Pollballiny, Co. Clare, Eire

By
KATHLEEN BANFIELD and C. INESON, B.Sc.

(I.O.S. 6 in. to 1 mile, Clare, Sheet 4)

The cave lies in the Townland of Balliny South, and its location is shown on *Fig.* 32. It was first entered by a party of the Yorkshire Ramblers' Club (Bartlett, 1936) and explored for a distance estimated to have been about 800 yards. In 1956 it was entered by a party of this Society and explored to the sump at 1350 yards. In 1957 a series of visits were paid to the cave, which was surveyed (*Plate* 10, *B*). Entry to the cave can be made at several points where the initial portion of the canyon passage is partially unroofed. The entrance used is number 4 on *Fig.* 32 and is zero for the survey. Upstream the openings lie in echelon, being formed along a close-set series of joints in the 200° direction. The stream that enters at the most northerly of the series forms the main stream of the cave and an examination of the swallet shows that there is no further extension northwards, so that the swallet marks the northern limit of the drainage basin for this cave. The southern limit of the drainage appears to be Begob Pot (Bartlett, 1936; *Fig.* 32, No. 5) as a fluorescein test has shown that the water from a pot a few yards from Begob Pot enters the cave as the second tributary T 2 and Begob Pot is the last, for some distance south, of the series of shake holes and swallets.

The series of entrances lies about 80 yards east of the outcrop of the Upper Limestone Shales on the west side of Slieve Elva towards the north, approximately at B 1a of Ollier and Tratman (1956, *Plate* 6 *A*). The shale to the west is extremely thin and may only be slipped material. For convenience in description the cave has been divided into sections and references are made to the cross-sections lettered on the survey. The passage entered is a 10-ft. high canyon passage (A) and continues for about 200 ft. in the 230° direction. Here the cave turns to about 200° direction and a thin calcite vein is present in the floor of the passage. Solutional lateral expansion occurs at floor-level (B) and is associated with a narrowing of the upper canyon portion of the passage. This continues to 550 ft. with a gradual change in form until the canyon part becomes a mere crevice in the roof. In this section soft dripstone formations are in profusion. These coincide with the emergence of the cave passage from under the shale. Such soft formations are common where a cave roof lies close to the surface, as it must do in this case. Two tributaries enter from the east in this part. The first, T 1, enters

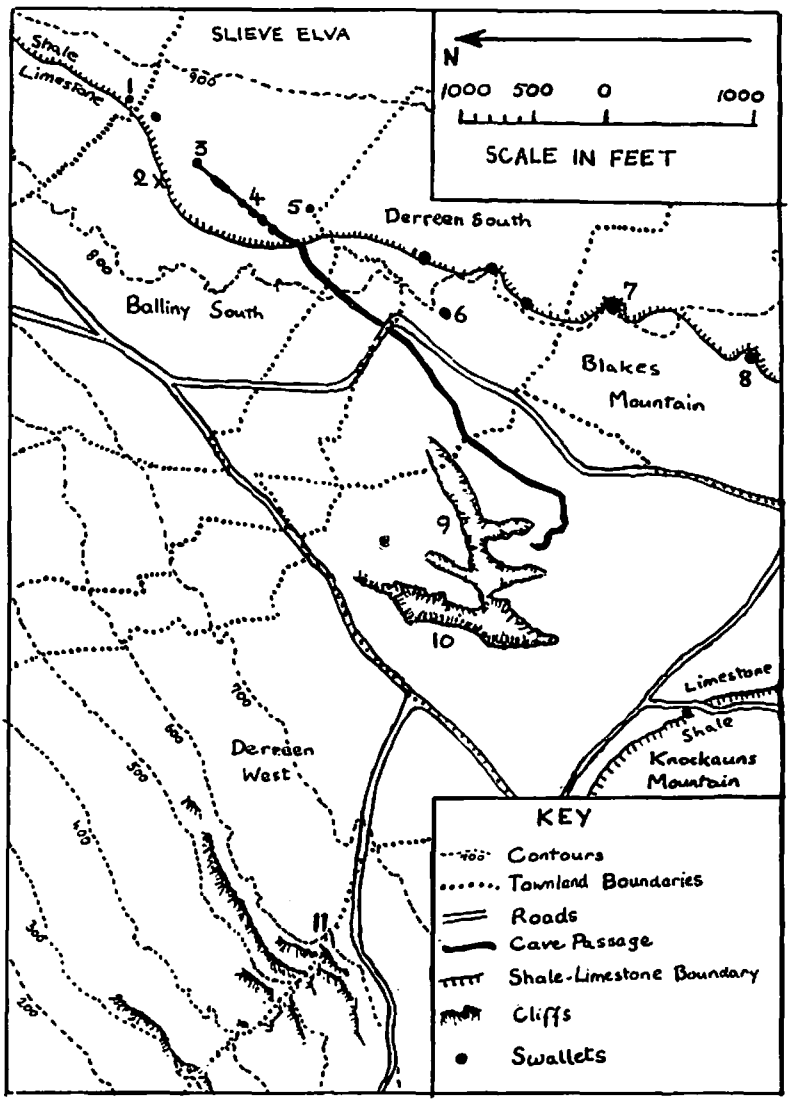

Fig. 32.—Pollballiny (Townland Balliny South). Sketch map of the area reproduced from the I.O.S., Clare, Sheet 4, 6 in. to 1 mile. Published with the permission of the Minister of Finance, Republic of Ireland.

1. Entrance used for Faunarooska.
2. Approximate limit of the southern trend of the upper part of Faunarooska.
3. Northernmost swallet feeding Pollballiny.
4. Entrance used for Pollballiny.
5. Pollbegob. Southern end of Pollballiny drainage.
6. Pollballiny South (Pollderreen), an open pot.
7. Polldubh North.
8. Polldubh South.
9. Dry Valley.
10. Closed depression (polje).
11. Steep dry valley.

at 370 ft. and can be followed for about 15 ft. The second, T 2, enters at 470 ft. and can be followed for about 30 ft. This water comes from a stream a few yards north of Poll Begob and presumably also includes the water from this pot.

After this section the cave again turns to the 230° direction and continues thus to 2540 ft., which, to judge from the description by Bartlett, is beyond the limit of his exploration. The canyon passage has developed again and a nearly horizontal chert band is seen in the walls of this section of the passage. It is first encountered at 760 ft. (D) where the canyon passage has been cut down until it has met the chert band. Solution then took place laterally along the bedding, as down cutting was retarded by the relatively insoluble chert, until the water found a weak spot and broke through and formed a channel in the floor. The band ends at about 1000 ft., when various distorted canyon sections are present (E, F, G, H). For these to have formed there must be a series of planes in the limestone allowing lateral development, by differential solution along them. Presumably in time this length of passage will develop into a canyon passage with wide shelves.

At 2540 ft. the cave turns back to the 200° direction. Thin calcite veins are seen in the further parts of this section. At the start of the section the passage is square in cross-section (I and J), and the chert band is prominent, forming bridges across the passage. At 2750 ft. the chert forms a continuous false floor with a passage 15 ft. wide and 1 ft. high above and 1½ ft. deep below the chert band, which is 2 in. thick. The caver has to crawl under this false floor and surveying becomes difficult (K). The floor now drops rapidly down a series of watershoots until the passage is 6 ft. high and of simple canyon form (L). It continues so to 3420 ft., with the floor dropping more steeply by watershoots than the dip slope of the bedding plane roof until the passage is 12 ft. high. From 2900 ft. to 3750 ft. the chert band forms the roof of the passage and there are no dripstone formations whatsoever. From 3420 ft. the canyon passage continues without any further increase in height but turns to the 260° direction and holds this to 3750 ft. Here a wide bedding plane passage has developed at floor level (M), and the height is only 8 ft. as the floor slope has been less than the dip slope of the roof.

The cave now turns back almost due north until it ends in a sump at 4050 ft. At the start of this section the passage is still a canyon with a wide bedding plane at the bottom, but it changes to a rectangular hole at 3800 ft. (N). There is much evidence of shattering and at 3830 ft. there is an impassible aven in the roof. The appreciable draught that has so far been drawn along with the stream now goes up the aven, presumably to the surface. The cave makes an abrupt turn back to the 230° direction, but almost immediately turns north again in a bedding plane passage with no associated canyon portion (O). There are two finely decorated grottoes,

one with straws 5 ft. long, in the last portion of the cave, where the chert band no longer forms the roof. At the end the floor and the roof slope down and the latter soon meets the water and the cave becomes impassable at 4050 ft.

RELATIONSHIP OF THE CAVE TO SURFACE FEATURES

Fig. 33 shows the cave line and associated surface features. To the west the land drops steeply to the sea. To the east is Slieve Elva. To the north is the large catchment area of Faunarooska Cave. To the south is the faint shallow valley with Polldubh North and South. To the north of Polldubh North lies another cave system provisionally named Pollballiny South, but which should be Pollderreen after the townland in which the entrance actually lies. Investigations in 1956 and 1957 have indicated that this system does not belong either to Polldubh North, as supposed by Tratman and Ollier (1956, *Plate* 6, *A*, site B 1) or to Pollballiny. It was entered in 1956 through a 12-ft. deep pot. The passage goes off in the 230° direction, but could be followed for only 60 ft. to where the way was blocked by a stalagmite barrier. There is no extension north of Polldubh North beyond B 1 (Ollier and Tratman, *op. cit.*) and no tributary big enough to have come from Pollballiny South was met with in Pollballiny.

The catchment area for Pollballiny is relatively small and as a result the cave passages are correspondingly small. The entrance lies within the shale edge, but the shale is very thin and once more it is seen that when thin the shales are pervious (Ollier and Tratman, 1956, p. 140). The general direction of the cave is south-west, but some sections follow the principal north–south jointing in the 200° direction. The south-westerly direction of the majority of the cave is not easy to explain, but one factor would seem to be development along a series of parallel joints as is evident upstream from the entrance used for the survey. The end portions of the cave run close to what is at first a poorly developed surface valley in the 230° direction. This valley soon deepens to enter a closed depression of considerable depth and dimensions. There are a number of boulder-filled hollows along the base of the cliffs that wall this depression, and presumably the aven referred to above communicates with one of them. The shattered rock noted in the cave lies close to the side of the depression. There is grass with marsh plants in part of the floor, but local inhabitants say that this polje never fills with water, though the cave sump is located only a short distance from the depression horizontally, and only a few feet vertically below the floor level.

To the west, about 500 yards from the end of the cave and about 200 ft. lower, is a steeply descending gulley, 11 in *Fig.* 31. It starts off abruptly and has all the appearances of an old stream bed from a rising now no longer

functioning. It runs almost straight down towards the sea, dropping about 300 ft. in about 400 yards before fading out. It seems possible that this was once the rising for the waters of Pollballiny, perhaps at a time when the polje was still liable to flooding and before the cave waters had found a lower route. The present rising of the waters of the cave is unknown, but it is presumably under the sea as no large springs are known on the hillside.

The survey was made using linen tapes reinforced with steel wires and alcohol-immersed hand-bearing compasses reading to one degree. The error in the setting of these compasses is less than $\pm 2°$. A C.R.G. grade 4 degree of accuracy is claimed for the survey. The survey was drawn out twice by different draughtsmen using different methods and the two agreed to 30 ft. in length and $\frac{1}{2}°$ in average direction.

REFERENCES

Proc. = *Proceedings, University of Bristol Spelæological Society.*

BARTLETT, P. N., 1936, " County Clare—a Brief Diary ", *Yorkshire Ramblers' Club Journal*, Vol. 6, 329.

OLLIER, C. D., and TRATMAN, E. K., 1956, " The Geomorphology of the Caves of Northwest Clare, Ireland ", *Proc.*, Vol. 7 (3), 138 and *Plate* 6.

PLATE 10A

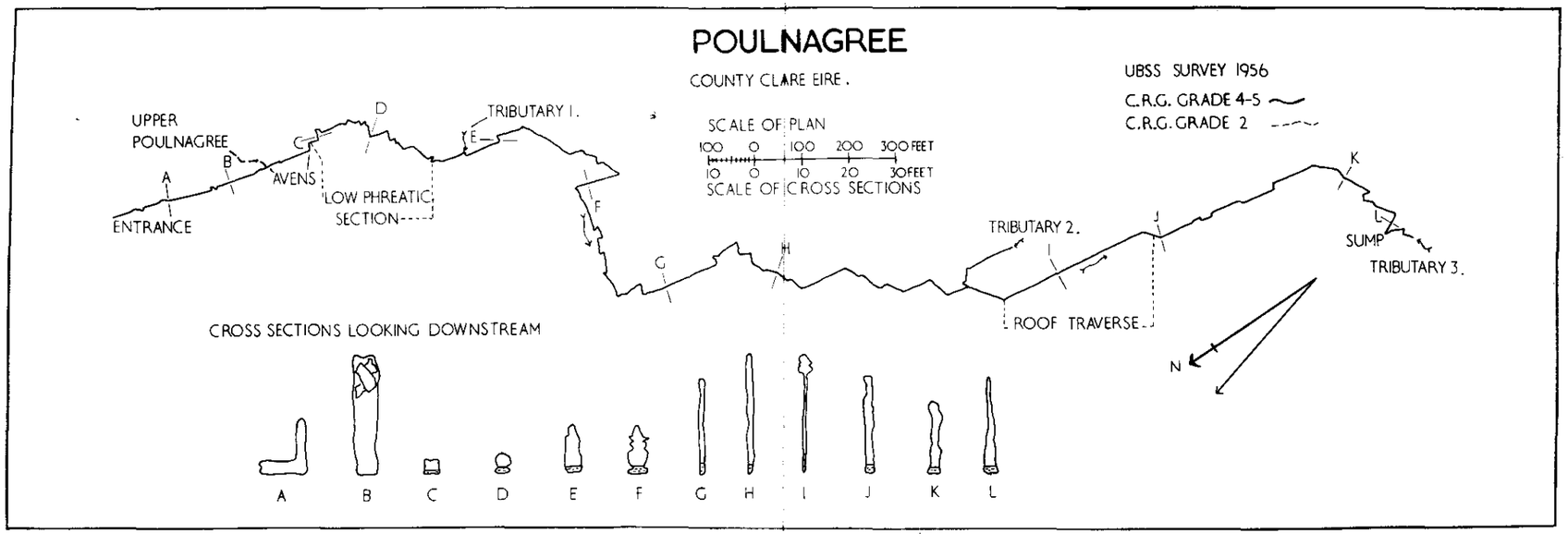

PLATE 10B