

LONG GALLERY, UPPER POULNAGOLLUM (SLIEVE ELVA)

by

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ABSTRACT

A description and survey is given of the Long Gallery in Upper Poulmagollum, from its swallet entrances to its junction with Short Gallery. The authors discuss the effect of differential solution of the limestone beds on the shape of the cave passage.

HISTORY

The first exploration of Long Gallery, Upper Poulmagollum, was made by Coleman and Dunnington (1944). Long Gallery used to end about 450 metres upstream from its junction with Short Gallery, at a choke of mud and boulders from which water issued. This was the situation recorded in Tratman (1969).

However on 2nd April 1969 a party from South-West Essex Technical College Caving Club, looking for Pollnua, descended the swallet E3 by mistake (Faulkner 1969). After traversing a great length of unpleasant passage, they emerged in the more recognisable parts of Upper Poulmagollum. Cambridge University Caving Club explored the passage during Easter 1979 in order to survey it at the request of UBSS. This report has been submitted to UBSS for publication in Proceedings.

DESCRIPTION

The passage known as Long Gallery has been described by Collingridge (1962) and by Faulkner (1969) and is redescribed here to present a single coherent account.

The swallet E3 is a large depression full of scrub near the drovers track, just where the forestry plantation recedes on north-west Slieve Elva. Two streams sink at the northern end of the shakehole and the eastern one can be followed down a narrow rift to a low passage which takes the water. This leads after 90 m. to a low crawl in water up to 0.35 m. deep and a junction with a roomy passage coming in from the right. This passage, which is floored with rubble, leads to a large shakehole similar to E3. The shakehole is now entirely surrounded by forestry so its relationship to other surface features could not be established. The continuation of the main streamway leads via a very low wet crawl of

25 m. to an aven open to the surface. This crawl was blocked by a gravel bank when visited by Faulkner.

After the aven the passage cuts down and its character changes to that of a narrow rift. After a short distance it becomes too narrow to stand, forcing one to crawl sideways in the water on a floor of shale cobbles. This section is very sinuous and many of the bends have pools 0.3 m. deep. Gradually the passage becomes wide enough to stand, but still too tight to turn around. In places the cobble floor is replaced by a floor of chert, penetrated a few times to produce awkward potholes. By section 11 (Fig. 38) the passage has become lower and wider, forming a tolerable hands-and-knees crawl. In this section of the cave there are some rather fine orange curtains, unfortunately no longer active, along the left hand wall. The passage becomes quite roomy and relatively straight until, after 200 m. it again becomes chert floored with one or two chert waterfalls. This part is again narrow and somewhat sinuous.

Eventually the water flows away through a low bedding cave while a short tube on the left leads into Short Gallery, joining it 0.6 m. above the floor. The water from Long Gallery joins Short Gallery a short distance downstream.

There is some evidence to suggest that the cave does not flood to the roof below the third entrance. UBSS chalk survey stations are still visible 0.6 m. above the floor in the downstream section after 18 years. However, on the second surveying trip at Easter 1979, there was a tide mark 0.3 m. above the normal stream level. This volume of water would make the constricted section at the beginning of the cave difficult, to say the least, and the part between the first and third entrances would probably be sumped.

GEOMORPHOLOGY

As far as can be ascertained, the passage is contained within the same two beds of bioclastic limestone throughout its length. The roof is a continuous bedding plane, with evidence of a shale band up to 20 mm. thick. This bedding plane also forms the roof of Short Gallery, and can be traced most of the way to Poulmagollum Pot. Of the two limestone beds, the upper is less soluble on average than the lower. The variations in thickness of these two beds control the passage shape in two ways. The solubility of the rock at a given horizon has a direct effect on the width of the passage at that horizon. Also, if the solubility of the rock at a particular horizon changes downstream, this will have much the same effect as a change in dip. Thus, if the stream, which runs steadily down dip, encounters less soluble limestone, ponding will occur upstream. This may be a cause of the wider passage between sections 11 and 13.

The bed which forms the floor of the passage contains chert, at least in the lower part of the cave. However, this does not appear to have

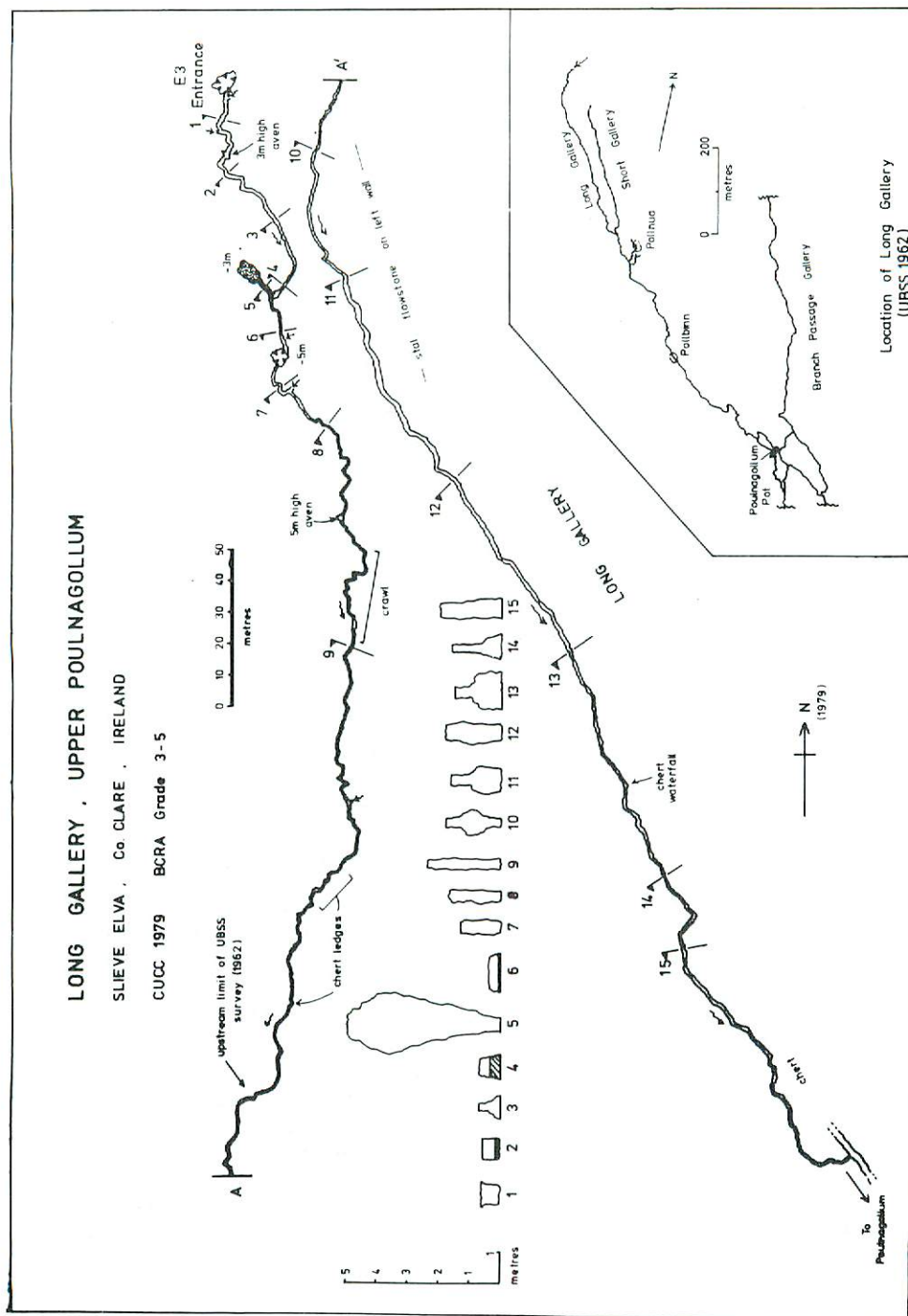


Fig. 38. Long Gallery, Upper Poulnagollum

exercised any major control on the passage. When the passage is floored by chert, the stream seems to have little difficulty in penetrating it, only to run on the same chert floor a short distance downstream. It would appear that the equilibrium gradient of the stream and the dip of the chert bed are too similar to allow the final penetration of the chert, which does not occur until downstream of Pollbinn.

The first part of the passage is notable for having several avens and inlets, two of which connect directly with the surface. Presumably the rest could also be assigned to surface swallets. This part of the passage runs more or less under the edge of the Namurian shales, suggesting that it is related to this feature, and thus is post glacial. The passage then turns away under the shale, and receives only one more inlet. Water draining from the surface will be captured by Short Gallery, so this latter fact is not surprising. It is obvious that water from the shale edge once reached this section of passage, to produce the formations, which significantly are found only on the left hand wall, i.e. the side towards the shale edge. The reason for the passage turning away from the shale edge is not known, but it could have been caused by local variations in dip produced by changes in bed thickness, or by a change in solubilities as mentioned earlier on. On the opposite side of Slieve Elva the upper passages of Faunarooska Cave turn away from the shale edge and run under the shale in exactly the same way. Neither major joint direction seems to have much effect on the passage.

The long straight section differs from the preceding and succeeding meandering sections by being much wider, with larger scalloping. The latter indicates slow flow, and the whole feature is probably caused by ponding, for reasons described above. The straighter passage is to some extent also a function of the survey, as a wider passage gives more chance of running a straight survey line round bends.

A NOTE ON THE SURVEY

The aim was to produce a survey to B.C.R.A. grade 5. To this end distances were measured to 0.05 m. with a Fibron tape, and bearings to 1° with a Suunto compass. Clinometer readings were dispensed with when it became obvious that the slope of the passage was almost constant and very small. It was impossible to keep to grade 5 in the narrow length between sections 8 and 9, because the compass could not be held at eye level. Hence readings were taken to the nearest 2° , with a larger station positioning error, which is more significant because of short survey legs. Grade 3 is claimed for this section. No closed traverse was made to check errors, but the survey is in excellent agreement with the previous UBSS survey where the two overlap.

The total length of passage surveyed was 883 m. in 235 legs, maximum length 13.5 m. and minimum 0.85 m. The survey took two

trips of about 6 hours, with an intermediate attempt aborted due to flooding.

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