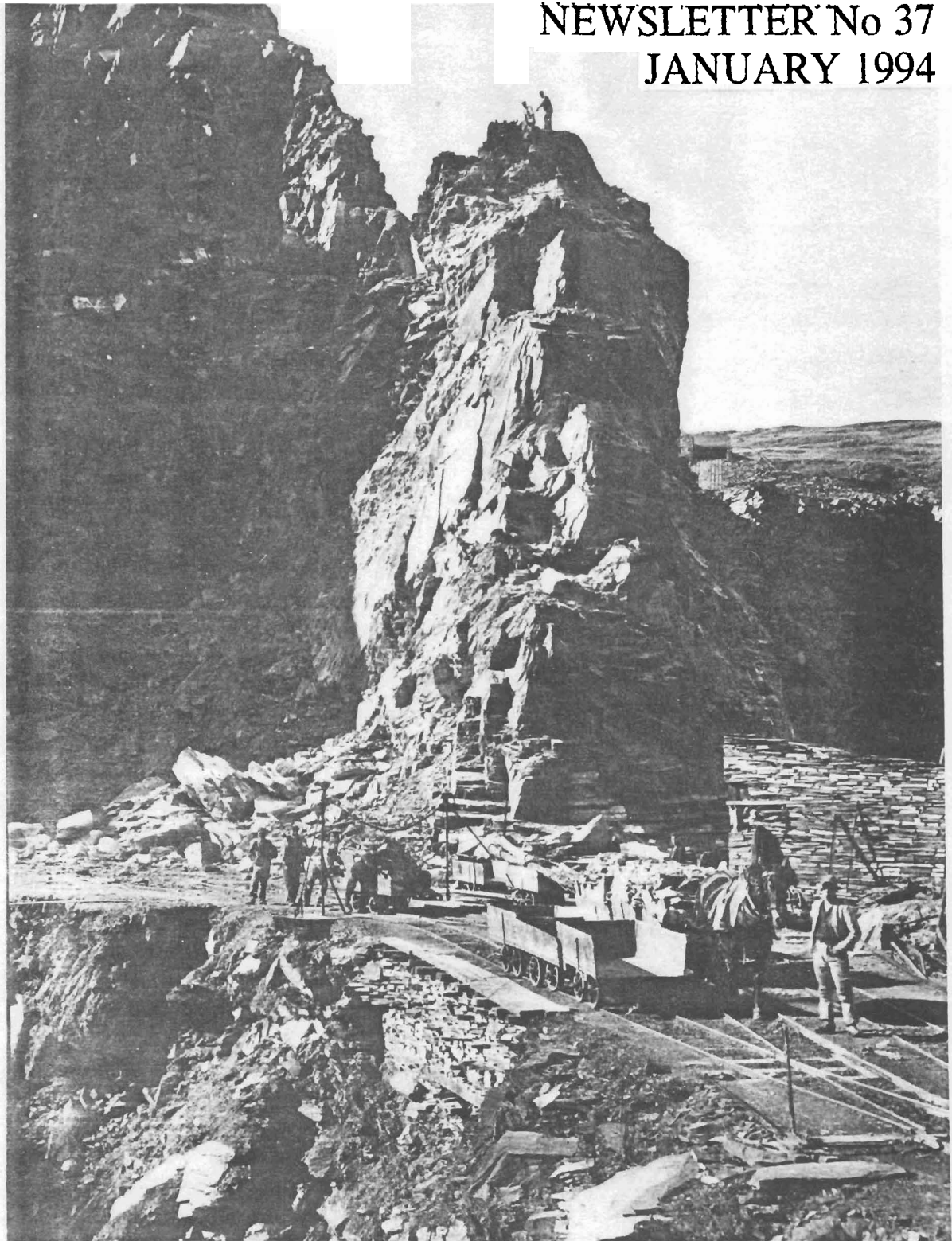


CUMBRIA AMENITY TRUST

NEWSLETTER No 37
JANUARY 1994



MINING HISTORY SOCIETY

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Front Cover:- Oakley Slate Blaenau Ffestiniog 1918
(From Alastair Cameron and is from a
Bromide print)

A list is available of all the contents of each
previous CATMHS newsletter from the Newsletter
Editor.(Also the library catalogue).

This newsletter was compiled using a word processor
on a MS.DOS computer, all common WP formats can be
imported (Wordstar,Word,Wordperfect,MS Works)on
both 3.5" and 5.25" discs.It would help if
contributors could use this method when ever
possible.More photos (Bromided) and drawings
would improve the look of the publication.

At the end of the day, however it is done, it is
your article and what's in it that counts.
Mark Simpson Newsletter Editor for 1994

CHAIRMAN'S REMARKS

It is an honour to have been appointed the successor to Mike Mitchell as chairman of CATMHS. It goes without saying that without Mike's strong leadership and wide practical experience CAT would not have maintained such a high profile in the field of mine exploration and conservation that it has over the years, and on behalf of the members I would like to express our gratitude for his work in the 'chair'. It is significant that despite the formation of three other mining groups in the area CAT's membership figures have always stayed at a healthy level and its activities are now more wide-ranging than ever.

And the past year has been no exception. For instance we have had no less than seven 'away' meets, including a trip to the Great Orme Prehistoric Copper Mines and an outstanding slate meet - the Croesor-Rhosydd through trip at Easter. It has also been a year of firsts - CAT's first gold panning meet, its first official survey meet, and the first ever shaft descent into Smallcleugh which opened up extensive unexplored ground and created a new through route. The Furness Adventurers have taken on two new and ambitious projects - restoring the fifty foot boiler house chimney at Woodbine Mine and a Heritage Survey to search out and record all remaining structures from the iron industry of Low Furness (an area sadly under-represented on the national list drawn up by English Heritage), and work on the restoration of the Newland furnace has continued in association with CWAAS and the Cumbria Industrial History Society.

Within the National Park a Mines Forum set up by the LDSPB now enables the different mining groups and conservation bodies to work more closely together, an arrangement already established for the joint project at Greenside, and prospects for preservation work at Coniston Copper Mine site are now

looking good. Also the possibility of an underground geological survey of Coniston Mine with CAT's help is being considered by the BGS. On a wider note seven of our members represented the society at the NAMHO conference in the Isle of Man in April.

Over the year we have hosted several other groups on field trips including the Cumberland Geological Society, the Cumbria Metallurgical Society and PDMHS, and public awareness of CAT was boosted by a very successful exhibition at the Ruskin Museum which hopefully will be repeated this coming Easter.

None of this would have been possible without the hard work and dedication of committee members and other members of the society whose efforts are greatly appreciated. It is not appropriate here to single out names but I'm sure Alastair Cameron won't object to a plug for his new publication, 'Slate from Honister', proceeds from which will be going to CAT funds.

Indeed, in recent years the society has become increasingly dependent on its own publications to maintain a healthy bank balance, and has also found it necessary to dedicate more time and effort to paperwork in order to achieve its conservation aims.

But this has not dampened the spirit of adventure which has always been a hallmark of CAT, and we have once again proved that there is still plenty of new ground to be discovered. So to echo a phrase from the opening remarks of our founder chairman, Peter Fleming - LET'S GET ON WITH IT!

Here's to a productive 1994!

Dave Bridge

Ref:- Socnotes.wps

Diary Dates.

January	16th	Coniston, Triddle Shaft to Taylors Level
	17th	Committee Meeting at Coniston
January	30th	Training Meet Cathedral Cavern, Tilberthwaite
February	6th	Greenside Mine, Patterdale
	20th	Borrowdale Wadd Mine.
	28th	Meets meeting at Coniston
March	6th	ARC Quarry , Ingleton - See News-sheet
	13th	AGM of NAMHO at Peak District Museum, Matlock Bath Derbyshire. Please Note that Sheila Barker is our NAMHO Representative.
March	24th	500th anniversary of birth of G. Agricola. (We have his book in our library).
August	4-7th	Probable date of next NAMHO Field Meet, to be at the Forest of Dean.

Society Notes

Your Officers and Committee for 1994 are as for 1993 except :-Jon Knowles is now Meets Secretary. and both he and Jeff Wilkinson of Coniston have been nominated to serve on the committee. Mark Simpson remains as Newsletter Editor.

Request from membership secretary -If you have recently changed your address and/or telephone number please notify him.

You may remember that with a previous newsletter we put out a request for artifacts for museum/ display purposes. We still require more material as, when we put on displays we need to put on a good show. Artifacts already donated have been carefully stored.

To all who have led meets, and to those who have written articles for the newsletter and in general have supported me and the Society, thank you. Please support Jon in his endeavours especially in ideas for future meets. As regards the Newsletter, both it and our other publications are a reflection of the societys activities. and are only as good as the articles in them, the field of mining I.A. is very wide and wherever you live there must be some facet of industrial archaeology that can be written about. (For guidance on starting a project and seeing it through I can do no better in pointing you to Adrian Pearce's article on the subject in Shropshire Caving and Mining Club's Journal No 1, a copy of which is in our library).

I may also point out that we now exchange newsletters with S.C.M.C. and with Peak District Mines Historical Society Ltd.

Mark Simpson, Meets Secretary and Newsletter Editor for 1993.

MEETS AND VISITS

NOTES ON A VISIT TO THE BGS OFFICE, NEWCASTLE

September 30th 1993

The opportunity to pick the brains of two leading Lake District geologists, Brian Young and Dave Millward, arose during a visit to the Newcastle office of the British Geological Survey which Jeff arranged for 30th September, 1993. The main reason for the visit was to study the 1:10,000 quarter sheet geological map of the Coniston area drawn from the latest survey (c1992) by Dave Millward. Copies of this are only available by special order and would cost £27.50 plus VAT in black and white and around £40 in colour. The Memoir to accompany the Ambleside full sheet, which includes Coniston, is in the process of publication.

Before lunch they both gave an hour of their time to talk about the latest theories on mineralization and the geology of the Coniston area. They both have a special interest in the Coniston Copper Mine and Dave Millward, having spent several months studying the surface features, is just itching to get underground. In fact once the Ambleside sheet is out of the way they hope to concentrate on two special studies - the Caldbeck Fells and an underground geological survey of the Coniston Copper Mine, government funds permitting. The latter would involve CAT members acting as guides. They considered that this would be a unique opportunity for geologists and mine explorers to work together with a common aim and Brian said that he could not over-stress the importance of Coniston Copper Mine in this respect, and also from the historical point of view.

We were able to provide a little information, in particular the nature and occurrence of secondary cobalt mineralization (ie erythrite

deposits) in the mine, and Brian said that he would be keen to carry out an X-ray analysis on the supposed sample of tenorite which Peter Fleming discovered at a previously unrecorded site in Borrowdale. He personally questions the recording of tenorite in the Dale Head South vein and is interested in this possible new occurrence. He has an eye for anomalies and recently corrected a long standing misconception that nickel was once identified in Newlands by referring to J C Ward's original field notes of 1876 where he found that it was a mis-reading of niccolite (NiAs), a mineral which is also found at Coniston in association with the cobalt.

As president of the Russell Society he reiterated his interest in setting up a permanent mineral display with geological backup to complement a display of CAT mining artefacts if the Ruskin Museum extension goes ahead, and suggested that it might be worth asking the Geologist's Association to help sponsor this extension (they have a fund called the 'Curry fund' created by the owner of Curry's Ltd who was apparently a keen geologist).

As far as mine plans go the only one they have of Coniston is the 6ftx3ft plan of about 1870. Dave Blundell has a tracing of this.

We left at 4pm feeling that the discussions had been extremely valuable and we intend to keep in touch to keep up to date with developments. Also Brian now attends the LDSPB's Mining Forum Meeting which is held here every six months. Since our visit however the government have decided to close the Newcastle office in September 1994 and transfer all work either to Nottingham or to Edinburgh. Let's hope this doesn't upset the applecart.

Dave Bridge, Jeff Wilkinson

GREAT ORME COPPER MINES

16/17 October 1993

The 1991 NAMHO conference was held at Blaenau Ffestiniog, and one of the field trips was a visit to the Great Orme Bronze Age copper workings, which have been carbon dated to at least 1800 BC. A company was formed to develop the site as a Bronze Age Mining Centre, which is now a major tourist attraction. CAT Members who visited the Centre were very excited by what they saw, and expressed an interest to visit some of the underground workings which are not open to the public. The outcome was an exchange of meetings between CATMHS and the Great Orme Exploration Society, arranged by Peter Fleming.

The first of these took place at Coniston on 26/27 October 1991, and eight members of Great Orme Exploration Society were shown around the underground and surface workings at Paddy End and Red Dell. Whilst examining the surface remains at Simons Nick the visitors noticed a stone mortar with two round depressions in it, and further searching revealed several more. They appeared to be very similar to those found on the Great Orme, and several had been built into the walls of the now ruined buildings above Levers Water. As these buildings are believed to be of Elizabethan origin there was some excited speculation as to the age of the mortar stones, which gave rise to some rather premature claims in the local press about Bronze Age discoveries at Coniston.

The return meet at Great Orme was a long time coming, but finally took place on the weekend of October 16/17 1993. About twenty CATMHS members took part, and the weekend was blessed with superb weather, the Isle of Man and the Lake District fells being clearly visible from the top of the Orme.

We were met by Edric Roberts, one of the directors of the Great Orme Copper Mines Ltd, who gave us an introductory talk and a guided tour of the public part of the mine.

The area was extensively mined during the 19th century, and miners then reported breaking into earlier workings, which were said to be Roman, though there was, and is no evidence for that dating. Waste from the Victorian workings built up round the site, and overlaid any earlier remains. In the 1980's members of the Great Orme Exploration Society began to explore the workings by abseiling down the 19th C shafts. In 1985 a date of 990 BC was obtained by radio carbon dating a sample of charcoal found in these workings, thus proving beyond doubt their Bronze age origin. The Great Orme Mining Company was formed, and they removed large quantities of 19 C spoil to reveal the main Bronze Age entrances, built an attractive visitor centre, and opened to the public in 1991.

There are fissures in the limestone up which hot gases have penetrated from the molten core of the earth, bringing with them veins of metalliferous ore, and at the same time disintegrating the limestone and turning it into soft rock, soft enough to be scraped by a fingernail, or worked by a bone tool. This soft rock is called dolomite, and is the only case in Britain where dolomitisation is accompanied by veins of copper ore. Percolating water has oxidised the copper into malachite, an ore which is relatively easy to smelt by primitive methods. The Bronze Age workings extend some 1000 feet into the hillside, and reach a depth of 200 feet through some 10 different levels. For visitors the scene is set by a very imaginative and well made video, after which the underground workings are entered at a point on the hillside where there are five tunnels side by side. It is thought that prehistoric workings exist above these levels, but they have not been uncovered. Outside is a collection of bone and stone tools, some set in wooden hafts to show how they might have been used. The ancient workings are very low, and the floor has been lowered in places so that visitors may walk upright, and steps built where necessary. Most of the prehistoric workings were backfilled, and it must have been a very confined work place.

There are signs of fire setting, and there are bone and stone tools to be seen, stained green by the copper. Occasionally traces of 'malachite and azurite' can be seen, and at a place where three veins intersect there is a large cavern, dated to 1400 BC, where the bronze age miners extracted thousands of tons of ore. This is floodlit using coloured lighting to provide atmosphere. The tour continues, to exit by another of the five tunnels.

Back outside we visited the Bronze Age opencast area for a close look at this summer's excavation. Geof David who has led the dig showed us the visible evidence of early mining, including what are believed to be marks left by prehistoric tools. What was quite staggering was the sheer quantity of artefacts. So far over 8000 bone and over 900 stone tools have been recovered. Some 20 pieces of bone had been unearthed that morning, and piles of green bones and worn stone mauls, or hammer stones, lay about. The bones are mainly the rib and leg bones of domestic animals, and the stone tools are beach pebbles, some quite large. Most of these are hammer stones showing considerable wear on one or more ends, but some are anvils or mortars similar to those found at Coniston.

Lunch was taken in the warm sunshine in the outside part of the cafe area, and arrangements made for the afternoon's activity. Most people elected to abseil down the 19 C shafts to visit the Bronze Age workings beyond the show mine, but a horizontal trip was put on for the benefit of wives and children. They were taken to a manhole on the promenade, and descended some metal rungs into White House adit, one of the Victorian tramming levels.

This exited onto the beach, where it is now gated, and the ore used to be trammed out to be loaded into ships which beached on the shore. The visitors followed the adit further into the mine, walking on the tramlines to keep out of the mud and water. These were wooden rails with metal strips on top. Further along were some Victorian clog prints which were carefully protected. It was not known whether these prints were those of miners, or of curious children of the period. The adit

terminated at a muddy blockage, but levels off led to a coffin level and to a seven foot shaft linking to a lower level which was flooded by the high tide. Being unequipped for aquatic mine exploration they retraced their steps to re-emerge through the manhole on the promenade, much to the surprise of curious onlookers.

There are three 19 Century shafts which penetrate the prehistoric workings. They are Vivien's shaft, which rises in the middle of the excavation, Roman Shaft and Treweek's Shaft, both have been capped by the council, and come to the surface further up the hill. Access has been preserved to all three shafts. The remainder of CATMHS visitors were taken on a through trip from Roman Shaft down Treweek's Shaft and out via the visitors route. This involved two longish vertical abseils, and a good deal of scrambling through ground not dissimilar to that found in haematite mines, though the colour of the mud was brown rather than red, and wash off a good deal more readily. Most of the route was in Victorian workings and there were quite a lot of pick marks to be seen in the soft rock. The Bronze Age workings were very low and confined, so that access involved something more than a flat out crawl, and it has been suggested that some of the work must have been carried out by children. We eventually came out in the back of the large cavern which forms part of the show mine, and were able to walk out to day.

Sunday dawned fine and clear, and the program was for a guided walk over the Great Orme, which is rich in archeological and historic remains. We set off from the Great Orme Mines, from where the line of the pump rod supports of the Tom and Gerry pump were pointed out.

This was based on a huge tank which was supported on an eccentric crank. The tank was situated on a stream at the bottom of the hill, where it filled up with water. When it was full, it tipped over, pulling with it a chain and rod linkage which ran for 1300yds up the hill and then 250 yds down the shaft to work the pump. It was not very efficient, and

five strokes an hour was considered fast! In the vicinity of Roman Shaft the ground was pockmarked with depressions, the remains of bell holes dating from the early nineteenth century. Several of the group were seen to be carrying dowsing rods made from copper rod, welding rod, or even plastic strip, and some of the sceptics, including myself had a go. Much to my amazement it seemed to work. The rods seemed to turn in the hand to point parallel to one another when crossing damp or disturbed ground, and to return to the straight ahead position a few feet further on. This seemed to occur reliably each time one passed over the same piece of ground, and everyone who tried it got a result!

Great Orme was devastated by floods which occurred on June 10th 1993. As a consequence some areas are closed to visitors, including the Penmofa drainage level, which was driven between 1834 and 1842 a distance of 830 yards from the sea shore to the foot of the mine shaft to drain the mine. The stone lining was damaged by the storm. The remainder of the walk was to inspect the damage done by the flood water which carried away large sections of the Marine Drive which used to run right round the Orme and is now closed, perhaps never to reopen?

We had been asked if we would be able to supply a quantity of mineral samples suitable for the general public, after some discussion

decided to purchase these from Pete Blezzard at Broughton Minerals. In return we were given some fine specimens of ore from the Great Orme mine, and loaned some stone and bone tools. Since the discovery of anvil stones at Coniston there has been much speculation as to whether they are of Bronze Age origin. This seems doubtful, as the rock at Coniston is quite unlike that at the Great Orme, and is much too hard to be worked by primitive tools. No stone hammers have been discovered, and it seems probable that the anvils at Levers Water were used in association with iron hammers at a much later date. However it is conceivable that bronze age miners obtained some ore from weathered veins where they outcropped at the surface, and if any stone tools should be discovered, then comparison with those from Great Orme would be of interest.

All in all this was a superb weekend, blessed by fine weather, and well supported by CAT members. We are grateful to our hosts the Great Orme Exploration Society and Great Orme Mines Ltd for their hospitality, and are full of admiration for the amount and quality of the work which they have accomplished in so short a time, and which should be an inspiration to us all. Edric Roberts and some colleagues are keen to visit Coniston again in the near future for a careful study of surface features, and we look forward to their visit.

Ian Matheson December 1993

31st October 1993 SURVEY MEET AT GREENHEAD GILL

Present: D Blundell, the C P Thomas family,
P Timewell, P Sandbach, C Barrow, J
Knowles, D Bridge

This meet was planned for two reasons. First to introduce more members to the art of surveying for which we have been gearing up to over the last year or so, the Furness Adventurer's leading the way, and second to complete a CATMHS study of the supposed Elizabethan lead mine at Greenhead Gill which was begun earlier in the year. This is briefly described in Newsletter No 34 and a full article on the history and surface remains of this mine will appear in CATMHS

Journal No 4.

The main interest lies in a terraced area close to some shallow open works and a flooded sump near the junction of Grains Gill and Greenhead Gill which documentary evidence suggests may have been the site of a Mines Royal stamp mill. The remains of two stone huts there are almost certainly more recent, but other features such as the terracing and possible buddle sites could be of 16th century origin. A second site of mining activity is to be found about 200 yards downstream.

The meet began with a stiff fell walk to the 1000 ft site which is tucked away in the deep valley behind Grasmere and the nine members then split into three work parties. One party, under Anton's guidance,

established a line of permanent stations linking the upper and lower sites and carried out a backbone survey to which more detailed surveys can be related. The others took detailed measurements of the two huts and other surface features at the upper site. These were backed up photographically. It was a cool breeze

that determined the length of time one could enjoyably spend in the open with tapes and clip boards but all felt that we had achieved something at the end of the day. One other meet should complete the field work.

Dave Bridge

DANBY LEVEL- ARKENGARTHDALE

November 21st 1993

Snow! The above date had been chosen to avoid it, still there you are. With the weather uncertain, and doubts as to who if anyone would turn up, and even if I could make it to Low Row, I set off. Hawes, no problem, up the hill to half a mile south of Buttertubs, OK. On the top no grit wagon had been and the snow lay thick. With teeth and everything else clenched I proceeded onwards, the snow coming down fast, feeling somewhat alone. I was grateful for the wire crash fence by the road and hoped I would not need it. I was relieved to make it safely down to the bottom of Swaledale and gritted roads again. The condition of the road on the way back could be worried about come the time.

The Punch Bowl at Low Row was reached at 10.15, and there I settled down to wait to see who was going to turn up. Half an hour went by, no-one, then Jon Knowles appeared followed shortly by John Brown, and that was all. Just as we were contemplating what to do Terry our guide appeared.

Tea was called for and we had a warm up in the lounge, to gossip about matters mining and contemplate the snow. As time went by a thought did crop up that a meets report could be made without seeing the mine at all, and who would know?. Still the honour of the Society was to be upheld, so, we extracted ourselves from this nice warm place and into the stern world outside.

We took the road that goes via Surrender Bridge and Moulds, in retrospect not the best idea, as those who know the road will realise. There are one or two sharp bends and steep bits along the way. However with a bit of pushing and shovelling we made our way to and up the Tan Hill road to the gateway of the mine track, just up past the Charles Bathurst Inn.

Parking the vehicles was achieved by taking a run at the gateway and hoping hard, in order to get onto the track, since nobody fancied parking on an icy road.

It was snowing and it was windy, I have changed in worse conditions, but not for a long time. Standing on a plastic bag on snow was not a good idea either. A dry suit has a lot to recommend it.

We at last were all kitted up, and then the question was put, where is it?. Terry's finger pointed at some distant spoil heaps at just about cloud base level, in the middle of a snow bound waste. -- Fair enough!! Once we set off it was not too bad, and we arrived at the mine without problems the entrance was located and the party quickly piled in. There is nothing quite like a nice warm adit, and once one's glass's had been demisted a start to the visit could be made.

A very brief history of Danby Level-see references at end. This is the most northerly level and at 1472 aOD. one of the highest. It was driven in the Undersett Limestone before 1806 to access veins in the Main Lime to the North West of Moulds Mine. (to those who know their geology, a question as the Undersett is beneath the Main Lime, how do you get at this Limestone?)

A look in 'Geology of the Northern Pennine Orefield' will tell you and the answer accounts for the way the mine was worked.

As can be seen from the plan, the adit is driven SW cutting several veins on the way. The party progressed without difficulty up to the turning to West End level, the passage being in good condition. From here onwards Terry wished to do some measuring to relate what he could see to what was on the plan, and to see how far we could get to Lucks All vein level. It appears that the area of Raisbecks String is as far as we can go, the level here is in shale and the stone arching has been squeezed and in

some places collapsed, stone arching bending the wrong way not being unusual. A strong hold party might make it through but, that did not include us that day.

We retraced our steps back to the junction with the main adit (Air is fresh in most places as it seems to come in through joints in the limestone).

With the turning to West End Level on our right we proceeded straight SW (the level at this point had been half backfilled with deads) the ground deteriorated as we scrambled further in, the rock turning to hard shale. After a short while we came to a four way junction, and, turning to the right (W) and proceeding over some more shale boulders arrived at a square cut shaft (about 70+ft) in the floor. To the north of this, nearby, was the horse whim chamber where we had lunch.

Lunch over we had a brief look round and down the shaft. Terry said that it was promising as it cut into some natural fissures with evidence of the "Old Man" along them, but some work was needed at the bottom of the shaft to make exploration safer. A level runs SW around the back of the shaft driven in a barytes vein. (Damrigg?) This was duly inspected to where it ended in a rise.

The party scrambled back to the fourway junction and turned south to the fore-end which is supposed to be situated on the Surrender boundary. The forehead was back into limestone again and the actual end was into the side of a natural fissure, just about man width. Whilst retracing our steps back to the junction several raises were investigated and once there we then turned east. It was worth a look but blockages prevented any serious exploration. As can be seen from the plan this level is going along what is taken to be the Damrigg Vein, the south side of the vein being against limestone, the north being along shale with the roof of the level being into sandstone. This area being somewhat confusing geologically, and it appears that there are a lot more workings at a higher horizon judging by the number of 'shaft cones' we saw. The vagueness of the plan may have been helped by the nearness of the Surrender Boundary.

After contemplating all these things we made our way back to the main adit and noticed just by West End Level what appeared to be the start of another level which only went in about 20ft but was half full of baryte, stored there for some unknown reason. On the way out the party also had a look down a level heading East down Martins Vein, progress being stopped by material from a rise. It may be possible to bypass this by climbing up into the vein to get beyond this obstacle, a worthwhile thing as there is supposed to be a lot more passage beyond.

Nixons Vein was cursorily looked at as by now time was getting on and concerns were being expressed about getting out and home. As it turned out there was no problem as very little snow had fallen during our time underground. Never the less we did not linger and after securing the mine entrance against the ingress of sheep made our way back to the vehicles as darkness was coming on. The homeward journey presented no problems as the roads had been gritted.

Danby is an interesting mine and one got the impression that there was once a lot more of it both on the adit horizon and above. Whether it will be possible to relate it to surrounding mines will depend on more investigation by a strong party, both of the geology and pushing some of the blockages/raises especially towards Lucks-all Vein.

My thanks to Terry Whitaker for showing us round and to Jon Knowles and John Brown for supporting the meet. I have been told that Pete Blezzard and Anne Danson came by and saw our vehicles parked on the mine track, but decided that it was too late to join us. (Pete and Ann if you wish to have a look at the place let me know)

Note:-although there are no physical barriers to the mines in this area. Terry has always kept the local gamekeepers etc informed. It would be wise to maintain this practice.

My thanks also to Dr. J.O. Myers of Austwick for his helpful comments on the geology of this area

References:- Mines in the Manor of Arkengarthdale

By L.O.Tyson published by NMRS.

The Lead Mining Industry of Wensleydale & Swaledale

By A Raistrick. published by Moorland Publishing Co

The Geology and Mineral Resources of Yorkshire.

Edited by D.Rayner & J.Hemingway. Published by

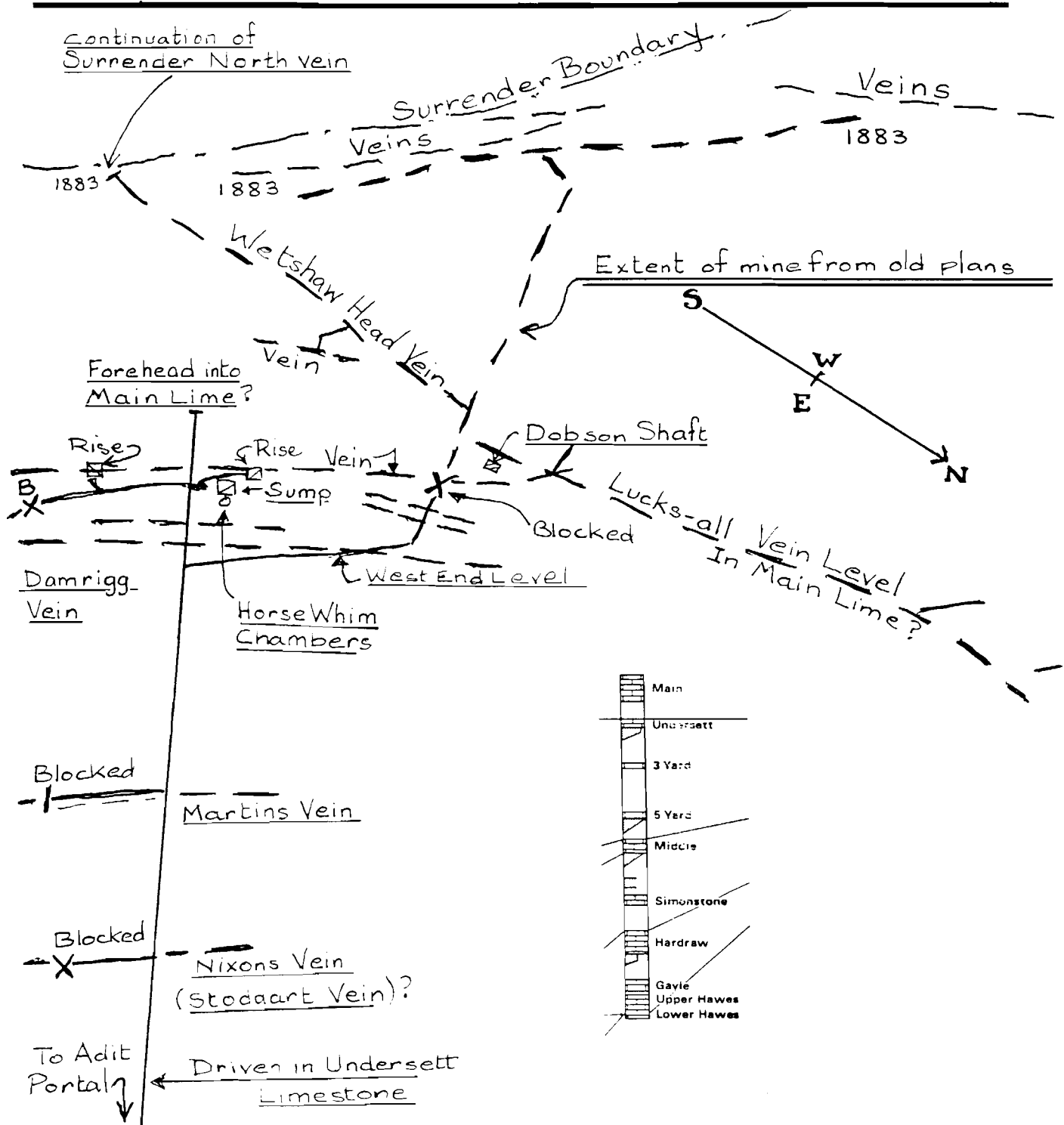
Yorkshire Geological Society

Geology of the Northern Pennine Orefield Pt 2

K.C.Dunham and A.A. Wilson B.G.S.(A copy of which is in our library)

A Dales Heritage. M Hartley and J Ingilby, Published by Dalesman.

Mark Simpson December 1993



A VISIT TO ABERCORRIS

Striving to escape from the rain driving onto the coast of North Wales, a small party of members decided to visit Abercorris slate mine to the east. The mine (also known as Cwm Odin) is high in a cleft on the northern side of the Afon Deri, the stream that flows through Upper Corris before joining the Dulas river at Corris village itself. There are several slate workings on the southern side of Afon Deri (among them Scwd mine referred to in the article on Braich Goch in the latest issue of *The Mine Explorer*) but only two on the northern side. These are Abercwmiddau quarry, beside Upper Corris village and recently landscaped out of recognition, and Abercorris high in its cleft. Referring to the map in *The Mine Explorer* it will be seen that Abercorris worked the Narrow vein which continues to Aberllefeni and Ratgoed mines.

Access to Abercorris was originally by a rough cart road slanting up the hillside from the Corris to Upper Corris road on the north eastern side of the Afon Deri. When about 1860 the Upper Corris branch of the Corris Railway was opened on the Braich Goch side of Afon Deri, an incline down to it was made from Abercorris opposite, crossing the road and the stream by bridges to reach the tramway. Today the easiest access is by a woodland path sloping gently upwards from the south end of the Upper Corris village, which leads to a pair of ruined mills and other buildings connected with the undertaking. There is also a small dam and reservoir at the foot of a punishing 600 ft incline guaranteed to raise a sweat. This leads up to the tips which lie on the left side, with the workings themselves being to the right.

As at Aberllefeni the Narrow vein dips at nearly 80 degrees so the chambers (closeheads) are very tall with the 'hanging wall' on the far side. The adits leading to them from the tipping floors all pass under the incline and, with one exception high up in the mine, are blocked by collapsed tip. However there are three open pits and it is possible to reach the adit which crosses one

of them on its way to the chambers by descending into the pit, or by a rift (above the adit) in the pit wall. The party used the latter entry and came immediately to where the adit from the pit passes along the wall of the chamber, protected by a decayed handrail. The rubbish-strewn floor of the chamber slopes to a shaft in the near corner which has long intrigued me, and down which much water falls. Onwards the adit leads to more chambers, using steps cut in the slate forebreast (footwall) it was possible to descend perilously to an intermediate level with an adit into a hole high up in the wall of the adjoining chamber. Descent to yet another intermediate level was by iron pins in the wall and yet more slate-steps, using a safety rope provided by one Jon Knowles.

However, to get down to the true floor of the chamber required more than just a rope and there was no belay point available, the bolting kit was called into use. After an interval (during which the safety member back in the upper chamber wondered what all the noise was about) a belay was fixed and 55' of ladder lowered.

Abercorris only one of many similar mines hereabouts, each with a series of deep pits or chambers in line along the vein, and the question always arising is 'Is there a deep level adit connecting all of them at the bottom?' In this case there was, though fallen tip blocks its entrance. It was possible to visit a number of chambers otherwise inaccessible, including one at the bottom of the shaft mentioned earlier. One mystery of long standing was thus made clear to your reporter. But it is in the nature of mine exploration that the solution of one mystery only reveals another. High up in the footwall of another chamber visited there was a large hole, inaccessible from below but not joining any adit yet seen. This means that there is still unfinished business at Abercorris because it might be reached by descending from the open (top) adit. And when Abercorris gives up its last secret, there is still Tyddynberth on the other side of the Afon Deri. That's got a deep level adit too. We shall be back.

Peter Hay December 1993

YEW CRAG SLATE WORKINGS

- December 27th 1993

This meet was slotted into the schedule shortly before Christmas and therefore did not receive the normal publicity. However eight people turned up which was about right for the purpose of the day. The plan was to work off some Christmas excessives by having an enjoyable through trip and at the same time check a number of outstanding points.

Unfortunately the day was not without problems the first being that the cold weather had closed the Honister Pass road from Seatoller to the Hause. This didn't stop a number of the group having a go at braving the sheet ice, but they soon thought better of it and returned to the Seatoller car park. There was nothing for it but to walk up to the top which did not take as long as first feared.

The scene at the Hause was uncanny, not a car to be seen and the face of the Honister Crag looked magnificent plastered in frozen snow and icicles. We ascended the Yew Crag incline with some difficulty as we only had one ice-axe between eight of us but were soon at the entrance to No 9 Level. The temperature outside must have been -5 Degrees C or even colder, but as soon as we started to descend through the underground system we were quickly stripping off winter mountaineering clothing as the temperature rose to its normal 50-55 degrees F.

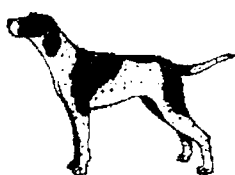
Yew Crag is an extremely interesting area and warrants more attention. The early Victorian workings remain relatively undisturbed because working during the present century tended to move lower down

the Crag. The group descended from No 9 Level to No 6, which marked the beginning of more recent workings. This was the level in which Adam Gregg was working on the 10th June 1948 when he was struck by a block of slate falling from the roof. Mr Gregg was taken to Keswick hospital but died the following day. His mates refused to work No 6 Level for a whole year afterwards.

A halt was made for lunch on No 3 Level after which the group descended to No 1 and returned to No 3 to exit via the Matheson Squeeze. Between the two levels, No 2 was the last to be worked during the summer of 1960. Eventually, in September of that year, all men and equipment were pulled out. Two years later an attempt was made to start working slate again in part of No 8 Level but this was soon abandoned. No more work has been done on this side of the pass to the present day.

Having exited the mine all that remained was to descend with care down the incline to the access road. Once back at the Hause it was obvious that the road was still closed. As we walked back down towards Seatoller we were amused to see two four-wheel-drive vehicles abandoned on the steep section of the road just below the top. Clearly their owners had ignored the 'road closed' signs at the bottom, no doubt thinking their vehicles could tackle anything. One had slid off the road completely and it was very fortunate it had not ended up hundreds of feet below. The other, a Range Rover, was abandoned on the steep ice with lumps of rock under each of the four wheels.

Alistair Cameron December 1993



A NEAR MISS AT NENTHEAD

I thought it appropriate to add a few observations on the incident at Smallcleugh which prompted Mark Simpson's article on mine gases in the last Newsletter. It happened on 16th October 1991 and brought home to us how easily the presence of bad air can turn a normal everyday mining trip into a near disaster. Perhaps 'everyday' is an overstatement in this particular case as we were probing into the far reaches of Smallcleugh searching for an alternative escape route from the workings on the Longcleugh Vein in the area of Barron's Sump. We had descended Atkinson's Sump, a partitioned man-way, to a sub-level about 80ft below Smallcleugh level. Outbye this sub-level connects with Barron's Sump and inbye leads to a ladderway rising to extensive workings a few yards short of the forehead. On this occasion we intended to descend below the sub-level at the point where the Longcleugh Vein is intersected by the Cowhill Cross Vein where there are two adjacent but separate sumps divided by a thin wall. It seemed that there might be a connection with Capelcleugh level here and the possibility of an alternative (though wet) route out, although the first sump had already been proved water-logged and there was no evidence of venting. (See Fig 1).

To reach these two sumps it was necessary to wade along the sub-level through welly-deep thick muddy water for about 50 yards but we were not particularly aware of bad air at this stage and were reassured by two previous visits. The first was on 3rd February 1991 when four members of WCMRG had descended Atkinson's Sump after first lowering a Draeger oxygen meter which had an audible alarm. The air was safe and further along the sub-level an oxygen level of 19.4% was recorded. On that occasion they explored the full extent of the sub-level with no ill effects and one member of the party descended the first of the twin sumps using its fixed ladders. The second visit was on 15th September 1991 when I also had

explored the whole of the sub-level with no ill effects.

On the day in question we descended the first sump only to find that it angled off into a completely submerged level about 40 ft down which was about the right depth for Capelcleugh level. After rigging the second sump I descended about 30 ft but found this also water-logged with no means of exit. A distinct smell of sulphur dioxide (rather than hydrogen sulphide) was noticeable near the top of this sump though not lower down. While de-rigging Mark complained that he felt unwell and was having difficulty breathing so we retreated as fast as we could to Atkinson's Sump.

As we fought our way back through the thick sludge the smell of bad air, particularly sulphur dioxide, became overpowering. Mark attached himself to the rope and slowly gasped his way up to Smallcleugh level. His muffled cry of 'rope free' came as an immense relief and we were soon making our way towards the crawls on Carr's Cross and the fresher air of Middlecleugh Second Sun where he quickly recovered. Fortunately only one of us had been badly affected.

The barometer readings taken around the time of each visit are plotted in Fig 2. The first two visits occurred during settled periods when the pressure remained steady. By contrast the October 16th visit took place immediately after a fall in barometric pressure which was accompanied by overcast skies and rain. The recorded pressure drop was 11 mm Hg in West Cumbria and 19 mm Hg in the North East, so at Alston it would probably be somewhere between the two. Although not a drastic change this fall in pressure would have been responsible for a release of gases into the mine atmosphere shortly before and during our visit, especially as it occurred after a long period of settled weather. The barometer is traditionally the miner's friend and the Mines and Quarries Act lays down regulations for its use. In the early days of

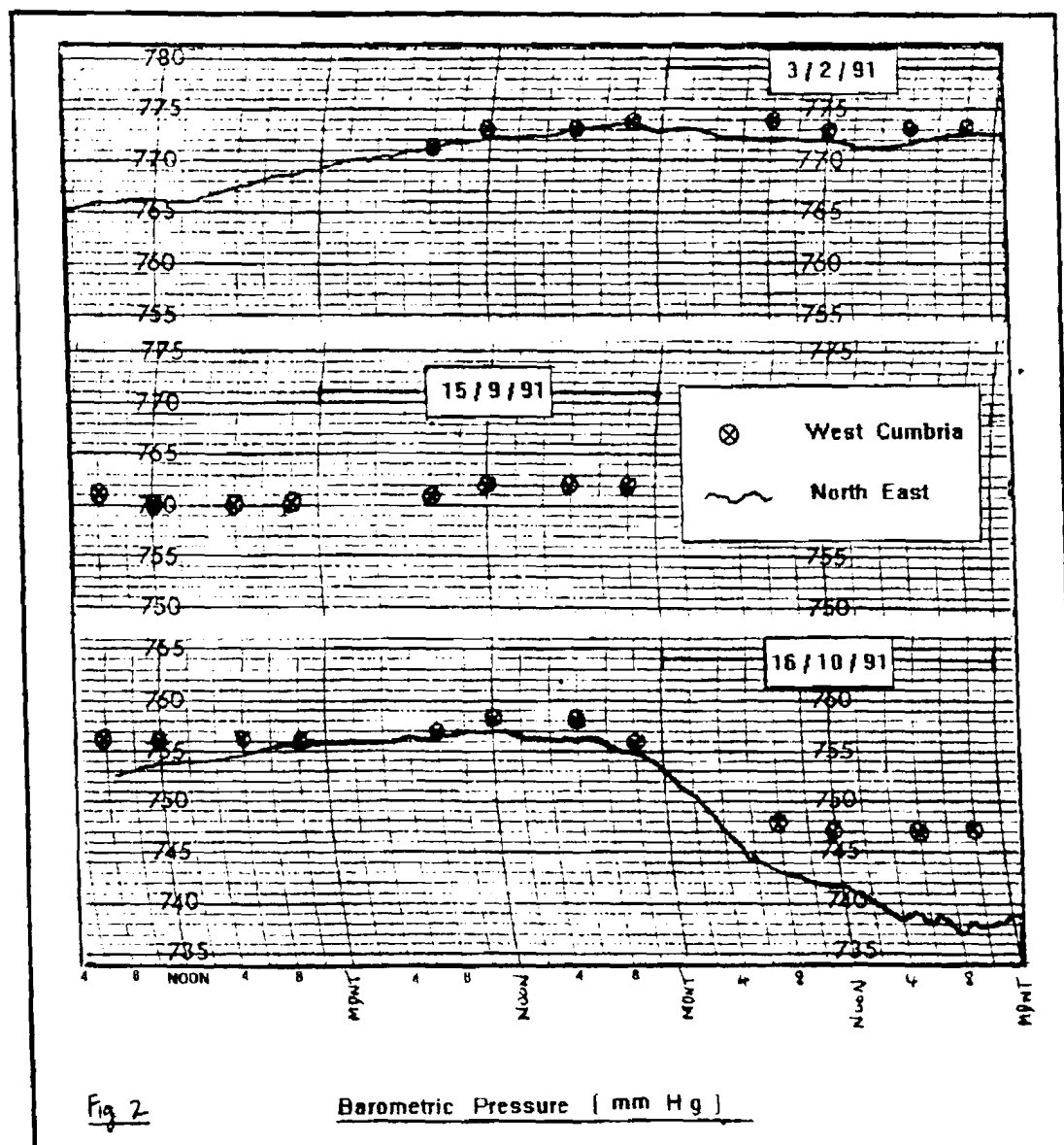
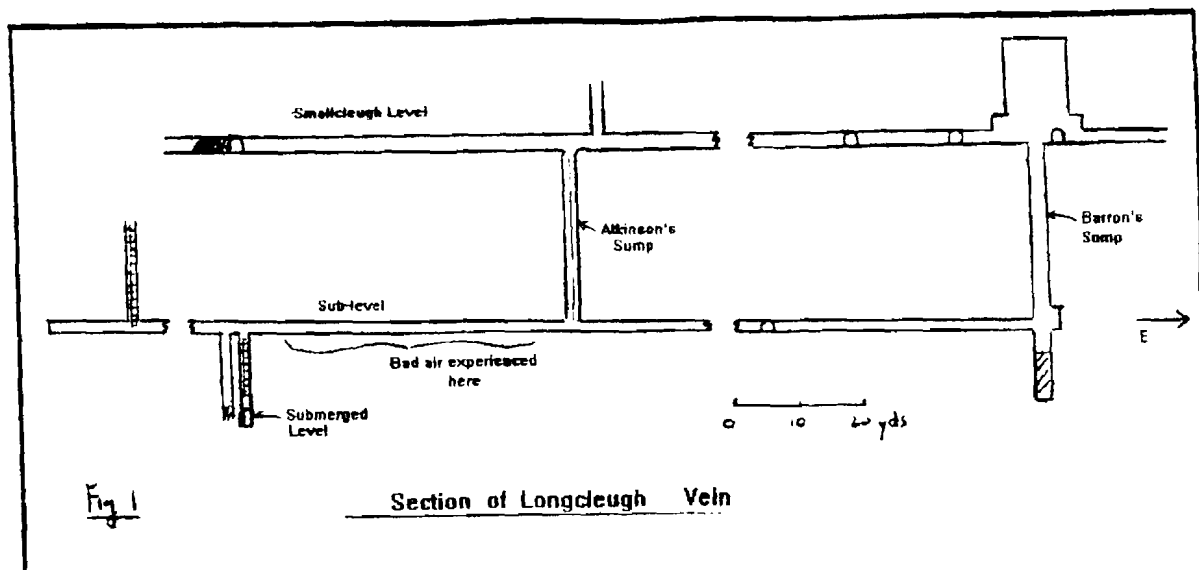
coal mining in Scotland it was by no means rare 'if the wind was in the wrong quarter' for colliers to refuse to work underground until the weather improved [B F Duckham, A history of the Scottish coal industry Vol 1, 1970].

Mark in his article lists the main gases which may be encountered underground but does not mention sulphur dioxide. This can occur in exceptionally dry mines containing sulphide ores [D B Corbyn, Shropshire Mining Club Year Book, 1963-64] and results from the oxidation of certain sulphides, particularly iron pyrites. Even very small emissions of sulphur dioxide from the strata could over a period of time result in a large build up of the gas in solution because of its high solubility, and this process would be aided by its high molecular weight which makes it heavier than the other gases so that it is likely to present a high partial pressure to water in the bottom of sumps or levels under stagnant conditions as a result of gas separation or layering. (see Table).

Taking the extreme case of water in contact with a layer of pure sulphur dioxide at a pressure of one atmosphere, the volume of sulphur dioxide dissolved in 1 ml of water at 10 degC under equilibrium conditions would be 56.6 ml. A drop in atmospheric pressure of 15 mm Hg would then result in $56.6 \times 15 / 760 = 1.12$ ml being released, ie the volume of sulphur dioxide released would be roughly equal to the volume of the water. This gives some idea of the maximum volume of sulphur dioxide which could be released from the welly-deep sludge in the sub-level for the observed fall in atmospheric pressure, but this picture is grossly over-simplified. For instance it assumes that there is sufficient sulphur dioxide around to reach saturation, and to obtain the maximum release in a short time the sludge would need to be thoroughly stirred up, which is precisely what one tries to avoid doing!

Furthermore, as total gas separation is unlikely the water would also contain dissolved carbon dioxide and probably hydrogen sulphide (see Table). Nevertheless

	Solubility in water				Molecular wt
	Water temperature (degC)				
	0	10	15	20	
Oxygen	0.049	0.038	0.034	0.031	32
Nitrogen	0.0239	0.0196	0.0179	0.0164	28
Carbon dioxide	1.713	1.194	1.019	0.878	44
Carbon monoxide	0.035	0.028	0.025	0.023	28
Methane	?	?	?	?	16
Hydrogen sulphide	4.62	3.36	2.91	2.55	34
Sulphur dioxide	79.8	56.6	47.3	39.4	64
The units of solubility are ml of gas (measured at 0 degC, 760 mm Hg) which will dissolve in 1 ml water when the gas pressure is 760 mm Hg.					



our evidence strongly suggests that sulphur dioxide should be added to the list of hazardous gases in the Nenthead mines.

A build up of carbon dioxide was possibly the main cause of the bad air because the country rock acts as a reservoir for this gas, and the following extract from William Wallace's treatise on 'The Laws which Regulate the Deposition of Lead Ore in Veins', published in 1861, is a vivid illustration of this point. His description of an unnamed sump fits Barron's Sump exactly and could well refer to the same place. His 'carbonic acid gas' is of course carbon dioxide.

Much of his description refers to the emission of gas while breaking new ground but the propensity for the strata to retain large amounts of carbon dioxide in cavities and fissures from which it can be released when the barometer falls is only too clear.

'In another part of the mine, situated 420 feet below the surface, and about one mile from the entrance, a Sump was in the course of being made into the Great Limestone, in order to find deposits of lead ore in Long Cleugh vein; when several small caverns connected with the vein were broken into, from which carbonic acid gas issued, accompanied with a hissing noise. The miners filled up the caverns with stiff clay to

prevent the gas from flowing out, but in vain, for it made an opening through the clay; and in one place threw up the water with considerable force. In order to explode a blast, one of the workmen was let down the Sump to relight a match which the gas had extinguished, when he nearly lost his life, so large was the quantity of gas which had flowed into the Sump in the course of a few minutes. It is remarkable that much rain fell afterwards from a very murky atmosphere. Generally there is a close connection between certain states of the atmosphere and the supply of this gas in the mines. It frequently flows out of the caverns and other small openings in the veins in a manner very similar to water. There is, however, this difference, - water can be heard and seen trickling down the sides, whereas carbonic acid gas is generally noiseless and always invisible. A lighted candle placed within one inch of the gas as it flows from the crevices often burns brilliantly, but when removed this short distance into the stream, it is instantly extinguished.'

The moral is obvious.

(Thanks to Norman Parkinson of St Bees and to Don Borthwick for the barometric pressure readings).

DAVE BRIDGE December 1993

Spreading the Word

ASSOCIATION FOR INDUSTRIAL
ARCHAEOLOGY
21ST ANNUAL CONFERENCE
September 1993

This event is the Industrial Archaeologist's equivalent of the NAMHO Conference, and is similar in that it is organised by a different local society each year. This year it was hosted by the Cumbria Industrial History Society, and staged at Charlotte Mason College, Ambleside. A variety of lectures and field visits took place over a period of

seven days from the 8th to the 14th of September and CATMHS was invited to contribute. Alistair Cameron set up a display in the foyer of the college, and this attracted a lot of interest. The main theme was exploration and conservation work in the Conistown Coppermines. A new set of photographs of Honister slate Quarries was also displayed. Ian Matheson gave a lecture entitled 'Lakeland Mineral Mining' to some forty delegates, many of whom, he was told, had stayed especially for it. Afterwards the conference bookshop sold out of our book

'Beneath the Lakeland Fells'. The next day Mike Mitchell conducted a large party around Coppermines valley, following more or less the route of Peter Fleming's popular trail guide. The conference proved to be one of the most successful of the 21 conferences in the history of the AIA. 135 delegates attended from all over Britain, and were introduced to the rich industrial heritage of our area. The CATMHS contribution was much appreciated, and the conference organiser, Chris Irwin, said afterwards "I think few of our visitors had realised the enormous scale of mining in Cumbria, or how much it influenced industrial development in the country as a whole".

COUNTRYSIDE THEATRE, BOWNESS. May 1993

On the 20th May Mike Mitchell and Ian Matheson gave a slide lecture at the Countryside Theatre, Bowness entitled 'Beneath the Lakeland Fells'. The theatre is attached to the information centre at Bowness, and is run by the Lake District National Park Authority who organise a program of talks during the tourist season. The talk attracted one of the largest attendances of the season, many of whom were local people, and was well recieved. Afterwards several of our publications were sold. The fee of 20 was donated to CATMHS funds, and we have been invited to give another talk during 1994.

MATERIALS SOCIETY OF CUMBRIA January 1993

Last January Dave Bridge gave a talk on the Coniston Mines to the Cumbria Metallurgical Society. This was so successful that they asked for more, and Dave arranged for Mike Mitchell and Ian Matheson to give another talk this January 1994. The Society has changed its name to 'The Materials Society', and so slate as well as metal mining can be included.

FRIENDS OF THE LAKE DISTRICT

Somehow or other a copy of our Newsletter No 30 came to the attention of the editor of the newsletter of the Friends of the Lake District, Alan Lord. It contained an article updating our membership about conservation work which we were carrying out on the headgear and pumprods in the Old Engine Shaft at Coniston. Mr Lord thought that this would be of interest to his own readership, and telephoned the writer Ian Matheson, for permission to reproduce it. Ian felt that it would be better to write a new article more suitable for the Friends of the Lake District, and this was agreed upon. The result was a two page article on the history of the Bonser workings at Coniston, stressing their value as heritage and the importance of conservation, as well as account of our own activities, which appeared in the summer edition. It was illustrated by two photographs of the Coniston Copperworks, both taken from the same viewpoint. One was by Mr Lord, taken in 1993 for comparison, the other by his wife's grandfather James Asquew, on a glass negative on Easter Saturday April 18th 1908. This was only about three years after the mine closed, and it shows the whole of the Copper Works with all the buildings intact, and the view beyond up Red Dell with the Old Engine Shaft Wheel, and water cascading from the broken leat running around Kernal Crag. It would appear that the original must be of very good quality, and it is hoped that we shall be able to obtain a copy for our archive.

Ian Matheson November 1993

NEWS

Minewater pollution: 'law reform needed'

Outdated laws need to be reviewed to solve the problem of minewater pollution, experts have agreed.

Prof Desmond Hammerton director of the Clyde river Purification Board, told geologists, engineers, environmentalists and local authority representatives meeting in Durham to discuss the potentially dangerous side-effects of pit closures that pressure is needed to enforce environmental safeguards.

'The law as regards minewater pollution has been deficient for over 1000 years and the only way to solve this is through new legislation and new attitudes,' he said.

Deputy leader of Durham County Council, and seminar chairman, Bob Pendlebury said switching off mine pumps poses a second threat to the county's environment after the massive efforts to clean up coal mining dereliction.

'Imagine an orange neck around the peninsular of Durham Cathedral,' he said. 'It is unacceptable that an industry can walk away from an environmental problem of its own making. At present the legal position is unclear, although we hope that British Coal will continue pumping until a long term solution can be found.'

At present, 11 pumping stations pump 7.7bn gallons of water from the Durham coalfield into the River Wear each year. But with the closure of the county's last mine, British Coal, which has met the 6M yearly cost of keeping the coastal pits dry, has no operating interest in continuing pumping in the area.

British Coal and the NRA, neither of which attended the seminar, are currently in negotiation over the issue. BC only needs to give 14 days notice to the NRA if it intends to cease pumping but the NRA is considering legal action to prevent this.

If the pumping ceases in County Durham, the water rising through the old mine

workings would become contaminated with iron, aluminium and sulphates, which would then be discharged into rivers, with implication for water supply, wildlife and subsidence. Prof Paul Watchman, of Freshfields Environmental Group, said BC could be liable under the Water Resources Act if it ceased pumping and pollution occurred.

'BC would argue that it is not fair for one body to have to pick up the tab for the industrial revolution,' he said. 'Equally I would say that it is unfair for a major industrial concern to walk away and leave an environmental disaster.'

Government proposals on BC's pumping activities are due in November with publication of the privatisation Bill. Durham County Council has sought a discussion on pollution prevention with Environmental Secretary John Gummer. So far he has refused to meet a delegation.

Surveyor 7 October 1993 Article sent in by D. Blundell

Bats and their access to mines

Snailbeach Land Reclamation

Engineers, in consultation with bat experts and English 'Nature', have installed 'bat grills' for several colonies of horseshoe bats discovered at Snailbeach Lead Mine.

English Heritage has also been active in the supervision of restoration work on derelict buildings at the mine, which reached its greatest output in the 1870's and closed in 1955.

The first part of the two stage project has involved closing off open shafts, adits and filling some stopes to make the area safe, and stabilise the ground where workings are near houses.

A total of 15 shafts were identified for capping of which 3 are to left open and fitted with bat grills.

Kinmain Construction's (the main contractor) £707,000 contract for the above works involves using part of a large stockpile of mine tailings, which contain

traces of lead ,zinc and cadmium. These tailings provide a good filling material with satisfactory compaction properties. Work has been complicated by difficulties in assessing the precise geometry of some of the underground stopes, which are at a steep angle from the vertical. This makes infilling more difficult as material tended to run away through openings.

Three separate 10m- high stope complexes were identified and ready-mixed concrete dropped down to seal the openings, Five of the mines adits have also been secured. Contaminated land around the village has been sealed and landscaped as part of the reclamation project and the rest of the 'white mountain', will be profiled and covered with topsoil as part of next years phase 2 operation.

The second stage is expected to include continue the above works, after a further survey of bat habitats has been carried out.

Abstracted from The Surveyor 7 October 1993

Cutting sent in by Dave Blundell

Reduction of size of British Coal Continues

British Coal is about to close up to five more pits and shed 3000 jobs in the New Year, ahead of a sharp drop in sales to the main electricity generators after Easter.

Industry executives will start a further round of colliery reviews by mid-February to pave the way for the fresh closures as the market for coal continues to shrink. The corporation is already down to 22 mines after a wave of

shutdowns before Christmas. The expected next phase was blamed last night on April's scheduled 25% fall--to 30 million tons-- in core contracts with National Power and PowerGen.

The mines considered most at risk are four of the remaining 12 reprieved for "market testing" last year- Prince of Wales, West Yorks; Kiveton, South Yorks; Point of Ayr, North Wales; and Bilsthorp, Notts.--plus Annesley, near Kirkby-in-Ashfield, Notts. Annesley was one of the 19 "safe" pits on British Coal's retained list in October last year when it announced plans to axe 31 of the then 50 collieries.

The prespring closure round is unlikely to be the last before what is left of the industry--which had 958 collieries in 1947 is returned to the private sector in 1995.

The Daily Telegraph Wednesday December 29 1993

Boulby Potash Mine-- Yorkshire

A Yorkshire salt mine is being used in an effort to detect a form of cosmic ray. The experiment could help to solve one of the great cosmological problems. Why we see much less material in the universe than we know to be there. About 10 times less. New detectors located in the mine may reveal whether the discrepancy is due to a kind of invisible matter ("dark matter") in the form of subatomic particles dubbed weakly interacting massive particles. (or Wimps). It is believed that these particles are the only ones that can reach the mine's depth of 3,400ft.

Daily Telegraph Wednesday December 29

Technical Information

WATER IN MINES

Water- The unit weight of water is about 62lb/cu ft (10kN/m³). and the pressure increases in a linear manner with height. Thus if the height of water in an adit is say 20 ft (6.1m) the pressure at the bottom will

be say $62 \times 20 = 1,240 \text{ lb/ft}^2$ (61kN/m²) This results in a total force of 12,400 lb/ft width of the adit (186 kN/m) measured across the invert of the adit.

Applying this to Zero Level at Force Crag, assuming that the water level is 5 ft below the top of the ladder way up to One

level, this gives a head of water of 40 ft. therefore the pressure of water at the bottom of the collapse in zero level should be about :- 248 Lb/ft²

If anyone has any other thoughts on the physics of this subject please write in, especially in a historical context, i.e those brave souls driving adits to unwater ground and coming across "Houses of Water".

See also the article on Minewater pollution.

Mark Simpson.

Information Anchor Tests

DCA have recently been involved with tests on Drop-in Sleeve Anchors and 10mm Coeur Hangers, which have revealed certain problems.

These hangers are designed for use with self-drill wedge anchors, but the drop-in sleeve anchors have only got 1mm thick

walls compared to the 2.5mm walls of the self-drills

Due to the offset nature of the Coeur hanger if a horizontal pull(out from a wall or a verticle hanging load from a roof mount) is applied then a bending moment is produced on the plate, which is transferred to the end of the bolt sitting within the sleeve.

The thin wall of the drop-in anchor cannot withstand this force and the sleeve shears near to the end of the bolt when the force reaches approximately 500kg.

This size of force is easily achieved in Factor One falls,yet it is less than a third of the specified tensile strength of the hanger/self-drill combination.

The advice is: If using a portable drill, stop the hole a couple of millimetres less than the required depth for self drill anchors and finish off the end of the hole by hand. One minutes extra work for 3 times the strength.

From **Below SC&MC Journal** Winter 1993

CONISTON COPPER MINES

ERYTHRITE

Many CAT members will be aware of the locations of what is said to be Erythrite (Hydrated Cobalt Arsenate)

Very little is recorded about the extraction of cobalt, so to have what is basically an alteration product of cobalt minerals at Coniston is of considerable importance. It is most evident on the wall of a stope where it is observed as streaks of crimson and pink leaching out of the country rock.

As I had struck up a friendship with Brian Young,who is one of the most experienced mineralogist in the country, I though it would be a good idea to ask his professional opinion about the "The Pink Stuff".

I carefully removed tiny amounts of rock spinters that had been coated,enclosed a map of the area and despatched them off to him.

A very prompt and detailed reply (which is reproduced here) confirmed the presence of the erythrite, but more importantly, it will lead to a visit by British Geological Survey experts which I am sure wil give a better understanding both of the geology and mineralogy of the Coniston Mines

Jeff Wilkinson. December 1993



British Geological Survey

Windsor Court
Windsor Terrace
Newcastle upon Tyne
NE2 4HB

21 October 1993

Mr J Wilkinson
Holmthwaite
Coniston
Cumbria
LA21 8ED

☎ 091-281 7088
Fax ☎ 091-281 9016

Dear Jeff

Very many thanks for your letter, map and samples.

I have made a brief examination of the samples. There seems to me little doubt that the vivid pink colour is due to the presence of abundant erythrite ($\text{Co}_3(\text{AsO}_4)_2 \cdot 8\text{H}_2\text{O}$): the colour of this mineral is very distinctive. At least some of the pink crusts give a strong reaction for carbonate when treated with 10% hydrochloric acid. This suggests strongly that the pink crusts are composed of calcite, to which an abundance of disseminated erythrite had given the strong pink colour. Both minerals are clearly of post-mine origin. The calcite is no doubt derived by solution from primary calcite within the vein and/or wall-rock. The cobalt could be derived either from cobalt ores or from cobalt impurities within other sulphides. It will only be possible to test this by attempting to sample beneath the pink crusts.

Incidentally, similar pink erythrite-coloured calcite is relatively common in a few other north of England mines with traces of primary cobalt. The most celebrated example is Tynebottom Mine at Garrigill.

I hope these comments are of interest. We will arrange a visit to this set of workings hopefully in the not too distant future.

All best wishes.

Yours sincerely

Brian Young

RHOSYDD SLATE QUARRY

Those members with an interest in Welsh matters will be saddened to learn that a planning application will shortly be submitted with respect to both surface and underground quarrying at the above site. The intent, if the grape vine is correct, is to open a surface quarry to untop the collapsed eastern workings, the waste from this being tipped into the western twll (pit). The money generated by the open quarrying would then be used to develop underground workings below the level of No 9 adit. To provide access a road would be driven up Cwm Orthin.

The impact of the workings would be severe for three main reasons :

- 1) The road would ruin the valley which is full of character and much used by walkers.
- 2) The open quarrying would cause major damage to what is, without doubt, the most comprehensive collection of remains at any Welsh Slate site. Although none of the features are remarkable in their own right, taken together they cover almost all aspects of the Welsh Slate industry. The working was initially an open quarry which developed into a mine and included, complex water power systems, barracks, two underground inclines, a variety of surface buildings and a tramway and incline to the Croesor tramway. The site is particularly interesting because the working areas progressed down the hillside, with time, which means that the earlier, upper, workings have not been obliterated by later development. This means that the remains cover the full history of the site.
- 3) Tipping into the western twll would make the Croesor to Rhosydd through trip impossible.

I personally feel that no underground quarrying would take place and any reference that would be made to this is a mere sop to obtain permission for surface workings.

Clearly, I feel, that the development must be opposed in the strongest terms and would anybody who is prepared to write in and object, as soon as the formal application is made, please let me now so that I can contact them as soon as the details are known as there is only a limited time in which objections can be lodged.

Jon Knowles December 1993
6 Ferncroft
Hightown
Liversedge

A Few Notes On The Sun Foundry

In the last CATMHS Newsletter (No 36), Jon Knowles asked about information on the predecessors of Hathorn Davey Ltd, the Sun Foundry and Carrett Marshall & Co

Charles Todd left the firm of Shepherd & Todd in 1844. (Also known as "The Railway Foundry, which later became the famous locomotive manufacturers E.B. Wilson & Co until 1858 when the firm became bankrupt and was taken over by the

equally famous Leeds loco makers Manning Wardle & Co and parts of the premises went to Hudswell Clarke). Todd and Shepherd had previously worked at what was then known as Todd, Kitson and Laird (Later Kitson & Co) which was next door in Leeds to the Railway Foundry.

The Sun Foundry was in Dewsbury Road, Leeds. The first locomotives were built in 1844, two 0-6-0 goods engines.

about 20 different locomotives were built, mainly 0-6-0 goods engines for the York and North Midland Railway and The Belgium Eastern Railways. Two 0-6-0T tank engines and three 2-4-0 tender engines are also known to have been supplied to the Grand Central Belgium Railway. Messrs Carrett Marshall & Co took over after the works closed in 1858.

Carrett had previously worked for E.B. Wilson & Co until he set up with Mr Marshall (When Wilson's also shut). They advertised an 0-4-0T for shunting and in 1860 sent a locomotive to the Natal Railway and another to the Kendal and Windermere Railway. However, their main products were steam road vehicles, water pumps and various types of tanks. Their excellent steam carriages of the 1860's were driven off the roads by the Red Flag regulations that weren't abolished until 1896. An illustration in the Colliery Guardian of a C.M. saddle tank shows cylinders mounted at an angle beside the boiler driving the loco's rear

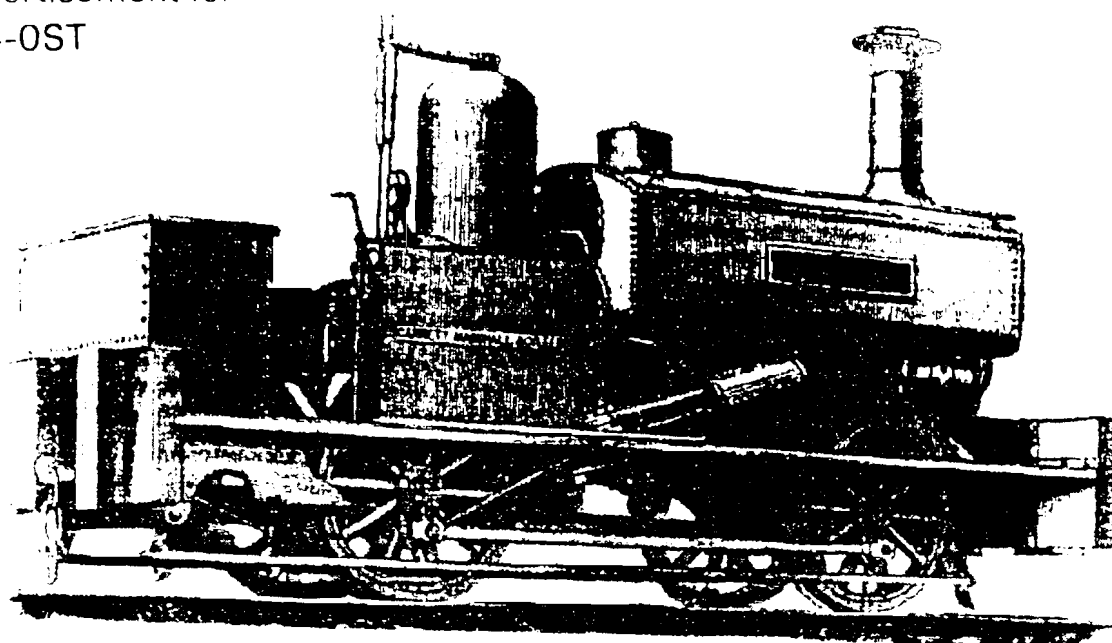
wheels, an unusual arrangement.

The Kendal and Windermere only ever owned the one locomotive, "DWARF" built by Carrett Marshall & Co. Their other loco's were leased from the Lancaster and Carlisle Railway. (These were all built by other makers). The Kendal and Windermere opened in 1847 to Windermere and was absorbed by the L & C in 1858, which was itself leased to the LNWR in 1859 and absorbed completely in 1862. I couldn't find out any more about "DWARF" but it sounds as though it was just a little 4 coupled saddle tank engine for shunting and maintenance work.

The two references I used were:-
The Kendal & Windermere Railway by Julian Mellentin (Dalesman)
British Steam Locomotive Builders by James W. Lowe. (Guild Publishing London)

The illustration is from the latter book
Albyn Austin November 1993

**Carrett Marshall &
Co**
Colliery Guardian
advertisement for
0-4-0ST



SILVERBAND MINE July 1939

Extract from Cumbria Aviation Research Group Newsletter No 10 1984

On the morning of the 18th July 1939 at the Silverband Mine, high on the slopes of the Pennines near the summit

of Great Dunn Fell, two West Cumbrains, Thomas Douglas of Distington and his foreman Jack Maxwell of Cleator were busily engaged in Barytes production.

The same morning, 21 year old Sergeant Pilot Kenneth Mitchell of 41 squadron Catterick, with his fellow pilots, attended a briefing with the squadron's navigation officer regarding a flight to Dumfries in a Spitfire Mk1, serial K9888. The usual weather conditions, high ground and landmarks were discussed with alternative routes in the event of bad weather being encountered.

Sgt Mitchell collected his Spitfire and with his squadron took off into the deteriorating weather, heading inland. After a few minutes flying the flight entered cloud and Mitchell became separated and confused regarding his position, jotting down on his knee pad "visibility nil".

Meanwhile, Thomas Douglas was emptying a tub of ore near the mine entrance when suddenly through the mist he caught brief glimpse of an aircraft overhead, heard the engine note increase, followed by the sound of a crash. Running back into the mine he

called for Jack Maxwell, who, being informed of the situation immediately organised a search party. As by this time visibility was only 12 to 15 yds, the miners walked across the fellside in the mist shouting to each other to maintain contact. They eventually located the wreckage of the Spitfire and Sgt Mitchell's body a short distance away.

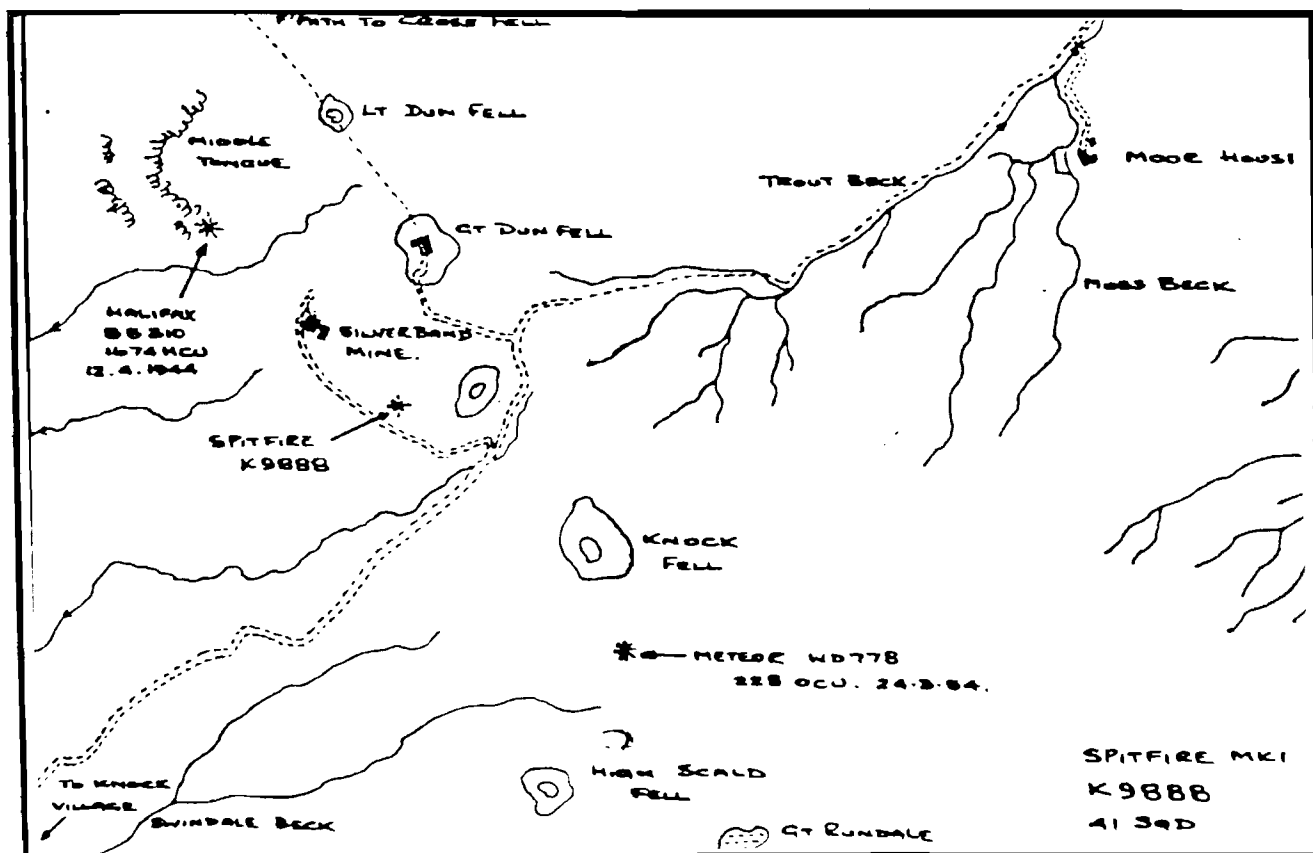
The local Police were contacted and Superintendent Wood took control. The RAF were informed and the squadron's C.O. Wing Commander Adams, was notified.

The inquest recorded a verdict of accidental death. W/Cdr. Adams stated Sgt Mitchell was probably following blind flying instructions and had he turned to port instead of starboard he would have descended into clear air in the valley.

Jack Maxwell received a letter from Sgt Mitchell's father, which expressed his deep gratitude to him and the Silverband miners for their prompt actions in relation to his son's accident.

Small pieces still litter the area with the main wreckage buried a few hundred yards from the remains of Meteor WD778 of 228 OCU, which crashed on 24 March 1954 during a ground controlled approach into Leeming.

Information supplied by P.Fleming.
November 1993



Book Review

Mines of the Gwydyr Forest. Part 5. Coed Mawr Pool, Cyffty and Other Mines. By John Bennett and Robert W.Vernon . A5.144pp. ISBN 0 9514798 4 9. Price 6.50 Post free from Gwydyr Publications c/o John Bennett, 7 St.Johns Way, Cuddington, Cheshire. ,CW8 2LX

This is the fifth book in the series of seven and covers as the title indicates the mines on the high ground west of Betws-y Coed and on the north bank of the Llugwy river.

The principal mines in this area were Cyffty, Coed Mawr Pool and Ffridd and the main body of the book is taken up with a most interesting description of their histories.

As with the majority of Welsh mines much more money was generated by the promoters than was ever won from the ground and it is quite remarkable how little was in fact brought to "day" in any of these ventures. Cyffty is one of the better known mines of N.Wales and is perhaps so because of the excellent surface remains which were extant until 1966 when they were needlessly demolished. In the last two years an Interpretation trail has been completed and the much reduced remains consolidated after the completion of a limited amount of

excavation. This trail is described in the book as are the present day remains at the other sites.

At the back of the book is a 12 page Appendix which is an extract from the Royal Commission Report of 1864, known as the Kinnaird Commission, which was appointed to enquire into the condition of all mines in Great Britain. This extract deals exclusively with Coed Mawr Pool mine and evidence from Lord Willoughby's agent and the mine Captain, Matthew Wasley.

The book is written in the usual easy reading style from these authors and the chapters are arranged in such a way that the individual histories of the mines are easily unscrambled from their often interrelated activities.

There are 33 maps and diagrams including four very good fold-out plans and 10 photographs. Again in this volume, as in the others, there are not many old photographs, but I am informed by the authors that this is simply due to their extreme scarcity and not a reluctance to publish. This volume stands well on its own, for those just interested in this particular area and for those who have already acquired volumes 1-4 it must be simply a formality to rush out and get Volume 5!!.

Damian J.McCurdy December 1993

***Date for articles to be in by --mid March.
To:- M.Simpson
Station Gates
Bank Top, Ingleton
Via Carnforth, Lancs.
LA6 3HG.***

Please Note :- This will be the last Newsletter that members will receive unless subscriptions are paid by the end of February.

DOCTOR DESCENDER

Dear Doctor

I have an identity problem within my group of friends since some people call me Peter and some call me Paul - please advise.

Anon, Roanhead Patch.

The symptoms you describe are not a cause for immediate concern, but should they develop to the point where people call you Mary (Doc's sixties group joke !) then I would be pretty worried if I were you. Your condition is not life threatening but can have other funny side effects including the inability to sensibly gauge the correct thickness to which bread should be sliced - you might think for example that sandwich's can be sensibly be made from one loaf using only one cut of the knife !.

Dear Doctor

I have a serious complaint to make. After your last diagnosis I rushed out and bought some brand new gloves from ingleglove Supplies (Ingleton) Ltd. and have since worn them regularly, but my symptoms persist.

Anon, Ingleton

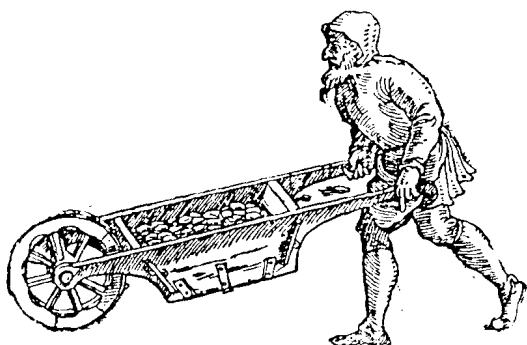
I feel that you may be being a little hasty, I am a Doctor prescribing proven remedies, not miracle cures. Although your illness (D.A.F.T.N.E.S.S.) persists I can see that effects are much reduced. During our recent consultation, for example, I saw clearly (through the dust cloud, whilst running for my life in the opposite direction hotly pursued by a massive boulder) that the pile of rocks knocked down by your attack only blocked a third of the level, not three-quarters, as before !. So progress is being made.

Medical complaints ?, embarrassing disorders ?, strange maladies - write in complete confidence, enclosing a cheque for £5 (still VAT exempt) payable to Jon Knowles (who has generously agreed to handle the administrative side leaving the Doctor free to concentrate on his research), at : 6 Ferncroft, Hightown, Liversedge, W.Yorks, WF15 8DT.

*
* THE 'FROG SHAFT' PROJECT *
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*
* Since the middle of last year a CATMHS project has been underway at *
* Nenthead to follow up the discovery of a strongly venting shaft above *
* Smallcleugh. A descent of this shaft has led to previously unexplored *
* workings in the Firestone, Little Limestone and Great Limestone, and *
* also a section of Middlecleugh level untouched since the days of *
* clogs. The workings lie on the Longcleugh vein and that part of the *
* Cowhill Cross vein to the SE. So far two connections have been made *
* with Smallcleugh level, both emerging in the vicinity of Barron's Sump *
* where the shaft originally terminated. The bottom of Barron's Shaft *
* which descends 335 ft from the moor near Nag's Head has also been *
* located in Middlecleugh level and workings on an extensive rich *
* oreshoot in this part of the Cowhill Cross vein have been entered. So *
* far 16 members of CAT have completed the through route from the moor *
* to the Smallcleugh portal which involves 400 ft of descent in six *
* pitches, much of it under running water. The route has been stempled *
* and bolted and a telephone cable installed. There have to date been *
* nine underground visits and many hours have been spent manning the *
* phone at the surface in all weathers. A full account of the project *
* will appear in the next newsletter. *
*

Peak District Mines Historical Society
The Historical Metallurgy Society
in association with the
Institute of Mining History and Archaeology

MINING BEFORE POWDER



*A conference in
honour of Georgius
Agricola's 500th
birthday*

*Weekend 25/27 March 1994
Charlotte Mason College,
Ambleside, Cumbria.
Estimated Cost: £90 fullboard
£20 conference only*

MINING BEFORE POWDER

This is a preliminary notice of a conference to examine current historical and archaeological work into mining and metallurgy before the introduction of black powder and steam power into mining, and of the general use of coal in non-ferrous metallurgy. It will concentrate on the post-Roman period, but will not exclude work based on an earlier period where this is novel.

The format of both the conference and the papers it is intended to publish will follow the highly successful 1992 "Boles and Smelting Conference" (HMS Publications). Presentations, preferably illustrated for the conference, will need to be concise so that a large number can be catered for.

Please contact Lynn Willies regarding any proposed contribution at the earliest possible stage. Your full cooperation will enable very rapid and economical publication with each paper presented entitling the author(s) to a free copy. Very low priced copies of the papers will be made available to all attenders and a higher, but still discounted price, for all orders placed in the first three months after publication.

**THIS IS A CALL FOR PAPERS:
PLEASE CONTACT THE ORGANISERS,
LYNN WILLIES or DAVID CRANSTONE at:-**

**PEAK DISTRICT MINING MUSEUM,
The Pavilion,
Matlock Bath,
MATLOCK,
Derbyshire, DE4 3NR
Tel: (0629) 583834**

*if you wish to contribute a paper
or
wish to have more information once available.*

MINING BEFORE POWDER

CONFERENCE 25-27 March 1994

Charlotte Mason College, Ambleside, Cumbria

Provisional list of speakers

Peter Cloughton - Medieval lead/silver mining
Chris Williams - Medieval mining law in N. Wales
Lynn Willies - Firesetting technology and archaeology
David Cranstone - Typology of surface mining
David Bick - Early mining leats and ponds in Wales
Robert Protheroe-Jones - Pre 18th century metal mining in Ceredigion
Richard Smith - Copper metallurgy: Practice at Keswick 1567-83
Alan Blackburn - Mining without laws - the Medieval Weardale Moormasters
Stephen Hughes - Hushing systems at the Cwmystwyth mines
Chris Lane - Roman Quarries and the Ambleside Roman fort
Ron Slack - Vermuyden's disputes at Dovegang
Tom Greeves - Merrivale Tin Smelter
Jim Rieuwerts - Lead production in medieval Derbyshire
David Field - the Cissbury Neolithic Flint Mines
Fred Hartley - Working in a fifteenth century coal mine.

Four further papers are likely. It may also be possible to publish relevant papers independently of the conference. Please contact Lynn Willies/David Cranstone, Peak District Mining Museum, Matlock Bath, Derbyshire DE4 3PS for more information. (Phone 0629-583834).

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

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