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The Newsletter of the Cumbria Amenity Trust Mining History Society

# Cover - Newlands in 1898

A pen and ink drawing by Joan Helme copied from a photograph by W.Holmes.

The furnace ceased production in 1891 and by 1898 was being used by a joiner and wheelwright under lease from the Duke of Buccleuch, hence the carts and timber stacked outside. We believe that the furnace and buildings as depicted 1898 are substantially the same as during the last productive years. The village, houses, furnace and buildings owned by the Duke were sold in 1921 to the relations of the present owner Mr. H.Stephenson. The letters and legal documents connected with the sale are in Barrow Records Office.

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John Helme February 1994

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# **Diary Dates**

| April 23th - 24th | Snailbeach Mine:-see information below                                  |
|-------------------|---|
| April 27th        | Mandalls Office - Evening Meet to carry out maintenance on the building |
| May Ist           | Newlands Restoration Project  |
| May 7th           | East Midlands Archeology Conference                                     |
|                   | Venue PDMHS Museum , Details S. Barker.                                 |
| May 22nd          | ARC Quarry Ingleton Visit to working quarry and processing plant.       |
| June 5th          | Lowfield Mine Site Lindal Record and Survey.                            |
| June 15th         | Stainton Green, Furness evening meet                                    |
|                   | Visit and record/survey.  |
| June 18th/19th    | Buckden Mine.Underground visit,   |
|                   | Grassington Moor Surface walk.  |
| July 3rd          | Greenhead Gill, Survey and record.                                      |
| July 17th         | Coniston Exploration.   |

### NORTH WALES MEET 15th - 18th APRIL

Come to Wales for a long weekend and see some of the underground delights of the principality. Trips have been arranged to cater for all tastes, ranging from surface and easy underground, to serious rope dangling, and worse. The details for the biggest meet of 1994 are as follows :-

### Friday 15th April

A visit to the working Maenofferen Slate Mine at Blaenau Ffestiniog. A fascinating "one off" chance to see the underground workings of one of the last working slate mines in Wales. All people attending must be fully paid up members so that the NAMHO insurance is in place. Grade E. Meet at Llechwedd Slate Mines Office no later than 10.00 am (kitted up and ready to go). Llechwedd Slate Mines are located on the main A470 Blaenau Ffestiniog to Bettws-y-coed road 1/2 mile from the centre of Blaenau. The mine office is located on the LHS inside the gate. Places on this trip are limited and will be allocated on a first come first served basis so ring the meet leader soon to avoid disappointment. All people attending will be required to sign an indemnity.

### Saturday 16th April

Visit to Cwm Pennant. Basically a surface walk in this interesting and lonely valley to look at the superb water-wheel and pump rods at Cwm Ciprwth and a brief descent into nearby Gilfach. The afternoon will be spent visiting the Prince of Wales Slate working at the head of the valley. Grade E with optional short D.SRT. Meet at the north end of the turn off the A487 Porthmadog to Caernarvon road at Dolbenmaen

(505431) at 10.00 am. Grade E plus optional D,SRT.

Sunday 17th April

Croesor Slate Mine. Exploration at this site concentrating on the No.3 (450 ft) and No.1 shafts, and exploration of the workings immediately east of the great fall. Grade EXP.

Monday 18th April

Croesor Slate Mine. A repeat of last years popular through trip from Croesor to Rhosydd - see newsletter 35 for full details. Grade EXP, includes two abseils of approximately 80' each, crossing a dangerous timber bridge, a tyrolean traverse, an abseil of 25' into deep water and then a swim of 125'. Wetsuit and access to a buoyancy aid required. For those daunted by this help is required at the Rhosydd end to enable people to exit - Grade E.

Both days meet at the car park (SH 683455) at Cwmorthin falls, Tanygrisiau, near Blaenau Ffestiniog at 10.00am.

People will probably be staying in the Vale of Ffestiniog and for those wishing to camp the camp-site at Maentwrog 0766 - 85240 has the C.P.Thomas / Timewell seal of approval.

Any queries ?, please contact the meet leader Jon Knowles on 0274 871012.

### Copy of SCMC Letter - Snailbeach Mine 23-24 April 1994

We are rigging Snailbeach Mine over the above weekend for exploration down to water at the 112 yard level. This means a total of about 650ft depth via 7 pitches. At the 40 Yard level (if you don't want to go any further) are a number of artefacts and passages to explore.

As you may know, infilling work is being carried out at this mine and access has not been possible for the past year. Work will start again in May and access will again be denied for an unknown period. This is the chance to explore the workings of this classic mine while you still can.

The SCMC invite clubs to explore the mine during the above weekend. It will be rigged for SRT, with ladders on the upper pitches. As a result, only those experienced in SRT will be allowed to explore below Perkins Level. There is no charge but we would appreciate a donation towards wear and tear on our tackle.

If any of you members want to attend, please ring Steve Holding (0952-660087)

# Society Notes

### Two quotes:-

1)" Young lads will grow up not knowing the comradeship of men working in a difficult situation". A South Wales miner recently made redundant when the last coal mine in the area closed down.

2) " It takes years to become a skilled miner, a fact all too often overlooked by people in authority who are apt to class miners as labourers instead of the skilled men they are."W.T. Shaw. Mining in the Lake Counties.

Much could be written about these quotes, but, in the CATMHS context if you wish to experience a little of what they mean The Greenside Lucy Tongue project will provide it. Working parties regularly meet to complete the reopening of the adit.Conditions are not easy and the work in the confined space is not for the faint hearted. Contact Peter Blezzard if you wish to help and think you are up to it.

Several other things. Our efforts to carry out a holding operation on the water wheel tower at Red Dell have founded on the rock of public liability insurance and the fact that so much deteration has occured so as to render the job beyond CATMHS capabilities. A great pity and after all Peter Flemings efforts. One day we shall look up, it will be a big heap of rubble and a case of:-'Sic Transit Gloria Mundi'.

Any one into using video cameras -- underground !! We would like to hear from you as a feature in any exhibitions that we periodically put on.

Do not forget that the Furness Mining Heritage Survey & Newlands Furnace all require your help now and for the forseeable future.

If that is not enough, we have stsrted operations to gain access to Hudgill Mine, Nenthead. There is no shortage of projects to be involved in (digging out, exploring, measuring and recording) or archives that need researching, All we now need is you

### Hey ! - That's my Krab

In an effort to reduce that "I'm sure I had 500 more krabs at the start of this meet feeling" an attempt is being made to compile a definitive list of individuals kit markings. The idea is that should you find yourself with vast amounts of other peoples gear at the end of a meet you will be able to return it to the rightful owner. To be included please advise the meets secretary of your colour(s). The list so far is :

Black Stamped P.F. Red Red & Black Red & Blue Red & Yellow Jeff Wilkinson Peter Fleming Ian Matheson Dave Bridge Sheila Barker Mike Mitchell Light Green Self Colour Red Yellow/Green Stripe White White & Black

Mark Simpson Andy Sibbald Anton Thomas Angela Wilson CATMHS Jon Knowles

### New Society members

David Tull Shane Brunker Mr & Mrs Dixon David Lindley Brain Marshall Paul Frost Barrow in Furness Liverpool. Egremont Carnforth Ambleside Houghton-le-Springs John Bowers Alan Bush John Hext David Sewart Mr Seton Bury Dalton inFurness Coniston Cambridge Morecambe

# Meets Reports

### Completion of Taylors Level December 5th 1993

Work stopped in Taylors level on Nov 17th 1991 with only a few feet still to be done to complete the level, since then it had been lying idle. It was to be more than two years before the workforce would return to finish the job on December 5th 1993 Readers will recall the project to construct a CATwalk of stemples to bridge the missing section of Taylors Level beneath the Red dell Stopes and so restore the continuity of one of the major levels at Coniston Coppermine. When the work ceased back in 1991 four more stemples were needed, but some of the timber which had been dropped down the stopes fron the surface could not easily reached and delivered to the workplace. Seven people returned on 5th December, and found everything just as it had been left two years before. They were Ian Matheson, Mike

The Boxing Day Meet 1993

Boxing Day was a beautiful day of sunshine and snow, so it was not surprising that only a few CATMHS members turned up for a dig at Greenside. Don Borthwick and Sheila Barker helped to carry timber and tools to the mine entrance before very wisely setting off for a fell walk. Peter Fleming partook of a Gluewein at the Ski Hut on Raise before traversing Helvellyn and enjoying a superb sunset from the top. He then waited at Greenside to meet the underground crew at the end of shift. Both Angela Wilson and Chris Jones also passed leaving messages outside.

Peter Blezzard, Ann Danson, Mike Mitchell, Clive Barrow, John Brown, and Ian

Mitchell, Clive Barrow, Peter Fleming, Mark Simpson. John Brown and Robin Rutherford who had travelled over fron Darlington. One group abseiled down from the open stopes to examine the catwalk, whilst a second entered from Red Dell Beck via the oil drums to recover the missing stemples from the floor of Taylors Level. they were hauled up and wedged into place some ninety feet above the water on the Deep level horizon, a good example of teamwork from all concerned. Several new rockbolts were placed to secure the safety line. On Jan 16th we expected to use the completed CATwalk for the first ever through trip down triddle Shaft to taylors level and out to day in Red dell Beck.

Ian Matheson January 1994

Editor :-Mines never stay still for long and the aim of a through trip was not to be . See Ian's article on the Triddle Shaft meet of 16th January 1994.

Matheson spent the day mucking out at the the face, enduring much warmer conditions than those prevailing outside. According to Mr Blezzard a rare species of newt inhabits the warm mineralised water issuing from the mine, and one of these leapt from the stream and attacked the writer whilst he was having lunch. Shortly after there was a loud explosion which resulted in coloured streamers in the coffee.

Despite these phenomena several tons of spoil were cleared away, to leave the dig in much the same condition as when work was left off last April, and ready to drive forward. Much has been accomplished at Lucy Tongue in a combined effort by CATMHS and MOLES, but it needs a determined and sustained push by all concerned to acheive the final breakthrough.

Ian Matheson January 1994

### Triddle Shaft to Taylors Level Through trip 6/01/94

Eleven people took part, though not all were paid up members. It was decided to split into two groups. The majority were to abseil down Triddle Shaft, visiting the Blue cascade and Deep Level en rout, and hoped to be able to walk out or the Taylors Level portal in Red Dell Beck. It was known that there had been a collapse of the floor just outby the recently completed stempleway and that the travers line was unsatisfactory. There had also been a rock fall which had partially blocked one of the oil drums between there and the entrance. A smaller party consisting of Ian Matheson, Dave Bridge and Jon Knowles agreed to enter the mine via the Red Dell stopes in order to deal with these problems, and then complete the through trip the other wasy round by prussicking up Triddle shaft and stripping out the ropes.

Whilst the main party made their way up the incline to Triddle Shaft this smaller group fixed a rope from the surface down what used to be known as the Armagedon Pitch, a 140 foot descent with a rebelay a short distance from the bottom. I dropped a coil of spare rope down the pitch which I had brought to replace the one on the travers, and went down first. I had some difficulty fixing a deviation on an iced up stemple just below the brink. In this area the stope divided into two, one branch following Taylors Level and the other containing the New Engine Shaft. Unfortunately the coil of rope which I had thrown down missed the ledge at the bottom and was lost down the New Engine Shaft, where it probably sank in the waters beneath Deep Level.

Once we were all down we made our way over the catwalk and fixed another rope down the manway beyond in order to reach the travers over the collapsed floor. When Taylors Level was first entered following the Boxing Day Dig of 1983 only a small section of the floor had collapsed, and this hole, which is featured on the cover of Journal No 2, gave access 90 feet down to Deep Level almost directly above the place where the LMQT dig was later to break through. It was realised at the time that the whole floor was

unstable, and a travers line was fixed to protectit. In the years since we were last active in this area about half of the remaining false floor has dropped out. Nothing remains of it, and crossing the void involves total committment to the travers line. Unfortunately many of the original hangers have been stolen. and replaced with a miscellaneous collection of motor car bolts, washers, and bits of cheap aluminium tubing. The ropes are damaged in several places, and incorrectly rigged, being threaded through some of the anchors rather than attached to them, so that a single failure could result in the whole rope pulling through. we had neither the time or the resources to make it safe and decided to direct the other party out via the Red Dell stopes and to suggest to the CATMHS Committee that the travers line be replaced, using non removeable hangers.

Whilst this inspection was taking place contact was made with Phil Merrin, the first of the group who were descending Triddle shaft. He shouted across the catwalk before ascending our rope up the Red Dell stopes on his way home. We made our way along Taylors Level to the blockage just before the viewpoint. Voice contact was made with Mark Simpson. who was energetically trying to dig his way towards us from the other side. He didn't succeed! (Not because it was impossible but out of concern for boulders falling down the manway just the other side from where I was! Editor). We rigged a rope down to Deep Level at this point to enable the others to get up, and Jon Knowles, who had not visited this area before went down partway to attach a re-belay. All three then prussicked up Merrins rope to the stopes beneath the Viewpoint.

At the Viewpoint we met three of the other party, and waited whilst they descended to Taylors Level extension to view the Blue Cascade. In order to recover the ropes from the bottom of Triddle shaft it was necessary to wait again whilst all seven abseiled down to Deep Level. This took quite some time, and we were pleased when the call came to pull the rope up, and we could get moving again. we prussicked up the first two pitches without difficulty, though care was necessary to avoid showering loose stones and timber on those below. we regrouped at Flemings Level, or what is left of it, and hauled up ropes and equipment.

The final pitch is a long one, about 180 feet,

all vertical, and it was tiring. At the top one has to squeeze up between the sheer rock wall on the left and some wooden stageing on the right. Unfortunately the abseil rope had been rigged quite low down at the head of the pitch, and did not assist egress. Dave Bridge was first up, but was unable to get out. He had to begin the manoevre from below in order to have enough slack in the rope to get above the belay, but each time he tried to elbow onto the staging the rotten wood crumbled under his weight. Ther are no footholds, after an hour he still had not suceeded, and had become exhausted. Ian and Jon, getting cold down on Flemings Level. were contemplating the options. To prussick up the rope and assist or climb past Dave? Unlikely to succeed as there would be no space at the pitch head. To abseil all the way down to Taylors Level and go out the way we had come in? No, the other group would have pulled the ropes out by now. To stay put and await rescue? Unattractive and embarrasing. Eventually Dave managed to free himself and to abseil back down to Flemings, and Jon set off up to have a go. It was a releif when he called down that he had been successful, and after a short delay whilst he fixed another rope from the balance bob to a re-belay at the pitch head, Dave and I were able to climb out without further difficulty. We still had quite a lot of gear to carry down, and did not reach the Youth Hostel until after 9.00 pm. By this time everyone else, having seen our lights outside Triddle Adit, had gone home, all except Mark Simpson, who needed

# Borrowdale Wad Mine 20th Feb 1994

The 400 ft descent through the Wad Mine usually proves popular and this trip was no exception. Several who joined the meet were still learning the ropes when it came to abseiling on a Petzl Stop but all seemed to get hang of things as the pitches became progressively longer - and wetter. Some time was spent in the morning exploring the ramifications of Gill Stage and the sub-level

above and then two pitches down Grisedale's Pipe and a short crawl took us to straight into Fairey's Stage and lunch.

After descending 90 ft of the the Grand Pipe

a lift home with John. (It was not pleasant waiting at the hut contemplating dark possibilities as the hour got later, and it was fortunate that Jeff also stayed and went up to see what was happening.Putting back on damp gear had no appeal, my dry stuff being in the back of Jons locked van. Editor)

There is still a lot to do in the Red Dell area. It is a long time since anyone has been in the northern extension of Flemings Level, and there is an alternative descent to part of Triddle shaft which to my knowledge has only been done once, about ten years ago. The plans show a connection between Bouncy Mine and Flemings Level which has not been found. There are several rises above Taylors Level which have not been climbed, and Taylors level itself, which is guite complex and does not appear on most of the mine plans , has not been surveyed. Finally the dangerous travers line near the entrance needs replacing. There is enough there to revive interest in vertical exploration at Coniston.

Ian Matheson January 1994

Warning !! During this trip it was found that most of one of the stagings in Triddle Shaft had recently ( in the last year) fallen down onto the area near the viewpoint. This has been reported in February Newsheet. From the look of things in the area of this staging more could well decide to go. A good case could be made for removing the blockage referred to in the report to reduce the danger from falling debris. Editor.

the hand chiselled Old Men's Stage provided a diversion for those who had not seen the mine before and then Dixon's Pipe came up with some impressive sound effects when a section of wall on the long second pitch broke away and shattered. With a bit of clearing at the bottom of the pitch it was safe to proceed and nine of us abseiled down to Gilbert's Stage and so out to

day through a wall of icicles while Paul and Jon de-rigged up to Fairey's Stage.

Though a well-used route experience once again proved that the descent through the lower section is not to be taken lightly. Dave Bridge

### **Furness Bat Survey**

Those who were present at the social last July will remember David Maclean, of Wetsmorland Bat Group, who gave an entertaining talk on bats in caves. That slide show was a recruiting drive for the bat survey which took place on the weekend of the 22nd of Jabnuary 1994. Chris Jones, Anton Thomas and myself were enlisted as local guides for the project, which involved visiting every underground site in Low Furness. The objective was to determine the importance of underground habitat to the local bat population.

On the Saturday morning, we were each assigned to a group of three bat experts we were to show around, each group was given a list of sites and a handful of access permissions. while Chris and Anton were taking their parties around Ding Dong and Pylon Pot, my party was visiting Crossgates tunnel and Bonfire Scar cave. The bat group examined every crevice for bats, and every horizontal surface for droppings, a slow job in the case of a rough stone-lined tunnel. Chris's group found six droppings in the bouldery expanse of Daylight Hole, which should merit some sort of needle in a haystack award.

In the evening we were rewarded with roast chicken, and met their tame nocturnal bat. Chris gave an exellent slide show on the

### **GREENSIDE APPEAL**

An appeal is being made to CAT members to help finance the completion of the

Lucy Tongue Level project at Greenside. This project has been under way for

over a year now and we have gained access to over 900 yards of level. It is

estimated that there are about 200 yards more to make a break-through but

progress has been slowed by a large fall which requires the use of Acro-props

and heavy timbering. Other sections of the level also require securing.

The work is being carried out jointly by MOLES, CAT and COMRU, and the costs

are being shared equally by MOLES and CAT. The problem is not lack of effort

or expertise but shortage of cash. To help the situation a special fund within

#### activities of CATMHS.

Sunday followed the same pattern . My party visited Connishead Grotto and Priory Park Rising. John Helme joined us for the descent of Sandscale No 2 shaft, in the afternoon. Although the shaft is flooded to whithin 12 feet of the surface, a pumprod was observed in good condition. this is particularly surprising, as it is recorded that the steam pumping engine was removed in 1927 and replaced with an electric pump. We then visited the magazine at Roanhead where a pile of moth wings produced some excitment, but the weekend remained bat-free

The highlight of the weekend would seem to be Crossgates tunnel, where a single alleged Daubentons bat was claimed. A nameless trial tunnel at Park contains a dark stain on the floor, estimated as 200 bat droppings. Wood Pit has two piles, estimated as 100 droppings. For the rest, although bats certainly frequent Furness mines and caves, as shown by the occasional dropping or piles of beetle husks, they certainly do not choose to live there.

It has been suggested that the Furness bats migrate to Coniston coppermines to hibernate in a cooler climate. the writer is somewhat sceptical of this if only because the Coniston area has its own considerable bat population. The bat Group is planning a major survey next summer, to include an examination of Furness abbey, but for the moment the bat's winter quarters remain a mystery

Peter Sandbach March 1994

CAT has been set up to enable us to meet our commitment.

A contribution of  $\pm 3$  will buy a timber leg or head-tree. Double that amount

would go a long way towards an Acro-prop. If you feel moved to have your name

associated for all time with the re-establishing of this famous level, please

send your donation to the treasurer:- John Helme, 3 Town View Road, Ulverston,

Cumbria, LA12 7HH.

The project is now being run by three 'dig leaders' - Peter Blezard for CAT

(tel 05396 23212), Warren Allison for MOLES (tel 0228 23923) and Clive Barrow

for COMRU (tel 0772 813312). For information on work meets at Lucy Tongue contact Pete or any of the dig leaders.

## The FROG SHAFT PROJECT by Dave Bridge

On a cold day in April last year Mike Mitchell and Clive Barrow were searching the moor to the E of the Nenthead-Perry's Dam track for venting shafts. They were looking for an alternative route into Smallcleugh Mine to assist rescue work, in particular from the region of Barron's sump on the Longcleugh vein which is about one mile in from the portal beyond two fairly tight crawls. One shaft they looked at simply dropped to a shallow open level not far from Perry's Dam but a strongly venting one well away to the E promised greater things. About that time Don Borthwick, Sheila Barker, Angela Wilson and myself located thirteen capped shafts in this section of the moor. From the activities of WCMRG we already knew about Bog shaft and an adjacent beehive 100 yards to the S which are close to the track but were keen to inspect the others. Eventually all attention was focused on the strongly venting shaft which Mike and Clive had found earlier and which became affectionately known as 'frog shaft'.

But before that, on Sunday 20th January, Mike, Don, Sheila, Angela and Dave joined forces to cover the ground again and six concrete caps were lifted. We descended four of the shafts (to be the subject of a future report) but in deference to Clive, who was otherwise engaged that day, we left 'frog shaft' alone, simply noting that it was typically circular with masonry lining near the top. An interesting feature was a cast iron pipe about 5 inches in diameter rising almost to the collar.

On Sunday 1st August Mike, Clive, Angela, Sheila and Dave homed in on 'frog shaft' which Mike then descended to an offset stope 90 ft down. The shaft could be seen to continue through a small squarish hole and Dave followed down to check it out with a powerful tracker's lamp. It was indeed a 'goer' and venting so strongly that the wind fairly howled through the stope. Unfortunately it was too late in the day to continue the exploration.

The big day came on Sunday 15th August

when three of the original team, Mike, Clive and Dave, were joined by Peter Fleming. Mike agreed to stay aloft while the others descended the first pitch on a 50 metre rope. The working at the bottom extended to the E for about 15yards, the last few yards sloping steeply down to the hole in the floor previously inspected. The cast iron pipe disappeared into debris at the bottom of the first pitch but, as we were to discover, reappeared lower down the shaft offset from the top section. There was sufficient extra rope to arrange a belay for the next pitch using some iron rails (probably thrown down when an earlier capping had been removed) with a backup round the pipe, and the next rope, of 100 metres, was held off the uneven floor by a bolt in the slate wall. We knew this to be suspect but it only acted as a deviation. At this point a small frog was 'rescued' from the bottom of the first pitch in a rope bag - we hope it appreciated our magnanimous act.

Dave abseiled down the short incline and the next vertical pitch. The incline was calcified and it was hard to avoid dislodging small stals from the wall which rattled away below, but the main pitch was wet and unpleasant. Heavy irony formations thudded down and one such 'knob' remained to catch the unwary on ascent. After a vertical drop of 60ft it was possible to swing into a level to the W.

Having assembled in the level we decided that this must be the Firestone Drift shown on a composite plan produced by John Lawson from London Lead Co records (the relevant part of which is reproduced in the WCMRG Review No 8), and that we had descended a shaft identified as 'Longcleugh Shaft' on the plan. The level with its ramifications extends nearly 200 yds W of the shaft and 18 yds to the E (Fig. 1). Pete swung across to explore the eastward continuation where large square-cut blocks of hard sandstone together with a set of plug and feathers (later discovered beneath dust on a ledge by Clive) suggested that the level may have been worked for the stone, though there was also a small over-stope on a mineralized part of the vein which Mike later climbed. We found wheelbarrow planking, sections of wooden ventilation trunking of two



Photograph 1

Scraper and wooden trunking found in Middlecleugh Level

Photograph 2





Photograph 3

Graffiti Found in Middlecleugh Level

Photograph 4



sizes, a scraper, and unspoilt clog prints in the white calcified mud close to the shaft.

See Photographs P1 and P2

Below, the shaft became wider and took up the hade, approx 20 degrees to the N, with some vertical sections. A Y-hang between a bolt in the hard Firestone and the iron pipe provided a re-belay for the next pitch, a long one and thankfully out of the water which now ran down the footwall. From a second re- belay on the pipe about 110 ft down above an unstable slope of gravel it was possible to swing into a level which crossed 126 ft below. This the shaft was Middlecleugh level about 120 ft above Smallcleugh level, its main function being to provide ventilation (Fig 2). The last visitors here had worn clogs and the inscriptions 'RAM 1898' and 'TW GH 1901' were written in yellow clay on the wall to the E of the shaft and also 'TA 1910' recorded in chalk - these being a legacy of VMZ. For a short distance to the E of the shaft the level was stone-arched but then driven through unsupported shaly ground. A collapse in coal measures about 90 yds from the shaft barred further progress in that direction. Later attempts to dig through this blockage proved unsuccessful. About 9 yds E of the shaft a spur to the N connected with upper workings via a wide hopper and a 20 ft rise too wide to free climb. From the Dunham section these workings appear to be in the Little Limestone.

See Photographs P3, P4and P5

In the other direction, across the shaft, the level forked after about 40 yds, the RH branch following Longcleugh vein to a major collapse at about 120 yds just short of which Pete spotted a small linteled opening in the RH wall which was venting. Squirming head first through the hole, which was little more than 15 inches high and 12 inches wide, he discovered a narrow circular ladderway with the top ladder still in place and was keen that we should pursue it to attempt a connection with Smallcleugh level. His subsequent efforts. though proving the connection, showed that one should always be prepared for the unexpected as we shall later discover. The original access to the manway had been walled over apparently to leave a ventilation

hole not designed for humans. (See photograph P6). About 17 yds short of the hole a 30 ft spur to the N which contained a broken ladder led to collapsed vein workings with an adjacent ore pass or manway tucked away round the corner to the right extending both up and down. We left this well alone until loose timbers and rock overhead can be stabilised.

The LH hand branch from the fork was a 105 vd crosscut to the Cowhill Cross vein where the level then swung to the left following that vein in a SE direction. Here, according to Dunham, a rich oreshoot extended 1000ft SE the Longcleugh vein in the Great from Limestone and was worked to an average height of 40ft. Also, the local geologist William Wallace in his 'Deposition of Lead height Ores in Veins' published in 1861 noted that while working this part of the Cowhill Cross vein the miners holed into a large cavern and felt assured that they had holed into some old works. These workings would be somewhere between the Middlecleugh and below us Smallcleugh levels, and although that branch of Smallcleugh level is open as far as a blockage 130 yds SE of Longcleugh vein, the workings had so far been tantalisingly out of reach at the top of a series of high rises. We also knew from Dunham that Middlecleugh level, here driven in the sandstones and shales between Little Great the and Limestones, communicated with Barron's Shaft, 335 ft deep from surface, near its forehead. This shaft was sunk from the Priorsdale boundary about 300 yds NW of Nag's Head to ventilate the far reaches of Smallcleugh mine. A quick recce was made along the level passing two open sumps, one just beyond the end of the crosscut which is marked on the plan as George Barron's Rise (from Smallcleugh level) and a second 125 yds further on - a 2ft x 5ft slot in the floor marked as William Thompson's Rise. Beyond this point progress was slowed by thick irony mud deposited by water flowing outbye and disappearing through the slot in the floor.

By this time our thoughts had turned to Mike waiting midge-bitten and incommunicado at the surface and so we abandoned the attempt to reach Barron's Shaft and retreated, de-rigging as we went. It was about 8.0 pm before the last bag had been hauled out, and several days before Clive had recovered from the effect of the suspect deviation bolt parting company with the rock!



Photograph 5 Stone Arching in Middlecleugh Level at the shaft



Photograph 6 The tiny access tunnel to the climbing way below Middlecleugh Level



Photograph 7 Communication with surface From Middlecleugh Level



Photograph 8 Bottom of Shaft B

We were now beginning to appreciate the magnitude of the task ahead. There were numerous leads to follow up, not least the main route through to Smallcleugh. We decided that we would push the project to completion if possible which would involve many more visits and a good deal of traffic on the ropes. We needed more permanent rigging to avoid rub points without the hindrance of rope protectors and to improve the belays. Also we needed a means of communication with surface and some shelter for the person at the top. Consequently on Sunday 22nd August, Mike, Clive, Angela, Pete and Dave arrived at the shaft top with three long fencing stakes, sledge hammer, saw, telephone head sets, 100 metres of telephone cable, a tent and 200 metres of rope, as well as the crow bar and SRT gear. Clive agreed to man the phone at the surface while the others lowered the gear and discovered another troglodytic frog. Pete and Dave then fitted stemples at the top of the incline and second pitch, and another to provide a deviation at the top of the third pitch (from the Firestone level down). The telephone cable was tapped at this point and was then run down to a point a few feet above Middlecleugh level where it ran out.

The object today was to push on with the main descent from the landing at Middlecleugh level. After a short loose slope the shaft dropped vertically for almost 50 ft through shaly ground where it was circular and masonry-lined. Fortunately there was a hard sandstone sill in the hanging wall and a good V- hang was secured from two bolts for a 75 metre rope. (See photograph P7). While Mike telephoned Clive, Pete and Dave descended this section to the top of the Great Limestone where the shaft then split into two branches - one vertical (shaft A) and one to the S (shaft B) which had a steep incline. To escape the flow of water the inclined branch seemed to be the obvious choice, although we found that most of the water drained into this branch anyhow. It led down past a series of workings in the Top (or Middle) Flats at about 20 ft below the divide, then workings in the Bottom Flats after a further 30 ft. finally dropping vertically for another 15 ft to a blockage. The other branch was also at the bottom (Fig 3).(See blocked photograph P8).

It is hard to understand the logic behind this split shaft arrangement. The branches of shaft in the Great Limestone are of generous dimensions and a large amount of material has been removed. Both are rectangular in crosssection near the bottom (approx 5ft x 10ft) and both contain loose lengths of cast iron pipe, most likely thrown down during salvage operations as all the fixed pipework had been removed below Middlecleugh level. The floor of shaft B was estimated to be only a few feet above Smallcleugh level whereas it would be necessary to dig through more than 10 ft of debris to reach that level from shaft A; in fact it was possible to step down into the bottom of shaft A from a 12 yd long tunnel which links the two branches at the Bottom Flats (Fig 5). Without doubt these two parts of the shaft originally connected with the two short parallel spurs off Smallcleugh level behind Barron's sump where a cast iron pipe of similar diameter projects from one branch and other pieces are lying around. There is also a 'windy billy' in one of the spurs.

After examining the shaft floors and the Bottom Flat workings which extended to the NE and SW of shaft B we moved up to the Top Flats to continue the search for a connection from there. Great care was needed to avoid dislodging an unstable pile of large boulders poised above the landing place to the W of shaft B. From this point another eye was found to connect with shaft A. Behind a pile of rotten planks and wooden ladders Dave gained access to a short level to the W which led through flats to a strongly venting rectangular ore pass the most promising lead yet (Fig 4). Due to lack of time and rope this was left for the next visit, but before quitting Pete checked out a second level across shaft B which ran SE and discovered a more extensive system of sublevels and flats terminating in an impassable stope. We then began the long ascent to day (or night) unaware that 200 ft above Angela was fighting the waterfall pitch in darkness with a broken caplamp. This time we left the pitches rigged but it was again about 8.0 pm before the party reassembled on the moor.

With more stemples and telephone cable, plus extra rope, a small group consisting of Mike, Angela, Pete and Dave determined to make the breakthrough on Sunday 29th August. This

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time Mike, feeling a bit out of fettle, stayed aloft while Pete and Angela descended the 'hell hole' once again and removed a potential rub point in the long third pitch by inserting a stemple. Meanwhile Dave had carried on down to make a rough survey of that part of Middlecleugh level so far explored. Then after establishing a telephone link with Mike from the Top Flats we descended the venting rectangular sectioned ore pass to a sub-level 30 ft below at the Bottom Flats horizon. This level ran back to shaft A past a small flat to the S but the last few yards beneath wide flat arching were back-filled. In the other direction was a T-junction the left branch of which followed a strong leader which was over-stoped beyond a rise. This branch was blind at 30 yds. The RH branch after a short distance ended at an ore pass which linked with workings 40 or 50 ft above and dropped into a hopper below. We were now about 20 ft above Smallcleugh level and from a bolt belay Dave abseiled to the bottom of the hopper - only to find it blocked! Gaps in the masonry had been sealed with years of clay and grit but a blast of fresh air found its way through a diamond-shaped hole little more than an inch across. We began to wonder if the main updraught was indeed an accumulation of airflows through lots of small holes - rather like sucking through a colander.

Disappointed we returned to Top Flats and rigging a traverse line Pete and Dave crossed shaft B to inspect the workings to the SE more closely, finding flats at two horizons and what sounded like a timber-lined incline below the far stope. To cross or descend this stope some engineering would be required but time had run out. There were several artefacts including a shovel and the base of a powder keg, also wheelbarrow planking which is a common feature of all the flats and levels in this part.

We decided to de-rig this time to inspect the ropes for abrasion, so with grim determination the party slowly hauled 300 metres of rope to surface where Mike, the true hero of the day, had patiently spent the last 12 hours receiving our regular telephone checks. But the ordeal was not over because the vehicles were parked near Bog shaft across moorland interlaced with dykes and peat hag. It is doubtful if anyone hit the sack before 3 am that morning.

The next move was to make a careful estimate of the position of the unvielding hopper. The position of 'frog shaft' at surface coincides with a small mark on the plan labelled Longcleugh Shaft when a fix is taken from the Smallcleugh portal, Bog Shaft and the Waterblast Shaft (also known High as Longcleugh Engine Shaft or more confusingly just Longcleugh Shaft). The section below the top stope down to the Firestone Drift and possibly down to Middlecleugh level is that labelled Armstrong's Rise on the plan, and the name Robson's Rise appears to be assigned to the lower inclined section (ie shaft B), although it is hard to be certain as the plan is not easy to decipher in that area. On this basis, combined with our rough survey of the flats, the hopper in question came to within about five yards of a hopper marked on the plan inbye from Barron's Sump.

On Sunday 19th September Angela and Dave set out to test the accuracy of these calculations. We located an insignificant looking opening, a blocked window about 24 inches wide and 16 inches deep, in the wall of Smallcleugh level some way beyond Barron's sump and after an hour of digging with a length of iron rail it was possible to climb up into fresh air. And there staring us in the face was the tell-tale diamond-shaped hole in the wall we had a through route!

We then inspected the two spurs behind Barron's Sump where a dig may be worthwhile to secure a more direct connection with the shaft. The close proximity of Barron's sump to the shaft, which incidentally is not shown on Dunham's section of the Longcleugh vein (the shaft, that is), may help to explain the history of this fascinating part of the mine with its lofty arching rising some 40 ft above the sump and the immense amount of masonry work. The sump seems to have been used for drawing ore from workings served by a sub-level about 80 ft down (still accessible), but Pete Blezard is that it was designed for a much convinced deeper development not shown on Dunham's section. The tall chamber must have been designed for a hopper and haulage mechanism if not a pump as well, though it is surprisingly devoid of plant. It was suggested that the water flow down the shaft, which has a fall of nearly

400 ft, may have been intended for some sort of hydraulic engine, though from the bore of the pipe it is more likely to have been another waterblast for ventilation. At surface the feeder pipe connects with a leat some 20 yards from the shaft collar and although the junction box has vanished a spill-off pipe can still be traced. Clive estimated that the volume of spoil from the shaft is consistent with the sinking above the dog-leg which supports the view that the remaining 300 ft of shaft had been worked as a series of rises.

#### This breakthrough was

timely as the following weekend happened to be a scheduled Nenthead meet. On Saturday 25th September Mike, Clive, Sheila, and Dave were joined by Jon Knowles, Alastair Paul Timewell and Cameron. Mark Simpson. Sheila agreed to stay on the moor. The others had set their hearts firmly on an inaugural through trip except for Alastair who was pushed for time, and Paul who, to his dismay, had picked up the wrong tackle bag and was without SRT gear. The pitches were re-rigged this time mainly with CAT rope and all abseiled to the Firestone where Mike arranged a stemple re-belay to avoid tension on the cast iron pipe which had vibrated in a disturbing manner during previous descents. (See photgraph P9). A ton of fractured pipework crashing down was the last thing we needed. After a quick look round Alastair made his exit upwards through the spray the others continued down while to Middlecleugh level.

While folk were descending Dave pushed on to the end of the branch of Middlecleugh level on the Cowhill Cross vein where beyond a deep pool of thick red mud he found water pouring out of a rise draped with irony deposits. According to the plan this must be Barron's Shaft. Some 30 yds short of the shaft a tunnel inclined down to the NE where the plan marks an unnamed rise from Smallcleugh. Partial back-filling deflected the water back along the level to William Thompson's Rise.

There is here a discrepancy between the plan and the Dunham section as Dunham puts Barron's Shaft about 70 yds further on and extends Middlecleugh level beyond that. We could find no evidence of this extension and our own rough survey agrees with the plan. There also appears to be a discrepancy between the plan and the position of the shaft at surface. When translated from plan to surface Barron's Shaft comes out near the Priorsdale boundary at GR 7916 4141 or thereabouts (Dunham quotes GR 7923 4141 which puts it 130 yds further E). Yet, as Clive discovered during his long hours of waiting on the moor, the nearest visible shaft at surface (a water-filled depression) lies some way to the NW also near the boundary. What we can be sure of is that Barron's Shaft is no longer open to surface.

In 1861 William Wallace described the sinking of Barron's shaft (although he doesn't name it) and referred to the strong water flow:- 'A few years ago, an attempt was made to form a communication with the surface, in order to ventilate a portion of Long Cleugh mine at Nenthead. The total thickness of strata between the highest level and the surface amounted to 336 feet [Dunham gives 335 ft for Barron's Shaft]. To effect this object, it was determined, in the first instance, to make a Rise from the conveniently level, as high as it could be extended, and afterwards to sink a Shaft from the surface to communicate with it. The Rise. after ascending 90 feet, reached the Firestone stratum, and drained from it a very considerable quantity of water, which continued to flow regularly in connection with a large quantity of carbonic acid gas [CO2].' He goes on to say that because of excessive carbon dioxide below, and drainage problems above, the connection was finally made by sinking а borehole through to the top of the rise. 'At the present time, the quantity of water dashed down the Rise amounts to 24 gallons per minute; it must therefore carry off a large portion of the latter [CO2] in solution'. Notes on the plan show that this part of Middlecleugh level was driven between July 1847 and 1851 February and that they achieved ventilation in 1851.

Mark had a quick dig at the Middlecleugh level collapse to the E and better belays were arranged for the last two pitches. Then when the party had descended and assembled above the final hopper Clive ceremoniously dropped into Smallcleugh level. Mike's telephone system was now working more efficiently than ever with the voltage jacked up to 40 volts, lighter handsets and neon indicators, and the hopper took on the appearance of a telephone kiosk as we reported back to base. Ninety minutes later cameras were flashing at the Smallcleugh portal - and that evening after a late bag of fish and chips in Alston square the beer in the Turk's Head went down particularly well.

Jon, Sheila, Dave, Mike and Clive availed themselves of overnight accommodation at Rock House where they were met by Angela, and on Sunday 26th September the party was joined by Anton Thomas, Stewart Hartley and Pete who had driven straight over from an Alpine Club dinner and had slept in his van. Sheila and Clive decided to stay up on the moor that day another through trip in while others had mind. But first Mike, Dave and Jon used a spare 50 metre rope to inspect George Barron's Rise on the Cowhill Cross vein from

Middlecleugh level. The level had been cleared of all scrap metal but we had our own timber for belays and the rock was good enough for bolting in places. Here a 12 ft step followed by a loose inclined tunnel led down to a sump with an exit beneath a pack wall 15 ft below. A run-in at this point which halted further progress had formed a small blind chamber beneath the wall. The return from this airless hole demanded a combined effort as a tight deviation had to be organised from above to prevent the rope bringing the wall of unsupported masonry down. Total depth to the blockage was about 50 ft.

Pete then rigged the narrow circular ladderway on the Longcleugh vein using an iron hook and an old stemple to provide a suitable hang (Fig 6). Crawling through the linteled hole, Angela then descended past the ladder and down an unladdered section reaching the bottom at 24 ft. Pete followed and, squeezing through a very tight gap between some masonry and the rock wall, found himself in an adjacent wider shaft which went both up and down and whose walls were lined with thick mud. Above, this should intersect with Middlecleugh level possibly beyond the collapse. Using two pitons for a re-belay, Pete descended this shaft for about 50 ft to some stone arching where a level went off W about 10 ft from the bottom. After 25 ft this level turned through 90 degrees and headed N for several yards to a blind heading. A trial sub-level shown on the plan in this position is named 'S Barron's Xcut in Mid Flat'. From the shaft Pete could see another ladderway through a wooden partition but his NiCad was failing and he was forced to return, plastered from head to foot in an ocherous sticky mud. The line of descent coincides with a climbing way marked on the plan which rises as a partitioned hopper/manway from Smallcleugh level. WCMRG had previously free climbed the lower part of this manway, but unfortunately for Pete and Angela another descent was going to be necessary to prove the connection.

Meanwhile back in Middlecleugh level Mike and Jon were tackling the 20 ft hopper to the Little Limestone workings east of the shaft but found the masonry in the level above bulging too much for safety. To gain access to these workings a maypole is needed to climb the adjacent rise. In Cross vein Anton and Stewart Cowhill discovered more graffiti at a place where according to the plan the London Lead Co was driving Middlecleugh level in 1849 and 1850. These two dates are clearly recorded on the wall but the letters are less easy to interpret - possibly 'TEAM 1850' '1849 JA?' 'Jack ARCHER'. (See photgraph P10). Later Anton and Stewart had another go at the collapse to the E. The pair eventually completed the through trip together with Jon, Pete and Angela who led them through the tortuous route from Barron's sump to the portal where a small reception party was waiting.

Sunday 10th October was ostensibly a COMRU meet but some exploration also found its way into the schedule. Dave and Angela made an early start in an attempt to reach Middlecleugh level from below before the larger party started to descend from the moor (the ropes still being in place), but by the time they had reached the Top Flats stones were already rattling down the shaft which elicited stentorian protestations in unmistakably Anglo-Saxon terms. Before long Pete Fleming, Chris Jones, and Trevor Tucker, as well as Anton and Paul (on return visits) had landed at Middlecleugh level. Then Pete Blezard and Ann Danson arrived. Mike and Clive kept in touch with the operations from above. Most were keen to look around the new ground, take photographs, and complete the through trip, but Pete F had his eyes on the climbing way and Dave on the legendary stopes on Cowhill Cross.

The far rise from Smallcleugh level near Barron's Shaft was the first target. The entrance



Photograph 9 Preparing the Descent From the Firestone Drift



Photograph 11 Top of William Thompson's Rise giving access to the Cowhill Cross Vein Ore Shoot 85 ft below Middlecleugh Level



Photograph 10 Graffiti found in Middlecleugh Level

cleared until it was possible to crawl through thick red mud to a narrow dry slot which descended on the hade (approx 20 degrees to the SW) and also continued upwards. After some loose boulders had been trundled down the working was descended but found to be blocked at about 50 ft where it belled out along the vein. Our attention was then transferred to the water sink, or William Thompson's Rise. Here Chris inserted a back-up bolt and Dave slid through the muddy slot in the floor from a cross-timber hang. (See photgraph P11).

the hade the water gave little Being on trouble (apart from a minor deluge created by a certain high-spirited member of the back-up team), but a bolt deviation was needed to complete the descent of the narrow rise to the floor of a 10 ft wide working 85 ft below. This working had been taken along the vein in both directions and the line of descent continued down large а masonry-lined ore pass some 10 ft long and 5 ft wide which was sumped up to within about 20ft of the floor of the stope (Fig 7).

At last the door had been opened to the workings on the rich oreshoot in this part of Cowhill Cross vein. To the SE the stope was back-filled to the roof after a short distance leaving a gap between the deads and the hanging-wall too tight to pass, but in the opposite direction there were 50 yds of clear ground before one was forced to climb over deads. The remoteness of the workings was accentuated by the tight connection with Middlecleugh level and the sound of running water making communication with the outside world impossible. It will need a party to explore these spacious stopes more fully.

During this time Pete F had been patiently waiting for the rope for his final assault on the climbing way. He and Angela repeated their performance of 26th September, but this time, some 80 ft below Middlecleugh level, Pete broke through the wooden partition into a yet another rise which continued upwards as a narrow manway beyond a dog-leg and had another short level going off to the W. After a further 30 ft or so of descent down this new rise he dropped into Smallcleugh level through a hopper, and after checking his whereabouts carried out the procedure in reverse (except that he continued to accumulate mud!). So we now had two connections with Smallcleugh level, but it is doubtful if the notorious climbing way will be descended (or ascended) again in a hurry.

Several other workings were inspected above Middlecleugh level - a short rise near Barron's Shaft at the top of which Trevor and Chris found a 10 yd long crosscut to the E, a short rise to the Little Limestone which is marked on the plan near to the Cowhill Cross intersection, and a working previously noted about 20 ft up the main shaft which continued W for 15 yds across a sump to a short rise. All these were found to be blind.

The day ended with Angela, Dave and Pete once again ascending to surface and de-rigging as they went, while the others completed the through trip and pulled the bottom ropes down. It had been a long haul but not too late for the Miner's Arms where all felt that they had achieved their day's objective.

The last visit of the year was on Sunday 7th November when Dave was joined by Phil Merrin. Unfortunately Chris had to drop out after a cracking his engine sump on the Rampgill track. As time was at a premium, reached from the Barron's Sump was Smallcleugh portal in 50 minutes (a record?) then Phil fought his way up the slippery ore pass above the hopper and attached a rope. Several leads were cleared up. The over-stope in the first sub-level, which rises precariously above some very flat arching, was climbed by Phil to a collapse at 30 ft. Then an unexplored level running E off shaft B at the the Top Flats horizon was inspected. After a 10 ft rising step the level continued on a string to a collapse at about 25 yds. The air here was bad. Finally more time was spent in the extensive Top Flats workings to the SE and some new ground covered.

After nine underground trips and many long hours spent on the moor the chief protagonists have been glad of a winter recess, but 'frog shaft' still holds a few more secrets and the story hasn't ended yet.

#### Dave Bridge



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### INTRODUCTION

# "The colours are formed by copper carbonates, green is malachite and the blue azurite."

Statements similar to this are often used when describing the enrichment colours at Coniston Copper Mines. After a minimal amount of research it became clear to me that such statements are at best a poor generalization and often untrue! The following article by Brian Young will enlighten all mining enthusiasts and allows us to pass on accurate information in our publications, displays, etc.

My sincere thanks to Brian for offering his time and expertise in producing this very informative work.

Jeff Wilkinson March 94

### POST-MINE MINERALISATION IN THE CONISTON COPPER MINES

#### Brian Young, British Geological Survey, Newcastle upon Tyne, NE2 4HB

Exploration of old underground mine workings commonly reveals deposits of minerals on the walls of old workings which quite clearly have formed since the workings were excavated: in many instances these deposits are still forming today. The term 'post-mine' is generally applied to these. A great variety of mineral species may occur in this situation.

The elements which form these minerals are derived from both the mineralised bodies and the wallrocks in which they occur by the action of groundwater percolating through the old workings. Surface waters, derived almost entirely from rainwater, almost invariably contain some dissolved carbon dioxide and oxygen. This is quite capable of reacting with a number of minerals and removing elements in solution. When, as is usually the case, mineral deposits contain comparatively unstable sulphide minerals such as pyrite or marcasite, the reaction with groundwater produces an abundance of sulphurous and sulphuric acid thus enabling further chemical attack on minerals through which this very reactive groundwater passes. Very high levels of acidity may develop, particularly in pyrite- or marcasite-rich deposits. Many of the metallic elements present in a deposit may thus be taken into solution.

Mineralogists and ore-geologists use the term 'supergene' to describe these near-surface processes and the minerals produced by them. (The term 'hypogene' or 'primary' is used for the original mineralising process and the minerals so formed.) Although it is common to hear 'secondary' used as a synonym for 'supergene' this is not recommended as a great variety of 'secondary' processes occur quite unconnected with the near-surface environment.

Near the surface, especially above the water table where abundant oxygen or carbon dioxide is present in interstices in rocks, deposition of the dissolved elements commonly occurs to produce minerals typical of this 'supergene' environment. This process occurs naturally near the outcrop of minerals deposits. Mine workings, by introducing oxygen and carbon dioxide and by enhancing the flow of groundwater through a deposit effectively provide an artificial environment for these processes, often at depths well below the water table. It is in just this situation that the mine explorer encounters the products of 'post-mine supergene mineralisation'.

The nature of the minerals formed in such an environment depends on a number of factors including the composition of the available 'hypogene' minerals, the solubility products and stability fields of the chemical compounds involved, the abundance of free oxygen and carbon dioxide and the nature of groundwater flow patterns. The topic is thus highly complex when studied in detail.

For the mine explorer at Coniston it is worth commenting on those 'post-mine' minerals which are known to be present. Most conspicuous, but not necessarily most abundant, in old copper mines are copper-bearing minerals. Almost all such copper minerals are brightly coloured, usually in shades of blue or green. One of the most common green copper minerals is malachite  $(Cu_2CO_3(OH)_2)$  and this is certainly present in parts of the Coniston workings. However, the sulphate brochantite  $(Cu_4SO_4(OH)_6)$  is also common and is frequently misidentified as malachite

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(Young and Johnson, 1985). The oxidation of abundant pyrite in the Coniston veins has produced sulphate rich groundwaters which in many circumstances will favour the formation of brochantite rather than malachite. A simple acid test will help to distinguish malachite which will fizz readily in dilute (10%) hydrochloric acid. Although there are several other obviously "malachite-green" copper minerals which may occur in such environments none has so far been recorded from Coniston.

To many people the best known blue copper mineral is azurite  $(Cu_3(CO_3)_2(OH)_2)$ . This is typically a vivid blue mineral though when crystallised it is commonly a very dark blue indeed. It is in general a much less common mineral than malachite and seems to be particularly scarce at Coniston, indeed despite many years familiarity with Coniston minerals I have yet to see a specimen despite claims of its presence in several descriptions of the area. Azurite has been confirmed at only a handful of localities in the Lake District.

A selection of blue 'post-mine' encrustations from Paddy End when examined by x-ray diffraction techniques proved to consist of either langite  $(Cu_4SO_4(OH)_6.2H_2O)$  or posnjakite  $(Cu_4SO_4(OH)_6.H_2O)$ : in places both minerals were present in the same small sample (Young and Johnson, 1985). Small specimens of these minerals may be seen on the dumps at Paddy End. It is likely that much of the material commonly referred to as 'azurite' from Coniston consists of one or perhaps both of these minerals.

Pale, turquoise-blue encrustations from Paddy End include material which gave an x-ray pattern close to chalcoalumite  $(CuAl_4(SO_4)(OH)_{12}.3H_2O)$  though its identity could not be determined precisely. Chrysocolla  $(Cu,Al)_2H_2Si_2O_5(OH)_4.nH_2O)$  may also be present as a constituent of vivid deep blue to turquoise-blue rather enamel-like encrustations at Paddy End. Whereas it has not been possible to confirm the presence of this mineral here it is an important constituent, along with malachite, of the natural supergene assemblage present in the vein outcrop at Black Scar Workings west of Levers Water (Young, 1987).

Bright rose-pink crusts locally attract interest at Coniston. Samples of these so far studied consist of erythrite ( $Co_3(AsO_4)_2.8H_2O$ ), either alone or perhaps more commonly as an intergrowth in postmine calcite coatings. The cobalt has been derived either from discrete cobalt minerals in the ore or present as traces within the other sulphides (Russell, 1925). In this context it is worth noting that when found on the Paddy End dump the closely associated sulphide has always proved to be tennantite (Cu,Fe)<sub>12</sub>As<sub>4</sub>S<sub>13</sub>). The occurrence of any sulphide associated with erythrite in the workings is worth investigating as the nature of the primary cobalt, and associated nickel, assemblages have never been investigated *in situ*.

White or colourless encrustations are less conspicuous in the workings but probably as numerous. Post-mine calcite, as thin coatings of 'flow-stone' do occur but are probably not abundant, reflecting the general low calcite content in the primary veins. Common in parts of the Coniston workings is gypsum (CaSO<sub>4</sub>.2H<sub>2</sub>O) as crusts of rather pearly crystals of the variety known as selenite. Gypsum is a common post-mine mineral in many mines in which sulphate-rich groundwaters are abundant.

Earthy yellow to brown coatings are very common in most abandoned mines including Coniston. Commonly ignored or simply dismissed as 'limonite' (not a true mineral but rather a field term for unspecified earthy iron oxides) these deposits may include a variety of iron oxide and basic iron

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sulphates including members of the jarosite group and similar minerals. The writer is not aware of any work done on these minerals at Coniston.

A variety of 'supergene' minerals of 'post-mine' origin are thus known at Coniston. Many more almost certainly remain to be identified.

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Nantiago Mine by Dave Blundell

Nantiago Mine (also known as Nant Jago) grid refences SN 826863, lies deep in the mountains of mid-Wales, beneath the highest mid-Wales, Plynlimon mountain in (Pumlumon Faw) at 2467 feet. The mine is sited at a height of 1500 ft AOD, in the of Powys (formerly County 2 miles East Montgomeryshire), of the Dyfed County boundary with (formerly Cardiganshire). The source of the River Wye lies 1.5 miles West of the mine.

Nantiago could not be described as a major producer of ore, during the life of the mine, (1830 - 1919), the total production was 1,709 tons of lead ore, and 1,929 tons of zinc concentrates. the site can be said to typify the many small mines of Mid-Wales, struggling against a poor location, and high transport costs, to pay their way, persevering in the hope of "better things to come". The closure of the mine, immediately following the First World War was due, not to exhaustion of the ore reserves, but the need to invest additional capitol in winding gear, and the slump in the price received for the ore, following the Governments' release on to the open market, of the Strategic stockpiles of ores.

## GEOLOGY / DESCRIPTION OF WORKINGS.

The vein at Nantiago strikes a little to the the South of West, though the Van Grits, which are overlaid to the East and West of the workings by the Gestwyn Shales. The vein, which varies between 3 and 6 feet wide, is filled with Calcite, brecciated country rock, and sphalerite, in which nests, and strings of galena occur. The vein is probably the continuation of that worked at Plynlimon Mine, over the county boundary to the west, in Cardiganshire.

The Engine shaft is situated at a height of 1522 feet AOD, with the adit cutting the shaft at 17 fathoms (102 feet) below the shaft collar. The shaft is 70 fathoms (420 feet) deep below adit, with levels off at 10, 20, 30, 40, 50, and 60 fathoms. The majority of workings lie to the west of the shaft, with the longest levels, (adit, and 20 fathom) extending 160 fathoms West of the shaft. This was the most productive part of the mine, with the quantity of ore decreasing in the lower levels of the mine.

#### HISTORY.

The mine is reputed to have been opened by Thomas Owen, from Flintshire, in the 1830's but no records of production survive. In 1846, the Mining Engineer Matthew Francis, of Goginan, Aberystwyth, examined the mine on behalf of the lessee Robert Parry. Following this examination. Francis submitted a scathing report on the waterpowered machinery on the mine, and in particular on the loads (pumping, crushing, and dressing) imposed on the 12 foot diameter water wheel. He likened this practice to " harnessing a mouse to a brewers dray", and recommended that another 2 wheels be constructed, (30 and 25 foot diameter), costing between€4-5,000. Shortly after this report, and after producing 20 tons of lead ore, the mine closed, and remained idle until 1852.

In 1852, a new company drove the deep adit, as a cross-cut, 65 fathoms to the vein, and started opening out stopes beneath the old shaft workings from the surface. This venture soon failed, and no production figures exist from this period.

By early 1861, the mine was at work again, with the engine shaft said to be 5 fathoms below adit, with the shaft sunk to the 30 fathom level by 1863. The mine was up for sale in March 1865, and remained closed until 1869, when working re-commenced under William J.Lefeaux, who operated almost continuously until the mine was abandoned in 1888. During this period, the workforce numbered around 28, with 20 working underground, and the remainder working on the surface. This period of operations is noteable for two facts; a 60 foot diameter waterwheel for pumping was installed in 1873; and 1875 saw the maximum production per annum in the life of the mine, 176 tons of lead ore, and 186 tons of zinc concentrates. From 1882, pruduction dwindled to around 20 tons per annum, produced by a workforce that could be counted in single figures. William Lefeaux died penniless, in a chair, at the mine shop in 1888. Following his death, the mine was abandoned.

Early in 1900, the Nantiago Mining Company, under Manager William Andrews, took posession of the site, and with a workforce of 49, in 1902, set about the task of re-equipping the mine.

A 56 foot diameter waterwheel was obtained from John Mills and Co of the Llanidloes Foundry, and installed for pumping duties, assisted by a Crossley Gas Engine, for the use in time of drought or frost. A three story mill, spanning the Nant Iago stream was constructed, powered by 2 Pelton Wheels, and equipped with a jaw crusher, crushing rolls, trommells, and 6, four-compartment jigs.

The numbers of men employed settled down to around 25 or so, with two-thirds of the men underground, and the remainder either on the surface, or in the mill. In the period between 1903 and closure in 1919, the production of lead ore varied between 19 and 101 tons per annum, with the production figures for zinc concentrates very closely matching those for lead ore. The ore was transported by horse and cart, in two ton loads, every Monday, to Llanidloes Railway Station, a distance of almost 13 miles by road from the mine.

In this period, the Galena concentrate (80% Pb) was worth round 11 per ton, with the Zinc concentrates (42 - 45% Zn) valued at 6.50 per ton.

In 1912, the mine passed into the ownership of the Llanidloes Mining and Machinery Company Ltd, who operated the mine up to its closure in 1919.

#### THE MINE TODAY

These notes are based on a visit made to the site in mid-September 1993. The mine is approached from the A44(T), parking at Pont Rhydgaled, (SN 840827), at the point where the A44(T) crosses the River Wye, 6 miles West of Llangurig, on the main road towards Aberstwyth. A public bridleway/private road, leaves the main road, to the North, at "Sweet Lamb", (after an advertising hoarding fixed to an adjoining barn, "Mountain Lambs Taste Sweeter"). The bridleway/private road is in excellent condition, and is used, complete with watersplash, as one of the off road, special stages, in the "Network Q" RAC Rally, held in November of each year.

The road follows the West bank of the River Wye, and then crosses to the East bank, just below the Wye Valley mines (West Wye Valley & Nantygwrdy). The East bank of the River is followed past the site of the Nantygwrdy dressing floors (now a large bulldozed flat area, used as a car park,  $at \le 5$ 



Nantiago Mine Wye Valley Powys

per car, by Rally spectators), at this point the road starts to climb across the face of the hill, leaving the river below. After passing a plantation of pine trees, and at a distance of 3.25 miles from the A44, an overgrown track cuts down to the left, towards the dressing floors, and the remains of the three-storey mill spanning the Nant Iago. The structure of the mill is very ruinous, but boarded floors, with the substantial remains of a Pelton Wheel, and its supporting timber framework and line shafting, still survive. The frame for the Pelton Wheel appears to have been assembled from "ready made" kit, as adjoining pieces of timber, at the joints, all carry identical numbers in Roman numerals, "match part IV to IV, part V to V etc...' Needless to say, the bronze bearings to the Pelton Wheel, and line shafting, have long since disappeared.

Adjoining the Pelton Wheel, on the boarded floor, are a number of bases of jigs, with sections of bucket elevator belting lying about. Downstream of the mill, on the West bank of the stream, are the sand and tailings dumps. The deads heap is also on the West bank of the stream, just upstream of the mill.

Following the Nant Iago upstream, a small trial adit, driven Eastwards, is passed, with the wheelpit for a 30 foot diameter waterwheel adjacent. This wheel was used to power crushing and ore dressing equipment, prior to the construction in 1900 of the three-storey mill powered by the Pelton Wheel.

A breached earth dam is now seen ahead, with the stream above in a small gorge. To the right (East) of the stream is a marshy area. At the back of this area, lies the collapsed Deep Adit level, (1420 ft AOD), driven in 1852, North West, to cut the vein.

Continuing upstream, along the edge of the gorge, the remains of the mine shop/office can be seen on the Eastern bank, just above, with a solitary Larch tree adjacent. On the West bank, just above the top of the gorge, lies the wheelpit, complete with timber bearers, and balance bob plat, of the 56 foot diameter pumping waterwheel, installed in 1900. A masonry pillar, for supporting flat rollers, points the way towards the engine shaft.

The stream, at this point, is culverted beneath a recent forestry track, built up so as to form an embankment across the widening gorge. Upstream of the forestry track, the steep hillside to the West, and a 12 foot high waterfall to the North, form a small cwm, which contains the Engine shaft, and winding wheel.

Crossing the forestry track, a small quarry is passed on the right hand side. Stone from this quarry was used in the construction of the various buildings and structures about the mine. The stream is absent from this area, as it flows down a shaft adjoining the main engine shaft, just ahead.

A number of stone and concrete pillars and engine beds, of varying sizes, are clustered beneath the steep hillside, on the West side of the stream bed. This is the location of the 87 fathom deep Engine shaft, with a 30 foot long open stope, running into the hillside to the West, with a level to, be seen high up on the back wall of the stope. Attempting to get a clear view down this shaft is extremely frustrating, tall engine beds block the access on the North and South sides, a steep grassy hillside blocks the West side. At the end of the open stope, and adjoining the stream, an 8 foot diameter spoked sheave wheel is jammed across the shaft, just below the collar. Two other sheave wheels survive in the vicinity of the shaft. another 6 foot diameter wheel, and a 10 foot diameter wheel. Across the stream lies the winch and gearing, with the remains of the defective wire rope, that brought on the closure of the mine, rusting away on the winch drum. The mine worked throughout its life, using kibbles for drawing from the shaft, modern winding methods, in the form of skips or cages, never reached this remote site.

Above the Engine shaft can be seen the remains of the wheelpit for the 35 foot diameter waterwheel, used for drawing from the shaft. A timber launder lies at the side of the 12 foot high waterfall adjoining the wheelpit. This was used to bring water from the top of the falls onto the wheel. The flow of water in the Nant Iago was argumented by water from a leat, discharging just above the falls. This leat can be followed, contouring round the hills for 1.25 miles, to a weir on the Afon Gwy (River Wye) in a side valley to the West of the mine.

This mine is contained on a very compact site, sited along a half-mile length of the Nant Iago, over a vertical difference in height of 220 feet between the dressing floors, and the drawing waterwheel. Walking

access is via a good track, set amongst superb scenery in the wild and empty hills of mid-Wales. Given the ease of access for vehicles, via the private road, and the length of time that has elapsed since the mine was abandoned (around 75 years), it is a pleasant surprise to find that so much in the way of mining equipment, has escaped the scrap men. I would suggest that whilst large items of equipment, such as waterwheels, were a saleable item, upon the closure of the mine, it was not a economic proposition to remove smaller items, such as sheave wheels, and winches, form this remote location, for their scrap value alone. This contrasts sharply with the Lake District, where little, if any, machinery remains on any site, following the abandonment of a mine. Nantiago is by no means unique in the survival on site of items of mining machinery, other sites in the area also contain items in-situ.

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DJB 01/01/94.

### **NEWS**

### The North Pennine Heritage Trust

The North Pennine Heritage Trust's Rampgill project was officially opened by the chairman of Cumbria County Council on the 7th March.

The work is being carried out by an enthusiastic C.C.F training task force and their supervisiuon is progressing well. They have started work on the second building which is being converted into 6 workshops and 2 offices. Hopefully the units will encourage local businesses to become established and the rents will help to provide funding for the the new visitor centre. The NPHT volunteer group which meets on the second and forth Sundays of each month, are repairing the dry stone walls and are about to commence the excavation of the old reservoir behind the woodyard.

Any help would be greatly appeciated.

Enquiries to Sheila Barker 0229 472296.

### Alstonite

Two mine spoil heaps which hold some of the worlds rarest rock formations have been declared sites of special scientific interest because the precious mineral is known to exist in only five places worldwide. The waste is known to include Alstonite named after Alston, Cumbria, where it was first discovered in the early 1800's and discarded because of no known use. Small formations were later found deep underground in nearby Acomb, Northumberland, but the rocks were dumped by miners digging for lead ore.

### News from North Wales

### Moelwyn Mine Accident

The mine entrnaces in the Moelwyn hills above Tanygrisiau may be sealed off and warning notices erected. This is due to the unfortunate demise of Mr Hughes from Hampshire, who fell to his death on the 5th April last year.

The accident occurred as he took shelter in an old adit but fell down an internal shaft in the Moelwyn mine on Moelwynn Bach, 300 metres west of the Llyn Stwlan Dam (SH 661442) Tanygrisiau. The Merionnydd Coroner has made recommendations to the landowners ( Crown Estates) to close the shafts and mine levels in the near vicinity as they are close to a public footpath. This to be done in such a way as to not hinder access for any rescue party.

Consultants have been appointed and are in consultation with other landowners including the National Grid Company to see what needs to be done. In other words mine entrances now open that are in the vicinity of public footpaths will probably be closed.

Abstracted from 'The Cambrian News' 04/02/94

Mr Brian Young, of the British Geological Survey at Newcastle-Upon-Tyne, asked for the sites to be protected.

"Its only commercial value is to collectors because it does not exist in large enough quantities to be used for anything else. However it is extremely important from the scientific point of view."

The location of the sites is being kept secret for obvious reasons.

Abstracted from the Daily Telegraph 01/03/94 Sent in by John Helme.

#### **Dolgellau Gold Fever**

There has been an upturn in the number of companies seeking approval for mineral exploration near Dolgellau. The Snowdonia National Park Planning Committee has approved extended planning permission for mineral exploration works to the Stoic Mining and Exploration Company from Merseyside. This is to be carried out at Coeti Maestryfer, near Bontddu. There was a similar application pending for exploration work for the Tyn Llywyn area waiting to be processed by the planners, but the planning officer Mr Henderson, says that approval for exploration work did not mean that approval would be given for future mining, as the application for permission to mine for minerals in the National Park are far more stringent than being allowed to explore.

It seems that they can chase the rainbows but cannot dig up the pots.

Abstracted from 'The Cambrian News' 14/08/93

Sheila C-P-Thomas February 1994

### MINING FORUM MEETING

Held on 19th January 1994 at the Coniston Institute

The scope of this meeting has grown since its formation nearly three years ago and now includes representatives from the Royal Commission for Historic Monuments, as well as English Heritage, the National Trust, BGS, CATMHS, MOLES and LMQT. The meeting was as usual chaired by Andrew Lowe of the LDNP and also present was the Park's new full-time Archaeologist, John Hodgson.

Industrial archaeological projects which the Park intend to pursue over the next two years are the Greenside Mine site, the Coniston Mine site, Backbarrow Furnace, Stony Hazel Forge and Caldbeck Howk (bobbin mill etc).

The Royal Commissionfor Historic Monuments will shortly start a survey of the Coniston site starting with a small scale overall plan (from aerial photography) followed by a detailed survey such as that already completed for Greenside.

Robert Maxwell, the local Archaeologist for the National Trust, supports the scheduling of the Force Crag Mine site. As far as the underground workings are concerned the NT is happy that minor work should go ahead to keep No 1 Level open. The Trust would transport materials etc but the underground repair work would probably be carried out jointly by MOLES and CAT. In view of the geology of the area Brian Young of the BGS was concerned that the head of water built up since the blockage of No 0 Level could eventually cause a land slip and suggested

### INDEX RECORD FOR INDUSTRIAL SITES

The Association for Industrial Archaeology has set up a scheme to enhance local Sites and Monuments Records (SMRs) and ultimately the National Monuments Record

catmhs No38

drilling into the hillside to drain the lower part of the mine.

David Cranstone, consultant Industrial Archaeologist for English Heritage, is at present viewing tin and arsenic sites and expects to visit the Lake District copper mining sites in the summer of this year.

Progress reports presented by the Mining History Groups included the following items:

#### CATMHS-

Stempling of Taylor's Level at Coniston; Elizabethan Lead Mine site survey at Greenhead Gill (the NT asked for a copy of our article on the history and visible remains of this mine, which will be appearing in the forthcoming Journal); Woodbine Mine Chimney project; Heritage Survey of Iron Sites in Low Furness; Drainage of Logan Beck Mine; The 'Frog Shaft' project at Nenthead (Brian Young expressed a particular interest in our exploration of the Cowhill Cross Vein workings); Honister Slate' publication.

#### MOLES -

Honister Winding Drum restoration; Dig at Hay Gill Mine; Opening of Brae Fell No 1 level; Greenside project (jointly with CAT).

#### LMQT -

Acquisition of the Haig Pit Engine House (interested parties have been offered the chance to view the winding engines - key held by John Greasley of Workington);

It was agreed that CAT would help with a Coniston Mine field trip on Saturday 26th March for people attending the Agricola Conference at Ambleside.

Dave Bridge

(NMR) in the area of Industrial Archaeology which is at present under- represented. The SMRs provide detailed local registers for research and planning purposes and it is important that all historic industrial sites, however small or apparently insignificant, are flagged up there. This is quite separate from the identification of possible sites for Statutory Protection which is currently being carried out by English Heritage.

The scheme is known as the Index Records for Industrial Sites (IRIS) Project and is being operated by the Archaeological Unit of Lancaster University. A meeting was called on 10th March in Ambleside by Jane Robson of the Archaeological Unit to discuss the project and how it will work in Cumbria. Those present included John Marshall, Michael Davies-Shiel, Andrew Lowe and John Hodgson from the LDNP and Robert Maxwell from the NT. Of the Mining History Groups only CATMHS was represented. The aim will be to cover the area subject by subject, participating groups or individuals with local knowledge recording sites on forms which will be collated prior to

the information being fed into the SMR data base.

Foreseeable problems were discussed including duplication, conflicting information, incorrect assessments of sites (should they be checked out and, if so, by whom?), the need for a map base to define the area of a site, etc. As a test run for Cumbria it was decided to record lime kilns and John Hodgson will be co-ordinating this exercise. CAT will, in due course, be in a position to contribute comprehensive records relating to the iron industry of Low Furness. Other areas where, in particular, a useful contribution might be made are the Lake District slate industry and copper mine sites.

Dave Bridge

### SPREADING THE WORD

An illustrated talk on the Coniston Copper Mines was given to members of the Rotary Club of West Lakeland at the Blackbeck Bridge Inn, Beckermet, on Tuesday 15th March.

Dave Bridge

### A few comments on Water in Mines article in Newsletter 37

Not being familiar with mining jargon & conventions of units, though I am a mechanical engineer, I had difficulty in understanding 'the invert of the adit'. I presume it is the circumference of the adit wall, and a figure of 10 is used (though this suggest a very low adit). Using this figure results in a 'force/length of adit' (ten times the pressure).

The second paragraph confused me even further, here the pressure is being divided by 10, not multiplied by it. In simple engineering terms a height of 40ft of fresh water (s.g. 62.4 lbs/cu.ft) would produce a pressure of:-62.4 \* 40 = 2496 lbs/sq.ft (17.3 psi)

A useful guide is that mercury has a s.g. of 13.5, which is not a million miles from 12. This means that, as regards pressure, 1" of Hg is roughly equivalent to 1' of water (fresh or salt at this accuracy). Further atmospheric pressure is 14.7[psi or roughly 15 psi]. Thus

2" Hg (similar to 2' of water) is similar to 1 psi.

How about an article on mining jargon & such conventions? Also, could grid refernces be included ( 4 figure would probably suffice) for those of us who do not know the locations being talked about?

Dave Sewart 22/02/94

Editor;- Thank you for writing in about the article. It is important when dealing with technical matters to be as accurate as possible, and where such knowledge could avoid unfortunate things happening, doubly so.

Does anyone else have anything they wish to say? It is a rare thing to have a letter.

A Glossary of mining terms can be found in our book

'Beneath the Lakeland Fells.' Invert is a term used in building for the bottom part of a pipe, drain or tunnel.In mining the bottom of the adit is called the 'sole'.

# **ROYAL FOREST OF DEAN**

### NAMHO FIELD MEET 5th-8th AUGUST 1994

The National Association of Mining History Organisations field meet will be held this year in the mines of the Royal Forest of Dean. There will be a large variety of underground trips for all abilities and several surface visits to mining related sites.

Iron mining has occurred in the Forest of Dean since the early iron age (2,700 years ago) and ended with the Second World War. In the years between, an intriguing and extensive series of workings have been created. This is a good opportunity to choose a range of visits to these mines and to see some of the recent new discoveries.

A visit to a working Forest of Dean Freemine is also planned, which will be an unusual opportunity to go underground into a unique type of coal mine.

The event is to be co-hosted by the Royal Forest of Dean Caving Club, Gloucester Speleological Society, Hades Caving Club, and Clearwell Caves. On the Saturday night there will be a Pig Roast and Social at the Rising Sun, Moseley Green, where there will also be a slide and video show throughout the evening.

Registration is on the Friday night or Saturday morning, at Clearwell Caves. Camping and other accommodation is available nearby, details will be sent with booking forms.

#### For information and booking forms, send an A4 S.A.E. to:

J. Hine, The Grottage, 2 Cullis Lane, Mile End, Coleford, Glos. GL16 7QF

• Information will be sent at the end of January 1994.

#### **TOWN AND COUNTRY PLANNING ACT 1990**

#### NOTICE OF DEPOSIT OF PROPOSALS FOR A LOCAL PLAN

#### LAKE DISTRICT NATIONAL PARK LOCAL PLAN incorporating policies in respect of Minerals and Waste

Notice is hereby given that, on 17 March 1994, the Lake District Special Planning Board (National Park Authority) have prepared proposals for the above plan.

Copies of the proposals are available for public inspection at the following locations free of charge (Opening times in brackets):

**DEPOSIT LOCATIONS:** NATIONAL PARK OFFICE, Murley Moss, Oxenholme Road, Kendal (Mon-Thurs: 9.00 am - 5.00 pm; Fri: 9.00 am - 4.45 pm); and KESWICK INFORMATION CENTRE 31 Lake Road, Keswick (Open 7 days a week 10.00 am - 4.00 pm).

Copies of the Local Plan are also available for public inspection at Borough/District Council, Cumbria County Council and Keswick Town Council Offices and Public Libraries during normal working hours.

Objections to, and representations in respect of, the proposals should be sent in writing to Mr J M Pattison MRTPI at The Lake District National Park Authority, Murley Moss, Oxenholme Road, KENDAL, Cumbria, LA9 7RL before 5 pm on Friday 29 April 1994. Objections and representations should specify the matters to which they relate and the grounds on which they are made, and may be accompanied by a request to be notified at a specified address of the withdrawal, adoption, approval or rejection of the proposals.

Only objectors whose objections are made in writing and sent to the address specified above within the six week period ending on 29 April 1994 will have the right to have their objections considered at a local inquiry.

#### NOTICE OF INTENTION TO ADOPT PROPOSALS

If no objections are received during the period given for making objections the Lake District Special Planning Board intend to adopt the proposals on the expiry of that period.

### New Books

Bailiff of Blackmoor by Thomas Beare

Special Pre-publication Offer. Hard bound c.150 pages £17.00 including post and packing. Scheduled for release early summer 1994 Written in 1586 this manuscript is the most

important previously unpublished book on the Cornish Tin Industry. It covers all aspects of the industry, including early history, organisation, legal status, charters, economics, wages, weights, measures, different types of tinworks, including dressing and blowing, tinners' working practices, social habits and customs.

Unique opportunity to obtain an accurate transcription and translation of the most complete early account of Cornish mining streaming and blowing

Send cheque to: J.A. Buckley 25 Carn Brea Lane, Pool Redruth cornwall TR15 3DS.

# ADIT PUBLICATIONS

If you have an interest in mining in general and the Welsh Slate Industry in particular you will be no stranger to Dr. Michael Lewis's and J.H.Denton's book on the **Rhosydd Slate Quarry**. First published in 1974 it is still regarded as the definitive example of how a history of any extractive industry should be written. Having been out of print for many years, and highly sought after second hand, a facsimile edition has just been published to a high standard on quality gloss art paper with all the original photographs, drawings, diagrams and two colour underground plan.

Unlike many mining histories the book does not only record the commercial history but is based on a full surface and underground survey of the workings together with their interpretation, all written in the clear precise easy to read style of an accomplished author. The book is privately published and distributed, by friends of one of the original authors. Copies are available from : Jon Knowles 6 Ferncroft Hightown Liversedge West Yorkshire WF15 8DT 0274 871012 evenings, weekends & answerphone

The price is f9.95 which includes 95p towards CAT funds plus f1.45 postage and packing. All books despatched in a padded envelope.

Specification : 104 pages 203 mm X 253 mm with 16 black and white photographs and many plans, diagrams and line drawings.

Note. Rhosydd will be visited on the meet on 18th April so why not read up on the history and study the plans beforehand ?.

### Dr. Descender

### Dear Doctor

I realise that this is beyond your normal field of activity but I would be grateful if you could help me with a puzzle which is causing me much mental anguish and preventing me from sleeping. There are a hundred people in a boat and the puzzle concerns the number who are crew and the number who are passengers. The crew comprises a Captain, a Bo'sun, a Steward and some oarsmen. however only 10 crew can sit at the Captains table. Some of the crew sit at the Captains table and some sit with the passengers. Those crew who sit with the passengers are passengers and not crew. If one member of the crew who had two seats at the Captains table gives his seat to one of the passengers, who then becomes a member of the crew, how many members of crew are there ?. Note that the Captain, Bosun and Steward automatically sit at the Captains table.

Anon, Everywhere

Honestly I haven't the faintest idea but if you find any body who has they would be very welcome to attend a medical symposium held annually in Coniston in early December. Advertisement Feature

# NO PRUSSICK ROPE

How many times have you lain awake in bed at night worried that people may have climbed your precious rope while you were deep in the Mine ?, how many times could they have dropped rocks on your sheath or loosened your belays ?. Fortunately relief is now available. Furness Industries are pleased to announced **NO PRUSSICK ROPE** which is guaranteed for life against prussicking. The secret of this amazing scientific discovery cannot be published but involves a way of preventing the rope from passing through the ascender.

Available only from: Marton Rope Supplies (1994) Limited. P.O.Box 1 Bell Hill Marton

Is this an example of 'how to win friends and influence people'? Editor

### Articles already received for the next issue. No 39

A Visit to the Wet Earth Colliery by Peter Hay

The Plynlimon Mine - Mid Wales by Dave Blundell

# A Name for the Newsletter any ideas? Let me know Editor. Here are some suggestions

The Bouse- Team, Adit, Ore- Hopper, given already. The name should not conflict with our Journal 'The Mine Explorer.'

Copy Date Mid June for publishing and sending out at about the First of July

**Extra copies** of this newsletter can be purchased from the Society for  $\pounds$ 2.50 Members and  $\pounds$ 3.00 Non-Members.

Many thanks for sending articles in , without you the newsletter would be a bit thin, so keep them coming.

Mark Simpson -- Editor.

### A view of the future of the UK Coal Mining Industry

Over 11,000MW of combined cycle gas turbine generating plant are now commissioned or under construction and a further 4,000MW will almost certainly be constructed by the turn of this century, coinciding with the gradual closure of Magnox stations from about 1996/7. This alone implies that all medium and small sized coal fired power stations will close by the mid 1990s and that the large coal fired stations themselves will be forced off base load with a dramatic reduction in load factors which in turn could lead to further closures.

That analysis implies the virtual destruction of the U.K. coal industry. The 30 million tonnes provided for in contracts up to 1998 will keep 13 pits open. after 1998 demand will drop to a point which is unlikely to sustain more than 8 to 10 pits. However, with so few pits and so uncertain a future, there will be no incentive to invest in those pits by a privatised coal industry. Without investment, cost will inevitably rise after an initial period of simple exploitation. If coal costs rise, further pit closures will follow, further coal generating capacity will close and further combined cycles gas turbine stations will be built. The market in other words has developed a self-sustaining momentum in favour of a rapid conversion to gas.

Ten years further on, what may then be left of the large coal-fired power stations and the advanced gas cooled nuclear reactors, will be approaching their design life time, just as the United Kingdom sector of the North Sea gas fields begins to reach depletion.

This country desperately needs investment in its next pressurised water reactor; in the coal industry and in clean coal technology.-----Instead of a balanced and secure indigenous energy supply we are rapidly approaching a dependence on a single imported fuel.

From an article by Mr T Cooper General Secretary of the Engineers' and Managers' Association in the Journal EPE November 1993.

What has this do with mining history ? Well in five to ten years time and we come to look back, it will be interesting to see how accurate Mr Cooper, s predictions and fears were :-Editor.

### More I.A. in the making?

By the time you read this April 1st will have come and gone, and the way our railway system operates will have been changed for ever. Have any of our readers with an interest in railway history anything to say on the matter? The fortune tellers are not optimistic. (M.W.T.S.)

## **CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY**

### Officers for 1994

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| JOURNAL EDITOR       | Don Borthwick, 38 Salcombe Gardens, Tyne & Wear, NE9 6X2,<br>091 482 2873                                   |
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**Honorary Members** 

John Marshall

**Mike Mitchell** 

**Peter Fleming**