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UPPER CULLAUN 2, CO. CLARE, IRELAND.

by
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O.S. 6-in to 1-mile, Clare, sheet 5. Tackle required: none.
Top Entrance E.21.7cm, N.16.1cm [E.8.6in, N.6.3in].
First and Last Hole E.19.5cm, N.12.4cm [E.7.7in, N4.9in].
Main Entrance E.19.0cm, N.1.4cm [E.7.5in, N.4.5in].

INTRODUCTION

The cave is situated on the west side of Poulacapple hill, which is the catchment area and source of the water of Cullaun 2. Several papers have been published describing the discovery, geomorphology and general description of the Callaun 2 cave. A summary of this work appears and the original references can be found in The Caves of North West Clare (Tratman Ed. 1969).

The cave was discovered and explored downstream from 'First and Last Hole', and the survey only covered that part of the cave (CNWC ch. 11, fig. 43). Although the upper part was not explored or surveyed, notes relating to the surface features can be found in several U.B.S.S. diaries and the following description was published by Acke (1954 p.15):— "Upstream from the cave entrance [First and Last Hole] to where the stream first goes underground there is an intricate series of passages extending over half a mile. These passages comprise three sets, one on each side of the valley and one centrally in the floor, and each has three levels. The passages meander, cross each other and intercommunicate in a most complex pattern, with many connections with the surface. Some of the passages are of canyon type and others of the bedding plane type".

The reason for the present paper is to present an accurate survey of these passages and their relationship to the surface features. This has become necessary because the whole valley floor under which the passages lie was afforested in 1975/1976 and access to these passages has already become more difficult. Access to the Main Entrance is now along the trackway immediately east of the Cullaun townland boundary and not across the valley floor.

DESCRIPTION OF THE PASSAGES

Despite the complexity described by Acke, from his observance of the surface features, only one set of passage was found. This consisted of two levels, an Upper dry level, which is typical Clare canyon passage

and a lower active streamway, which is mainly, but not entirely, of the bedding plane type. These passages frequently cross and recross eachother, taking independent courses. It is thought that the other passages referred to by Acke must lie to the east of the series and be supplied with water from streams which are shown to end abruptly at the shale/limestone boundary (Tratman, 1969 p.185, fig. 46). If these passages do exist, however, it is not obvious where they enter the main system.

THE STREAM PASSAGE

The total length survey was 584m. The passage runs in the 210° direction keeping to the west side of the valley for the majority of its length and then swings to the east side and follows under a line of depressions down to the First and Last Hole. There were no water inlets along the active length despite the fact that there were several small depressions in the valley floor to the east of the surveyed passage. The shelving is very wide at the southern end of the Stream Passage and these may produce water into the cave in wet weather. At the time of the survey the conditions were very dry.

At the top of the valley the stream is in a deep gully in the shale down to where the limestone is exposed and the stream has cut a meandering slot into the limestone. Where the stream slot is roofed over the passage can only be followed for a few metres before it becomes too low. Its route can, however, be followed from the surface down to the ruin by a series of depressions, which have been produced by collapse of the roof.

The first access point, Top Entrance, is from the floor of a tree-filled hollow, 15m southwest of the ruin. The passage upstream is of canyon form and has two distinct levels. The higher level though originally quite large (2m high and 1m wide) soon dwindles to a flat-out crawl in a bedding plane and becomes unroofed in a small hollow opposite the ruin. Soft tufa is being deposited in this area and there is a small gour pool containing a red crystaline mass, which is most probably calcite heavily stained with limonite. The lower level is the present streamway. Upstream progress can only be made by hands and knees crawling in waist deep water for about 60m where the passage becomes impassable because of fallen roof blocks.

Downstream for the first 110m as far as section 2 the passage is generally 1.0-1.5m high and 3.0m wide and is partly filled with large limestone blocks which have peeled off the walls and roof. Careful examination of the scalloping and shape of the blocks showed that the passage was a series of short wavelength meanders. The passage walls have often been undercut at the base on the inside or chord of the bend forming reverse slip-off slopes (Ollier and Tratman, 1969, p.72, 73, fig. 12b). This preferential solution has caused the blocks to break off under their own weight. Cleavage has been invariably along a N-S

calcite filled joint. This is a developmental feature also seen in several places along the main stream passage down to the 'Pool', and in other caves.

10m upstream of section 2 the surface is visible through a small solution pothole with vertically fluted sides and the passage roof can be seen to be approximately 2m under the surface here. Downstream from section 2 the passage changes direction slightly and ceases to be obstructed by large blocks. Easy progress can be made for 60m to section 4 where the passage becomes much larger and the stream is now flowing in a channel that it has incised in the floor. At this point an upper level channel comes in from the west and crosses over the stream passage and there is a vertical feature resembling type 'd' of Tratman (1969, p.73, fig. 12d). The floor of the upper passage is intact and the same limestone bed forms the roof of the stream passage. This is most likely to be a collapse feature.

The streamway continues as a canyon passage, 2m high and 1-2m wide, until section 6 here it becomes very low and the stream disappears along a bedding plane to the right. To the left is a small passage, 0.5 × 0.5m, which soon rejoins the main passage at section 7. The upper level can be entered at this point through a 1m-diameter hole in the roof. the main passage continues from section 6 as a flat out crawl on a dry gravelly bed under a slab that has fallen from the roof. On the other side of this slab the stream is rejoined and the passage becomes low and wide, 1m high × 3-4m wide, for 35m where the passage gradually narrows and takes on a canyon form at section 8. This continues for the next 90m until the upper level is rejoined at another entrance (E.20.4cm, N. 14.1cm).

Downstream the passage becomes progressively lower until by section 9 it is only 1m high by 1m wide and, at the time of the surveying, was half full of water. The vegetation debris stuck to the roof and trapped in the wide shelving at roof level shows effectively that this part of the cave is frequently filled to the roof. After 10m a very wide but inaccessible passage goes off to the left and is thought to rejoin 60m downstream where the passage is blocked by collapse material for about 5m. The passage continues on the other side of the collapse with a similar form down to the 'First and Last Hole', 150m, where the water can be heard gushing down the small cascade at the beginning of the Year Passage. At section 9 there is another limestone block that has been undercut by the solution and broken away along a N-S joint.

THE UPPER LEVEL

The Upper Level is 390m in length and is formed in the southern half of the valley, which is wide at this point and contains a lot of water-sorted, brown glacial debris. This has been exposed by forestry work. A grey clay is also present. It is 2-10cm thick and lies beneath the peaty top soil but on top of the local drift soil. This clay is highly calcareous

and similar, though the colour is lighter, to a blue/black clay exposed to the south of Faunarooska (Perratt, 1969 in CNWC p.41.).

The passage itself consists of lengths of unroofed canyon passage separated by shorter lengths where the roof is intact. It can be traced all the way down to the Main Entrance of Callaun 2. Several of the openings are where local water has sunk but the majority have been formed by roof collapse. A fresh system of passages is beginning to develope to the east of Cullaun Townland boundary where the drift and shale have been eroded away to expose the limestone.

At its extreme northern end the passage is reasonably large (section 14) and is blocked by collapse material. Scalloping on the walls and floor indicate a N-S stream flow. To the left is a small impassable passage leading to a surface opening. After 30m the streamway is seen to the left at section 7 and a further 5m a small passage leads to a surface opening, with scalloped walls 20m further on there is another surface opening, after which the passage is larger (section 16). Directly after this there is a small passage to the roof at roof level. After a few metres it comes to the surface in a small depression. The walls and the floor of this passage are very thickly coated with a dark, iron-stained flowstone. To the north of this depression a solution pothole with vertically fluted walls is forming. This is 3m deep and tapers to its southerly end. The water collects into a small trickle and disappears down an impenetrable crack. It was not seen to re-appear in the stream passage. It could not be dye-tested.

Beyond section 16 the cave runs under an area with a shale cover over the limestone and there are no more surface openings until another entrance (E.20. 4cm, N.5.5m) is reached where the surface of the limestone is again exposed. The canyon passage is now continuously unroofed right down to the Main Entrance of Cullaun 2. It does not have an upper 'T' form (sections 20, 21).

THE SURVEY

The surveying was done by the authors during the Easter 1976 expedition to Co. Clare and the original data and survey are available in the U.B.S.S. library. A plastic, metal-reinforced metric tape was used to record distances to the nearest 0.01m. Bearings were taken to the nearest degree using a Sunto prismatic compass model K.B.-14. A clinometer was not used as the limestone in the cave area is horizontally bedded and there are many openings to the surface from which the depth of the cave could be checked. Backbearings were not taken.

The survey was plotted on metric graph paper at a scale of 1:500 and transferred to high quality tracing paper and reduced photographically for publication. Surface detail was obtained from the Irish Ordnance survey maps 1:2500 Clare 5.13 and 5.9. The coordinates were calculated from the 'First and Last Hole'. The closing errors on several closed loops were better than 1%. Several surface measurements

were taken to relate surface features to the underlying cave. The 'Top Entrance' was found to be 5m out over a total length of 500m in relation to the ruin marked by O.S. It is not certain how this error arose. Most of it could be from the difficulty of transferring surface data from an Imperial scale map to a metric survey.

It was also desirable to make the survey compatible with the published one of Cullaun 2 (Tratman 1969, fig. 43). For this reason the survey now published has two grid systems:— the dashed grid lines are marked in feet and correspond to the original Cullaun 2 grid; the solid lines represent Upper Callaun 2 grid, which was constructed so that the 400m grid line was coincident with the origin of the Cullaun 2 grid. The map references were determined as eastings and northings taken from the southwest corner of the I.O.S. Clare sheet 5., 6-in to 1-mile.

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UPPER CULLAUN 2

Co. Clare, Ireland.

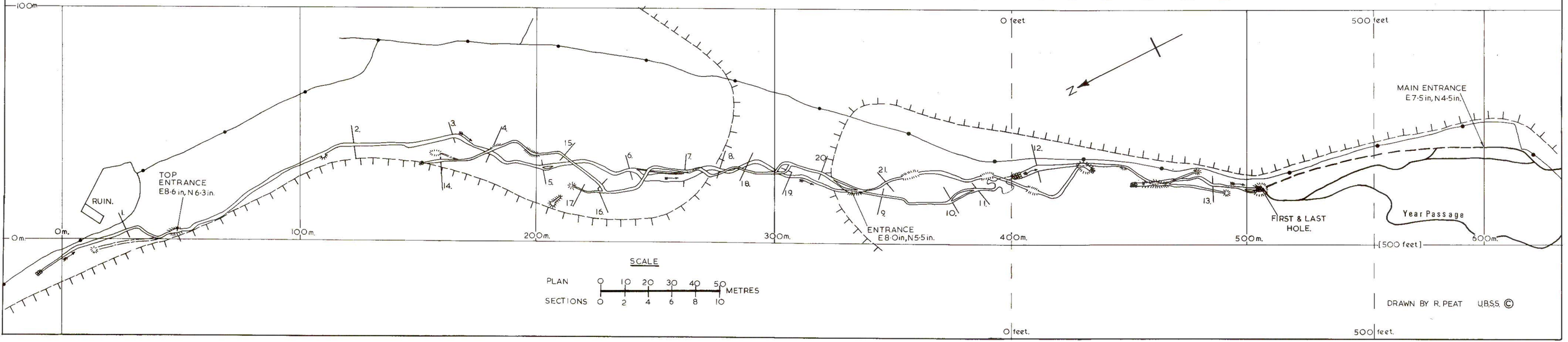
U.B.S.S. SURVEY 1977.

KEY — CULLAUN 2 · TOWNLAND BOUNDARY · UNROOFED CANYON · C.R.G. GRADE 4 · C.R.G. GRADE 2 · LIMESTONE SHALE · SURFACE OPENING · STREAM

STREAM PASSAGE 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

UPPER LEVEL 14. 15. 16. 17. 18. 19. 20. 21.

ALL SECTIONS DRAWN LOOKING DOWNSTREAM.



SCALE

PLAN 0 10 20 30 40 50 METRES

SECTIONS 0 2 4 6 8 10

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