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SURVEYS

Editorial

This is number one of our new style Journal and I agree with you; lets hope number two does not take as long to produce. But, of course, there have been difficulties, mostly financial.

It might well be called the Fountains Fell issue and I do congratulate all concerned on the outstanding discoveries and efforts made in that area. I am sure that non club members will be amazed to learn that Gingling Hole is now number five in order of length on Fountains Fell, but I do hasten to add that it is still number one for an easy day's outing.

The Northern Pennine Club is now well into its second stage. The club first began in 1946 with the founders and then plus converts operating from Crow Nest Cottage and the Cross Streets. Ten years later, the second stage began; a mostly "new team" with a fine large headquarters, Green Close, Clapham. However, there have been few resignations, the "old team" do sometimes still pothole, though not often in hazard suits, and the club is as healthy as ever. Let us hope for more successes in 1958.

Malcolm G. Riley,
Airton

Recording the Alston Block

R.T.Hylton

Once upon a time, in the days when a Messerschmidt wasn't a scooter, a young boy was evacuated to the town of Alston in the valley of the Tyne, where, seeking amusement, he read a book by a certain Sopwith who told of a cave entered by miners in the Ayleburn Mine a hundred years before.

In the course of time and by assiduity to his studies the boy secured entrance to the University at Cambridge from whence he led a band of students to survey the cave at Ayleburn, amongst the party being one Brian Heys.

Later, Jack Myers being exiled from Leeds into the wilds of Durham, cast around him and in company with Brian prospected the area. They decided that the Ayleburn water probably rose at Bar Haugh. Jack Newrick says that this was in fact chaff tested in the old days and is so.

However, we started in real earnest on the country north of Stainmore about three years ago when we secured a base in Weardale, that is, when I went to live up there. At this time it was not well known to the organised caving world. Norman Thornber's 'Pennine Underground' includes Moking Hurth Cave also known as Backhouse's cave. It seems first to have been recorded by a Mr. Backhouse who also did some work in the Grassington Moor area, but this was too far from the usual haunts to be visited by more than a very few people. Sopwith, in his book, mentions various mines including the above and the Nent Force Level, the entrance to which is now buried in quarry debris but was once a very important drainage level three miles long, driven to drain the mines in that area. Jack Newrick tells a story about the maintenance man who went up in the only boat in the district to do his day's work. He forgot to secure the craft and being a non-swimmer found himself marooned with the boat only a few yards away, and there he had to sit until the folks outside got so worried they built a new boat or raft or something and went up and rescued him.

A Stationary Office Publication, 'The Northern Pennine Orefield' by Professor Dunham of Durham University, notes several mines which have run into cave systems, varying in altitude from Cow Green underneath the Tees to Silverband Mine high above it on Great Dun Fell at about 2400 feet. Also included are Lune-Head Mine where the caves are said to be the most notable feature of the mine; Flushiemere, where a large cavern is said to have been found, and Hudgill mine. Unfortunately, the last three named have now "run in" and so have sealed the caves off. Flushiemere "ran-in" between two trips by the Durham Cave Club to find the Cavern. The Cow Green Management disclaims knowledge of the cave, and permission has not been given to enter Silverband.

Jack Myers and I went to Ayleburn one day to see if we could push it a bit further. We met the owner, Mr. Shepheard, who works his own coal mine in the opposite side of the burn. After treating us very hospitably, he told us that some Newcastle people had been in and found an extension upstream of the waterfall. We went in and surveyed this section, took some photos and retired to ponder on these Newcastle folk. Later on, I spent a lone afternoon surveying Lynnkirk Cave, a small cave in Shittlehope which a farmer told me about.

I showed the Ayleburn photos to the chemist in Wolsingham, Norman Black, now treasurer of the Durham Cave Club. Some weeks later we went off up the dale to meet "a gentleman who has discovered a cave and wants to form a club to explore it." Norman thought there was a stream in this cave. There is. The gentleman was Jack Newrick and the cave was Ludwell Fairy Holes. Jack had been bitten by a cave bug whilst farming in the Mendips and in company with Derrick Maling from Durham University found both Fairy Holes rising and also the sinks two miles away in the Blaeberry Burn. Though this was an independent discovery, it was in fact a rediscovery: the cave has always been known, though it may

have been easier to get into once. The wife of the farmer, on whose land the entrance is, had a grand-relation who, ninety years ago, is supposed to have gone into the cave with a week's supply of food and candles and to have emerged at Ash Cleugh down to his last jam sandwich and his last inch of candle, which would argue that the job took him at least a week, unless he was burning his candle at both ends. Ash Cleugh is the next cleugh to Blaeberry Burn. It is improbable, however, that anyone has, in fact, been from rising to sink. It is difficult to imagine anyone living for a week in Fairy Holes, up to his waist in water for a fair part of the time. The explanation seems to be in the way that people lived in the dale in those days. A man would work his farm at the weekend and would go off up to the mines on Monday with a week's food and candles, leaving his wife to run the farm. The area round the Blaeberry-Ash Cleugh was extensively mined and it is unlikely that the miners would have neglected to test the sinks. It is possible that one of the mines ran into the cave somewhere. Anyway, Jack had been in a fair way with the Northumberland Mountaineering Club and at one point they had found some signatures:- 'Muschamp', 'Geo. Race', and an almost illegible one with a place name which was at first believed to be 'Harehope Hall' with the date '3rd June 1844'.

Some time later, I came across a book in a second-hand shop: 'Weardale' by Morley Egglestone, written in the second half of the last century, probably about the 1880's. This Gentleman was one of the Weardale worthies and is still well remembered in the dale. He says that this cave was entered some time ago by a party who explored for several hours and compares it with the glories of Antiparos (wherever that is ?). He mentions the two people in another part of the book. Just recently, Jack Newrick came across a Mr. Bell living in Crook who knows quite a lot about these people and was able to tell him that the third name was 'Jacob Walton' and the place-name was 'Farewell Hall'. It was here that the party turned back.

At Christmas 1944, a piece of news from Jack Newrick took Brian Heys, Jack Myers, Alan Boake, Bill Brown and myself into the Hope Level mine in Stanhope to look for a cave in the Great Limestone. About 700 yards into the level, whilst still in the Four Fathom Limestone, which lies underneath the Great, we found that the level had intersected a cave. This we explored and surveyed for about half a mile and added the name 'Golightly' to the aforementioned ancient cavers, (I suppose you might call it a caving club). We didn't find the cave in the Great Limestone for various reasons but there is no real reason to suppose it is not there. To these caves may be added, in Weardale, Clints caves, Ireshope, Elph Cleugh in Swinhope, Sowan Burn south of Stanhope. Morley Egglestone doesn't mention Sowan Burn and there may have been no entrance until quarrying broke into it. Until then it may have been full of water, with an unobtrusive sort of rising. His book goes no further down the dale than Stanhope which, to the purists, is the bottom of the dale, so he doesn't bother to mention another Fairy Hole in lower Bolihope, where local gamblers used to spend Sundays getting rid of their money away from the arm of the law. This has since been quarried away. Nor does he mention Jacob Well, also in Lower Bolihope; (I wonder if this has anything to do with the aforementioned Jacob Walton). He does, however, mention a cave in Bolihope Crag which has, he says, been quarried away, and also a cave or caves in Wellhope which we have not yet traced.

However, the real gem in his book is Heathery Burn Cave, which was quarried away about eighteen years before he wrote his book, but which he apparently knew well. During the quarrying, there was found one of the most notable bronze age collections ever discovered, along with the bones of the owners. This was sent to London, presumably to the British Museum. The cave was apparently one of the local "musts" and many of the visitors "scratched their names on the enamelled rocky walls". He described it as being in the eastern hillside, and taking a northerly direction, roughly parallel with the burn. The principal part was some sixty yards long and ten or twelve yards wide and three or four yards high. Great bosses of stalactite were numerous and an incrustation covered the floor except where a stream of water from the Heathery Burn ran through. Near the centre, an encrusted mass of rock was called the Communion Table; it was under the stalagmite floor that the archaeological finds were made.

Whilst operating up here we have helped to further the Durham Cave Club, a sturdy brat doing great things, and since we, who operate up there, are also members of the D.C.C., it is not possible to separate our doings. On the escarpment above Brough, some potholes have been found, one of which takes a flood stream of considerable proportions though we have not yet managed to enter the sink which is blocked with boulders. The neighbouring holes have been descended to depths of about sixty feet when they close in. Jingle Pots on Lunehead Moor have been explored but the water has not yet been traced. The D.C.C is hoping to do this in course of time, searches having been made on the hills round the headwaters of the Tees and Tyne, Meldon Fell, Knock Fell and Great Dun Fell. We are now trying to break into a cave which is over a mile from sink to rising near Nenthead; it is proving very obstinate. Also in this area are Tutman's Hole and Pate Hole. Some time ago someone from Appleby was doing work in this area. Arthur Gemmel and Jim Leach went up to visit some of his digs near Flass and Dryevers. Unfortunately, we seem to have lost trace of him.

In amongst all this work, of course, appears the green imp, fluorescein, spreading alarm and despondency around him. We made a test of the Harnisha Burn sink one afternoon and the next day a school camp by the Bolihope Burn had to go off the water wagon when their clear spring ran vivid green. The clear spring was in fact no more than one of the many sinks and risings of the Bolihope Burn into which the Harnisha Burn finds its way via an old lead mine. A farmer in Weardale was most depressed when he found that an old duck-puddle near his neighbour's midden where some water sank was in fact his drinking water supply, but what hurt us the most was, when we had turned the Bolihope Burn a beautiful emerald green for most of its length and nobody noticed it. Its this kind of thing that makes it all seem not worth while.

So now, having started on what we thought to be almost unknown country, we find that it is in fact well known, or at least it has been. Much of this is to the credit of the mining activity in the last century, and of course, the old boys Muschamp, Race, Walton and Golightly, bless their old billy-cock hats and mutton-chop whiskers. They must have had hearts like lions to tackle Fairy Holes with tallow dips and tinder boxes.

Fountains Fell Caverns

B.Heys

'Britain Underground' lists 15 pots or caves in the Fountains Fell area of Ribblesdale. Of these, prior to 1956, only Gingling Hole had been explored to any great extent, but a sustained N.P.C. attack on Gingling Sink has yielded a cave of equal length already and scope for more with hard work.

Gingling Hole itself was first explored by the Yorkshire Ramblers Club in 1923 (1), and a second descent was made in 1931 (2). On this second occasion, the way on was found blocked by debris and had to be reexcavated, whilst the entrance to Gingling Sink had opened itself up and the first ladder pitch was descended into a two foot pool. A passage was also entered under the dry stream bed and after a narrow crawl went down fifteen feet to a bedding plane where water was heard. This must presumably have been what is now termed the flood sink.

The next mention of Gingling Hole (3) is concerned with rescue operations; a member of the Moor and Fell Club broke a leg in the final chamber.

After this, the next move was by the Craven Pothole Club (4). In 1949, the Brindle brothers explored the bedding plane from the foot of the 25' shaft of Gingling Sink and after a series of short pitches reached another wide bedding plane with an undulating floor.

"In each hollow was a pool, but at last, a ridge in the floor coincided with a dip in the roof to make the passage too tight for further progress."

The N.P.C. has also been interested in the area ever since there was an N.P.C. Several of the smaller pots were explored for the first time and much thought was given to the problems of Gingling Sink. The flood sink was examined and on one occasion a storm broke whilst a party was below. They were called out hurriedly, and a few minutes later the entrance was deep under water. Malcolm Riley also reached the series of short pitches of the Brindle brothers.

My personal interest in the area started the day I dropped four pounds of fluorescein in Gingling Sink and three days later, when Brants Gill head turned green, Gingling Sink became one of my greatest obsessions. N.P.C. interests in the area became still greater (5).

Gingling Hole was reexamined and surveyed in 1951. Nothing new was found but an erroneous belief that Gingling Hole turned round on itself and that the final chamber was under the entrance shaft was dispelled. Instead, the general trend of the cave is almost in line with Brants Gill head and reaches under Fornah Gill.

By 1955, we became aware of the changeability of the area. The entrance of the flood sink disappeared under several feet of peat and gravel. But it was remembered that the explorers had been able to climb a small shaft inside and speak through the cliff face.

Our 1955 job was to open up this line of communication and pursue the original line of attack further. The first few weekends work merely established that our memories were at fault and we had to start tunnel driving again about ten feet away from our first attempt, successfully breaking in after a few weekends.

We got into the bedding plane and realised that with a bit more work we might reach the foot of Gingling Sink first pitch, but did not think this effort was justified.

After the failure of the indirect attempts, our minds began to turn to pressing the direct route - Gingling Sink itself. The Brindles' expedition had shown that even under drought conditions, the water level at the bottom could vary by 12", so it was clear that to make progress a super-drought must be established.

As genuine droughts on Fountains Fell are very rare, we began to design an artificial one. Jack Myers favoured a Grand Contour Canal to carry the beck along the moor past the sinks. I favoured getting two or three lengths of fire hose to carry the water across the sinks. I opposed Jack's idea because it sounded like too much work; Jack opposed mine because the pipe would not carry enough water.

And so, for a while, we just thought hard. Then I found myself a number of lengths of heavy duty rubber hose about five inches in diameter. I was confident we could squeeze the beck into one of them given reasonably dry weather.

Saturday, May 26th 1956, Jack, Dick Hylton and I conveyed three lengths, some 200 feet of the pipe, to Fountains Fell and made a preliminary assembly to get the water to the Flood Sink. We soon realised that the water had got back in at the foot of the first pitch of Gingling Sink.

The next day we continued work and got the water over the short stretch of turf below the Flood Sink, but once again, the water was back in at the foot of the first pitch. However, as the pitch was now dry, we had a look down to see what we could do.

Jack had a go at the wet bedding plane to the left of where the stream disappeared but decided it was too tight to get far. I went far enough to see that there was no easy way over for a very flat man, and yet this must have been the way the Brindles and Malcolm went. I was puzzled. My view ahead was partially blocked by a boulder wedged between floor and roof and surrounded by flood debris. So to make quite certain that the low bedding plane was not opening up beyond, I pulled some of the debris to one side and was most pleasantly surprised to hear a clatter, clatter, plop.

A few minutes more work and there was a boing, boing, sploosh as the boulder which covered the hole disappeared. I followed too, a little more quietly, whilst Gordon Batty negotiated the bedding plane. We descended the "series of short pitches", deciding that the last one needed a rope. The climb is easy enough, but the approach has to be made feet first along a narrow tunnel so that one cannot see one's footholds and at the bottom is a deep pool where the main stream reappears. From here we followed the bedding plane to where the "ridge in the floor coincided with a dip in the roof" - the barrier which had stopped the Brindles and was to stop us for the day.

The next day of progress was June 10th, the day after the club dinner, so there were plenty of helpers on the surface who were not eager to go down. Our first job was to extend the pipe line by two more lengths, and we were eventually rewarded by hearing a roaring sound from Gingling Hole where the water was going down a hole about 15 yards from it. The water enters about 15' up the left hand wall above the manhole at the entrance to the canal.

Gordon and Bill Holden were the only two fit for a descent that day and they departed with a hammer and chisel. They abolished the barrier, partially at any rate, and Gordon got through. The surface diversion had been successful and had allowed the pool to drain away, leaving a reasonable airspace over a canal. The water had apparently got away through a 2" wide crack, but to the left was a man-size crawl up a boulder slope and then over rock to the next pitch.

This aroused enthusiasm, so we returned to the attack the next Saturday; Gordon, Bob Goodwin and I. We took a couple of ladders with us and found that the next pitch was 20', a rock flake on the left serves as a belay. Nearby, a shower enters from the roof. From the foot of the ladder extends a wet bedding plane and after a short stretch of gravel, the water deepens to 2' whilst airspace is limited to 8". Soon a fissure in the roof allows one to stand up and then scramble up into a dry bypass passage - the first place

we have met below, where one can hope to stand out of the water in even a slight flood, although even this is not a place to be if it is raining hard.

Continuing, we crawl with the stream over pebbles, hearing a waterfall ahead, and then we can stand up in an aven where the water enters. That looks like a passage to explore another day, for now the large passage formed by the combined streams leads on easily round the corner.

That is, at any rate, what we were thinking at the time, but round the corner the roof dipped down to within 18" of the water. We were in a knee deep pool and the water was going out down a low bedding plane to the left. Straight on was a 100' hands and knees crawl to a dead end. We returned elated with our progress but did not feel over optimistic about further progress downwards.

Our next trip down was a week later. We put fluorescein in the top sink of the flood beck before going down, and about half an hour later we saw the waterfall below turn green. Gordon climbed the waterfall and fixed a rope for me to follow. We found a few hundred feet of easy passage and then met a high aven. Round a corner the stream entered by a low passage which we followed mainly on hands and knees to a ruckle of boulders down which the stream was cascading. On our return we ascended a boulder slope in the aven but decided it was a bit too precarious to do much at the top.

When we got back to the waterall chamber, we observed with alarm that the flow of water had increased. Our one aim then was to get out as quickly as possible. The siphon pool level was unaltered and once beyond it we paused a moment for breath - but not for long. A not far distant roar indicated that a flood was approaching us so we sped on up the short pitches and found a strong stream occupying the first bedding plane. The bedding plane is for the most part just under 8" high but a slight meandering channel in the floor gives just enough height to get through. It is bad enough when you can see the channel, but when there is a turbulent water surface 6" below the roof, it becomes most unpleasant. The one redeeming factor was that the water was warm, in fact the climb up the entrance ladder pitch was an enjoyable shower bath.

On the surface again, the sun was shining and the thunderclouds were disappearing to the east. In the meantime, Bert Bradshaw, who had been keeping watch on the surface for us had been disturbed from his slumbers by heavy drops of rain. He had had previous experience of floods, and when he saw the dam was overtopped had gone to gather a rescue party from Green Close. Over Ingleborough the storm had been much heavier and the rescue party whom we met at Dale Head seemed surprised to see us again.

Whilst this trip had shown us that we could get out in the event of a minor flood, we realised that our pipeline had very little overload margin. If we were going to spend much time below, we would have to find a larger pipe and we now knew there was enough new ground below to justify a bit of work. Oil drums connected end to end had been suggested, but a large number would be required. We had a look over quite a few local rubbish dumps and decided that there were quite a large number available. The next Saturday we delivered 30 to the site and as the flow was small we planned to make a descent next day to make a survey using just the rubber pipe as before.

During the night there was a little more rain but not enough to upset us. Five of us got down and we started surveying back from the top end of the inlet passage. We were almost back at the waterfall when Jack claimed that the water was rising - I wasn't certain, but we didn't wait to make sure and once again we retreated at top speed. This time we got out about five minutes before the flood reached the entrance.

By now we were quite convinced that our new pipe line was imperative and Gordon, Jack and I planned to spend the second week of July on this project. We started on the Saturday and by the Thursday we had 80 oil drums leading from the dam to a weird trifurcation which we christened Flook. From here we had three rubber 5" pipes in parallel to a covered trench in the col below the Flood Sink. When we

admitted water to the finished assembly, Fountains Fell lived up to its name - there were many leaks; we tried throwing in a few handfuls of sawdust to plug the leaks with some partial success, but whilst my back was turned, the tin containing the sawdust disappeared, but of this more will be said later.

In the end we decided to use the rubber pipe to carry as much water as it could whilst the oil drums would do their best to cope with any flood. After lunch we got below again and managed to finish off the survey. We also had a look where the stream finally disappeared down the low bedding plane and by removing a few boulders we eventually dropped the stream through the bottom of the pool which had previously inconvenienced us. A little more work and we were able to follow it down about eight feet to another flooded plane. As survey was our primary object, we did not push this bedding plane but left it for another trip - it is still waiting.

Since then we have not had much success below. The next time we got down we found the first bedding plane practically choked with soft peat washed in from the Flood Sink and had to plough a way through it. The level of the siphon pool had risen several inches so that we now had to duck right under to get through, so we were not in a very pushing mood when we got to the bottom.

The period July 28th to August 6th had been chosen for a mass attack by the "old timers" - but they were given an ample excuse for not descending. The period proved to be one of exceptional rainfalls, so the time was largely spent watching the great circling lakes into which the sinks developed. When we saw the cave entrance eight feet under water, we were glad to be on the surface.

During the floods we did a very rapid fluorescein test on a sink in the Flood Beck - in five minutes it reappeared 50 yards lower down.

Whilst we appreciated that the pipe line could not be expected to cope with large floods we were a little disappointed with its performance. The missing sawdust tin was blamed and we therefore broke the pipe to extract it, eventually finding it ten feet from the top end. With the blockage removed, the flow increased tremendously, but so alas did the leakage.

We had another short look down at the end of this period, but found the air space at the siphon pool to be down to two inches. We retired to await the next dry period.

When will that be ?

Bibliography

(1) Yorkshire Ramblers Club Journal Vol V p 215

(2) Yorkshire Ramblers Club Journal Vol VI p 154

(3) Yorkshire Ramblers Club Journal Vol VI p 314

(4) Journal of the Craven Pothole Club Vol I p 40

(5) Cave Research Group Newsletter No. 32 p 3

P.S. N.P.C. party - May 5th 1957, found the hole completely inaccessible due to a backing up of the canal which indicates a probable block of the outlet by flood debris.

The pipe line system has been dismantled and the hole temporarily abandoned for the other activities.

The Editor

Fornah Gill Cavern

C.Green and B.Hudson

Fountains Fell Episode 2

Location 34/848696

The chain of events that led to breaking into Fornah Gill Cave dates back to late July 1956.

One Sunday, a party consisting of C.Green, R.Hylton and J.Myers had spent the whole day repairing the dam around the water diversion pipes at the Gingling Hole Wet Sinks, but in the late afternoon decided to walk down the Fornah Gill valley in search of probable new digs.

The area had been neglected in the past, probably due to there being no open caves, and the fact that the limestone ended a short way below Fornah Gill barn.

However, the club had heard about a pothole in the valley that had been covered many years ago, whose location was now lost (since opened up as "Magnetometer Pot"). The Fornah Gill stream varied considerably in its flow. In dry weather it would vanish completely but when in moderate flow, it all disappeared in a small rift in the stream bank, a few yards upstream from Fornah Gill Cavern to be. A few hundred yards downstream, where the limestone ended, were small risings, and for many years it had been assumed that these were connected with the sink. However, a fluorescein test showed there was no connection, so one could only assume that water sinking in Fornah Gill came out at Brantsgill Head Rising, about three miles away.

All these facts indicated a possible way into the Fountains Fell master cave system, so we set about digging out the water sink rift. The stream was in spate and a lot was flowing past the sink on to Neals Ing Farm. A temporary dam was built to divert all the water past the sink, and the rift was exposed as a shaft about four feet deep, and just wide enough to stand up in. The bottom was packed with loose gravel and silt through which the stream percolated away. It was abandoned as a hopeless excavation especially since the water built up to a head indicating considerable blockage.

The following week, G.Cornes, C.Green and W.Holden visited Fornah Gill valley and noticed two small fissures in the bank downstream from the wet sink. Due to a washed down mud bank, the fissures were now well away from the main stream. Trenches were dug from the main stream to each in turn and the upstream one readily took away a good flow without any sign of blocking. These fissures were surrounded by a shallow grass-covered depression. It appeared that this depression was a silted up pothole that at one time had taken all the flow of the stream.

So we started digging and soon exposed a water-washed fissure. In the distance was the steady rumble of the stream falling over a pitch.

Our enthusiasm was further aroused by a visit from Robert Caton of Neals Ing farm, in the later afternoon, who showed us a point a few yards upstream from the dig where some years ago one could throw stones down a deep open pitch. This had since silted up with a heavy bank fall.

The following weeks were spent in excavating the twenty five feet deep entrance shaft. We were hampered on most weekends by very bad weather, nearly continuous drizzle or driving snow, making it most unpleasant for the party on top hauling up the buckets. Lack of transport and snowed up roads together with petrol rationing forced us to spend many uncomfortable nights sleeping out in Fornah Gill Barn.

The shaft was a mass of tightly packed clay and limestone boulders. Long slabs of limestone held tightly in a vertical position by the mud were a great hindrance, owing to the difficulty of getting a firm grip on them and extracting them in one piece.

At a depth of 12 feet we thought we had reached rock bottom, apart from a small silted shaft in the main floor. This we cleared for a further 8 feet and then found that our "rock bottom at 12 feet" was only another huge boulder.

By Christmas, a depth of 20 feet had been reached, and it was obvious that some better hauling device than a bucket and rope was required. Mr. Caton of Neals Ing Farm kindly gave us some timber, and a hauling platform with a tripod and pulley block was erected. The shaft wall of wedged boulders, now in a very dangerous condition, was shored up with timber wedges, fixed in by Gordon Batty and Jack Myers.

We finally reached rock bottom in January and a narrow outlet passage was exposed. Brian Hudson was pushed in head first and found that it ended after about 10 feet with a drop down a vertical narrow rift. This was blocked with boulders, but they were soon broken up and dropped down a rift into a low cave with a mud floor. At first there was no obvious way out, but after removing jammed boulders from the floor, Gordon Batty opened up a tight vertical squeeze that dropped into a clean washed stream passage.

Excitement ran high as we crawled along with an ever increasing roar of a waterfall in the distance. After about 40 feet, we dropped into the main stream passage of the whole cave system.

We walked upstream for about 100 feet along a fine streamway with white polished dripstone floor and walls. After two right angle bends, the roof became lower and finally ended with the stream percolating through a roof fall.

The downstream passage ended in a few feet with the stream disappearing into a sump in a narrow fissure.

However, a narrow tube "Oxbow Crawl" seemed to run parallel to the stream direction where it "sumped". So we set off along this arduous crawl in the hope of meeting up with the stream again.

We emerged into a vertical fissure passage with a stream entering on the right, but a much smaller one than the main stream sinking at the sump. A fluorescein test would be needed to prove any connection between the sink and rising at each end of Oxbow Crawl.

The vertical fissure soon developed into a hands and knees crawl, the floor becoming more and more blocked with silt, until the airspace became too small to progress any further. However, by building a mud dam, we managed to divert the whole stream down a small outlet and then by lying on our backs there was just sufficient airspace to wriggle on through the mud with chests rubbing the roof. After a further 60 feet, the mud cleared and the passage increased in height and in the distance a strong roar could be heard. However, after taking a final plunge over a small drop, the streamway ended in an impassable sump. On later visits, the level of this sump never fell, even during dry weather, and no way on could be seen.

Rift Chambers

These are best entered from Mud Chamber - crawl up a short inclined mud slope and one emerges into a shattered chamber about 50 feet high. Several loose, dangerous flakes hang from the walls. The floor slopes steeply away and high level passages can be seen in both walls, but these end after a few feet.

The far end of the chamber finishes in a narrow fissure that drops into the main streamway at the end of the Oxbow Crawl.

A continuation of the chamber can be seen across the stream passage but it is blocked with boulders - these could easily be cleared and might reveal a further extension.

Upstream Inlet Passage

This feeds into the main stream about 40 feet downstream from the end of Oxbow Crawl. A tortuous crawl leads into a small mud chamber. A groove runs along the floor of the crawl and the author had the unpleasant experience of having his knee trapped in it for an hour while lying flat in the passage. He managed to release it only at the expense of cutting away a boiler suit, immersion suit and long underpants!

Several avens occur in the roof of the mud chamber as well as a complex of further small inlets, all choked with mud. Digging in one of these led to an extension of the passage for a further 50 feet until it became choked with mud again. This extension has several interesting potholes in the floor, but they are all heavily silted.

Apart from the places mentioned above there appears to be little hope for further extensions in this cave.

A large dam was built over Fornah Gill water sink, upstream of the entrance, in an attempt to divert water from the cave. However, the main passage flooded as strongly as ever! We can only assume that the cave is fed by numerous sinks along the stream bed.

On one visit after a period of drought, when the whole valley was dry, the final sump still remained as an impassable stagnant pool.

We would finally like to thank Mr.Caton of Neals Ing and his family for the hospitality given to us on many occasions, for allowing us to use Fornah Gill Barn, and supplying timbers for making the shaft cover.

Tackle required

Entry Shaft 25 foot ladder with 40 feet of handline, tied to the bottom of the ladder, running to the bottom of the first rift pitch.

Care should be taken to keep clear of the shored up shaft wall.

Hammer Pot

G.Batty

Fountains Fell Episode 3

Location 34/853697

January 13th 1957

A disappointed party of N.P.C. members had emerged from the newly discovered Fornah Gill caverns the previous day. The way to Brants Gill Head was not yet open. Various shakeholes to the south of Gingling Hole were examined and one very interesting hole with a small stream entering was carefully noted. The "Fincham - smoke - draught test" showed that this sink was ventilating inwards very strongly.

January 20th 1957

A week later, a digging party consisting of J.O.M., A.F. and R.S. set to work in the noted shakehole. The actual place where the water sank was not dug, but a small shaft was sunk a few feet further down the shake hole in hope of hitting the passage in a more suitable place for an entrance. After dropping a shaft of about four foot, spaces appeared between the boulders and a draught was felt as the opening increased in size. A small stream could be seen in a clean washed passage of negotiable height and width. One of the party (A.F.) crawled inside and proceeded downstream for several feet and reported that the passage narrowed but would be passable with rock flakes hammered away and boulders in the floor removed.

February 3rd 1957 Members: G.B. and A.D.M (guest)

Boulders in floor removed by passing through entrance. Flake hammered off the wall and a little progress made. Passage appeared to end, but more boulders removed from floor might allow progress. Passage about 2 feet wide and 5 feet high (Rift type).

February 4th 1957 Members: J.O.M., B.He., R.S., A.F., C.C., G.B.

The following day a stronger party of N.P.C. members set to work on the blocked passage. Large boulders passed along passage by chain of horizontal diggers and deposited outside on the fell. Soon B.He., the leading digger, disappeared into the dug hole in the floor. A larger stream passage continued, but still only of crawling dimensions. After a few yards, the passage turned into a fairly tortuous rift, but still passable. Soon a 20 foot pitch was reached with B.He. already at the bottom. This was laddered and the party descended into a small chamber.

With high hopes, the party followed the continuing passage downstream, finding a rift of narrow width and about 10 feet high. This was followed for about 20 yards till it was thought that further progress was impossible without removing some clothing and enlarging certain places with hammers. The draught at this point was intense and a slight rumble could be heard in the distance.

February 9th 1957 Members: B.He., B.Hu., R.S. and G.B.

Rift passage again attacked, a little progress made, but the passage appears to become increasingly tighter.

February 10th 1957 Members: A.F. and B.Hu.

A way hammered through rift with considerable amount of work with hammers. A medium sized chamber, followed by an easy walking passage followed to a pitch thought to be in the region of fifty feet. Retreat due to a lack of tackle.

February 17th 1957 Members: J.O.M., B.He., B.Hu., A.F., C.C., W.H., A.D.M. (guest)

The 50 foot pitch descended by five of the party. Rawlbolt inserted for ladder belay. Pools on ledge baled out before descent. C.C. volunteered to stay at top of pitch.

From base of pitch a fairly long stream passage of walking height followed to a 30 foot pitch. Back under ladder, short stream passage and 6 foot drop to small chamber. From chamber, a crawling passage, easy at first, hands and knees, then getting increasingly lower. Small stream flowing, large amounts of sludge deposits on floor and sides of passage. Very loud distant rumble urging party on. After a squirm through mud a small inlet encountered on left. Passage increased in size but still hands and knees.

Five yards and another large inlet on left with fair depth of water flowing. Just downstream the passage grows in dimensions. Large chamber on left with mud slope. Stream passage now of Clapham Cave size with 18 inch deep stream flowing. Confusion of formations including clusters of helictites. Party pressed on downstream at a fast walking pace. After an estimated 200 yards the stream plunged over a pitch of unknown depth. Retreat..

February 24th 1957 Members: B.He., A.F. and G.B. (underground)
J.O.M., B.Hu., R.S. (surface)

Conditions very wet owing to melting snow. Survey as far as the 50 foot pitch. Hole for Rawlbolt drilled above the descent into Showerbath Chamber.

Surface party improving entrance.

March 17th 1957 Members: J.O.M., A.F., R.S., C.G., G.B.

Sink above Hammer Pot started as a dig. Large excavation required. Water sinking believed to emerge in Showerbath Chambers in Hammer Pot.

March 31st 1957 Members: B.He., B.Hu., G.B.

Descent to stream passage, water fairly low (12"), hardly any flow at first inlet.

Large, old, inclined passage discovered beyond dry chamber. Rift - just man size, descended, without possibilities of progress. Passage terminates in large aven approximately 50 feet high, climb up wall, leads to another passage 20 yards long and finishes in another aven 40 feet high. These avens believed to be within 60 feet of surface. May prove to be an easier entrance to the pot.

April 7th 1957 Members: B.He., B.Hu., R.S., G.B.

B.He. and R.S. survey from 50 foot pitch to aven before Sludge Passage area.

B.Hu. and G.B. dig in top of inclined passage - no success. Survey from this point back to Sludge passage area.

Water conditions - very low.

April 19th 1957 Members: B.He., B.Hu., A.F., T.M.

Tackle taken through pot to head of wet undescended pitch. Traverse discovered to right of waterfall. Dry ledge between wet and dry pitches used as a stance and belay point. Pitch descended and estimated at 45 feet. Very large, pure white calcite cascades on opposite wall of pitch, the largest cascade formation members of the party had ever seen.

Phreatic type of passage leading away from bottom of pitch ends in large sump area. Numerous large gritstone boulders seen at one point.

Retreat !

July 14th 1957 Members: A.F., G.B.

Exploration of main stream inlet found to be a sub-aqua rising. Passage now named the Sad Passage for two obvious reasons.

Passage only 30 yards long (approx). Main stream passage surveyed to head of cascade pitch 45 feet. Retreat.

G.B.	Gordon Batty
A.F.	Alan Fincham
J.O.M.	Jack Myers
B.He.	Brian Heys
B.Hu.	Brian Hudson
C.C.	Cyril Crossley
C.G.	Colin Green
R.S.	R.Smith
T.M.	T.Marsden
W.H.	William Holden

Mostly Hammer Pot

B.Heys

It is difficult to know who to blame for the original discovery of Hammer pot, nobody wishes to accept responsibility for the sufferings it has caused those foolish enough to persevere with it or the frustrations it has given those who are too well built to descend it.

When I first had a proper look at it on February 3rd 1957, quite a bit of work had already been put into making it a cave of 10 yards to a ridiculously small opening. But the draught at this furthest point was most encouraging and I scraped about a bit to see if the passage could be dug out. It looked as though it could, with work, so I started to divert the small stream which was making things uncomfortable but in so doing I opened up a much more promising line of attack and before long had scraped out a low crawl into a descending stream passage.

The rest of the party had meanwhile been opening up the approaches and intent on their work had not noticed my breakthrough. My call to them to follow up set them moving but they had to start excavating again in order to get through the crawl. I pressed on and reached the head of a pitch, so returned to call for ladders, again more delay while the others struggled through the initial narrows. Whilst waiting, I looked at the pitch and decided it could be climbed, so I pressed on down and into the next narrow section as far as Hesitation Corner, beyond which I did not wish to press on alone. When the others came on they also failed to get much beyond Hesitation Corner and we retired to leave it for another trip, with less clothing on.

This next trip was on the following Saturday with Gordon Batty, Brian Hudson and myself. Brian Hudson achieved the furthest penetration but retreated exhausted. That night, however, Alan Fincham persuaded Brian into another go and next day, while Gordon and I expended our energies elsewhere, they met with success, getting through into Showerbath Chamber and on as far as the top of the big pitch. meanwhile Jack Myers and Rowland Smith had surveyed the first pitch.

The next Sunday we had a full strength attack. Five of us got through the narrows, of whom Cyril Crossley was left on the lifeline at the 50' pitch, not an enviable occupation, but he was more comfortable there than if he had continued with us. The stretch between the 2nd and 3rd pitches had no obstacles, but beyond the 3rd pitch was a short bit of easy passage and then the Sludge Crawl, a hands and knees crawl, began.

And what a crawl that was, hands and knees to begin with, but eventually degenerating into a flat out crawl and full of mud the consistency of porridge. Those in the lead churned up the mud making it worse for those who followed on and to cap it all my reserve headlamp bulb failed in the middle of it, my main bulb having failed shortly before. Fortunately, Alan Fincham had a spare and a change over was effected under difficult conditions.

At last after 100 yards and when the air space had been reduced to 8", we got through into a bit more space again. There was another quiet canal inlet on our left and then a raging torrent, also on the left. We had heard its roar right from the start of the crawl and for once we had not overestimated the size of the stream from the noise we had heard. There was only one surface stream in the neighbourhood of comparable size, we had obviously met the Gingling Sinks water again.

Gordon, Brian Hudson and Tony Marsden pressed on downstream whilst I rested in a dry branch passage. The floor of the stream was full of deep holes into which they were continually falling. They climbed down a short cascade and then reached their limit, the water simply fell into blackness which their lamps could not penetrate. They were greatly impressed.

We returned to the surface and were revived to comfort by tea and cakes at Neals Ing whilst alarm over our absence from Green Close steadily rose.
During that week, my thoughts kept drifting from work to the stream we had seen and doubts crept in. I had taken occasional compass bearings below and knew we were heading roughly northwards, yet the stream had entered on the left which was not how I would have expected to meet the Gingling Sinks water. Fornah Gill stream was not big enough, what else could it be ?

I looked at the map but there were no other streams of any consequence in the area. But then I realised that this in itself might be the answer: the area without streams was at least as big as the area draining to Gingling Sinks and the water had to go somewhere. All the rain falling on Out Fell must sink after a very short surface run and collect underground into a master cave and that was what we had met.

Next weekend I expounded this theory meeting at first with disbelief but gradually gained some doubtful supporters. Still, we would find proof one way or the other by continued exploration or by some sort of water test.

That Sunday turned out very wet so we were limited to surveying as far as the 50' pitch which under those conditions was not attractive. One thing we noticed on this trip was that the draught, previously so strong, was no longer noticeable. The answer is, we believe, that a rise in the main stream level of 8" or so will cause the water in the Sludge Crawl to back up to the roof and seal off the system - ugh !

The next Sunday would have been ideal for an attack but there were not enough thin men for a party. Instead, we enjoyed the sunshine on top looking for higher entrances into the Out Fell system. At dusk we noticed one very promising hole in Dick Close pasture. If this also drained to Brants Gill Head then we certainly have an arduous life ahead of us. We returned to this hole the next Sunday and found it blocked at a depth of 50' and then we found another pot even deeper not far away, but it looks as though this Dick Close Pasture is going to form a separate episode in itself.

Our next assault on Hammer Pot was on March 31st. Gordon, Brian and I carried tackle down to the main stream intending an attack on the big wet pitch. Progress through the Sludge Crawl was very difficult, my ladder and rope came undone and required much pulling through the mud.

We had put Flook into action to drain the Wet Sinks, but the main stream was nearly as strong as previously, more support for the Out Fell master cave theory, so we decided to tackle the dry passage first. The initial clay slope was surprisingly difficult, but after that, we got into a most remarkable inclined passage rising steadily at about 30 degrees for considerable length. Near the top is a hole in the floor about 12" x 24" and quite deep. Beyond is an aven with a slight drip coming in and disappearing down a very low passage. Up in one wall is an opening reached by a climb and leading onto another small aven; it looks as though we are near the surface here and one or two places might go with the aid of a spade, but we left them for the time being and returned to the main stream.

We also looked at the other lower inlet below the cascade but found it soon blocked. Having spent so much time digressing we didn't take tackle to the head of the main pitch, but merely investigated it for a future attempt. With a little engineering, we might keep the ladder away from the main force of the water.

On our way back, we decided to explore the Pit, the hole in the inlet passage in the hope that it might bypass the Sludge Crawl. I tried it first but soon retreated, then Brian had a go and reached mud bottom - completely choked. The descent had been easy enough but the ascent was a long struggle, he had no room to bend his knees to climb the ladder. In the end we got him out by lowering a rope loop for his left foot on which I heaved while Gordon heaved on the ladder holding his right foot.

That trip gave me plenty of food for thought during the next week, a few bearings and roughly paced distances suggested that we must have been somewhere near to the Fornah Gill bridge when we were near the surface. From the size of the inclined passage, it may well have carried the main Fornah Gill stream (perhaps once including the Gingling Sink water) from a sink now completely choked, but the avens might represent some small sinks on the west bank of the stream near the bridge.
However, this was only very rough guess work, so the next weekend, we had a survey trip to try and fix the top of the incline passage more closely. The result surprised me in that our long underground journey had brought us very near to the entrance of the hole. We did not land quite under a shakehole but there were two holes not far away which appeared possible digs. The first one was dug the following weekend and Alan Fincham disappeared down amongst perilous boulders where no one else was prepared to follow and he reported a possibility of opening out a passage, but during the next week the hole collapsed and interest in it ceased. The second hole did not attract immediate attention since there was a large boulder in it, but later on we erected a tripod over the hole and with a complex system of pulleys, and a rawlbolt inserted into the boulder, we lifted it out to one side and then after hauling out many bucketsfull of boulder clay we got into a small cave where we wielded a hammer, but with not much effect.

Our greatest success came on Good Friday when Brian Hudson, Alan Fincham, Tony Marsden and myself set off to attempt the final wet pitch. Alan had a look at the pitch and decided he could climb into the fissure to the right of the fall with just the aid of a handline. We followed and then waited while he disappeared into cracks in the floor seeking a dry way down. I, impatient, wandered off along a small crawl whence I was able to look back into the stream passage from whence we had come and then looking forward I saw a colossal white stalagmite flow on the far side of a large shaft. I called to the others to come and join me. Brian and Tony did so, but Alan could not hear me and kept pottering about underneath. In the end, by pulling up his ladder, we indicated to him that he had better come up.

We fixed the ladder for the descent of the new shaft which was quite an easy and dry climb since the stream did not come in until about 8' from the bottom. At this point we stopped for chocolate since it looked as though we were going to set off along a big stream passage for a long walk. Brian set off again but halted at the first corner. It looked as though dinghies would be needed. However, it was a relatively short deep pool and we were soon on a boulder strewn floor with holes high in the roof. Onwards, the roof came down and the stream disappeared to the right, inaccessible. To the left was a low crawl and we pressed on through this, a wet crawl in places, and got back to the main stream, a few yards of boulder floor and then an extensive stretch of passage with deep water and little airspace gradually ending in a sump.

The rest of that Easter weekend we spent recovering in more gentle areas of Fountains Fell, and thinking. That thinking was most effective since it led, a fortnight later, to the discovery of Magnetometer Pot in two hours of digging, of which more is to be said elsewhere. But the discovery of Magnetometer Pot meant an end to progress in Hammer Pot. Still a lot of N.P.C. tackle was below ground there and was worth the effort of bringing out. A party on July 7th surveyed the stream passage to the head of the pitch and brought the tackle back through the Sludge Crawl and into Showerbath Chamber and then eventually, on November 3rd, the tackle was brought out to the surface.

Between the 2nd narrows and the Sludge Crawl there are two passages still unexplored and beyond the last pitch there are several holes in the roof and the sumps which might be pressed further. But the select few who have been through the narrows and Sludge Crawl have little enthusiasm for repeating that route and await the discovery of an easier way into the Out Fell Master Cave.

I suppose, some day, someone else may follow in our stomach prints along the Sludge Crawl, but I hope they do it in settled weather. We have noticed wisps of grass on the stalactites in the roof of the passage where it is about 20' high at the top of the last pitch. Flooding to that sort of level seems to be a common failing of the Fountains Fell Caverns.

The other big menace is the 2nd Narrows. It is bad enough to get oneself through when feeling fresh: to do it when exhausted is much worse. To get an injured man through might not be possible.

Caving in Austria or Frolics in the Fir Trees

In August 1957, Gordon Batty, Roland Moore and Colin Green departed for the continent full of high intentions and well armed with climbing and caving gear. But the weather somehow seemed unsettled and it was so much better on the Lido at Venice. However, their conscience became troubled and at last they departed for Innsbruck and Austrian Caves.

To quote Colin:

"We set off towards the sinks and risings marked on the maps. Then the struggle in the fir trees started - leaping from branch to branch, yard after yard hardly ever touching ground. After five hours of bouncing through bushes we reached the sinks with scratched arms, torn shirts and very tired.

But there were no caves....."

The old team would have known better - they would have stayed in Venice.

Magnetometer Pot

J.O.Myers

N.G.R. 34/849697

Altitude 1300 feet

Length 1500+ yards

Historical Introduction

For many years, club members have been aware of the existence of a lost pothole in Fornah Gill on Fountains Fell. In fact, the knowledge dates back to well before the formation of the Northern Pennine Club. About twenty years ago, when Mr. H. Caton first took over the farm at Neals Ing, the then owner pointed out a place in Fornah Gill, where he had covered over a pothole, which had since become completely concealed. Apparently this hole had opened up some years before during the 1920's and, being a danger to livestock, had been quickly covered over.

In 1940, Mr.Caton mentioned the lost pothole in Fornah Gill to L. Brown in the hope that its exact whereabouts might be re-discovered. After all, it was not very comfortable, when walking up the gill, perhaps on top of the hole, to wonder how safe the cover might be. L. Brown, H. Burgess and one or two others dug for some time around the recommended spot, but without finding anything. The information then available led them to expect that the hole might have been covered over with an old barn door, hence the feeling that sooner or later it would collapse and engulf some unfortunate animal.

After the formation of the Northern Pennine Club in 1946, attention was focussed on Fountains Fell for some considerable time and one of the first projects was another attempt to find this mysterious lost pothole. Although much digging was done in the appropriate area, nothing was found. There the matter remained until 1957, but in the meantime much theorising was done and Fornah Gill gradually acquired significance in the minds of new Club members.

Once the fluorescein test by B. Heys in 1950 had showed that the waters of Gingling Sink flowed rapidly through to Brants Gill Head, a distance of over three miles and a depth of some 650 feet, a mental picture evolved of an immense cave system of which Gingling Hole was but a fragment. The preliminary investigations of the flood sink and the Wet Sink near Gingling Hole in 1949 had shown that this part of the system was of relatively recent development, so that it was only logical to follow down the dry valley into Fornah Gill and ponder on the possibility of an older larger system representing the original sinks of the same streams. The distance between the Wet Sinks and Fornah Gill Barn is about three quarters of a mile, so it was felt that there was plenty of room for perhaps more than one Brants Gill-trending master cave in this length. Fornah Gill Barn was taken as the downstream limit of possibilities because just below here is a small spring, and not far downstream again is the local base of the limestone. The spring was believed by many to be a rising from the small sinks in Fornah Gill, but this view could not be held by anyone seeing the area in fairly wet weather when the amount sinking in the Gill could be seen to be appreciably greater than that issuing from the rising. A fluorescein test in January 1957 showed that some of the water of this spring was derived from a small sink in the field just in front of the barn.

In 1951, after the completion of the work at Penyghent Pot, the problem of Fountains Fell was studied afresh. In fairly dry weather, the stream of Fornah Gill was found to be sinking at a point about thirty feet upstream of the present position of Fornah Gill Cavern. Digging revealed a very tight fissure sink in the limestone bed which was filled in and abandoned. Although a number of inspection visits were

made, no further work was done unitl 1956 when the dig which led to the discovery of Fornah Gill Cavern was started, the details being described in this Journal by C.Green and B.Hudson.

The disappointment caused by the fact that the new cave had not led us direct into a postulated Brants Gill-trending master cave was responsible for the digging which led to the discovery of Hammer Pot, described by B. Heys and G. Batty. Far from solving all our problems, this new hole only caused more acute frustration among the 'fat men', the writer included, who could not get through the tight fissure in Hammer Pot. It was at this stage at Easter 1957 that Mr. Caton chose to prod us with a reminder of the covered hole of Fornah Gill. This time, however, he had done some basic research and unearthed a statement from the previous owner that the hole had been well and truly covered with railway lines and slate slabs.

Straight away, B. Heys suggested the idea of using a magnetic method to locate the buried railway lines, assuming that they had not all rusted away. We discussed the scheme over the Easter weekend and fixed a date for a fortnight later when I was to bring along a Hilger and Watts Vertical Force Magnetic Variometer (Magnetometer for short) and do a trial survey. We then remarked that if we found the hole, and if it should turn out to be anything of consequence, we should have to call it Magnetometer Pot, and so it was that we had the pot named before it was discovered.

The discovery of Magnetometer Pot

On the discovery weekend, I was occupied at work on Saturday morning and had promised to give a slide show at Neals Ing in the evening, so was thinking in terms of Sunday for the survey. On the Saturday morning, however, I received a card from Brian Heys including the following:- "Is there going to be a chance to do magnetic survey Saturday afternoon ? I will probably be up there for 3 p.m. I dreamt last night that we discovered Magnetometer Pot." This could hardly be ignored, so I promptly phoned Heys at his home and arranged to do a couple of hours surveying from about 5 p.m. onwards the same day, which was as soon as I could get there. R. Smith and I went up from Leeds, having obtained the loan of the necessary magnetometer from the Department of Mining at the University.

On arriving at the site, we found that Heys had already arrived and was walking away on the fells somewhere. I started at a point 12 feet downstream from the wall at the top of the pasture and took readings to begin with a ten foot intervals. At the fourth reading, a marked increase in magnetic values was noted, this still being some distance upstream of the place where the hole was expected to lie. The line of stations was continued down to the traditional spot, but no further variations of significance were observed. The area around station four was then examined in more detail, the results outlining a curve of magnetic values showing strong positive and negative anomalies. These were interpreted as being related to the two ends of an elongated magnetic object or objects, probably the long lost railway lines. The anomalies were right in the middle of the dry stream bed. Heys had arrived during the survey and as it was then about 7 p.m. I sat down for a snack while Heys and Smith began to dig a hole at a point in between the positive and negative section of the survey. After they had gone down two feet, a quick check with the magnetometer showed the effect to be getting stronger with depth, and so I left them working industriously while I went to Neals Ing to give the slide show. About 9 O'Clock or so in the middle of the show, they came in brandishing a piece of slate slab. They had had to dig down nearly six feet to reach it and at one stage had wondered if they were really on the right track as the surface sand and gravel had given way to silt and clay. However, as Heys explained, he and Smith were both firm believers in the value of science and so had decided to carry on until rock bottom or a slate slab was reached. The small piece of slate removed had enabled them to drop stones down twenty feet or so in a shaft.

The following morning, B. Heys, R.T. Hylton, R. Smith and I continued to work at the entrance, trying to clear enough space to lift off one of the main slates. The first one was so large that we never reached its boundary, so we just chipped off enough to enable a man to get past. This work revealed the first of

the railway lines, four in number and full gauge, which were neatly placed parallel to each other across the top of the hole. The area was neatly slabbed with one inch thick slates. This was only about four feet or so wide, while from the magnetic results, the lines appeared to be between twelve and fifteen feet in length, so that the site must have presented a very different appearance when the lines were first placed in position.
Another party, consisting of G. Batty, A. Fincham, C. Green, W. Holden and B. Hudson, who had been to the Wet Sink, returned in time to help with the good work. Batty and Smith went down through the lid and barred down several tons of loose boulders which were preventing access to the fifteen foot pitch below. Then more boulder shifting before a rope pitch of twelve feet in a rift was descended. Heys joined the other two below and soon a shout indicating that a stream passage had been entered was followed by the complete disappearance of the party from sight and sound. Meanwhile, the very unstable entrance shaft was made safer by the introduction of a couple of forty gallon oil drums, with ends removed, to make a shaft through the stream bed, and a third one added later to bring the top above flood level. Normally with a stream flowing past, this presents a most strange appearance, especially when someone is in the 'conning tower'.

Exploration and Survey

The party down the rope pitch had virtually disappeared. When they had been gone for over an hour, it was apparent that there must be something interesting to detain them for so long, so the remainder of the party followed. Down the rope pitch, a simple winding passage soon led to a climb down in a chamber, down one side of which, recently shattered boulders indicated further clearing activities. Beyond here, the passage shrank to a hands and knees crawl leading into a fissure where a roof traverse was advisable and then via a four-ways junction and a narrow winding passage to a pitch. All this part was dry, the water having disappeared down a hole in the floor at the beginning of the first fissure. Here at the pitch we found the rest of the party gazing down what appeared to be a one hundred foot shaft into a deep pool. They asked us which way we had arrived there, and apparently there were already two routes of approach, one the way we had come, and the other a short cut that we had missed.

A return to the surface for tackle and then Fincham went down the pitch which proved to be 65 feet deep and the water too deep to stand up in, while there was no dry landing space. A ledge about twelve feet up looked as if it might give access to another shaft on the other side of a curtain wall. Batty went down and managed to swing onto the ledge and look into a parallel shaft also full of water. The water surface went round a corner out of sight and it was felt that a check with a rubber dinghy was advisable. This, when carried out a week later, revealed no way on above water level and the place subsequently became known as the First Well Pitch.

A few feet down the Well Pitch, a side opening led to another parallel shaft dropping to the same water level. From a short distance down here, a crawl passage was followed, which led off via a complex of small passages, up a small aven, and by another crawl, back to the First Well Pitch again. At the foot of the small aven was another pitch which was descended the following week by B. Heys supported by G. Batty. This, the Second Well Pitch, ended in a pool of water with the exit in a small crack below the surface. A. Fincham, investigating the far end of this dry crawl system, started off along a wet crawl of comfortable size. As no-one followed, he came back again, but it was continuing easily, although apparently in an upstream direction. While at the First Well Pitch, we noticed a strong air current disappearing in this direction, and began to wonder if there might not be an overhead route beyond the sumps of the Well Pitch series. The general direction was favourable but the attempt had to wait until the following week.

During the first day's exploration of the near entrance series, a passage system leading off at the Four-Ways was explored through some dry crawls to a phreatic-type passage of some five to six feet in height and six to eight feet in width occupied by a small stream. After a short distance, the main passage suddenly terminated in a clay choke, while the stream continued down a small winding passage which

soon became too tight for individuals of normal size. A few yards down the smaller passage, a dry silted crawl led off to the right.

The first day's work, then, resulted in the descent of the First Well Pitch and the exploration of some three hundred yards or so of passage. Considerable confusion existed regarding the detailed layout of the crawls around the top of the First Well Pitch which could only be resolved by survey. However, the name Magnetometer Pot had now come into full use, though it was not long before the easier abbreviation of 'Mag' was preferred in general conversation.

On Sunday, May 12th, both exploration and survey went on at the same time. M.G. Riley, R. Smith and I started surveying the near series. G. Batty and B. Heys with A. Fincham, G. Gowland and B. Hudson checked the First Well Pitch by rubber dinghy. This proving to be a dead end, the latter two went off along the wet crawl while B. Heys and G. Batty examined the Second Well Pitch. The Well Pitch party drew blank, but the 'Wet Crawlers' were more fortunate. Pressing on for about fifty yards, they emerged from the water into a twelve foot high dry chamber. The way on was slightly downhill in a low dry crawl which gradually increased in height to hands and knees going, at the same time accompanied by a pleasing development of stalactite formations. After about 110 yards, this crawl opened at a T-junction into a much larger clean rock arched roof passage. They turned right here and proceeded north westwards in the apparent downstream direction, finding the twelve to fifteen foot wide passage gradually getting deeper and deeper into standing water, a section soon named the River Styx. At a point where waist deep wading was necessary, the roof appeared to be meeting the water not far ahead, but a few feet of weaving between massive roof pendants which dipped below the water surface, gave access to an easy continuation. A few yards more wading and they stepped out of the water and entered a completely different type of passage. The change at this point could best be compared with the change from the arched Cellar Gallery to the flat-roofed visitors' section as one comes out from Clapham Cave. In the case of the Styx the transition is direct, with no side-stepping as in Clapham Cave.

Some two hundred yards of clean washed passage, roughly ten feet square in section, led easily onwards until at a wider part it suddenly appeared to end. A way on to the right in a northerly direction, the Cross System, was followed until a narrowish stream passage was entered. The rock both in this and the Cross System was clean washed and highly eroded, apparently by fast-flowing water. After rather less than a hundred yards in the stream passage, they climbed down fifteen feet into a high rift cavern, Milestone Chamber. Although the passage at the far end beckoned them on they felt that perhaps they ought to leave a bit for others to explore and so turned back at this point.

When Fincham and Hudson returned with excited accounts of long marches towards Brants Gill and lots of formations, Heys and Batty could not resist having a look. They went on beyond Milestone Chamber and in only another hundred yards reached the top of a fifty foot pitch opening into a very large rift chamber, later named Caton Hall. They also had a look to the left at the junction at the start of the river Styx and found the large passage plunging down a steep slope to a small but sinister sump. The slope covered with sand and small gravel gave the impression that the sump could rise and flood the Styx and the crawls - perhaps 'Once in a century' as Heys put it.

Unable to wait for the next weekend, G. Batty, who had been advised by his doctor to rest for a day, joined R.T. Hylton and T. Marsden, temporarily men of leisure, and went down Magnetometer Pot again on Wednesday, May 15th. They descended the pitch into Caton Hall and were disappointed to find no broad highway out at the bottom. Opposite to the pitch, a huge slope of boulders went up nearly to the roof. No way could be found through the boulders. A restricted bedding plane entered through the boulders at the foot of the pitch was left until the weekend for a more thorough examination. The parties which had so far reached Caton Hall were agreed in their estimate of about half a mile distance from the First Well Pitch. This was later confirmed by the survey to be in error by not more than 2%.

Sunday 19th May saw another combined exploration and survey trip. While H. Dickens, W. Holden, R.T. Hylton and I surveyed slowly through the Wet Crawl and beyond, the exploration spearhead (Brants Gill Head or Bust!), consisting of B. Heys, G. Batty, R. Caton, A. Fincham, G. Gowland and B. Hudson, pressed on. Unfortunately as far as the exploration party was concerned it was 'Bust', and they were defeated after forcing about a hundred yards of particularly unpleasant rough wet crawl leading on beyond the bottom of the fifty foot pitch. The whole of this area bore unmistakeable signs of flooding to the roof. The survey party completed the main passage through the Wet Crawl and the Styx and on as far as the top of the pitch into Caton Hall. On the same trip, the rather obscure inlet passage coming in from the Southwest at Holes Junction was noticed and followed for some distance.
None of the party who had been down the crawls beyond Caton Hall had been particularly anxious to return there for some time, and in any case it was not a very safe area during the wet summer that followed. Attention was turned to the possibility of digging out some of the obvious choked passages which seemed to be leading off into new ground. The one on which most hopes of success were pinned was the Plasticene Dig at the end of Northbound Passage. The clay choke here had now been removed over a distance of about thirty feet and the passage continues as a practicable clay and sand dig with an occasional current of air to add encouragement. Work is also continuing at other points in the system and it can only be a matter of time and patience before new ground is broken.

Topography and Hydrology

From the entrance at the top of the small pasture north-east of Fornah Gill Barn, the main trend of the cave is west-north-west. The River Styx passes under the wall almost due north of Fornah Gill Barn, bringing the cave into High Cow Close. The Easy Passage then leads on into Cow Close along a north-westerly line and then the northerly Cross System and north-west Rift Passage leads toward the north side of Cow Close. Just before reaching Caton Hall, the passage goes beneath the wall. The survey ends here at present, on the southern edge of New Pasture. The general trend of the cave is towards Silverdale Gill Pot and the depth from the entrance is about 150 feet, bringing the level of the far end to about 1150 feet O.D. The Northbound Passage would seem to be trending in a direction which would soon intersect the line of the Hammer Pot system if it could be continued, hence the keen interest in this area.

A thorough study of the development of the cave system of Magnetometer Pot has yet to be made. A few tentative observations can be made, however. The lowest points in the Near Series are down the First and Second Well Pitches, but the exits from these are at present flooded and impassable. The most important passages appear to be the crawls which are of phreatic or sub-water-table origin. From the Four-Ways Boulder, the Northbound Passage is heading for the general line of the Hammer Pot system and the water draining away along here is not seen again in Magnetometer Pot.

The Wet Crawl, an 'upstream' passage, leads to the Dry Crawl, a 'downstream' passage, finally reaching the Styx Passage. Here is a link with a much larger system which seems to be more actively developed than the Near Series. The River Styx continues as an arch-roof phreatic or sub-water-table type of passage which then suddenly changes its character to the square section of Easy Passage. At Holes Junction, this main way terminates abruptly. The way down the holes in the floor is at the moment too narrow to explore. The south-westerly passage now seems to be definitely an old inlet although hopes had been entertained that it might be a blocked continuation of the main way. The continuation to the north via the Cross System is of a much smaller cross-section than that of the Styx and the Easy Passage. The small inlet met at the beginning of the Rift Passage does not appear to be large enough to have formed the passage it is now using. This enlargement would seem to be mainly due to water coming along the Cross System from the Easy Passage. Very sharp erosion features in the limestone walls and floor of both these passages suggest very fast flowing water.

The 'Once in a century' floods from the small sump at the foot of the Styx Slope have been arriving at a frequency of several times a year. There have been at least three floods this summer which have redistributed the sand and gravel of the Styx Slope, and changed the water in the pools of the Easy

Passage. The floods appear to come up the Styx Slope at a velocity sufficient to lift small gravel up to half an inch in diameter. Water fills the River Styx to the roof towards the far end and flows back through the Dry Crawl and the Wet Crawl and on into the Second Well Pitch. The main flow surges on down Easy Passage at a depth of between four and five feet. Some of the water must flow down the holes in the floor at Holes Junction filling up the restricted openings below completely, while the overflow continues north, now at roof level in parts of the lower passages. The flow is then able to move with less restriction down to Caton Hall, where it floods the low crawls beyond to roof level.

The last and most severe flood so far recorded probably occurred on Tuesday, 29th October. On Saturday, 2nd November, B. Heys and B. Hudson visited the Near Series and were intrigued to find a new foam tide mark round the walls four feet above the top of the First Well Pitch. The initial flood had come out of the crawl at a high enough velocity to move pebbles of over two inches in diameter. On looking down the pitch they were puzzled to find no reflection of the light in the pool at the bottom. Dropping a stone down revealed that there was no longer a pool at the bottom - the plug had come out ! A week previous to this, Hudson and I had observed that a rock floor was visible at the bottom of the Second Well Pitch, although on that day, the water down the First Well Pitch appeared to be at normal level. Both pitches were subsequently redescended, but there was still no way out at the bottom of either; the exits being waterlogged fissures.

The intermittent floods coming from a part of the pot which is normally inactive raise the problem of the origin of the water. The only certain thing is that this is not derived mainly from sinks in Fornah Gill as these are not capable of taking anywhere near sufficient water. The floods must be the overflow of some other nearby system which is normally carrying the stream, but which has a restriction causing flood water to back up excessively. These conditions could be fulfilled by Hammer Pot, the main drainage line of which lies barely 300 yards away to the north-east. The pool from which the stream flows down the Out Fell Master Cave in Hammer Pot is at roughly the same level as the foot of the Styx Slope in Magnetometer Pot. The present survey estimation would put the pool at the foot of the Styx Slope at about ten feet above that in Hammer Pot. Bearing in mind the limits of accuracy of the surveys so far as depths are concerned, these pools must be considered as being suspiciously near to the same level and the possibility cannot be excluded that they are connected by a submerged water system. Thus when heavy rain causes the flow to increase beyond the capacity of the restricted entry into Hammer Pot, the overflow passes through Magnetometer Pot. The question thus resolves itself into the ultimate origin of the stream in Hammer Pot.

Beyond the two potholes to the south-east lie the open slopes of Out Fell leading via Dick Close Pasture to Knowe Fell. The ultimate limit of the area draining to Brants Gill Head is not yet defined, but the first square mile of Out Fell can now be included as a result of fluorescein testing. This water must be draining via Hammer Pot, hence the name of the Out Fell Master Cave. In dry weather, not very much water sinks on Out Fell and parties who have been down Hammer Pot are agreed that even in dry weather the flow of water is such that it would be suicide to attempt to descend the last pitch of Hammer Pot direct with the stream. Thus the Wet Sink and Coates' Cavern have to be brought in to make up the difference. With this hypothesis, Hammer Pot becomes part of the missing Wet Sink Master Cave System and Magnetometer Pot, the present overflow, must be the original Master cave to Brants Gill head. The only positive material clue to support this hypothesis was provided on a survey visit to the Styx Slope after a flood. The receding water had left the slopes of sand and gravel covered by a top layer of about half an inch of little bits of heather shoots and twigs, fragments from the peat. These are not produced in volume by the numerous small trickles which form the drainage of Out Fell and beyond, but rather from the rapidly eroding peaty banks of raging torrents such as the two becks which contribute their water to the Wet Sinks system.

Conclusion

Although exploration is temporarily halted, there are three areas of interest where further work needs to be done. The first in Northbound Passage is the continuation of the Plasticene Dig which is suitable for wet weather work. Thin men may make more progress in the streamway and the small silted crawl near here. The possibilities of the partly flooded fissure down the holes in the floor at Holes Junction should not be ignored. Finally, in the next dry spell in the spring of 1958, it is intended to have another determined push at the end of the crawl beyond Caton Hall. On the surface, the natural inclination would be to examine possibilities nearer to Brants Gill Head in the hope of bypassing the obstructions in Magnetometer and Hammer Pots.

The grateful thanks of all concerned in the exploration are due to Mr.H.Caton of Neals Ing for permission to excavate in Fornah Gill and particularly for bringing to our notice this wonderful opportunity of rediscovering a lost pothole.

Profiles showing variation of the vertical component of the earth's magnetic field over the concealed railway lines in Fornah Gill, Fountains Fell.

Scaling Ladders in Lancaster Hole

G.Cornes and W.Holden

On a sight-seeing trip one day, in the main drain of Lancaster Hole, G. Cornes and H. Burgess discovered a small, silted up passage which had previously remained unnoticed. Ten minutes digging revealed an ascending slope, wet and slimy, into which the protesting Burgess was promptly pushed. After a few feet however, he was stopped by a vertical ascending pitch of some 15 to 20 feet and the slimy, damp and dejected H.B. had to retire.

At Club Headquarters some time later it was decided by the club elders that scaling tackle should be taken in and that an attempt should once more be made to push the H.B. passage. A young team was dispatched, with the ever-faithful Cornes, and the second assault on H.B. began. The job of scaling the pitch was fairly easy, simply five scaling ladders propped against the wall, then a simple climb of four feet brought the party to an upstream passage some two feet wide and some five to six feet high. This continued for thirty yards and terminated in a round aven some forty or fifty feet in height. The caving genius of G. Cornes once more excelled and in no time at all he found that at about thirty feet up two passages appeared to branch off from the circular aven. Another trip was planned on the spot.

Two weeks later, a party of N.P.C. trogs, with six additional scaling ladders, entered Lancaster Hole with H.B. passage again as their objective. After much sweating and swearing the round aven was reached and six scaling ladders were fixed in position. They fell much short of the two prospective passages however, and back we had to go to pull up our first pitch and bring along an extra four scaling ladders. These were attached to those already in the aven and up went the first man. It proved to be a very uncomfortable and unsuccessful climb, but on the other side of the aven from the point reached could be seen a huge black opening. Down came the bod and over on the other side went the scaling ladders. G. Cornes went up and after a hair-raising climb arrived in the black void. W. Holden followed and together they set off to explore. The passage was arch-shaped, about ten to twelve feet across and after twenty yards divided into two smaller but easily negotiable passages. The one on the right was explored first and after only forty yards it terminated in a silted blockage. The passage on the left continued for forty yards and then on the (left) right hand side a small, tube-like passage was noticed. The air coming from this passage made it difficult to keep one's hat on. Holden pushed his way into this tube, into which he just fitted, and after fifteen minutes of hard wriggling he made fifteen yards of ground and discovered a new stream passage. The stream falls away down a pitch which is too narrow to allow entry at the top but which appears to open out underneath. Upstream was much too narrow for exploration, so after a fantastic struggle to turn round, Holden made his way out and reported to Cornes. Cornes sat back and listened like a wise and wily old owl and declared that the stream passage must be pushed as it did not come into any known point of Lancaster Hole Main Drain or the waterfall passages and could possibly by-pass the main sump.

The pitch has not yet been descended but plans are afoot and soon we shall know where the passage leads.

No survey has yet been made of the H.B. Passage but it is hoped to include it in the N.P.C. and C.R.G. publication on the Lancaster Ease Ghyll system.

Heron Pot, Kingsdale

Interim Report and Survey

The discovery was made by members of the Fylde Mountaineering Club who had spent some time investigating this east side of Kingsdale. A dig had been started in a dry shakehole near a sink on High Brown Hill Pasture (opposite Yordas Wood) and a narrow fissure type passage was unearthed.

The winding passage led on and met a main stream inlet on the right. Strong evidence of water erosion is shown in the rock formation and numerous calcite straws decorate the roof. A calcite vein also shows strongly along the roof: these veins increase further downstream. At section 5 on the survey, washed out bedding planes show on the walls.

Ducking under a large block of dripstone, many fine formations are reached and a 90 yards long inlet passage on the right is also strewn with formations. At section 8, a large dry inlet appears in the roof.

Another duck under a dripstone block, and the stream now flows rapidly on to the head of the first pitch (20 feet with a beam belay).

At this point the Fylde Mountaineering Club called in the N.P.C. for assistance with exploration and survey.

A second pitch of 30 feet, following the first, was descended by Bill Holden and F.M.C. members; a stream passage followed, then a crawl along a flat bedding plane until daylight could be seen through a small hole; but not reached !

N.P.C. club members subsequently carried out the survey. More calcite veins were found below the pitches and some beautiful gour pools between sections 10 and 11. The survey party were able to pass out equipment through the final hole but were still unable to make an exit that way.

The cave is almost half-a-mile in length, runs generally due north and the main stream outlet is in Gaze Gill. However, fluorescein showed a connection between the cave and a rising further down the dry valley indicating an undiscovered cave system there.

N.P.C. members taking part were W. Holden, H. Tucker, C. Green, G. Batty, C. Brindle and R.T. Hylton.

Abbreviated (with regret) from an article by C. Green.