

Cullaun IV and V County Clare, Ireland

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INTRODUCTION

In the last issue of the *Proceedings* an account was given of "The Cullaun Series of Caves, Co. Clare, Ireland" (Acke, 1954). Cullaun IV was described as being 200 yards long (1954, p. 9) and its valley as continuing as Cullaun V valley (1954, p. 19). This latter cave was briefly described as far as it had been explored. Further exploration of it was made in 1954 and its main routes surveyed by the methods given in the 1954 paper, using a hand-bearing compass and a linen tape reinforced by wires, and to the same degree of accuracy deemed to be Cave Research Group 4-5 (Butcher, 1950). The entrances are shown in the map in *Fig. 1* of the 1954 paper (p. 8). In order to reduce the plotting error which would inevitably occur, since some 270 pairs of bearings and distances were involved, each distance was resolved into magnetic Eastings and Northings. These were added up in groups of ten and plotted to form a grid, and all the groups added up to give the overall dimensions of the cave. When the actual bearings and distances were plotted on this grid, it was noticed that the plotting error within each mesh of the grid was in most cases only 2 per cent, and the greatest error was only 3 per cent. The survey is shown in *Plate 5*.

EXPLORATION

The exploration and survey were made from the entrance called Vb (Acke, 1954, p. 19). In 1953 a vertical pitch (1954, p. 20) had been reached. This first pitch was descended in 1954 and found to be 15 ft. high. It is climbable with a rope, though a ladder is desirable. The passage soon joins a slightly larger one with a main stream, at section 6 of the survey, which fluorescein tests show to be carrying water of the stream left near the Vb entrance. In a patch of mud nearby there seemed to be knee prints, so presumably the previous explorers mentioned in the 1954 report had gone down this vertical.

Going downstream, the passage continues as a canyon type with a flat roof, and a faint T-section at roof level. The floor was U-shaped with occasional pools, and much evidence of current markings on the walls. The passage was, on the average, 8 ft. high and 3 ft. wide. Five small tributaries were observed coming in through cracks in the walls at various points between sections 12 and 22, two of which are on the east side of the passage.

Just upstream of section 16 the stream vanishes into a low bedding plane passage in the floor. It meanders independently for a short distance, and reappears at section 17. There is a sudden drop of floor level into a pool about 3 ft. deep, here, and the roof above this and beyond for a length of about 50 yards shows a very fine example of phreatic spongework. This peters out at each end and is the only spongework found in the whole of the Cullaun series. After this the passage retains the same form but becomes gradually wider and lower. About 700 yards from the first pitch the streamway becomes a broad and slow-flowing canal (section 23). The roof gradually becomes lower, and the passage becomes of bedding plane type, at the end of which there is a crawl over a bank of loose shale débris. There are current marks on the roof, and the whole of this stretch obviously floods to the roof quite often.

The exit into a further portion of the canyon passage is considerably restricted. The floor drops to the next lower bed and the streamway again becomes narrow with swiftly moving water (section 24). A little further on this develops into another bedding plane passage in the same way, though this one is not so low. Beyond this the passage again becomes of the canyon form, and follows a vertical calcite vein for much of the way. This part of the cave is decorated with some fine gours, microgours and dripstone formations. About 1150 yards from the first pitch a large-mouthed tributary enters on the west side (between sections 28 and 29). This was explored, but soon became too narrow to pass. At section 30 the streamway turns south-east, though there is an oxbow continuing in the general direction of the cave. The streamway now flows in a channel cut in the floor of a bedding plane passage into the largest chamber in the cave (section 31 and beyond). In this the floor becomes steeper, and ends in a waterfall 15 ft. high tumbling into a small pool. The roof above this is heavily shattered. It is possible to climb down a boulder slope adjacent to the waterfall and skirt the pool. Beyond this, the cave ends in a low bedding plane, through which flows a strong draught of air.

There remains to be described the portion of the cave upstream from the junction just beyond the first pitch (section 7). This passage is of the usual canyon type 4 to 5 ft. high, and it was again noticed that the stream followed calcite veins for long sections. About 500 yards from the pitch a stream enters from the west, and this was proved by fluorescein to be the main stream left near the VB entrance. This point is only 125 yards in a direct line from the VB entrance, but the route is too narrow to follow. The passage can be followed for another 50 yards to a waterfall, which is about 7 ft. high and easily climbed. Another 40 yards upstream there is a second waterfall similar in size and form to the first. This one is more difficult to climb; a slip lands one in the pool at the foot of the fall. Just

beyond this the passage splits into three ways. A dry way leading north-east, full of stalactites and straws, is soon closed by a low stalactite grill. The other two, side by side, are streamways, but are only about a foot high and are too small to follow.

STREAMS

The origin of these two small streams found at the head of the cave is not yet determined. They may be separate, but they are in the same bed and may be the two branches of one stream which has divided around an "island". The direction of the passage is towards VA entrance and this suggests that the water may be coming from thence through an impassable passage in the same manner as the main stream does from close to VB entrance. If this is so, then the second stream (Acke, 1954, p. 19) picked up between V and VB entrances (1954, *Fig. 1*) is not, as then thought, the VA stream, but another derived from the drainage of the area between the end of VA as explored in 1954 and the junction of passages between V and VB.

Fluorescein was used to test various streams but owing to the extremely wet season, which rendered VB below the first pitch and also V to VB impassable on three occasions in fourteen days, not all the tests could be checked inside the cave. It was proved that the V entrance stream did connect with the assumed VA stream at another point than the main junction as the VA waters were faintly tinged with dye from V stream upstream from the main junction. It was also proved that the water emerging from a low canyon type passage just upstream from V entrance was the combined waters of Cullaun IV and V, so that Cullaun V is strictly the continuation of Cullaun IV with V coming in as a main tributary close to the road, or V entrance of this paper and the one of 1954. The hollow by the road at V is where the roof of the cave has collapsed. Dye put in here was passing the bottom of the first pitch within half an hour. Rapid walking downstream outdistanced the dye which reached the first bedding plane in about an hour. Two hours later it had not reached the end of the pool there, a good illustration of how a comparatively small pool with quite a good stream entering at one end and leaving at the other can hold up the passage of a dye.

POINTS FROM SURVEY

There are several points of interest from the survey. The main line of the cave and canyon passage follows a joint vertical to the bedding but following the dip. The general direction is 196° true which corresponds to the average of the direction of the principal joints (*see also* Acke, 1954). Where the direction of the cave changes, the new direction is generally south-east. This may be compared with south-west for Cullaun I (1954, *Fig. 2*). Less regular changes of direction occur in the first bedding plane,

but the cave afterwards reverts to its old direction, and finally there is another turn south-east. It will be seen how nearly parallel for quite a way are the directions of the main streamway upstream from the first pitch and the dry route from the same place to the Vb entrance.

The plot of the survey on 6-in. maps (*see* Acke, 1954, p. 8, *Fig. 1*) showed the cave passing under a shale-capped ridge to emerge under exposed Mountain Limestone to the south. Its end as plotted comes barely 50 yards from the northern edge of the next shale-capped ridge to the south. The roof of the cave at its end cannot be more than 30 ft., and is probably less, below the surface. Examination of the area over the end of the cave as plotted showed a fairly extensive shallow depression a few feet deep. Limestone is exposed in parts of the bottom of the depression and into it flow two small streams which disappear down water-eroded cracks. These presumably connect with Cullaun V, just beyond the end point reached. The thinness of the covering would account for the shattering noted in the roof and the streams with surface openings for the draught.

It remains to be discovered what direction the cave takes from the end point reached. It could turn almost due west to pick up Cullaun III and to emerge at St. Brendan's Well east-north-east of Lisdoonvarna, but this is hardly likely as tests in 1953 with large quantities of fluorescein in Cullaun III (1954, p. 20) failed to produce any result at St. Brendan's Well or elsewhere. It could turn more or less east to pick up the waters from a series of swallets as far as the last and largest of the series Poulnacuilin and thence to feed a turlough, perhaps, at Kilcorney. Most likely Cullaun V waters do not emerge at any known rising.

There are two other points to be noted, the first of which is the danger of flooding. This is common to all the Cullaun series, as indeed to many other caves of Co. Clare. The first bedding plane becomes completely filled with water, and upstream the current would be too swift to allow the first pitch to be reached. Under flood conditions the hollow beside the road at V entrance becomes a deep swirling pool with the actual entrance completely submerged. Only the embankment of the road prevents the combined waters of IV and V from becoming a surface stream down the valley to Vb or one of the adjacent openings. This suggests that solution from below upwards to the surface plays a part in producing a collapse of a cave roof, where the cave is only just under the surface. Why a comparatively large passage should become suddenly constricted without any change in the limestone bed, as here beside the road, is not known, but the effect is obviously a damming back of the water and active solution of the roof. The head developed under such conditions can easily be as much as 50 ft.

The second point is rather an unusual one. There is in the area of Cullaun a practical joker who on one occasion deliberately blocked up the

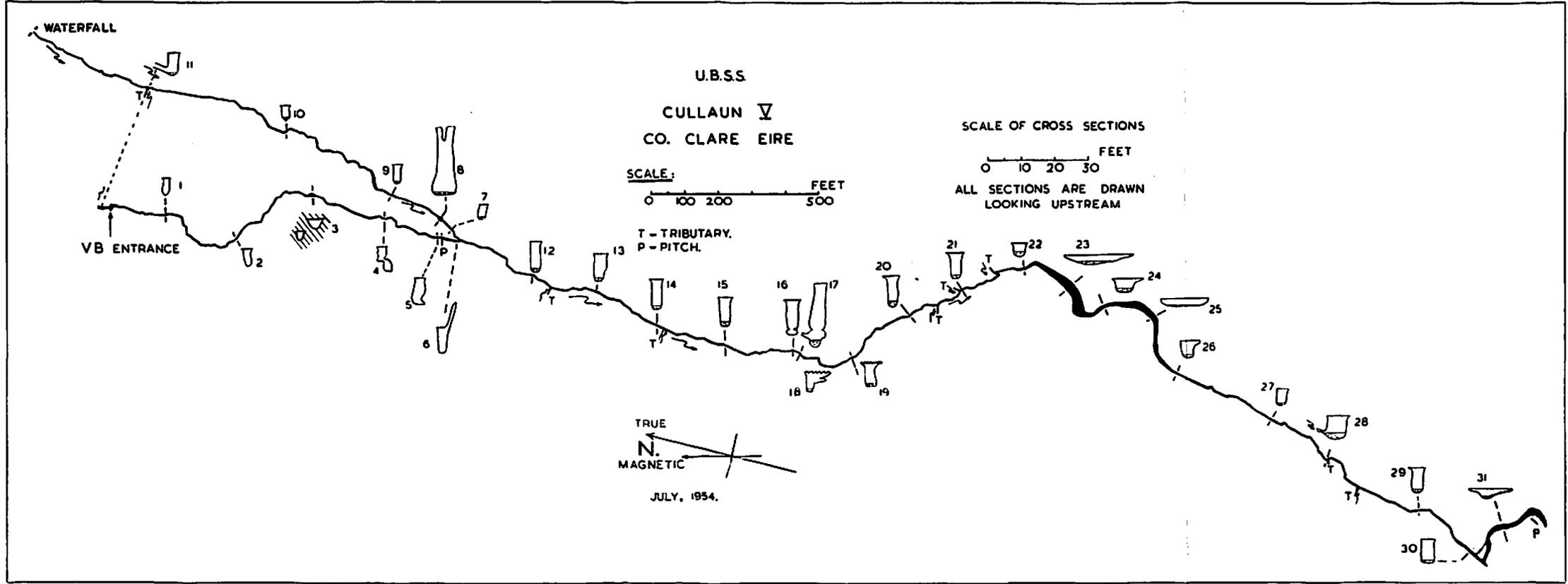
VB entrance while a party was down the cave. Fortunately on this occasion the obstruction was easily removed from inside. It would be advisable when exploring this cave to leave one member on watch on the entrance, which can easily be blocked in such a manner as to close also the route to V entrance, and that also can easily be blocked.

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REFERENCES

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Plan of Cullaun V, Co. Clare, Ireland. The great difference between the length of the cave and its width, except in the bedding plane passages, has necessitated exaggeration of the width in order to show the passages clearly. The actual size of the passage at any point is shown by the cross sections, which are drawn at ten times the scale of the plan.