CAT The Newsletter of the Cumbria Amenity Trust Mining History Society



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Cumbria AmenityTrust Mining History Society Newsletter No 67, April 2002

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Cover picture The Ore tub in Top Level Extension at Coniston Copper Mine. This was found in Top Level Extension, still on its rails. The floor on which it stood had collapsed and it was buried by fallen stones. CAT members spent several evenings working to save it, first wiring it to the wall whilst the debris was removed, then hauling it out and rebuilding the floor before replacing it on its rails. A similar ore tub was later discovered built into a wall of deads near Waterfall Shaft in the Paddy End Stopes

CAT web site: www.catmhs.co.uk

Editorial.

Quite a bit of my time recently has been taken up with editing Volume 5 of our Journal, 'The Mine Explorer', which I hope will be available before the next Newsletter is due. There are just a few promised articles which I hope to receive very soon. (If you are one of the outstanding authors, may I remind you, the deadline was March 31st!) It is eight years since we published volume 4, and as you will read, a great deal has been accomplished by the Society since then.



I am hugely indebted to Dave Sewart for his work in laying out the text. It has been tremendously encouraging, and a great relief, for I couldn't have done it myself, to be able to send off a contribution and to receive it back by return of email, set out and printed exactly as it will appear in the finished article. My thanks also to Alastair Cameron, who made the introductions. Look out for his new book on the History of Coniston, which is due out very soon.

Ian Matheson

New Members:

We welcome new members, Michael Kelly, of 26 Lapstone Road, Millom, Cumbria, Christopher Eldered, 7 The Limes, Harleston, Cambridge, and Richard Shaw, 68 Weston Way, Baldock, Herts. We hope to meet you all at some of our events.

Meet List

You should by now have received the summer meet list. Members interested in attending the Cornwall Meet in September should note that Mark Waite's telephone number is 01923 267247, and not as stated. The evening meet at Tilberthwaite Quarries on 14th August is now likely to be rescheduled to take place on July 31st. I will confirm this in the July Newsletter. IM.

Comment

I recently overheard a tale concerning a keen mine explorer who had put details of his favourite mine onto a web site. Unfortunately the mines owners who nominally have the site on a care and maintenance(?) basis somehow found out about this and the explorer was threatened by the owners solicitors.

Standing aside from any legal issues this poses a number of points for discussion. Firstly is it not right that interesting places to visit should be publicised so that we can all visit them. The down side is that if we all visit them a few fools will follow us and probably cause an accident resulting in draconian measures to prevent access.

Alternatively should these "secrets" be kept for a chosen few and details furtively exchanged in darkened pubs but only to those you can really trust? In any event the old walkers adage of "take only photographs and leave only footprints" is well worth remembering. Jon Knowles.

100 Years Ago

From the Westmorland Gazette:

18th January1902. Report on explosion. The report of Captain Lloyd on the circumstances attending an explosion which took place on October 23 at the corning house at the factory of the Elterwater Gunpowder Company was issued on Saturday. the inspector has no doubt that the explosion was due to the ignition a small quantity of powder dust which had accumulated in the course of years behind the wood casing of the machine, and causing the ignition was a naked candle in the building.

For nearly three weeks before the accident the factory had been shut down for alterations, and the corning house was being extensively repaired. No breach of law in connection with the incident was committed, and those concerned are exonerated from moral blame.

Cornish Mining News:

King Edward Training Mine

The Trevithick Trust has opened to the public the King Edward Training Mine near Camborne. It will be fully open to visitors during 2002, and there should be an underground experience for visitors. From the NAMHO Newsletter No 42, Winter 2001

Geevor Tin Mine Heritage Centre. Pendeen Community Heritage have been awarded the contract to manage Geevor Tin Mine Heritage Centre. Geevor is the largest heritage mining site in Britain, and they are committed to developing it as a world class mining museum.

Other sites well worth a visit whilst in Cornwall include the Camborne

School of Mines museum, the Levant Engine House, East Poole Engine House, Wheal Martyn China Clay Pit, and of course the Eden Project. Why not make a week of it!

China Clay

Two china clay companies working deposits on the south western edges of Dartmoor have heeded sustained pressure from the Dartmoor Preservation Society and voluntarily agreed to forgo mineral permits that were granted 50 years ago to extend a pit and waste tips further into the Dartmoor National Park. Until the 1960's the nearby River Plym ran white with suspended clay and an extensive area was covered with white dust, while pyramid tips of white mica dominated the view. (I lived in Cornwall in the 1950's, and well remember the white pyramids shining in the sun, a spectacular and not unattractive sight, at least from a distance. Ed.)

Earby Mining Museum

The museum will be closed until Spring 2003 due to extensive refurbishments, including a new roof and floor.

Florence Mine Award

On 15th August an SSI Award, one of just 33 awarded nationally last year, was presented to Lady Egremont, lessor of the mine, on behalf of everyone who works there. The Award is in recognition of the continuous mining activity which keeps the geological exposures accessible, and for promoting public enjoyment and appreciation of the site.

Florence Mine is the last deep working iron ore mine in the UK, and is an SSI,

of national importance for it's superb exposures of the iron ore body, which is rare in the world. Two types of iron ore occur at Florence mine, kidney ore and specularite. As well as visiting the Heritage Centre one can also go underground and see the iron ore specimens where they formed in the rock over 200 million years ago.

It is the mining activity, drilling and and associated blasting shaft maintenance that keeps the impressive mineralogical features exposed. The mine's production is used to supply the foundry industry of Britain and Germany with annealing ore, which is used to make industrial castings more malleable, drawing out carbon from the molten metal. Crushed iron ore is also used to make pigment for paint, building products concrete. and cosmetics. If the mine was to close flooding and collapse would result in it's total loss.

Presenting the Award, Dr Paul Glading, Deputy Team manager of English Nature, Cumbria, said "Geological knowledge underpins our scientific understanding of the natural world and is fundamental in sustaining our continuous need for resources from earth, such as metal, fuel and water. Without the huge amount of effort and continued commitment of SSI owners and managers like those at Florence Mine. the immense task of safeguarding SSI would be impossible".

The Heritage Centre is open from April to the end of October, with underground tours available at 12.30 on weekends and Bank Holidays.

From Cumbrian Nature, Issue 11, Winter 2001

NAMHO Conference and Meet

The NAMHO Conference 2002 will be held at Aberystwyth on the 5th to the 8th July. It will be hosted by the Welsh mines Society assisted by other local mining history societies, and there will be a full programme of lectures, surface walks, underground trips and events. Telephone social the Conference Secretary John Hine for details. 01594 833217. The Ireland Meet, which was cancelled due to the Foot and Mouth Disease outbreak will now take place in September 2003.

Prince of Wales Colliery to close.

From The Times Business, Jan 31st 2002.

The UK's oldest colliery is to close in September with a loss of 500 jobs. Prince of Wales Colliery at Pontefract, in Yorkshire, which began production in 1860, suffered geological problems during the development of a new face. UK Coal's Chief Executive, Gordon McPhie, said 'We cannot justify further investment at the colliery. With the skill and support of our employees we can replace the output lost by the closure by increasing production at other mines.'

The closure was announced just 24 hours after the Energy Minister, Brian Wilson, ruled out further aid for the coal industry. UK Coal will write off $\pounds 15.8$ million after a failed attempt to open reserves at its nearby Wentedge coalfield.

Thanks to Times Reader, Sheila Barker, for this clip!

Wales Weekend 22nd & 23rd September – Meet Report

Saturday – Britannia Copper Mine Chris Cowdrey John Ashby John Aird Tristan Goldsack Jon Knowles (ML)

As is becoming common on Welsh meets the day dawned warm and sunny. After narrowly missing somebody strolling along the white line in the middle of the Bangor to Llanberis "A" road, arrival was made at Pen-y-pass where even at 9.00 am there was a queue for the car park. However there was still plenty of parking to be had down the Pass.

Once everybody was together we trogged up the PYG track to the mine. The weather had taken its toll on the bolts put in at Easter 1997 and two more had to be placed before we could descend to the No. 5 level. This has already been described in NL 51. One feature we had noticed in 1997 but had not fully studied was the small end tipping wagon. In a level which could never have contained more than 100 metres of track it is unusual to fine a wagon of approx. 18" gauge which has two buffers on each end and even more surprisingly no sign of any drawgear. The reason for this arrangement as opposed to central buffer cannot be explained. Its hard to believe that wagons were even run in trains at this site.



Waggon on no 5 level Note the buffers are fitted. JK..

We were fortunate in that persons unknown had already provided a belay and after a little rigging we were able to continue along the stope to an area previously unexplored by CAT. This was blind after a short distance but had a number of interesting artefacts including a dismantled barrel which was marked "1431 G.W @ Co. Ltd, Wilderspool, Warrington" and the remains of a box for "Nobel Gelignite"

Returning to the stope we then abseiled down to level 4 which is probably the most interesting and extensive in the whole mine. After climbing around a hole and down some deads the level was attained. There was much to see on this level including plenty of evidence of copper mineralisation (see photograph), a wooden ore hopper and the remains of some steel air ventilation pipework in re-use as a launder. The entrance to floor 4 is either collapsed or lost in scree. It would be possible to descend again to floor 3 (and ultimately to floor 1 and out) but we had not known about this in advance and had not rigged accordingly.



Treasurer Aird in No 4 Level, with prominent copper staining. JK.

Returning to day and lunch we then descended the hillside to the site of level 3. As on the last visit the entrance, which is at the base of a small rock face, was partially blocked with rocks. After removing the worst of the rocks it was possible to squeeze into the level. Whilst this level is probably as long as level 4 there has been much less mineral extraction. What it lacks in mineral it makes up for with a fine timbered ore shute and a timber ventilation door wooden air pipe. Immediately inside the level there are hangers from where it is a straight forward descent down the narrow stope to floor 2 - which obviously gets very wet in poor weather.

This lower level contains a very interesting type of ore shute which I personally have not seen before in any other mine - see photograph. It consists of a box section approx. 18" square assembled from timber planks and the whole is inclined at initially approx. 45 degrees to the horizontal but becomes steeper. It would appear that this was used for tipping ore down, which was from either very near the entrance or possibly even from an open working outside. From a practical point of view the shute does not appear to be inclined steeply enough for the ore to descend under gravity and either manual intervention or possibly water would need to have been added to ensure that the ore descended.



Ore chute, Level 2. JK.

Returning to day, time was pressing on and after a quick look into level 1 and washing in the stream - I left a cheap plastic there if anybody is interested, we returned to Pen-y-pass. This route always seems, probably because it is, much longer than the route used for the upward journey.

Saturday evening was spent by most people at the Bryn Tyrch in Capel Curig except for Tristan who seemed to take offence at John Ashby buying him a drink (surpise is the usual reaction) and promptly left for the Little Chef before retiring to his tent.

Further reading.

Britannia or Snowdon Mine by Colman and Laffoley in Bulletin of the PDMHS Volume 9 Number 5.

Sunday

Chris Cowdrey John Aird Gwynfor Pierce Jones (Local Expert) Jon Knowles (ML)

Again another glorious sunny day. We always knew that John Aird would not be joining us but were a little surprised when Tristan didn't turn. A mobile call some hours later revealed that he had been woken by sheep ! at 11.00 am. We can only assume that the sheep was trying to get out of the tent.

Our guide for the Sunday morning was Gwynfor or more formally Dr Gwynfor Pierce Jones. A resident of Dyffryn Nantlle, he has spent more than 20 years studying the quarries of the valley and is the acknowledged local expert – his PHD was on the Dorothea Quarry.

Starting from the car park on the site of the former Tal-y-sarn interchange station where slate from the valley quarries was latterly transhipped between the horse drawn 3'6" Nantlle Tramway and the standard gauge branch from Pen-y-groes, we walked along the new road which gives a good view of the whole area.

Turning left we passed Dorothea House before entering South Dorothea Quarry. Even this smaller quarry, which subsequently became part of the larger Dorothea Company, bears witness to the massive changes the area has seen as quarrying progressed. The 1900 second edition ordnance survey map shows the road as passing through the middle of the quarry. Whilst remnants of the original road can still be seen they are on top of pillars of rock rising from a large flooded quarry with the replacement road (now just a path) running along the side and it too falling into the water below.

Most general works on the Welsh Slate Industry describe three methods of working viz, galleried quarries, underground quarries and pits. It is the later which concerns us here. Where the dip of the slate vein is nearly vertical it can be worked either as deep pits as in Nantlle or, as in the Corris Slate district, as an underground quarry. Digressing slightly is should be noted that the method of underground working used at Corris is completely different from that used in Blaenau Ffestiniog. Turning back to Nantlle the pits were worked ever deeper until the deepest were 600 feet deep. Even today when the pits are flooded this depth has its dangers since the Dorothea workings, which are used by divers, frequently claim more victims. The deep pit workings of the Nantlle valley had three problems, water, waste disposal and lifting the rock out.

Water could be overcome, where the topography and finance allowed, by the driving of extensive drainage systems but where this was not the case mechanical pumping was employed. This was initially powered by water wheels and subsequently by steam and eventually electricity. Waste was a problem until the end with much waste having to be up-haulked for tipping – always an expensive process. There had even been a proposal at one time to tip the waste in the sea which is approximately 7 miles away.

With deep steep sided pits the conventional method of using inclines to overcome differences in level was not practical and much reliance was made on chain inclines and their successors the "blondin" cableway. In its simplest form a chain incline consists of a chain strung from a tower on the edge of the quarry with the other end anchored in the pit below. A carriage would be would be run out along the chain until it hit stop at which point is would be lowered to the quarry floor where a wagon filled with, slate rock for the mill, or waste for the tips would be attached. This would then be wound up to the surface. "Blondins" named after the famed tightrope walker were technically more advanced since

they could be lowered at any point spanned by the cable since they did not rely on a stop fixed to the chain. (I could write a lot more on this subject – if this interests you please let me know and I will expand in a future newsletter).

Walking along the edge of the twll one of the interesting remains came into view - The Dorothea Pumping Engine. Like all pit quarries Dorothea suffered very badly from water ingress and in 1906 they put into service one of the very last Cornish Pumping Engines ever built. This 68" engine was supplied by Holman's of Camborne in 1904. What is even more remarkable is that the engine has survived in its original engine house ever since. Whilst the engine is now protected by a preservation order much work remains to be done to keep the building weather and vandal tight and to prevent further deterioration. CAT members Peter Hay and the author assisted by PDMHS member Andrew Hurrell have played a small part in this by cutting down the trees which had taken over the adjacent boiler house and a hopefully successful attempt to kill the ivy which has taken a grip of the structure.

This picture, taken in August 2000, is of the inside of the engine house, showing the top of the cylinder and beam.



Top of the cylinder and part of the bob of the Holman Pumping Engine at Dorothea Quarry. Stewart and Moyra Holme lurk in the background. JK.



Peter Hay relaxes after spending a day clearing trees and ivy from Dorothea Engine Boiler House. JK.

Entering the building it is possible to explore everywhere including the cataract pit and marvel at this wonder of Victorian engineering.

A fascinating report on the sinking of the pumping shaft and the installation of the engine and pumps survives in the Gwynedd archives and whilst it is far too extensive to reproduce here a few snippets may be of interest.

- The pumping shaft was sunk 155 yards deep by 9 feet square a process that was to take 3.5 years but fortunately did not result in any serious injuries.
- When the shaft was sunk through the slate to the pre-Cambrian porphyry which lay beneath it a large fissure was encountered which allowed a strong feed of water into the shaft. One week later the neighbouring South Dorothea Quarry was dry and they were able to stop their pumps.

After leaving the engine house we took a circular walk encompassing Dorothea, Pen-ybryn, Pen-yr-orsedd, Gallt-y-fedw; Blaen-ycae and Tal-y-sarn before returning to our starting point.

Only the Pen-yr-orsedd Quarry is now operating and perhaps Alfred McAlpine Slate Products are reaping the benefit of the investment in driving drainage levels made by W.A.Darishire & Co. who drove the extensive drainage tunnels which have drained the quarry pits from the later half of the 19th century to the present day. Most of the other valley quarries used mechanical pumping which brought flooding upon abandonment.

This is a fascinating area which despite the losses in recent years still has interesting and impressive remains which will interest anybody with a passing interest in Slate Quarrying.

Jon Knowles

Further Reading

For a general description of each site read the "Slate Regions of North and Mid – Wales by Alun John Richards.

"A Report on the Pen-yr-orsedd Slate Quarry Drainage Systems and other Underground Features by Jon Knowles, Peter Hay, Andrew Hurrell and Stan Owen Rev.3 August 1998.

Dear Doctor

I am very aGreeved since I have been threatened by solicitors for putting on my web site details of an interesting mine to explore. Is this normal ?

Anon, Cambridge

No but perhaps suggesting that the Maen was being worked in a less than professional manner was not your most tactful move. Although some of your friends may disagree. Doc

Dear Doctor

I am having trouble with my arithmetic. If for example you start with a barrel full of apples and are told to retrieve the apples should there be more or less apples left in the barrel at the end?

El Presidente

An interesting but not very difficult question. The word retrieve as defined in my dictionary means to "regain possession of" or "recover by investigation or effort of memory" or to put it bluntly there should be no apples left at the end.

Boxing Day Meet, 26th December 2001 Coniston.

Ten members set off to attend this meet. Only nine of them actually arrived at the BMSC Cottage at Coniston. The tenth suffered a punctured petrol tank on the way.

Members have, over the years, become used to the very fine weather I arrange for the meets I lead. This day was no exception. Sunshine, blue skies, and clear views persuaded everyone to stay on the surface. We walked up to Grey Crag level, then along the leat to Brim Fell level, a trial level driven about 80 or 90 yards, which still has a fine arched portal.

Several of those present said that they had not visited the more ancient workings higher up, thought to be originally of the Elizabethan period, now often referred to as John Dixon's Works, and so we ascended the steep fellside to visit them. It appears that this small mine was re-worked at a later date using explosives. We then climbed higher up the fellside to visit John Willy Shaw's Level. This relatively recent working, 1929 - 1933, was driven with compressed air drill for a distance of over 100 yards at a cost of well over £1000, but provided no financial return. Today the original mine waggon chassis still stands on the rails inside, and the ruins of Willy Shaw's hut still stand outside.

After this we continued up towardss Low Water and Coniston Old Man, with a stop for lunch on the way in the old slate quarries. Facing a cold north wind we carried on along the main ridge over Brim Fell and descended from Levers Hause to the tarn of the same name. On the way back to the cottage we looked at the old Tongue Brow workings, and agreed that they needed another visit to check out some recent changes which have occurred there. Meet Report 13th January 2002 Hudgillburn Mine

This was the first meet at Hudgillburn for over twelve months, due to Foot & Mouth Disease restrictions. There was a good turnout; 14 members attended.

Unfortunately there had been a couple of collapses, one in the cutting outside the portal and one in the level about three quarters of the way along the cut and cover section. The left-hand wall of the level had collapsed, making the roof slip.

Work started to clear the fall in the level, and on disturbance a large hole soon appeared on the surface. This presented problems as the level runs alongside a bank which has the field wall running along the top of it. As the collapsed material was removed more kept running in. Attempts were made to shore up the bank with the timber and steel that was available, but it was decided that there was no point in further digging until permanent support of the bank could be carried out. A fence was erected around the hole to keep the stock out.

Several members went up into the Cavern, including Sheila and Anton Thomas, who did a lot of the early work at Hudgillburn but had not yet explored the mine. Don Borthwick collected Radon detectors which should have been collected in February 2001, but were delayed by Foot and Mouth Disease restrictions. All appeared well in the mine, no further falls were seen.

The weather was dull and damp, but our day was greatly improved, thanks to Karen Beer, who produced bacon and sausage butties. John Brown has subsequently been up to Hudgillburn and measured for some steel supports to hold back the bank while we replace the arching in the traditional manner.

Sheila Barker.

Peter Fleming.

Recent Developments at Coniston

December 29th. Grey Crag Level reopened!

As reported in the last Newsletter, a hitherto undiscovered part of Grey Crag Level was entered on December 29th. The digging team were busy clearing debris and breaking rocks, but Messrs Fleming and Simpson. Matheson scrambled through to investigate the new ground. The level was visible on both sides of a huge flake which seemed to have come from up in the roof. At first we tried to clear a way in on the left-hand side, but spoil and rocks kept running in from above. Mark suggested a dig lower down following the rock wall on the right hand side. This was successful. and an entrance was achieved. There was a short section of floor with a set of tramlines in place and a wooden launder running between them. Two holes in the floor showed that there was an open stope beneath. and a timbered roof suggested that this continued upwards. We had hoped that we would be able to get into the large stope beneath the Twin Tunnels of Middle Level, but were disappointed to find a terminal collapse after about 80 feet

After this exploration we returned to the dig, noting on the way a soil level showed that parts of the floor seemed to have subsided by about 3 feet. Perhaps this explains how the Launder Level. for which we had previously searched in vain, had become exposed. Arriving at the dig we discovered that, as usual, a lot of progress had been made moving spoil. In order to get back out we had to climb over a large boulder, estimated to weigh about 3 tons, which filled the passage. This had become more difficult as the spoil on the inbye side had now been removed down to floor level, and the descent was much higher than when we came in. Mark Simpson

went first, and as he reached the top of the boulder it moved! Mark shot back very rapidly, but not as quickly as John Brown, who was below it on the other side! It was resting point down on about 5 feet of spoil which had become destabilised. We decided to lash it back with rope so that we could get out, and tightening the rope rocked it back a foot or so to its previous position. It being late in the day, both teams decided to leave it for another time.

January 20th. Paddy End Through Trip Re-visited!

On Sunday 20th January Mark Simpson, Peter Fleming and Ian Matheson went up to Levers Water in the hopes of making a descent through the workings from the Funnel down to Grey Crag Level. We also wanted to inspect the condition of the mine, and to complete an accurate survey from Middle Level down to Grey Crag Level so as to connect the independent surveys already carried out in those areas.

The previous week the digging team had succeeded in erecting another steel frame, safeguarding the recently opened connection in Grey Crag Level We hoped to be able to make the first descent of the Paddy End Through Trip since it was blocked by a fall around Easter 1996. If this was not possible then we hoped to come through via the Balcony Stope and South Vein to Pudding Stone Level.

There had been heavy rain in the early hours, but fortunately this had stopped by the time we walked up to Levers Water, and we were able to keep dry. The floor of Arrette Chamber is disturbing. Once upon a time we blithely walked across the apparently solid floor, but now it has dropped away, leaving a few timbers across a void. This area needs some serious safety work. The descent to Top Level and then on down to Middle Level posed no problems. On Middle Level there have been a number of changes over time. The floor behind Blue Rock Chamber, where there was once a manway, has dropped away, possibly as a result of debris falling on it from the rotten floors above. The area beyond, where a hand line leads down towards the Pinnacle, has suffered damage, and there has been considerable movement. We put some bolts in Blue Rock Chamber to provide an anchor for an alternative way on should the handline become impassable.

We then went down into the huge stope below the twin tunnels, where we could see the inscription 'CAT 1983', which Peter Fleming had made there with his finger in the blue wall below the tunnels during his heroic first ascent by Maypole. We surmised that the whole of the side of the stope, including the original floor of Middle Level, had fallen away at some time in the distant past, probably because the miners had made the hole too big and the walls too thin. A similar thing is happening in Earthquake Passage.

We climbed back up to Blue Rock Chamber, but before continuing we ascended the manway further out bye in order to inspect the stope above, which connects to the back of Blue Rock Chamber. In the past we have unsuccessfully tried to dig from here into the lost part of Middle Level which leads out to day. It is blocked with biggish rocks, but was venting quite strongly. Whilst up here we heard the Stihl saw being used by the digging team 200 feet below, and later smelt the fumes from it.

We began the survey work from the sole of Middle Level above the Pinnacle, using three tripods at intervals to sight on, and taking measurements with the Disto and tape measure. Some of the height to the roof measurements could not be taken, as water vapour and droplets prevented accurate Disto readings. There have been changes to the floor level here; part of it has dropped away, and part has been built up by falling debris. We took the survey in to the top of Paddy End Shaft.before continuing down to the Pinnacle. The floor of the slope leading down to the final pitch is quite clean, mainly because it is swept by water raining down from the stopes immediately above the Pinnacle.

We had blunted all the drill bits putting the bolt in Middle Level, and one of our party had forgotten to bring the new ones, so we were not sure whether we would be able to descend the final pitch, as the bolts might have been damaged by the 1996 rock fall. The alternative, to go back up to Middle level and then descend the 2 dubious pitches in South Vein, was not a welcome prospect. All was well however, the bolts were untouched, and only a small part of the fixed rope had been damaged by the cascading rock.

At this stage we had to be very careful not to dislodge any stones onto the digging team who were working directly below. John Brown, Colin and Andrew Woolard, and Peter Sedgewicke were busy packing plastic sacks with rubble, and packing them on top of the steel roof which they had constructed in order to absorb the energy of any further falls. We were able to converse with them before descending to join them.

Ian Matheson.

17th February. Coniston Meet.

Present Mark Simpson, Peter Fleming, Ian Matheson, Jim Alexander and Jane Moreland. We met at the hut about 10.15 to find John Brown & Co preparing for the next session in the mine. Discussions were held about our objectives for the day, which were resolved to going up to Levers Water, descending to Middle Level and having a look at the Paddy End Stope via the Wheelbarrow Level. Nobody was enthusiastic about the Avalanche Stope descent, although this was not ruled out for a future trip.

This part of Paddy End Stope had last been visited about ten years ago, and it was decided to survey the area and if possible descend to Grey Crag Level. If time permitted we would then Level, beside the winding hole to the stope under.

Whilst the rest were lunching I rigged the next pitch from existing hangers and set off down. One of the first things of note were the ladders (see plan) and the drill marks pointing downwards. At 17.6 metres from Middle Level floor the stope length had reduced to about six metres and a staging had been reached. Once through the manhole the floor below was reached at -25m. Whilst the rest were descending I took some measurements of the level inbye and had a look at the wheelbarrow. Much blue flow was in evidence. South East



investigate the Paddy End Shaft area.

An hour later we were in the mine. Jane Moreland did not come underground, but kindly carried some gear up to Levers Water. Lunchtime found us beneath the boulder shelter in Middle of the landing point after several meters the level had been blasted into Paddy End Stope, the vein of Stope 4 that had been followed down having pinched out completely.

The first objects that you see at this point are the many boulders which have

fallen from above, which block further progress south east. There is no sign of any level continuation. Looking NW in the Paddy End Stope there is a pack wall and an opening into the main stope. Access to this area is by half an old ladder from the manway.

By the time I had taken all this in everyone else arrived, and Peter set of up the 'ladder', some 3m high. The first impression I had after ascending was the size of the area we had come into, the stope being some 4 metres wide and ascending up beyond where Middle Level had been up to Top Level. The south west wall was smooth and almost vertical; the NW wall was similar but with a hade. To the south east was a boulder pile which reached up to within about 5 metres of Middle Level.

We all had a good look round and speculated on the origin of these boulders. Perceived wisdom was that the middle Level bypass had been driven along a fault parallel to the Paddy End Stope in which the original Middle Level had been. Sometime during the exploitation of the stope this fault had been reached at the horizon where we now were, and eventually the whole of the hanging wall below Middle Level had fallen away along this line of weakness.

Turning around and facing north west it was apparent that the debris on the 'floor' had come from Middle Level inbye of the Twin Tunnels, and what could be seen above were the roof timbers that level Whilst to contemplating this, and what we knew to be resting on those timbers, measurements were taken of the area. and hangers put in for the next pitch, about 45m down to Grey Crag Level.Ian then pointed out that the time was approaching 3.45, and if we were to investigate the Paddy end Shaft we had better leave the descent for another day.

It was at this point, whilst we were preparing to ascend, that the value of spare tapes and ascenders was shown, and the usefulness of gear checking before you commence a trip were demonstrated. I will not go into details, but the ascent was safely achieved by all, and the people concerned, all experienced, vowed that this would not happen again. (hum!).

The party made their way up to and along Middle Level and down the old 'Through Route' to the 'Letterbox' some 30 metres down which opens into the Paddy End Shaft. I went down the ramp to the head of the final pitch to make contact with John Brown, but he and the rest of the team below had gone out of the mine by then, the time being about 4.30. Again time was pressing, and it was agreed that hangers should be put in on the footwall of the shaft ready for a descent, and a party would come back later and complete the exploration. Ian got on with doing this whilst Dave and Jim rigged the final pitch.

A short time later we were all down on Grey Crag Level, being impressed yet again by the amount of work achieved by JB and Co, even to the little ladder to help people descend into the level.

The ropes on the final pitch were left in (yet more ropes!) so that we could more easily reach the Paddy End Shaft another time. We all then made our way out to day.

Mark Simpson

26th February. Paddy End Shaft Survey

Mark & I returned a few days later to complete the survey of Paddy End Shaft from the Letterbox down to Grey Crag Level, and to retrieve the ropes. For some reason we chose to do this on a day which followed two days of unremitting heavy rain! We made our way through the curtain of water at the entrance to Hospital Level to the foot of the final pitch of the Through Trip, burdened with a spare rope, survey kit, tripods, and the electric drill. Water was cascading down the wall, but we prussicked up the ropes which had been left in last time, and hauled them up after us. We also recovered a short length of rope, which Dave Bridge had left to facilitate access to the top of the abseil. This was important, as you will read later!

After replacing Dave's rope with a spare length, which we had brought for the purpose, we scrambled up the rough slope, past the Pinnacle to reach the Letterbox, which gives access to the side of Paddy End Shaft not far below Middle Level. There is not much space here, and it is quite drafty. We rigged the two 35 meter ropes so as to be able to pull them through when we were certain that we could get safely out at the bottom. While we were doing this Mark's tackle bag rolled off the slope and disappeared down the shaft. He bemoaned the loss of his lunch, but didn't mention that the bag also contained the spare rope.

When we were ready Mark set off down, taking survey measurements and readings as he went, and writing them down on the wet notepad. He soon disappeared from view as this shaft is far from straight, and can surely only have ever been used as a ladderway. About 60 feet down he put in some bolts for a re-belay, and as I was getting thoroughly chilled I welcomed the opportunity to go down and join him. There was just room to stamp out a foothold in the shifting mud and gravel. Mark then continued down to the end of the ropes, where he reported that he could see down to Grey Crag Level. I set about pulling the ropes through, but found them very hard to move. I clipped my chest-jammer onto the pull down rope, and by jumping up and down managed to pull down a few feet of rope, whereupon it jammed again. I clipped onto the other rope and using the same technique managed to get it back to where it started from. Two more attempts got me warm again but were unsuccessful, so I decided that we would have to leave the ropes in situ yet again, and abseiled down to join Mark.

It was at this point that he told me that the spare rope was in the tackle bag which had rolled down the shaft, and which we could now see lying on the floor of Grey Crag level about 30 feet below. As luck would have it I still had Dave's short length of rope which we had recovered earlier, and it was just long enough to reach the bottom, thus saving us the unwelcome prospect of retracing our entire route in order to get out. Thanks Dave, but sorry, we had to leave it there!

Before leaving Mark spent some time completing the survey to link up with the Through Trip descent, while I went into the newly discovered Launder Stope to put in some belay bolts for use for future exploration. On the way out along Hospital Level we reflected on how fortunate we were not to have to carry out all those extra ropes!

There is still quite a lot of exploration to do at Coniston, so, if anyone wants to join in, do contact Mark or myself.

Ian Matheson

March 3rd. Finally the ropes are retrieved!

We returned with Dave Bridge and Peter Fleming on Sunday March 3rd to retrieve the ropes. Peter had hurt his back, so stayed at the bottom with the digging team, who were addressing the problem of the moveable 3 ton boulder. They had decided to jack it up, winch it onto the top of the steel roof and stabilise it there. Mark, Dave and I prussicked back up Paddy End Shaft, stopping on the way to examine and survey a sub level containing the remains of a ladder which leads into the stope above the Balcony. We then continued up the shaft and pulled the ropes out at the top. The reason we were unable to pull them through on the previous trip was that a twist in the ropes had caused the knot to jam against a stemple.

On the way down the ramp from Middle Level to the head of the final abseil to Grey Crag Level we shone a powerful light up the stope to see if we could discover the source of the water which cascades onto the rocks half way down the ramp. We were able to see the underside of the floor of Middle Level, and the water appeared to be pouring off the end of a timber protruding from one side. The part of Middle Level with which we are familiar is quite dry, so Mark speculated that there might be a part which we have not yet discovered.

Ian Matheson

March 10th. News of the dig. Email from John Brown.

We were up at Coniston again today. We installed the other piece of channel section to enable us to suspend the boulder between the walls independently of our steelwork below. We managed to jack the boulder into place and secure with a stemple against the hanging wall at the outbye end and chocks at the other. We will be up next weekend to pack around it and to continue to remove the rest of the collapse material, replacing the temporary set with a full, more permanent one, which will probably be the last. It was very wet with more water than I have ever seen in there whilst we have been on this project. I think that it is all starting to come together now, after a few difficult periods. I believe you may be going this Tuesday. Let me know what you think about what we have achieved over the last couple of weeks.

March 12th. The Descent of Launder Stope.

Peter, Mark and I returned on 12th March to investigate the stope beneath the tramlines in the recently discovered Launder Stope on Grey Crag Level. On the way in we were very impressed to see that the boulder had been moved several feet to its final resting place on the packing above the steelwork. To move it had taken 3 visits, and was a considerable achievement.

In the Launder Stope we carefully moved a section of the launder to avoid damaging it, and set about stabilising some loose timbers which were hanging out of the bottom of the floor. One fell out and crashed down into the depths, but we were able to lash the other to the tramline.

Peter and I went down, leaving Mark at the top. Looking up and trying to avoid the water which was dripping down beside the rope I could see that all of the timbers supporting the floor inbye of the hole we were abseiling through had fallen away, leaving a section of floor a few inches thick which consisted only of mineralised clay. I asked Mark to keep very still, but movement of the rope brought down showers of small stones. Fifty feet down we landed on floor of sorts, consisting of a ruckle of jagged rocks. Forty feet to the east it dropped off into the stope leading to Waterfall Shaft beneath Grey Crag Level, and forty feet to the west there was a rock wall. Possibly the stope here might bend round out of sight to the north, but the only way to find out would be to descend a further 40 feet over razor sharp flakes of broken rock



which had fallen from the hanging wall of the stope. The rock remaining on the hanging wall was fractured and there were fangs of rock with no visible support. One didn't want to make a noise in case it all fell down. This was not a nice place to be, so we lost no time in prussicking out, getting quite wet in the process as the water flow from above appeared to have increased. Mark very wisely decided to forgo the experience, and remained at the top.

March 18th. Tracing the water.

John Aird had come up from London to attend the Committee meeting on Monday evening. He spent Sunday working with the digging team and joined Mark and myself for a day of exploration on the Monday. Peter Fleming and Dave Bridge were both indisposed, so we were a team of 3.

Mark had been giving some thought as to the origin and route of the water which finished up falling onto the dig and flowing away down Paddy End Shaft, and thought that it may come from a section of Middle Level which we had not yet discovered. To determine this, he said, was to be our task for today.

We carried the gear up to Levers Water and decided that it would be easier to descend to Top Level via the Lake Stope Shaft rather than from Arrette Chamber. It wasn't! the descent was fine, but the ropes jammed, and we couldn't pull them through. John prussicked back up to free them, but on his return they jammed again, and we had to repeat the ascent. This cost us a lot of sweat and an hour of time, but eventually we were able to make our way to the outbye end of the Top Level main adit. We had a dig here years ago when Mark Simpson moled his way in, succeeded in making voice contact with the surface and was able to push an iron bar out to day. Above this area is the crater which appeared on the surface at the time that the through trip became blocked around Easter 1996. Beneath the crater is the remains of a ladderway. We had previously thought that this was the source of the blockage on Grey Crag Level, the spoil and scree from the surface tumbling down the shaft, and burying the dig site, before pouring through a window in the side of the stope and cascading a further 270 feet down through the mine to block the Through Trip. As a secondary objective Mark wanted to confirm this.

We were to abseil off the end of the level and pendule round the corner into the main stope in order to descend to the Middle Level horizon. Mark suggested that I should go first, but as it was his project I insisted that he should have the priviledge! In fact it turned out to be fairly simple, with one rebelay which facilitated a nice clean descent to a section of floor about 90 feet.below. Part way down we met the water which we were looking for. It issued out of a gulley which was separated by a rock arrette from our descent point, flowed down the wall, and disappeared through the floor on which we had landed. From here we could see through to the top of the Pinnacle which is on the ramp leading to the final pitch of the through trip. We recognised that we had been here before and were now standing on an isolated section of Middle Level directly above the rocks which were showered with water. There was no undiscovered new ground., but we had made important an discovery. Practically none of the stone from the crater above ad reached this part of the mine, and none had gone below it. the The crater on the surface is definitely not the source of the Grey Crag Level blockage.

Looking inbye from our position the floor ended but a row large diameter stemples indicated its line. We were puzzled to see that there appeared to be very little headroom between these stemples and the rock roof. From our viewpoint we couldn't be certain whether the stope ended, or bent round out of sight. We took some survey measurements before leaving.

On the way back up we tried to investigate the course of the water. It was flowing down a V shaped gully separated from our descent point by an arrette of rock and it's bed was heavily mineralised by copper oxides. We were unable to see the upper part, but it seemed to be on the same horizon as Top Level. Once at the top of the pitch I scrambled up the steep slope of small

stones, past the Window and up to the top beneath the old ladderway. The remains of a ladder can still be seen pinned to the wall, and looking up further I could see what may have been a manway, choked with rocks, through which water was dripping. This can only come from the surface, and there is a channel in the slope which must have been cut in times of heavy rain. The bottom of the slope is dry, so the water seeps through the stones and must make it's way through the rock wall of the stope via a buried fault or cross cut, becoming mineralised in the process. It then issues from there and flows down the V shaped gulley to Middle Level, seeps through that floor, cascades onto the rocks on the ramp, down the wall to the dig and thence down Paddy End Shaft.

Ian Matheson.

March 20th. Email from John Brown. It is interesting to know where the water is coming from and you have obviously spent a great deal of time finding that out. Uncomfortable as it is to work underneath it, I think it is a major factor in keeping the false floor below us in the excellent condition that it is in at the present time. There was talk of diverting all of the water down Waterfall stope, but I think that we need to keep it running along the full length of the floor to keep it wet.

We reckon it will take us two more days to complete the project. I will let you know what our plans are.

March 26th. Surprise view.

Mark, Peter and I were back again on 26th March, this time to try to clarify the relationship between the huge chamber containing the Twin Tunnels and the main Paddy End Stope, which Mark believed to be one and the same. On the last visit we had left a rope on the Through Trip final pitch, so prusicking up this to the ramp was easy. On the

way up the ramp we replaced some of the bolts and tidied up the handline. We made our way to what Mark calls the Surprise View on Middle Level. looking across to the Twin tunnels. Peter returned to the top of the ramp whilst Mark and I abseiled down to investigate a gap behind a huge rock where one can get through to the top of some rubble to peer in to a stope beyond. From here we were able to communicate with Peter through the stope, and he was able to see the light from our big lamp at the far end of the Through Trip stope, thus proving Mark's theory.

Previously we had placed some bolts in the wall of Blue Rock Chamber in order to provide an alternative way down avoiding the awkward scramble through the broken ground at the end of Middle Level. Peter thought that they were in the wrong place and would provide an awkward landing, so on the way out I put them to the test. In fact the landing was OK, but about half way down I noticed an inaccessible level which I had not seen before. We had no knowledge that anyone had explored it, so using a convenient scaffold pole for aid and a rock bolt for protection I climbed up to see. It is blind, about 25 feet long, cut in solid rock following the wall of the vein. with some mineralisation in places. It lies parallel to the main stope, and the rock between the two must be very thin.

Returning to the job in hand we descended the ramp. From the end one usually abseils straight down to Grey Crag level, but the stope does continue beyond that pitch and is shifted to the west. From the results of the survey work so far Mark has concluded that this continues to become Launder Stope. We wanted to confirm this, so Mark penduled across from part way down the final pitch to a big ledge on the other side and crossed it to the foot of a packwall about 40 feet high, built where the stope changes direction. We had hoped to be able to climb it, but it was late in the day and it looked very steep, so we decided to leave it for another time.

Having determined that the material which blocked the through trip in 1996 had not in fact come from the crater on the surface, the question arises 'Where had it come from?' It didn't come down the ramp and there is no direct route from high above. There was some damage to a fixed cows tail at the top of the Through Trip and a few feet above it one can see where a flake of rock has slid out of the hanging wall, but there is not enough material to account for the blockage. Our best guess now is that this flake bounced off the end of the ramp and carried away with it some of the material forming the ledge on the other side. Peter remarked that it looked different from his recollections of it before the blockage.

Ian Matheson

There seem to have been at least 3 events in the Paddy End Stope, the run in from the surface above Top Level, the collapse which blocked Grev Crag Level, and the subsidence which exposed the entrance to Launder Level. They may be related, but there was also a major collapse in the stope off Pudding Stone Level within a month of our entering it, and there has been a serious fall beneath Launder Level. In the days before the 1996 collapse the Paddy End Through Trip had become something of a trade route for mine explorers and cavers. We are now much more aware of condition of the place. and should do our best make others aware of these dangers, which could be avoided by using the rather more difficult route down South Vein to Pudding Stone Level

The Mills of Newland Beck

The inaugural meeting of the Societies, including CATMHS, called together by Dr John Marshall to discuss the future of the Charcoal Iron Furnace at Newland, took place on 26th October 1989. Shortly after this a number of articles were written by Dr Marshall for local newspapers, to publicise the importance and condition of the remains. As well as these articles, one by local historian Jonathon Wignall gave details of the other industries of the valley. This article appeared in the Evening Mail on March 1st 1990, and is reproduced here by kind permission of the author.

John Helme.

The great charcoal barns still dominate the little hamlet of Newlands almost a century after their adjoining ironworks drew it's last breath. They must have dominated the minds of the ironmasters who controlled the Newland Company. The partners own mines at Lindal had unlimited supplies of iron ore, and the beck running down from the high moorlands could be relied upon to keep the great bellows wheel turning throughout the seasons... but where was the charcoal to come from? In the early days of the industry there had been as many as eight iron works bidding for coppice woodlands to provide the valuable fuel. Competition had been cut-throat, with insufficient timber available to feed all the furnaces simultaneously.

Amalgamations and closures resulted, but the surviving companies then had to operate additional ironworks on the heavily wooded coasts of Scotland and Wales. Two works which they established, at Bonawe in Scotland and at Furnace near Aberdovey, are now lovingly pereserved, and rightly so, as examples of those countries industrial roots.

By the 1860's Newland controlled the production of charcoal iron throughout Britain, from the Lorne Furnace at Bonawe and at three local works. That at Duddon bridge had lost the use of it's wharf there with the building of Foxfield Railway viaduct, and finally closed in 1867.

In its place a new blast furnace was built at Warsash. on distant Southampton water opposite the present Fawley oil terminal. The first cargo of ore for the new works sailed from Ulverston in the 'Mary Atkinson'. Captain Swainson, in 1866. A new schooner, 'Warsash' was built by Whites of Ulverston three years later one of a fleet owned by the Newland partners.

The New Forest provided charcoal, produced as the by-product of a chemical works alongside the ironworks. The new furnace was under the management of Ulverstonian James Dickinson, and ran until the closure of the chemical works put and end to the charcoal supply, around 1882. Mr Dickinson returned manage to Newlands until it's closure, after which he retires to 'Lorn Villa' at Warsash.

Even without the Duddon Furnace charcoal supplies at Newland and Backbarrow remained critical, as the furnaces had been enlarged in 1855, and it became practice to alternate production between the two to conserve supplies. Eventually, in 1874, Newland was rebuilt to accept coke, with a hot air blast for added economy. For the first time in many years both furnaces were able to work together, and Lorn Furnace closed, although 'Lorne Brand' pig iron continued to be made at Backbarrow for many years after that.

Charcoal continued to be the stock-intrade of Newland. The quantities passing through the great charcoal barns annually produced great clouds of un-useable 'slack' - broken fragments and dust liable to choke the furnace. At Leighton, near Arnside, and Cunsey, on Windermere the old furnace sites can still be pinpointed by vast amounts of this slack darkening the surrounding soil., At Duddon however, it was not discarded, but by 1840 was taken to a mill at Thwaites to be ground into blacking.

Blacking, it seems, was a fine charcoal dust used to line the moulds used for quality metal castings. Small charcoal also went into filters used for clarifying domestic water in the days before piped supplies. Some also was used in the manufacture of boot blacking, carried on around this time by James Wilson in the old cotton mill at Beckside, Kirkby. Certainly there was a wide demand for the slack, and it was soon exploited.

One of the joys of the Newland Valley was the range of ways in which the water was used. In a ghyll upstream of the furnace are the remains of a weir, little changed from 1918, when it burst after a memorable thunderstorm. The roofless walls adjoining can be identified as Newland Forge, used to beat out wrought iron until 1807. Ponderous trip hammers and a rolling mill beat out bars of strip iron, probably for local nail makers.

By 1849 the building was tenanted by William Jackson, Charcoal Blacking Merchant, and in 1862, when he retired at the age of 74, the iron company offered the blacking mill to let. It was taken by William Turner Swainson in April that year, and the old lease document still remains in the Swainson family.

The yearly rent for the mill was £50, with wheel, watercouses and gear, stables and 'bray house' – an odd name suggesting that the charcoal was brayed into dust by some form of mortar and pestle. The landlords undertook to maintain the property, except against fire, and to sell Swainson all the slack he needed from Newland, or from Duddon or Backbarrow if there was insufficient. The price was to be one shilling per cartload of specified capacity.

Grinding charcoal was risky business, and within six weeks of signing the lease ('damage by fire excepted') the Ulverston Mirror was reporting that spontaneous combustion had caused £10 of damage at the Swainson Bros. mill. In 1870 another fire consumed all the charcoal, and stopped work for several days. John Bolton records that Swainson was enthusiastic an geologist, and around 1875 he left Newland to take up a career as Captain at Berkune Mine, near Urswick. He died in 1897, aged 62.

His successor is unknown, but may have been James Whittam, of Newland Bottom, who was listed in the 1862 directory as ' blacking maker'. At any rate the mill continued in work until 1884, when 'the small building used for drying charcoal prior to grinding' burnt down. It was rebuilt in a determined manner and remains to this day. It's slate roof appears traditional enough, but it is supported entirely on steel rails and rods with no timber whatsoever. An iron floor allowed charcoal to be dried by a fire below – with care!

Further upstream is the hamlet of Newland Bottom. Wedged in the steep valley, the huddle of buildings still concealed a corn mill complete with all it's workings. Lacking the traditional appearance of a Lakeland mill, it was in fact built by William Burrow in 1772 for fulling cloth. At some time after 1820 the heavy fulling hammers were removed, and it became a corn mill, retaining it's water wheel in the centre of the building, and a maze of underground waterways which may have been used for cloth washing processes. A tall building adjoining, once used for spinning flax tow for sack cloth, was a cotton mill in 1805, later became a granary, and now serves as an architects studio.

The tail race of the Newland Bottom Mill once powered another mill, now a private house but retaining it's iron mill wheel. A blacking mill on this site was burned down in 1845, and again in 1851. The tenant, 70 year old John Parker, died shortly afterwards, and a creditors meeting was held in Richard Roper's office to 'consider the best means of securing and realising the assets'. A new tenant was found in the person of young Thomas Barrow, who's father was corn miller down at Newland. In 1853 Thomas Barrow & Co. were advertising Junior 'Charcoal Blacking for Foundries', but the following year Walker Wilson of Newland Bottom Corn Mill advertised the small mill 'used of late for grinding charcoal, but is suitable for any purpose where power is required'.

Thomas Barrow had married and moved to Newby Bridge Corn Mill, which he adapted for grinding charcoal from Backbarrow Ironworks. Years later Donaldson Peters recalled a bizarre incident there in 1857. The young Edward, Prince of Wales, had been touring the Lakes, and visited the mill. Reaching into a barrel of blacking he misjudged the fineness of the powder and plunged in up to the elbow. Peters never forgot the half crown he got for brushing the royal sleeves clean.

Barrow himself claimed to have accompanied the Prince on his tour of North America in 1860, and appears to have moved back to 'Alpine Vale' on his return. Wilson's small mill was then being used for the noise-some process of grinding animal bones to produce phosphate fertiliser, but was offered to let in April 1862 with 'the corn mill and former flax or cotton mill'. The corn mill passed to the Armer family, and by1866 Barrow was again making blacking at Newland.

His father in the meantime had retired from milling to his wife's estate at Stainton Hall. The railway reached Stainton's in 1869, and in the boom year of 1874 the younger Thomas offered a newly built foundry at Stainton for sale. Nothing more was heard of this venture, but in his old age he claimed to have spent a fortune searching for iron in all parts of the world. In 1878 a Barrow iron founder had to take him to court to get payment for a cast iron blacking pan, and the solicitors following year tried unsuccessfully for three months to serve him with a writ, as he dodged from one address to another. He had started another blacking factory in the late 1870's in the remote old bobbin mill at Woodland Grove, but had to mortgage the mill to Thomas Ashburner of Newbarns. It was sold in 1881, and subsequently converted into

cottages. Ashburner successfully brought an action against Thomas Barrow for removing some of the fixtures included in the sale.

A directory of 1882 lists 'Thomas Barrow & Sons, blacking, charcoal and pig iron manufacturers and iron ore merchants, Alpine Vale'. Thomas(111) born in 1857 was now a partner, and he started a blacking mill at Upperby, on the outskirts of Carlisle. In July 1882 it burned down. Thomas(111) was found guilty of arson and trying to defraud the insurers of £1500. He was sentenced to five years penal servitude at Carlisle Assizes. He made a brief re-appearance in 1887 when he advertised machinery erecting and fitting at Alpine Vale Foundry.

Thomas(11) sold his house at Newland in 1866, but continued to live there until his death in 1919. Another son, William James. was. in 1890. advertising charcoal blacking for builders, colour mixers, chemicals for filters and disinfecting. His address was Alpine Vale Mills, but he probably operated from the lower blacking mill. The upper mill was again engaged in grinding bones.

With the closure of the iron works in 1891 the charcoal industry seems to have faded away from Newland. The bone mill was offered for sale in 1897 as a going concern, and later was used for the production of patent firelighters. It's last corn was ground in the early 1960's, a far cry from monastic times, when the yearly rent was 7s 6d for 'Newlandmiln'.



A Map Showing Water Mill Sites At Newland

Newland Furnace – Survey Report

In 1997 a team from the Royal Commission on the Historical Monuments of England (now incorporated into English Heritage), under the leadership of Dr Ian Goodall. arrived at Newland to survey the remains and history of the furnace. This involved survev making detailed drawings of the buildings, furnace, barns, blacking mill etc., and compiling details of the history from the owners and known sources. The present members of the Trust were actively involved during the two weeks of the survey, and were able to assist with information and details from their own researches.

Following a meeting in 1999 of the owners and members of the Trust with Dr Gooodall to review the draft document, a final version is now, in 2001, published and made available tto the public. A copy, held by me can be made available to anyone interested. The full title and reference is 'Newland Furnace, an Architectural Survey Report', NBD index No 95778.

John Helme.

More about Graphite

After our recent visit to the Coniston Boot Polish Mine up Mealy Gill and its questionable graphite content I paid a visit to the small graphite working in Bannerdale in the Caldbeck Fells to see how it compared. Apart from the Seathwaite Wad Mine. to my knowledge Bannerdale is the only other place in the Lake District where graphite is known to have been mined. While the Coniston working seems to have passed into obscurity the one in Bannerdale is better documented, perhaps because of the lead mine there.

The Bannerdale Graphite Mine

Both the lead mine and the graphite mine in Bannerdale are described in

detail by Richard Hewer in British Mining No 25, 1984. He speaks of a graphite level that, according to the records, was driven some 25 ft along a quartz vein in 1868. The graphite deposit was known well before that date however and there is evidence that the level was worked before 1868. In the Transactions of the Cumberland Association. No 8. 1882-83. J.G. Goodchild quotes from a letter, written in 1856 by the well-known geologist Adam Sedgwick to his colleague Robert Harkness. Sedgwick was getting too old for field work and was advising the vounger geologist where best to continue his work. Amongst other things he writes:- "You should look at the new Black Lead works somewhere behind Saddleback. I do not remember the name of the locality though I saw it in 1823 along with Jonathan Otley". Sedgwick's letter was written two years after the first recorded extraction of lead ore in Bannerdale. Later geologists (ie Ward, Eastwood), apparently oblivious of the separate graphite working, looked for graphite in the lead mine and found no convincing evidence. Sedgwick's description "new Black Lead works" strongly suggests that he was referring to a different working from the lead mine and that graphite was already being worked there by 1856.

It's been many years since I last visited the Bannerdale site and I'd forgotten how elusive the graphite level is. Both mines are in the crags surrounding the head of the valley, the graphite working being some 200 metres south of the obvious lead mine at a height of about 510 metres OD. The short 9-metre level is wide and drilled. Outside is a built-up terrace and foundations of a small hut. The country rock is a black mudstone and being within the Skiddaw Granite aureole has been changed by thermal contact to a hornfels or "spotted slate" that is harder and more brittle than the unaltered Skiddaw Slates. About 400 metres to the south-east on the eastern shoulder of Bannerdale Crags and nearer the outer boundary of the aureole the altered rock exhibits light-coloured needles of chiastolite. Here the cleavage and bedding planes happen to coincide producing a rough but attractive slate that has been used locally for roofing.

Some 25 years ago Ziemba (see British Mining No 1, 1975) inspected the graphite working and found up to one inch nodules of graphite at the level entrance (though the majority were much smaller) and also graphite concentrated along the edges of the quartz vein. I took a sample from the edge of the quartz string several metres inbye and found it to consist of a layer of black carbonaceous material on quartz. Its surface has in places a bright sub-metallic lustre and when rubbed leaves a greasy black film on the fingers such as one gets when handling Borrowdale graphite. This is indisputably the graphite, but other carbonaceous material with the appearance of decomposed slate in a cleavage plane adjacent to the vein leaves no such deposit. Both types of material can be found on the short run of spoil below the level some pieces containing layers of weathered pyrite. The slaty material has a dull lustre that is probably due to mica (Richard Hewer concluded that the graphite is probably amorphous carbonaceous matter in a matrix containing more or less seracite mica). I couldn't find any obvious graphitic material amongst the spoil below the lead mine.

Comparison of the Coniston and Bannerdale graphite deposits

The geological environments of the two graphite deposits are surprisingly similar. The Coniston deposit (see Jeff Wilkinson's article in CAT Newsletter No 66, also the BGS Memoir on the Ambleside District, 2000) is in a predominantly fine-grained black mudstone with a fine silt in the lower part of the of the Windermere Supergroup. This sediment is graptolitic and is reported to be richly so in places. Likewise the Bannerdale deposit occurs in a fine-grained black silty-banded mudstone of the Skiddaw Slate series that also contains graptolites (Eastwood et al, Geology of the Country around Cockermouth and Caldbeck, 1968). The Coniston sediments are early Silurian and probably post date the Ordovician sediments at Bannerdale by some 40 million years, but both have been laid down in relatively deep marine sloping shelf environments under anaerobic conditions where oxygen was absent or near absent at the sediment surface, and both are pyritic. Furthermore both sediments are found to contain several percent of free carbon, about 3% on average at Coniston and about 5% in parts at Bannerdale where it is reported as graphite.

One difference is that the Coniston graphite deposit is adjacent to or within the zone of a thrust fault - the Stockdale thrust (see Jeff's article). There is no similar faulting in Bannerdale, but there are intrusive dykes in the area and also the lead vein 200 metres away, which itself follows a dyke over part of its length. Another difference is the fact that the sediments at Bannerdale have been thermally altered.

A sample taken from the wall of a fault at the Coniston mine resembles the graphite samples from Bannerdale, showing in parts a bright sub-metallic lustre and when rubbed leaving a greasy black film on the fingers. There was no visible spoil to examine there due to the thick layer of leaves. The two questions that arise are - is this true graphite, and if so how was it formed? To my mind the sample taken from the Coniston mine does show that graphite occurs there, though from what we saw it hardly seems possible that enough could have been mined to keep a blacking mill going. It was possibly ground down with other carbonaceous material there to make a poor quality blacking for local use. On the other hand, as well as grate polish the Bannerdale graphite is said to have been used for making pencils. The decline of the Seathwaite Mine in the mid 19th century would no doubt have provided an incentive. One possibility is that these were artificial "leads" made by subjecting graphite powder to high pressures in the so-called Brockendon process. This was a method patented in 1843 to produce "artificial plumbago for lead pencils purer than any that could then be obtained in consequence of the exhaustion of the mines in Cumberland" (see Petroski, The Pencil, 1989). The composite graphite so produced was purer than that made by the Conte process, developed in France when supplies of Borrowdale graphite to that country ceased during the Napoleonic Wars, in which powdered graphite was mixed with clay. In 1854 Brockendon's plant and machinery were sold at auction to a Keswick merchant.

As for the formation of the graphite deposits, that question is best left to the geologists. It is nevertheless well established that organic detritus in sedimentary rocks can be converted to thermal graphite by or regional metamorphosis (see Weis et al, The Epigenetic Origin of Graphite. Geochimica Vol 45, 1981). This would explain the fact that the 5% carbon in the Bannerdale country rock, mainly from graptolites, is in that form. But the concentration of graphite in faults also requires a transport process. Workable

vein deposits of graphite (ie epigenetic graphite), though not as common as stratified deposits, do occur throughout the world, the most important being in Sri Lanka (the Borrowdale deposit which is closely associated with an intrusive dyke is a different case). One accepted transport process appears to be the conversion of the carbon to carbon monoxide in the presence of superheated water vapour at 700 to 900 degreesC followed by its breakdown into carbon and carbon dioxide at somewhat lower temperatures in the presence of a catalyst such as pyrite or even quartz, in a vein for instance. These conditions could well have been met at some stage at Bannerdale where the temperature of the circulating hydrothermal fluids is expected to be high due to the close proximity of the Skiddaw Granite only about 1000 metres beneath.

Lower temperatures might be expected at the Coniston location where the underlying granite intrusion is several kilometres distant from the Silurian sediments. Furthermore recent re-dating of the Eskdale and Ennerdale intrusions to an earlier date of 450 Ma (Hughes et al, J Geol Soc London, 1996) implies that 20 million years might have passed before the early Silurian sediments were layed down.

When the BGS Memoir on the Keswick district is published it will be instructive to see what the geologists say about the graphite in Bannerdale. For instance why it apparently occurs only at the one place and not in the adjacent lead vein. It will also be interesting to find out their latest thinking on the origin of the Seathwaite deposit. As for the origin of the Coniston graphite, there seems to be considerable room for speculation.

Dave Bridge

<u>The Employment of Children at</u> <u>Coniston Copper Mine in 1842</u>.

The following is taken from an 1842 report on the employment of children and young persons in the mines and quarries in the north of Lancashire. We are grateful to the Coal Mining History Resource Centre, the publishers, Picks Publishing, and the editor, Ian Winstanley for permission to reproduce these extracts. Copies of the complete report can be obtained from Ulverston Heritage Centre.

<u>Childrens Employment Commission</u> <u>1842</u>

Report by Anthony Austin Esq. On the Employment of Children and Young Persons in the Copper Mine at Church Coniston.

I visited a copper mine belonging to the Coniston Mining Company. A considerable number of children and young persons are employed here. Their occupations are above ground and are principally washing and sorting stones which contain the ore. Their number is as under:

Children, males:

3 of 7 years old, 3 of 8 years old, 8 of 9 years old, 5 of 10 years old, and 8 of 11. Total 35.

Young persons:

10 of 13 years old, 8 of 14 years old, 12 of 15 years old, 3 of 16 years old, and 2 of 17 years old. Total 35.

Of these 70 children and young persons there are only 8, or 11% can write. Of these only one is under 13 years of age. The number who can read amounts to 63, or 90%. Those who attend Sunday Schools are 53, or nearly 76%. 81% attended public worship. The wages average 3s. 5d per week, the highest being 8s., the lowest 2s. Females:

1 of 6 years old, 1 of 7 years old, 2 of 9 years old, 4 of 10 years old, 3 of 11 years old, and 5 of 12 years old. Total 16. Of these not one can write, 15 can read and 14 attend Sunday Schools. 14 attend public worship. The wages average 3s. 7d per week, the highest being 4s. 6d, the lowest 2s. 6d. 231 adult males and 7 females are employed. (Total workforce in 1842 therefore was 324. IM.)

Hours of Work.

The hours of work are from 7 o'clock in the morning till six o'clock in the evening in summer, but as the work is almost in the open air, and a lighting of the place not very practicable, no work is done in winter before or after light. One hour is allowed at midday for dinner.

In the mines where adults are employed the work is carried on day and night, except on Sunday, on which day no work is done. The shifts are eight hours, three sets of hands being engaged. Thus each set labours eight hours of the twenty four.

Nature of employment.

When the ore is brought to the open air it is broken by some boys and girls with hammers. This work is done in a shed having a roof and walls on three sides, open to the air on the fourth side. It is then washed and broken while still wet by smaller boys and girls. In this shed the ground and the tables on which it is broken are always in a wet state. The children wear the Lancashire clog with a sole of wood, which is the best protection, and there is no necessity for getting their body clothes wet. They are obliged to handle the cold wet stone constantly with one hand, and this in wintertime must be painful employment. Then the ore is sorted. The next preparation for the children is what they call tubbing. This used to be done by hand by the children and was by far the worst part of the work. This tubbing is now in the more modern phraseology

called jigging, and is performed by machinery. The ore, when passed through a crushing mill, is placed in large sieves, formerly held in the hands of children, who stooped with them over a tub or small reservoir of water and agitated them 'till the ore separated from the stone. Now, immersed in a tub or reservoir, each sieve is agitated by machinery driven usually by waterpower. After a certain quantity of agitation the water is let off and the refuse is separated from the ore by the boy, who holds in his hands an iron scraper for that purpose. This is performed only at considerable intervals of time, and it is scarcely necessary, though perhaps not easily avoidable, to wet even their hands. This work is performed in a shed open in the front. Another employment is separating with shovels certain portions of finely pounded ore, which is brought down by a stream of water from the stamper. The ground of the shed is always damp, or even wet, but as the work is performed by shovels there is no need of getting wet in any other part than the feet, or soles of the clog if the clog be waterproof.

The children suffer considerably from the cold, though in severe frosty weather no work is done and they of course complain when they get home No persons are employed in drawing, as in some coal pits. Horses only do this work, the adits being made high enough by cutting away top and bottom to admit them.

State of the Place of Work

The mine is entered by level adits, which are from five to six feet high, and three feet wide. The one which I entered was rather wet from the drippings of the roof, below this there are other levels. One or two of the boys who are apprenticed to the mining business work underground.

The shaft of the mine which leads to the lowest level is descended by ladders or

steps, each ladder being not more than 24 feet long, and resting upon a platform or landing place sufficiently large to prevent the descent of anything which might fall beyond the foot of the ladder. This precaution is necessary because the men carry with them a considerable load of tools which are slung at their backs. Occasionally one of these slips and falls out. Those below would run great risk of being killed if this mode of construction were not adopted. The angle at which the ladder is placed is carefully attended to by Mr Barratt and is always that which is easiest of ascent or descent. The period of work underground called eight hours, but seldom exceeds seven.

Accidents

Accidents rarely happen. Every possible precaution is taken and there are strong coverings of timber over the ladders every ten or twenty fathoms. One man was killed within the last two years through his own negligence by falling into a shaft.

Treatment and care

Great attention is paid by Mr Barratt, a proprietor and superintending agent, to the welfare of these youths and no corporal punishments are inflicted. There is a sick fund, but this is confined to adults. Their physical condition is good. Their work is in the open air, with protection from storms and wind and rain, and every attention ids given to prevent all unnecessary exposure to inclemency of climate. I need therefore not dilate on this point.

I have the honour to be, Gentlemen, Your most obedient servant, ANTHONY AUSTIN.

Evidence to her Majesty's Commissioners

No 23. Mr John Barratt, May 10^{th.} He is a shareholder in the Copper mine and the resident manager. The number of children and young persons employed at the works is about 100. Of these very few (perhaps not one) under 18 years underground. employed are Their occupation above ground is washing, breaking, picking and sorting ore. The youngest is about 8 years of age. He has been obliged to reject some this summer on consideration of their being too young. Parents are anxious to get their children employed as soon as possible and there is not other employment for them. The parents are chiefly miners. He endeavours as much as possible to separate the boys from the girls while at work, and there is a person appointed to superintend the place whose moral character is attended to. He is not allowed to use corporal punishment and is desired to prevent the use of improper language. We subscribe to a day school, which is supported by the joint contributions of Mr Marshall, Lady le Fleming and the Mining Company. We require as far as possible the attendance of the children at school in the winter, when they are unemployed. The parents are beginning to see the value of education.

No 29. Rev Thomas Tolming, Incumbent of Coniston Church

The principal employment of children in this village is at the Copper mine. They do not work under ground. The employment above ground is very cold in the winter season. The mothers complain that their children suffer from this. He is not aware that it brings on any disease. Consumption is the most prevalent disease of the district.

There is an excellent Sunday School Some ladies of this parish superintend it so that children and young persons in the parish are not so much demoralised as they might otherwise be from assembling together in works where the moral conduct is not made the principal object of bringing them together.. Mr Barratt, the superintendent of the copper mine, is particular as to the character of those whom he employs, and a register is kept. Persons proved guilty of gross misconduct would be duly cautioned or dismissed. The mining company contribute to the daily school, and some of the children who work at the mines in summer attend the school in winter. It is the wish of the manager of the mines that they should do so. Several of the children go to the mines at an early age, having no previous instruction. In places where the poverty of the parents who have a young family has compelled them to apply to the relieving officer for relief he has made this one of his pleas for refusing it. 'You have children. Why do you not send them to work in the Mines?' This has been said in the case of children so young they ought not to have been sent to work, and in other cases the delicate health of the child rendered it dangerous to send it. Those who do send them are almost always in so poor a state that they are compelled to send their children for the sake of the assistance derived from the produce of their labour.

No 27. Ann High

She has 4 children working in the mine. The eldest, 15, a boy who wheels gets 8d a day. The second is Anthony, just turned 13, who picks and wheels for 7d a day. They have worked there for two years. The third is 10, and gets 5d a day. The youngest is 7 years old and has just gone. He gets 2s 9d a month. Her husband works in the mine. He has worked 9 days at the mine (surely years? ed.) He was a shoemaker before. They have 8 children and the rest are too young to work. They get no relief from the parish. They were obliged to apply in winter and got some clothes. The children could not work for a good bit in the bad weather. When the children work in the winter they complain a little but it does not give them They are not such bad chilblains. masters. They send them home to their parents and they beat them, they are forced to they could not get a living without the children's work

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 21st January 2002 at the BMSC Hut, Coniston.

Agenda.

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1	Apologies for absence	2	Minutes of the last meeting
3	Matters arising	4	Secretary's Report
5	Treasurer's Report	6	Membership Secretary's Report
7	Meets Secretary's Report	8	Hudgillburn Mine
9	Coniston Coppermines	10	Publications
11	Library	12	Date and venue of next committee meeting
13	Any other business		

Present	M. Simpson (MS),	S. Barker (SB),	I. Matheson (IM),
	P. Fleming (PF)	M. Scott(MSc)	A. Wilson (AW).

The meeting commenced at 7.30 p.m. - 6 members in total attended.

i Apologies for absence: J. Aird (JA), M. Mitchell (MM).

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 12th November had been previously circulated to members. It was PROPOSED by IM and SECONDED by PF that the minutes be signed by the chairman as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

- 3.1 Item 13.3 IM still required a bulb from C. Barrow.
- 3.2 Item 13.4 N. Wilkes had given the HGB survey kit to SB, it was now at Alston.
- 3.3 Item 10 PB books had paid their account.
- 3.4 Item 13 AGM The Charity Commission only have to be informed of a change in Trustee's once a year (when they send out a form).
- 3.5 Item 10 AGM it had been suggested we should take out insurance on the stocks of our unsold publications. It was decided that this would be difficult as the stocks were in different member's homes, and the numbers were constantly changing.
- 3.6 Item 4.5 MS had contacted J. Hodgson, the project is going ahead. The NPA have agreed to the use of help from outside groups. JH is forming an action plan and will inform us of progress.
- 3.7 Item 9 Leslie Aird had already transcribed some of the letters.

4 Secretary's Report

- The secretary had received:
- 4.1 SB had booked a stand at the NAMHO Conference, with a power point and would find out the whereabouts of the display boards.
- 4.2 SpeleoScene 49.
- 4.3 a) LDNPA wanted Nominations for a Local Access Forum-No response from members to enquires.
- 4.3 b) LDNP A draft copy of their 2002/3 Corporate Plan, need comments by 4th Feb.-action PF.

5 Treasurer's Report

- JA sent a balance sheet for the period 31st Oct. to 10th Jan, which included:
- a) The current a/c now stood at £1853.83 and the building society a/c stood at £6218.94
- b) The Archive insurance had been paid.
- c) The Annual Dinner had made a profit.
- d) £141.31 had been received from the IR for the 2000 gift aid.

Thanks were expressed by the committee to the Treasurer.

6 Membership Secretary's Report

IM reported that 90 members had renewed their subs, 10 had not. There had been one new member. The society's publicity leaflet needed updating, its content to be discussed at the next meeting.

7 Meets Secretary's Report

Jon Knowles was compiling the next meets list. Suggestions of venues for the Wednesday summer evening meets were made. SB to send to JK. MS had suggested a photographic and a survey meet, IM an easy descents meet at Coniston. Eagle Grag, Honister Quarry with Mark Weir, and Newlands Valley were also suggested.

8 Hudgillburn Mine

First meet for over 12 months, about 14 members attended. Unfortunatly there had been 2 collapses, one outside portal & one 3/4 way down the cut & cover, Some members went up into the Cavern, D. Borthwick collected radon detectors, all seemed OK in the mine. The rest worked outside clearing the falls. JB has been up and measured for some steel to hold back the fall while we replace the arching in the traditional manner. Thanks to Karen for the bacon butties.

9 Coniston Coppermines

PF reported there had been several meets at the Grey Crag Level dig, it is progressing well and has reached Waterfall Shaft. There are some big boulders and heavey timberwork to deal with in this section. MS, IM and PF had done the 'Through Trip' the first time since the collapse, the hand lines all need replacing. The area below Middle Level looked unstable and it was thought that when the work is finished some sort of warning notices should be posted.

During recent work an 80ft section of new ground has been uncovered, the level leads to workings on the Paddy End Old Vein and contains a wooden launder. PF and MSc had been looking at the Tongue Brow Elizabethan working (above the leat above Kernal Crag), the floor appears to have dropped - more exploration needed.

MS thought we should look at the entrance to Levers Water Mine, a meet to be arranged. MSc to enquire about a longer pipe for the pump. MS and IM will continue with the Grey Crag-survey when the dig is finished.

10 Publications

IM had received five articles for Journal No. 5 and an estimate from D. Sewart from Black Bear press - 1000 copies £1878, with a run on of 500 copies at £337. It was decided that a 1000 copies would be sufficient.

As most of the CAT subs are now used up on the production of the newsletter it will be necessary to charge members at cost price + P&P for the next Journal. It was suggested that we could put adverts in No. 5 to help with the printing costs - £25 for half a page and £50 for a full page. Cost of the NL was discussed, PF suggested he could get the pages with photgraphs photocopied with better results, but this would cost more. IM to investigate.

PF would take LMH into the Evening Mail and ask them to do a feature.

11 Library

IM was asked to put a feature in the NL highlighting a book from the library or a document from the archive, to encourage use. He suggested we should buy Ian Tyler's new book for the library, all agreed.

12 Date and venue of next Committee Meeting - 18th March 2002 at the BMSC Hut, Coniston.

13 Any other business

- 13.1 PF would make a provisional booking at the Yewdale Hotel for the 2002 AGM and Dinner.
- 13.2 It was noted that Florence Mine was now a SSSI.
- 13.3 IM was working voluntarily at the Armitt Library in Ambleside, they are putting on an exhibition (to celebrate The Year of the Mountain). Their theme will be Man's impact on the Heritage and Environment of the Fairfield, Langdale and Coniston areas. They would appreciate any help we could give them, including the loan of artifacts, photographs or documents. Please contact IM with ideas.

SB 23/01/02

Chairman

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Honorary President:	Lord Egremont			
Vice President:	Major J.W.B. H	Major J.W.B. Hext		
<u>Chairman:</u>	Mark Simpson, Moughton Cottage The Green, Austwick, N Yorks. Phone 01524 251426.			
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<u>Librarian / Archivist</u> :	Anton C P Thomas, 145 Abbey Road, Barrow in Furness, Cumbria LA14 5EZ. Phone 01229 823776.			
<u>Committee members</u> :	John Aird Peter Fleming Mark Scott	Sheila Barker Ian Matheson Mark Simpson	Dave Bridge Mike Mitchell Angela Wilson	
Honorary Members:	Sheila Barker, John Marshall,	Sheila Barker, Peter Fleming, John Marshall, Mike Mitchell.		
		CAT Newsletter	No 67, April 2002.	