MSG 14

The 14th Journal of the
Moldywarps Speleological Group
2021

MSG14

THE FOURTEENTH JOURNAL OF THE MOLDYWARPS SPELEOLOGICAL GROUP

November 2021

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LIST OF SURVEYS

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Cover: *from an original oil painting by MSG member John Longstaff (Cluff), with permission.*

1. INTRODUCTION

Yes, here we are again with MSG14, which follows hot on the heels of MSG13 published in 2015. It is however now some time since the Group's first journal, back in December 1967. Throughout the whole of this period the focus has always been on caves in the Northern Pennines, to the north of the Craven District, and the explorations described in this publication are no exception.

Also true to the past is the club's membership situation which has rarely included massive hoards of people, and the number of active cavers involved in the discoveries described herein totals only about 10 or 12. We can't be too sure of the precise number as, again echoing much of the club's history, no records have been kept of club membership. Indeed, the last published membership list appears to have been in late 1991, when it comprised as many as 56 individuals (only two of whom are thought to be actively caving today). In the last few years we have however been joined now and then (often at times particularly close to the point of a speleological break-through) by friends from other clubs, including the York, North Yorks Moors, Orpheus, Durham Cave and Mine, Northern Pennine, Black Rose and Red Rose Clubs.

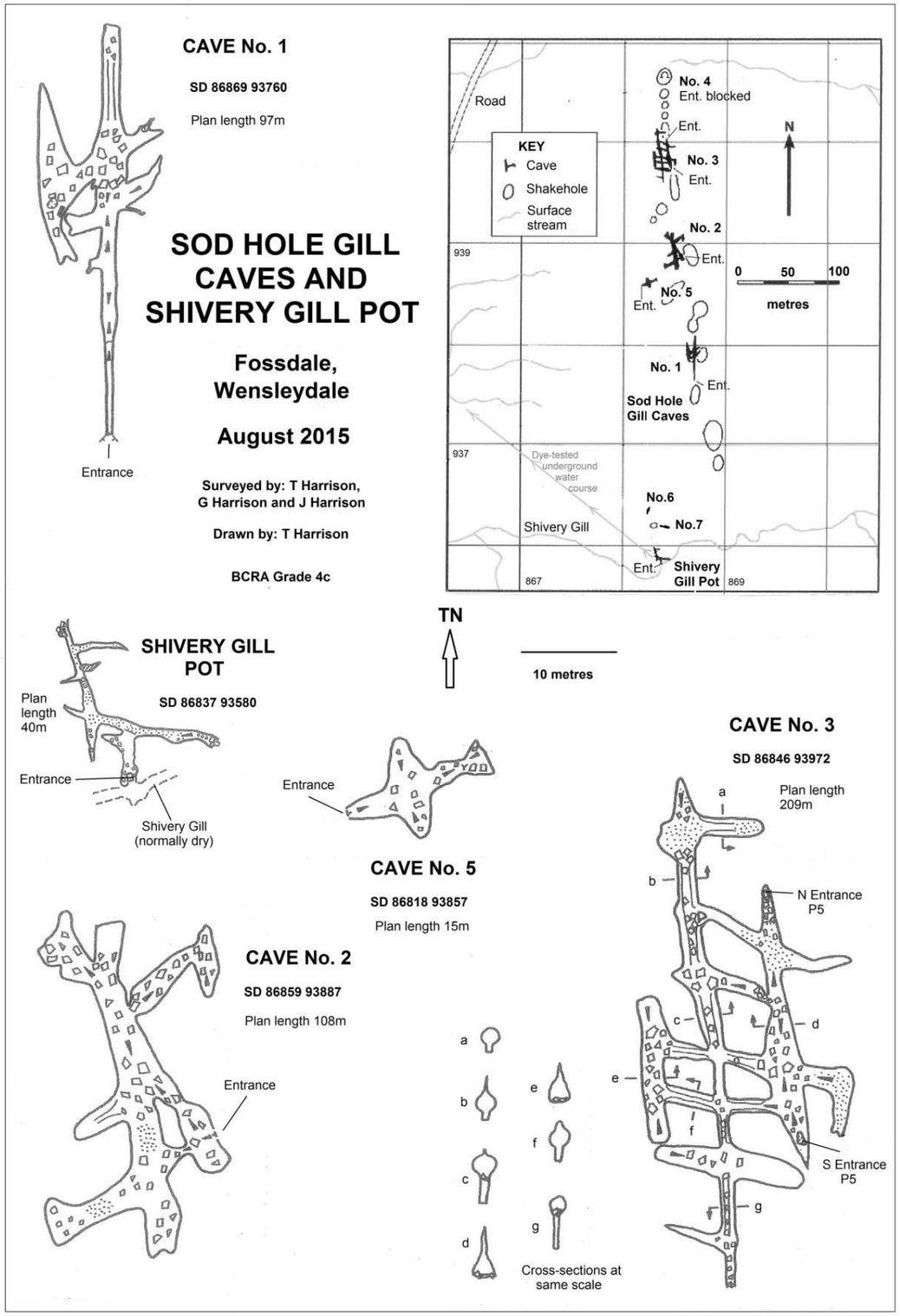
We still ignore the bureaucracy that smothers many caving organisations, having no subscriptions, no meet lists, and relatively few social occasions. But we do still get underground! And when we do it's usually with a spade and a drill, or a compass and Disto. The results are described herein. As always it's an eclectic mix of all-sorts, with just a bit of a geographical structure to the layout to help you find your way around. Enjoy the read!

2. WENSLEYDALE

Sod Hole Gill Caves

Tony Harrison writes:

Sod Hole Gill Caves, on a Great Limestone bench on the east slopes of Fossdale in Upper Wensleydale, have been known about for many years and *Northern Caves* (1988 edition) tells us that caves no. 1, 2 and 3 were explored by the NPC in 1958, with ULSA adding no. 4 in 1967 and YURT no. 5 in 1972. (Additionally, the Swaledale Mountain Rescue Team's records note that on 14 April 1974 there was the "recovery of body from pothole at Sod Hole Gill"!). However no surveys of the caves appear to have survived or to exist and so in 2015, in order to fill this gap and a few spare afternoons, I surveyed them all (assisted by my son and 12-year-old grandson for no. 2). So that the surveys don't just remain only on my laptop until the end of time, they are reproduced in this journal. More importantly, the re-exploration of the caves not only confirmed their phreatic nature, but from their morphology and relative locations also confirmed they are all of hypogenic origin.



3. SWALEDALE

3.1. THE CAVES OF BIRKDALE AND NATEBY COMMONS

Tony Harrison writes:

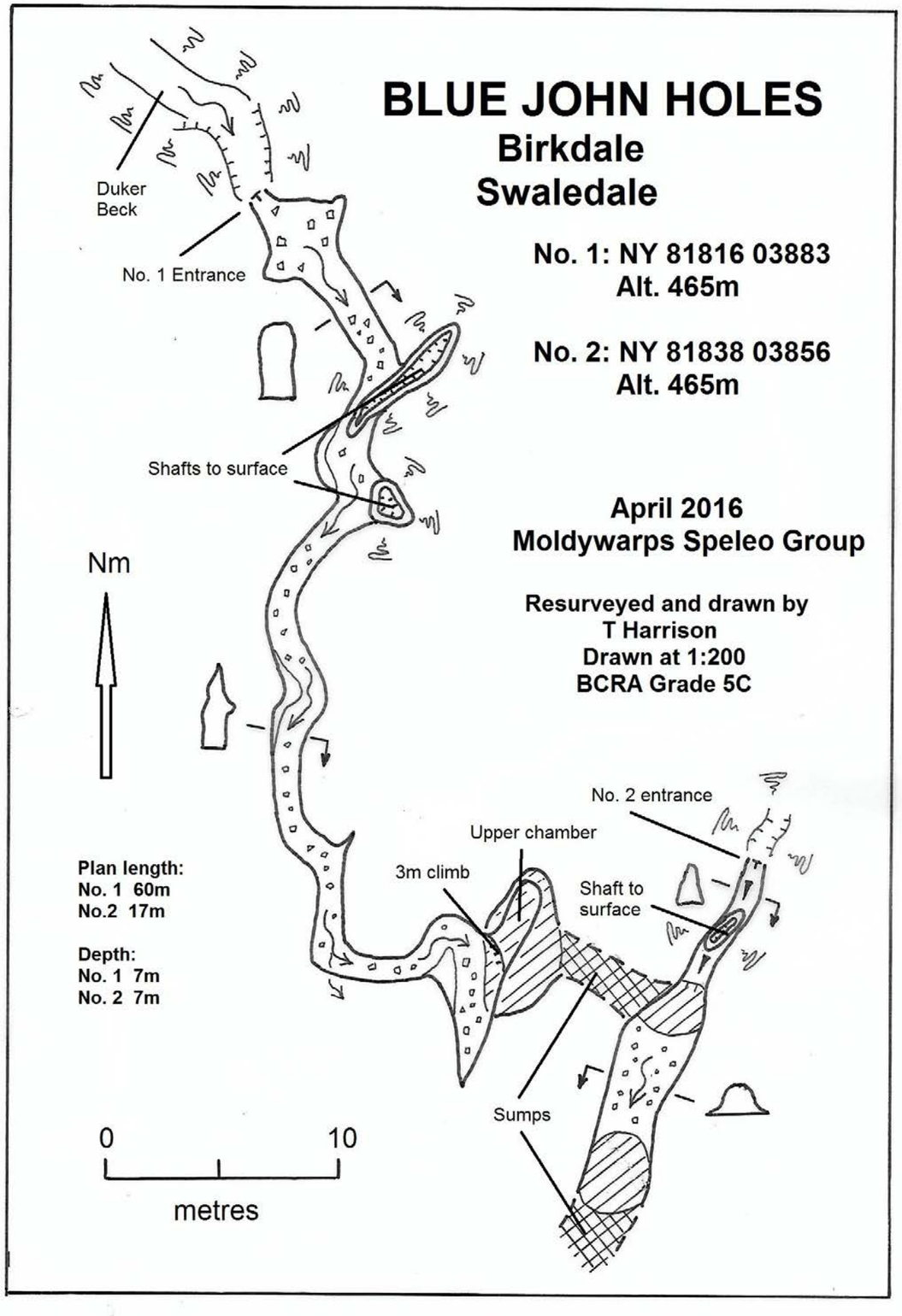
On the watershed between the northern end of Mallerstang and Upper Swaledale, where the Kirkby Stephen-Keld road reaches its highest point, is an interesting if limited stretch of the Great Limestone. An approximately 2km² rectangle of limestone pavement here, an area called Nateby Common, is peppered with shakeholes and vertical shafts. The holes called Tailbrigg Pots, Hollow Mill Pot and Fells End Pots are perhaps the major openings but there are several more. None however appears to have developed horizontally from the foot of the shafts, many of which reach a depth of between 20 and 40m. Most were first explored by the YRC in the late 1920s. No significant stream flows into any of the pots.

About 2km to the south-east, to the north of the surfaced road, is another smaller area of limestone with one known major cave system, a stream passage called Blue John Holes. Its resurgence, near the road, is one of the major sources of Birkdale Beck, later to become the infant River Swale.

In 2016 and 2017 two cavers, myself and John Cordingley of Craven Pothole Club (CPC) and Cave Diving Group (CDG), individually took an interest in this area.

Blue John Holes

My initial interest was simply to fill a gap in our list of cave surveys; here was a significant cave, slap in the middle of Moldywarps country, which didn't appear to have a survey, although the cave is accurately described in *Northern Caves*, even in the early 1974 edition. (There is no indication of who the early explorers were – but see below!). My solo survey, in the spring of 2016, of the two parts of the cave that are separated by a short sump, was without incident, and the result is recorded for the first time in this journal. (I say without incident, but there was one moment of dismay when I jumped in Cave No. 2 from a ledge for a distance of about 4 feet to land not on small cobbles as I had presumed but on the belly of a decaying sheep whose squelching and smelly innards reached up to my knees).



Since my quick look at Blue John Holes in 2016 John Cordingley has checked through the Cave Diving Group's Newsletters (CDG NL) and uncovered a little about the original exploration of these caves as follows:

23-10-76: Dave Morris - CDG NL 42 (Jan 1977) page 12:
BJH No1: Downstream Sump: dived for 7 m (to -1.5 m) to complete choke of boulders.

BJH No2: Downstream Sump: dived for 21 m to where it's too low. But noted that water was high and that normally the terminus is only 3 m in.

13-06-76: Paul Atkinson - CDG NL 43 (April 1977) page 8:
BJH No1: Downstream Sump: same findings as Dave Morris but not reported until after DM's dive.

(So note that Paul Atkinson was the first to dive BJH No1 and Dave Morris was the first to dive BJH No2).

Blue John Risings

Earlier than my 2016 visit to Blue John Holes, in February and March 2016, John Cordingley made some visits to the area and to the resurgence of Blue John Holes, about 40 years after the first visit to the rising by a CDG member way back in 1976. Then it was dived from the resurgence in a shakehole for about 20m to surface in another nearby shakehole where the water goes underground again before its reappearance upstream in the sump of Blue John Hole No. 2. John made four visits to the resurgences in February and March 2016, first repeating and surveying the 19m short resurgence sump (Blue John Risings) between the shakeholes. A note of his first dive in February 2016 is in a CDG Newsletter (CDG NL199 (April 2016) page 2) and is as follows:

BLUE JOHN RISING, BIRKDALE (SWALEDALE), N YORKS. NY 81980369

29-02-16 DIVER: J NCORDINGLEY
Bored with inactivity (due to a torn knee ligament) I limped 50 metres from the car to this seldom visited site. Sump indexes since 1961 describe a 22 m long, 1 m x 5 m sump connecting two shakeholes but gives no reference. Northern Caves Volume 3 (1994 Edition, page 238) credits the CDG with exploring it in 1976. R. G. Coe's 1960 article in CPC Journal 2 (6) pages 354-356 gives useful information and a map of this area. From the resurgence I followed an easy 4 m wide bedding 0.75 m high (max -2m) to surface in the next shakehole after 19m. The sump was pleasant in good vis, with lots of flaggy cobbles for snoopies. Line was removed after making a survey.

Northern Caves says the stream originates from "joints" in the upstream shakehole (before flowing into the upstream end of Blue John Rising). Moving aside a few sandstone cobbles has revealed that the water actually comes from a choked underwater bedding plane. My fingers felt like they'd ben dangled in liquid nitrogen by this stage (as Swaledale streams at this altitude are nippy in February) so nothing more was done that day. The new underwater cave was later named **Equinox Hole** (see below). The presumed source of the water is the impressive sink at Blue John Holes some distance away.

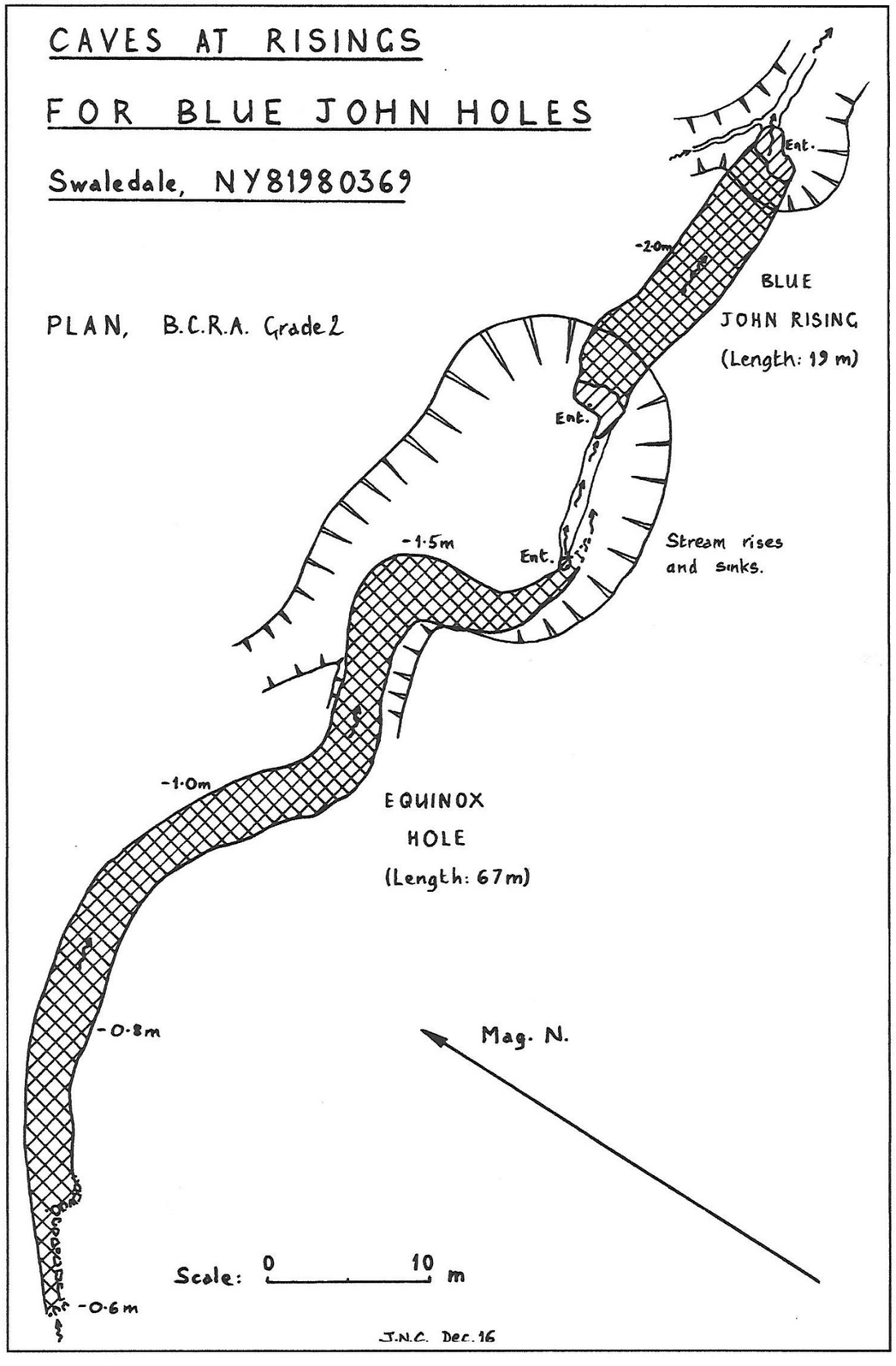
John's subsequent visits to the upstream rising (which he called Equinox Hole as mentioned above) involved an initial swim from the rising for 4m and then, having cleared some obstructions, for 65m to a choke of large overhanging cobbles. Later in the autumn of 2016 when the visibility was better he returned and made a further couple of metres in two dives before deciding the job was too hazardous. On his way out from this last dive he met a large sheep's skull floating just in front of his mask; chances are that it was the same beast that I had intimate contact with about six months earlier! With his generous permission, his survey of the cave is reproduced here, and fuller accounts of the dives have appeared in the CPC Records 122 (April 2016) and 125 (January 2017). John, as always, kept a log of the dives and again he has allowed us to reproduce those of the December 2016 dives here:

EQUINOX HOLE, Birkdale (Swaledale), N. Yorks. NY81980369

04-12-16 DIVER: J N CORDINGLEY
Two summer visits had confirmed that the peaty vis here is as blacker than an astronomical black hole in the warmer months. With winter beginning to bite, the water was finally clearing today. Some digging was needed to re-enter the cave but, despite signs of powerful flows, the line was in good condition. At the choke (61 m from base) a Derbyshire tube was deployed to progress for 5 m, head first, along an alcove in the right wall. All this section has large boulders to the left, with a suggestion of airspace above them. A minor delay whilst belaying the line then caused the vis to reduce, preventing assessment of the safety of the boulders beyond.

06-12-16 DIVER: J N CORDINGLEY
A more careful look upwards and leftwards along the line laid two days ago revealed what looked like a roof of boulder clay, as well as the boulders seen previously. A further metre of progress was made at the end but the alcove being followed under the right wall was becoming smaller, so the suspect roof was now almost overhead rather than to the side. At the point reached (67 m from base, at -0.6 m) there is a restriction; it may be passable but I didn't fancy it with poised cobbles overhead. It's not an easy place to start a dig either, so the Derbyshire tube and the line laid from it were recovered for use elsewhere, before making an uneventful exit. (The in situ line therefore ends at 61 m, as previously.) Sheep bones were noted in the upstream half of the sump, so today's terminus probably is still on the main Blue John Holes flow (despite the comments to the contrary in CDG Newsletter 199:3-4). The survey (both of Equinox Hole and Blue John Rising) is likely to appear in CPC Record 125, in January 2017.

John recalls that he tried very hard in 2016 to find who first dived Blue John Rising, but failed. In a nutshell it had certainly been explored by 1981 as the sump index published that year contained a description which John found (in 2016) to be fairly accurate. At the time John contacted Dave Morris and Paul Atkinson (living in America!) and both said they weren't the ones who dived the rising. There is no contemporary dive log describing the original exploration in Newsletters either. So the exact history of the rising itself remains unknown.



Dye testing on Birkdale and Nateby Commons

It was in December 2016 when John and I got in touch with each other, and John expressed the view that more water may be entering Equinox Hole (from somewhere between the entrance and the final obstruction) in addition to that from Blue John Hole. It's quite likely that in the reduced visibility a side passage had been missed. So John was keen to see some dye testing done on other sinks in the area and I took the job on.

John thought water may be finding its way from one of the Fells End Pots to Equinox Hole, or alternatively from the Tailbrigg Pots. Both groups of holes are essentially on the Eden/Swale watershed and could drain in any of three directions: to the north to Rigg Beck, to the west to Kitchen Gill, or to the east to Uldale or Duker Becks and hence to the Swale. The problem was that being on the watershed no streams ran into any of these sinks and so water tracing could be a bit of an uphill battle (sorry – a bad metaphor in this case) even in the winter season. Eventually I found trickles of water running into Hollow Mill Pot (just south of the Tailbrigg Pots) and into a shakehole just east of the main Fells End Pot (but not into the pot itself). So in two separate tests I stuck dye into both of these, with seven activated carbon detectors at various possible resurgences (the same seven places in each test). All fourteen detectors, when eluted, were negative. So the underground water flows in the area remain a mystery. As John says in CPC Record 125: "The hydrology of this area really does need sorting out". In case someone eventually does that, he/she may find the details of my tests of some use, so they are recorded below:

TEST 1

Dye used: 200g fluorescein. Detectors: 25g activated charcoal.

Dye entry point: Hollow Mill Pot NY 81046 04576 Alt. 503m

Time: 1600hr. 10-1-17.

Dye detection points:

1. Equinox Hole	NY 81962 03686	Alt. 460m
2. Duker Beck above junction with Uldale Beck	NY 82035 03615	Alt. 457m
3. Uldale Beck above junction with Duker Beck	NY 82014 03572	Alt. 461m
4. Kitchen Gill	NY 79990 04744	Alt. 422m
5. Rigg Beck rising	NY 81212 05151	Alt. 450m
6. Resurgence on S side of Rigg Beck	NY 81157 05309	Alt. 440m
7. Rigg Beck below points 5 and 6.	NY 81157 05316	Alt. 439m

Detector collection: 97 hours after dye addition.

TEST 2

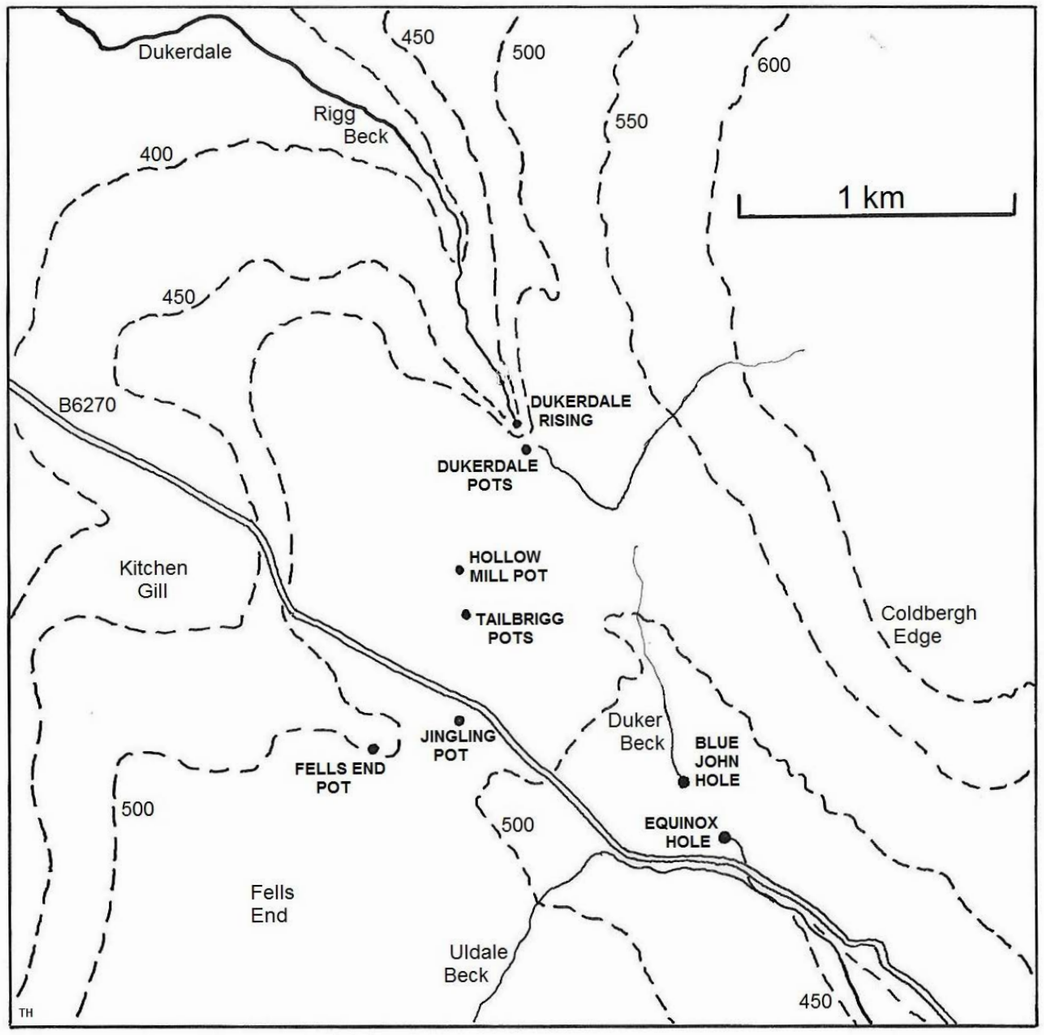
Dye used: 500g fluorescein. Detectors: 25g activated charcoal.

Dye entry point: Shakehole E of Fells End Pot NY 80748 04035 Alt. 492m

Time: 1300hr. 18-1-17.

Dye detection points: As Test 1.

Detector collection: 74 hours after dye addition.



Location of caves on Nateby and Birkdale Commons

While up in this area it struck me that locating the pots and caves with 8 or 10 figure grid references (to replace the 6 figure ones in *Northern Caves*, 1994) could be of use, and in doing so I could keep an eye open for any "new" pots (although usually I didn't have gear with me to descend any). I did just that and then wrote it up in guidebook-speak. This eventually found its way to the authors of the revised *Northern Caves* guide published later in 2017, and hopefully was of some use. The list also includes one or two new holes worthy of poking into by someone in the future (note particularly the Tailbrigg Neck holes). So again for future explorers I include the list below. And to again quote John Cordingley from CPC Record 125: "There is certainly more cave to be found in the vicinity".

January 2017. Extended and revised from descriptions in the Brough Section of *Northern Caves*, Vol. 3 (1994). All 8 or 10 figure NGRs are from recent GPS readings.

BLUE JOHN HOLES **Grade I**

1. **NGR NY 81816 03883** **Alt. 465m**

Length 60m **Depth 7m**

GL. Obvious sinkhole with trees, up dry valley beyond sheepfold. Large entrance to roomy streamway passing daylight holes after 12m and continuing to sump, completely choked 3m in at 1.5m depth. Climb above sump enters small aven.

2. **NGR NY 81838 03856** **Alt. 465m**

Length 23m **Depth 11m**

GL. Entrance 37m SE of 1. Slide down mud slope to foot of 8m circular shaft from surface, and drop into stream, entering from sump on right which is near choked sump in 1. Downstream is hands and knees crawl for 18m lowering to second sump, too low after about 3m.

BLUE JOHN RISING

Upper entrance **NGR NY 81971 03691** **Alt. 459m**

Lower entrance **NGR NY 81985 03684** **Alt. 459m**

Explored 2016, CDG.

Length 19m

GL. No accessible cave for non-divers. Stream emerging from Equinox Hole sinks in same shakehole after 10m. Sump is up to 2m deep, emerging from pool in adjacent shakehole.

DUKERDALE CAVE **NGR NY 81206 05236** **Alt. 476m** **Grade II**

Length 15m

GL. At foot of cliffs on N side of Dukerdale, near usually dry waterfall at valley head. Two small entrances above rising, connected by easy dry passage, with tight crawl on left to choke.

DUKERDALE POTS

Explored 1967, GC.

GL. Small pots near head of Dukerdale. **Grade II**

1. **NGR NY 81341 05137** **Alt. 495m**

Depth 11m

In deep shakehole near sink of Rigg Beck. Squeeze under rock bridge to 4.5m pitch into small rift chamber, from which further pitch of 6m descends to choke.

(2. Not found in 2016. From 1994 *Northern Caves* guide with no precise NGR: A few shakeholes N of 1 is a choked 9m pitch**)**

5. **NGR NY 81254 05095** **Alt. 494m**

Depth ?

(Not in 1994 *Northern Caves* Vol. 3; still to be explored). To W of Pot 1 in shakehole on other side of Rigg Beck is a shaft……..?

EQUINOX HOLE **NGR NY 81962 03686** **Alt. 460m**

Length 67m

Explored 2016, CDG.

GL. No accessible cave for non-divers. Sump descends 1.5m in 10m, thereafter gently rising, and extends with no air space to boulder blockage.

FELLS END POT **NGR NY 80726 04034** **Alt. 495m** **Grade II**

Depth 38m

Also once known as Kitchen Gill Valley Pot.

GL. Entrance in upper of double shakehole within fenced enclosure near to small stream sink to E. First pitch (9m) into large rift which descends to choke, but second pitch (8m) through small hole at foot of pitch enters small, dry chamber. Third pitch (18m) follows immediately, and has tight take-off, into blind shaft.

Fells End Pot No. 2 Not found in 2016.

HOLLOW MILL POT **NGR NY 81046 04576** **Alt. 503m** **Grade II**

Depth 30m

Explored 1929, YRC; extended 1959, CPC.

GL. One of several shafts (Tailbrigg Pots) into which stream flowing from E sinks. Open pot 6m deep, then shute down onto main pitch at foot of which stream sinks in choked rift. Alternative entrance 4.5m W of open pot, narrow 4.5m fissure and then 15m pitch, followed by tight crawl opening half way down main pitch.

JINGLING POT **NGR NY 80957 04093** **Alt. 498m** **Grade II**

Depth 9m

GL. To S of Keld-Kirkby Stephen road, further E than Fells End Pots. An obvious open fluted shaft within fenced enclosure, choked at the bottom.

TAILBRIGG NECK POTS

Not yet explored.

GL. Two small pots in double shakehole at head of Kitchen Gill.

No. 1 **NGR NY 80439 04190** **Alt. 490m**

Small hole at side of upper shakehole.

No. 2 **NGR NY 80435 04196** **Alt. 490m**

Tight hole at bottom of lower shakehole.

TAILBRIGG POTS **Grade II**

Explored 1929, YRC.

GL. Several potholes in lower of two large fenced enclosures at E edge of Tailbrigg limestone pavement N of Keld-Kirkby Stephen road, including Hollow Mill Pot (see separate entry).

No. 1 **NGR NY 81004595** **Alt. 505m.**

Depth 23m

Deep fluted open shaft choked at bottom a few metres N of Hollow Mill Pot.

No. 2 **NGR NY 81041 04567** **Alt. 507.**

Depth 20m

Open blind pot a few metres S of Hollow Mill Pot.

No. 3 **NGR NY 81033 04535** **Alt. 505m**

Depth 8.5m

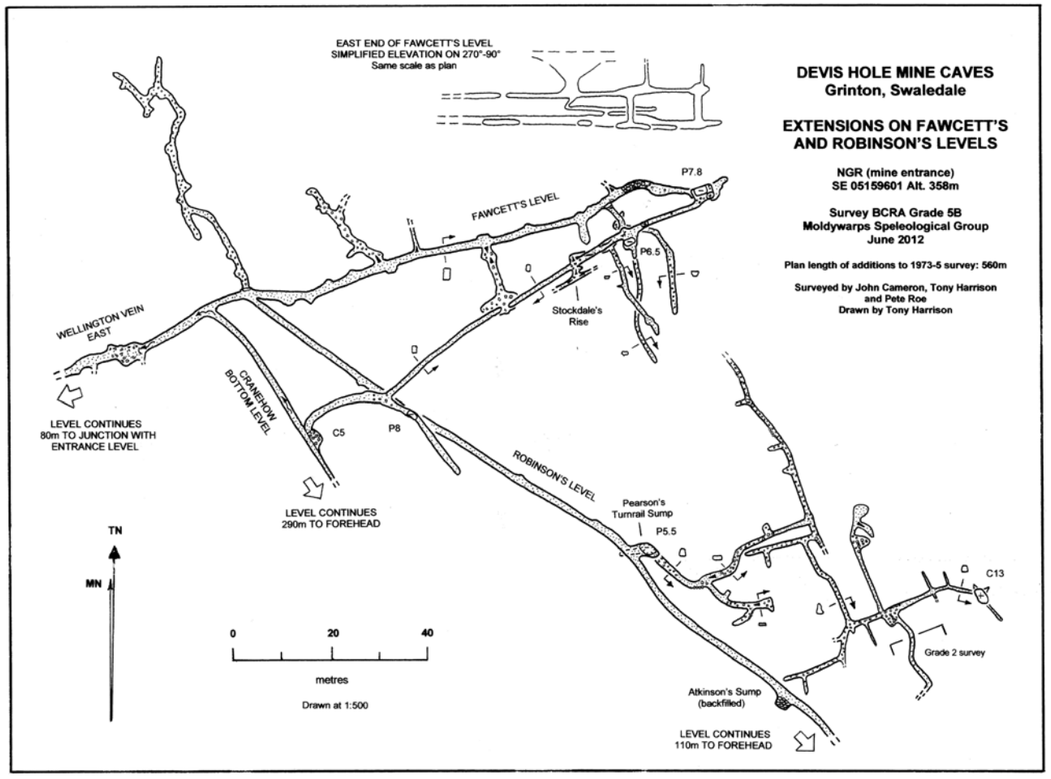
A few metres further S again is pothole which can be entered by scramble down rift to small chamber.

Other pots in same depression are also all choked at foot.

3.2. DEVIS HOLE MINE CAVES

Tony Harrison writes:

The exploits of MSG members in Devis Hole Mine Caves near Grinton in Swaledale fill large sections of MSG12 and MSG13 (9 pages in the former and 5 pages in the latter). In MSG13 is a line survey of the complete system, and both journals have a number of larger-scale surveys of important parts of the system. However for the simple reason of my lack of administrative competence, one of these more detailed survey sections (from 2012) was missing from MSG13 – that of the mine and natural passages near Fawcett's and Robinson's Levels. To fill the gap the survey appears herein.



Devis Hole Mine Caves were closed to the caving world throughout most of 2020 following Storm Ciara in February of that year. Massive flooding in Cogden Gill caused the entrance shaft to collapse and the first section of the mine adit to fill with debris. In early 2021, thanks in part to the local availability of a large mechanical digger, Pete Roe, Chris Curry and friends managed to re-excavate the entrance and fit it with several sections of concrete pipe set at a sloping angle, so allowing access once again.

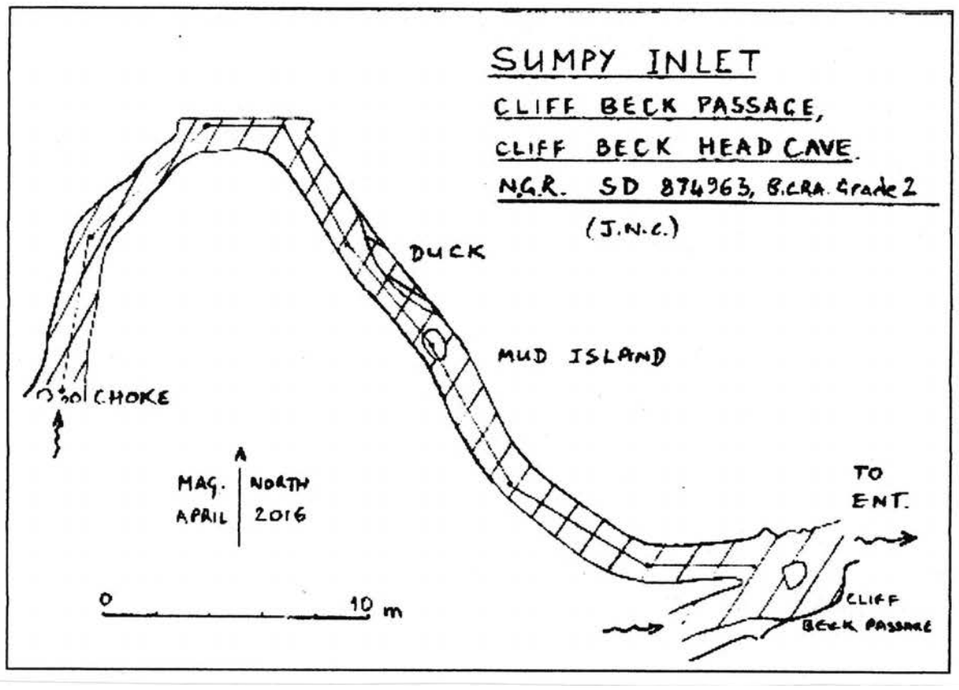
3.3. CLIFF BECK HEAD CAVE

John Cordingley writes for MSG14:

This cave and the surrounding Buttertubs are covered by a very good article and survey in MSG Journal 7 (1974) pages 13-15 & 34. It inspired me to go and take a look early in 2016. There are two ways on just inside the cave entrance; that to the left (Cliff Beck Passage) carries the main flow of water and has an inlet on the right. The MSG survey showed this inlet ending at a sump after 8 m. It was a cold day and there was a strong draught disappearing into the inlet. Draughts don't blow through sumps so it was earmarked for a closer look (with more appropriate gear) on a future visit.

The return match happened in April the same year, this time on a warm day. The inlet was still draughting but the air was blowing strongly out from the inlet. Dressed in plenty of cosy neoprene, what was previously thought to be a sump was passed as a duck. 30 m of passage followed beyond the end of the original MSG survey to a partial mud choke. This could be dug but the priority was to make a Grade 2 survey. I had a compass but nothing to write on, so the numbers all had to be memorised then written down back on the surface. The total estimated length of the inlet was 38 m.

The survey showed the new bit (which I called "Sumpy Inlet") ends just about under Buttertub No. 3b. The plan is available – and is reproduced here – along with a short description, in CPC Record 123 (July 2016) pages 9 & 10. A short report also appeared in CDG Newsletter 200 (July 2016) page 2, mainly so the description can be updated whenever the next CDG Northern Sump Index is published.



There was more water in Sumpy Inlet than the tiny seepages descending Buttertubs 2 & 3 that day, so perhaps some water comes from further afield? Also of interest, Cliff Beck Passage was so named by Pete Ryder and friends because it was thought its stream is derived from the main sink in Cliff Beck. However on my April visit there was a great deal more water flowing in this passage than was sinking in Cliff Beck. The Beck was fairly peat stained whereas the stream in Cliff Beck Passage was very clear. Perhaps there is rather more to find in Cliff Beck Head Cave (now 165 m long in total) than was believed when the 1974 MSG work here was done. One for a future Moldywarps hit list, maybe?

The excavated cave entrance at Grinton Smelt Mill Rising in sandstone below the Great Limestone.

3.4. GRINTON SMELT MILL RISING

SE 0494 9634. Alt. 330m. Length 20m and growing!

Cavers have noticed with interest over the years the strong stream rising just upstream of Grinton Smelt Mill on the west bank of Cogden Gill. This was once the water supply for Grinton Youth Hostel and was capped with a manhole cover; fortunately the hostel is now connected to the mains water supply so allowing potential investigation of the flow in Cogden Gill. The resurgence is one of the largest on the south slopes of upper Swaledale, usually rivalling Cliff Force, Snowden Gill and Crackpot in intensity.

In April 2021 the presence of a mechanical digger in the vicinity (see Devis Holes account above), and the helpful approval of the local gamekeeper gave a wonderful opportunity to probe this resurgence a little. After removal of a fair section of the stream bank the water was found to flow horizontally out of the hillside from a little further upstream than the capped manhole, through cracks and faults in the sandstone stratum one or two metres below the Great Limestone. A major dig, initially involving the chemical removal of large sandstone blocks and currently chunks of limestone just above the sandstone, is now underway and has lots of potential. Dye testing a few years ago shows that at least some of the water comes from the short natural streamway found under the entrance adit of Grovebeck Mine some 2.2km away with a fall of 78m, taking the dye about 24 hours to traverse. (See MSG13).

3.5. SNOWDEN GILL CAVE

SD 929955. Alt 450m. Current length c.430m, vertical range 8m. Grade 4.

The exploration

Snowden Gill is one of the largest resurgences on the south slopes of the River Swale, often rivalling Cliff Force, Crackpot and the Grinton Smelt Mill Rising in the volume of water emerging. It's attracted the attention of local cavers several times over the decades but only in relatively recent times has a degree of success been achieved. The resurgence itself does not look promising, as a wide spread of fast-flowing water with no obvious main outlet gushes from a tumble of large boulders at the foot of the Great Limestone. A major fault crosses the hillside hereabouts so it is not always clear where one rock stratum ends and another begins; in short the area is a geo-hydrological nightmare.

The caving story probably starts in about 1986 or 87 when Pete Roe and Dave Hobbs gave the site the once-over and shifted a few boulders around with no apparent success. It was in 1991 when a more determined effort was made by Pete and other members of MSG and the Orpheus Club by digging in boulders a few metres above the main widely-spread resurgence outflow. The dig continued for

The original (1991) entrance to Snowden Gill, no longer in use (Alan Woodhead).

several months absorbing a reasonable quantity of scaffold poles and miscellaneous chunks of wood with about 10m metres of slightly downhill progress made to reach lots of flowing water and very limited air-space. Frequent roof collapses tended to discourage further progress and the dig was abandoned for better prospects elsewhere in late 1991 after the excavation of about 20m of passage.

In 2015 interest was revived when Pete and Tony Harrison revisited the site and decided that a dig at the bottom of a nearby shakehole about 15m up the hillside beyond the rising may prove a better prospect, particularly as the shakehole seemed to lie just beyond the frustrating boulder-filled area where the old dig had ground to a halt. It took the best part of a year to dig a 3m-deep vertical shaft at the bottom of the shakehole, which was carefully lined with concrete pipes, fitted with an iron-rung ladder and tastefully capped in June 2016 with a Yorkshire Water metal manhole cover.

The space uncovered at the bottom of the shaft, while hardly cavernous, led relatively easily further into the hillside as a low crawl floored with small streams of water flowing out of low channels at the foot of the passage walls. A little way along a larger flow from below the left wall disappeared under the right wall via a gap large enough to squeeze damply through lying on your back (the Wet Wallows). Beyond was a large pool and a low sump, but off to the left was another short crawl into a boulder-strewn chamber well decorated with speleothems (Straw Chamber), first reached in September 2016.

The new entrance shaft to Snowden Gill, the construction of which developed into a significant engineering feat (Alan Woodhead).

And beyond this chamber was another space high enough to stand up in (Boulder Chamber) with a considerable flow of water across the floor. Moving beyond the entrance point of the water proved a difficult problem requiring a little chemical persuasion now and then, and access along the subsequent low passage for 20m or so to a four-way junction took until October 2017. In the intervening period a dig upwards at the start of the Wet Wallows eventually gave access to a higher-level chamber (the First Attic) which in turn gave another entry point to Boulder Chamber so avoiding the damp misery of the Wet Wallows. Progress beyond the four-way junction seemed increasingly difficult so attention turned to wide cracks leading off the west wall of the First Attic. From January 2018 relatively rapid progress was made along these to the Third Attic (the Second Attic is a small chamber beyond Boulder Chamber), but by December 2019 the effort required to reach the farthest explored point was such that visits dwindled in frequency and attention began to turn elsewhere. And in February 2020, dictated in part by Covid-19 social restrictions, visits to the cave dwindled to zero. To date we have a tortuous set of cave passages adding up to a plan length of about 430m and a vertical range of 8m, with progress beyond the farthest point probably fairly reasonable to achieve for those prepared and able to make the effort to get there.

Work continued in Snowden Gill throughout the mosquito-ridden summer of 2016 and the subsequent snowy winter (Alan Woodhead).

Alan Woodhead entering the Wet Wallows in Snowden Gill Cave – backwards (Tony Harrison).

Straw Chamber in Snowden Gill Cave (Alan Woodhead).

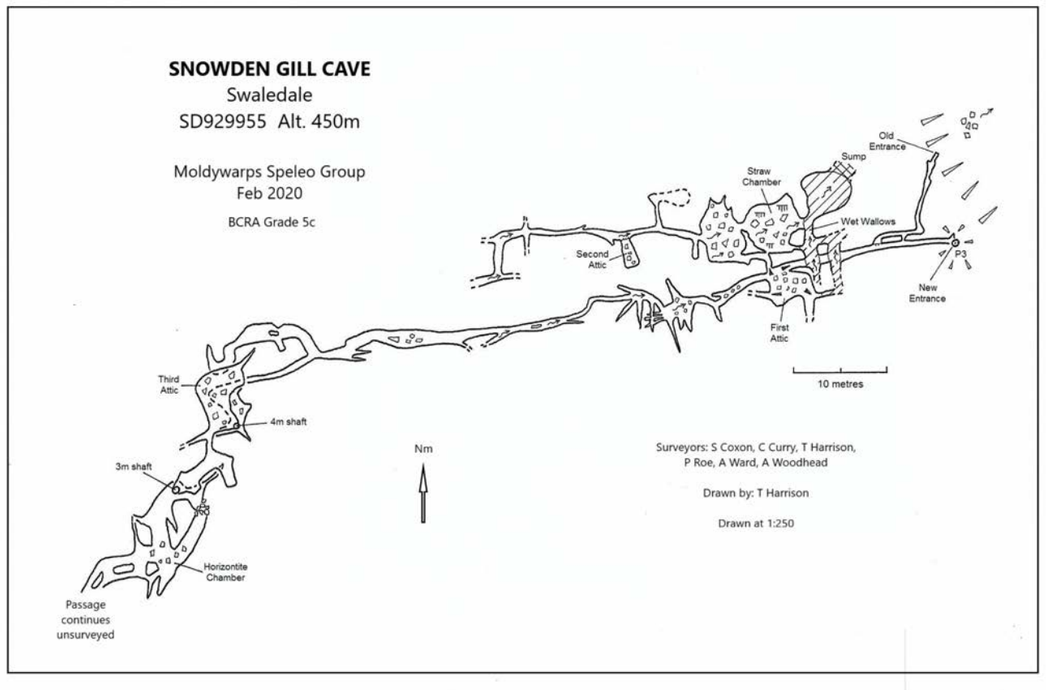
Snowden Gill below the resurgence, showing the response after heavy rain (Alan Woodhead).

Conditions in Snowden Gill Cave tended to be tight .... or wet!

Chris Curry negotiating a damp section of Snowden Gill Cave (Alan Woodhead).

Tony Harrison surveying near Boulder Chamber in Snowden Gill Cave (Alan Woodhead).

Occasionally Snowden Gill Cave provides cavers with a little open space. Chris Curry in the Third Attic (Alan Woodhead).



The hydrology of Snowden Gill

Tony Harrison writes:

The Snowden Gill resurgence is one of four large resurgences on the south slopes of Swaledale (the others being Cliff Force, Crackpot Cave and the Grinton Smelt Mill resurgence) and the source of its considerable flow of water gushing out of a large pile of boulders has intrigued cavers and geologists for many years. It was in fact back in March 1959 when the first attempt was made, by Jack Myers (a noted caver of the time), to investigate this. He thought that, because of the slight dip of the Great Limestone to the north (at about 1 or 2 degrees) in this area, water falling on the south side of the Wensleydale –Swaledale watershed may emerge in Swaledale. He tested his theory by digging for 3 hours to divert the waters of Whity Gill into a nearby shakehole and then added copious amounts of fluorescein. It worked! Several hours later he observed the dye flowing out of the Snowden Gill rising (this was long before any cave had been unearthed beyond the rising) and also noted a significant increase in the rising's flow rate. This was the first of several confirmed "trans-interfluve" connections now known between Wensleydale and Swaledale (9 at the last count), as even though the bulk of the water flowing down Whity Gill normally continues down into the River Ure Myers had shown that water sinking in adjacent moorland can indeed then flow to the north.

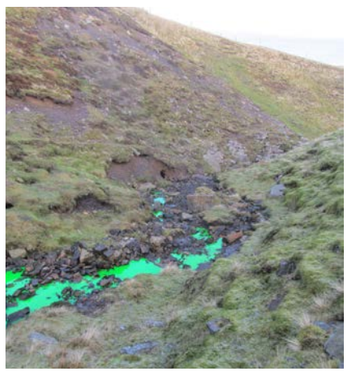
The experiment was confirmed in late 1991 when Pete Roe and the BCRA Hydrology Group put dye down one of the Whitfield Fell pots (probably No. 4, the largest of these pots) which lies some 1.3km east of Myers' injection point, and detected the dye at Snowden Gill. A third successful test was carried out by the writer early in 2020 at a stream sink in the peat on the Wensleydale side of the moorland of Askrigg Common, still further to the east.

More dye tests over a period stretching from 1960 to 2019 were less successful and showed that water sinking near Satron Tarn and at sinks in Routin Gill, Stony Gill and on Broad Mea Top all flowed down the fall lines to emerge lower in the respective gills. However these experiments have helped to define the "boundaries" of the Snowden Gill catchment area. This appears to be an expanse of around 6km^2 covering a large part of both Askrigg and Oxnop Commons on both sides of the watershed. Much of the eastern section of this area is capped not by the Great Limestone but by a thin Little Limestone bed which is separated from the Great Limestone by equally thin layers of sandstone and shale. It seems probable that the water falling on the Little Limestone (or more correctly the glacial and post-glacial deposits above it) finds its way through that bed and then through fractures in the sandstone and shale to reach the Great Limestone and underground streams emerging eventually in Snowden Gill.

On the west section of the Snowden Gill catchment area, on Oxnop Common where the Little Limestone bed has probably faded out, is yet another thin limestone bed, the Crow Limestone, in this case separated from the lower Great Limestone by a significant thickness of shale and sandstone layers including the Ten Fathom Grit. The presence of these impervious beds probably means that in these areas rainfall fails to sink into the Great Limestone until it has flowed a considerable distance down the fell on the surface.

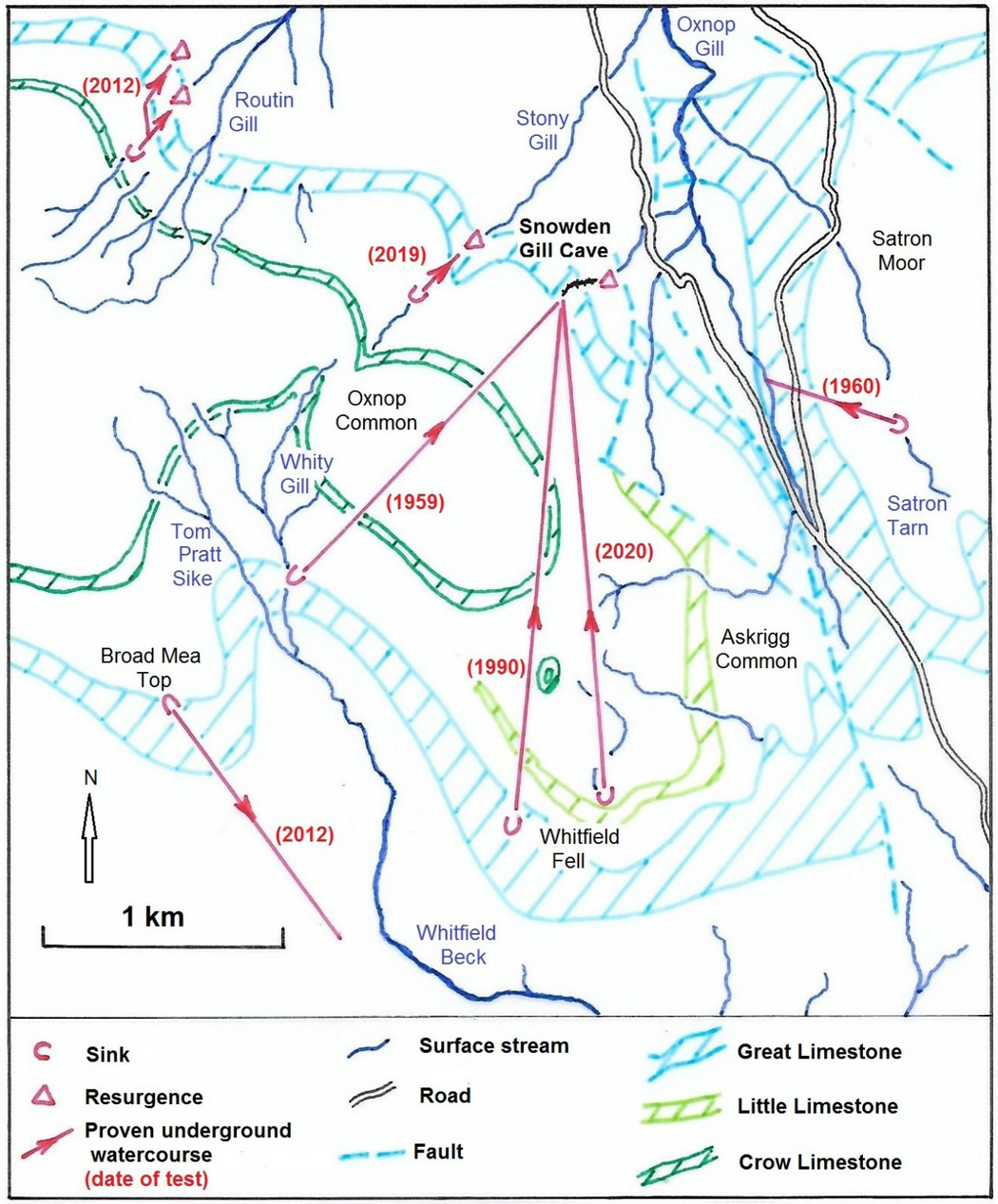
Known details of all these dye tests are in the table below. The attached sketch map indicates the proven flow routes.

Date	Sink	Resurgence – positive result	Dye quantity	Flow time	Fall and distance	Resurgence – negative result
14-15 March 1959	Whity Gill SD91669429, 519m	Snowden Gill rising SD92979551 445m	1.4kg Fluor-escein	About 19hr.	74m in 1.8km	
Easter 1960	"Sink downstream from Satron Tarn". Probably SD942949 515m	"Oxnop Beck". Probably c.SD937951, 460m	"A dispro-portionate quantity"	?	55m in about 500m	
Late 1991?	One of Whitfield Fell Pots c. SD926932 515m	Snowden Gill rising SD92979551 445m	?	?	66m in 2.4km	
12 June 2012	Broad Mea sink SD91119378 513m	Cogill Beck SD91859277 399m. Strong positive	270g Fluor-escein	Less than 22hr.	c.100m in c.800m	Cliff Force rising SD87529605 440m; Snowden Gill rising SD92979551 445m; Whity Gill SD92109273 392m
23 July 2012	Routin Gill central sink SD91029611 519m	Routin Gill (west) rising SD91209632 474m; Routin Gill (far west) rising SD91209648 465m. Both strong positives	450g Fluor-escein	Less than 22hr	c.50m in c.400m	Snowden Gill rising SD92979551 445m; Stony Gill SD92469573 462m; Routin Gill (east) stream SD91329619 480m
31 Dec 2019	Stony Gill Head SD92209549 514m	Stony Gill Beck SD 92579580 446m	140g Fluor-escein	Less than 24 hr	c.60m in c500m	Snowden Gill rising SD92979551 445m
15 Jan 2020	Whitfield Fell swallow hole SD92969337 528m	Snowden Gill rising SD92979551 445m	900g Fluor-escein	26.5 hr	c.80m in c.2.25 km	Whitfield Gill SD93619180 274m; Askrigg Beck SD94619177 287m; Oxnop Gill SD93689490 458m; Spring above Oxnop Gill SD93479522 450m; Stream junction E of Snowden Gill SD93289566 402m



Stream-water containing fluorescein sinking as it reaches the upper rocks of the Great Limestone at Stony Gill Head on the last day of 2019 (Tony Harrison).

Eluted samples from detectors in the Stony Gill dye test. That on the left is from Stony Gill below the Great Limestone and the other samples from the Snowden Gill rising (Tony Harrison).



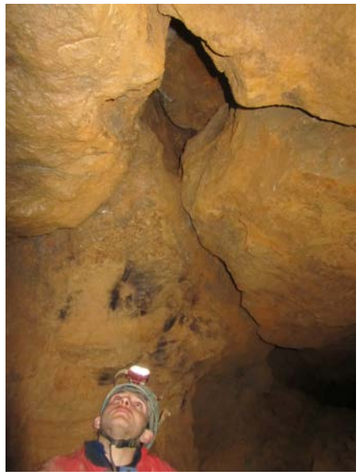
4. ARKENGARTHDALE

4.1. SLOATE HOLE MINE CAVERNS

By Tony Harrison:

Sloate Hole Mine, in Upper Arkengarthdale near the Faggergill Mines, was the last lead mine to be worked in Swaledale and Arkengarthdale. It was started in 1908, after earlier activity in a neighbouring shakehole called Nut Hole, and closed in 1912. When the mine was operating there were three entrances: the original hand-worked passage from Sloate Hole shakehole, the horse level slightly to the east driven a little later, and the entrance to Nut Hole Mine slightly to the west of Sloate Hole. The two mines join up only a short way in to the workings.

After closure it seems that the mine workings continued to be accessible, at least via the original Sloate Hole entrance. John Hardy's eclectic and rambling (but very interesting) book called "*Swaledale: Portrait of a North Yorkshire Mining Community*" and published in 1998, for example, has a fascinating account of how the author, the Methodist minister in Gunnerside in the 1950s and 60s, explored the mine in 1976/77 with his brother and "rescued" two decaying ore trucks for local museums. (His plan of the mine in the book has a "here-be-dragons" feel to it but his written account appears remarkably accurate).



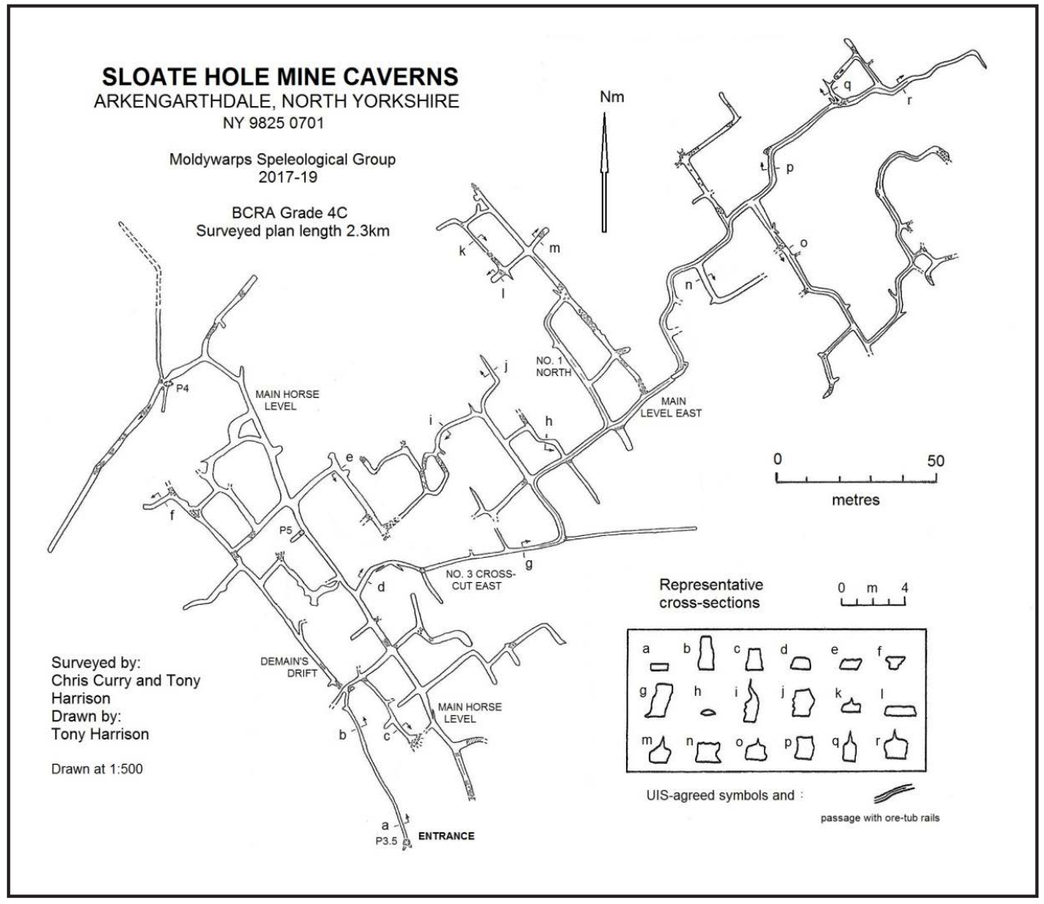
In many places in the mine only the ceiling features indicate the original hypogenic cave origins of the passages. The black marks above Chris Curry's head are from miners' candles. (Tony Harrison).

The original (and present) hand-driven entrance passage to Sloate Hole Mine has now filled to a depth of two-thirds or more with flood debris (Tony Harrison).

Mine enthusiasts probably continued to explore the mine, known to be closely related to a natural cave system, on and off throughout the following years, despite the fact that the entrance passage became more and more silted up (and now in 2019 involves a flat-out crawl). In the late 1990s Pete Roe and friends made several trips down there and Pete became particularly interested in two short "sumps" (vertical shafts dug by the miners below the levels to look for ore), both close to the main horse level. He thought he could hear running water the beneath the base of at least one of them and conjectured that they may link up to natural underground streamways. In 2017 he went back there to have another look, accompanied by the writer, Chris Curry and Annie Eaton. Unfortunately both shafts ended in solid rock, but my imagination had been stimulated. How much of the mine remained unexplored? What was the relationship between the passages used by the miners and the entirely natural passages? Or did the miners just utilize entirely natural passages and not drill or dig any of their own? And did the geomorphology of the passages give any hints of their speleogenesis?

So I pottered back there a few times by myself with a compass and Disto meter to make a full survey, until being joined on the later trips by Chris Curry so making my life much easier. We finished the job in early 2019 with the result displayed in this journal, and with fairly pronounced views on the system's origins.

An unusual feature of the mine is that there are no signs of drilling or explosive activity in any of the passages; most appear to have entirely naturally sculpted ceilings and walls, the latter occasionally widened by hammer and chisel to allow the passage of ore tubs. The minimal size of the spoil heap outside the horse level is also noteworthy, given the relatively large cross sections of most of the passages and the total passage length of over 2.2km. Clearly the majority if not nearly all the passages are natural and seem to have developed around the mineral veins. We have no hesitation, therefore, in fully endorsing the statement made by Dunham and Wilson in Volume 2 of *Geology of the Northern Pennine Orefield* (page 90) when they write: "*the Sloat Hole Level at Faggergill gave access to a network of natural passages along joints in the Main Limestone cutting through a flat. [.....] The lead ore production, [was] largely or entirely got by collecting the residual galena in the clay of the passages....*" Sloate Hole is clearly yet another of the Northern Pennine's significant hypogenic maze caves.



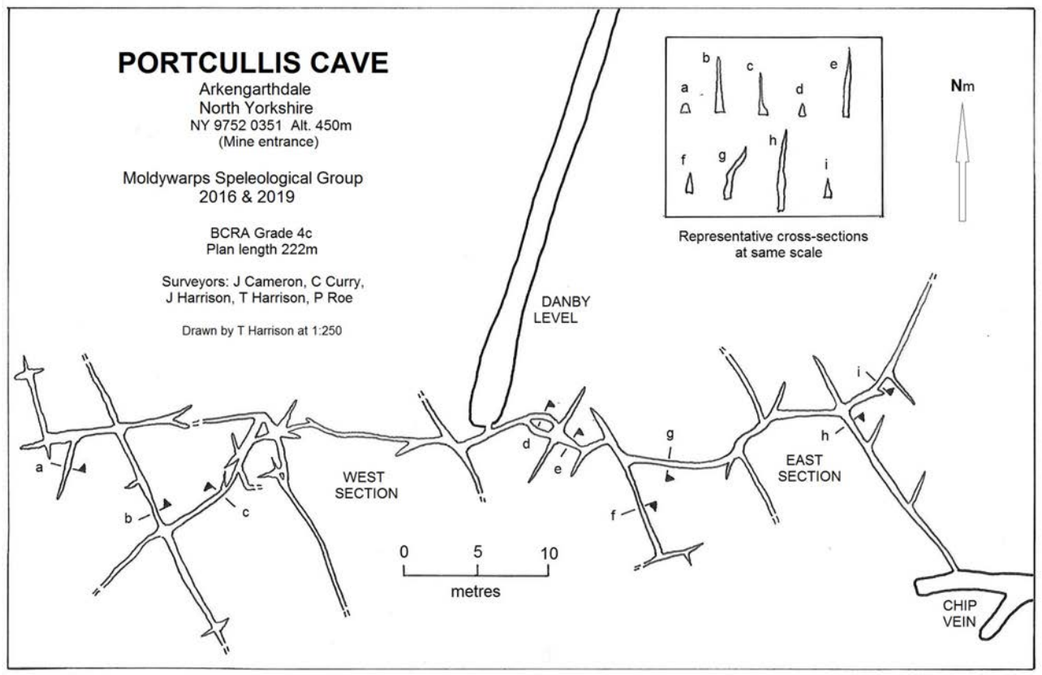
4.2. PORTCULLIS CAVE AND DANBY LEVEL CAVERNS

Tony Harrison writes:

Danby Level, on the south slopes of Upper Arkengarthdale facing Whaw to the north, was first driven in the 1830-41 period and proved to be one of the major 19th century mining endeavours in Arkengarthdale. In 1863 60-70 men were recorded as working in the mine which continued in operation until at least the 1880s. When driving the horse level in 1841 the miners broke into a small low natural passage running at right angles to the main drive, but they did not proceed any further in that direction, moving instead to more profitable ground to the west.

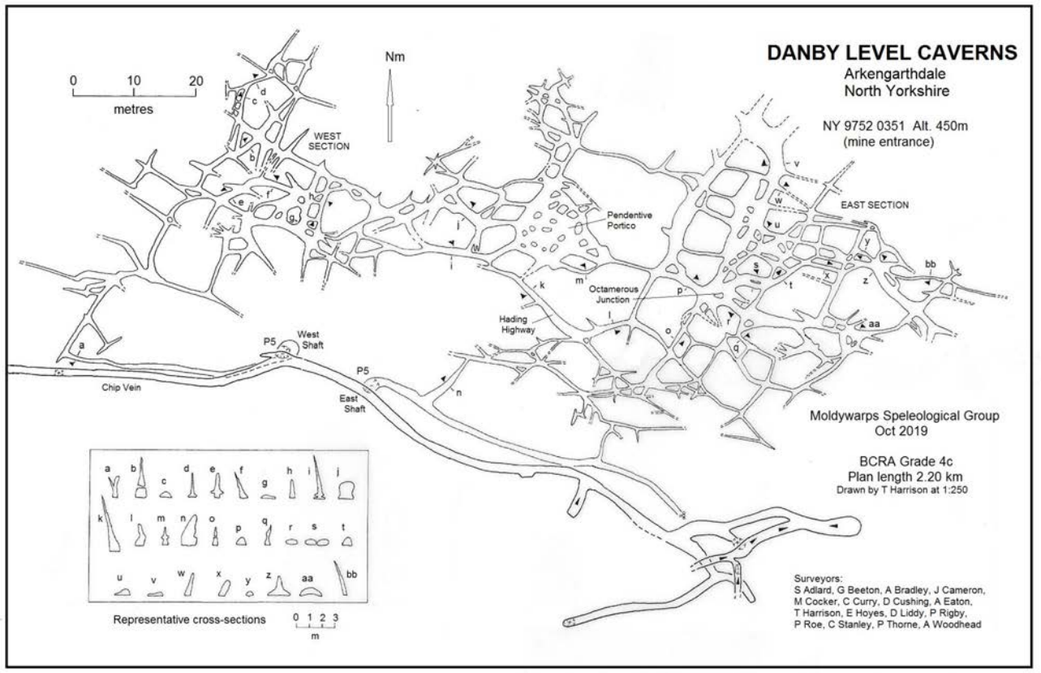
In the 1980s the Earby Mine Research Group, under the forceful direction of Dave Carlisle, opened up many collapsed areas of the mine, including the horse level leading to the unexplored natural passage. Pete Roe, along with other MSG members of the time, had a look at part of the natural passage running to the west, but they only covered 20 metres or so of what proved to be rather tight and difficult rifts. A more thorough investigation of the system to both the west and east of the mine level forehead was carried out by MSG members (Pete Roe, Chris Curry, John Cameron, Tony Harrison and James Harrison) in 2016. The cave was surveyed and called (at the time) Danby Level Caverns, the system proving to be about 220m long, all rather tight and uninteresting. A short account of the discovery was noted in "Descent" magazine at the time.

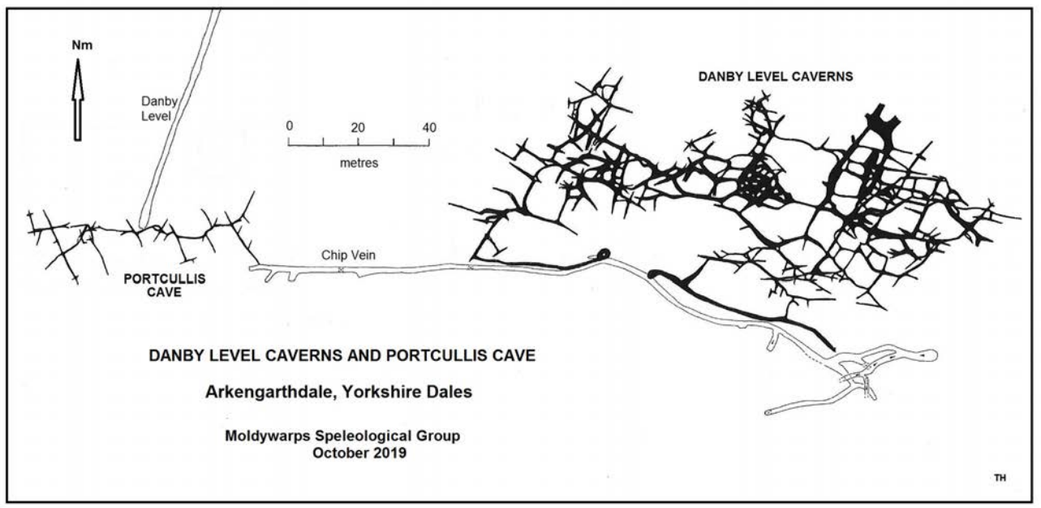
It was in early 2019 that Chris Curry, during another visit to the system, thought that he could see mining debris beyond a tight and narrow rift in the far east of the system, and it wasn't long before he was back with a drill and bits of bang. Access was soon obtained to an old mining passage which at the time nobody knew existed but which was found subsequently from old mining surveys (thanks to Dave Carlisle) to be Chip Vein. The passage led in about 100m or so to holes in the floor reaching more natural passage, immediately identified as another Northern Pennine maze cave, not previously recorded and not entered by the old miners.

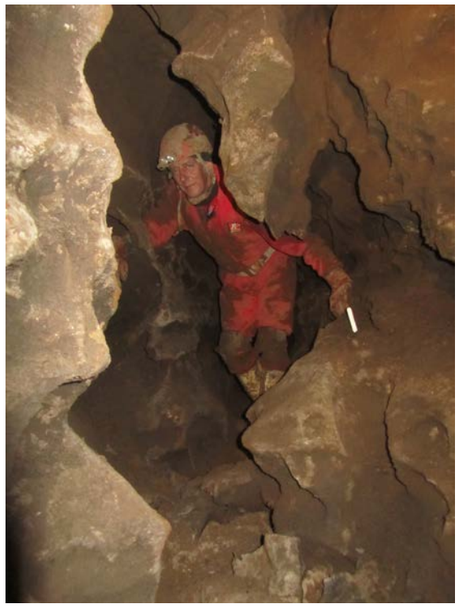


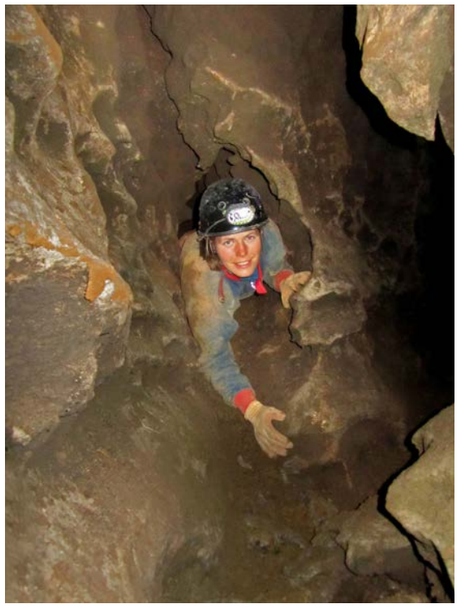
To distinguish between the two sections of natural cave now discovered, the "original" short (220m) section at the forehead of the Horse Level was renamed "Portcullis Cave" and the larger section reached from Chip Vein took on the name of "Danby Level Caverns".

Several interesting exploration and surveying trips were carried out in Danby Level Caverns throughout the rest of 2019. A total of 2.2km of new cave was recorded, much of it on floors sloping up at 10-20° to the north as the block of Great Limestone in which the cave sits is inclined to the south because it is bounded by two slip faults.

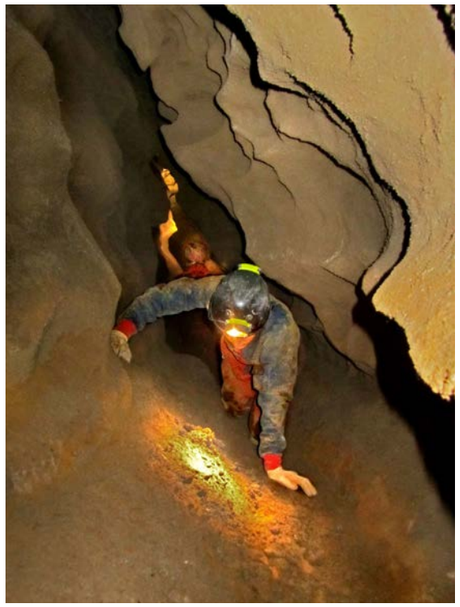




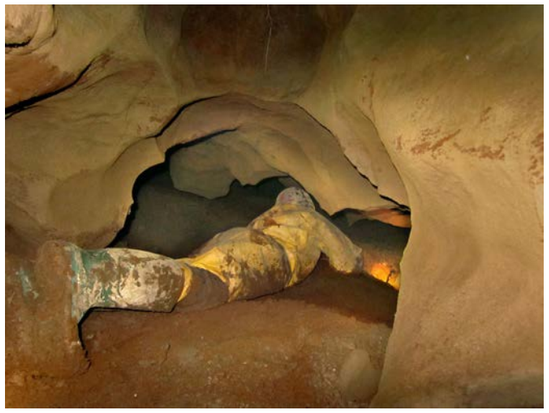




Pete Roe and Stacey Adlard in typical rock scenery in Danby Level Caverns (Tony Harrison).



A typical hading rift passage in Danby Level Caverns (Tony Harrison).



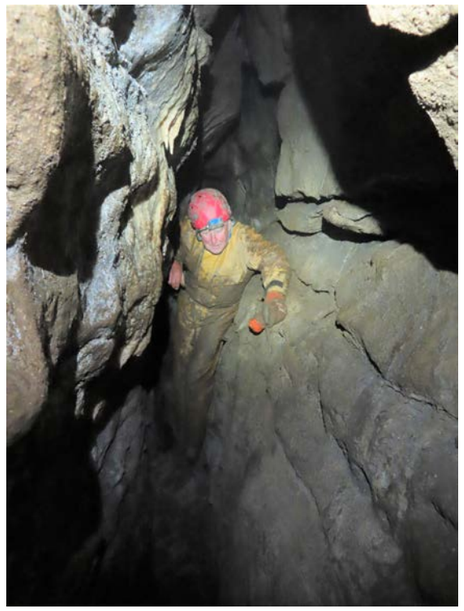
Pete Roe in the Pendentive Portico in Danby Level Caverns with its distinctive ceiling cupolas (Tony Harrison).

5. GRETADALE

5.1. DRAUGHTING HOLE

GL. NZ 00705 09048. Alt. 449m. Length 4+km. Depth 10+m.
Explored 1968, MSG; 2021 York Caving Club, MSG.

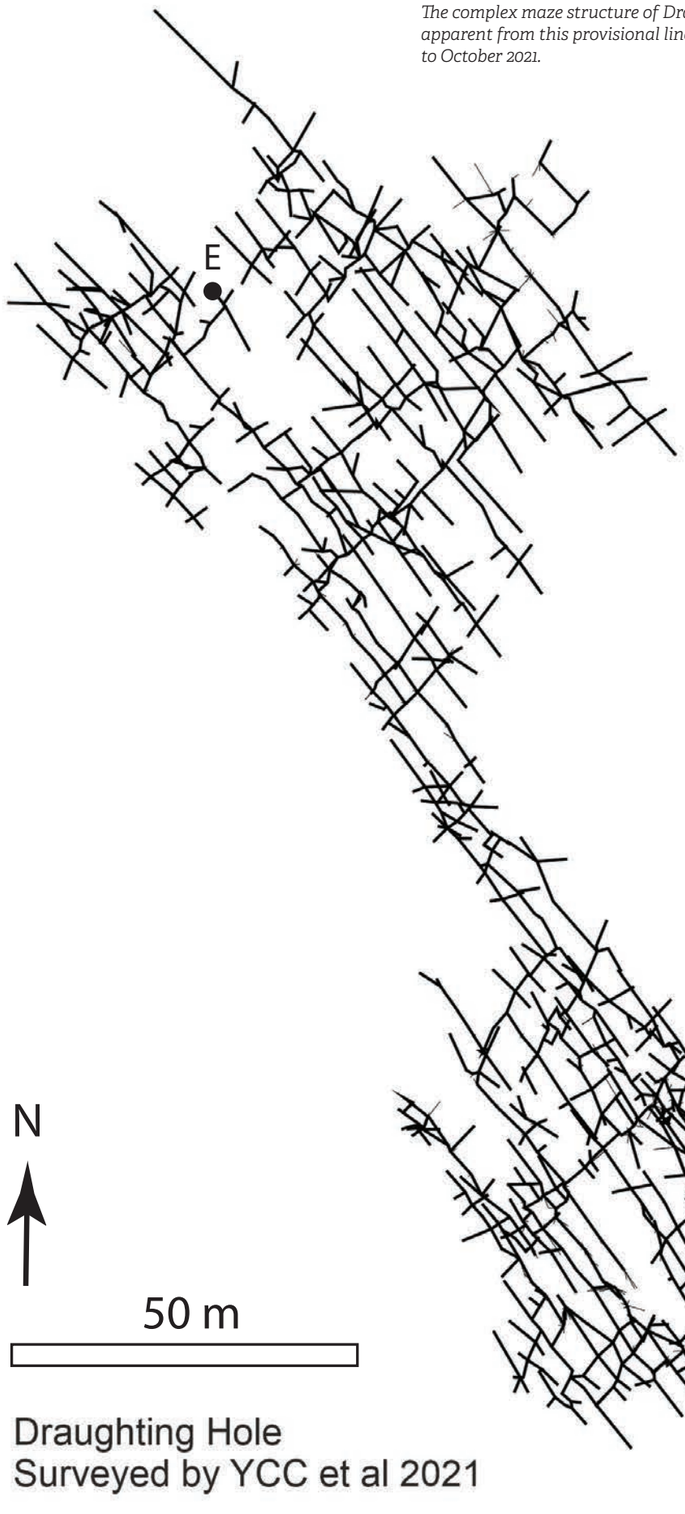
This recent exploration is another great success for north-east cavers, and the credit lies with the York Caving Club. So a full report and survey on the find will await their next journal, but because that may be some time off yet, and because of some involvement by MSG both before and after the recent breakthrough, a very short summary of the recent work is included here with the kind permission of the York cavers.



A relatively wide section of passage in Draughting Hole (Chris Curry).

Draughting Hole is one of several shafts lying just on the Gretadale side of The Stang, and has attracted the attention of cavers on and off over the last 50 years or so because of the strong draught emanating from the hole. It was first examined by MSG back in 1968 when exploration was stopped a few metres from the bottom of the 4m deep entrance shaft by the tightness of the rift. (The present writer recently found a Survex survey he did of the hole in May 2008 that he had forgotten all about, but it added nothing to the original investigation back in 1968!)

In the summer of 2019 Fleur Loveridge and Pete Talling had another look at Draughting and they returned with Matt Ewles and Laura Bennett in the autumn of that year. More frequent visits involving other members of the York crew were made through the following winter, and the breakthrough – involving the help of a bit of bang – came in April 2021. It was immediately clear that the team had discovered yet another of our increasingly frequently encountered Pennine maze caves. Exploration and surveying, with MSG's Chris Curry in a leading role, has continued since that date with around 4km of mainly rather tight and awkward rifts now mapped. There's more to get, but it's becoming increasingly difficult. To give a feel for the place and to show the complex maze structure of the cave's passages a Survex line survey is displayed here, but a full account and the detailed survey must await the completion of the York team's work.



The complex maze structure of Draughting Hole is very apparent from this provisional line survey of exploration prior to October 2021.

5.2. CAVES ON GILMONBY MOOR

In early 2017, Ben Coult and Kelvin McKivitt identified three cave entrances on Gilmonby Moor near Bowes when walking without caving gear. They are all in the Great Limestone on the north slopes of the moor, only a mile or so north of the infamous Eller Beck caves (see MSG5 and MSG12). On June 3rd 2017, they were joined by Jerry Gibbs, Tegwyn Morris and Chris Scaife, to investigate fully.

Chert Gill Sink

NY 9873 1202. Length 10m. Depth 8m. Grade 1.

Explored by Chris and Ben. Obvious sink in the true left bank of Chert Gill. 4.5m ladder climb down to sloping false floor, followed by squeeze and short free climb into rift 7m high.

Badger Trap Hole

NY 9932 1161. Length 7m. Depth 3m. Grade 1.

Explored by Chris and Ben. This open hole is located 5m from a wall, in a small valley. Ben and Kelvin had previously rescued a badger that was trapped in the fence. A "chossy" climb down leads to a boulder floor, with a short aven on the right and a stooping rift on the left. This stooping rift ends at a small chamber, with a short, tight rift leading off.

Ben Coult at the entrance to Hong Kong Phooey (Kelvin McKivitt).

Hong Kong Phooey

NY 9956 1130. Length 7m. Depth 11m. Grade 2.

Explored by Chris. This hole, which had already been slightly enlarged by Ben and Kelvin, is found in a shakehole approximately 20m long and 4m wide, near Hong Kong Plantation. The obvious entrance at the far end of the shakehole is a short crawl over a false floor, to a climbable pitch in a rift.

6. VALE OF EDEN

6.1. BLEA POTS LUMB

It's a long time since Moldywarps cavers did much in the Vale of Eden – probably the most interesting project hereabouts was the exploration of the Stenkrith Caves south of Kirkby Stephen back in 1975 (see MSG8) – but yet again John Cordingley has generously provided us with details of a little exploration he did on a resurgence near Nateby, about 2km south of the Stenkrith Caves at Blea Pots Lumb in 2012.

John writes:

This substantial rising is located on the east bank of the River Eden just over a mile south of Nateby (near Kirkby Stephen) at NGR NY775050. My attention was drawn to it by Brian Heys' article in the Northern Pennine Club "Yellow" Journal (1) where he states: "*North of Wild Boar Fell we have a major sink at Whorn Gill (760 027) which together with Christy Gill (761 030) probably drops down to the Eden to the vicinity of Blea Pots Lumb (775 050).*"

To my knowledge this has never been directly confirmed but, if correct, would indicate a straight-line underground drainage route of around 2 miles. It also suggests a flow path crossing underneath the River Eden. Of course the water rising here may prove to be from a different source but either way there is sometimes a very impressive flow emerging. There are three pools in the field; the two normally static ones dry up in drought leaving circular sandy depressions. The main pool is about 10m x 7.5m and produces a permanent flow draining into the nearby River Eden.

In July 2012 I obtained permission from the land owner to dive the main resurgence pool (2). Most of it was found to be waist deep and floored by fine sand. The water is welling up from pebbles and sand at the bottom of a conical depression close to the east end of the pool, where the depth is 1.5 m. There is no bedrock exposed and only a major dig would hold any hope of entering the underground passage which must feed the pools.

Blea Pots Lumb is similar in nature to Sell Gill Holes' resurgence at New Houses Rising in Ribblesdale, where (in flood) the water also wells up through alluvium into a number of choked pools.
The underground drainage routes in this area of the Eden's catchment seem to be poorly understood and would make an excellent target for a comprehensive water tracing project.

References:

1. NPC Journal 3 (1) 1967 page 10. 2. Cave Diving Group Newsletter 185 (October 2012) page 1.

Blea Pots Lumb (John Cordingley).

7. TEESDALE

7.1. CUTTHROAT CAVERNS

This is one of MSG's most significant finds in the last 10 years or so and deserves all the space it can get in this journal. The system lies on the north slopes of Upper Teesdale as described in detail below. The discovery has already featured at some length in *Cave & Karst Science* and *Descent*, but the work really deserves a very wide readership and so Chris Scaife (Ben Coult and Chris Scaife were the two main movers and shakers in the exploration) has kindly allowed an earlier version of the exploration written by him to be recorded again here:

In the dry summer of 2018, a small band of northern explorers was busy in some labyrinthine passages high up in Teesdale in the North Pennines. The entrance to Cutthroat Caverns was first identified by Ben Coult of Moldywarps Speleological Group, and Paul Rodrigues of Durham Cave and Mine Club, in June 2018. They were inspecting shakeholes and found one that, after a small amount of digging, revealed a downward slope into a rift, now known as Admiral Benbow, 13m long and 4.5m high. There were some stalactites on the ceiling and flowstone on the walls of this rift. Neither Ben nor Paul had surveying gear, or caving gear except for lights, so they had a quick look in the low crawl at the end of the rift, concluded that it looked promising, and left plenty to push for another day.

A couple of days later, I went up with Ben and Janet Kent of Black Rose Caving Club, to push the cave, and to explore a handful of small pots nearby. In the surrounding shakeholes we were able to descend four previously unrecorded pots, with depths ranging from three to five metres. We also pushed the low crawl at the end of the rift in Admiral Benbow and surveyed Cutthroat Caverns to a modest length of 27m, as far as a boulder blockage. Ben returned at the beginning of July, with David and Keith Errington of the Moldywarps Speleological Group, and somehow mustered up the strength to get through these boulders. They then traversed via Walking the Plank into a very impressive passage, known as Umbar. This passage appears vadose in nature, with cobble floors and calcite on the walls.

On our next trip, at the far end of the tall, vadose rift, we entered the Hall of the Four, the only section of cave with a non-buccaneering name. (There were two great benefits to calling the cave Cutthroat Caverns – the first was that all passage names include a piratical reference; the second that we found out about the existence of a card game called *Cutthroat Caverns*, with which our cave purely coincidentally shares a name, and we played this game to celebrate completing the cave's exploration.) This pleasingly decorated passage was named in homage to the Hall of the Thirteen in the Gouffre Berger, as there were four cavers present for its discovery, and four stalactites hang down from the ceiling.

It was on the 7th of July 2018 that we realised that the cave would be measured in kilometres rather than metres. I was surveying with fellow Black Rose caver Carolina Smith de la Fuente, while Moldywarps Ben Coult and John Dale went off scampering. As I was wriggling on my belly in the most awful quagmire imaginable, a short blind passage in mud that kept dragging me under, barely able to keep my head in an airspace (hey man, it all needs surveying), Ben and John returned from a pleasant stroll in big walking passage to tell us we needed a bigger survey notebook. We immediately joined the scamperers and scurried off into what we now call Cave Ahoy. There was palpable excitement from all four of us as we pushed on into virgin passage, reaching a crescendo in the CROW's Nest, the largest chamber in the cave at 10m long and 7.4m high. This network of passages north of Umbar was clearly of a very different nature to the vadose entrance series and it was apparent that we were in a hypogenic phreatic maze cave of considerable size.

Exploring and surveying the cave was a mammoth, but highly enjoyable, task. The core team of explorers, known as the Cutthroat Underground Northern Team, consisted of Moldywarp Ben Coult and Black Rose cavers Carolina Smith de la Fuente, Janet Kent, Alex Ritchie and me. We liaised with experienced maze cave explorers from the Moldywarps – Pete Ryder, John Dale and Tony Harrison –

who advised using plant labels to mark out every junction in the maze, and to survey left at every turn, thus ensuring a methodical survey. The markers were labelled AA, AB, AC, etc. and I think we got as far as LA. For several months in 2018, every time we went caving we were exploring hundreds of metres of untouched passage. In case any readers are unsure whether this is standard practice in the North Pennines, I should perhaps state that this is not the norm.

The Tortuga Trail is the name we gave to the main passage through the centre of the maze, and this extended north from Umbar for over 100m, with one or two boulder obstacles, and 25 junctions, along the way. Passages leading from each junction were carefully explored and, in general, got narrower the farther they were from the Tortuga Trail, with passages in the eastern extremities, such as the Barbarossa Crawl and Long John Slither, being fairly narrow. Passages in the far east of the maze tended to become too tight for further exploration, whilst the limits in the western passages were generally caused by breakdown blockages, which seem to be the result of a mineral fault.

We encountered the water table at the north-western end of the complex, in the area known as Davy Jones' Locker, which is the deepest part of the cave, almost 17m deeper than the entrance. Even at the height of the 2018 drought, the northern extremities were flooded, but elsewhere the cave was mostly completely dry. Carolina and I visited the cave on one occasion when water levels were particularly high, a day on which much of the approach path was under ankle-deep water. A small stream was flowing down Umbar in the entrance series and up the Tortuga Trail, before veering left down a side passage and then disappearing into a hole in the floor. In my survey notes, I had mentioned two small pools of water in a section of side passage up near Davy Jones' Locker, but on this very wet day we were unable to reach the pools of water as the approaching passage was sumped.

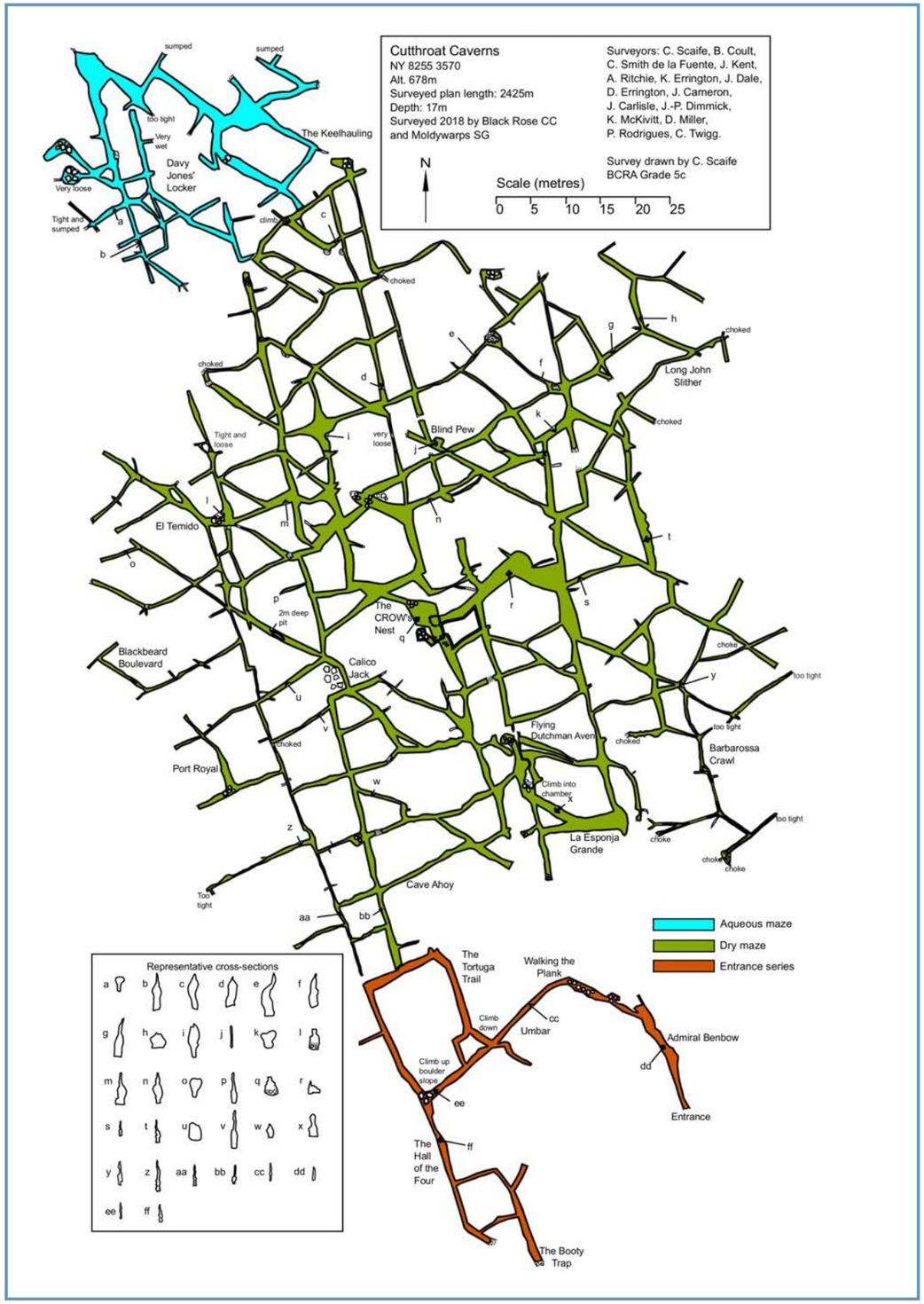
We have only found one entrance to this cave, but there is strong evidence that there exist other, small entrances. We found a dead vole at the end of the Barbarossa Crawl, a long, long way from the entrance we were using. Dead bats were found in several places, including at the bottom of the unscaled Flying Dutchman Aven, 13.6m tall and dripping with water. The bat remains were identified as Whiskered Bat, *Myotis mystacinus.* Live bats were also seen on occasion flying through the Admiral Benbow entrance rift.

As we surveyed, we kept comparing the length we had so far explored with the lengths of other UK caves of significant length. Every evening when we got back from a trip, after entering survey data into the computer I would send out messages to the other Cutthroats to tell them how our cave compared with others locally and across the British Isles. We also celebrated milestones along the way, with the one- and two-kilometre dances. After exploring the cave in full, we made several visits to remove the plant label survey markers and check passage detail. There were a few surprises on these visits, such as finding that by climbing up near the Flying Dutchman Aven we were able to enter a higher part of the rift, where the top of the passage continued a great length, but overall we found that we had done a pretty thorough job the first time around.

In total, between June and November of 2018, we had explored 2,425m of previously unknown cave. At the time of writing, according to data on the website **www.ukcaves.co.uk**, Cutthroat Caverns now ranks as the 79th longest cave in the British Isles, 43rd longest in England and 25th longest in the *Northern Caves* guidebook areas.

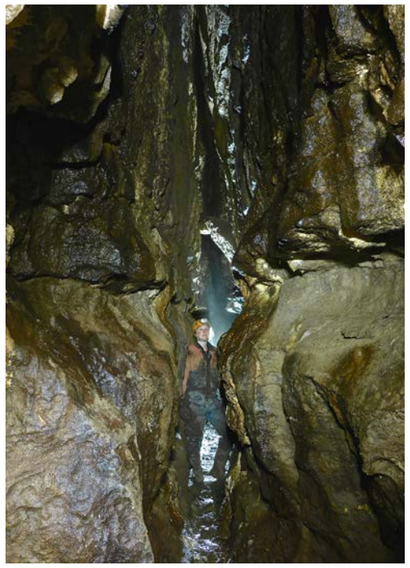
It should be noted that loose rock is a potential hazard in parts of Cutthroat Caverns, and there were one or two close calls during our visits. In addition, as with all large maze caves, navigation without a survey is ill-advised.

Ben, Carolina, Janet, Alex and I would like to thank all those who helped in the exploration and surveying of this wonderful place. Juan Corrin was, as always, a great help with the complexities of the survey drawing. In addition to those named elsewhere in this article, Kelvin McKivitt, John Cameron, James Carlisle, John-Paul Dimmick, Don Miller and Chris Twigg all visited the cave and contributed to its exploration.

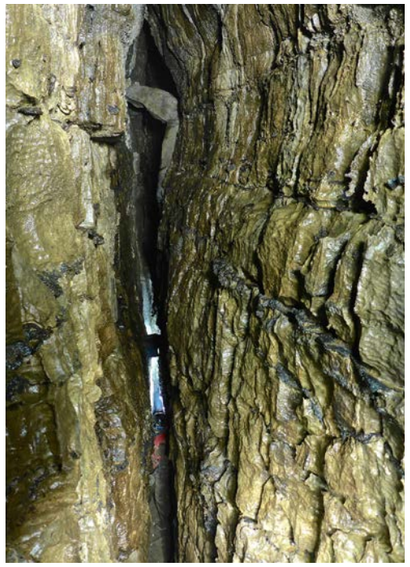


The Cutthroat Caverns survey earned a "Distinction" in the survey competition at BCRA's "Hidden Earth" Conference in 2019 (as did the earlier MSG survey of Hudgill Burn Mine Caverns at "Hidden Earth" in 2016).

Formations at the end of the entrance passage to Cutthroat Caverns (John Dale).



The end of the entrance passage to Cutthroat Caverns (John Dale).



The rift near the entrance to Cutthroat Caverns (John Dale).

Ben Coult at the entrance to Cutthroat Caverns (John Dale).

Chris Scaife surveying in Cutthroat Caverns (John Dale).

7.2. EPISTLE POT

Epistle is another exciting Teesdale find, with exploration now largely complete (though one or two leads may go a little further). Chris Scaife writes:

This is a fenced-off pot in a line of shakeholes above the Red Grooves House farm shop north of Newbiggin in Upper Teesdale. A steep grassy slope drops down to the open pot with a stream falling in. The grid reference for this hole is NY 9216 2951.

I first visited on Wednesday 14th of March 2018. Ben Coult had visited a few times previously, with others, but never properly got to inspect the entrance. It was first descended on 8th of December 2018 by Chris Scaife and then Alex Ritchie, with Ben Coult providing surface support. We used wooden stake belays (some old ice axes I had in my garage) to descend, as no other anchor points could be found at the top of the shaft. We descended from the south side to the floor of the entrance chamber at a depth of 10m. Dimensions at the floor are 6m×4m and a waterfall enters the pot at the northeast corner. We found rifts leading off in two directions; both would need some digging but they looked promising.

It was descended again by Chris Scaife and Alex Ritchie on 9th February 2019, with Don Miller, Janet Kent and Ben Coult on the surface. We dug through a blockage on the eastern wall at the foot of the entrance shaft, to reach a large pitch, which we left undescended and had loose rock at the top. We knew we needed to return with more rope.

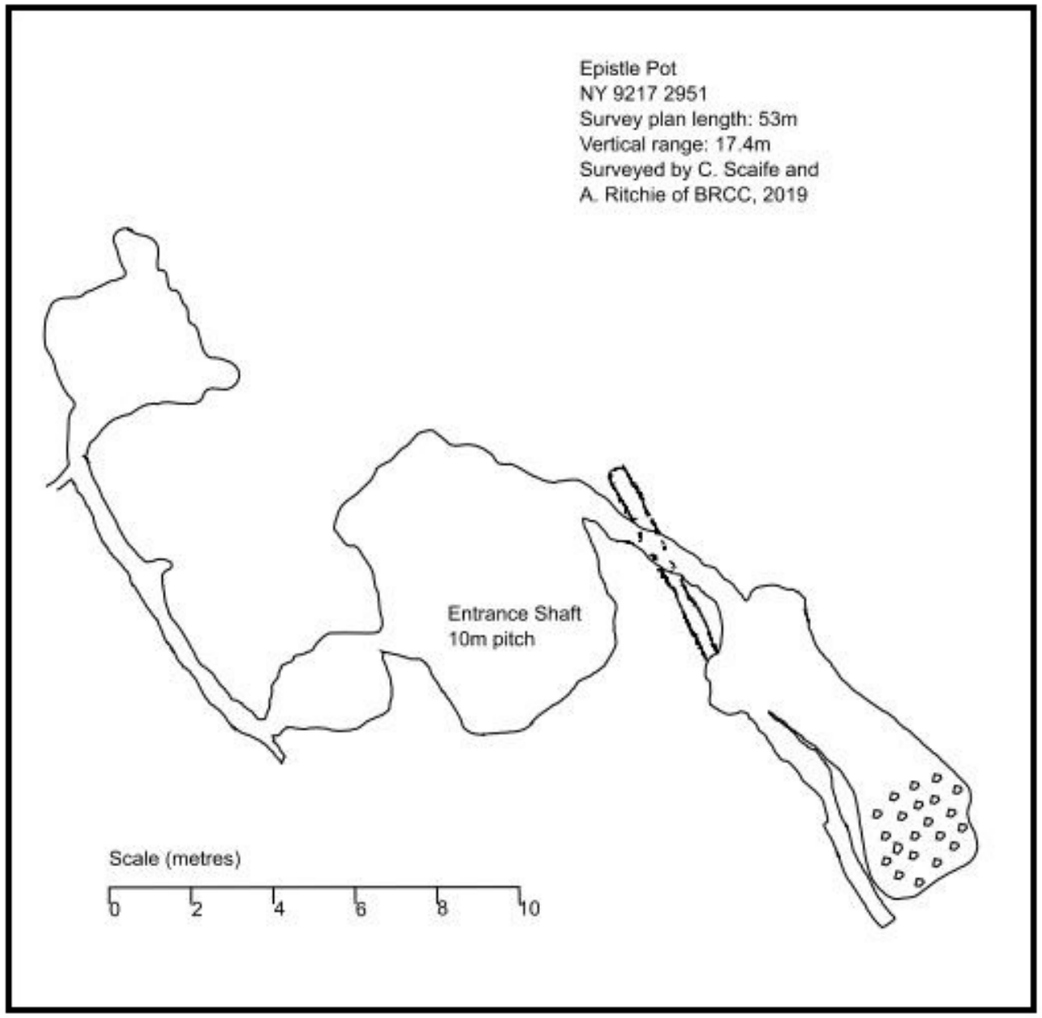
We also surveyed part of the small rift heading west from the bottom of the entrance shaft. This began as a narrow squeeze on a climb down into a standing chamber. The streamway could be seen here 4m below, but we have not yet descended to the streamway. A narrow crawl on the right at the end of the chamber, with flowstone and some stals, led into a highly impressive chamber – Sincerely Chamber – 12m high. There are several other points along the way where it may be possible to climb down to the stream. 30m was surveyed on this date.

At the foot of Epistle Pot's entrance shaft (Chris Scaife).

The surface hole of Epistle Pot (Chris Scaife).

On the 23rd February 2019, I returned with Alex, Ben and Janet. This time Ben descended the entrance shaft on a ladder, then headed out to wander the hillside with Janet. Alex and I pushed the rift on the eastern wall of the entrance shaft. This is a 6m crawl with loose rock, and it opens out half-way up a chamber – Faithfully Chamber – 13m high, which we reached by descending a 7m pitch. There are one or two rifts at the bottom, but all quickly close down. The chamber itself is very large, with water flowing in from the flat ceiling, and a large alcove at the south-eastern end, which could not be entered as it was about 6m off the floor and any climb up would have been incredibly loose.

The total surveyed plan length of the cave is now 53m, and its two pitches (more pitches than most caves in the North Pennines) give it a depth of 17.4m. The cave has been given a "Grade 2" designation.



7.3. DAMMIT POT, ISOLATION HOLE AND BARBARA STREISAND CAVE

From Chris Scaife:

On 17 March 2020, during the Covid-19 pandemic, I went to Teesdale with Don, Janet, Ben and Kelvin to look in the shakeholes above Moking Hurth Pot. We found three of note but none had any significant depth or length.

Isolation Hole, NY 8712 3134. Length 9m.

Slide down a hole in the shakehole into a walking rift leading downwards, around a right turn to a dead end.

In a nearby shakehole, NY 8715 3135, there is a 3.3m hole in a boulder jumble into an aven with some nice calcite, and on the edge of a shakehole at NY 8716 3135 is a 3.5m free-climbable rift.

Dammit Pot, NY 8668 3151. Depth 5m, length 9m.

Climb down the wet hole where the stream sinks in a complex, elongated shakehole. At the foot of the climb there is a dry chamber 2m x 2m x 4m high.

Barbara Streisand Cave, NY 8663 3156. Depth 5m.

A loose climb down through boulders into a small shaft.

Dammit Pot (Chris Scaife).

Barbara Streisand Cave (Chris Scaife).

Isolation Hole, another hole going nowhere in Teesdale (Chris Scaife).

8. WEARDALE

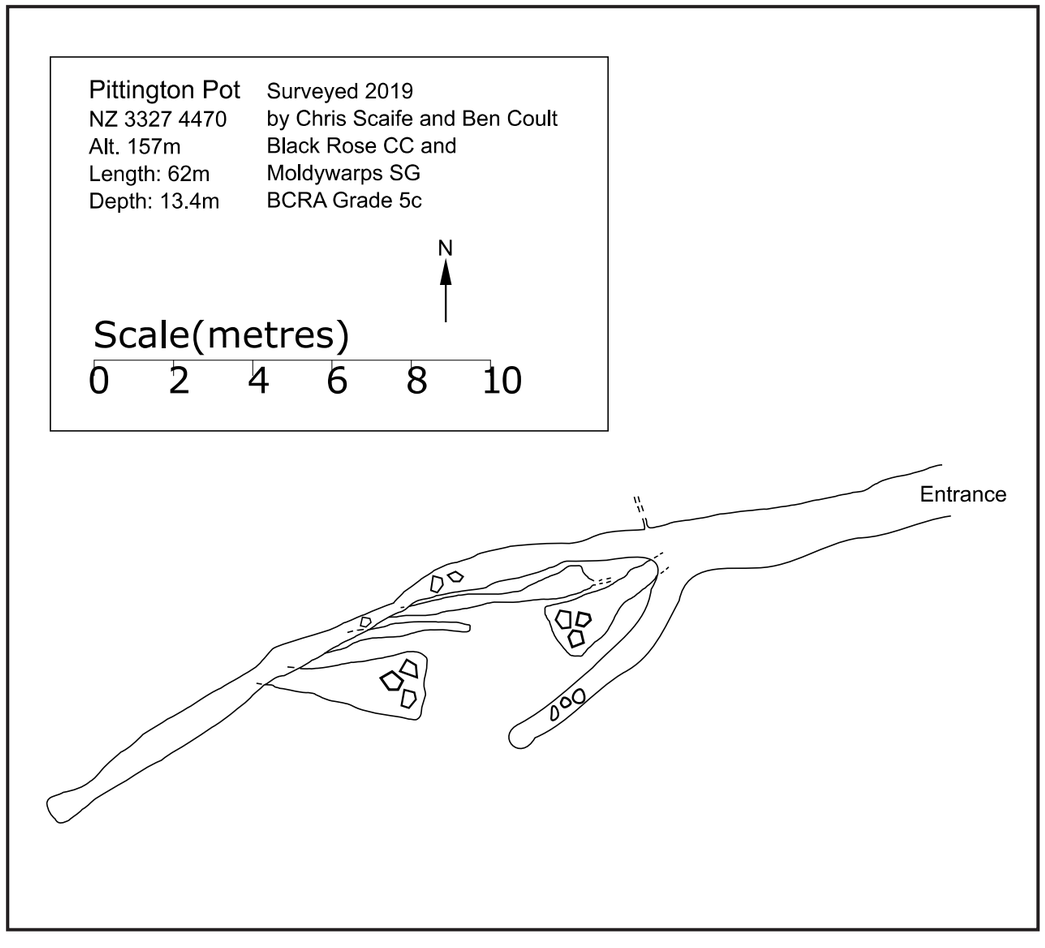
8.1. PITTINGTON POT AND RIFT

Chris Scaife writes:

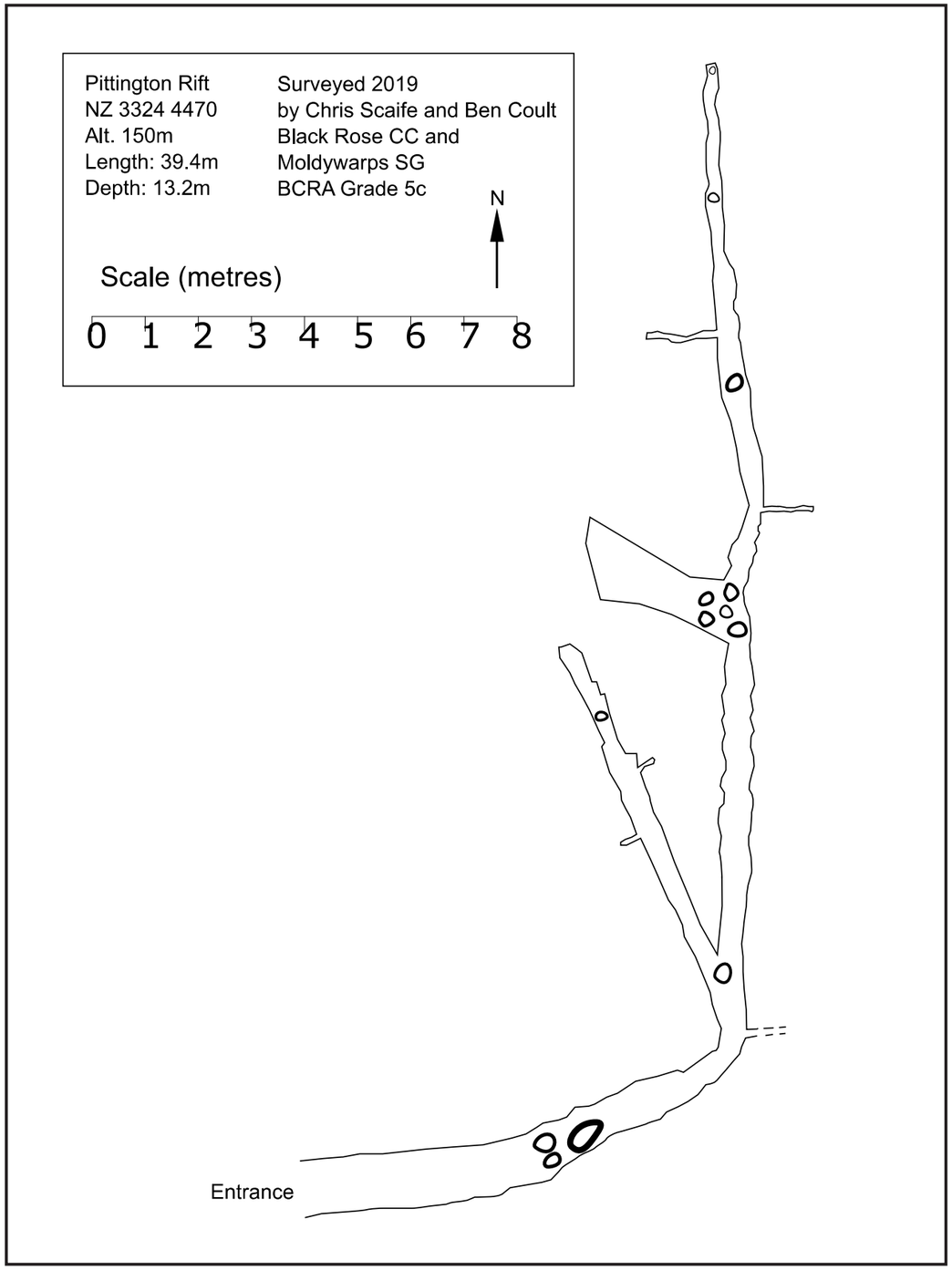
Two slip rifts in the Magnesian limestone quarry on Pittington Hill, County Durham (about 6km NE of Durham City centre), were known to locals, but first investigated speleologically by MSG cavers Ben Coult, Kelvin McKivitt, Jerry Gibbs and Rob Clark in January 2016. I visited the caves with Ben to survey them at the end of the summer of 2019.

Entered via a wide crack that runs to the full height of the quarry face, Pittington Rift consists of a short climb up a slope, followed by a drop down and around a corner into a blind rift. A slide down at the start of this short section leads into the main rift, which is over 7m high in places and can be traversed at varying heights until a total blockage is reached.

A very small cave, comprising a couple of short rifts met by a cross rift, is located about 15m to the south on the same quarry face.



At the edge of the field above the quarry, Pittington Pot has a large entrance but may be difficult to spot through the dense vegetation. After walking down the entrance slope, a climb up on the left leads into a short blind rift. To the right, from the entrance, a climb down leads into a tall main chamber. Loose rock is a hazard in these caves, particularly in Pittington Pot, in which there appeared to have been some major rock movement since 2016.



8.2. WOLF CLEUGH CAVES

NY 9214 3426. Cave 1: 24m, Cave 2: 36m. Grade 2.

In the late 1990s, David and Keith Errington of MSG visited Wolf Cleugh, a remote valley in Weardale. At a meander in the stream, they found a series of holes which, after a little digging, led into a small cave complex. They drew up a very rough survey from memory, but nothing about the cave was ever published.

A few years later, on 19th of June 2004, Pete Ryder and Arthur Byrne walked to Wolf Cleugh and reported that most of the stream was sinking into a hole in the west bank. About 30m downstream of this, they looked at a flood sink, which they thought looked an easy dig, but would need caving gear. They concluded that this was "almost certainly a sink for Fairy Holes".

Pete returned on the 1st of July 2004, with Douglas and Tim Elliott, to investigate the flood sink. They first spent a short time digging in what is now Cave 1, and could see that there was an enlargement ahead, through a narrow fissure. They then dug at the entrance of what is now Cave 2 and emerged from a sideways crawl into a standing height chamber, then a step down into a rift that soon became too tight.

Ben Coult in front of the entrances to Wolf Cleugh Caves (Chris Scaife).

Chris Scaife in Wolf Cleugh Cave 1 (Ben Coult).

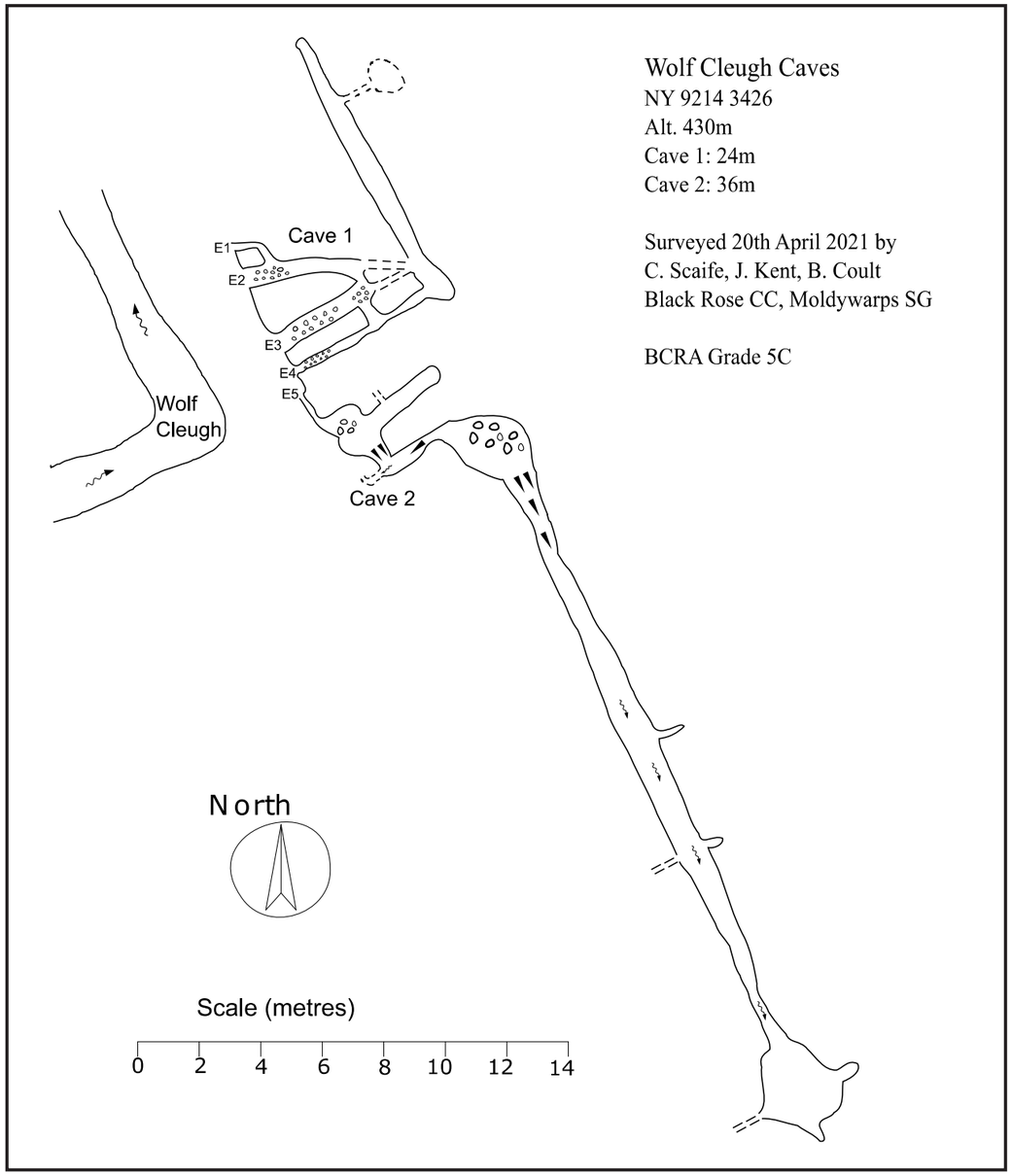
On 20th April 2021, Chris Scaife, Carolina Smith de la Fuente, Oscar Scaife (aged seven weeks and one day), Janet Kent, Ben Coult and Kelvin McKivitt made the journey across to survey what had been found so far. We parked at Swinhope Head, NY 899332, and walked for 3km to the limestone of Wolf Cleugh. There was no sign of the hole on the west bank, but we were unaware then that this had been mentioned in the past, so did not investigate that area thoroughly. The water levels were low, as it had not rained for several weeks, so no water was flowing into any of the entrances on the east bank. A couple of short vertical holes were noted on the hillside above the caves on the east bank, but not entered.

After just a few minutes of digging in the east bank entrances, Janet Kent and Chris Scaife were able to explore two caves, which had been previously entered. Cave 1 is a real complex, with four entrances, marked E1 – E4 on the survey. E1 was tiny, with a small rift that soon joined the rift entered through the largest entrance, E2. This continued too tight to a passage beyond, but the negotiable part turned right, into a parallel rift back to daylight. This parallel rift, entered through E3, also continued towards the passage beyond, via a too-tight section, and a cross rift led into a fourth rift, entered through E4.

We were able to reach the passage beyond by crawling through E4, into a standing height rift parallel to the surface stream. This rift became progressively tighter; a small chamber on the right through a too-tight perpendicular rift appears blind.

Cave 2 was entered through E5. The entrance was an awkward wriggle, best done feet first, around a couple of right angles, into a reasonably spacious chamber. The way on is a short climb down into water, followed by a climb up into a rocky chamber. A slope leads down from here into a narrow rift, with a stream flowing to a final chamber with some small speleothems.

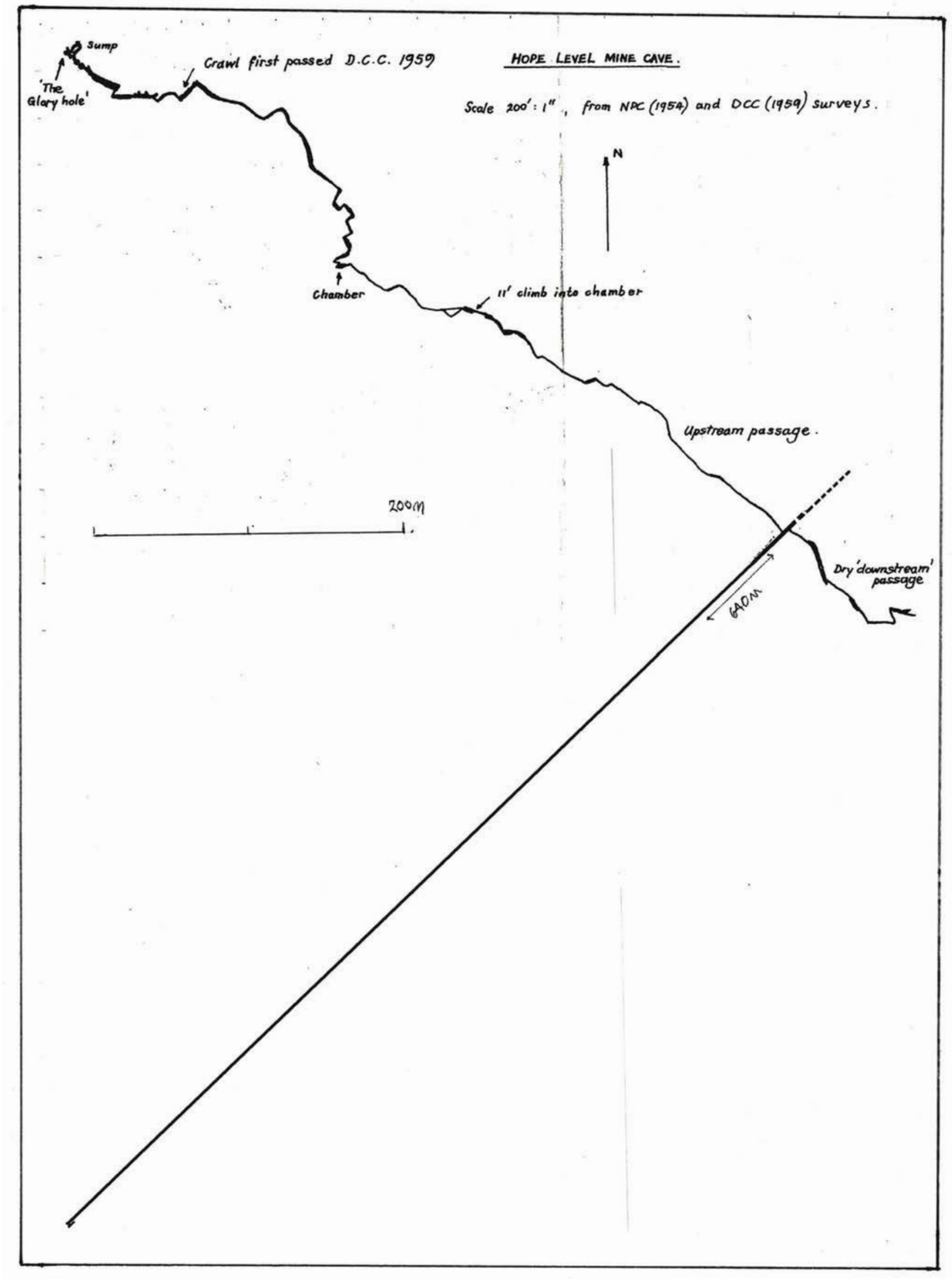
Janet was feeling the cold, so the survey was undertaken as quickly as possible on the outward journey. Chris then took his Disto X into Cave 1 and shouted out the figures to Ben, who had to sketch passage details all over his lovely sheep drawing in the notepad.

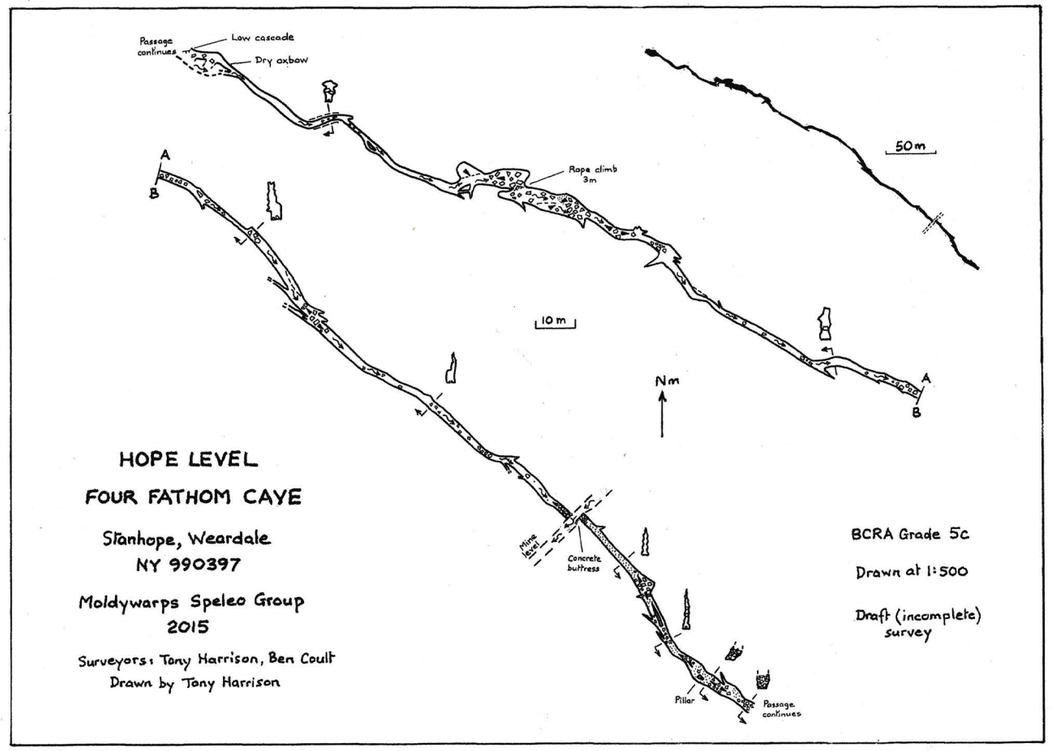


8.3. RESURVEY OF HOPE LEVEL FOUR FATHOM CAVE

Hope Level Mine, above Stanhope in Weardale, was first driven in 1868-77 to find lead ore. No workable deposits of this mineral were found but the level did reach a wide fluorospar vein which was worked later in the 1930s and 1940s and again from about 1975 to 1986. The lead miners intersected a natural stream passage about 640m from the portal, crossing the mine level in the Four Fathom Limestone. The cave, which is about 760m long, was explored and surveyed by the NPC in 1954 and the Durham Caving Club in 1959, and a copy of their survey is still available and is reproduced below. However the survey is not recorded on the **www.cavemaps.org** website and is essentially a line survey without much detail.

Access to the cave is not always easy as the mine portal is in private land, but because of friendly relations with the then land owners, Ben Coult and Tony Harrison visited the cave in 2015. They decided to repeat the survey over the coming weeks, partly to provide more detail and also in the hope of finding more cave, and this job was largely completed over the rest of that year. Then fate intervened, initially requiring our investigation of more interesting new caves elsewhere and then preventing any caving whatsoever because of the arrival of Covid 19 and the resultant lockdowns. So at the present time the new survey remains unfinished, with a few 10s of metres missing from each end of the new survey. Nevertheless it seems sensible to include the new survey as it currently stands here in MSG14, on the grounds that we may never get around to finishing it (there's so much else to survey!), and that a partial survey is probably better than none. The partial resurvey confirms the accuracy of that by NPC and DCC, but unfortunately no new passage was found!





9. MISCELLANEOUS

9.1. THE MOLDYWARPS - THE EARLY YEARS

Pete Ryder writes:

It is quite a long time now since the Moldywarps began, in fact long enough for those beginnings to be actually thought of as history. Like a lot of things, we began in that hinge-decade of the 1960s, before some present members (most present members?) were even born. By the end of the decade the world had changed; we were onto our third journal, and already had a few miles of new cave exploration - Smeltmill Beck Cave (1967) and the Ayleburn Mine Cave Extension (1968) being the two major finds. Accounts of these explorations have already been published (Ryder, P.F. (2008) *Memoirs of a Moldywarp,* Broomlee Publications); this is not another attempt to chronicle these, but to say how caving felt in those early years, and its particular joys and pains.

My interest in caving had already begun a few years earlier, in those first years after the eleven-plus exam and going to big school ushered in an era of semi-independence, and in particular the possibility of going off to do things your parents might disapprove of. Not that my parents disapproved totally; I already had a rock-climbing sister they were quite proud of. This dawning of speleo-awareness came with our discovery of the Richmond Copper Mine, from home in Darlington just a one-and-threepenny bus ride and then a short riverside walk. There were one or two visits to proper caves as well, places like Crackpot and the slip rifts of Whitcliffe Scar (also near Richmond). Caving gear was simple, just old clothes, the shell of a miner's helmet (mine had lost its internal cradle, so I experienced direct cranial contact with the texolex. Light was a torch, or a bit better, a bicycle lamp, or even candles.

Then in 1966 things came together. A few friends at the Queen Elizabeth Grammar School, Darlington, decided that we needed to be a proper club. Could it be a school club? Two or three masters were approached, and rapidly retreated. So we did it ourselves, and for years, caving occupied most of our Saturdays, and quite often Wednesday evenings as well. The first MSG trip, duly recorded as such in our logbook (I was always an enthusiastic scribe), was in October 1966, to Keld, where we found our way into Kisdon and East Gill Caves. Kisdon felt daring, after all, '*Pennine Underground*', the cavers' guide, rated it as 'severe'. To this day we do not know why, it's quite a friendly little place, although it peters out into some nasty muddy crawls if you want them.

Slowly caving gear began to be more sophisticated. Boiler suits became the norm, crisp and blue on their first trip, increasingly muddy and tattered thereafter. Apart from that it was just old clothes. I acquired an aluminium helmet, with a cradle this time, for five shillings. I think it came from an oil rig worker. I mounted a crude bracket on the front, and drilled a couple of holes for a tie at the back, for my new lamp, a miner's alkali cell. This had a heavy steel battery case worn on a belt, with a cable to the headpiece. Four of us had motorbikes, and I dimly recall an expedition up into County Durham to buy some lamps (a pound or so I think) from a sad soon-to-close colliery. If the seals went and the sodium hydroxide leaked out you could get a nasty burn. A little later lead acid lamps, in black plaster cases, came in, still with a hint of danger but not as risky as the alkaline cells. There was also a memorable alternative to electric light, the carbide lamp, which had been much more popular in the earlier 20th century, when it was used as a bike lamp. Some cavers swore by it, some swore at it. The advantage of a carbide was (they said) that there was nothing that could go wrong with it which you could not fix underground – whereas if you had an electric and the cable pulled out of your headset, that was it. You put lumps of calcium carbide in the base of the lamp, screwed the top reservoir on, and set water dripping onto the carbide, which gave off acetylene gas. This hissed out through a fine nozzle in the middle of a polished reflector, beside which as a flint by which you could strike a spark to ignite the acetylene – bang! Ideally this would then burn with a bright steady flame, and illuminate your subterranean path. Ideally. But often the jet would get blocked – never mind, you carried a set of

prickers (sharp ended piece of wire) which you could poke into the jet and clear it (all by feel in the dark of course). And then strike a light again – provided the flint was clear of mud and water.... And of course the carbide had to be replenished, having turned to lime, which cavers tended to dump underground, despite this being an unsightly pollutant.

Carbide lamps are now quite properly extinct; the large-scale expedition models (with a belt-mounted generator and pipe to the helmet) lasted longer as there are remote places where you just could not recharge an electric. The type we used to use, the Premier cap-lamp, looks nice, clean and polished on the mantelpiece. It should stay there.

When the Moldywarps had been going for six months or so, I bought my first wetsuit. Actually, it came in kit form, of neoprene sheets, glue, and a roll of yellow tape to seal the joints. You just cut it out and stuck it together. I cut out the trousers, as a single sheet, and still managed to stick the wrong edges together..... Wetsuits did help. The water was still cold when you got into it, but it warmed up inside the suit and you could be just about comfortable even when neck-deep in the stuff. And it was wetsuits that enabled us in May 1967 to push through the low-airspace entrance series to discover Smeltmill Beck Cave, over a mile long and our first really big find. We really needed the wetsuit; poor John Cooper came on a trip in 'dry grots' and was frozen silly. This was the technological advance the Northern Dales had been waiting for; a whole series of (to be honest) wet and nasty caves yielded to us over the next few years – Eller Beck Head, Keld Heads, extensions to God's Bridge River Cave. They had their downside; if you kitted up by the car and then walked over the fell in your wetsuit (or indeed, went down a dry cave) heat exhaustion or stomach cramps or some other unpleasantness could set in. And I can still remember the smell of an unwashed wet suit...

As I have already said, I have always been an enthusiastic scribe, and an anorak for cataloguing even the most minor of holes in the ground. To go in the guide-book a cave needed to be about twenty feet long, or a pothole twenty feet deep. The Northern Dales had plenty of these.

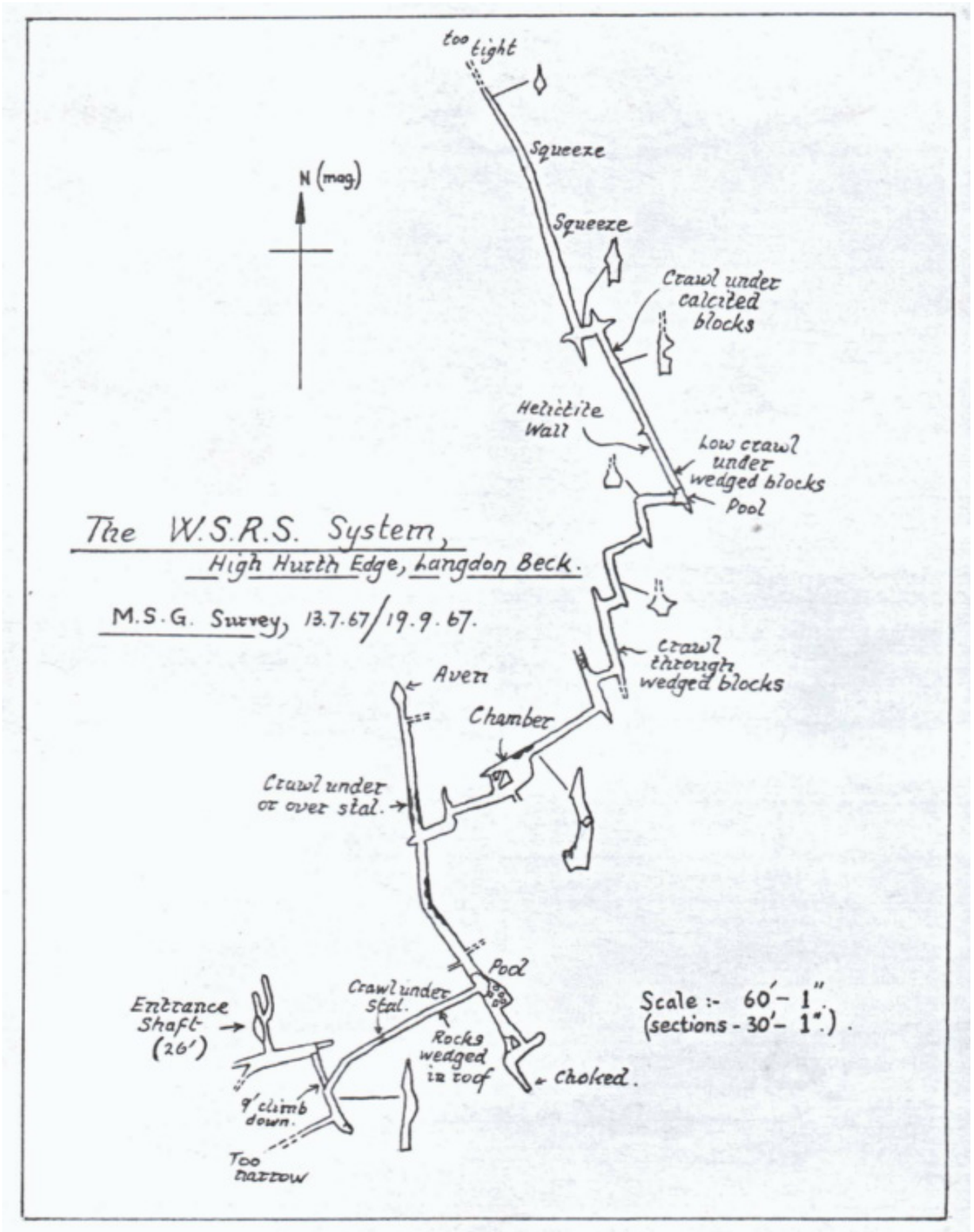
A cave group needs a scribe. It also needs those whose skills are more physical, to be at the sharp end. For a few years in the late 60s and early 70s I made many evening trips with Graham Stevens, who was equally keen on small caves but unlike me was thin and able. Time and time again I found myself stuck in some crawl when Graham's boots had receded into the gloom ahead, as he writhed on beyond the previous limit of human penetration. Then at two or three o'clock in the morning, having a stay-awake coffee in the kitchen of our house in Darlington, debriefing the explorer and getting him to produce sketch plans of where he had been. Often this meant that a 20-metre-long tight cave had received an addition of 10 metres of even tighter cave. 'Extended MSG' would then go in the guide. Quite probably no-one has been back to these places since. Just occasionally there was a real epic, as on the night Graham pushed through a ridiculous on-your-back wet crawl at the downstream end of Moking Pot. People have since doubted this, but I was there; I saw him go and then departed overland to go into Moking Hurth, where the water reappeared, to meet him blundering out; water in his ears meant that he had lost his sense of balance, which one could argue was not a normal attribute of devotees of such places anyway.

Our prime focus was always new exploration, or recording of previously-unrecorded caves. It is this that perhaps defines what the group is, as opposed to a more normal caving club. A normal caving club of the period (there are few around today) concentrated on trips to well-known (and in our area usually Yorkshire) potholes. We did not do that – other than a handful of trips – our aim was to search the limestones of the Northern Dales that most cavers had ignored, to the extent that there was still the odd quite obvious cave or pothole which just did not seem to have been noticed by anyone previously. Eller Beck Head was such a case; following the valley up, one came to a crag, with the stream cascading from a black hole the size of a human front door. It looked very inviting, and if anyone had ever been inside, they had not told anyone. Or maybe they had been in, and found what a grim and aqueous place it really was, and did not wish to perpetuate the experience by recording it.

So we explored and surveyed places like this. We started off with paper notebooks, a plastic clothes line with a tag every foot, and an old prismatic compass, all vastly inferior to the gear available today; one rare occasion we even used a thing called an Abney Level for measuring vertical angles (which you had to do if you were claiming Grade 5 for your survey). Squinting through it in wet and muddy underground conditions was virtually impossible. Thankfully some Northern Dales limestones are bedded more or less horizontally, so survey legs tended to be either horizontal (more or less) or vertical drops. We also had an excellent mentor in the art of surveying – and in particular drawing up surveys, in Martin (Chesh) Davies of the YURT, the Yorkshire Underground Research Team. (A good name. For a while the acronymists amongst us thought of rebranding ourselves as the 'Durham Underground Research Team').

So surveys became our speciality, gracing the pages of journal after journal. (Now available online at **http://nymcc.org.uk/publications/moldywarps-speleological-group/**). Real complexities came with our involvement with two big phreatic maze systems in Swaledale, Windegg Mine Caverns and Devis Hole Mine Cave, although these shrank in significance years on with the ridiculous eight-and-a-half mile labyrinth of Hudgillburn Mine Caverns.

Over the years we extended our interest from the Northern Dales to other Northern-Dale like areas, limestones in other parts of the British Isles away from the classic caving areas – the Isle of Skye, and parts of Ireland (Kenmare and County Waterford). Rapidly we attracted other speleologists with similar interests, and became a very loose body indeed – you can be a moldywarp and an active member of another club if you want, although you might like to use our journal to chronicle your finds. Indeed, being a moldywarp is a matter of feeling like one, not of signing up on a list. We have never had a subscription or anything formal like that. Journal profits have funded a few items of surveying gear, that is all. Basically we are a bunch of like-minded individuals who have ploughed a slightly different furrow to most club cavers. It is something of a surprise to realise that we have been just that for over fifty years...



The first survey ever published by MSG, in the journal MSG1 in 1967. The "WSRS System" is known as Moking Pot today.

9.2. GRAHAM STEVENS 1943 - 2020

John Dale writes:

During the early part of the pandemic Graham (GS) unfortunately succumbed to the Covid 19 Virus, leaving a loving wife and sons. What follows is a potted history of Graham's early caving exploits gleaned from his logbooks and his personal relationship with Pete Ryder (PFR) and myself. What has become apparent over the past year is the enormous contribution GS made to UK caving; the incredible relationships he had with cavers past and present, along with the legacy he has left the general caving community in the form of an extensive library. The library has been bequeathed to the Northern Pennine Club as partial recompense for MSG's easy discovery of Cliff Force Cave after the NPC gave up on the project after many years of trying.

Graham began caving prior to 1960 and his first log confirms Ingleborough show cave was visited (GS noting that the guide fell in a pool!) and that the Buttertubs in Swaledale were descended without tackle. GS was already involved in climbing, so he organised an early Easegill trip for the Flyde Mountaineering Club where he was a member with friend Brian Hughes. In the 60's the FMC had a strong relationship with Margaret and Norris Scarr who owed Bullpot Farm and lived at Gale Garth. The couple allowed FMC members to use the farm for overnight stays. It was in 1961, during one of these stays, that a teenage GS pushed an unexplored passage off the Lancaster Hole stream-way. He passed two tight ducks to where a tortuous inlet stream-way eventually led to a flowstone blockage. It would be twenty years before this blockage was passed by the RRCPC, to become what is now known as Woodhouse Way.

The use of Bull Pot Farm by the FMC continued, with GS helping Norris with lambing, haymaking and dry-stone walling. This happy relationship abruptly ended when Leeds University descended Pegleg Pot (via Leck Fell) after Margaret had refused permission to walk in via Bull Pot Farm because she was worried about the weather. The ensuing flood and rescue fiasco closed the fell to cavers and the resulting legal wrangling eventually led to the Red Rose securing Bull Pot Farm as a HQ and later, the formation of the CNCC.

1961 saw GS in Gaping Gill and noting that the last pitch in Disappointment Pot was the only one that required a lifeline. The author now knows where one of his own personal bad habits had its foundation. The continuing link between GS's climbing and caving exploits becomes apparent when in 1961 the entrance to Pant Maur Pot is descended "*using a rawlbolt and en rappel*" – predating the "invention" of SRT by a couple of decades. 1961 also saw GS on a variety of OUCC meets including Lancaster Hole where he (again) records climbing the entrance pitch without a lifeline, followed by ascending Stake Pot, using combined tactics and a wedged krab on a belay belt - for aid. Penyghent Pot was descended with the KCC in 1962, but they didn't reach the bottom due to "*an ill boding and general dissent*" GS finding it "*not very difficult if one wears a goon suit*".

GS's long association with Fairy Holes begins on the 22nd April 1962 with an 8-hour trip to the sump and pushing of a passage above the Sarcophagus – with no sign of an end. Clearly, GS was operating at the top of his game as Fairy was recognised as one of the most difficult trips in the country at the time.

Being a caver interested in new explorations, a log on the 1st July 1962 finds him at the bottom of Simpsons Pot pushing a low passage to a small chamber from where the passage became too tight. If the Brooks are reading this, we now know that a Moldywarp nearly beat you to the Kingsdale Master Cave.

Like Fairy Holes, another cave that GS became well known for was Washfold Pot. This was first visited with the KCC in July 1962 with the "*grand plan*" of aiding across a traverse, putting in a rawlbolt and producing a dry alternative to the hugely serious big pitch. GS spent 2 hours in a "*hair raising position*" drilling a hole for a large rawlbolt – a hole that is probably still there. He also began learning the craft of surveying during this period – producing the original surveys of both Washfold pot and Yordas Cave.

In 1963 GS took part in the rescue of Ron Cooper of the OUCC who had fallen off Bar Pot's first pitch, ended upside down and had blacked out. The ambulance got within 100 feet of Bar Pot, where it was found that the casualty had carbon monoxide poisoning due to a dodgy exhaust on his car!

GS's list of early friends assisting him in his caving career reads like a caving's "who's who", George Cornes, Ron Bliss, Mike Wooding, Jim Eyre and Oliver Lloyd regularly corresponding with GS about organising pushing trips into newly discovered systems. An intriguing entry is where "*the farmer at Skirwith recollected that a back way to White Scar was deliberately blasted in*", a statement he also heard from Tot Lord.

At this time, GS was still heavily involved in the explorations of the major caves in both Wales and the Three Peaks area - but clearly showed some early interest in the Northern Dales. A letter from Ron Bliss of the Red Rose to GS dated December 1963 answered GS's query about the new NPC discovery of Thackthwaite Beck Cave in Wensleydale. Ron stating that he had "*only visited it once; and was not impressed. It being wet, horrible, and had loose chunks of rock dropping around all over the place*".

GS notes that, after the 1964 BSA conference, caving trips were offered and Ingleborough Cave attracted only two people. One of which was GS and the other being Eric Hensler, with Mike Boon acting as a "guide". GS then goes on to say that on a subsequent surveying trip to Lost Johns that Mike's party got lost at the bottom of Dome pitch. GS went the following day, free climbing all the pitches down to the Pulpit, eventually reaching Lyle Caverns and ending up in what reads very like the passages below what is now Boxhead Pot.

During his time at Oxford University GS attended an official British caving exchange to Czechoslovakia (in the days of Communism) and (traitor!) also on a Cambridge UCC expedition overland to Yugoslavia and Greece, in an old post office van with no silencer - that needed push starting!

Being an incurable romantic, he took his then wife to be (Sheelah) down Yordas (in flood), constantly telling her how it wasn't normally like that. And once after marriage down Porth Yr Ogof in a boat made out of an old inflated tyre inner and a ground sheet. It wasn›t until they emerged that he told her how many people had drowned there!

The first real Moldywarps entry in GS's log books is dated 21 March 1970 with Pete Ryder, Stuart Hodgson, Jan Arrowsmith and John Longstaff surveying MSG's new discovery of Hard Level Gill Cave. Entries then come thick and fast with the Dream Team of GS, PFR and friends pushing Ellerbeck Head, Kisdon Cave and Moking Hurth. Here GS recorded the first through trip between Moking Hurth and Moking Pot. On the 17th June 1970 GS stating "*I squeezed along in the water with my head in the rift above, which was narrower than my helmet. Burrowing in the gravel under the water allowed progress with one's nose in the airspace and in complete darkness as the helmet had to be held behind. After 20 feet a corner was reached where a very aqueous struggle for 20 more feet led to the end of Moking Hurth*. PFR then returned out of Moking Pot and rescued GS who didn't know the way out of the cave!

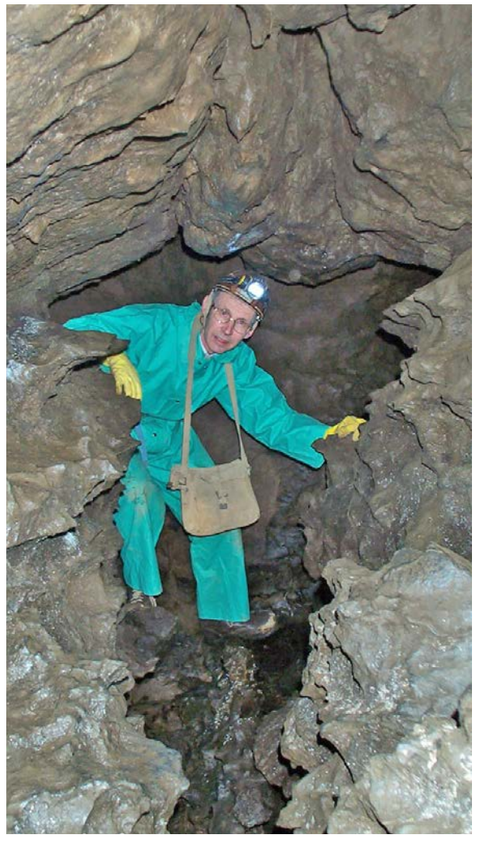
From then on GS became MSG's "Secret Weapon", a thin, waterproof, insect lover who revelled in Ellerbeck Head and Keldheads explorations. He later took on the challenge of Cross Pot after the Brooks had descended a particularly tight pitch in 1968 and left the end open. He states in his 1970 log "*Swindale Master Cave here we come*". Unfortunately, we are still looking for this over 50 years on.

In terms of the North York Moors, in June 1971 GS sketched out a cunning plan to enter the sinks where Excalibur Pot now resides and in 1973 following the opening of Devis Hole by Dave Carlisle GS initially thought he had discovered the Central Maze. He was dumbfounded when an inscription by the dreaded YURT was found – dated 1964. The Devis explorations continued, accompanied by Ernie Shield, who was another strong local climber, and this friendship lasted many decades. On the 6th of August 1974 the author (then a 14-year-old schoolboy) turned up on GS's doorstep to be initiated as a Moldywarp and becoming the Northern Dales "*Apprentice Thin Man*", GS telling PFR (I did overhear this) not to tell JD what lies across the watershed of the Three Peaks area or we would never see him again.

In August 1974 GS returned to Fairy Holes with the Nature Conservancy to find 1500 feet of the cave quarried away - with only the entrance remaining in a grassy knoll "*because the quarry owners knew it was an SSSI*". This led to many years involvement with Fairy, dealing both with Blue Circle and subsequent owners. After lengthy legal wrangling, GS obtained written permission to assess the underground state of the remaining cave. On supplying the initial exploration notes to Blue Circle he quickly got another legal letter banning both himself and any other cavers from entering the cave "*due to reckless, dangerous and foolhardy antics*" in the flooded, low airspace and loose boulder choke, that now formed the entrance passage. It took until 1976 for the furore to dissipate, when a party consisting of GS, Dave Brook, Martin Davis, Roger Sutcliffe, Bob Mackin, Dick Glover and Dave Carlisle affected entry - only for the cave to be officially closed again for many decades. GS followed the recent Fairy's high-level extensions with interest and would be proud that the length gained is closing in on the length of the passage that Blue Circle quarried away.

Local slip rifts became a regular staple of GS and a 1975 pushing trip to Noddle End Windypit involved his friends Rick and Pat Halliwell. The author being 15 years old (and never having encountered a female caver before) immediately fell madly in love with Pat. But later accidentally stepped on a very bloated dead goose at the bottom of the second pitch; suffered a serious brown trouser moment and all thoughts of love at first sight were rapidly erased in the subsequent trauma. Which was not handled well by GS, who just fell about laughing.

Other GS friends around this time were Richard Gibson, Athol Lawton, George Bee and Paul Atkinson. George and "Sprack" becoming the tame Moldywarp divers - pushing many squalid Northern Dales sumps with GS in support - such as God's Bridge River Cave.



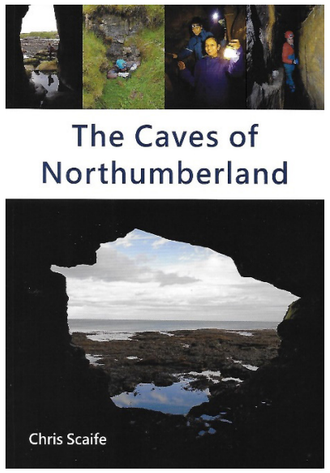
Graham Stevens in Jack Scar Cave, Teesdale, in 2006 (Pete Ryder).

In August 1976 GS finally succumbed to JD's relentless 15-year-old schoolboy pestering, involving a visit to The Far Waters and Mike Wooding's Hallucination Aven. Unfortunately this was the very same day MSG's Ryder, Langthorne and Solman broke though into what was to become Cliff Force Cave. I don't think GS ever quite forgave me and I was relegated to carrying diving cylinders to sump 2 in Cliff Force for many weeks thereafter. This being closely followed by horrid pushing trips into the aqueous Eller Beck and Borrowdale Beck Head caves as further penance.

From here-on, GS's underground exploits are well documented in the Moldywarp Journals, which have kindly been made available at the North York Moors Caving Club website. It is hoped that some of the stories above; and many more that will be recited in front of roaring fires with a beer in one's hand, will bring back happy memories of an original "gentleman" Moldywarp. GS was a valued friend, loving husband and good father. He had even taken his grandchildren to Yordas – a cave he fell in love with nearly six decades ago.

Graham now lies in a peaceful woodland grave close to his Newton Aycliffe home and here; if one listens very intently on an evening, you might just hear the words "*170 degrees, 10 degree inclination and 75 feet - pass the entrencher, Swindale Master Cave here we come!*"

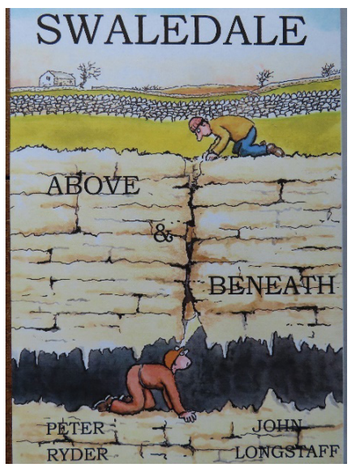
9.3. BOOK REVIEWS



Caves of Northumberland

Yet another brilliant "first" for Moldywarp's territory! (Well, it's northern edge, anyway). Chris Scaife has worked hard for months if not years to produce a great new volume on every known cave in Northumberland, whether in limestone, sandstone or any other kind of substance. At 160 pages long and with dozens of photos, the content spreads from Marshall Meadows Cave (sandstone, 8m, NT 9817 5703) on the coast near Berwick-upon-Tweed in the north to Tutu's Welly Pot (Great Limestone, 12m, NY 8029 4648) near Allenheads in the south, with a further 120 or so caves described in areas in between. All have lengths, locations, rock type and difficulty grading carefully noted – and of great use for those wanting a good day out, most also have a short section on nearby attractions (varying from castles, rock art, wildlife, heritage centres, market towns, and rock-climbing locations).

Chris's writing is clear and literate (not always the case in caving publications!), yet very easy and logical to read, and the book as a whole is well laid out and produced (by Sigma Press in Carmarthenshire). The book was launched at events in the Strawberry pub in Newcastle and at Inglesport in March and April 2019, and is available from the latter or from Chris himself (chrisscaife@hotmail.com) for the very modest price of £8.99. As an added incentive to buy it, it has a forward by Pete Ryder, who was carefully coaxed out of retirement by Chris to be given a pen in his hand and told to write (which Pete does very well). If that wasn't enough to encourage you to buy, you need to know that the book features at least 13 photos of Chris himself (but – sorry, ladies – most only to give scale to the caves). It has previously been ecstatically reviewed in *Descent* by John Cordingley, and now has the ultimate accolade of an equally enthusiastic review in the MSG journal. Well done, Chris.



Swaledale; Above & Beneath

Not content with his previous classic book "*Memoirs of a Moldywarp*" published back in 2008, Pete Ryder, assisted by fellow Moldywarp John Longstaff, has used his "Covid lockdown" time to great effect by producing another book on Swaledale. Pete has provided the text and John the illustrations. The book, published in Feb 2021, is entitled "*Swaledale: Above & Beneath*" and describes the dale chapter by chapter from Richmond to Hollow Mill Cross, alternating with descriptions below ground (mainly the early Moldywarp explorations) and above ground (mainly the fascinating historic buildings and monuments in the dale). Another "must have" for all northern cavers' bookshelves. Available from Broomlee Publications for the bargain price of £10 including postage (www.broomlee.org/publications).

9.4. UNDERSTANDING THE FORMATION OF THE PENNINE MAZE CAVES

Tony Harrison

About a dozen or so large maze caves have been explored in the northern Pennines over the last 50 years. (In many cases "re-explored" would be a better word, as some were first discovered by 18th and 19th century lead miners). Their locations stretch from near the South Tyne valley in the north to Swaledale in the south, and anyone who explores these caves today will be immediately struck by the lack of similarity to the "traditional" caves further south in the Yorkshire Dales and the Craven District.

Most of us have a reasonable understanding of the processes of cave formation that apply to the popular caves in the Dales or elsewhere in the UK such as the Peak District or the Brecons. In layman's terms it all comes down, of course, to the solution of limestone in water. Limestone has a solubility in pure water of about 15 parts per million (ppm) and this would result in an exceptionally long time for caves to form. However if carbon dioxide is dissolved in the water (say from the atmosphere) making it slightly acidic, the water may be capable of dissolving around 50 ppm of limestone. And if the water passes through organically rich soils it may absorb sufficient CO_2 to dissolve some 400 ppm of limestone. But water can only form caves if it has a ready access route into the limestone, usually requiring a pattern of fractures in the rock. A microscopic crack may be enough to start the process, and the stress on the rock caused by earth movements millions of years earlier, together with bedding planes resulting from the initial sedimentary deposition of the limestone, will make the job much quicker.

In a typical fissured limestone bed water will percolate in at the surface and gradually open up cave passages before eventually finding its way back to the surface via springs below the point of entry. Cave passages may be vadose, formed by free-flowing streams with an air surface above the water, or phreatic, formed below the water table in fully-flooded conditions. Each type gives rise to different passage shapes (their geomorphology). In the Craven district the whole process typically took half a million years or so, with the Pleistocene – the last two million years – with its unprecedented climatic changes a particularly important period for cave formation.

The Pennine maze caves are dramatically different. They are usually completely dry (except occasionally for a little surface water percolation) and they don't seem to be related in any physical sense to existing surface water patterns such as rivers or streams. Some quite different speleogenetic process seems to have been in play here.

The first northern Pennine maze cave to be explored in modern times was Windegg Mine Caverns in Arkengarthdale, broken into from mine workings by the Earby Mine Research Group (EMRG) in the early 1960s and explored by the Moldywarps Speleological Group (MSG) over 1970-72. The next major maze cave to be examined was the Central Maze in Devis Hole Mine, in Swaledale, a little to the south of Windegg Mine. This mine was reopened in 1973 and the maze surveyed by MSG over 1973 and 1974. Both mazes were immediately noted as being phreatic in nature, but it was in 1975 when Pete Ryder wrote up the explorations for the *Transactions of the British Cave Research Association* (now *Cave and Karst Science*) that someone (Pete) began to think hard about the precise origins of the caves.

Pete first noted that the two mazes had much in common with two other phreatic northern Pennine groups of caves: Sod Hole Gill Caves at the head of Wensleydale and Sloate Hole Mine Cave in Arkengarthdale, neither of which had been fully (or probably even partially) surveyed by cavers at the time. He then attempted to link Windegg and Devis Hole to nearby watercourses, but with little success. Nothing was immediately obvious at Windegg and Pete concluded that the mine workings must have affected the hydrology of the area. He came to a similar view at Devis, where a major underground watercourse does flow under or close to the cave system but he could see no immediate connections. He nevertheless speculated that, as all four of these systems (except possibly Windegg) appear to be situated within a few hundred yards of a major hydrological system, the presence of pre-

existing network caves had been an important factor in the initiation of long distance and inter-dale hydrological systems. He also confirmed that both Windegg and Devis, primarily phreatic in nature, were formed under virtually static water conditions.

It's worth noting at this point that Windegg and Devis were not the first "maze-like" caves to be explored and surveyed in the northern Pennines. The combined Moking Hurth and Pot system, above Langdon Beck in Upper Teesdale, is only 550m long (in contrast to 1.1km and 1.6km respectively for Windegg and Devis) but shows the same reticulate structure and is remote from any surface watercourse. The cave has been known about since at least 1898 and was surveyed by MSG members and others in 1953-5 and 1970. A report on the cave in 1971 notes its phreatic nature but has nothing else to say about its origins.

The next major maze system to be discovered and surveyed was Knock Fell Caverns, just south of Cross Fell at the heart of the Northern Pennines, by Roger Sutcliffe and his friends in the Gritstone Club over 1980-4. In his report on the find in 1985 Roger wrote that "the phreatic origin of the cave is difficult to reconcile with the present-day topography" but didn't venture further into speculation about the source of the water. Ten years or so later, probably in 1994, Knock Fell had an important visitor from abroad, Professor Klimchouk of the Institute of Geological Sciences, National Academy of Sciences of Ukraine, Kiev. Alexander Klimchouk is one of the world's most respected karst scientists and has focussed on hypogene (upward water flow) speleogenesis, on which he has published dozens of papers. What he thought of Knock Fell at the time of his visit isn't recorded but in 2011, in an important report on this type of speleogenesis published in the USA, he notes that Knock Fell Caverns "has a substantial overprint of water table and vadose features but the morphologic suite of rising flow is still easily recognizable". This was the first record of hypogenic activity in the maze caves of the Pennines but probably wasn't picked up by UK cavers – and certainly not me – at the time.

It was in the 1990s that another group of phreatic maze caves was explored in the Pennines (by Dave Carlisle and his EMRG colleagues, supported at times by Pete Roe of MSG): the Faggergill Mine Caverns. These are difficult to access and examine; the geomorphology is complex and the caves still haven't had any detailed study by karst geologists. The two obvious sections of maze cave – Stang Strings and Easter Rifts – are not the only natural openings in the mine and a few shorter "non-maze" passages have also been found. In addition to the usual phreatic profiles the caves have two active, if underfit, streams running north to south, in Pounder's Vein Cave and Langthwaite Cavern respectively; these are probably later vadose imprints on a hypogenic base. Little has yet been written about the speleogenesis of the caverns.

There was then a significant pause before the next major maze system to be explored and surveyed: the Southern Maze in Devis Hole Mine, over 2002-3 and in 2011. This is an extensive system heavily altered by mining in several areas and displaying mainly rift-shaped passages now known to be typical of hypogenic development. A significant discovery was made in 2011 in the "Horn's Workings" part of the maze where natural shafts about 10 metres deep and normally ending in mud floors were found to fill with a metre or so of water after heavy rain. This suggested a link between present underground watercourses below the maze and the maze itself. Speculation at the time by me, in issues of *Cave and Karst Science*, proposed that the caves had formed after the phase of mineralisation resulting in the presence of galena ore, but a direct link between speleogenesis and this lead mineral was not made at the time. It was also postulated, again by me in 2012, that "it is possible that ..... the initial formation of the network caves at the top of the limestone was driven by entry of diffuse water from above", a completely incorrect assertion given our present knowledge of hypogenic activity in these mazes.

Then came a big breakthrough in our knowledge of the speleogenesis of the Pennine maze caves with the exploration and survey of Hudgill Burn Mine Caverns near Alston. Rediscovered (after initial discovery by 19th century miners) by the Cumbria Amenity Trust Mining History Society in 1998, it was explored and surveyed by MSG in 2013-14. It was about halfway through this process when

underground on a survey trip that the two main surveyors (myself and Pete Roe) and John Dale had our light-bulb moment. We decided there and then – correctly for once! – that the prevailing shape of the passages in the cave could only have arisen from upward (hypogenic) flow of the dissolving water. And within a few days, as I examined the partly complete survey showing the widest and highest passages closest to known nearby mineral veins, I had my own "eureka" moment in deciding that sulphur (probably from the galena and sphalerite) had dramatically enhanced the acidity of the dissolving water thus speeding up, or promoting in the first place, the hypogenic speleogenesis of the cave. This last hypothesis was supported by the fact that the old miners had found much of the lead in the mine in the form of cerussite ($PbCO_3$) rather than the usual galena (PbS), implying release of sulphur then already well on the way to becoming sulphuric acid.

Support for these theories soon came from respected professionals. In June 2015 Alexander Klimchouk again came to the North Pennines for a trip down Hudgill, accompanied by Andy Farrant of the British Geological Survey and myself. Soon afterwards Tony Waltham and Dave Brook, whose combined knowledge of the geology of Pennine caves cannot be exceeded, also visited the system with me. All four had no doubts in confirming the hypogenic nature of the system, but Professor Klimchouk remained very unimpressed by the galena/cerussite/sulphuric acid theory. However of no doubt at all about the idea was Arthur Palmer of the State University of New York, one of the world's experts on maze caves, who (with Alexander Klimchouk) reviewed the paper we wrote on Hudgill in late 2014.

Since Hudgill, four more large maze caves have been studied in the Pennines, the first three being Cutthroat Caverns, Sloate Hole Mine Caverns and Danby Level Mine Caverns. Cutthroat Caverns, on the moors between Upper Teesdale and Upper Weardale and discovered and surveyed in 2018, was found to exhibit all the characteristics expected of a hypogenic maze. Although entered directly from the moorland and not via mine workings it is nevertheless very close to galena-containing veins, and its entrance passages were found to exhibit epigenic, vadose geomorphology before the phreatic maze region of the cave was reached. The Sloate Hole investigation (in 2018-19) also failed to produce any new evidence about the speleogenesis of these caves, but its previously predicted (in 1975) phreatic – and hence hypogenic – nature was confirmed. Sloate Hole's passages have been significantly altered by the mining activity of the early 20th century, but the re-exploration failed to discover any links with existing watercourses or signs of vadose activity and again it fitted into the previously observed characteristics of Pennine maze caves.

One of the latest discoveries is Danby Level Caverns, found by enlarging a narrow natural rift near the forehead of Danby Level on the south slopes of Arkengarthdale in early 2019. Here some of the geomorphology differs significantly from all previously examined maze caves, in that there is a high preponderance of low, wide, cupola-capped passages, unlike the narrow "inverted V" rifts predominating in the other caves. We think this is a result of the fact that the cave lies within a tilted fault block in a position amenable to cupola formation. However the cave has failed yet again to produce any further information that would tie down more precisely the geological period during which these caves were formed ..... but in early 2021 we were treated, out of the blue, to a fascinating and almost certainly partly hypothetical account of how they were formed!

This was through the publication in the scientific journal *Earth Surface Processes and Landforms* (Vol. 46, p455-464) of a paper entitled "Supergene sulphuric acid speleogenesis and the origin of hypogene caves: evidence from the Northern Pennines, UK" by an Australian professor of environmental geoscience, Dr Webb, written (according to a footnote in the paper) when on sabbatical of the University of Newcastle. The first point that emerges from the paper, which is scattered with numerous small inaccuracies, is that the professor has almost certainly not entered any of the caves in question and that the paper must be regarded as a "desk" study unsupported by *in-situ* observations. There are several areas of debate in the paper, but there were also two aspects where Dr Webb and I agree – that the caves were formed by sulphuric acid speleogenesis and that the sulphur came from metal sulphides in associated or nearby ores. Dr Webb, however, did not agree with our previous

hypothesis that the caves are hypogenic because " the acidic groundwater does not originate from underlying strata". This follows from his earlier statement that "the maze caves were dissolved by the release of acidity from sulphides within the same bed in which the caves were formed". The second statement is probably correct but the leap to the first is debateable. A lot hinges on the precise and appropriate definition of hypogenic speleogenesis (of which there are several).

Webb also states that substantial deposits of pyrite/marcasite [iron sulphides] are "the key factor" in the speleogenesis of these maze caves, arguing that "an additional source of acidity was required for maze cave formation" to that from oxidation of galena/sphalerite because the source of the H_2CO_3 needed to release acidity from these sulphides cannot be atmospheric CO_2. There is potentially a lot of credibility behind these thoughts, but at this stage they are conjectural and not supported by much evidence.

A note by me (known technically as a "Discussion") on the debateable points in Dr Webb's paper has been sent to the journal and (after peer review) accepted for publication, as has a "Reply" to the note written by Dr Webb (which was also peer reviewed); both documents will be published the same time in the journal probably late in 2021. Hopefully this will spur further examination of the caves and more debate about their speleogenesis.

Meanwhile discovery and exploration of Northern Pennine maze caves has continued. In April 2021 the York lads and lasses blew a little hole in the narrow rift near the bottom of the Draughting Hole entrance shaft on The Stang to discover a tight but accessible rift-type maze of which over 4km has now (Oct. 2021) been explored and surveyed. Remaining passages with potential are difficult to reach and then to negotiate, so exploration is not yet complete. The system differs from the earlier maze caves in having numerous shafts in the cave floors which may eventually provide evidence to help us move a little farther in the speleogenetical debate.

9.4. THE MINE AT HOLLINHEAD

MSG members continue in the long-established tradition of poking down any unusual hole in the ground in or near the Northern Pennines, whether made by nature, man, badger, rabbit or fox. Pete Ryder and Chris Scaife are two of the current experts in this field of endeavour as the following account by Chris illustrates. As this venture took place on Blackburn Common north of Bellingham in Northumberland it does not fit easily into any of the previous chapters on the Pennine dales, so this account by Chris Scaife has been unceremoniously plonked here in the Miscellaneous section of the journal.

Hollinhead Mines, Northumberland, NY 8132 9071

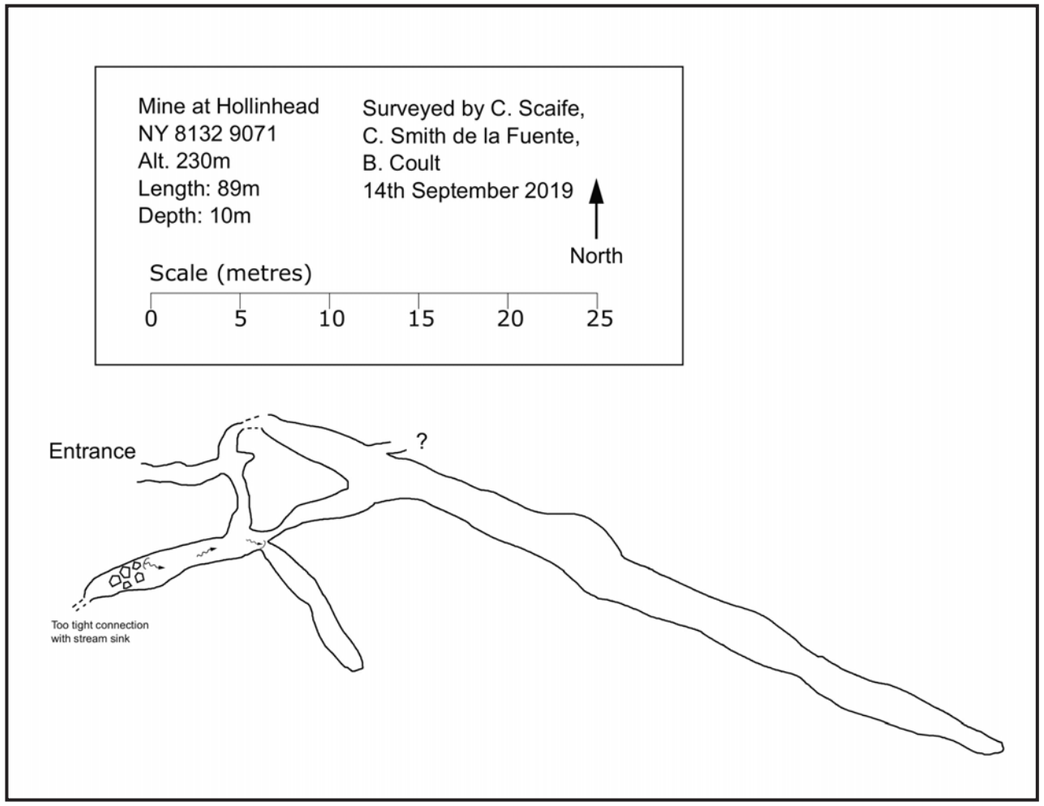
I was sitting in Tocumen International Airport in Panama with Carolina Smith de la Fuente, awaiting connecting flights on the return from our honeymoon, when I saw that Pete Ryder had posted on Facebook a picture of what looked like a cave entrance in Northumberland. I immediately sent him a message and we arranged to go and investigate before I returned to work.

Visit by Chris Scaife, Carolina Smith de la Fuente and Pete Ryder on January 2nd 2019:
There were two entrances close together. I looked in both of them with Carolina, while Pete stayed clean on the surface. We found a fair amount of mined passage in one hole and a short, wet crawl in the other, so we vowed to return with a Disto.

I returned with Ben Coult, Kelvin McKivitt and Carolina on September 14th 2019, after coffee at Pete Ryder's house:

Hole 1. Length 89m, depth 10m. I surveyed the mine with Carolina. Ben came in as far as a narrow section, and Kelvin provided valuable surface support. The entrance is a drop down into mud, followed by a crawl, then a slide down to the right. Right at the bottom of this slide leads to a boulder choke, where the stream enters. Left of the boulders, there is a too-tight connection to Hole 2. Following the stream back to the bottom of the slide, the stream leads right to a small chamber and dead end. Straight ahead leads up a slope into more spacious passage, with a choked connection with the entrance passage on the left, and a long, gentle slope downwards on the right.

Hole 2. Length 9m. The stream sinks into a crawl for 4.5m, then it becomes uncomfortably low. I was able to see ahead for another 4.5m, at which point it appeared to close down almost completely. The cobble floor would need much excavation to progress.



Ben Coult at the entrance to Hollinhead Mine 1 (Chris Scaife).

Chris Scaife entering Hollinhead Mine 2 (Kelvin McKivitt).

9.5. COATE MOOR MINE UPDATED

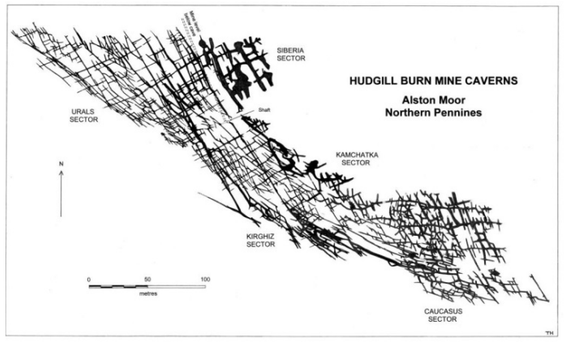
And now for another esoteric bit of information on another obscure abandoned mine. Readers of this journal may remember that MSG13 contained a survey drawn in August 2012 of Coate Moor ironstone mine near Kildale in the North Yorks Moors that was worked from the mid-1800s to 1876. The survey covered all of the mine accessible at the time but it was clear from old plans of the mine that much remained hidden behind roof falls (see page 37 of MSG13). Recently Chris Twigg and friends in the Cleveland Mine Heritage Society have done a bit of digging and uncovered and re-surveyed a major new section between the main workings and the furnace adit that is highlighted in red on the part of the miners' 1876 "abandonment plan" here (see MSG13 for the full 1876 plan). So essentially all of the mine as worked in the mid-1800s is accessible again. Chris and friends have also overlaid the original (2012) survey on a Lidar plan of the surface features as also shown here.

9.6. CONSERVATION SUCCESS FOR HUDGILL BURN MINE CAVERNS

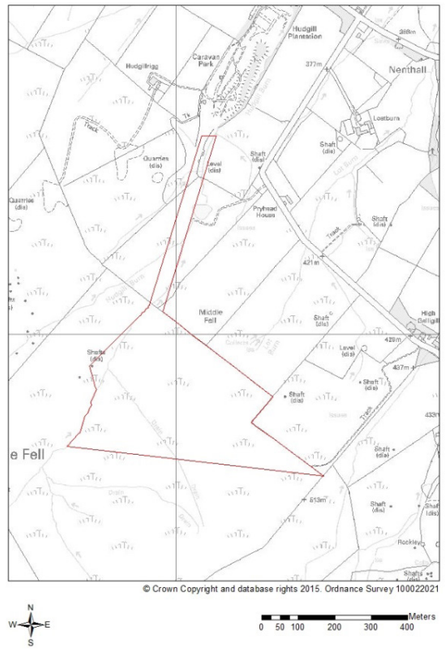
Most readers of this journal will be aware of the concept of SSSIs (Sites of Special Scientific Interest), the UK government's process for protecting outstanding biological and geological locations. They may not be aware, however, that the process differs for these two types of sites, and that the GCR (Geological Conservation Review) procedure is that which is followed for geological sites. The GCR programme began in 1977 and its aim is to identify the best (most representative) earth science sites in Britain to ensure their long-term conservation.

As they were completing their exploration and survey of Hudgill Burn Caverns in 2014 Moldywarpers realized that they had a stupendous geological discovery on their hands – by far the most extensive hypogenic maze cave in Britain, a category of cave which is itself a bit of a geological curiosity. And with talk at the time of possible drilling in the Alston area by a mining conglomerate for zinc, the question of conservation arose.

So a member of MSG decided to take action. Through various contacts in the North Pennines Area of Outstanding Natural Beauty (AONB) and elsewhere he was eventually put in touch with staff on the Joint Nature Conservation Committee (JNCC), the body controlled by DEFRA that administers the GCR procedure. After several meetings, much study of the survey and surface maps, and underground familiarisation trips for some of the officials, the case for designation of Hudgill Burn Mine caverns as a GCR was made, and the subsequent administrative process carried out (as it happens, by Andy Farrant of British Geological Survey, a friend of the same member of the Moldywarps). And so the Hudgill Burn Mine Caverns now appear on the official list of GCR sites as the extract below from the JNCC website illustrates. Hopefully SSSI designation for Hudgill will follow in due course, as almost all GCR sites are subsequently notified as geological SSSIs.



The outline plan of the cave proposed by MSG for GCR designation.



The GCR boundary initially proposed by JNCC for the cave, including the mine adit giving access to the cave.

Hudgill Burn Mine Caverns (Caves)
Site Details

GCR Number	3345
Name	Hudgill Burn Mine Caverns
Unitary Authority	Cumbria
Country	England
Grid Ref *	NY751454
Site Report	No site report

* This is the approximate central point of the GCR site. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the site.

GCR BLOCK

CAV Caves

Publication details

Karst & Caves of Great Britain(1997)

A.C. Waltham, M.J. Simms, A.J. Farrant & H.S. Goldie, Geological conservation Review Volume: **12**

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Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.

Location of Hudgill Burn Mine Caverns GCR site

The Hudgill Burn Mine Caverns entry in the GCR database.

A search through the files has produced this early photo of MSG members on an outing. The exact date of the photo is not certain but one or two older members of MSG may recognize themselves.