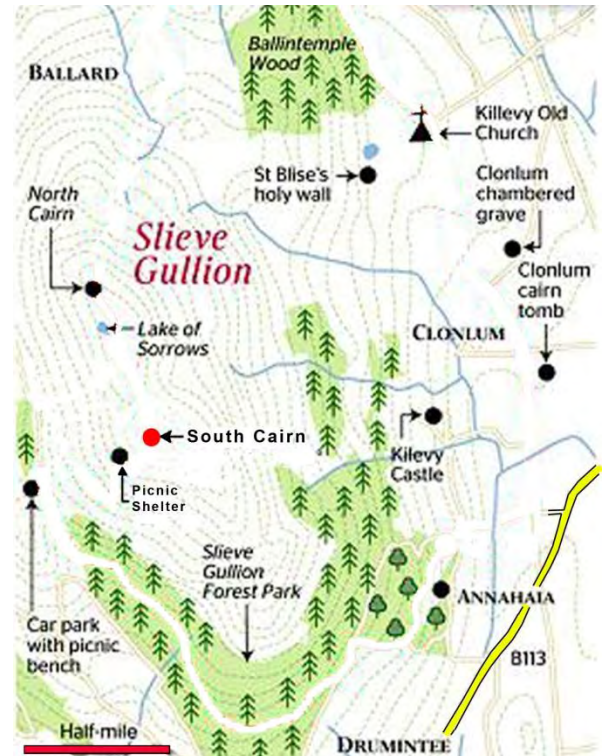
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1.0 Introduction

1.01 Mann Williams were commissioned by Darren Rice, Ring of Gullion LPS Officer for Newry and Mourne Council to carry out an inspection of Slieve Gullion, South Cairn and to provide initial conservation advice in relation to its future maintenance and management.

1.02 Slieve Gullion Passage Grave is set on the northern summit of Slieve Gullion and is the highest surviving passage tomb in the British Isles. It is known locally as 'the Calliagh Berra's House'.



1.03



The objective of this report is to provide an overview of the current condition of the site and to provide initial thoughts and observations on an appropriate management strategy. Background information and key plans for the site are provided in the appendices of this report for reference.

1.04 It is noted that the criteria for specifying works on the site needs to recognise a primary objective of adopting conservation 'best-practice', which requires that works should be necessary and justified. Providing a 'maintenance-free' site for the foreseeable future is unrealistic and the implementation of a site management plan will be necessary for the site.

2.0 Inspection

- 2.01 The photograph below shows a 360 degree view of the chamber, with the south-west facing entrance located to the left of the image and the north-east facing blocked chamber entrance shown towards the centre of the image.



- 2.02



The cairn is approximately 30m in diameter and up to 4m high with a kerb of massive, but undecorated, stones around the perimeter. A slight indentation on the south-west marks the entrance to a short, lintelled, passage shown in the photograph opposite looking out. This entrance passage leads to an octagonal chamber. The roof was originally corbelled, but has been replaced with a concrete capping supported on steelwork.

- 2.03

The entrance to the chamber is restricted by the presence of loose stone which has migrated in from the entrance area together with some fallen stone from the walls and roof area.



2.04



The image opposite shows the blocked entrance to the north east chamber and the wall to the east side of the chamber. A close up view of the blocked entrance to the north east chamber is shown below with a detail of the fractured lintel above. A concrete brace has been inserted as a strut between the vertical stones. The stonework generally appears stable although it would be recommended that annual reviews are carried out to establish any progressive deterioration.

2.05



2.06



The photograph opposite shows one of the intact basin stones on the floor of the chamber located on the north east side. It is essential that these are protected during any planned work on the chamber.

2.07

The photograph shows a second basin stone located on the floor on the west side of the chamber.



- 2.08 The roof of the cairn was originally corbelled stone, but was replaced in the early 1960's with an arrangement of steelwork and concrete slabs over, as illustrated in the photograph opposite taken from below.



- 2.09



An open metal grill provides light and ventilation into the chamber, although inevitably this also allows water ingress from above and is contributing to the corrosion of steelwork.

- 2.10

The steel trimming to the roof light, which also supports to the concrete deck, is heavily corroded as illustrated in the images on this page. The photograph below shows a close up view with delamination of the steel occurring as a result of the corrosion. At this stage the steel appears to retain sufficient residual strength to continue supporting the concrete deck, although it is noted that the corrosion is an ongoing problem and failure would be anticipated within the next 10-15 years (possibly sooner) if not treated.



2.11 The concrete deck which spans between steels and the perimeter walls to the chamber appear to be providing adequate service with only local spalling evident.



2.12



Vandalism and graffiti within the chamber is apparent as illustrated in the image opposite and the details below. Marker pens have been used in a number of areas and options would exist to carefully remove these markings. However some of the graffiti appears to have been carved into the stone, and this would inevitably be more difficult to treat.



Marker pen graffiti



Carved in graffiti

- 2.13 Externally the cairn consists of loose stone as illustrated in the image below. The roof light grill described previously is shown in the lower left of the photograph and the summit markers are visible above. The dishing/depression in the surface above the chamber is well documented and can be seen more clearly in clauses 2.15 and 2.16.



- 2.14 The area immediately above the chamber is shown in the photograph below. The metal grill which covers the roof light consists of a simple arrangement of solid bars and perimeter frame. Although corrosion is evident it appears to have maintained sufficient strength to continue providing effective service. The surface of the concrete slab which caps the chamber is exposed in a number of locations as illustrated in the photograph. Whilst this is aesthetically a poor detail it also reduces the natural protection that would be obtained from random stone covering. It would be suggested that a layer of stone was reinstated over the concrete slab to address this issue and improve protection.



- 2.15 The entrance to the chamber is illustrated in the photograph below. The current tendency appears to be for visitors to walk from the summit marker down across the head of the chamber as illustrated. This creates a natural erosion process that migrates stone down towards the entrance area.



- 2.16 The photograph opposite illustrates the stone that has collected in the entrance to the chamber. Consideration should be given to encouraging visitors to take a route that brings them to the entrance from the south west side rather than taking a north to south path across the head of the cairn. In addition to this management of visitors (possibly with the use of way markers) the stonework around the entrance to the chamber should be locally consolidated. Consideration could be given to the use of geogrids set within the loose cairn material to discourage migration.

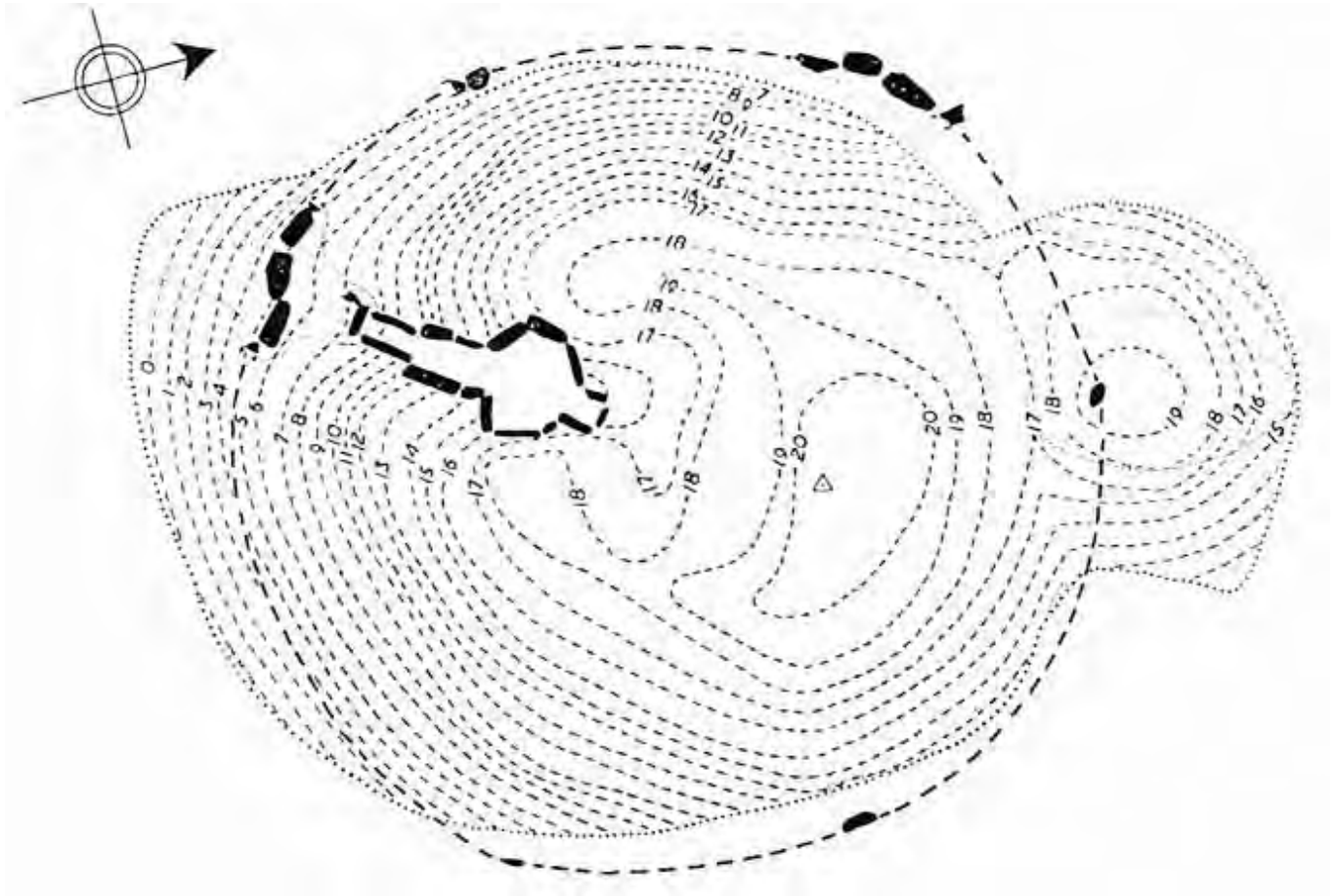


3.0 Conclusions

- 3.01 The nature of the site is such that erosion in the form of migration of stonework is an ongoing challenge. Preventing foot traffic across the head of the cairn would be almost impossible without extensive barrier systems, and this is clearly impractical and wholly inappropriate for the site.
- 3.02 The approach considered appropriate is a combination of localised conservation works to improve the existing stability and presentation of the monument, together with some consideration of footpath routes and options to encourage foot traffic directions that lessen the risks of erosion.
- 3.03 The preferred route would be for the normal footpath route to take visitors to head of the cairn and the summit marker from the north west side, passing across the cairn in an easterly direction. On reaching the base of the cairn the visitor would proceed clockwise around the base until reaching the entrance where they can approach from the south west.
- 3.04 Within the chamber it is recommended that loose stones and pinnings to the perimeter walls are consolidated where possible. The dry bedded nature of the cairn is such that mortar consolidation should not be used unless it can be set well back from the face work, and not seen in the completed work.
- 3.05 A proportion of loose and fallen stone on the floor of the chamber and passageway should be removed under archaeological supervision. The extent of removal should be carefully regulated to avoid excessive clearance, and care taken around wall base areas to ensure local consolidation is carried out should loose sections be encountered.
- 3.06 The corroding steelwork supporting the concrete roof slab is an ongoing maintenance issue, and with the corrosion progressing it will eventually require extensive repair, and possibly replacement. Options to treat the steelwork are limited in the harsh environment.
- 3.07 The concrete capping slab to the chamber generally appears in serviceable condition although the upper surface is exposed. It is recommended that some cairn material is placed over the exposed concrete to provide some protection against the freeze thaw effects. The placing of stone in this area may also remove the line of sight from the summit marker to the metal grill to the roof light over the chamber. This may in turn reduce the tendency for visitors to head for this area and then on down the flanks of the entrance, rather than take the preferred route to the entrance.

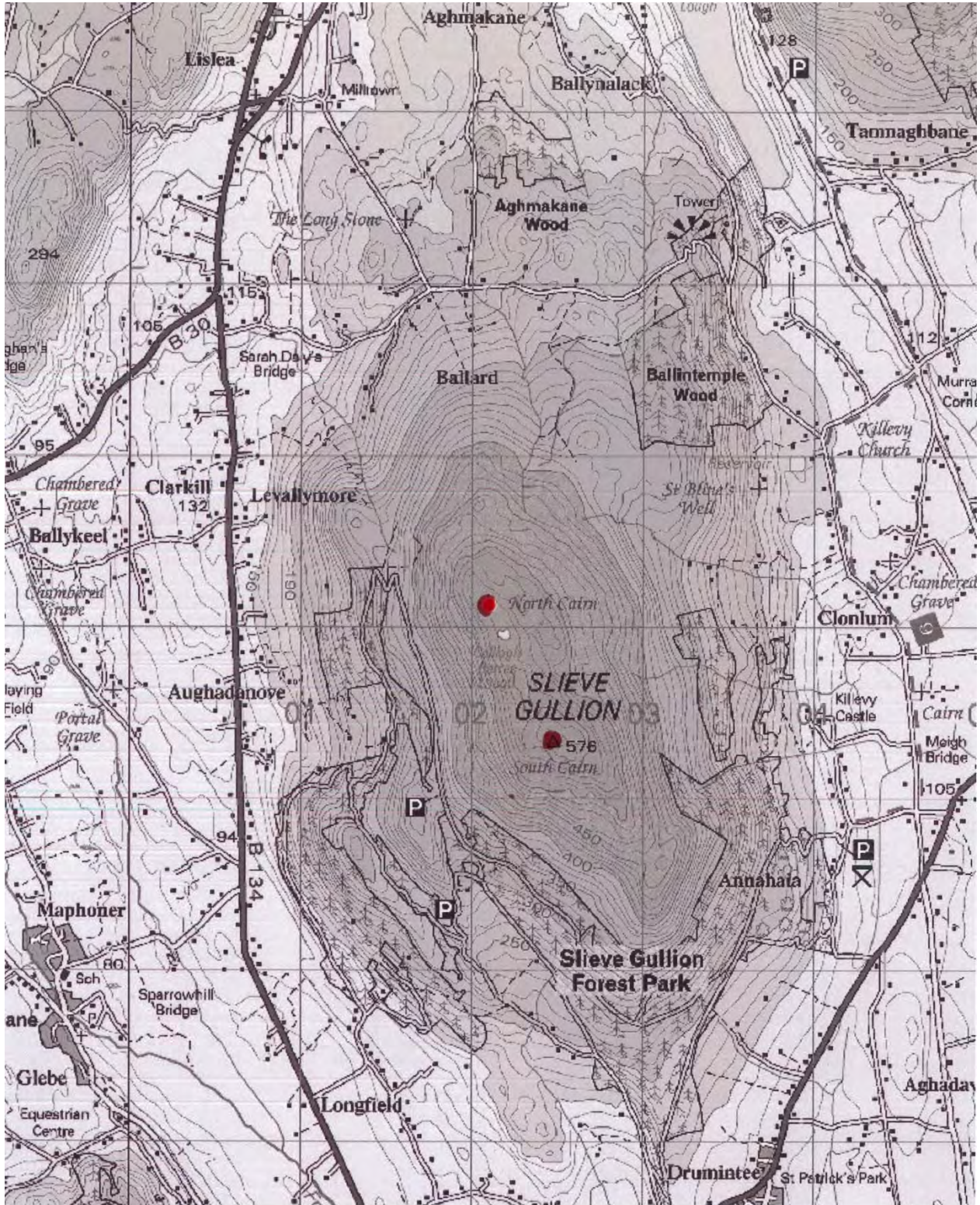
Appendices

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Appendix A

Site Location



17/01/2014 11:42:16

Scale 1:30000

Center Point (302100, 321130)

Appendix B

Site Background Information

The following background information has been obtained from various sources including NIEA archives, and provides background information on the site

Slieve Gullion (Sliabh gCuillinn, 'The mountain of the steep slope') stands at a height of 573m in the centre of the Ring of Gullion and is the highest mountain in County Armagh. On the southern summit, a large Neolithic burial chamber known locally as 'Calliagh Berra's House' is the highest surviving passage tomb in Ireland. Local folklore tells how the famous Irish Giant, Finn McCool was bewitched by the wicked Calliagh Berra. Touched by her sadness, Finn was tricked into diving into the bottomless lake to retrieve her lost ring.

The mighty Finn surfaced some time later with the ring but he had fallen under her spell and emerged an old man with hair as white as snow. Eventually, Calliagh Berra was forced to undo her evil spell and Finn regained his former physique, with the exception of his beautiful blonde hair. The story still goes that if anyone swims in that treacherous lake, their hair will turn white.



SLIEVE GULLION: PASSAGE TOMB

South Cairn, Cailleach Beara's House or Calliagh Berra's House

Standing at the southern end of the summit ridge of Slieve Gullion, some 870m to the southeast of the Bronze Age cairn, this is the highest surviving passage tomb in Ireland and commands a most impressive view over the surrounding countryside. The large and imposing monument was recorded and partly excavated by Collins and Wilson in 1961. The covering cairn was found to have been built from the igneous rocks found naturally on the mountain, but the outer edge was obscured by encroaching peat. An examination at several places around the perimeter revealed a kerb of massive stones, up to 2.06m long, laid horizontally and defining a circular area around 30.0m in diameter. The kerb has been effective in retaining the bulk of the cairn, since it still stands to a height of over 4.0m and little slipped stone was identified in the surrounding peat.

The kerb was continuous, but a slight indentation in the plan on the south-western edge marks the area of an entrance to a short passage leading to the chamber. In 1961, the tumbled stone and modern debris which filled these features was removed to reveal that the passage only began about 3.0m from the kerb. It is possible that originally it continued to the edge of the cairn, but a letter dated Dublin, March 29th 1739 to the Bishop of Dromore, now in the Harris Manuscripts (Armagh Cathedral Library), records an unusual 'porch' which may have existed in the space. The letter goes on to describe

'a cairn with a large stone door, with stone jambs which appear to be artificial; before this door was a porch about 6ft high next [to] the door; it extends 8 or 9ft and grows narrow towards the entrance into it which is so small that a man can just creep into it'.

During the excavations a large stone was found lying across the south-western end of the surviving part of the passage. This may simply have tumbled from above, but could represent a sill stone dividing the passage from the 'porch'.

The passage is about 4.5m long, constructed of drystone-walling but incorporating large blocks of stone up to 1.8m long set on edge. The roof, formed of lintels, is 1.4m high at the south-west end and rises gradually as it approaches the chamber. Drystone-walling continues within the chamber but the use of large blocks of stone has given rise to an almost octagonal plan, measuring some 3.0m across. A small end chamber, about 90cm square, faces the entrance passage and is of a more orthostatic construction. The roof of the chamber was corbelled, and although the centre has long since collapsed, leaving a hole, much remains and it is clear that it must originally have risen about 4.0m above the floor.

An account recorded by Charlotte Brooke in 1789 describes how the chamber was opened by local people searching for the 'Old Lady' or 'Witch' (the *Cailleach Beara*) who was believed to live there, 'but only a few human bones were found'. By the time of the 1961 excavation, the chamber had been thoroughly disturbed and the paucity of finds was not surprising. A few fragments of worked flint and chert, a scraper and a barbed-and-tanged arrowhead were found in the soil that filled the crevices in the natural rock floor of the chamber. Two stone basins were also discovered among the lower levels of the modern fill, and a third was recovered from the outer end of the passage, where it had been concealed for safety some years earlier. Carefully-shaped stone basins are generally associated with passage tombs, but the ones from Slieve Gullion are essentially natural although their shape has obviously been improved by varying degrees of hammer-dressing.

On the northern side, a small mound of rounded and angular stones was later added to the fabric of the passage tomb cairn. This was about 12.0m across and was thought to be a Bronze Age addition, but extensive excavation revealed no burials or structural details. Pollen analysis and radiocarbon dates from the adjacent peat deposits provided a little more information about the history of the site. Peat had started to grow by around 3265 ± 95bc and it seems that the immediate area was not densely wooded, even in pre-Neolithic times. The results did not provide a secure date for the construction of the cairn, but sometime in the first half of the third millennium BC was tentatively suggested. Pollen analysis also demonstrated a phase of woodland clearance about 2000 BC, but this cannot be associated with the monument.

Appendix C

extract

Ulster Journal of Archaeology, Vol. 26, 1963.

THE SLIEVE GULLION CAIRNS

by A. E. P. COLLINS *and* B. C. S. WILSON

INTRODUCTION.

SLIEVE GULLION has long been famed for the large passage-grave cairn sited on its southern summit. Although damaged, enough is preserved of both passage and chamber for it to be clear that both in size and in building technique it is one of the major passage-graves of Ireland. It was thus felt that excavation was necessary both to search for evidence of funerary deposits and to reveal as much as possible of its construction, so that an adequate record could be included in the County Armagh Survey. And while equipment and labour were assembled for this task it seemed wise to undertake the excavation of the smaller round cairn on the northern summit.

Special difficulties were foreseen in working on so lofty and exposed a hilltop and it was decided to try to overcome these by the use of student labour encamped on the mountain. A camp was therefore established on the northern end of the mountain about 600 ft. below summit level and some thirty students from the Archaeology and Geography Departments of Queen's University had their first experience of a training excavation during the period June 17th—July 29th, 1961. Our thanks are due to all these and to a few other friends who braved bad weather and difficult and dangerous working conditions and to two local farmers, Messrs. Joseph Hughes and Sean O'Grady; the last of these, at considerable risk, took his farm tractor with equipment almost to the summit. We would also wish to thank the specialists who have contributed appendices. The photographs and drawings are reproduced by permission of the Ministry of Finance.

GEOLOGY AND TOPOGRAPHY.

Slieve Gullion owes its origin geologically to the intrusion of plutonic rocks at some time within the Tertiary epoch. The mountain itself is composed of a mass of granophyre and biotite-gabbro intruded in a broad belt N.W.-S.E. across the centre of an area of the much older Newry granite; surrounding the mountain at a distance of up to three miles is a circle of hills comprising a ring-dyke of other erosion-resistant igneous rocks which have erupted through a series of volcanic vents (J. K. Charlesworth, 1953, 157-60).

The mountain (Fig. 1) forms a ridge approximately three miles long from north to south and two miles wide. Its steep slopes on east and west are for the most part free from cliffs and crags but show a fair proportion of bare rock and scree where weathering has attacked its massive jointing. Trees and bushes are both absent apart from a belt of modern planting on the east slope behind Killeevy Castle and Hawthorn Hill. Peat which supports a growth of heather, bilberries and grasses covers most of the summit and the gentler slopes, though it is obviously being currently eroded from around many parts of the summit ridge. In a slight saddle, just south of the northern end of this ridge, lies a small shallow lake, the outflow from which finds its way by streamlets down both eastern and western slopes. Several other streams which have their sources in boggy hollows descend, those on the east to the Flurry river and those on the west to the Forkhill river.

From the summit (1894 ft. O.D.) very extensive views can be enjoyed in clear weather. To the north-east appear the Belfast Mountains and Slemish and due north is Lough Neagh. To the north-west are Slieve Gallion and the Sperrins, while in exceptionally clear weather some of the Donegal mountains are visible. Almost due west is Cuilcagh while to south-west and south one can see vast distances over the midland plain, with such local eminences as Slieve na Calliagh clearly identifiable. Beyond the plain to the south appear the Dublin and Wicklow mountains. Near at hand to south-east and east are the hills of the Carlingford peninsula and the whole range of the Mournes.

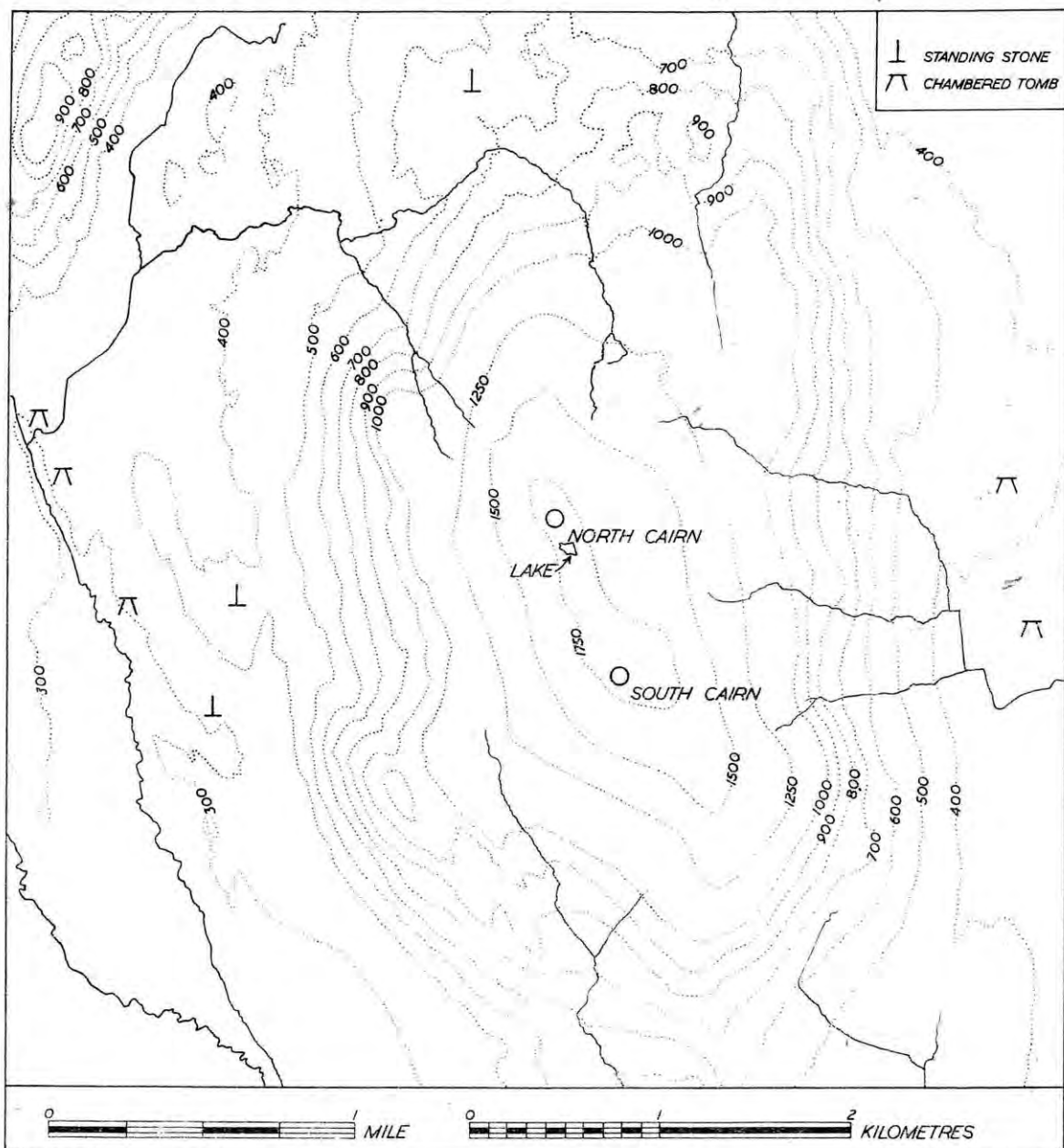


FIG. 1. Slieve Gullion: location of cairns and other megaliths.

SLIEVE GULLION CAIRNS

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That these two cairns are not isolated examples is made clear by Fig. 1. Megaliths of one kind or another are well distributed on the lower ground round the flanks of the mountain. These include on the west the tripod dolmen of Ballykeel, set in the end of a long cairn, and on the east the long ('horned') and round cairns of Clonlum. The ring-dyke hills appear to be devoid of megaliths except on the north-east and south (outside the scope of Fig. 1): Camlough mountain bears a small circular summit cairn and its south-eastward extension, Ballymacdermot mountain, has given its name to a long ('horned') cairn; to the south are the remains of a large round cairn on Carrickbroad mountain. The position of Slieve Gullion in relation to other Irish passage-graves is shown in Fig. 2.

PREVIOUS HISTORY OF THE SITES.

The south cairn with its passage-grave has long been known. The earliest discovered reference* is in a letter in the *Harris Manuscripts* in Armagh Cathedral Library, dated March 29th, 1739. This describes the 'cairn with a large stone door, with stone jambs, which appear to be artificial: before this door is a porch about 6 feet high next the door: it extends eight or nine feet and grows narrower towards the entrance into it which is so small that a man can just creep into it like a rabbit hole. This porch has been broken into, but I could not find by any persons thereabout that the cave itself had been entered by anyone.' A further reference in Wright's *Louthiana* (1748) mentions 'another of these vast heaps, 300 feet in circumference, is to be seen on the top of Slavgullion. This has a cave or cell in the middle of it.' In 1788 (Charlotte Brooke, 1789, 70-1) a local tenant describes it as follows: 'On the summit there is a large heap of stones which is called Cailleach Birrn's House, in which it is said that Finn Mac Cumhal lies buried; and at nearly the same level there is a circular lake, the diameter of which is about one hundred feet; and is about twenty deep. On one side of this lake, another heap of stones is piled; and round it, at all seasons, is a beaten path extending to the *Old Lady's*, or *Witch's House*. Lately some peasants, expecting to find out this old woman (who, however, has at no time thought proper to appear), threw down her house and came to a large cave, about twenty feet long, ten broad and five deep, covered with large flags, in which either the dame, or money was expected, but only a few human bones were found.' This reference is interesting as alluding to the north cairn ('another heap of stones') as well as to the south cairn.

THE SOUTH CAIRN (Pl. Ia and Fig. 3).

The Main Cairn and 'Annexe'

Prior to excavation the cairn appeared as a vast pile of loose stones of the same material geologically as the mountain itself, rising out of the peat which here covers the summit. The stones varied in size up to nearly a hundredweight though it was noticeable that very small stones were rare. The apparent outer edge of the cairn, shown on Fig. 3 as a dotted line, shows the upper limit of growth on the mound of moss and grasses. The shape as seen on plan was anomalous—a rough oval with an excrescence or annexe projecting outwards on the north. Approximations to this unusual shape are shown in the sketch plans by Mr. T. G. E. Powell (T. G. E. Powell, 1938, 241) and Mr. E. M. Jope (E. M. Jope, 1952, 10).

*We are greatly indebted to Mr. T. G. F. Paterson, Curator of Armagh County Museum, for introducing us to the literature of Slieve Gullion.

A series of radial cuttings (1-9) was laid out to trace the outer limits of the cairn. Up to three feet of peat was encountered in most of these, growing over and masking the true outer edge of the cairn. This edge was found to be marked

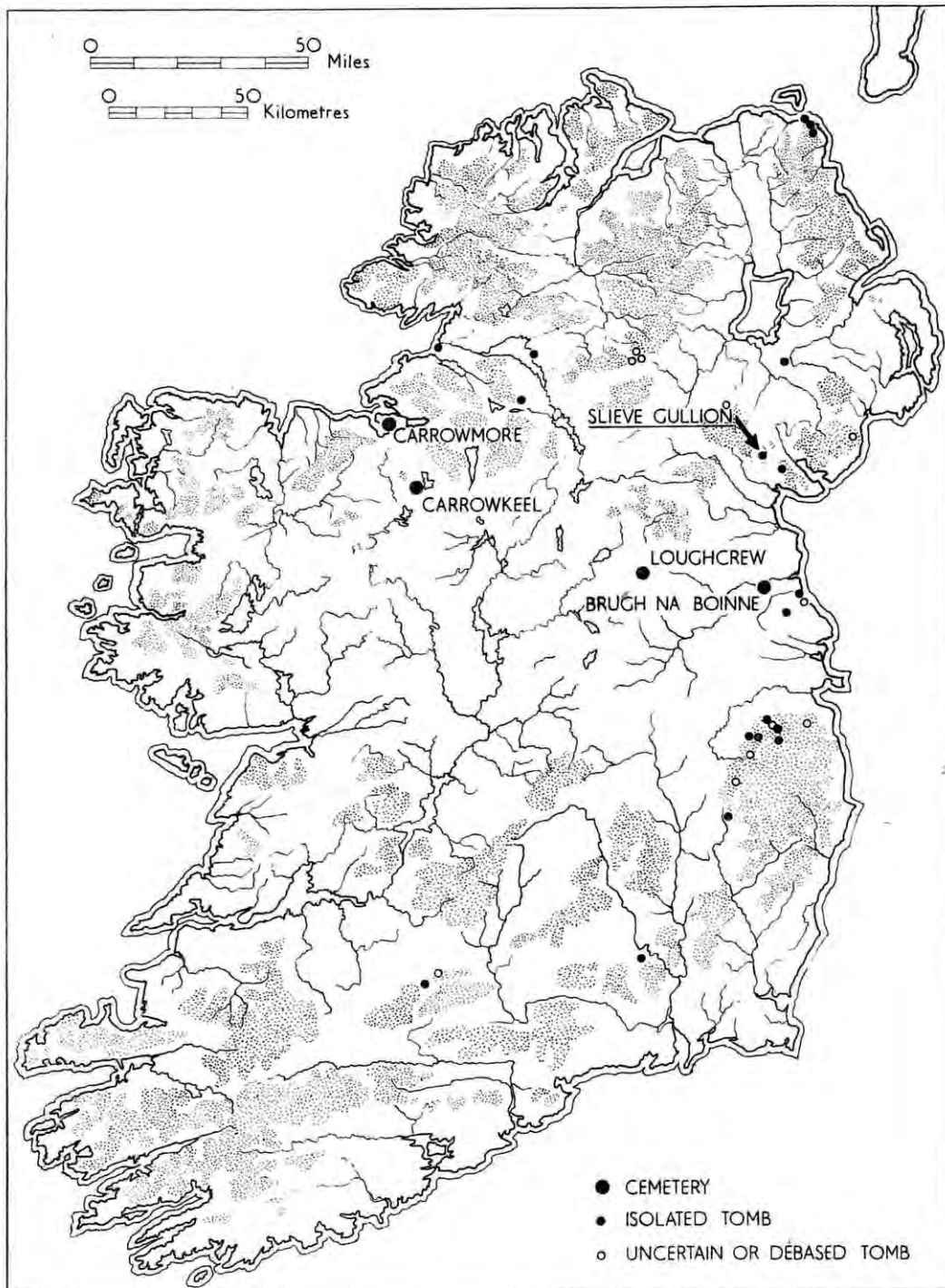


FIG. 2. Irish passage-grave distribution.

SLIEVE GULLION CAIRNS

by a kerb of massive stones laid horizontally (Pl. IIa). Those exposed varied between 2 ft. 6 ins. and 6 ft. 9 ins. in length. Most were more or less weathered with well rounded angles; they were presumably prised off the outcrops so common on the mountain, where weathering has enlarged the jointing fissures and smoothed all angles. Most of the kerbstones rested on 6 ins. to 1 ft. of mixed small stones and peat, apparently the pre-cairn covering of the summit. That they had been generally effective in preventing the spread of the cairn mass was shown by the

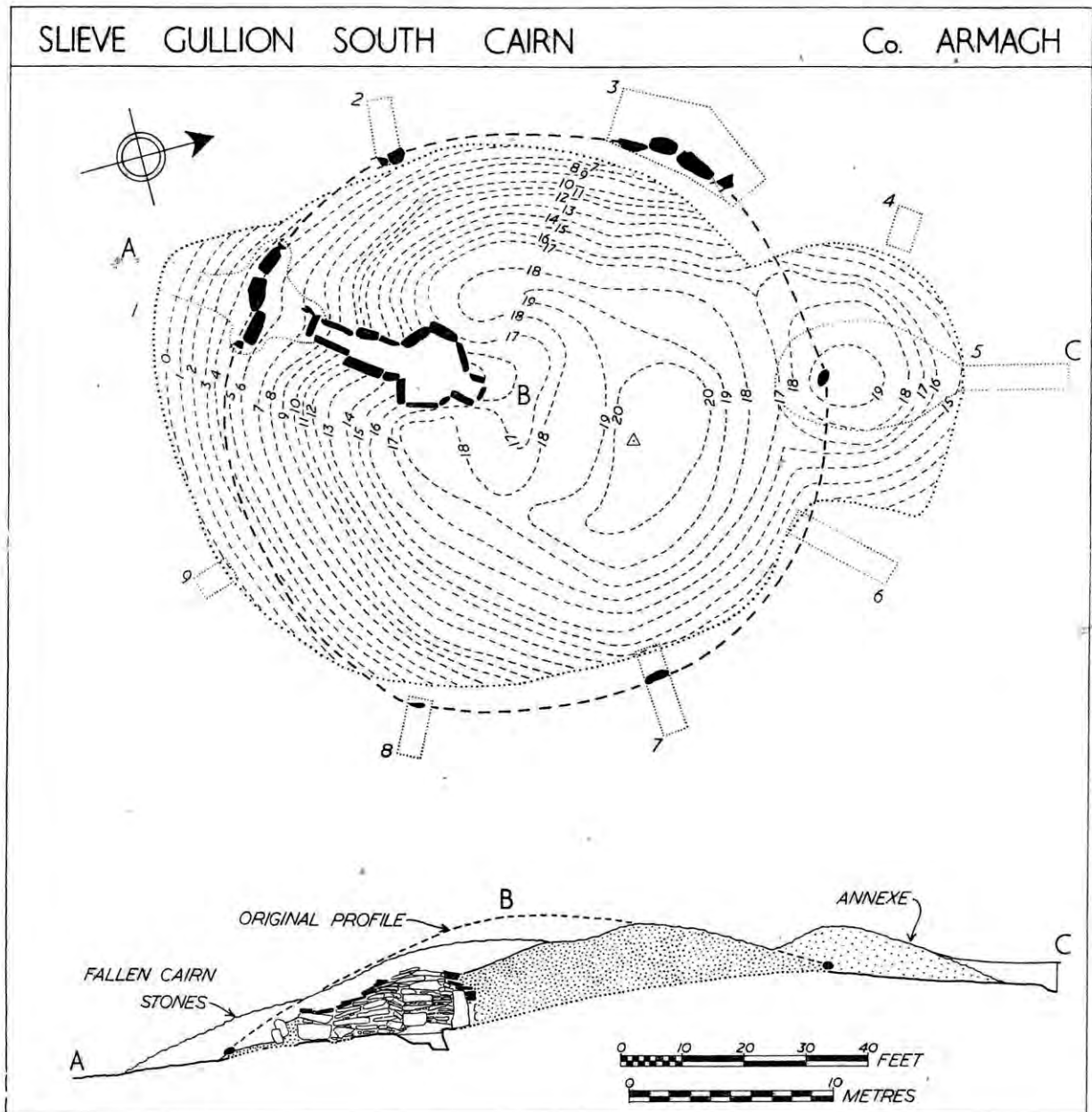


FIG. 3.

scarcity of stones embedded in the peat which lapped over the cairn. The few stones found in the peat were confined to the uppermost foot or so. The pressure of the cairn mass had, however, been sufficient to displace the long axis of one of the kerbstones in Cutting 3 through about 70° . Two of the cuttings on the main cairn mass failed to find kerbstones; Cutting 6 was apparently long enough to reach the presumed edge of the cairn and we may thus infer that the kerbstone at this point was missing; Cutting 9, on the other hand, touched the fringe, not of the cairn itself, but of the fallen stones presumably thrown down by our predecessors who uncovered the chamber roof. This general spread of the cairn beyond the kerb on its southern side may well have been assisted by gravity, since it is here that the cairn profile was originally at its steepest. To have continued Cutting 9 far enough to locate a kerbstone was deemed unjustifiable.

A vertical series of peat samples for pollen analysis was taken in the south side of Cutting 7 (Fig. 4) by Dr. A. G. Smith of the Botany Department, Queen's University.

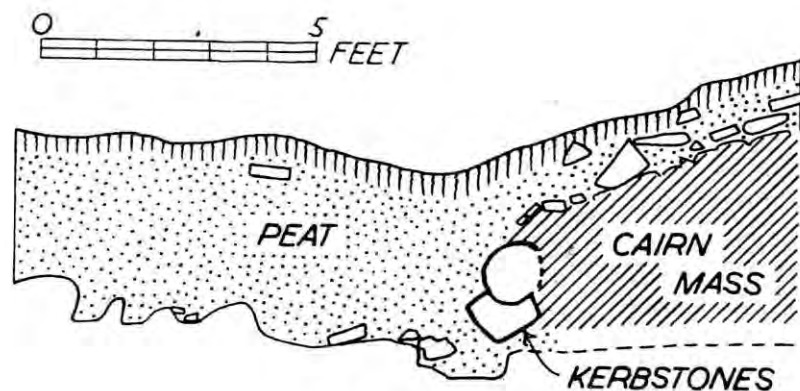


FIG. 4. Cutting 7.

The plan (Fig. 3) shows contours at one foot vertical interval which cease at the pre-excavation edge of the cairn. They ignore a series of recent disturbances to the cairn made by troops in training during the 1939-45 war. Several 'fox-holes' of conical section had been dug into both the cairn and its 'annexe' and two ramps for quick access to the top of the cairn, the one passing just east of Cutting 3 and the other north of Cutting 8, are presumably attributable to the same period. A triangulation pillar of the Ordnance Survey is cited close to the present-day highest point; it is marked on the plan by a triangle enclosing a dot.

The 'Annexe.' This northward extension of the main cairn appeared when planned to be a later addition built on to the passage-grave cairn. Accordingly, Cutting 5 was extended through its centre in the hope that some form of cist or other chamber could be located near its centre. To preserve stability, the sides of the cutting had to be battered at about 45° . In this way a very large part of the volume of stones comprising the annexe was removed. The component stones showed a mixture of rounded and well-weathered pieces with sharp angular pieces.

SLIEVE GULLION CAIRNS

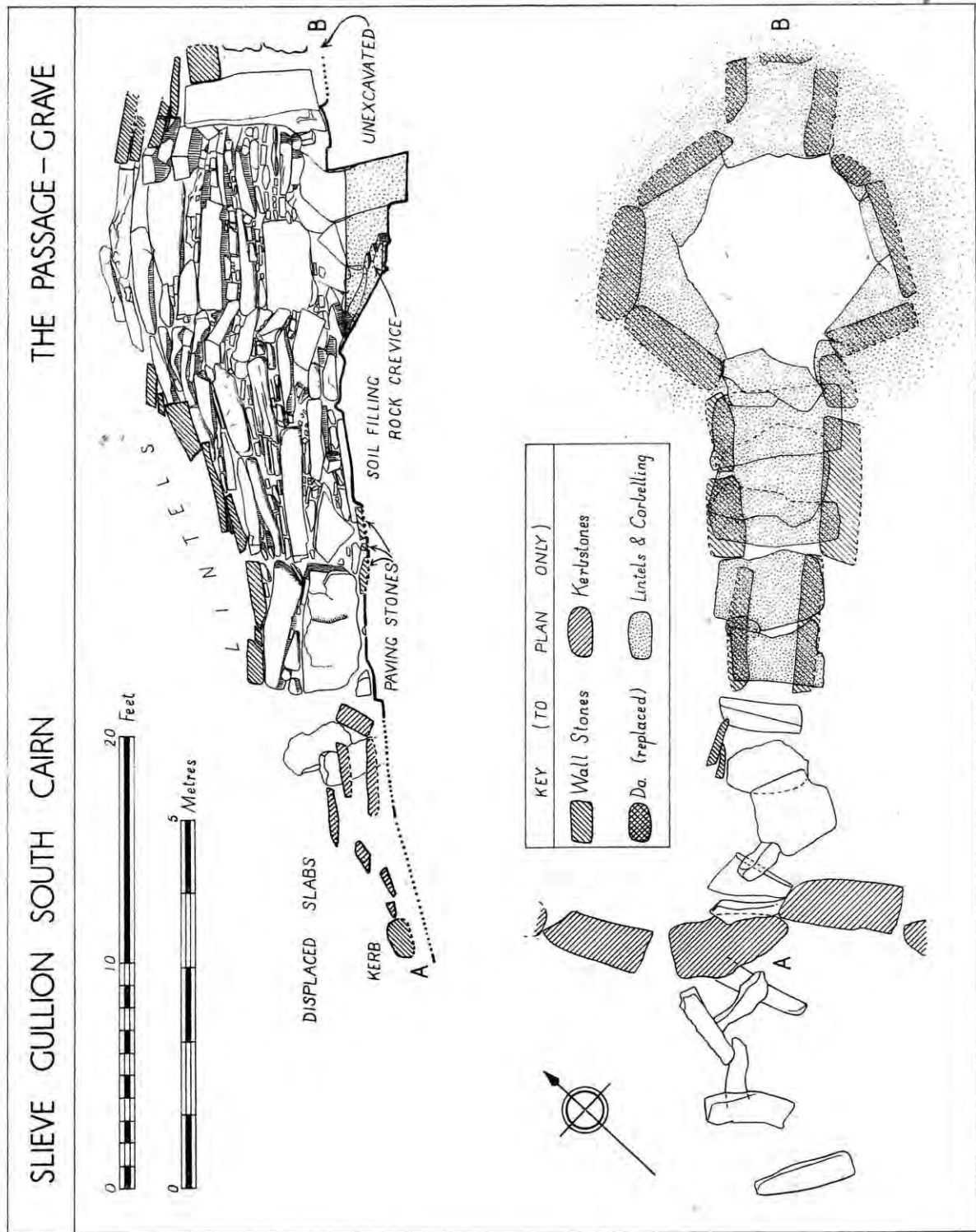


Fig. 5.

The lowermost foot of cairn stones was bedded in and on a fine dusty black soil, comparable with that found in the fissure of the passage-grave floor (p. 27). The soil probably represents the pre-cairn peat with the addition of any dirt, originally adhering to the cairn stones, which had washed down to this level. The stones were, in general, rather larger than those of the main cairn. No kerb was apparent, though there was a tendency for thin slabs 3-5 ft. long to be laid horizontally at the outer edge. As in the main cairn, peat covered the outer edges of the annexe. Corroborative evidence that the annexe was added after the construction of the main cairn was provided by finding one of the latter's kerbstones at the inner end of the cutting where it had been buried beneath about 7 ft. thickness of annexe material. No artifact was discovered in the 'annexe.'

The Passage-Grave (Figs. 5 and 6). Prior to excavation, all that could be seen of the passage-grave was the gaping hole in its corbelled roof and up to 3 ft. of the walls below roof level. The task of excavation was to remove the collapsed rock

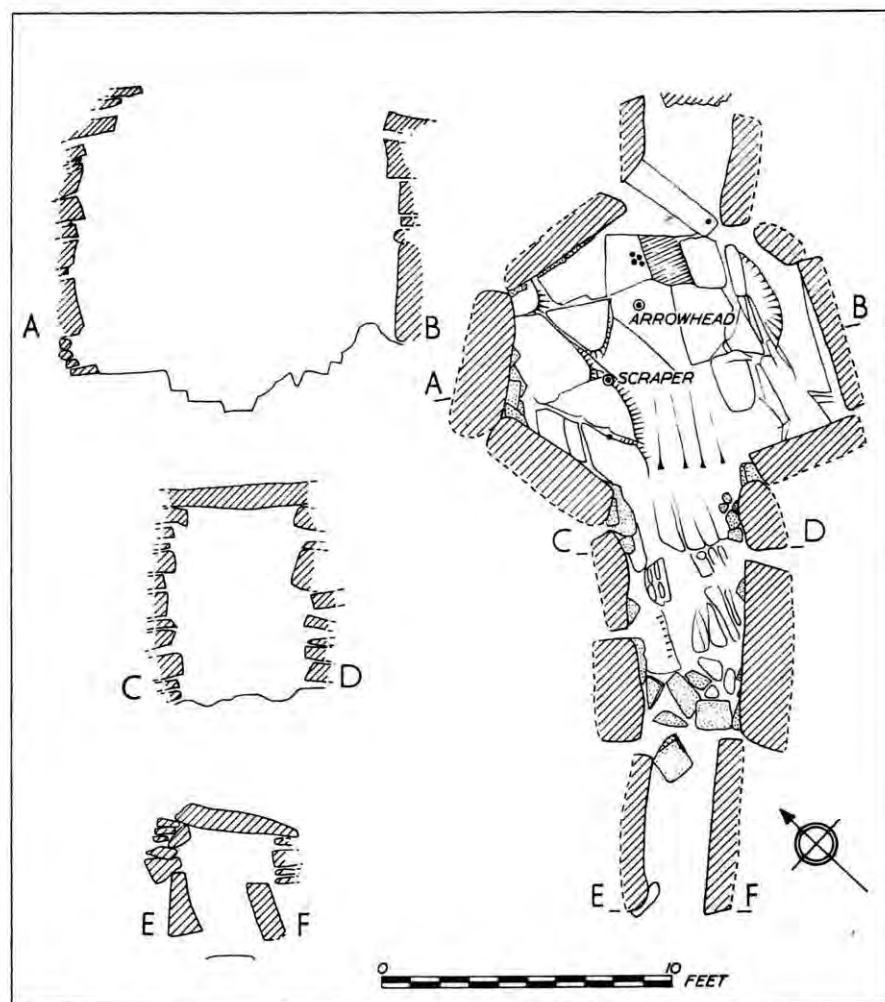


FIG. 6. Find spots of flints indicated by black dots.

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consisting of large fallen roof slabs and cairn material, the broken bottles and other debris which choked both chamber and passage, and to uncover the upper surfaces of the lintels by which the passage was roofed. Since few traces of a burial deposit or grave-goods survived, the following account is treated as a structural description of both the chamber and its approach passage; the few finds are described in a following section.

The Floor. The floor (Fig. 6). presented many irregularities. In the passage it consisted of the closely ridged and furrowed surface of the bed-rock. The cracks and interstices contained some dark brown soil, though whether this represented part of the pre-cairn soil cover it would be difficult to say. Here and there were small areas of flat stones, carefully laid as paving to smooth over some of the natural irregularities of the passage floor. These and sundry flat chocking stones inserted beneath the walls of passage and chamber are dot stippled in Fig. 6.

One jointing-plane almost coincides with the main axis of the passage; the other crosses it more or less at right-angles to the first. The massive character of the rock beneath the superficial traces of weathering was well seen in the floor of the chamber where a rectangular hole, seen best in longitudinal section (Fig. 5), probably owed its origin to ice-plucking.* The bottom of this rock cleft showed a thin-skin of brownish-khaki clay, full of small stones, perhaps a trace of boulder-clay. On this were traces of a sticky black deposit, apparently peat. Filling above this to the level indicated was a fine black powdery soil. In the top of this soil was a concentration of charcoal and a very few tiny fragments of heavily cremated bone. The charcoal, while generally distributed, was locally concentrated in the area shown stippled in Fig. 6. From this same level came 7 pieces of worked flint and one of chert whose find-spots are indicated on the same plan. These were the sole finds of early artifacts from the south cairn.

The Walls (Figs. 5 and 6 and Pls. IIb and IIIa). Dry-stone walling was almost exclusively employed in both passage and chamber. Large blocks up to 6 ft. long and a foot or more thick were used. The natural unevennesses of the site were to some extent removed by a judicious use of small chocking pieces and for the most part the large slabs were laid flat. Some, however, of the basal stones were set on edge; both such stones at the outer end of the passage (seen in section at E-F) were set thus; so was the next stone inwards on the east side of the passage and likewise the stone at B (Fig. 6) in the chamber wall. In addition, the two side stones of the recess or end-chamber (Pl. IIb) were set on end as orthostats. It was very clear that the stones that had been laid flat were so set that their shorter axes in the horizontal plane sloped downwards, away from both passage and chamber. This appeared to have been achieved in part by the use of stones of wedge-shaped cross-section and in part by the use of suitable small chocking stones. A further consequence of this tilting is to be seen in the downward tilt noticeable in longitudinal section (Fig. 5) of the splayed walls of the chamber. In this we can see a conscious appreciation of the stresses involved: the slope of the wall and roof stones countered the thrust exerted by the mass of stones

*We are indebted to Mr. N. Stephens of the Geography Department, Queen's University, for this suggestion.

forming the cairn. The sheer weight involved in the structure has become all too apparent in the cracks seen occasionally in large walling slabs and very frequently in the thin chocking pieces used between them (cf. Pl. IIIa). At one point in the north-east splay wall of the chamber it was necessary to safeguard both workers and monument by replacing a missing wall stone with a suitably sized piece. This stone, immediately to the right of the ranging-pole in Pl. IIb, is shown cross-hatched in plan (Fig. 5).

The present outer end of the passage is probably an original feature. As drawn, the large wall-slab on the east side has slipped inwards about 1 ft.* The 10-ft. gap between the outer end of the passage and the kerbstones is at present littered with large horizontal slabs. One of these, on edge and adjacent to the passage end may well be a kind of sill-stone *in situ*. The others lying outside this are presumably remnants of the 'porch' (p. 21), outside the passage, if the early account can be relied on. The two short and slight orthostats just outside and to the west of the entrance may well be all that survives intact of this feature. By their splayed setting they suggest some kind of approach to the passage, funnel-shaped on plan.

The inner end of the small end-chamber is at present blocked by two large jagged stones which may well have been originally one large member. We strongly suspect that this shows evidence of the explosives used on the site some years ago by a local clergyman (L. O'Kane, 1955, 5). If united in one piece they would have been large enough to have formed most of the end wall. The two orthostats which line the side walls of this end-chamber provide a neat facing and, incidentally (like the New Grange orthostats), do not bear any of the weight of the roof.

The Roof. Roofing of the passage was by a series of massive lintel-slabs laid directly on the dry-walling of the sides. The two outermost lintels have dropped nearly a foot at their eastern ends with the displacement inwards of the main wall-stone at this point. The lintels number six with the addition of three small packing pieces. Some two to three feet of cairn material were removed from the top of the lintels to uncover their upper surfaces. Lintelling was also employed to cover the end chamber.

The main chamber was roofed by corbelling of which the lowermost two to three courses are still *in situ*. The original height of the complete corbelled vault cannot be ascertained with certainty. The surviving portion on the western side has a height of about 10 ft. above the floor. A probable figure for the total would be 12-13 ft. The transition from lintelling over the passage to corbelling over the chamber was neatly contrived. The nearest lintel stones to the chamber were laid on the lowest corbels. By this means two relatively small and light stones were employed which can perhaps better be described functionally as corbels than lintels. As is clear on plan (Fig. 5) they are too short to bridge across from wall to wall of the passage at this point and require the support of the corbel stones below them.

In the course of clearance of the chamber, eight large flat stones were encountered among the debris. These, with lengths of up to 5 ft., were all of such a size and

*This stone was set back in its original position in 1962 as part of limited conservation measures on the monument.

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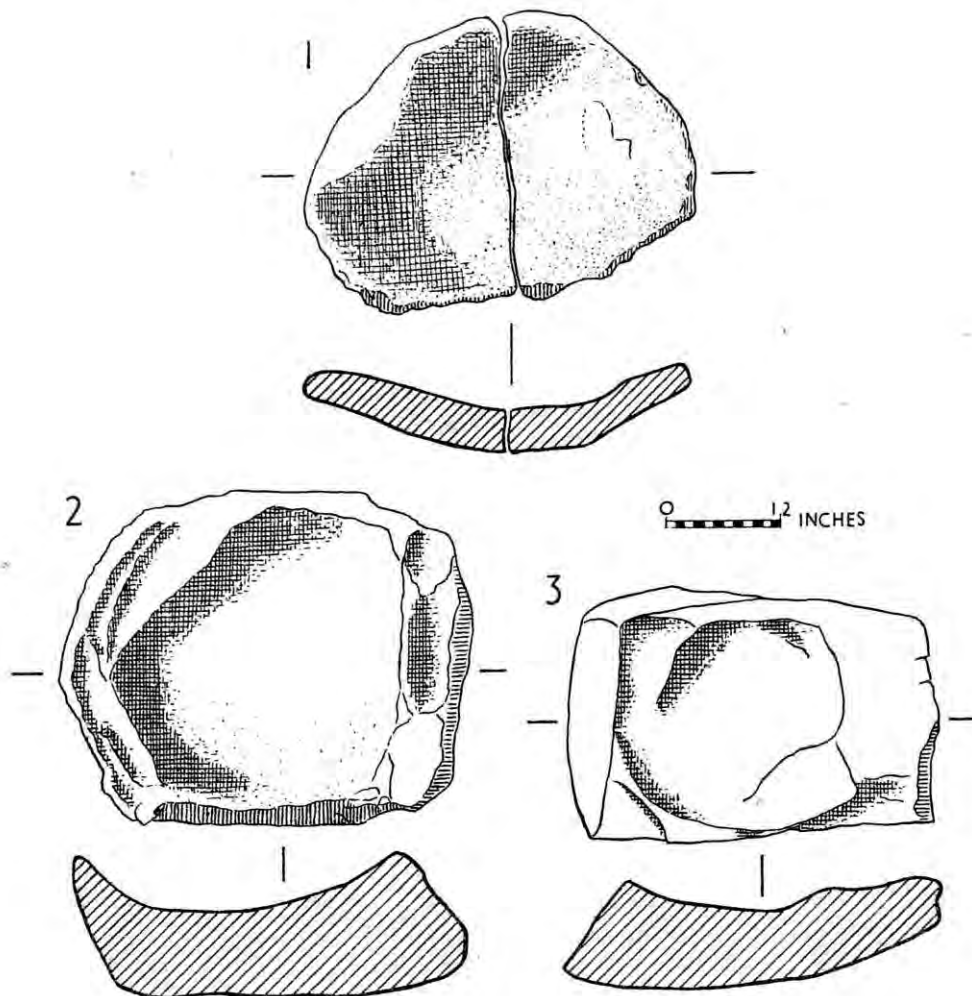


FIG. 7. Basin stones.

shape that they could best be explained as fallen-in slabs from the chamber roof—enough in fact to add about one more course to the roofing. These, in view of the narrow and dangerous state of the outer end of the passage, had to be removed through the gap in the chamber roof. To make this possible, most of them had to be broken into suitable-sized pieces to be hauled up with ropes.

The Basin Stones (Fig. 7). Three basin-stones in all were encountered: one, broken into two pieces, was found inside the outer end of the passage*; the other two, both considerably larger and heavier than the first, were found lying face down at the bottom of the modern filling of the chamber. All three were apparently natural basins, improved in varying degree by hammer-dressing. An examination of outcrops on the mountain showed that basin-like fractures of natural origin were of quite common occurrence. All that was necessary was to select suitable pieces of rock which would serve with the minimum of adaptation. The second shows some degree of shaping of the sides and base of the rock by rough flaking.

*Where it had been concealed for safety some years ago by Prof. E. E. Evans.

The Finds

Approximately 7 ft. thickness of stones large and small were encountered in clearing the chamber and the passage was similarly blocked for about a third of its height. Scattered through the mass were innumerable fragments of bottle-glass, empty food tins and many pieces of iron wire. These would appear to have been cast in by picnickers and others. Since it is known (*County Louth Archaeol. J.*, 1 (1906), 197) that the chamber was almost cleared of obstructions by members of the County Louth Archaeological Society in 1906, there would appear to be some foundation for the local rumour that the chamber was largely refilled in recent years to prevent it becoming a pitfall trap for sheep.

Fairly low in the filling were a copper halfpenny which, though illegible, corresponds in weight to the Bolton issue for Ireland of 1805, and a silver twopenny piece of Elizabeth I. †

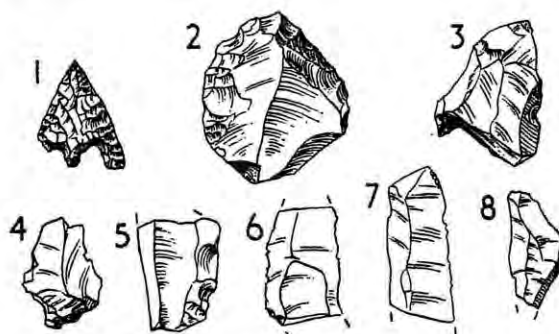


FIG. 8.
Worked flint and chert ($\times \frac{1}{2}$).

In the surface of the black soil filling the crevice in the centre of the chamber floor were seven pieces of worked flint and one of chert (Fig. 8). Fig. 8.1 shows a small barbed-and-tanged arrowhead in opaque dark grey flint. It would appear that one barb had been broken off in manufacture and the stump subsequently trimmed. The round scraper, Fig. 8.2, of paler grey flint shows a combination of steep step-flaking (top right) and shallow, obviously pressure, flaking on the left. The remaining pieces (Fig. 8.3 to 8.8) show no traces of secondary working; 8.4 is heavily burnt. Fig. 8.8 is interesting in being made from Carboniferous chert.

Despite a careful search, no traces of decoration, either pecked or incised, were discovered on any of the structural stones. Since these are of a homogeneous fine-grained character which would be easy to peck or incise and would equally defy weathering, we are satisfied that this is one of the undecorated passage-graves.

THE NORTH CAIRN (Pl. Ib and Fig. 9).

The Cairn Mass. Before excavation, the cairn mass appeared as a pile of loose stones of a character generally comparable with those of the south cairn. No obvious covering slabs of cists were visible, though there was a tendency for the tops of stones apparently set on end to show projecting above the general level around most of the perimeter. A pre-excavation contour plan (Fig. 9, lower left) shows the apparent edge of the cairn by means of a heavy broken line. It

†We are indebted to Mr. W. A. Seaby, Director of the Ulster Museum, for kindly identifying these coins.

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was clear that the cairn stones extended further beneath encroaching peat on east and west, though to north and south the solid rock of the mountain was locally exposed.

The monument was described in 1940 (T. G. F. Paterson in *Prelim. Survey Anc. Mons., N.I.*, 77) as 'probably untouched.' The war of 1939-45, however, affected this as well as the south cairn and a conical fox-hole shown by the pre-excavation contours in Fig. 9 (lower left) was dug down almost to the underlying bed-rock. The up-cast of cairn stones was piled round to form a kind of breastwork which gave a foot or two of extra height round the lip of the hole. The cairn profile seen in section (Fig. 9, upper) is thereby affected and the probable original profile is indicated by a strong broken line. Further evidence of disturbance at an unknown date was shown by the contours near the north-eastern edge of the cairn. These mark a trench following round the curve of the cairn with a length of about 20 ft. and a depth of about 2 ft.

The method of excavation employed was to remove half of the cairn at a time up to the diameter A-B. The half to south and east of this line was first removed. Stones clearly set on edge or on end were left and form the basis of the plan (Fig. 9, lower right). In addition to these, two cists were located: Cist 1 about 5 ft. east-south-east of the centre; and Cist 2 a further 12 ft. east of Cist 1 and built just within the arc of closely set stones on end on the south-eastern edge of the cairn. These cists are described separately below.

The bedrock on which the cairn was piled formed a broad-topped ridge whose main axis trended approximately north-west/south-east. Its massively jointed composition at points adjacent to the cairn is clear at points where there is no covering peat. Its irregularities under the cairn are shown in cross-section in Fig. 9. The western flank of the ridge showed several large loose boulders of granophyre obviously too large to have been brought to the site as parts of the cairn build-up. We owe to Mr. Stephens the suggestion that these, too, are products of erosion which have slipped down from the crest of the ridge. In fact, he has suggested that they are sufficient to warrant the use of the term 'collapsed tor' to describe the pre-cairn characteristics of the site.

Erosion had followed the jointing-planes to produce deep crevices and pits. One of the latter at 10 ft. west of Cist 1, and with an overall depth of over 7 ft., contained a natural soil fill, 2 ft. deep. This soil was obviously formed by decomposition of the rock as it was composed of the less easily weathered crystals of its make-up. An interesting feature of this pit was the care with which it had been covered up in the course of cairn building. Several slabs, chosen to fit, were laid horizontally on one another to a depth of about 1 ft. (Pl. Va). The obvious care with which they were placed encouraged the hope during excavation that the pit had been utilised as a natural 'cist' for burials, but such had not been the case.

Stones set on End and on Edge (Pl. Vb). As will be seen from Fig. 9, stones set on end and on edge occurred at many points throughout the structure. The hard bed-rock, which can have had at most a few inches of soil covering its least exposed parts, gave little opportunity for setting the lower ends of these stones in sockets. The best that could be done was to pack them around their bases with other stones laid flat or to jam them in natural fissures in the bed-rock. Some of the upright stones, invariably small ones, were placed near the centre of the

cairn. They were in some cases grouped around individual bosses of the solid rock but seemed to have little structural significance in relation to the size and depth of accumulation of the piled stones on top of them. Those grouped peripherally included many quite large examples weighing several hundredweights each and as much as 3-4 ft. high. They were clearly set to form a kind of edging to the main cairn mass (it is noteworthy that their longer axes on plan were usually disposed to follow the curve of the edge of the cairn). Yet they are far too irregularly spaced to be described as a kerb to the cairn. It is clear, too, that they are not arranged so as to form a true circle but rather an ellipse whose longer axis approximates to the axis of the underlying rock ridge. Some parts of the peripheral grouping show the stones closely set. On the south-west these clearly would have been of value in buttressing the cairn mass, since the solid rock here falls away steeply. Yet on the north-east there are equally large stones set in at least two concentric arcs at a point where there is little fall of the bed-rock and they would thus appear superfluous for this purpose. One of the more slender of the slabs shows in section (Fig. 9) and the figure makes it clear that they were never intended to form an exposed kerb; cairn stones to a depth of three feet, obviously not spill from higher up, continue the cairn mass outwards for a further 9 ft. horizontally. That there had, anyhow, been little cairn slip is shown by the almost stone-free growth of peat which overlaps the cairn edges at either end of section A-B. The most that can be inferred is that the stones that were set on end and on edge were a rather half-hearted constructional device. They were probably, apart from the cists, the first stones placed on the site and were of use in temporarily retaining the loosely-piled cairn stones as the mound was built up. Some which have leant outwards under the thrust of stones placed within the periphery probably moved at this stage of the work, before further loose stones were piled outside them.

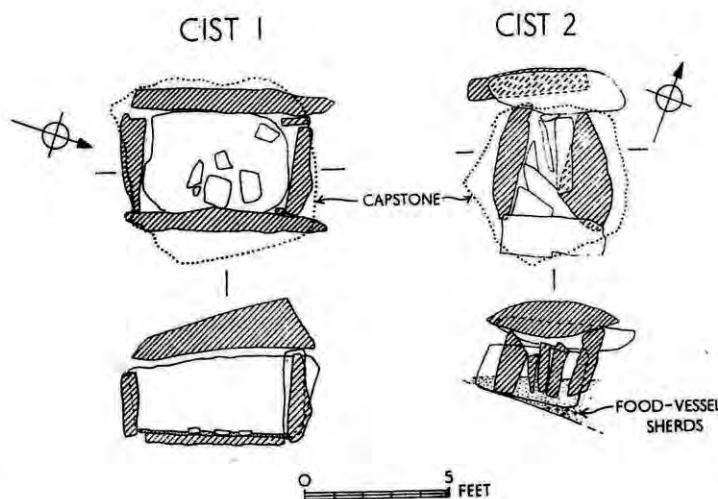


FIG. 10.
North cairn: cists
(see plates IV, VI)

The Cists. Cist 1 (Fig. 10) was an extremely well built example, 2 ft. 6 ins. long by 1 ft. 9 ins. wide. The wall stones were well selected, parallel-edged stones set with their top edges well levelled. As is usual, the sides projected slightly beyond the end stones. The capstone was far more massive and of triangular section;

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thickness ranged from 5 ins. at one end to 11 ins. at the other. Three slabs of stone of lengths from 1 ft. 3 ins. to 2 ft. 3 ins. were laid side by side overlapping the thin (southern) end of the capstone. The cist was floored with a thin slab, well fitted to the area enclosed by the walls. Two small packing stones were used to fill crannies between the side stones and the northern end stone.

On removal of the capstone the cist was shown to be empty save for a layer of fine black powdery soil about $\frac{1}{2}$ -in. deep on the bottom. In this and lying in direct contact with the floor stone were some half dozen thin pieces of flat stone (Fig. 10). Two interpretations seem likely to account for this empty cist: either it contained an unaccompanied inhumation which had completely decayed in the acid conditions of Slieve Gullion or else it had never had a burial inserted.

Cist 2, sited just within the peripheral concentration of slabs on end, towards the eastern edge of the cairn, was first identified by reason of its capstone, a slab polygonal in plan and lentoid in cross-section. When this had been removed, what appeared underneath was at first sight so little like a cist that doubts arose: several slabs set on edge more or less parallel with one another occupied an area bounded on north and south by two similar slabs, 1 and 2, laid flat. Only when one of the slabs on edge had been extracted were we reassured by the finding of a few fragments of burnt bone in the black soil in which their lower edges were bedded. Removal of five slabs (shown with dot stipple in Fig. 8) revealed a true end-stone set on edge at the northern end and disclosed the fact that one of these slabs (six on plan) was probably originally the southern end-stone. The removed slabs had been resting in a fill of fine black soil. When this had been cleared, the cist floor was shown to have been the bed-rock which here sloped down eastwards at about 23° with the horizontal. The black soil fill in its upper part contained few bone fragments; these were more concentrated where it attained a greater depth on the east side. They appear to represent the remains of a single individual (Appendix, p. 39). Mixed with them at this lower level were numerous very small food-vessel sherds (Fig. 11). The black soil containing bones and sherds had percolated outwards and downwards from the cist and fair numbers of both bone and pot fragments were found outside it to north and east. This spill is presumably the result of water running down the sloping bed-rock and washing the material out through the crevices between the poorly-fitting wall-stones of the cist.

The Finds

One type of recent find—military brass cartridge cases—was all too evident at the centre of the cairn in and around the 'fox-hole.' These appeared to have trickled through the interstices between the cairn stones to reach its basal levels. The only finds of any antiquity from the north cairn were the sherds, mostly too small for illustration, of the food-vessel from Cist 2. These, however, would be sufficient to account for only about a third or a quarter of the complete pot. A total of 172 sherds was collected of which the majority were tiny crumbs which show no trace of either inner or outer pot surfaces. With the exception of a few base sherds, all those which display outer pot surface show continuous decoration. A selection of the larger sherds is illustrated in Fig. 11 where they are reconstructed to the form of a tripartite bowl, a type which has been studied by Mrs. Alison Young (Alison Young, 1950-51). The only sherds large enough to give an estimate of diameter

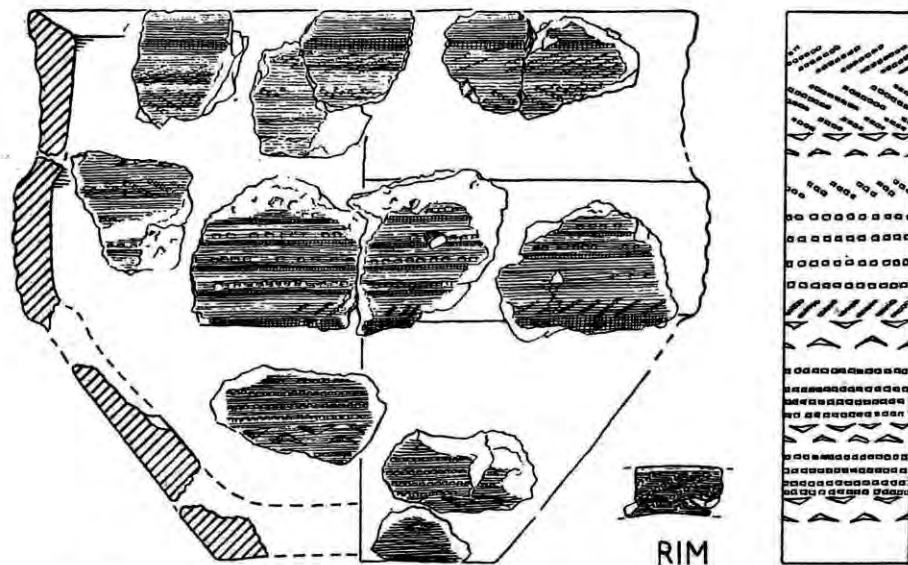


FIG. 11. Food-vessel from cist 2, with scheme of decoration on right ($\times \frac{1}{2}$).

were those for the middle section of the pot; rim and base diameters are conjectural. Height in the reconstruction is probably approximately correct since, though joins between sherds are generally lacking, there are sufficient significant overlaps in decorative motifs (unless, by chance, a whole unit of decoration is missing from the surviving fragments).

On the basis of this admittedly problematic reconstruction an analysis of form and decoration may proceed. The rim is neatly bevelled and bears oblique fine-toothed comb impressions. The whole 'neck' or upper part of the pot beneath a very flattened bead-rim shows four shallow furrowings with three intervening broad and shallow ridges. Diagonal, very lightly applied, fine-toothed comb impressions have been applied to these ridges. At the base of this top section there is a band of 'false relief' chevron pattern. The cordons show very lightly impressed imprints of a larger and coarser square-toothed comb; in places the pressure has been too light for the impressions to register. Upper and lower edges of this middle portion show diagonal impressions, those on the upper edge being made by the finer comb and those on the lower by a very fine twisted cord. The lower part of the pot bears alternating horizontal bands of fine comb impression and 'false relief' chevron pattern. What survives of the underside of the base is unornamented. Constructional methods are clearly evident only at one point: the junction between the lower and middle sections. On analogy with other food-vessels of this type it is likely that each of the three parts was made separately and then joined to the others.

DISCUSSION.

For clarity, the two sites are discussed separately, beginning with the south cairn.

The South Cairn. In his pre-war study of the Irish passage-graves, Mr. T. G. E. Powell split them regionally into four main groups and placed the Slieve Gullion

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tomb in his third or Armagh group (T. G. E. Powell, 1938), with the apparent passage-grave of Clermont Carn in Co. Louth, some seven miles south-east of Slieve Gullion. With these he included the probable sites of Carnavaddy, Co. Louth, and the Vicar's Carn, fourteen miles to the north of Slieve Gullion. A subsequent paper (G. E. Daniel and T. G. E. Powell, 1949) on the basis of analysis of structural features has attempted to identify the earliest or primary passage-graves of the British Isles and to trace in the remaining later or secondary passage-graves initial trends of structural elaboration followed by simplification and degeneration. On the basis of then current chronological studies, mainly of Continental material, dates were proposed for the British and Irish tombs. In this paper the Slieve Gullion tomb was placed in the primary group.

In 1954, Prof. Piggott (S. Piggott, 1954) devoted a chapter to a descriptive analysis of the Irish passage-graves. The tombs, their 'art' and their primary grave-goods were considered sufficiently distinctive to warrant description as the Boyne Culture after the Brugh na Boinne cemetery. Since these general surveys, fresh passage-graves have been published, especially in Ireland, Wales and Brittany and, with the advent of a few C¹⁴ dates, the widely favoured 'short' chronologies, popular a decade ago, now stand in need of radical revision. While we feel that this is not the occasion for the re-opening of the whole problem of passage-graves and their inter-relationships in time and space, a commentary on the location, the structural features and the few finds in relation to other Irish passage-graves is called for.

First, location : the south cairn, situated at the 1894 ft. summit of Slieve Gullion, would appear to be the highest of all surviving passage-graves in the British Isles. Yet it must be recalled that the large destroyed round cairn on Slieve Donard (2,796 ft.) in the Mourne Mountains, Co. Down, probably contained a passage-grave (*Prelim. Survey Anc. Mons. N.I.*, 135, with earlier references). Local summits were characteristically chosen as the sites for isolated passage-graves. Even where they were grouped in cemeteries on lower ground, as for instance the Boyne tombs or those distributed round the coasts of Brittany, it was usual for local eminences, however slight, to be chosen. The Slieve Gullion tomb is also typical in being near the coast; few Irish passage-graves, with the notable exception of Loughcrew cemetery, are more than thirty miles from the coast.

Since some have claimed to see a relationship between passage-grave location and the distribution of metal ores, especially copper and gold, we may note that copper ores are known and were mined in the 1850s at Tullydonnell, six miles south-west of Slieve Gullion (G. A. J. Cole, 1922, 28).

We may now turn to the cairn itself. In diameter (97') it lies well within the range from 280' (Dowth) to 33' (Loughcrew V) and is close to Carrowkeel H (100') and Seefin (87'). If we exclude the 'giants' of Dowth and New Grange and the probable passage-grave cairns of Knowth and Knocknarea, it is exceeded only by Loughcrew cairns L and T and by Carrowkeel H.* In height (c. 16') the cairn is low. Its height expressed as a ratio of its diameter is as 1 : 6, the same as at New Grange. At Carrowkeel K the ratio is as 1 : 3; the latter is relatively the highest that we have been able to trace.

*We have ignored Loughcrew D (180'), since excavation has failed to trace a chamber in it (G. Coffey, 1912, 90-97).

		CAIRN DIAMETERS.			
Dowth	- - - -	280'	Carrowkeel K	- - -	71'
New Grange	- - - -	250'	Carrowkeel G	- - -	69'
Knowth	- - - -	225'	Loughcrew G.	- - -	62'
Loughcrew L	- - - -	135'	Loughcrew I	- - -	62'
Loughcrew T	- - - -	115'	Carrowmore 27	- - -	60'
Carrowkeel H	- - - -	100'	Loughcrew S	- - -	55'
Slieve Gullion	- - - -	97'	Loughcrew H	- - -	54'
Seefin	- - - -	87'	Loughcrew F	- - -	49'
Carrowkeel F	- - - -	87'	Loughcrew K	- - -	49'
Carnanmore	- - - -	75'	Loughcrew J'	- - -	46'
Fourknocks	- - - -	75'	Loughcrew U	- - -	43'
Carrowkeel B	- - - -	74'	Belmore Mtn.	- - -	40'
Carrowmore 63	- - - -	72'	Loughcrew V	- - -	33'

Our cairn is normal in possessing a kerb of large, mostly contiguous stone blocks. As at New Grange, it is continuous across the entrance to the passage, and also, as there, shows a slight indentation opposite the passage. Passage and chamber need to be considered together. The general method of construction—dry-walling with a corbelled roof to the chamber and a lintelled passage—is a classic method of passage-grave construction on the Continent, though relatively rare in the British Isles. Slieve Gullion's nearest neighbour, Clermont Carn (E. E. Evans, 1941), with walls of both circular chamber and passage built thus, is set in a circular cairn some 60 ft. in diameter. Now that Tibradden, Co. Dublin, long thought to be a passage-grave of this same dry-walled and corbelled construction, has been shown to be a 19th century feature inserted into a Bronze Age round cairn (M. OhEochaidhe, 1957) the only other known example in Ireland is New Grange itself. This provides a partial parallel in that the orthostats lining both passage and chamber were not meant to support the roof which originally rested throughout on dry-walling. But while the principle of dry-walling is shared by all three sites, the Slieve Gullion method of using very long and thick slabs as the basis of the wall with small material merely added as packing would seem to have few parallels anywhere. Dry-walling is normally of small thin slabs as is the case at Clermont Carn where seven courses occupy a vertical height of 2 ft. 6 ins. (E. E. Evans, 1941, 78). The same is true of comparable monuments in Iberia and Brittany. Thus, in the tombs of Almeria, Andalusia and Algarve figured by the Leisers (G. and V. Leisner, 1943, Tafel 84), 3-4 ins. is the average thickness. The contrast between Slieve Gullion and Alcalar (Algarve province, Portugal) is brought out in Plate IIIb. In Scotland, stones of comparable thickness but much shorter were used in constructing the walls of both passage and chamber in the corbelled passage-graves of the Clava group. In the Corrimony cairn of this group some of the wall-stones near the entrance to the passage were set on edge (S. Piggott, 1956). The only Iberian examples at all comparable with our site for the massive proportions of wall-stones are at Monge and Barro in Estremadura, Spain (G. and V. Leisner, 1956, Tafel 5), where blocks up to 22 ins. thick were employed. The Slieve Gullion lintelling of the passage is a normal method for any type of passage-grave. The passage roof follows usual Irish practice in rising gradually from its entrance to the chamber, in striking contrast

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to Continental practice where, as Prof. Giot recently reminded us,* the passage roof is of uniform height throughout its length.

The polygonal plan of the chamber follows almost inevitably from the use of such long stones for walling; a chamber round in plan would require the use of much shorter stones. The end chamber at Slieve Gullion poses many questions. As a solitary end chamber, without the addition of lateral chambers which, combined, give rise to the familiar Irish cruciform passage-grave plan, it is paralleled only at Clermont Carn. It has been a widely held view that the cruciform plan was an elaboration on Irish soil of the south Iberian idea of a main chamber with a pair of lateral chambers opening out of it on either side. Dr. Daniel has gone so far as to specify the Alcalar tombs of S. Portugal as the most likely Continental progenitors (G. E. Daniel, 1958, 108). Solitary end-chambers are practically unknown in Iberia (or in Brittany); the only example published by the Leisners is in a rock-cut tomb at Alcaide, Malaga province (G. and V. Leisner, 1956, Tafel 8.1).

Having considered cairn, kerb and passage-grave, it remains to discuss the interrelationships of all these three elements. A feature of most of the Irish passage-graves is the disproportionately large size of the cairn, far larger indeed than is necessary to cover passage and chamber. A normal feature of the primary southern Iberian tombs is the central siting within the mound of a large chamber. Thus, at Los Millares, chamber diameter is frequently one third of mound diameter, with resultant equation of chamber diameter with passage length. The same central location of chamber is normal in Brittany, though chamber diameter in proportion to mound diameter is usually much less. In Ireland, Fourknocks I is exceptional in approximating to a central position for the chamber. The following table which shows the ratio of length of passage plus chamber to cairn diameter shows that the Slieve Gullion figure of approximately 1:4 approaches the Irish average:—

Fourknocks	-	-	-	1 : 1.8	Carrowkeel K	-	-	-	1 : 4
Seefin	-	-	-	1 : 2.3	Loughcrew T	-	-	-	1 : 4.4
Loughcrew H	-	-	-	1 : 2.4	Carrowkeel F	-	-	-	1 : 4.5
Loughcrew I	-	-	-	1 : 3	Loughcrew F	-	-	-	1 : 4.5
New Grange	-	-	-	1 : 3.1	Carnanmore	-	-	-	1 : 4.5
Slieve Gullion	-	-	-	1 : 4	Loughcrew L	-	-	-	1 : 4.7
Belmore Mountain	-	-	-	1 : 4	Dowth	-	-	-	1 : 6
Carrowkeel G	-	-	-	1 : 4	Irish average	-	-	-	1 : 3.8

We have suggested (p. 28) that the gap between passage and kerb may have been occupied by some kind of funnel-shaped portico or forecourt. Such a forecourt is a recurring, though by no means a universal feature of passage-grave plans. Loughcrew Cairn L (G. Coffey, 1912, 82) is a good Irish example. It is unfortunate that this should be one of the most exposed and vulnerable features of the tombs. Unless originally lined with orthostats set in sockets, the nature and precise limits of the forecourt are always likely to remain in doubt.

The stone basins inside the passage-grave are a well-known feature of several

*In the course of a lecture delivered in Queen's University, Belfast, December, 1961.

of the Irish sites. They occur at New Grange, Dowth, Loughcrew F, H and L, at Baltinglass and at Knockingen. Iberian parallels are known from the Dolmen de Matarubilla (Seville), and from a tomb at Castraz (Ciudad Rodrigo), (G. and V. Leisner, 1943, 286). Nothing can be said of the original location or function of our Slieve Gullion examples, since all had been moved.

The small finds from the chamber are evidently only the residue left after successive lootings spread over at least two centuries. The tiny fragments of burnt bone confirm that cremation, the normal rite found in Irish passage-graves, was employed. Yet, the reference (Charlotte Brooke, 1781, 70-1) to 'a few human bones' might well argue for additional inhumation or at least for a very imperfect degree of cremation. It hardly seems that fully cremated fragments would have been recognised at such a period by the 'peasants' concerned. The pieces of worked flint and chert are of interest; the chert flake may perhaps indicate contacts with regions further west in Ireland (cf. A. E. P. Collins, 1959). Whether the primary flakes were intentionally or accidentally placed in the chamber will remain a moot point. Such have been found in the other recently excavated passage-graves of Baltinglass and Fourknocks, as well as in Loughcrew F. They are, of course, too, a commonplace in the galleries of the 'horned' long cairns. The small barbed-and-tanged arrowhead is far more likely to be an intentional inclusion. One recorded from Loughcrew Cairn U (R. Buick, 1895, 59) and another from Cairn R2 (G. Coffey, 1896, 32) are the only instances we have been able to trace from Irish passage-graves. Another is known from the Scottish passage-grave of Barpa Langass in N. Uist (*R.C.A.M. Scotland*, 1928, 75) and a third from an Anglesey dolmen, Ty Newydd, perhaps to be associated with the local group of passage-graves. Our specimen is comparable in form and size with those found elsewhere in the British Isles associated with beakers.

To sum up, it would seem that the fuller knowledge of the Slieve Gullion tomb obtained by excavation has produced little that is likely to be of comfort to those whose preoccupation is with the arrangement of tomb plans in either a logical or a chronological sequence. We would agree with Daniel and Powell (G. E. Daniel and T. G. E. Powell, 1949, 170) that all passage-graves with chambers of circular plan, whether they be rock-cut (as at Palmella) or corbel-vaulted (as at Alcalar) or capstone-roofed (as at Pavia) can be grouped together as the basic *West European Passage-grave*. Elaborations of plan, such as the addition of side- and/or end-chambers can fairly be presumed to be later developments. But beyond this point theorising is both difficult and dangerous. The broad contemporaneity of corbel vaulting and capstone roofing, dry-walling and orthostat walling has been brought home to us by their combination in tombs contained in one and the same mound at Barnenez South, Brittany (P. R. Giot, 1958). If, as seems reasonable to us, the Irish cruciform plan is to be derived from Portuguese tombs with paired side-chambers, as at Alcalar, how then are we to explain Slieve Gullion with its sole end-chamber? Is it, so to speak, the local Irish component which, added to the Iberian side-chambers, produced the characteristic Irish cruciform plan?

What, in fact, we are witnessing in megalithic studies is a complicated amalgam of cultural diffusion and local development (i.e. evolution). While none would deny that *both* these principles are to be recognised as contributing to the complex

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picture of megaliths in western Europe, their relative roles in any particular area will remain obscure until we have much more abundant C¹⁴ dating for individual structures in Iberia, Brittany and the British Isles. Thus, with our present lack of absolute chronology, while subscribing to the thesis of diffusion of the general *idea* of passage-grave architecture along the western seaways, we cannot tell whether the overseas contacts involved were rare or frequent. Such C¹⁴ dates as we have—e.g. 3030 ± 75 B.C. for Ile Carn corbelled passage-grave in Brittany (P. R. Giot, 1960, 61) and the Mound of the Hostages at Tara, Co. Meath, of 2290 ± 150 B.C.—hint at a period of a thousand years over which to spread the passage-graves of western Europe. Did the variations on the original theme in any one centre of passage-grave development take place under the stimulus of frequent contacts between these centres?

The North Cairn. There is less that need be said of this smaller and simpler structure. It has numerous congeners throughout Ireland, but more especially in the upland or even mountainous areas. The arrangement of stones stood on end within the cairn mass is hard both to parallel and to explain. The main concentration on and near the periphery no doubt to some extent serves as a substitute for a kerb. Surface indications of kerbs to round cairns are frequently lacking but since kerbs can be covered either with loose cairn stones or by later peat growth, we feel that parallels should be sought only from among fully excavated examples. A small example of a kerbless cairn with large central cist containing beakers is known from Gortcorbies, Co. Derry (A. Mc. L. May, 1947), and a rather larger one at Loughkeelan, Co. Down (A. E. P. Collins, 1957). This absence of kerbstones in areas where suitable raw material was available is perhaps to be taken as a decline in architectural standards in the full Bronze Age, when the use of large blocks of stone, normal in the collective tombs of an earlier date, had been forgotten. A similar lack of kerb is seen in the annexe to the south cairn at Slieve Gullion.

Of the cists, Cist 1 is a sound piece of construction; Cist 2 is by contrast, very rough and ready and both by its construction and by its siting seems likely to be a secondary insertion in the cairn. The packing of the cist with slabs set on edge may be evidence for even later disturbance which removed the bulk of the food-vessel. Such packing with slabs need not, however, be interpreted thus. A possible parallel is to be seen in the otherwise empty Cists 1 and 3 in the Millin Bay cairn, Co. Down (A. E. P. Collins and D. M. Waterman, 1955, 21 and Fig. 7).

APPENDIX:

THE CREMATED BONE FROM CIST 2 IN THE NORTH CAIRN

by DR. W. R. M. MORTON, Department of Anatomy, Queen's University, Belfast

THE material submitted consists of a mass of bone fragments weighing approximately 285 grammes. The pieces are all small, varying from about 3 by 1.5 cms. to small crumbs of bone about 2 mm. in diameter. They are in the main coated with a dark grey soil but some are whitish in colour where the surface of the bone is powdery in consistency. Breaking shows the interior of such pieces to be white; they are also brittle.

The most easily identifiable fragments are those from two petrous temporal bones and a single phalanx from a hand. Numerous fragments of big long bones from limb are present but cannot be identified with certainty. These include a flake of bone probably from the back of the femur.

The left petrous temporal bone is represented by a small fragment containing the superior and the posterior semicircular canals and some other parts of the internal labyrinth of the ear. The right (?) petrous temporal fragment cannot be identified with certainty as only one semicircular canal is present. It is almost certain, however, that it is from the right side of the body.

Sex is impossible to determine. The bones are those of an adult, to judge by the portions of cortical bone from the long limb bones. It is concluded that the cremated human bones contained in this cist are those of one adult individual of unknown sex.

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Co. ARMAGH

SLIEVE GULLION NORTH CAIRN

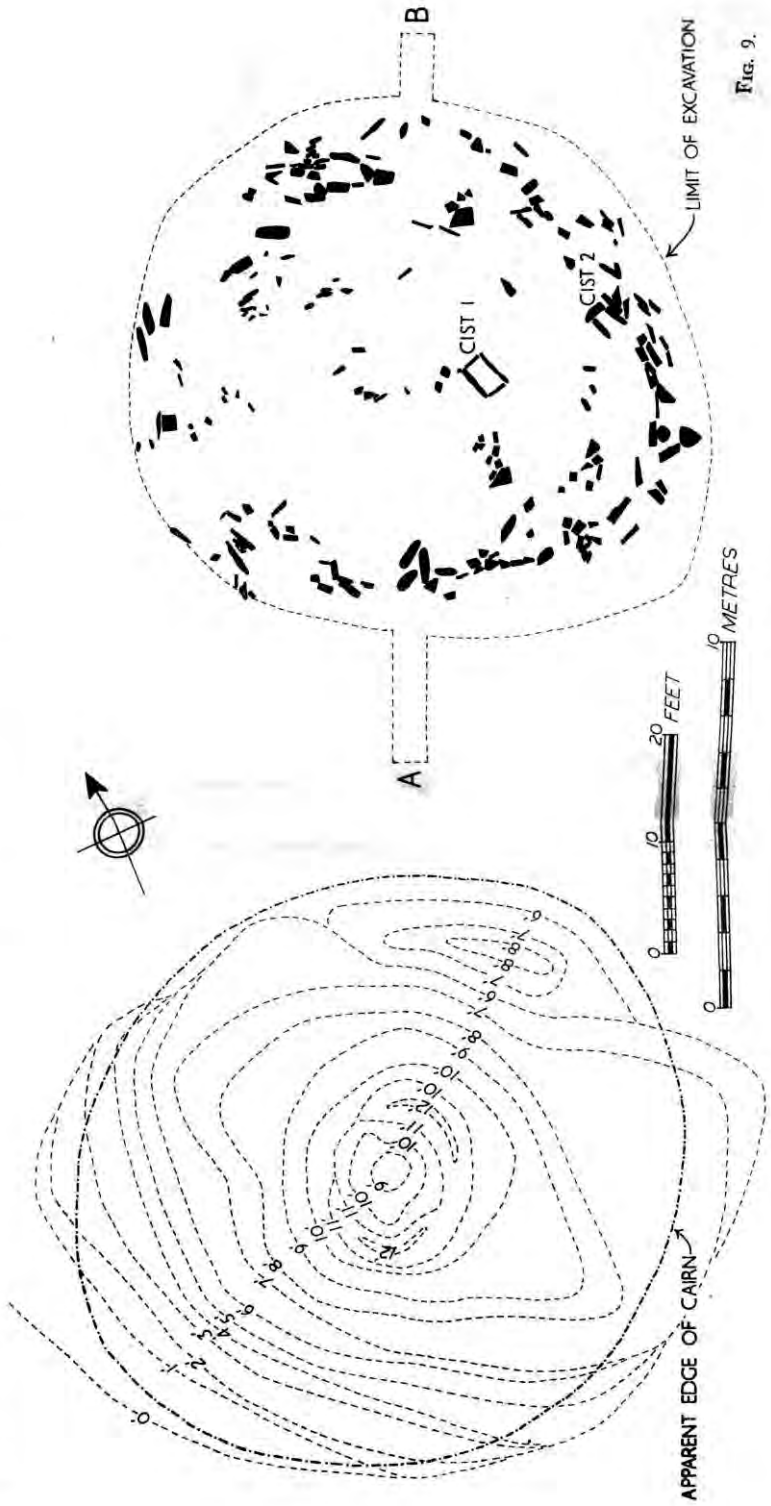
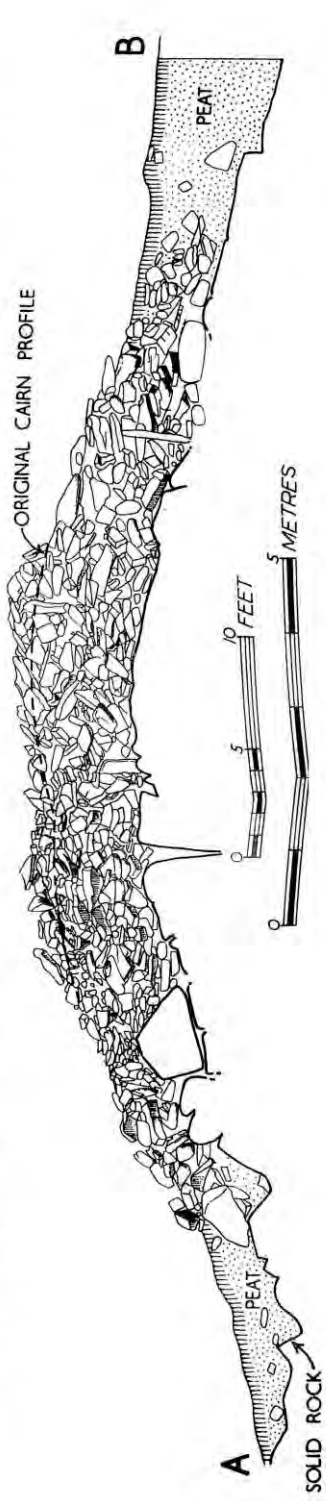
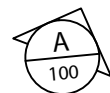
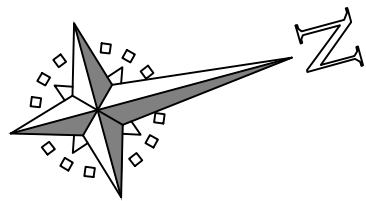


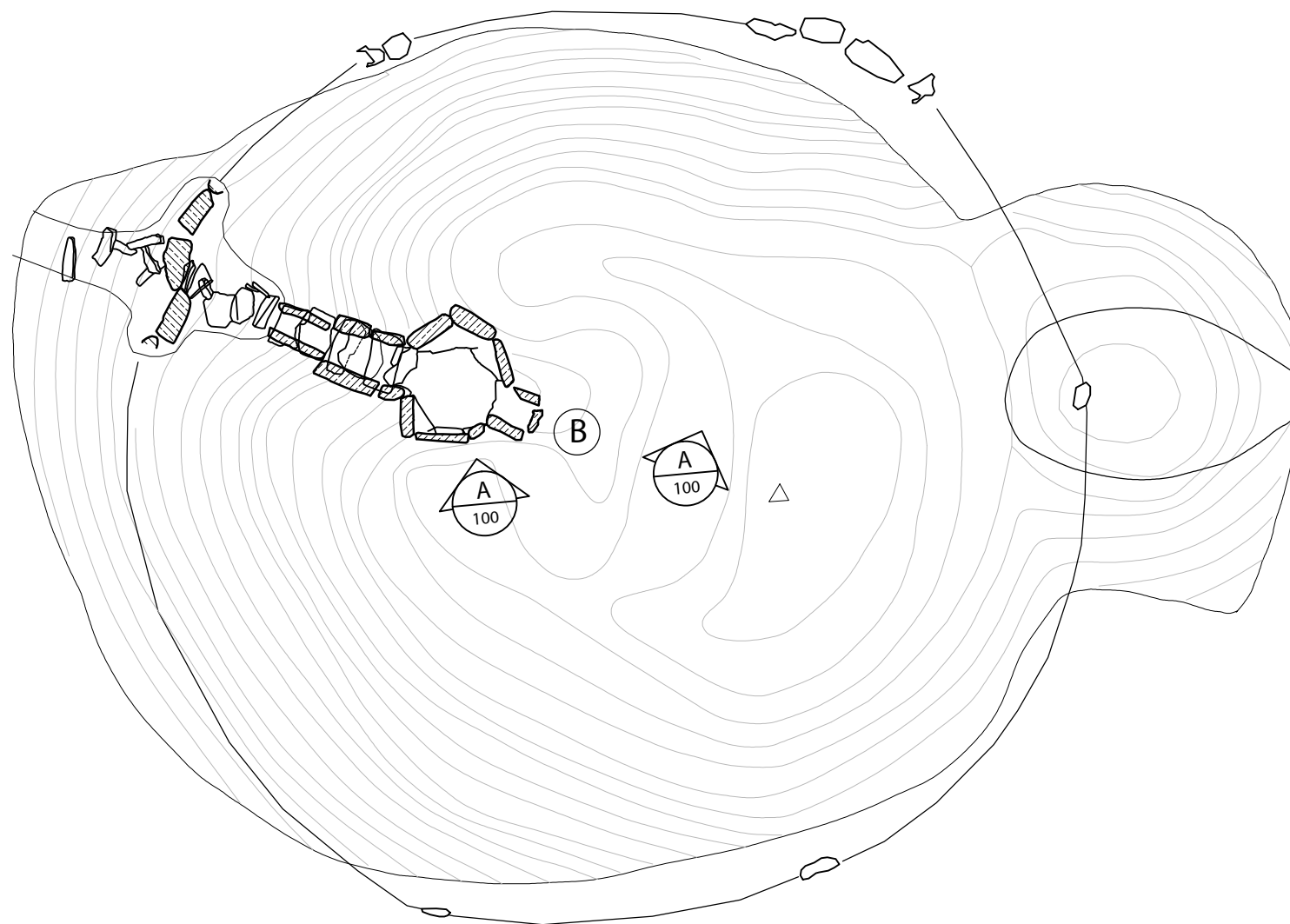
Fig. 9.

Appendix D

Site Drawing



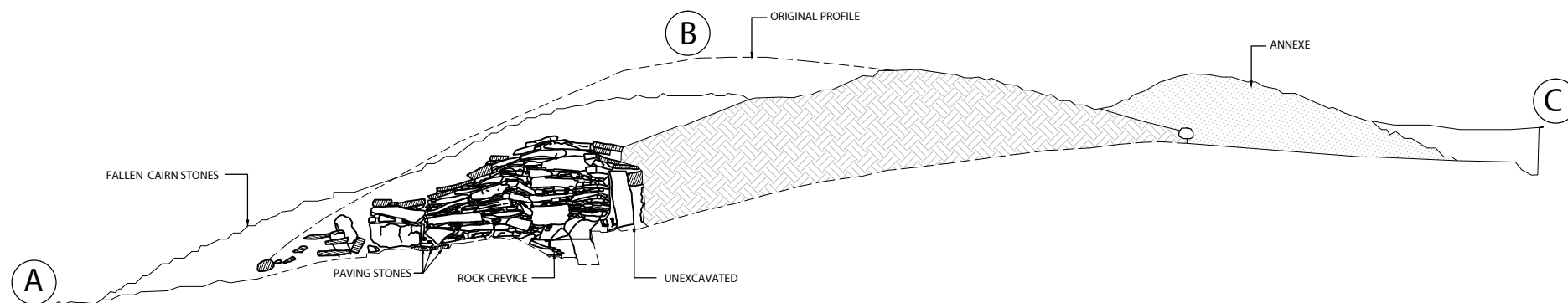
A



C



PLAN
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SECTION
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PROJECT
SLIEVE GULLION SOUTH CAIRN

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PROJECT	DRAWING	REV
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Appendix E

Record Photographs from 1961 Excavations







Appendix F

Survey Record Photographs 2014



Slieve Gullion_ (1)



Slieve Gullion_ (2)



Slieve Gullion_ (3)



Slieve Gullion_ (15)



Slieve Gullion_ (16)



Slieve Gullion_ (17)



Slieve Gullion_ (18)



Slieve Gullion_ (19)



Slieve Gullion_ (20)



Slieve Gullion_ (21)



Slieve Gullion_ (22)



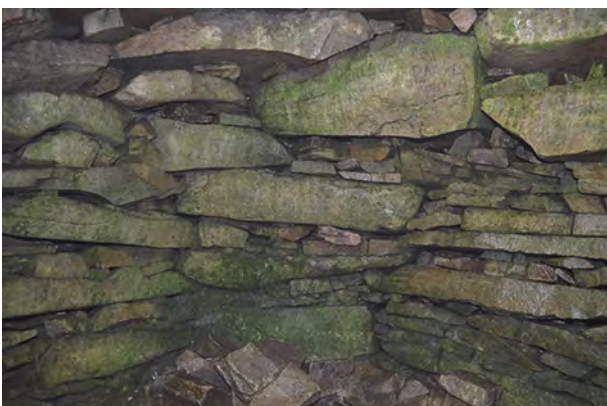
Slieve Gullion_ (23)



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