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THE FERGUS RIVER CAVE, CO. CLARE, IRELAND

By

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Entrance: O.S. Clare 6 in. to 1 mile sheet 16. E. 33.8 in., N. 16.8 in.*
Td. Roughaun. Total length: over 7,000 ft.
Tackle required: none.
Alternative names: Ballycasheen Cave, Poll-na-Cloch Greanta, Roughaun Cave.

ABSTRACT

The Fergus River Cave is the only example of a resurgence cave explorable for any distance in Co. Clare. Its total length is now over 7000 ft. The directional trend up stream is N.N.E., towards the Carran depression. The hydrology is complex, but when water flows in the cave this water is derived from the Castletown River sinking at Carran and draining into the Fergus River. In wet weather much of the cave fills to the roof.

LOCATION

Although the entrance is only 300 yd. from the nearest road, the cave is hard to find. The entrance is located amongst moss-covered boulders at the foot of a small bluff in a dense thicket. South of the entrance a rock-strewn channel leads down to several intermittent bedding-plane resurgences which serve a major tributary of the Fergus River.

HISTORY OF EXPLORATION

The cave was first discovered and explored for 500 ft. in 1937 by the Yorkshire Ramblers Club (Bartlett *et al*). They named it Ballycasheen Cave after the neighbouring townland; it is actually in Roughaun.

In 1957 the UBSS rediscovered the entrance, naming it the Fergus River Cave because of its proximity to the Fergus River. Subsequent water tracing showed that it was not the Fergus but the Castletown River that resurged nearby.

* In "The Caves of North-West Clare" the northing is incorrectly given as N. 17.8 in.

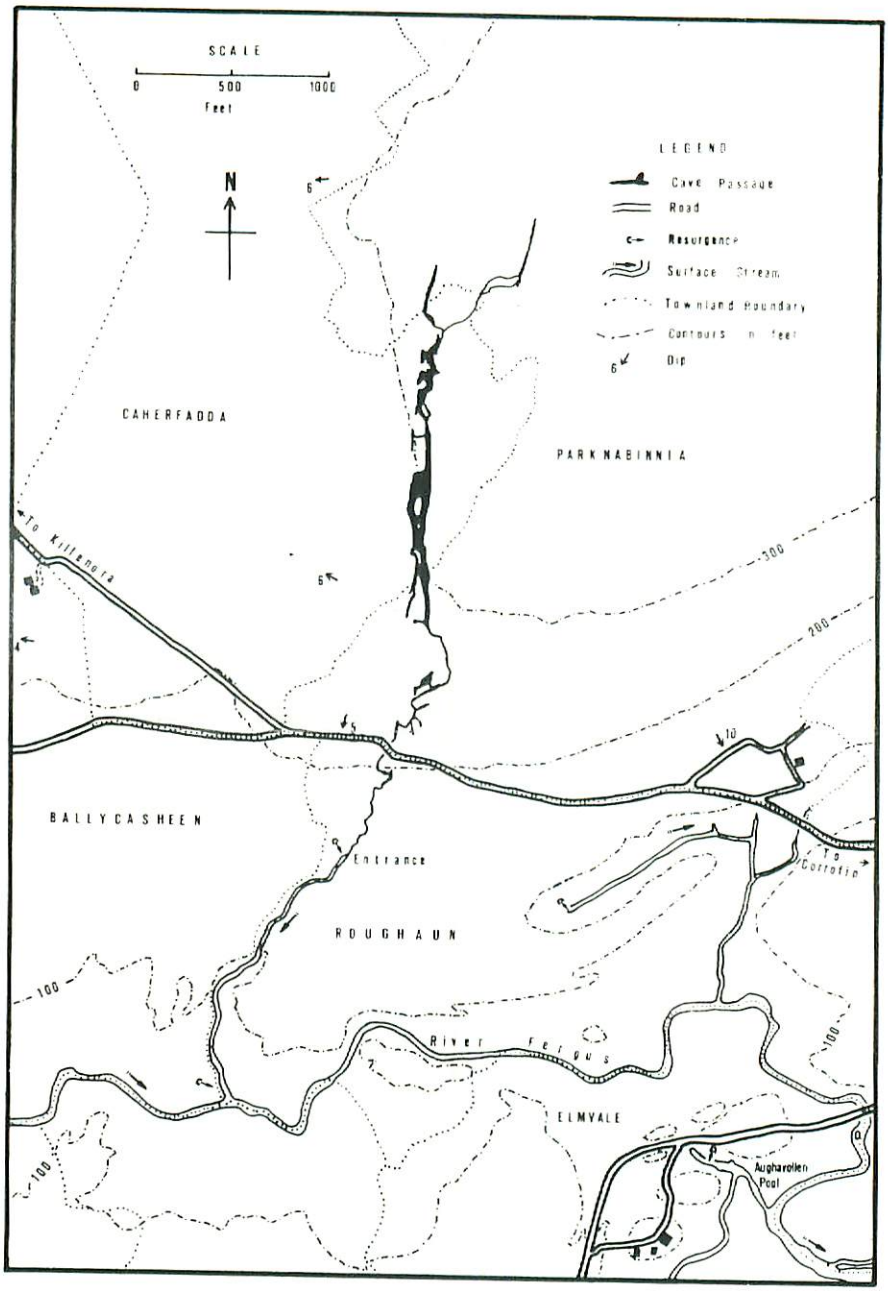

Fig. 32. Based on the Ordnance Survey of Ireland with the permission of the Government, permit No. 1773, Cave data added.

The next examination of the cave was in 1960 when the Craven Pothole Club passed a constriction (now known as "The Nick") and more than trebled the length of the cave. They also surveyed it to CRG.Gd.3. Yet again the original exploration was unknown, and to add to the confusion the cave was called Poll-na-Cloch-Greanta (Butty 1960).

Williams (1964) prefers to call the cave "Roughaun Cave" after the true townland location of the entrance, but since the widely known title is the Fergus River Cave, that is used in this report.

The UBSS resurveyed the cave to CRG.Gd.4 in 1962/3 (Patmore and Nicholson, 1965) and also explained the geomorphology in detail. In August 1970 F. J. Nicholson and wife (UBSS) passed a tight squeeze just beyond Block Chamber. They dug through an obstruction to find about 1000 ft. of passage. From the obvious way on, the roar of a stream, un-mistakeably rising, forced a rapid exit. Heavy rain had occurred and it was observed the next day that water had flowed in spate from the cave entrance, indicating that most of the cave had been full.

On returning in Easter 1971 another UBSS party, in somewhat dryer weather, was able to explore further into the extensions. They reached the streamway and skirted it for some distance to an upstream sump. A prolonged drought in July of the same year resulted in the Fergus River and its tributary drying up. Since no stream was found in the cave either, the sump was passed and several thousand feet more were discovered. Exploration was halted by a "very final" sump, static under the prevailing conditions. An active tributary was also explored, and the whole system surveyed to CRG.Gd.5.

DESCRIPTION OF THE CAVE

The Fergus River Cave forms part of a resurgence complex, and is described looking upstream. The description of the "old part" of the cave will only be touched upon as it has been adequately described elsewhere (Patmore and Nicholson, 1965). The paragraphs following are complementary to the survey.

As far as Shingle Cavern, the character of the cave alternates between a series of small bedding caves and interlinking rifts with higher level loopways. Two points of interest in this section are The Nick, a tight slot upwards between two bedding planes, hard to negotiate for long-legged persons, and the Skittles, a group of three club-shaped stalagmites. Apart from these there is little in the way of speleothems other than patches of soft white calcite, often associated with gour pools. Shingle Cavern is the first sizeable chamber, being 100 ft. in length, 20 ft. wide, and 40 ft. high. Much of the chamber is filled by a large pile of calcited mud, and there is a heap of gravel at the northern end. From here to Block Chamber the

passage character is as before, only heavily muddied.

Block Chamber is a large bedding cave, named because of a huge fallen block which is resting on an earlier fill. The way to Mud Chamber and White Aven lies to the left (west), but the route on is below and to the right of the vertical wall inscribed "CPC '60" at the north-eastern end of the chamber. The next 400 ft. are tight and unpleasant; three tight squeezes have to be negotiated, one through a U-tube dug in August 1970. This route lies alongside a completely impenetrable choke of fallen blocks, and leads directly to Acoustic Passage via an ascending mud incline. Passage dimensions increase considerably to 40 ft. wide and 4 to 6 ft. high. The roof is a single unbroken bed of limestone, and the floor is of soft mud covering a base of rounded cobbles. A pile of spent carbide deposited here in 1970 was found to be well washed the following Easter, indicating at least one submergence. All footprints had also been washed away, and the reader is referred to the elevation to note that most of the cave would be full under such conditions. One section of the passage has excellent reverberation characteristics; hence the name.

On travelling northwards several holes down on the right are passed. These provide an alternative route to the next 600 ft. Route-finding is exceptionally difficult in either case; very wide bedding planes, partially filled with mud banks and loose flakes fallen from the roof, confound the explorer.

When the resurgence immediately below the entrance is flowing, but not in dry weather, one may expect to hear the stream from here onwards. The acoustics distort the sound to a startling degree, and to those unfamiliar with the cave this is quite un-nerving. The stream can occasionally be seen amongst broken rocks at the bottom of a trench at the western side of Gurgle Chamber. This was as far as the September 1970 party reached, as sudden gurgling noises indicated a rise in water level and prompted their exit.

As one travels northwards from Gurgle Chamber, the width of the bedding plans passage apparently narrows, and by following a series of marker-cairns one suddenly emerges at a stream passage. This is Sweet Afton Corner. The name "Sweet Afton" was adopted from Robert Burns' well-known ballad, Afton Water, for the thoughts of peace and contentment evoked by Burns' romantic lines seem particularly appropriate . . .

"Flow gently, sweet Afton, amongst thy green braes;
Flow gently, I'll sing thee a song in thy praise."

The water flows from right to left, issuing from gravel below the wall. It was originally thought to be a tributary, but is more likely to be part of the main stream itself. If one meanders downstream between well stratified mud banks, easy access to the mainstream is gained; this cannot, however, be followed in either direction for any great distance. By going north along a mud-floored passage from Sweet Afton Corner the stream is again reached at the Stack Room, 16 ft. high, 50 ft. wide, 150 ft. long; the name arises from the stacked slabs which have fallen from the roof, somewhat resembling a haphazard pile of dinner plates. The main stream flows out of these. By climbing the slabs an upper bedding plane is reached, by-passing the impenetrable water route. The next section of stream passage is very short (50 ft.) to where the stream issues from a tight sump. Again there is an alternative route via bedding planes at various levels to the east of the stream. This brings the explorer to the furthest upstream point attainable under normal flow conditions, and was the limit of exploration at Easter 1971.

The stream gushes out of a tight sump, and to the east a static pool may be found. In dry weather, when there is no significant stream, both the sump and the static pool dry out completely, and it is through the

latter that further progress may be made. A lower bedding plane is followed for 100 ft. to a very tight and unobvious squeeze under a loose block, leading to a yet lower level. Two ways on from here may be taken. Firstly a bedding plane passage leads over some fallen blocks and finally strikes a prominent N-S joint in which a relatively large passage has developed, 20 ft. high, 20 ft. wide, and 250 ft. long. This is the first enjoyable part of the cave—one can stand up! It must be emphasised that the section of cave described in this paragraph has been steadily descending as one progresses northwards (upstream), and when the streamway in the previously-described part of the cave is active, this entire section will be submerged to a depth of 40 ft. The end of the passage, when explored in the dry conditions of July 1971, was marked by an abrupt wall with a deep, blue, static sump pool at its base.

Secondly one can crawl eastwards up a small streamlet, No Mercy Tributary, for 40 ft., where the roof bed begins to ascend. A 9 ft. square-section passage meanders in a north-easterly direction for 450 ft. to the base of a 16 ft. aven. Half way along the tributary Straw Oxbow leads off on the northern side. There are several elegant 6 ft. dripstone straw columns in this passage, which rejoins the other at the aven. The walls of the aven are heavily covered with moon-milk, and a small trickle of water cascades down. It is best to persuade a small person to go up first, as the top of the aven is very tight. A hand-line may then be lowered to assist the rest of the party. This brings one out near the bottom of the boulder-floored No Mercy Hall, 50 ft. high, of varying width, and 100 ft. long. The trickle enters from roof level and flows down the eastern wall. At the northern end, two difficult climbs lead to a well-decorated roof-level continuation of the hall, following a joint for 250 ft. Here it divides into impenetrable anastomosing channels, from which a strong draught issues. This is the furthest point reached in the cave, being 0.7 miles north of the entrance; it is also the highest, at 157 ft. above entrance level, and is estimated to be only 50 ft. below the surface.

GEOLOGY

The limestone is massively bedded and crinoidal. There are variations in the dip, as recorded on the Geological Survey map over the route taken by the cave. Variations of dip have also been noted within the cave and these variations are not always in accord with those recorded on the surface. For approximately the first third of the cave the dip is S.W. Around Gurgle Chamber it is due west to reach a maximum of 6-8 deg. and finally southwest again. Development along joints is not pronounced. Where it is obvious it is always along the N-S joints.

HYDROLOGY

R. B. G. Williams (in Patmore and Nicholson, 1965, p. 288) pointed out that the molluscan remains recovered from the floor of Mud Chamber ruled out Lough Aleenaun as the water source. In personal communications he emphasised this point and suggested that the Castletown River of the Carran depression was the source. Dye tests were run from the swallet to the resurgences a

few yards down valley from the cave entrance. Positive results were obtained in less than 48 hours and the whole of the dye was through in less than a week. This is a very rapid through-flow time over a distance of 6 miles. It precludes the presence of long lake-like stretches along the route. It is a fair assumption that the water from the Castletown River runs through the submerged parts of the cave and under higher flow intermittently through the explored parts.

The catchment for the Castletown River is entirely on limestone. It responds rapidly to rainfall. The area from the swallet to the cave mouth is also limestone, though with some drift in places. Rain will percolate rapidly to the cave system. Under wet conditions the swallet may be submerged by as much as 6 ft. and under lower conditions it is obvious that much water goes underground upstream from the swallet. It is also well known from other caves in N.W. Clare that percolation water frequently behaves like swallet water and quickly enters the caves as discrete tributaries.

On the evidence from dye tests and surface observations it is unlikely that the water of L. Aleenaun and other areas and swallets to the west runs through the Fergus River Cave. Their waters probably run direct to the river itself. To the east are other streams, with their own catchments, and these run direct to the Fergus River. This river rises in L. Fergus. From the lough it follows a north-eastward course for several miles. "Then immediately on reaching the limestone bedrock it goes underground in Kiltoraght swallet" (Williams, P., 1968, p. 3 and pl. 1.). It has never been seen by UBSS parties, even under high flood conditions, to overflow down the abandoned valley cut in glacial drift, downstream of the swallet. The highest resurgence is at Poulnaboe, but under drought conditions this dries up and the surface river ceases to flow as far down as the main resurgence at Elmvale over $\frac{1}{2}$ mile away. Under these conditions the tributary, fed mainly from the cave, is also dry as the water is at a lower level. P. Williams, (personal communication), has suggested that the Elmvale resurgence is the focus of all water from a very large area, and that the higher level resurgences, such as the one fed by the Fergus River Cave are only active under high flow when the capacity of the lower constricted levels is exceeded.

GEOMORPHOLOGY

Nicholson (in Patmore and Nicholson, 1965) has described some of the features. He drew attention to the various stages of

development of Block Chamber including the presence of water borne cobbles, some larger than 18 x 9 x 4 in., and that the upstream surfaces of the blocks themselves had been polished by abrasion. It must have needed a powerful stream to transport and round the cobbles even if most of the rounding had been done by glacial action before the cobbles were swept into the cave. He also noted that the erratics formed from 0.5-5.0 per cent of all the cobbles in various areas (see also Leake in Patmore and Nicholson, 1965, p. 288). The erratics must have come from the north.

In Shingle Cavern the shingle has its individual elements aligned with their long axes perpendicular to the direction of travel. They have very probably been rolled into position by fast moving water. In the same chamber there are massive and very clean flowstone deposits associated with a small inlet stream at roof level. Mud is banked to 10 ft. up one wall. Shingle Cavern is predominantly devoid of the main stream now and is regarded as one of the safest places in the cave to sit out a flood. Yet the elevation (Pl. 12) shows that its roof is only about 10 ft. above that of Acoustic Passage, which does fill to the roof.

Acoustic Passage has cobbles of 4-6 in. size covered by 2 in. of mud. The latter was deposited, presumably, from water backing up. The roofs of the two routes through Gurgle Chamber are in the same bed, which dips west. The mudbank separating them has several small stream gullies running out of the lower side indicative of drainage into the large stream canyon on the west.

Near Sweet Afton Corner the mudbanks have been cut through by a tributary stream. The banks are seen to be composed of laminae about $\frac{1}{8}$ in. thick. The exposed section is 2 ft. deep.

Throughout the cave there is evidence of roof collapse. In Block Chamber the boulders are immense and rest on an older fill. "The Nick" too is between a slipped block and the solid wall. Mud is everywhere: some is still being deposited although elsewhere its removal is being effected.

In Shingle Cavern, White Aven and No Mercy Hall small tributaries enter at roof level. In each case there are massive flowstone deposits. In the case of No Mercy Hall they are tufaceous in nature and this applies to a lesser extent to the other two places. Paul Williams (personal communication) thinks that such deposits in Clare caves indicate proximity to the surface. The roof of No Mercy Hall has been calculated to be about 50 ft., perhaps less, below the surface. In this chamber there is considerable

breakdown with partial removal of the rock in excess of that found elsewhere in the cave.

The explorable part of the Fergus River Cave is the original part of the cave altered by roof collapse and deposition of varying grades of fill under varying conditions of flow. The through flow seems to be becoming less violent. The water has found lower routes, which are being developed, but which are as yet inadequate to take all the water along the length explored. These new routes are generally to the west, down dip, of the original passage. Similar conditions may or may not exist upstream of the static sump. The elevation suggests that, in the early stages, phreatic loops of low vertical magnitude were developed under a hydrostatic head (see Ford, 1971). The explorable cave is becoming fossil and is filling with mud in places. In the submerged reaches downstream from the cave mouth the dye test suggests that multiple levels are being developed. A comparison with the Black Bridge (Upper St. Brendan's) and St. Brendan's resurgence system is apt.

The age of the system has not been yet fully worked out. It is obviously linked to the main Fergus River, which originally flowed, on the surface, down the valley cut in the glacial drift, till it had exposed the underlying limestone at Kiltoraght and went underground to resurge after about 400 yd. at Poulnaboe. The swallet depression is very shallow and so cannot have been functional very long. There is much evidence that the Fergus River, at least as far as Elmvale, has only been sinking into the limestone for a comparatively short time. This began after the main valley had been cut and filled with glacial drift. Thus this part of the river course is a post-glacial development, though perhaps starting in late-glacial times. It follows that the cave system is also of this date because of the linkages with the river.

SAFETY

There are few technical difficulties in the cave, other than the climbs of No Mercy Hall. However the cave does involve a considerable amount of crawling, so much so in fact, that over a total length of one mile there are fewer than ten places where it is possible to stand up and walk. Progress in the system is therefore necessarily slow. Despite the appearance of the survey, route-finding is in places exceptionally difficult. The main trouble occurs in the bedding planes, where because of the lack of landmarks, and the numerous obstacles that have to be skirted, maintaining a

straight course is virtually impossible. A fit party, well acquainted with the cave, may be expected to take at least three hours to traverse the system from end to end. Thus the minimum time likely underground on a trip to the furthest reaches is six hours.

It has already been emphasised that the cave is prone to flooding. The catchment is large; the surface is generally bare limestone, with occasionally a scanty covering of soil. Thus rain immediately drains into underground channels, and may cause rapid flooding. Some parts of the cave, notably Gurgle Chamber and the bedding plane just inside the entrance, may become impassable after only a few hours precipitation, and there is ample evidence for most of the cave filling completely.

The inference is, therefore, that by the time a party in the cave is aware of a rising water level, it may well be too late to get out. Acoustic passage, Block Chamber, and Shingle Cavern offer temporary refuge; No Mercy Hall, although higher, cannot be recommended as access to and from it is via the first zone to flood when the mainstream is flowing (see elevation). A party trapped there would be in a sorry plight.

A caving trip to the Fergus River Cave should therefore be postponed if any volume of water is already resurging near the entrance, or if rain is forecast.

THE SURVEY

Instruments

The survey was carried out using a Suunto hand compass and clinometer, each read to $\frac{1}{2}$ degree, and a metallised linen tape read to the nearest inch. The magnetic correction peculiar to each quadrant (according to surface calibration) was subtracted before processing. The plan and projected elevation were drawn by computer using the corrected data at 1 : 1000 (see below), from which a tracing with detail added was made. This was then photo-reduced for publication, to 1 : 2000. The one closed traverse around Gurgle Chamber misclosed by under 1 per cent. CRG Grade 5 is claimed overall.

Computation

The UBSS has been implementing computer processing of cave survey data since F. K. Hanna in 1963, though only routinely for the last three years. The development of programs for this purpose is a continual process as they become more intricate and provide more complex displays of the "final product".

In 1968 R. J. Taylor programmed an Elliot 503 to draw stereoscopic pairs of surveys, which convey much height information when viewed under a stereoscope. A 30-inch wide incremental plotter is the main output device at present, and intermediate data storage of co-ordinates is achieved on disc files. The current programs (in Fortran IV) by A. G. Wilkins draw out line diagrams, with elevations on any bearing, polar analyses, and even the lettering on the plan. There is currently friendly competition from J. D. Walford to draw in the walls of passages, and not just the surveyed line. This is hard to achieve with the minimum of data, but is relatively straightforward until junctions are encountered. These difficulties should be overcome shortly. The original computer drawings are available in the Society's library, and a paper will appear in a future "Proceedings" giving program details when they have been finalised.

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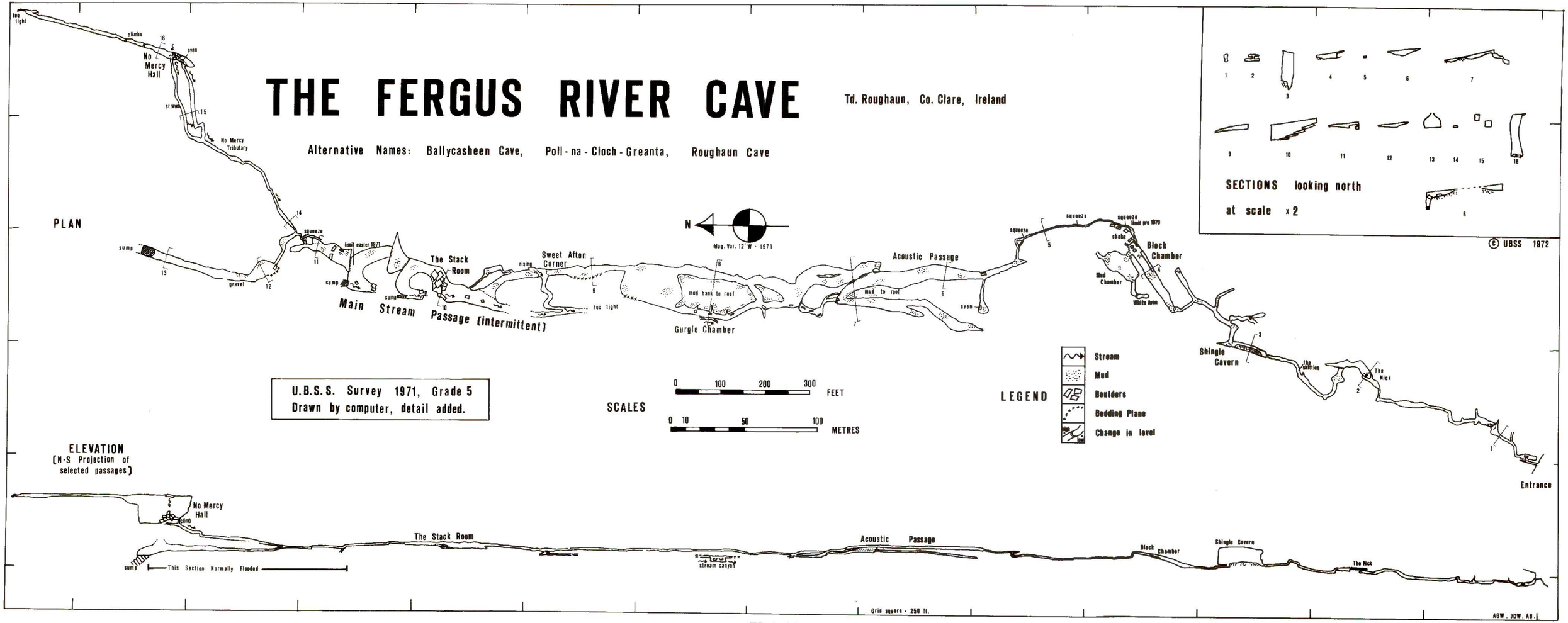
THE FERGUS RIVER CAVE
Td. Roughaun, Co. Clare, Ireland
Alternative Names: Ballycasheen Cave, Poll-na-Cloch-Greanta, Roughaun Cave
PLAN
No Mercy Hall
No Mercy Tributary
The Stack Room
Sweet Afton Corner
Gurgle Chamber
Acoustic Passage
Block Chamber
Shingle Cavern
The Nick
Entrance
Main Stream Passage (intermittent)
N
Mag. Var. 12° W - 1971
U.B.S.S. Survey 1971, Grade 5
Drawn by computer, detail added.
SCALES
0 100 200 300 FEET
0 10 50 100 METRES
LEGEND
Stream
Mud
Boulders
Bedding Plane
Change in level
SECTIONS looking north
at scale x 2
© UBSS 1972
ELEVATION
(N-S Projection of selected passages)
This Section Normally Flooded
Grid square = 250 ft.
AGW. JDW. AB.

Plate 13