After 110 ft. the passage makes a sharp bend to the north-east. The floor level has been dropping gradually and the passage becomes some 20 ft. high (11). The stream drops down a 12 ft. cascade (the roof also dropping), and then flows on among boulders to the final chamber, there being again a drop in roof level. The water sinks under the right and left hand walls of the chamber which is 12 ft. in diameter and is 7 ft. high. A squeeze between boulders at the left of the chamber leads into a loose boulder choke with no apparent way on.

Flood Risk

The 160 ft. of passage from the entrance floods to the roof after heavy rain. Much of the cave floods badly but the larger passage below the ladder pitch does not apparently fill to the roof.

The Survey

The cave was surveyed to C.R.G. grade 4. The instruments used were a Suunto hand compass read to 1° and a metal reinforced linen tape read to the nearest inch. Vertical drops were measured wherever necessary.

The writer would like to thank his fellow surveyors E. Brown, C. Thomas, Miss D. M. Last and P. F. Godfrey for their help.

R. T. F. MARSH.

Poulcraveen, Co. Clare, Ireland

Td. Doolin. Clare 6 in. to 1 mile Sheet, 8A. S2 in Tratman (Ed.), 1969.

Poulcraveen and Poulsallagh have been briefly discussed as caves invaded by the sea (Tratman (Ed.), 1969, p.207). The conclusion was that they were not part of the other active systems studied. The Poulcraveen site, (S2), was studied afresh over Easter and in July, 1970. The aim was to map and describe the cave and to investigate its relationship to the present sea level and the surrounding glacial drift in order to suggest its mode and date of development (*fig.* 51).

It was found that there was a meandering canyon passage sliced through longitudinally from north to south. Thus, in the present sea cliff, there are remnants of the former east side of the cave. The plan locates these. The numbered sections show loops and oxbows (8–12, 13), short roofed sections (3, 6–7) and avens with roof pockets and wall pockets, typical of phreatic development (5–7). One aven was explored by maypole, but was found to be plugged by glacial drift at the top. There is a distinct domed roof pocket, (9) and a wall pocket (14). The rift, (7–8), narrows and is impassable. Subdued scallops are found on the recognisable portions of the cave wall, seen from (1–15), excepting the seaward cliff sections and outer overhanging walls of (5–7), (8–12) and (2–4). These are sea pitted joint faces.

It is difficult to be certain of the direction of the scallops and the cave now has no active stream in it. However, the water probably flowed down dip from north to south, because the floor, where seen, dips that way at 3°. The lowest part of the solid floor seen is at the south entrance to the main loop. This loop appears to be an oxbow as it is smaller than the arch cave section, unless the main cave was closing down at this stage. At the south end of the cave wall, (14, 15, 16), the subdued scallops, flutings and wall pockets merge into a face that is cut across by glacial striations in juxtaposition with a bank of calcareous glacial moraine. The striations, preserved under the moraine, indicate a southerly and upward direction of ice movement (*pl.* 25B).

From the evidence set out above, it is clear from the phreatic roof features that the cave was not originally excavated by marine erosion. It has all the features of a typical Clare canyon passage formed by a fresh water stream.

It is also clear, from the evidence of the moraine resting on the cave wall and the striations formed by glacial erosion which cut into cave features, that the cave formation pre-dates the last epoch of glacial erosion. Coupled with the glacial smoothing of the top of the arch section, the indications are that the cave has been sliced through longitudinally by glacial erosion of the cliff (*pls.* 24B, 25A).

The conclusion is that Poulcraveen provides the first unequivocal example of a pre-last glacial cave in N.W. Clare.

In considering the substantial case of Poulcraveen, other sites may now be considered for a pre-last glacial age. At Poulsallagh, (S1), north of the short section of winding canyon passage previously described, (Tratman, *op. cit.*, *p.*207), there is a wider section of cave on the cliff top. This is 6m wide, 5m high and 25m long, closing at the landward end. There are flutings and subdued scallops on the walls. Although there are no striations

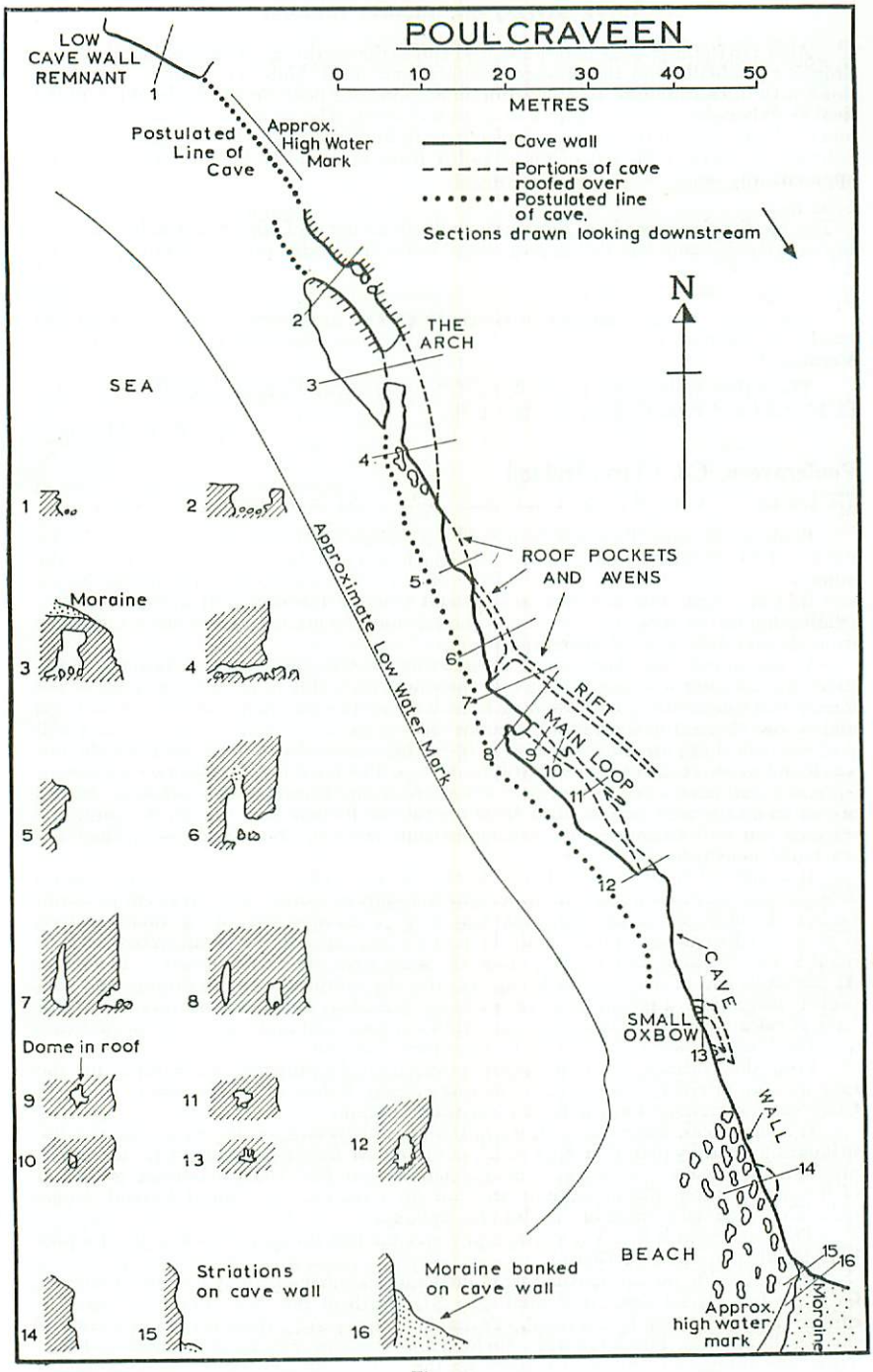
POULCRAVEEN
0 10 20 30 40 50
METRES
LOW CAVE WALL REMNANT
Postulated Line of Cave
Approx. High Water Mark
Cave wall
Portions of cave roofed over
Postulated line of cave.
Sections drawn looking downstream
N
THE ARCH
SEA
ROOF POCKETS AND AVENS
RIFT
MAIN LOOP
Approximate Low Water Mark
SMALL OXBOW
CAVE
WALL
BEACH
Moraine
Dome in roof
Striations on cave wall
Moraine banked on cave wall
Approx. high water mark
Moraine

Fig. 51

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 (Poulnagun), 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. Poulnagun (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 (Poulnagun) 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.