

to be seen on the cave wall, there is a rift nearby, part filled with cemented glacial drift. Further consideration of this site may confirm it as of similar age to Poulcraveen.

The fieldwork was done by B. Ottway, B. B. Perratt, K. M. Rowntree, E. K. Tratman and S. Trudgill.

S. TRUDGILL.

B11 (Poulmagun), Co. Clare, Ireland

O.S. 6 in. to 1 mile, Clare, sheet 8.	Altitude	c.420 ft.
Entrance: E.18.4 in., N.21.9 in.	Length	750 ft.
Td. Poulmagun (Hole of the Hound).	Depth	191 ft.

Tackle required: First pitch; 45-ft. ladder and 50-ft. tether.
2nd pitch; 40-ft. ladder and 30-ft. tether.

Introduction

B11 (Poulmagun) is an enormous conical depression, some 180 ft. across, and 65 ft. deep from the highest point on the rim. It lies 300 yd. south of Ballynalackan School, and falls into the class of "shakeholes within the shale margin" (Tratman, 1969), though limestone is exposed for the bottom 15 ft. There are two openings in the base of the depression. The first is a steeply descending rift, blocked after 20 ft., and obviously inhabited by foxes. The second is a small swallet hole only recently opened, formed on the intersection of an E-W and N-S joint, the latter being exposed as a short cliff face. In wet weather two small streamlets, derived from the area of the shakehole, sink here. There are no other surface streams in the vicinity.

History

The B11 shakehole has been periodically examined and dug by UBSS since 1954 (UBSS diaries, unpublished). A party in 1968 made some progress removing boulders from the sink-hole, though entry was not gained at that time. At Easter 1970 it was found that over two years the streamlets had washed in the remainder of the debris, exposing a small but passable opening. This gave access to a 45-ft. pitch, the bottom floored with boulders through which the stream sank. In front was a 15-ft. high unstable boulder wall which was climbed and a possible way on was noted.

On July 13th, 1970, members of UBSS again visited B11. The passage beyond the boulder wall was followed south-east for 110 ft., where it came to a dead end. Footmarks indicated that others had been this far before. A strong draught was felt blowing through a low choked tunnel on the right (south) near the furthest point reached. Two days' digging removed twelve feet of mud obstruction from the tunnel, giving access to an E-W rift leading to the rest of the cave.

Description

The open part of the pot-hole lies within the shale boundary. The sides are steep and densely covered with scrub; the usual descent route, an easy scramble, is marked on the survey, and follows one of the streamlets. In the limestone at the bottom is a wide trough, 40 to 50 ft. square and 15 ft. deep, probably formed by collapse from below. The actual boundaries of this trough are indistinct on three sides, being partially masked by shale slip. On the East side, the edge of the trough is marked by a small vertical cliff face along a N-S joint, at the base of which is the swallet and entrance to the cave system beneath (*fig. 52*).

The entrance pitch is a 45-ft. ladder climb down an E-W rift, a continuation of which may be seen at the foxhole, some 50 ft. further west. The pitch shows phreatic features, on which is superimposed much vertical fluting due to the action of the stream descending. The floor is a boulder pile, sloping down to the east, the stream percolating down out of sight between the boulders. A false door remnant, and 15-ft. wall of boulders (now partly demolished) on the eastern side, indicate that there is major collapse below this point, and that it is still actively subsiding. The way on is along a 110° - aligned rift, 2 ft. wide and up to 12 ft. high, floored with shale mud. After 110 ft. this rift becomes a dead-end, and one turns south through a low tunnel—the dug section. An E-W rift is then entered, 2 ft. wide and 15 ft. high. To the right (west) it soon closes down, but to the left a crawl leads to a small chamber containing a large perched block formed where part of one wall has become detached. The floor here, and in the tunnel, is of varved mud, coarse shale debris alternating with fine orange-coloured silt. Rotting grass high on the walls indicates occasional flooding to this point.

B 11 (POULNAGUN), Co. Clare.

UBSS Survey

July 1970

CRG Grade 5

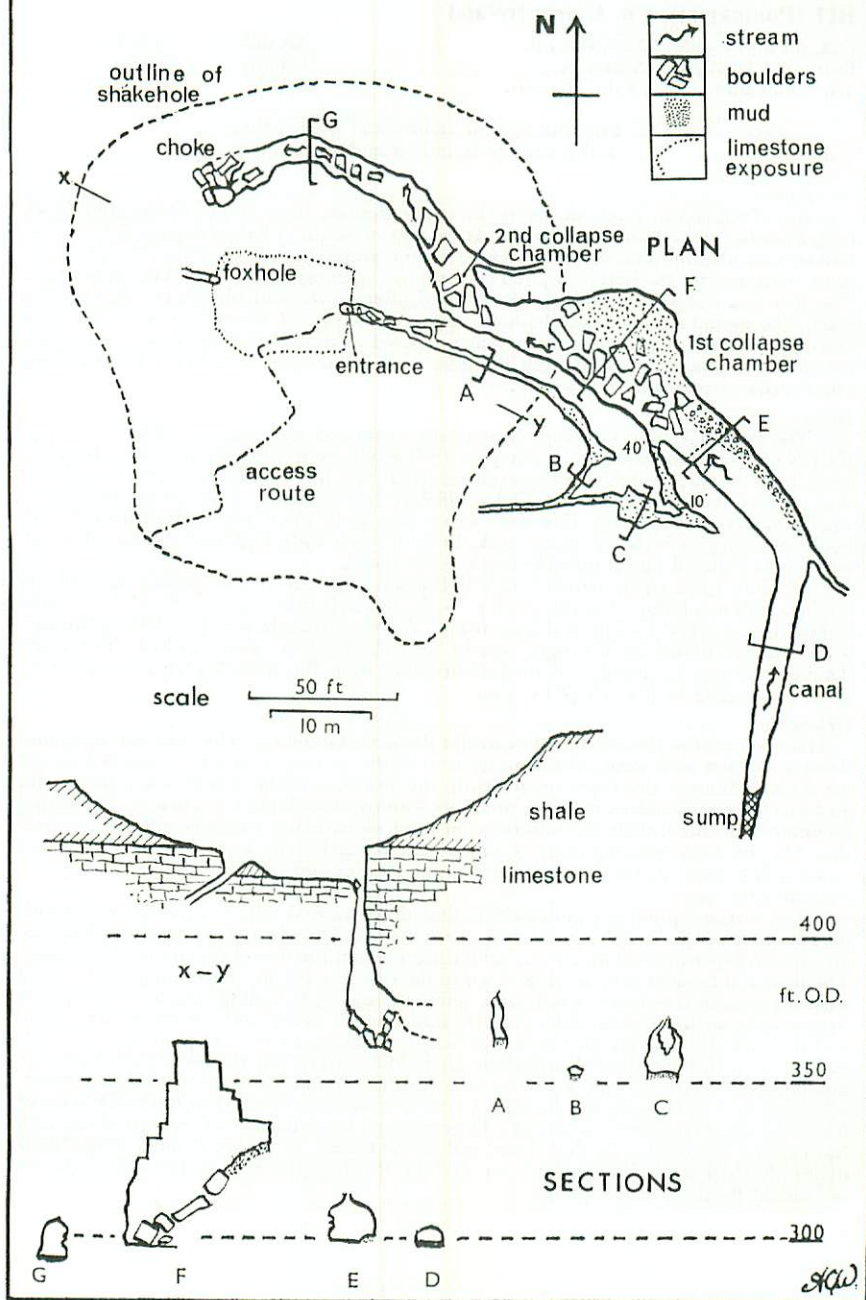


Fig. 52

On the far side of the small chamber, which shows phreatic pendants, a short crawl leads to a passage on the left, dropping 10 ft. and sloping steeply down to the top of the second pitch. This is a 40-ft. ladder climb down an aven leading into the streamway.

The stream passage by the 2nd pitch is 14 ft. high, 20 ft. wide, and floored with boulders. Upstream, south-east, one passes up over a small 18-in. chert-topped cascade into the canal, 5 ft. wide and 3 ft. high. The roof, a prominent band of chert, follows the bedding, dipping gently to the south at 3° , finally meeting the water level after 50 ft. to mark the start of the sump. The floor of the canal is also along a chert band; at several points chert projections from the walls make progress difficult.

Downstream one immediately enters an enormous collapse area, the stream finding its way between boulders at low level. This is best avoided by climbing up to the right into a huge collapse chamber, 40 ft. wide and an estimated 70 ft. high. An immense mound of collapsed blocks, well compacted with mud, slopes down to the stream on the left; mud stalagmites here indicate frequent flooding. Remnants of deserted phreatic high-level tubes may also be observed.

Further downstream there is a second collapse area, this time passable at stream level between blocks measuring 20 ft. long. After only another 80 ft. yet another boulder choke is reached, marking the end of exploration. Concerted efforts to find a way through were unsuccessful; some of the boulders are also very unstable.

Two small tributaries enter the main stream from the right bank. The first, near the start of the canal, becomes too low to follow after 30 ft.; the second, entering at the second collapse choke, is blocked with mud after 40 ft.

The depth of the surface shakehole is 65 ft., and the cave descends a further 125 ft. The total depth is therefore 191 ft., making B11 the deepest pot-hole in Co. Clare down to the active streamway (*c.f.* Poulelva 97 ft.)

Geomorphology

B11 has often been discussed amongst geomorphologists interested in the Clare limestone area. The existence of a large active streamway flowing beneath the shakehole has been postulated (personal communications, unpublished) on two scores: firstly the severity of the collapse of the limestone to form the trough at the base of the shakehole demands the original existence of a large subterranean passage. Secondly, the sheer quantity of shale that has subsequently been disposed of in forming such a large conical depression requires there to be a large volume of water flowing to wash the debris clear. There is no dry valley leading into the shakehole; the only water flowing into the entrance is that derived from catchment on its own area. Hence it must be assumed that all collapse material has been removed from below, initiated by upwards solution and collapse of the limestone, followed by gradual slumping of the shale into the cavity so formed. A comparable example, indeed the only other example of the phenomenon in Co. Clare, is at the Fisherstreet pothole in the Doolin System (Savage/Hobbs, 1969). However, at Fisherstreet the subsequent washing away of collapsed material is nearly complete, and an open shaft leads directly down to the stream level. The development at B11 is not yet as mature as this.

The July 1970 discovery of a streamway associated with the B11 pot-hole, whilst adding to the evidence for the above, does not provide a direct proof of the theories. Certain anomalies are also imposed; these will be considered individually:

(a) The first visit to the streamway, on the day of the break-through, had been preceeded by a night of moderately heavy rain, though not of flood proportions. A considerable volume of water was flowing in the B11 streamway. Fresh froth on the walls indicated that the flow had recently been even larger. Between this visit and the second, 36 hours later, there had been little rain; the stream had subsided to the merest trickle, even though nearby streams (e.g. Polldonough) were still flowing quite strongly. This is indicative that the B11 streamway is a flood oxbow to a nearby system, taking water only when the level in that system backs up and overflows down the flood oxbow. In this case, the real "main stream" has yet to be discovered.

(b) As may be seen from the survey, none of the collapse areas in the streamway lie below the main collapse zone in the surface depression. Moreover, the collapse chambers in the streamway are roofed by flat, undisturbed planar bedrock, and are therefore not continuous with any collapse above.

The inference is therefore that there is a cave passage running parallel to the streamway found, that it passes directly below the trough of the surface depression and was responsible for causing the major collapse resulting in the eventual formation of the shakehole. It would be to this passage that the B11 streamway acts as the flood oxbow.

Certain observations provide additional evidence for the postulated sequence of events which formed the surface snakehole. The phreatic development of the rift passages above the streamway indicates that the local water table was originally 100 to 120 feet higher than the present stream level, conditions which would be essential if the mode of formation were to be as proposed. The water level does still occasionally back up to 70 ft. above stream level, as evidenced by the grass debris left in these rifts, and the varves on the floor though exceptionally heavy rainfall would probably be required for this. However frequent flooding to a height of 30 ft. seems certain from the deposits on walls and the mud stalagmites seen.

Phreatic pendants in the streamway show that this also developed under water; vadose entrenching is now taking over for the majority of the time. Some shelving, a vadose feature, is seen at the end of the canal.

The altitude of the streamway at the terminal choke is 290 ft. OD; it is therefore likely that a considerable length of passage remains to be discovered downstream of the explored part.

The author would like to express his thanks to Messrs. J. D. Walford and A. Boycott who helped with the exploration and surveying. The author is also indebted to Prof. E. K. Tratman for his helpful suggestions.

A. G. WILKINS.

The Resurgence of the Coolagh River, Co. Clare

Clare 6 in. to 1 mile, sheet 4;
E: 7.3 in. N: 2.4 in.
Td: Ballyryan. Altitude: zero.

The resurgence of the Coolagh River has been a subject for speculation for the past twenty years. The consensus of opinion was that the water resurged on the coast, though below sea-level. Various theories have proposed that the underground system continued the present trend of the Coolagh River Cave south-west, past Poll Cloghaun (Williams, 1969), and the Cregg Lodge swallets (Collingridge, 1969), to eventually resurge in the sea at or near the small bay in Td. Glasha More (Tratman, 1969). The only clue that it did not resurge there at all, but turned back north-west, was a report by Mr. J. Kelleher of Oughtdarra at Easter 1969. He related to members of the UBSS that "when flood water was flowing on the surface past Ballynalackan Castle, peaty brown water came up through boulders on the coast just south of Pollsallagh bay, forming a mushroom several feet high."

No record of the exact spot was available, and although several parties searched intensively, no trace of any resurgence was found in 1969. It is perhaps of interest that "Pollsallagh" means "Dirty Water Hole."

Dye tests in July 1968 and at Easter 1970 had meanwhile traced the water from Poulmagree via a series of risings and sinks, a long way towards Pollsallagh (p. 300). This, and Mr. Kelleher's evidence, suggested that Pollsallagh would be the site of resurgence of the Poulmagree water; it was considered possible, but not very likely, that the Coolagh River also came up in the same area.

The discovery on July 14th, 1970 of a cave passage associated with the B11 shakehole (p. 295) suggested to the authors that there might be north-west flow of water beyond B11 along the underground route or routes to the sea. This prompted a re-examination of the stretch of coast-line around Pollsallagh. The resurgence was discovered on July 15th, partly by chance. When passing a small bay, a distinct peaty coloration of the sea-water was observed. However there had been little rain previous to the occasion, and it was only when the spot was revisited several hours later when the tide had dropped, that a steady flow of peaty-brown, fresh water was observed bubbling up through boulders close to the sea-line. It immediately became clear why the site had been missed so many times before: at high tide the resurgence is completely submerged by foaming sea-water; at low tide the higher levels of the resurgence dry up, the water presumably percolating up through gravel on the sea-bed a short distance off-shore, there being insufficient head to force it out of the upper openings. Under low flow conditions, the resurgence is only clearly visible for two hours between tides. It has since (Sept., 1970) been noticed that water pours out at the highest level at all states of the tide after heavy rain. (*pl.* 24A)

The site is marked by a tiny, 40 by 40 ft. bay in the eroded limestone platform below the massive storm beach boulders which form a prominent feature in the vicinity. The bay may be recognised by the small boulders it contains; these are the only boulders found at sea-level for some distance. It has been numbered S3 in accordance with the