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The Newsletter of the Cumbria Amenity Trust Mining History Society

Cleaning up in Tilberthwaite Ghyll. Photo Roger Ramsden.

No. 95 May 2009

Cumbria Amenity Trust Mining History Society
Newsletter No 95, May 2009.

Contents:

New Members. We are pleased to welcome:

John Dale
A scientist from Middlesbrough. He is an all round outdoor man and from a mining point of view is interested in underground meets, exploration and preservation of mines. He has been involved with Roger Ramsden and Tony Holland.

Philip Meredith
Phil was a member of the group pre CAT mine explorers which included Eric Holland, Peter Fleming, Alan Westall, Ronnie Calvin, Pete Blezard and Ann Danson. In the 1970's, amongst other things, they opened and explored the Glencoyne Level at Greenside mine. Although he didn't actually join CAT when the trust was formed in 1979, he should nevertheless be regarded as one of its founders. Phil went into partnership with Pete Blezard to form Broughton Minerals, but in his forties decided to pursue an academic career and went back to university. He is now Professor of Geology at UCL. In that capacity he has recently been involved with CATMHS in arranging for Geophysical surveying at Coniston Copper mines and at Silver Gill. He says that having been increasingly involved in surveying for lost adits he thinks he really ought to join.

David McGinnigle
David writes: I was delighted to discover the existence of your society via the internet. I've been scrambling about quarry spoil heaps and the occasional available mine throughout my life and have been increasingly keen to become involved in mine exploration. My experience is limited to some guided tours and a few forays of my own in mines in Matlock. Although in my mid forties I am generally fit. Travelling shouldn't be a problem, about two and a half hours from home to Alston arriving 6.00/7.00 am!

Helen Wilkinson
Helen is a well known mine explorer in Nenthead. She is interested in all aspects of mining history.

John Belton
John Belton, who lives at Bolton le Sands, is a retired slate quarry rock hand from the local Quarries. His father Harry formerly worked at Broughton Moor Quarry as a rock hammer man and blacksmith. The Beltons were connected through marriage to the Hellen family. They were originally miners in Cornwall and came to Coniston to mine copper in the mid 19th Century. John has in his possession an old handwritten book detailing work undertaken at the Coppermines and a collection of old photographs, which he has kindly made available to CAT. A list appeared in NL 93 and some of the photos were used for the cover feature of our February Newsletter.

News:
Braddyll Memorial Stone, Bardsea Pier
On page 8 of Journal No. 92 is a picture of Anton Thomas stood on the pier near Conishead Priory. Next to Anton are 2 blocks of limestone, one has the initials TRGB - Thomas Richard Gale Braddyll one time owner of Conishead Priory. A road runs from the Lindal and

Marton iron ore fields to the pier. It has been proposed that these 2 blocks be re-erected. A site meeting will take place to look into the possibility of this. The land belongs to SLDC and we will probably have to seek the usual permission etc. If permission is granted it will be good publicity for CATMHS.

The site meeting took place at the beginning of February and, apart from an objection by Peter Sandbach, it was generally agreed that such a project would be both desirable and feasible. (See letters to the editor on page 6.)

After tracing the department responsible for the pier, Environment and Planning, Parks Grounds and Open Spaces Department I spoke to an officer and explained what we wanted to do. I was told all would be ok as it was only a small alteration. I said I would send an email formally requesting permission etc and asked for a formal reply; no problem I was told.

Then I received an email, shortly followed by a phone call form Tom McCormick. Before I was given chance to speak he told me on no account was I to begin work reconstructing the pier. There followed a barrage of questions; i.e. how long was the pier going to be, did I realise the implications on spawning salmon etc. After he had calmed down I said that we were not building a Morecambe Bay Barrage, explained our aims and emailed him the original email. He apologised saying that he had received wrong information by internal phone.

A pleasant chat followed. He is new to the area, has done some pot holing and been down a few mines in the Peak District, is a keen fell walker, one of the reasons he moved to Kendal. While the conversation was taking place he was also looking at our website. He was impressed by what he saw and may buy Journal 6! He may be able to give us old copies of 1:5000 maps to the area with the original shoreline and structures. He has a site meeting with contactors and the Environment Agency soon to look at sea defences at Bardsea and we may meet up. So, we have the go ahead, in writing.

Mark Scott.

Below is copy of email from Tom McCormick of SLDC (sea defence officer) 22.4.09
I have been out to Bardsea to photograph the two piers and to look at the seawall collapse. We are hoping to carry out some remedial works to this section of seawall later this year, assuming we get the correct approvals.I was interested in the significance of the date on the stone? I am happy for it to be reset at whatever angle is deemed appropriate, as long as it is made secure so as not to be lost to the sea or thieves.

Keswick Mining Museum
Ian Tyler held his annual opening day on 8th March. Mike Mitchell, Clive Barrow and Ian Matheson attended. It is a very fine museum and I would recommend that anyone who has not visited it should do so. Ian has launched the Friends of Keswick mining Museum. Friends make a single payment of £20 which entitles them to visit the museum free of charge and to enjoy the benefits of a free guided walk once a year led by Ian Tyler. And to receive two newsletters per year. Apply to Keswick Mining Museum, Otley House, Otley road, Keswick CA12 5LE.

Force Crag Feasibility Study

On behalf of the Environment Agency, Entec UK Ltd are carrying out a feasibility study associated with the mine discharges from Force Crag Mine. They state that, since the closure of the mine, rainfall percolates through the mine and mining waste resulting in poor water quality in Coledale Beck just downstream of the site which fails the Environmental Quality Standard for zinc and cadmium at its assessment point in Braithwaite.

Entec Ltd have established small structures to monitor water quality in the beck and issuing from Level 0 and Level 1 portals. They describe two treatment options, one on an active system on an industrial scale involving silos, chemicals and machinery, the other a passive system requiring shallow lagoons containing organic material. The latter system is in it's infancy as technology and there is a strong benefit to trialing such a system at pilot scale before investing on a full scale system. They suggest that a temporary pilot system consisting of one or two tanks 1.5 meters high and occupying an area of 15-20 square meters could be sited on the hard standing below the mill buildings. They suggest that a full scale system might be located at the old settling pond with discharges fron Levels 0 and 1 being directed there via buried pipes.

As part of this project the Environmental Agency is working closely with the site owner, the National Trust. However they are interested in getting the participation of all stakeholders that have an interest in the foece Crag site and the Coledale Valley. They have included CATMHS and MoLES as stakeholders and ask to be informed of any other people or organizations that may have an interest. The deadline for reply is 22nd February so the matter will have been dealt with by the time you read this. IM.

Carrock Mine.

A site meeting had been held at the mine attended by Eleanor Kingston Graham Standring, the LDNPA Ranger and John Brown of CATMHS, but the new Dalemain Agent, Mr Craig Brough did not turn up. The object of the meeting was to talk through the proposed restoration work with the agent and try to allay any fears that the Estate may have about the proposal. In a subsequent telephone discussion it became apparent that Mr. McCosh had been under the impression that CATMHS/MOLES would need a proper access agreement to enter the mine, but Eleanor has persuaded the agent that, because this was conservation work and not exploration, an access agreement would not be necessary.

However, the time was not completely wasted and the proposed restoration work was discussed in detail. Damage to safety fencing on some of the open stopes was examined John VBriown suggested that remedial work could be carried out to these at the same time as the restoration work, if it were to go ahead. Some of the digging team had viewed the area and discussed all of this the previous Sunday. Whilst CATMHS were happy to carry out this work and any subsequent maintenance that would be required to be done, it would be on a purely voluntary basis and a decision had been made at committee level to say we were not willing to enter into any written agreements with the Estate. Once the work was completed it would receive the same level of monitoring and care received by other sites that have been restored by CATMHS.

Newland Furnace

The Newland hamlet is rapidly changing from industrial dereliction to des res. Work has nearly finished to convert the old deserted corn mill to an up-market dwelling, and substantial landscaping of the surrounding land is taking place. The ore stores have been demolished and new dwellings on the site are nearing completion. The garage adjacent to the Furnace stack is being re-roofed and converted into a meeting centre.

New dwellings on the site of the iron ore store, 3.3.09

The garage adjacent to the furnace stack, 3.3.09

The garage has been cleared out to reveal the top of an arch through the base of the west wall of the stack. The existing concrete floor is to be removed and then replaced after consolidation of the substrate. A block wall is to be built which will forever hide the furnace wall and arch although it may be possible in the future to reveal the arch from the inside of the furnace.

West wall of the furnace stack from inside the garage

Measuring up for the new gate

At the furnace itself a site visit with the blacksmith took place to measure up and decide the best arrangement for a new security gate, for which a grant has been obtained. There was a setback regarding funding for the new furnace roof when due to administrative problems English Heritage deferred the grant application. This has now been rectified and EH have offered a grant of 100% of the application. Work must be started before October 2009 and completed by March 2010.

IM.

Letters to the Editor

1: Dear Sir,

It has recently been suggested that CATMHS might re-erect the stone at Bardsea bearing Colonel Bradyll's initials. I believe that would be unnecessary and wrong headed. It is unnecessary because the stone is in no danger where it is, and the information on it can easily be read in its present position.

Thomas Richmond-Gale Bradyll was born in 1776 and inherited the Conishead estate in 1818. In 1821 he was appointed High Sheriff of Lancashire and began the demolition of the Elizabethan manor house in order to build the present "priory". This was completed in 1836 at a cost of £149,000.

Colonel Braddyll had many mining interests over the years; besides Sea Wood, he leased Haygill and Silvergyll copper mines from 1823 until 1836, but his largest venture was the South Hetton Coal Co. The South Hetton shaft on Colonel Braddyl's Co. Durham estate was started in 1831 and working in 1833. The Company built its own railway to Seaham Harbour. In 1838 the company began sinking Murton pit. There were to be two shafts, fourteen feet diameter sunk through 456 Ft of limestone and 60Ft of quicksand. The quicksand almost defeated them; a third shaft, sixteen feet diameter had to be sunk and more pumps brought in. To sink the next ten fathoms took three pumping engines and 6 winding engines adapted to pump. They drove 27 columns of pumps. The engines consumed the steam from 39 boilers and at one stage were raising 10,000 gallons per minute. The seam was reached in April 1843, but at a cost of £300,000 or £400.000. The company was bankrupt in 1846 and it's proprietor in 1847. The Priory and its contents were sold in 1850. TRG Braddyl died in 1862.

In spite of founding what would become a highly successful coal and railway company (Murton pit closed in 1991), Colonel Braddyll died penniless. That is why the impact of the datestone is stronger as it lies than if it were set upright again.

PS. A locomotive built in 1837 for the Braddyll railway, later named "Braddyll" survives in Sheldon Railway museum.

Peter Sandbach.

References

http://www.mininginstitute.org.uk/papers/Boyle.html
P B Shelley, Ozymandias

2: Richard Hewer.
We have applied for an extension to stay in New Zealand which I think will be for one year. Eileen would like to retire in one years time and then we have to sell the car, apartment contents and close down all our accounts here, though to be honest we may leave some money in the bank, at 5.5% to 6% interest, it's better than at home. It's great being here but we knew all along that we could not become residents (over 55 years old). The immigration is very strict. We have had to go through the whole application procedure again even though Eileen has a permanent job and supports me. They show no mercy, so we are doing all we can whilst we can. When we do leave we will not be allowed back for at least one year - still, there's Australia, that's got a few mines, could be worth a try. I have a few 'tit-bits' of information with regard to the Newsletter No 94:

Wanlockhead.
Many years ago when I was an active member of 'the other' society, we held a meet at Wanlockhead with the objective of visiting the hydraulic engines, unfortunately heavy rain flooded the area and we were unable to proceed with the project so it was decided to start digging out two 'allegedly' 17th century levels. The first was at Straitsteps Mine just above the beam engines and paved area, and on the hill side. A dozen of us took turns digging down in an area where an old adit was supposed to be sited. After removing a large chunk of ground we landed on top of a series of collapsed sets. Whilst grovelling around (which I'm very good at, being a groveller most of my life) my hands came upon a very nice sample of cubic galena, about six inches in diameter just lying ontop of the header of the innermost set. The local team decided it was time to bring in a JCB and we left (after all it was tea time). The next day we joined the local team who were endeavering to locate another level sited at the back of the local rubbish tip. We furiously dug through the tip, which was an adventure in itself, for we were turning up Victorian medicine bottles, ink wells, brandy and whisky (whiskey) bottles, as well as some nice pottery too. The local team erected some sets and started forepoling (the photo in the journal) not the best example because the poles were dipping down slightly rather than having an elevated position. Suddenly we were nearly overwhelmed by a rush of water bursting out from the rubbish. We had reached the level floor and were nearing the entrance to the level. The flow was so great it was decided to leave it draining and continue the next day, of course, that was the day we returned home. I often wondered the outcome of those two levels, were they opened up and entered. Perhaps someone could tell me?

Bannerdale Lead Mine.
With regard to the second level, yes there is a lead vein running along the roof, much oxidised. I cut a chunk of vein material that contained a three quarter inch rib of galena, possibly near the copper mineralisation mentioned in the article. I have the sample at home, somewhere! Mind you that was in 1984, it could have been paper thin, you know how things become exaggerated over time!

You never know what you may pick up in these places. Whilst exploring around Brandlehow in my early youth, I ventured into Whitwell's level. After passing the covered, filled shaft I found a thin lead vein running along the roof of the level. I produced a little chisel and picked up a cricket ball sized spherical boulder from the floor of the level, only to find that it was a solid piece of galena, oxidised white and cream around the surface. I obviously abandoned the string in the roof!

Richard Hewer.

Wiltshire Stone Mines trip, 4/5th July
The trip on Saturday is planned to be Box Mine itself. The trip should be fairly easy, apart from the complexities of navigation. There are many artefacts, so bring a camera. The choice of entrance has yet to be made.

The Sunday trip is likely to be one or more of Swan, Ridge or Browns Folly mines in the same area. The Meet Leader has booked himself and his wife into The Quarrymans Arms in Box village for the Friday and Saturday nights. There are both less and more salubrious hostelries available depending on ones penuriousness. Chris Cowdery.

Brownley Hill Mine Meet, 1st February 2009.
History: Although Alderman Ridley probably operated the mine prior to 1735, this was the first recorded date of the lease being offered by the Commissioners of the Greenwich Hospital. Although the lease was not taken at that time, Thomas Westgarth operated the mine from 1748, with the London Lead Company acquiring the lease in 1751 which it relinquished before its term had expired in 1765; a consequence of poor returns for a substantial investment. Brownley Hill mine then became one of the few major independent workings on Alston Moor, commencing with the operations of William Armstrong and William Hutchinson who leased the mine from 1765 until 1795. They produced a large quantity of ore although this was in fact sold to the London Lead Company for smelting.

The Brownley Hill Company which acquired the lease in 1795 benefited from the high price of lead (£36/ton) during the Napoleonic Wars. Although the company prospered, by 1816 they had given up as the quantity of ore raised did not cover development costs with many of the rich ore bodies having been worked out. Much of the ore produced during the remainder of the century was by reworking old ground.

Jacob Walton, Thomas Shaw and Partners, who subsequently took the mine, decided to lease liberal "bargains" to teams of miners for periods of up to a year at relatively generous rates, rather than the traditional period of a month. Through this enlightened policy, production of a large amount of ore from the old workings was made economic and allowed Brownley Hill mine to became one of the more productive mines on Alston Moor for most of the period it was worked by Jacob and later John Walton. Annual returns of a few hundred tons of lead ore increased to more than a thousand tons by mid 1850's.

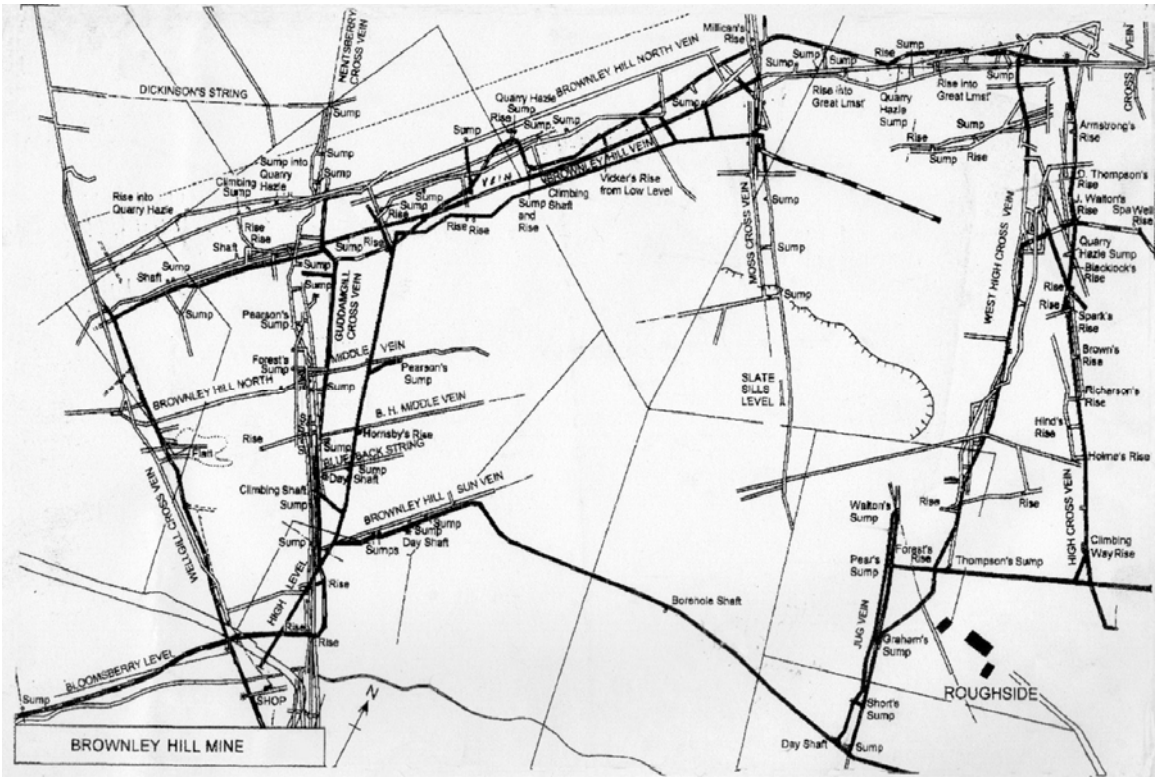
The Brownley Hill High Level was driven by the London Lead Co. but it was subsequently replaced as the primary access by the Bloomsberry Horse Level. The exact time that this level was driven is unclear but it appears to have been during or prior to the tenure of Walton and Shaw. This important level eventually drained the whole of the mine and afforded easy access to the veins.

The Brownley Hill Mining Company took the lease in 1874, but the lead ore had practically been worked out and an increasing reliance was placed on zinc production. The Nenthead and Tynedale Lead and Zinc Company, the next lessee, produced both lead

and zinc between 1890 and 1894, but not profitably; the decline which had begun in the 1870's following the collapse in world lead prices was by now irreversible. The final period of working was undertaken by the Vieille Montagne Zinc Company of Belgium, a company that reworked many of the mines on Alston Moor for zinc in the first part of the 20th century. In 1936 a final six month trial was made, but the ore body was found to be uneconomic.

Mine Description

Brownley Hill mine is a large and complex part of the Nenthead network with connections to Nentsberry Haggs, Rampgill & Gudhamgill mines. Some of its levels were utilised as haulage ways for ore from these adjoining mines. The workings are accessed from the Bloomsberry Horse Level, located on the bank of the River Nent at NY7762 4465, (repaired with the assistance of CATMHS in May 1996) which crosscuts to the Wellgill Cross Vein. The mine's labyrinthine workings radiate from this point, extending several kilometers into the hill. Many of the haulage levels were driven in the shale beds underlying the Great Limestone and are now in a collapsed or unstable condition. Nevertheless most of the mine is still accessible, the major exception being the workings on the Moss Cross Vein. In common with many of the other Nenthead mines, it contains some superbly constructed stone arched passages and a section on Tatters String is probably the finest example in the whole region.



The Brownley Hill High Level portal lies at NY778 4993 but is currently blocked, however access is possible from a rise on BH North Middle Vein via the Bloomsberry Level. The BH High Level is in a rather poor condition, having been driven in the shale

above the Great Limestone, although it is open along the length of most of its three branches and allows access to Tatters String and the inner reaches of the mine including workings on the south section of the Jug Vein. Here a sump leads back down to the BH Horse Level horizon and at this point also the Roughside shaft enters the BH High Level from the surface. (This shaft was apparently driven simultaneously down from surface and up from the level but surveying errors resulted in a 'dogleg').

Lessees of Brownley Hill Mine:
Pre 1735 – Alderman Ridley
1748 – 1765 London Lead Co.
1765 – 1795 William Armstrong & William Hutchinson
1795 – 1816 Brownley Hill Co. (Monkhouse, Hopper & others)
1816 – 1886 Brownley Hill Co. (Jacob Walton & Thomas Shaw)
1886 – 1890 Nenthead & Tynedale Lead & Zinc Co.
1930s - Vielle Montagne Zinc Co.

CATMHS Visit 1st Feb 2009
Attendees : Mr Cowdray, Mr Ramsden, Mr Knowles, Mr Ashby, Mr Hebson, Mr Willie (guest) and Mr Holland (ML).

Having assembled 09:30 at the Nenthead Mines car park, we proceeded along to the parking area at Wellgill from where, after a short 5min walk, we arrived at the portal. The weather was cold, the skies overcast and the forecast was for snow. It was good to get

underground at Nenthead again and soon we were making our way along the Bloomsberry Level, then left (north west) along the *Wellgill x-vein*. On our right we passed numerous flat workings, the result of zinc extraction during the final period of working. On reaching the *Brownley Hill North Middle vein,* a climb up a packwall followed by a traverse of a large cavity in the floor brought us to the *Gudhamgill Burn x-vein.* In this area, common to this mine, but unusual for Nenthead, can be seen one of the many examples of arching formed using deads rather than quarried stone from Flinty Fell Quarry. (Possibly this could be a consequence of the very limited development done here by the London Lead Co.). After crossing a railed sump, a complex route brought us to where a rise provides access the *Brownley Hill High Level*. After kitting up, we then discovered that there was no rope hanging down the rise! We could see a coil of rope sticking out over the lip of the top of the rise and the only conclusion we could draw, was that the previous party to pass this way had for reasons best known to themselves, pulled the rope up after climbing the rise. After admonishment from the team for not checking the previous day that the rope was still there, I though it best to hurriedly devise a 'Plan B'. The obvious course of action was to reverse the route and if, when we got to the top of the rise, we found the rope or belay unsafe to use, there was the backup option of descending back to the Horse Level horizon via *Tatters String*. And so we retraced our steps back onto the *Wellgill x-vein* and travelled further in-bye to its junction with the *Brownley Hill vein.* Turning north east along this vein, we made our way along the arched level, passing numerous hoppers, indicative of the impressive workings above. We passed the junction with the *Gudhamgill Burn x-vein* and from there the condition of the level deteriorated. Having been driven in the shale, many collapses and backed up water make progress arduous and slow. Only short sections of arching remain, providing a respite from the crawling and stooping.

Eventually, we reached a junction with what I think must be the northern section of the *Jug vein* and taking this we headed south through badly collapsed and unstable ground to a hopper, above which a roped rise gives access to the workings in the Great Limestone, above. We emerged from the short arched (once again constructed from deads) passage at the top of the rise, to an area that contrasted markedly with what we had experienced up to that point: a huge stope, maybe 15 to 20 meters high, though only a few meters wide. This is a remote and infrequently visited area of Brownley Hill mine, but also an interesting one and all agreed it was very impressive. Clearly a large amount of material had been removed from here. Another arched passage at the eastern extremity of the stope led to a complex area of parallel stope workings, all


The North Jug Vein Stope

in contrast to the more commonly encountered ‘flat workings’ of the Nenthead area. Artefacts encountered here included tallow candles, water flask, and wheelbarrow but predominantly boots & clogs of which numerous examples and styles were seen.

After a break for lunch we descended back to the Horse Level, then continued a short distance in-bye to the junction with the *Brownley Hill High Cross vein* which we then followed in a southerly direction. The terrain was again difficult and tiring and after what seemed a long time crawling & stooping, we arrived at an important 4-way junction. This lies below some sizable workings, again in the Great Limestone. Numerous routes are possible up into these workings, but the meet leader, despite carefully inspecting every rise, failed to locate the correct one, only realising some 100 meters or so along the level. Sensing that a backtrack to search for the correct rise would probably not be a popular choice, all agreed that in view of the passing time, difficult terrain and the possibility of being snowed in, we should give that area of the mine a miss on this occasion, and employing ‘Plan C’ we continued on, leaving the exploration of those particular workings until another time.

A short distance further we reached a rise up which we all climbed with the aid of a length of builder’s rope. We proceeded along a fine level (below stoping above) passing some old explosives in a side pocket, until we encountered the rope coming down from the *Brownley Hill High Level*. The passage we were in continues to an innocuous forehead in bad air. After we had all safely climbed up onto the high level, we had passed the half way point and were heading back towards the portal. The high level itself was driven in the shale by the London Lead Co. to de-water the very early workings above. The level is open, though in extremely poor condition and involves quite a physical effort to traverse. Numerous shafts descend from the surface onto the *Brownley Hill High Level* and various sumps descend. A right turn, very near the blocked portal eventually brought us to the top of the rise that was our original route up to the *Brownley Hill High Level*. Sure enough, someone had simply pulled up the rope (maybe tackle hauling) and neglected to lower it back down. ‘Plan D’ a descent via *Tatters String* was thus not required. With the whole party safely down and spirits upbeat, the end of shale passages was celebrated with a second lunch break and a team photo.

Having made better progress than anticipated, we arrived back down onto the *Welgill x-vein* (for the second time that day) with time to spare, and so we were able to put ‘Plan E’ into effect. We made our way in-bye to the connection with the *Nentsberry Haggs* mine. After a short scramble, a rise can be climbed up to the very fine Brownley Hill engine room. This is well worth a visit, but sadly, we discovered that some of the rails spanning the rise and used as climbing aids had been removed. Although Mr Hebson climbed up, the rest of the party declined, agreeing that a rope should be installed at some point in the future. From here we made our way out into the cold, late afternoon to discover that fortunately we had not been snowed in.

I would like to thank all who participated in this meet, especially those who travelled a considerable distance to attend.

Tony Holland

Bannerdale Meet, 20th January

We left the parking area in light rain to head off up the track to the mines site. A little way up the track the weather took a turn for the worse & developed an intense dislike of us. Further on the wind & rain was so strong that some members were forced to return as they just could not see where they were going and one member was unwell. The remainder Don, Mark, Roger, Tony & Mike carried on (probably not having bathed for a week decided to take advantage of the situation)

At the head of the valley under the crags we took shelter in a roofless & almost wall less old Mine Shop with a huge fireplace. There was some debate as to who should light the fire but this was not resolved. It should be mentioned here that the intrepid Mark carried the CAT GPS equipment (& used it) all the way to the mine site.

There was a spoil tip just above the shop which had a jolly beck to the left, this was scaled and a level found just above the tip. Tony and Roger (who were not convinced that they were wet enough) entered it through a waterfall & found it to be a blind drive some 50 or so metres long. On their return they ascended to another level approx. 20 meters higher to the right. This level turned out to be partially stoped and 60 or so meters in length but nothing of great interest.

After a wet sandwich and a dry martini (I wish) we set off back with the wind & rain behind us, so we were able to get thoroughly wet through (we don't believe in doing things by half) and in due time reached the pub where Pete was happily wrapped round a pint of the best! After being forced to join him we discussed the day whilst draining off all over the furniture & floor, and left before the fire brigade arrived to Pump Out!

Mike Mitchell

Braddyll Pier, Friday 30th January

Mark Scott, Ian Matheson, Mike Mitchell, Peter Fleming, Tony Holland Wendy Brown, Pete Blezard, Peter Sandbach. Dave Bridge arrived a few minutes late via an agricultural route having gone to the wrong car park.

This visit had been arranged for Friday afternoon at fairly short notice to determine the feasibility of re-erecting the memorial stone to Colonel Braddyll. The stone lies on its side on the remains of a short pier that is thought to have been erected as a boundary marker rather than a loading platform. It appears that the stone plinth has cracked with age and a large corner has broken off and fallen away. It is likely that vandals subsequently pushed it over and possible that the broken piece of plinth is still lying on the foreshore. It was agreed that it wouldn't be too difficult to repair; the broken piece would either have to be replaced or found by searching at low tide. Mark Scott undertook to apply for permission from the Council to do so. Peter Sandbach was of the opinion that it would be more appropriate to leave it as it is (see his letter on page 6) but said that if he was overruled he would probably help.

Having completed our business with Colonel Braddyll's memorial we then paid a visit to his mine. Sea View mine is a short distance away, and the adit, which is wet and run in,

leads under the coast road to some workings which include two rises to the surface in Sea Wood, also run in. As there was still time and improving weather we then walked to the summit of Birkrigg Common, visiting the Quaker burial site on the way back.

Ian Matheson

Coniston meet, 22nd February 2009
Deep Level – Hospital, Grey Crag Level

This easy walk-in meet was to encourage members or prospective members who do not usually venture underground to do so.

Eight members and four guests were delivered a Health & Safety preamble and a 'Frisk Assessment' before being kitted-up, where required, with harnesses, or load bearing belts and cows' tails, helmets and lamps. Their ages ranged from 17 to 78.

We headed off into Deep Level where several features and some of its history were discussed. Seven of the group went as far as the LMQT dig at the end of the old crosscut from J.W. Shaw's 1954 level. We then all returned out to day.

A walk up to Red Dell was taken at an easy pace with stops to look at several features relating to the Elizabethan period. We entered the gated access level to see the winding wheel and balance bob platform at the top of the Old Engine Shaft.

A lunch break was taken near the old waterwheel pit in pleasant sunshine and blue skies (which is now expected on any meets I lead!). Next we looked at the New Engine Shaft stopes and wheel pit, the site of the Red Dell stamp mill and Flemings Level, where some of the history of this interesting area was explained. One of the leats was followed around the fell-side to Paddy End where we entered Hospital Level. Care was taken to ensure everyone clipped themselves onto the stainless steel safety wire whilst crossing the open shafts. The "Great Open" was illuminated with powerful spot lamps to enable us to see the roof some 150 ft above. Everyone went the full length of Grey Crag Level to the end of the drive, deep beneath Levers Water. We made our way back to surface, but before returning to the cottage a quick visit was made into Courtenay's Cross Cut to look at the South Shaft.

From the point of view of the objects of this meet, I would consider it to have been successful. Several attendees had never been into Coniston Mines before and gave the impression it had been a worthwhile experience.

Members attending were Sheila Barker, Maureen Fleming, Philippa Tindal, Derrick Cutmore, Peter Fleming (Leader), Tony Holland, Mike Mitchell, John Wood, plus four guests.

Peter Fleming

Helvellyn (Wythburn) Mine

Saturday 14th March 2009

John Aird (ML), Chris Cowdery, Tony Holland (Rigger), Roger Ramsden (Guru), Mark Waite

The ML had wanted to visit this mine ever since seeing (at the Catmhs 21st Celebrations) Peter Fleming's photo of a sledge team fighting their way up hill in deep snow transporting the drums to protect the entrance. Having enlisted the help of Roger Ramsden all appeared to be straightforward, Roger eager to demonstrate that Tony Holland had not seen everything there was to see underground in Cumbria, recruited the latter to visit the site and do the rigging. Roger then took the Meet Leader for a quick look round on the day after the Annual Dinner, on the basis that some knowledge was better than none!

For March, the weather for the Meet was good and the party left the car park on time! (Eat your heart out UU). An hour and twenty minutes later the dustbin lid was being removed at No 1 level, prior to the climb up to Arnison's. This must be the toughest approach to any mine site in the Lake District if not the North of England.

Underground at Arnison's a decision to go straight down the two pitches to No 2 level and then work back up was taken. The orepass from Arnison's initially gives a free hang followed by a long damp inclined slope, not too unpleasant down to No 1. Again the initial descent off a stemple down into a narrowing water course is no problem, just a couple of deviations to pass but then one descends directly into the waterfall issuing from the watercourse! Hurrying on down, not far from the base of the pitch is a sub level containing the wheel barrow, last used in 1879 and still water tight.

The party gathered for photography apart from Roger, who had opted to remain on Arnison's and fossick about.

When the time came to continue down the ML suddenly remembered that Roger had mentioned that the rope was not quite long enough and so another length had been knotted on to extend to the bottom. Now crossing knots is an acquired technique and it seemed a good idea to invite the rigger to demonstrate especially since the knot lay exactly in the centre of the water flow. The vicarious pleasure the ML took in watching Tony take a couple of attempts before he managed the manoeuvre was in no way diminished by the ML's own battle with the knot. (Chris Cowdery's success in persuading Mark to attach one Stop above the knot and the second below it must rank as one of the most successful pieces of SRT sabotage in the history of underground exploration).

Once down on No 2 level, the entire horizon was explored and much effort was expended looking for the "Nixon" signature. The inbye ends of the levels were found to be collapsed short of the position shown on the plans, the remains of zinc ventilating ducting indicating how far from day the workings were.

Returning to the base of the orepass it suddenly became clear that the ML was the only one who had brought lunch with him, so an orderly return up the ropes commenced. Once back on No 1 level (where "Thomas Nixon's" signature was found, sadly no longer quite as clear as it used to be),

Tony and the ML derigged the lower pitch and Tony exited the level via the drums to walk back up to Arnison's. Now came the ML's moment of glory, having climbed back up to Arnison's derigging on the way, he found it quite impossible to exit the top of the pitch. After a great deal of incompetent thrashing around while being offered much helpful advice it was pointed out that using the natural footsteps would solve the problem and they did. (Regrettably all this was captured on video by Roger).

The stopes on Arnison's level were explored; they lie on the east –west cross course and while not of great length are of considerable height. There are good exposures of galena in the vein and impressive calcite build ups running vertically down the walls, along with a small number of artefacts including an oil can.

Collecting the gear the party headed outbye passing the iconic tub, photos

of which instantly identify the mine. On examination it becomes clear that even dismantled the task of transporting the component parts the 348 feet vertically from the top of the incline at No 2 level up to Arnison's would have been a superhuman task.

A final visit to the jack roll sump rounded off the underground tour, leaving the party to close up the entrances and descend to Wythburn Church in a bitterly cold wind.

Many thanks to Roger and Tony for all the hard work, it was well worth while!

Thanks to Mark Waite for the photograph of the ventilation ducting.

References: -

"Wythburn Mine and the Lead Miners of Helvellyn", *Alen McFadzean.*
"Thirlmere Mines and the Drowning of the Valley", *Ian Tyler.*

Tilberthwaite meet, 15th March 2009

As this was planned to be the second day of CATMHS Lake District weekend, I wondered what kind of physical condition the participants would be in after the strenuous efforts on the previous day, visiting Wythburn Mine on Helvellyn. I need not have worried. Mr Cowdery set off up the track out of the car park at such pace that I found myself with Roger at the rear, desperately trying to keep in contact with the group and wondering what Chris had eaten for breakfast. Clearly everyone had forgone the pleasures of the bar the previous evening and had retired to gentle slumber in preparation for the followings days adventure.

The 20min trek that normally takes half an hour brought us finally to the portal, situated quite picturesquely next to the waterfall at the head of Tilberthwaite Gill. We kitted up and headed along the level, negotiating several crawls and a squeeze before sliding down into the belly deep water. After a couple of hundred meters we crawled out of the water and stooped our way along the low passage to the head of the first pitch. This takes a fair quantity of water during wet periods and as we stood looking down at the water cascading over the edge, there were one or two dark mutterings referencing the meet leader's assurances of a day of dry ropework, following the previous days torrential SRT pitches.

From the base of the first pitch, we traversed out over the false floor to where a hole in the floor timbers reveals the second pitch. We all descended this safely, and continued on down the various pitches following the course of the old ladder way and the remarkable timber ore chute to eventually arrive on the Tilberthwaite Horse Level, very near to its forehead. It was a major disappointment however, to see the water in the level had backed up almost to the foot of the shaft which meant the level would be sumped a long way before the slate workings we had hoped to reach. (This had been possible on a previous visit, the water having receded a good few hundred metres back down the level on that occasion). Nevertheless, Mr Waite & Mr Cowdery decided to try their luck and waded off into the deepening water, voices trailing into the distance, lights fading into the blackness.

They were soon back though. After only a short distance, the water had met the level roof.

We then began our ascent, de-rigging as we progressed until finally, we arrived back at the portal. The cleaning facilities at this working are first rate, but Mr Waite, not content with a whole river in which to clean off, waded purposefully through the water and stood beneath the waterfall, very reminiscent of those TV ads for 'Old Spice' back in the 1970s.

Attendees: Mr Aird, Mr Ramsden, Mr Cowdery, Mr Waite & Mr Holland.

Thanks to Roger Ramsden for the photos

Bottoming Brow Stope

Roger and I arrived at Coppermines Valley on a cold blustery January morning to commence another exploration project on our 'Coniston Copper To Do List'. The first task of the day was to retrieve the 100mtr rope from the site of our previous exploration in the deep stope behind Simons Nick. From there we walked past the crater and on to the fenced off open cleft a short distance further. Although Roger had descended Brow Stope a number of times previously, he had not actually reached the base of the stope due to a lack of rope, but for me this top part of Brow Stope was all new, a part of Coniston Copper Mines that I had never previously explored.

The small open fenced off slot that often 'breathes' steam in cold weather belies the extent of the workings below. We descended down about 15mtrs to land in a chamber, the floor of which consisted of; on one side, a steeply sloping rubble pile, and on the other, very large sections of stope wall and roof. The whole chamber seemed to be a green colour due to the large quantities of moss growing on the walls. I made my way down the rubble slope to where an open slot led into the stope below. I could hear the sound of water running down the stope walls. This was not our route today, so I climbed back up to rejoin Roger and crawling behind a very large boulder we found a way forward and arrived at the top of a stope. Two ancient and very rusty anchors were sited in the only section of reasonably solid wall. The whole area was comprised of very soft vein rock and despite a long time looking, we failed to locate another good area in which to place an anchor bolt. We set one in beside the rusty ones and then traversed out across the footwall and placed another to try and get a reasonable hang for the rope (forming what subsequently became known as the 'Ramsden Traverse').

I descended first, a depth of about 10mtrs to land on a wedge of fall material with a sloping rubble piles leading down from the right and left. Whilst deciding which looked to be the more promising route, the decision was forced on me by the rope bag rolling away and down the left hand slope. I followed it down to eventually arrive at a small letter box type slot which opened into the blackness of the stope below. I could again hear the sound of running water. I climbed back up having retrieved the rope bag to rejoin Roger on top of the wedge, having decided the right hand side appeared to be the better route. After further difficulties in finding a suitable place for an anchor we were then ready to set off down the next section of the descent.

We landed on another rubble slope, this one undercutting the one we had just descended. Copper staining was evident in this area and the stope was very narrow. We carefully made our way down the slope to arrive at a timber edge and looking over this into the stope below, we could see no bottom. We rebelayed the rope and I started the descent. After only a couple of metres I saw a passage entering the stope and there sat near the opening was a very fine wheelbarrow. I swung into this passage and was soon joined by Roger. Lying adjacent to the wheelbarrow we found a rusted mass of chain and what appears to be a section of climbing chain. Further along this passage was an array of drill steels. The passage terminated into what appeared to be another stope. We wondered at the purpose of this short 10mtr or so passage but could come up with no viable purpose other than a communication passage, although the presence of the wheelbarrow and the tramming boards along the floor of the level would suggest something else.

After a break for lunch, we considered our route; again we seemed to have a choice of two. We chose the stope at the far end of 'wheelbarrow passage' for the simple reason that we could see a floor below. We soon descended, arriving on yet another rubble slope which led steeply up. Large timbers littered the floor, partly buried under fall debris. We followed the rubble slope upwards eventually arriving at a ladderway with 2 sections of ladder heading up to what could only be Levers Water Mine. I felt secure in this assumption when I saw a very old rope leading up to a section of false floor above. The rope was distinctive and identical to one I had seen in tunnel L5 in Levers Water Mine some months previously. We then retreated back down the slope, past our rope and onto to where the floor terminated and another rope descent was required. We located an old hanger which appeared to be quite sound and having rebelayed to it, commenced yet another descent. Numerous old sections of ladder were lying in the area at the bottom and proceeding along the base of the stope, we entered a section of passage. This turned through 90deg to the left and then appeared to open up into yet another stope. Or was it the same stope? Maybe it was the stope at the other end of 'wheelbarrow passage'? Possible, yet the horizontal distances involved seemed to contradict this theory. It was all becoming somewhat confusing, the vein system in this area seems very complicated…

Unfortunately the day's progress was brought to an abrupt halt for want of rope. Poor Roger had to chalk up yet another unsuccessful attempt to bottom Brow Stope, but we did place an anchor bolt in preparation for the 'final push' when we would return with another rope. We started on the long climb back up to the surface, my hopes of being able to exit via the Top Level Extension having been dashed.

Later that evening I consulted Peter Flemings Brow Stope section in Journal No.3. Two things were immediately apparent. Firstly how very near to the bottom of Brow Stope we were at the point we were forced to retreat and secondly, what an accurate graphical depiction Peter's section is. I was able to precisely recognise the route and features that we had seen that day.

A week later, the team reassembled with the twin objectives of reaching the base of Brow Stope and attempting to gain a clearer picture of the vein structure in that area of the mine. We soon left the snowy surface conditions behind and commenced our descent down the various pitches still rigged from the previous visit. (But not before considerable time and effort was spent by one member who prefers to remain anonymous, struggling into his SRT harness having undone all of the buckles the previous week). Our progress was fairly slow with frequent stops for photographs and the taking of compass bearings, but we duly arrived once more at 'Wheelbarrow Passage'. Having a spare rope with us, we took the opportunity to investigate the stope directly below the northern end of the passage. This landed on a section of false floor just above the lowest point we had reached the previous week and I immediately recognised the surroundings. The line of descent also coincided with a bend in the stope. Returning back up to 'Wheelbarrow Passage', a section of vein, rich in Chalcopyrite was visible just below the passage floor. We were able to prove that the passage does not connect two stopes, bur merely connects two 'legs' of the same stope at the point at which it bends, by virtue of the fact that Rogers light was visible to me from both ends of the passage. We again struggled to reach any reasonable conclusions regarding the purpose of this passage.

After lunch we continued our descent from the south end of the passage, taking regular compass bearings and photos as we progressed lower. Finally we reached the point at which we were forced to retreat the previous week and rigged the final pitch to what we hoped would be the base of Brow Stope which proved to be the case and soon we were celebrating reaching our goal with a second lunch break. A final compass reading indicated that although Brow Stope has a number of bends, the general trend in direction is uniform from top to bottom.

Forgoing the option of an easy exit via MAGs catwalk, we opted to de-rig Brow Stope rather than leave it roped, as the 100 meter rope would soon be required for another planned exploration at Paddy End.

Tony Holland, Roger Ramsden.

The Shattered Stope, Sunday 8th Feb 2009. Tony Holland & Roger Ramsden.

We arrived at Earthquake Passage by the usual route across MAGs catwalk. The first pitch landed us on a small section of false floor, its load of deads sloping down on both sides. The stope width was rather narrow but it widened as we descended the second drop onto a steep and very unstable rubble slope. We made our way very carefully down this slope to a vertical drop, the third pitch. Below, a further slope led steeply down, while overhead the stope was choked by large fallen blocks lodged between the stope walls. Finally we the rubble slope levelled out and we arrived what appeared to be the bottom. In this area, alarming scratch marks on the walls were evidence of fall material from above. A small gap in the floor appeared to show a route to get deeper but on descending this it was found to be choked at the bottom.

After a break for lunch we bridged our way across the hole to arrive on a boulder pile in a wider section of the stope. The other side of the pile led steeply down and on descending this we were surprised to see deep green water. This unfortunately marked the limit of possible exploration for us. On reading CAT newsletter no.32, we discovered that this was believed to be a remote section of Grey Crag Level.

We then slowly made our way back up to Earthquake Passage, exercising great caution due to the amount of loose material. After our second lunch break we climbed down into the section of Shattered Stope accessed from half way along Earthquake Passage. This place is a scene of devastation and collapse. Fall material forms a kind of floor that needs negotiating with care. Overall it is not a place to linger and in fact during the short time we were there, alarmingly, we heard a piece of rock falling. We carefully made our way to the opposite side of the stope and climbed down to the low passage where a crawl is rewarded with the remains of a jackroll.

We then wearily made our way out of the mine to discover that snow had fallen and we were very lucky not to have been snowed in. The drive back down to the village was far from easy or pleasant.

Words : Tony Holland, Photos : Roger Ramsden

Over The Wall,
Sunday 15th February 2009. Roger Ramsden, Tony Holland.

With our recent explorations of Brow Stope and Shattered Stope at Paddy End completed, we were now able focus our attentions on Top Level and its relationship and connections with the large Paddy End stope below. With a number of options in mind, we chose firstly to go 'Over The Wall'. The wall in question is actually a section of stacked deads and timbers lodged between the narrow stope walls, just off tunnel T3 on Top Level. I had once climbed this wall many years ago but went no further at that time due to a lack of equipment and not a little trepidation at the black abyss that could be seen where the loose rubble slope on which I was stood terminated, some 20' away. Matters were not helped at that time when I saw the condition of the solitary hanger upon which I had just entrusted my life to, in order to reach the top of the wall. I recall my main aim being just to get back down in one piece.

And so Roger and I found ourselves laden with ropes, anchors and battery drill on Top Level, fully equipped and ready to discover what secrets lay beyond the wall. Vague comments from other members indicated that it was 'an interesting area of the mine' and today was the day we would finally find out for ourselves.

The first task involved my re-acquaintance with what has to be the most rusty and confidence sapping hanger that I have ever seen. A new anchor and hanger were quickly installed, the rope attached and then it was time for lunch. Nourished and fortified we were then ready for some serious exploration. We climbed up onto the pack wall and while Roger took photographs, I installed further new anchors and hangers, until we were ready to descend off the rubble slope. Looking down over the edge, I was immediately but pleasantly surprised to see a floor maybe 15mtrs or so below us and it seemed to comprise enormous boulders and sections of stope wall and roof. I had expected to be confronted with a large empty stope plunging all the way down to somewhere below the Middle Level horizon, so this was an unexpected bonus. We were soon both down the rope and standing in a sizable chamber from which a lot of material had obviously been mined. The floor sloped upwards to the South East, and clambering up we arrived at a 'window' looking into the huge, deep Paddy End Stope adorned with beautiful green secondary mineralisation. Down to the North West another small window revealed another very deep stope – or was it the same one?

We quickly installed some anchors at the lower window and prepared to descend into the blackness below. The take-off point was very awkward and not helped by a large round boulder that seemed to be wedged between the walls. It was only after climbing over it and descending below it that I realised that far from being wedged, it was merely resting on one of the timbers forming the false floor that we had been stood upon. Fortunately it looked reasonably secure and so I was able to confidently begin the descent and transfer my attentions elsewhere, in particular to the tunnel that entered the stope directly opposite me. This could only be some part of Middle Level and looked remote and intriguing. Green malachite mud was evident on its floor. Had anyone managed to pendule into it? Was it accessible from another part of Top Level? Spinning round on the rope I was also delighted to see the twin tunnels of Middle Level. The day was becoming more fascinating by the minute! Below me I could see the large wide flat floor of the stope and as I descended further down I began to recognise where we were, this being the part of Paddy End Stope visible from the viewpoint on Middle Level, near the Green Pool.

At the North West extremity of this stope, the floor fell away into blackness and presumably all the way down to Grey Crag Level but as we had no more rope with us, we were forced to postpone any exploration until a future date. I recalled reading that Angela Wilson and Dave Bridge had descended this some years ago and in fact we were able to locate a few old hanger plates. A small slot near the South East wall of the stope was open and we were able to scramble down and from there to the passage containing a fine wheelbarrow, also accessible through a hole in the floor of Middle Level above. This was complete and in good order, with a solid timber wheel banded with a steel ring. The passage was quite short and towards its rear, the walls were adorned with a particularly deep green shade of mineralisation.

It was late afternoon by this time and we had three big ascents before us, but before we started on the long climb out, we attempted to scale the large blocks of stope wall lying at the South Western end of the stope in an effort to reach the Middle Level viewpoint but only made it about half way up. We left all the ropes in place intending to revisit Paddy

End again very soon. The next day I phoned Peter Fleming who kindly clarified a few things including the route into the extension of Middle Level that we had seen behind the twin tunnels.

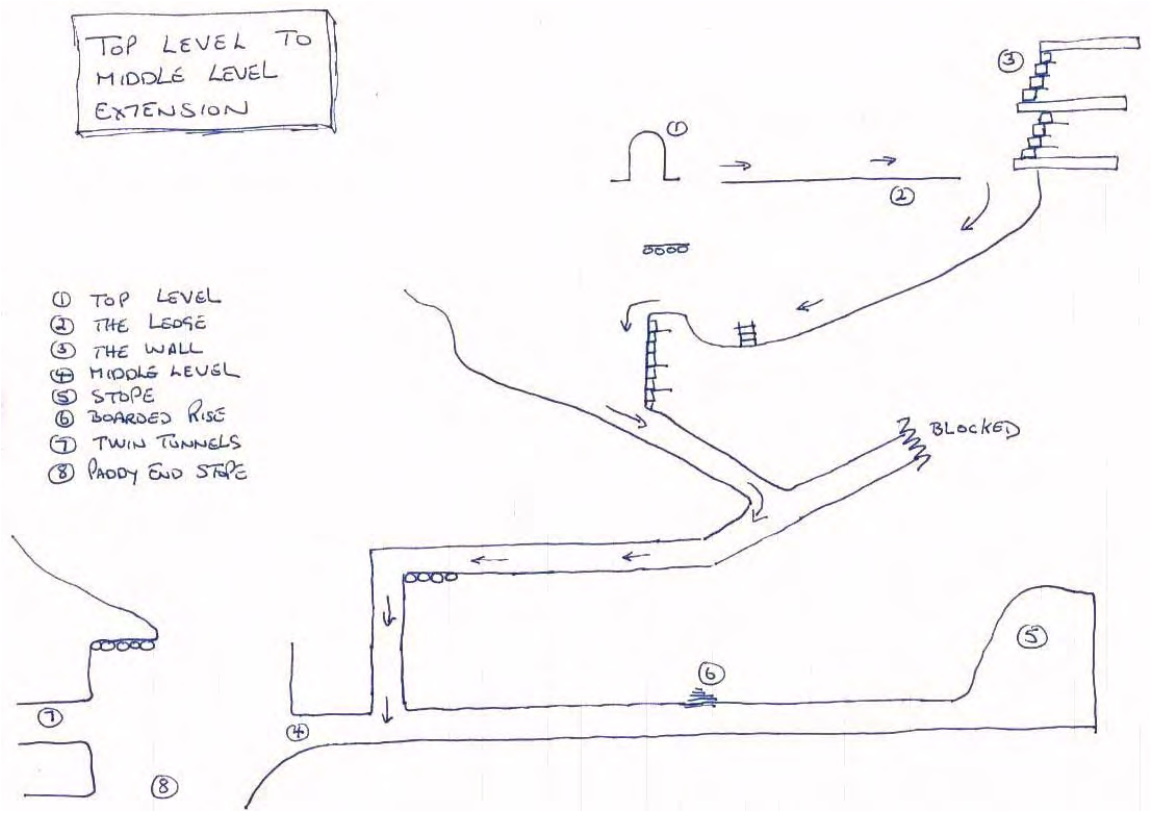
Thursday 19th February 2009. Roger Ramsden, Tony Holland.
Eager to explore further and in particular to find the route down to the Middle Level extension, we made a mid week visit back to the wall on Top Level, again laden with more rope, the drill and copious quantities of rigging gear. Instead of climbing the wall, this time we descended the loose and unstable rubble slope below it. After a short drop there appeared to be no way forward but on closer inspection a small hole in the floor, almost fully blocked with rocks (soon cleared) led us down to an undercut that in turn landed us in a good sound solid passage. This short passage had a partly solid, partly false floor and at the end, a shaft led down to what I could see was obviously an important level. With an anchor soon installed we both descended down onto the Middle Level extension we had seen the previous Sunday. The terminus of this level into the Paddy End stope is an awesome place. Green malachite mud on the floor, the Twin Tunnels ahead, a few timbers lying over the edge, the yawning blackness of the Paddy End stope below and a fine mist in the air all added to the atmosphere.

We then set off to explore the ML extension, passing beneath a boarded over rise or ore hopper, here a fabulous cascade of Copper mineralisation decorated the walls and floor. Ahead, an area of stoping though on a minor scale, coincided with a change in direction of ML from roughly NW to SW. Consulting the plan it was evident that ML would pass below the Lake Stope and on to the Windy Stope but unfortunately our progress was halted by a major roof run-in. Inspecting the fall material it was clear that water often flows down this collapse. Could this be the route of the water draining from the Lake Stope?

With our explorations of ML completed, we climbed back up to Top Level to attend to the important matter of Lunch before commencing phase two of the day's objectives. We climbed over the wall and then descended down to the lower 'window' into the Paddy End Stope. While Roger waited at the wedged boulder I descended down to the stope floor and then Roger lowered a bag containing a 50mtr rope down to me. The plan was to continue on down to the isolated section of Grey Crag Level below. With new anchors installed, the rope was lowered and the descent commenced. To the left was the open stope, whilst to the right an enormous wall of stacked waste material stretched from the floor above right down to Grey Crag Level; a distance of about 40mtr. Two re-belays

were required before the bottom reached. I made my way in-bye along the stope base until I reached the flooded sump mentioned in Dave Bridge's report. A timber placed across the sump helped in crossing the sump, but alarmingly, the wall bellied out where the timber closed in to meet it, requiring a balancing act to avoid Dave Bridge's fate. I retreated before trying once again, this time facing the wall rather than away and managed to reach the other side despite a number of hand holds peeling off as I used them for support. A short distance after the sump I saw the stack of rails mentioned in Dave's report and soon after, the forehead. I used one of the rails to span the flooded sump to help with the return crossing.

After the long climb back up to Top Level, we installed a few more anchors in preparation for future explorations before heading back up to the Arête chamber and then out, emerging at 5pm feeling very tired.



Stank and Yarlside mines, by Peter Sandbach.

Thomas Storey and his brother in law, William Bolton formed the Yarlside mining in 1868 against the advice of experts. On the other side of the hill, the Barrow Haematite Steel Company sank a borehole looking for coal and found a vein of haematite. Their lease dates to 1871. Both sets of mines were on veins, sometimes the same veins, more difficult to work than the sops at Roanhead and Park. Both contained places where the ore had a high phosphorous content and both crossed boundaries between the Duke of Buccleuch's land and the Duke of Devonshire's property. Each bogie had to be labelled to indicate its source. The top of the hill is about 250ft above sea level. In his talk to the IME in 1899, Mr Davison went into some detail about the porous, faulted nature of the ground. At any time they were likely to break into a new source of water, or worse, the running sand, a slurry of sand and water that could submerge the pumps and block them. Either could be flooded out by a failure of their neighbour's pumps.

A pamphlet supplied by Jon Knowles lists some of the engines built by Hathorn Davey. It includes a letter from William Boulton dated August 1881 praising the efficiency of a recently installed engine with 33in and 60in cylinders working two 20in plunger pumps raising water 430ft in one lift. This must be the engine referred to in J K Dunstan's mine report of October 1883. "No9 pit Davey engine is working 8 ½ strokes/min, faster than it should run". He had seen the future two years earlier when he reported "No8 pit on top of the hill is 80yds deeper but they are afraid to open out at the bottom for fear of the water beating them out. It will have to be done and very soon if they wish to keep their returns of ore up to the mark"

The News, Nov 1st 1884 reported:
YARLSIDE MINES - Under the new system at the above mine, coupled with the able and judicious management of the new manager, Mr Davison, along with the extra efforts of the miners, the place, instead of working at a loss of 3s 5d per ton, is yielding a fair profit to the owners; and it is to be hoped the owners will see their way to give the hard working miners a better remuneration for their labour seeing they are doubling their output. 3s per day is too little for hard underground work of 8 hours.

The large new pumping engine which has just been put down at No 11 pit was successfully started on Thursday 23rd October and its running powers thoroughly tested by Mr Briggs, of the firm of Davey, Hawthorn & Co., Leeds (the makers). The engine is of the compound horizontal type known as Davey's Patent Differential Pumping Engine. The respective diameter of the cylinders is 38" and 66", with a 10 ft stroke.....The pumps are two 20" plungers, 10ft stroke.....capable of raising 2700 gallons the height of 400 ft in one minute (3.9 million gals/day).....Great credit is due to Messrs Boulton, Storey & Co. for their speculative and business abilities these dull times and for the spending or circulating of so much money. It is to be hoped that when the iron ore trade revives they will reap an abundant harvest.

This is the first we hear of No 11 pit, started in 1882. The new system involved putting everybody on piecework. J K Dunstan was pleased, reporting that the miners raised three bogies of ore for every one they had filled previously. He also had to report that some places were left standing because the miners would not accept the pay. He was less keen on piecework in 1888 when he reported: "They are talking about starting 2 or 3 lots of tributers

in the pit (Yarlside No3) but I think this is the wrong course to take as they rob and plunder the ground until it is almost impossible to work after them, should it come to a stand for a time" He clearly expected the mine to come to a stand soon. He was concerned that the timbering would not stand for long if the pumps were stopped and certain that Stank would be flooded. Yarlside employed about a dozen teams of men, largely working in old ground at this stage, Stank employed about 65 teams. The mine inspector does not report men but "places working" or "breasts of ore".

Base of Hathorn Davey engine at Yarlside No 11 pit. Photo P Sandbach

A joint pumping scheme was first proposed by Edward Wadham in 1879 but with two mining companies and two dukes and their agents, negotiations dragged on for years. Stoppages at Yarlside in 1885 and 1886 caused by floods of sand and water brought matters to a head, Thomas Storey was not disposed to continue with Yarlside. An agreement was signed in 1888 but it required the dukes to accept a reduced scale of royalties. Numerous scales of royalty were drawn up and rejected. The sticking point seems to be this: If the Duke of Buccleuch's ore contains phosphorous and sells at a lower price, why should the Duke of Devonshire accept a lower royalty? The argument that the phosphorous was found randomly in all parts of the mine was not accepted. Matters were complicated by the death of the 7th Duke of Devonshire in December 1891. In October 1891, Sir Thomas Storey was desperate to get out. He wrote from Llangollen in less than tactful terms:

"Dear Mr Wadham, If you insist on having your pound of flesh, I must make some sacrifice and try to find it for you. - But before I set about it will you kindly tell me whether in your arrangements with the Barrow Co. you see any chance of them making me an offer which I can accept for acquiring my interest - which means the whole - in Yarlside. *(handwriting becomes a scrawl)* I really now feel no interest in "future arrangements" in working Yarlside for I am quite disheartened, I have given up all hope that **I** should ever be successful with it - and heavens! it now owes me £70,000, a large portion of which has been paid to you. This is enough to drive a man mad and yet some Duke coolly demands still more sacrifice at my hands!

If the naked facts were made public it would be a curious comment upon mine royalties.
Yours faithfully, T Storey"

The records do not say what payment was made, but A H Strongitharm valued the plant at Yarlside in 1891 and arrived at a figure of £10,361 16s 6d. Strangely, the valuation included the engine beds, but not the engine houses, on the grounds that the engine house had no second hand value. At some time, the Hathorn Davey engine with 33" and 60" cylinders installed at No 9 pit became a 30" and 60" engine at No 10 pit. It was probably just the high pressure cylinder that was replaced, as Mr Davison refers to this engine being 19 years old in 1899. This was valued at £3734. The 38" and 66" engine installed at No 11 pit in 1884 was valued at £3556.

BHS took over Yarlside mines in September 1892. By this time Yarlside was very nearly worked out and Stank was not far behind. BHS lost no time in putting a large number of men into Yarlside and removing the last of the ore. When mining stopped at Yarlside in June 1898, even J T Rigg accepted that the mines were all robbed out and there was scarcely a particle of ore to be found.

John T Rigg and his predecessor, J K Dunstan were employed by Edward Wadham, and Edward Wadham was employed by the Duke of Buccleuch to ensure that no ore was left behind and royalties were paid in full. Rigg hated weazels (winzes). This is what he meant when he wrote that mine was worked all upside down. When a weazel or a slope (an inclined shaft sunk on the vein) is sunk below the bottom height, those workings are beyond the reach of the main pumps. It needs a secondary pumping system and a secondary air-driven winding system to get the ore out. More seriously, if ore was taken from the lower levels before it was worked out above, there would be voids and the possibility of a collapse. A collapse could mean that some ore was lost for ever, and that would upset his employer. He wrote that if it had to be done, then a slope was marginally better than a weazel, but he would prefer that this method of working was not used at all. As the cost of working Stank was already high enough and the ore was running out fast, there was no prospect of sinking the shafts deeper, so in April 1897, BHS began sinking a series of weazels from the 780ft level down to 840 Ft. .Rigg reported "There are 4 workings in the new weazel sunk 60Ft below the 780Ft level. Water pumped from the new weazel runs back to the weazel which was sunk in the South drift from the 720ft level to the 780Ft level from which it is then pumped up to the 720Ft level by means of a wire rope (driving an 8" lift) attached to the main rod of the No2 pumping engine to which the water then runs." Apart from the wire rope breaking occasionally, the system seems to have worked well enough until the vein was exhausted.

Another new development was No12 pit. This was not exactly a new shaft; it started out as a rise, then it was driven up to the surface to act as an air shaft. In 1896 a headgear and winding engine was added to save the long underground tramming of ore to Stank No2. A self acting tramway was laid down to take the ore to the railway. There was a good wide vein of ore in No12 pit, but it had a high phosphorous content. The tramway was extended over the railway to a stock heap where the un-saleable ore could be stored. It was disposed of by BHS dedicating a furnace to the production of low grade pig iron.

Another set of mine reports was written by J W Lawn, mines manager of Barrow Haematite Steel Co., reporting to William Kellett. In 1896 he wrote that although production remained constant at 2,000 tons/week, this could not continue as the known deposits were working

down fast and there was nothing new in prospect. If production fell, fixed costs would remain constant, as the pumps could not be stopped, so the price of the ore must soar. In 1898 production was down to 1500 tons/week and falling, while coal consumption remained at 400 tons a week.

Mr Lawn had to report an accident in No 12 pit in 1900. Three men were working out a pillar of ore when there was a massive rock fall. One man was killed and the others briefly trapped. His report mentions the ore that would be lost. In an earlier report he mentioned the risk of robbing out the supporting pillars quickly, but as there was no other ore in sight, there seemed no alternative.

In April 1898, Mr Davison (the man who was recently appointed in 1884, now working for BHS) made an urgent trip to Barrow to buy a log. It had to be large enough to make a new main top connecting rod for No11 pit Hathorn Davey engine, the old one having split, and been bound up to keep the pump going. The connecting rod was 2ft square and 36ft long. The high point of his career may have been his presentation to the IME on the pumping engines at Stank and Yarlside, but he was probably aware that he would soon be dismantling them all.

The engines were:
(Stank) No1, 40" Cornish engine,
(Stank) No2, 72" Cornish engine
(Stank) No5, 70" Cornish engine
(Stank) No7, 80" Cornish engine
(Yarlside) No10, 33" and 60" HD engine
(Yarlside) No11, 38" and 66" HD engine
(Yarlside) No11, Auxiliary horizontal 25" engine, formerly used as a winding engine, compounded and geared 5:1
(Yarlside) No3 12" and 18" HD engine

The auxiliary engine in No11 pit is described in mine reports as the rotary engine. It caused several floods when the shaft broke. The average rate of pumping in 1898 was 8 million gallons/day, with a maximum in winter of 9.9 million gallons/day. BHS gave notice to the dukes in 1900 and began salvaging the pumps and rails from the winzes in January 1901. The last ore was raised on 30 March 1901. The next few months were spent salvaging the pumps, filling subsidences and shafts and lifting tramways. Anything useable was taken to Park.

Reading the mine reports, one would think that there was not a scrap of ore left in Yarlside, and not much in Stank, but BHS returned to Yarlside in 1910 and sank three new pits. Still troubled by phosphorous, rushes of sand, and separating the ore belonging to two dukes, the new No 1 pit worked until 1939. The new No 3 pit was sunk mainly to raise moulding sand. This continued until 1956. These are probably the two pits recently destroyed.

References

The Red Earth, Dave Kelley
Mine reports at CRO, Barrow, BMF3, BMF5, BD/BUC/box 53, 54, 63, BDB47 box 6
Papers relating to Stank and Yarlside, BD/BUC box 22/11

Hathorn Davey Engines in Furness, with a digression to Tasmania
By Peter Sandbach.

Hathorn Davey & Co. made engines and pumps at their Leeds factory from the establishment of the company in 1846 until it was taken over by Sultzer in 1936. Their horizontal compound differential pumping engine was designed in 1871 and used at several mines in Furness. Before trying to describe some specific sites, I should try to describe pumps in general.

Glossary

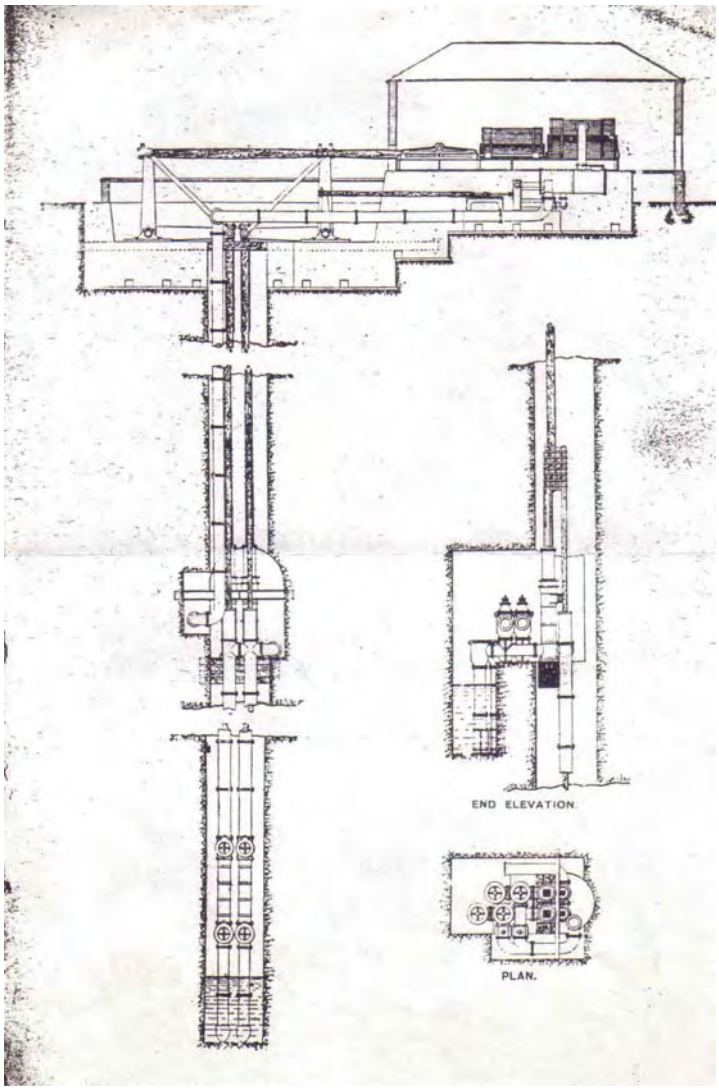
Horizontal: The author understands this bit, cylinders arranged horizontally.
Compound: More than one expansion. More cylinders means more energy extracted from the same amount of steam. The most efficient engines were triple expansion, the Hathorn Davey engines used in Furness were double expansion.
Double acting: Steam was applied to each side of the piston alternately. If an internal combustion engine could do this it would be a 1 stroke.
Differential: Nothing like a car axle. The Hathorn Davey differential gear used a second steam engine to regulate the valves on the main engine. If the main engine tried to run away, the steam could be shut off and applied to the wrong side of the piston. The differential in this case is any difference in the speed of the two engines. The differential gear gave smoother running in normal operation and prevented disaster when a pump rod broke.
Lift: The vertical distance from the pump to it's outlet, on the surface or at another pumping station..

There is no such thing as a vacuum. Vacuum is only an absence of pressure. The pressure that we generally take for granted is atmospheric pressure, 760mm of mercury, 34ft of water or 15psi. That is all the force available to drive mine water into the pump chamber. In practice, cavitation sets in at much less than 34ft. An uneven pump stroke or a narrow inlet valve would make the water boil rather than fill the pump chamber, then the piston comes down on empty space, resulting in a shock transmitted through the pump rods to the engine. Therefore the pump has to go at the bottom of the mine.

The pump rod at Sandscale No2 should not exist. The steam engine drove a 12" and a 14" ram pump until 1915, but it was replaced by electric pumps in 1928. The shaft was capped by British Cellophane, but their method of capping was to build something like a concrete garage over the shaft and the concrete was crumbling in 1996. The photographer (SCPT) is standing on a steep, slippery slope above water of uncertain depth, the roof above is the shuttering for the concrete.

Some pumping engines could be installed next to the pumps. The pamphlet from Hathorn Davey lists an underground engine at Bolecow, Vaughn & Co.'s mine in county Durham, with 25 and 57in cylinders raising 60,000 gallons/hr from 1000 ft in one lift. That is unusual. It was generally more convenient to have the engine on the surface next to the boiler house.

To connect an engine on the surface to a pump, perhaps 1000 ft below, a line of pump rods was used, usually pitch pine. The pump rods or spear rods worked for years on end at 4 - 6 strokes/minute until, eventually one would break. Then the steam in the cylinder and the weight of the counterbalance are working in the same direction under no load. The term occasionally seen in mine reports is that the engine "came indoors". It means about a year of work rebuilding the engine and maybe the engine house as well.



The patent compound horizontal differential engine, from the Hathorn Davey pamphlet.

There is no theoretical limit to the outlet pressure of the pump but the water was usually sent up in several lifts. The bottom pump would lift the water to a cistern about 500ft higher and a second pump, driven by the same set of pumprods would send it the next 500ft. The strength of the column pipes might have been a limiting factor.

The largest concentration of horizontal differential compound engines must have been at the Tasmanian Gold Mining Co. site. The Beaconsfield mine installed 3 engines in 1906. They had 50in and 108in cylinders, 10ft stroke and raised water 1500ft in 3 lifts. Each pumprod weighed 170 tons and the three engines raised 6.5 million gals/day at their normal speed. There were 36 pumps - two on each pumprod at each height. The mine claimed to have the largest, most efficient pumping system in the world but the water still beat them. The mine closed in 1914. It was re-opened in 1999. A new Grub shaft was sunk and the old Hart shaft cleared out. During this

work, one of the pumps was brought to the surface and is now on display at the Beaconsfield museum, claimed to be the last of its kind in the world. In 2006 there was a rock fall at the mine which killed one man and trapped two men underground for a fortnight. It has not been worked since.

Three Hathorn Davey engines at Yarlside were mentioned in the previous article. Harrison Ainslie had at least four. The Institute of Mechanical Engineers visited Lindal in 1901 and were shown Hathorn Davey engines at Lowfield and Bercune. The Lowfield engine had 45" and 80" cylinders, the spear rods were 22" square and 1150Ft long. The pump rods ran on iron rollers in the inclined shaft and raised 0.05 million gallons/day from 735Ft.

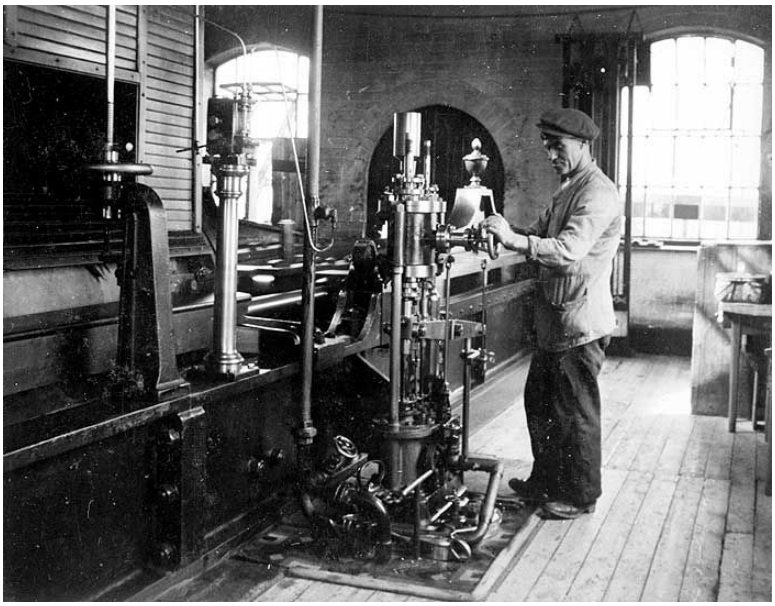
Mr Davison was clear about the necessity for a solid engine bed: "It has been found that it is desirable that all foundations for heavy permanent pumps should be built on solid rock or cement concrete, and where girders are used that they should be made of wrought iron or steel and never of timber, as with timber it is almost impossible to avoid springing, and thereby causing broken joints and sometimes pipes." "The Iron Moor" records the arrival of a Hathorn Davey engine at Harrison Ainslie's Frank pit in 1882, The engine bed was solid limestone blocks, capped with huge sandstone coping stones, but the engine was then seated on pitch pine logs, 60ft long and 25Ft wide and 10Ft high. This engine survived the wooden engine house burning down around it in 1894 and worked until 1914. It was then broken up for scrap. Frank pit was high on the "to do" list when the relic survey folded. There are some large engine beds in a thicket of bramble and willow, but they do not look like the engine beds at Yarlside and Violet.

There was another Hathorn Davey engine at Diamond pit. The pumps at Diamond, Lowfield and Bercune were replaced by electric pumps about 1910. The engine at Bercune was kept on standby. Harrison Ainslie auctioned off surplus plant in 1910 and 1911. Although the auctions were supposedly of plant surplus to requirements because of electrification, the catalogue reads like a fire sale. Strangely, the Diamond pit engine with 30" and 50" cylinders appears in both sales. £105 was bid in 1910 and £110 in 1911.

Base of Hathorn Davey engine at Violet Pit in 1996. Photo SCP Thomas

One reason for starting this fit of research was to find the origin of the Hathorn Davey engine at Violet pit, Roanhead. Nothing was found, but there were two large engines going spare at Yarlside in 1901. If BHS hoped to use them again, they would be

taken to Park. Kennedy Brothers started work on the Violet pit engine in 1903. The engine worked here from 1912 until 1942, with a four month stoppage for maintenance in 1932.



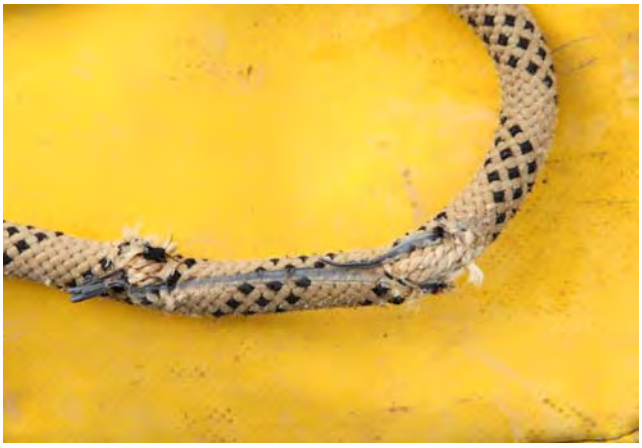
Violet pit engine. The operator is adjusting the differential gear. The small engine was sometimes called the iron man, like a good engine man, it was always ready at the side of the engine. Reproduced by permission of English Heritage NMR

Cambridge Museum of Technology claim to have the only working Hathorn Davey horizontal compound differential engines in the world. They were installed in 1894 to pump sewerage.

References

http://www.dmm-gallery.org/transime/u17d-01.htm Detailed account of Yarlside pumps in 1899 by Jas Davison for the IME.
Several websites contain conflicting information about Beaconsfield mine.
Hathorn Davey pamphlet supplied by J Knowles. Printed about 1910.
Lindal and Marton website
The Iron Moor, A. McFazdean
Steam engines and waterwheels, F D Woodall
CRO, Barrow, Z1679 catalogues for auctions of Harrison Ainslie plant in 1910 and 1911.

Rope Washing can go Wrong!



The photograph shows the damage that can be caused by washing rope in the normal front loading washing machine, in this case the loose rope has been trapped between the drum and either the rubber seal or the door and the frictional heat build up has caused the sheath to fail in two places and glazed the sheath in between. If a rope is going to be machine washed then it should be placed in a bag to prevent this occurring. Of course the person doing the washing may suffer far greater injury when their wife/partner finds out what was in the washing machine.

AUSTRALIAN ARTEFACTS, or
"They did it differently Down Under"

The Central Deborah gold mine, Bendigo, Victoria, Australia operated from 1934 to 1954 producing 930kg of gold from quartz veins, which are formed into a marked anticline axis running north south through the lease.

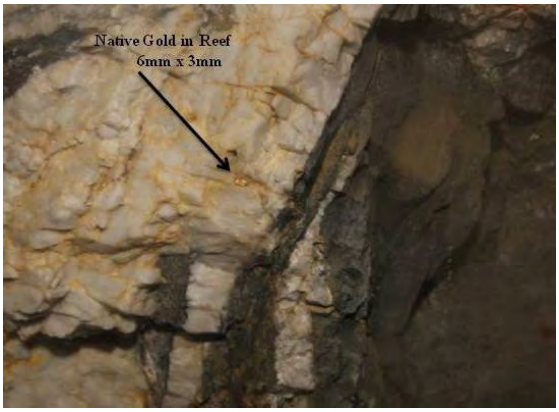


Figure 1 "The Real Thing"

Seventeen levels were worked down to a total depth of 410 metres; the mine has now re-opened as tourist attraction, dewatered down to level 4.

Apart from the magnificent surface equipment a visit underground reveals a couple of items not seen anywhere else.

Figure 2 The Bendigo Bucket

The "Bucket" was the standard acetylene lamp used throughout the mine's life, since helmets were only worn by officials and Government inspectors there was no need for a head mounting and the handle of the lamp was simply hooked onto a suitable support to give hands free working. (See Figure 4)

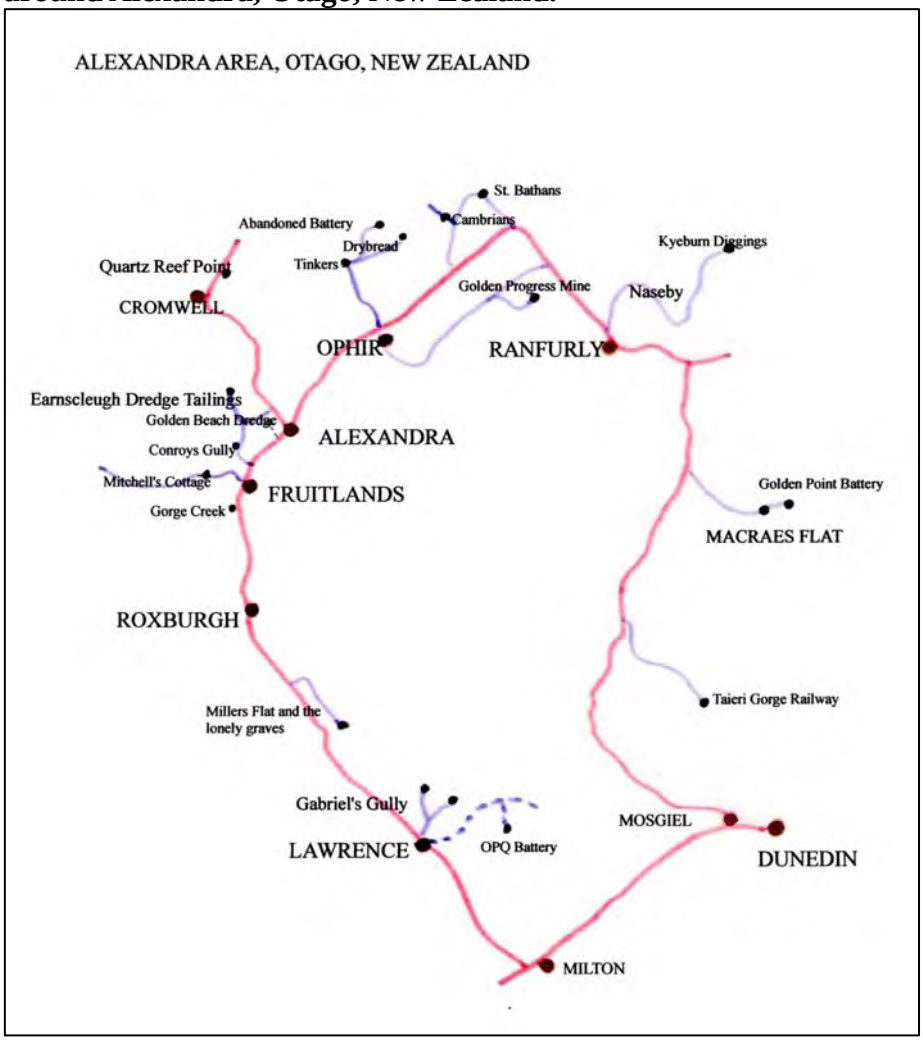
Figure 3 The Inner Container

The inner was filled with carbide via the screwed lid, the outer bucket filled with water, the inner inserted and water flowed onto the carbide via the hole arrowed above.

Figure 4 The Pelican Shovel

The Pelican shovel was the standard tool for cleaning up, obviously with native gold of the size shown every speck of material had to be collected and this was the way it was done. (Note the "bowyangs" to keep the trouser legs out of the water.) In fact theft of gold was an ongoing problem throughout the life of the mine.

A Trip to the Mining Sites around Alexandra, Otago, New Zealand.



It was the annual Wellington holiday; this meant a long week end break, so Eileen and I decided to explore the eastern side of the Otago mining field (South Island). As usual the weather forecast was great for the north and average for the south and guess where we were heading?

We flew down to Dunedin after work, late Friday afternoon, hired a bright red Toyota Camry and headed for Milton where we turned off Highway 1 and drove up Highway 8 towards Lawrence, we planned to travel across country on a dirt road to the OPQ, Canton and Victory Battery site and the Cosmopolitan Mine, however an unattended farm tractor and trailer blocked the rough road, as time was of the essence, that was the end of that. The Canton Battery/Mine was of interest because unusually it was discovered and operated by a Cantonese Chinese company in 1876 until the shaft became swamped. It was abandoned and then recommenced working by an English company, usually the other way round! It would appear that most of the battery and waterwheels were in a state of collapse and I had hoped that the DoC had instigated some repair work.

Undaunted we continued a few miles to Lawrence where we turned along a dirt road leading to Gabriel's Gully, now a wide open valley terminating in a huge amphitheatre that was originally a saddle called Blue Spur, it was eventually mined away to well below the present picnic area and the large valley flanks still show traces of hydro-sluicing. Separate rock pillars, like sentinels guarding side sections are the remains of unworked disputed boundary claims. Gabriel's Gully proper is sited around the bluff and to the right of the picnic area, a track branches to it passing a section where one can legally pan for gold. The DoC notice board stated 'Haere Mai Ki Tuapeka' translated 'Welcome to Gabriel's Gully'!

Gold was first discovered in Evans Flat just north-west of Gabriel's Gully by Edward Peters, between the two sites was Blue Spur. Gabriel Read was encouraged to prospect the area, Read and a shepherd named Munroe moved down into the forested gully opposite Blue Spur where, after removing two feet or so of gravel they struck soft slate covered by gold! No matter where Read prospected within the vicinity using only a shovel, a pan and cradle, he struck gold. Upon hearing the news several parties arrived in 1861 and from 150 prospectors in July, the numbers swelled to 6,000 by September and by the end of the year over 10,000 people were active in the goldfield. All

the ground had been staked out and gold had also been discovered in Munroe's Gully, Evans Flat, Waitahuna and Waipori. There were stores, pubs, restaurants and canvas tents. The town of Lawrence was established. (This moved later). Timber was cut down for supports in the diggings and cabins. Most of the miners occupied canvas tents that could be quickly rolled up an moved to another site. The diggings viewed from the hamlet of Blue Spur above appeared like a multitude of mole hills.

The 'rest area' is the site of Blue Spur saddle that was mined away to 135 feet below the present level. Gabriels Gully far right out of sight

At it's peak in 1862 over 200,000 ounces of gold was removed from the gully. After the harsh winter of 1862 many miners retired to warmer climes but the rush returned. Further discoveries were made at Weatherstons adjacent to Gabriel's Gully which was reported to be even richer. The rich gold in Gabriel's Gully had washed out of Blue Spur (Hill) and the gold was embedded in an extremely hard 'cement conglomerate'. To extract the gold persistent hydro-sluicing. One of the early companies drove a tunnel into Blue Spur, cross cutted three ways, filled the latter with three tons of powder and blew, bodily, a huge slice of the saddle out of the hill and down into the base. Blue Spur was reduced by these methods into a huge sunken amphitheatre. The Hydraulic Elevator was introduced which allowed gold bearing ground to be raised rapidly using water pressure. By 1888 the Consolidated Goldmining Company amalgamated the smaller companies and reworked the gully floor. Out classed and without capital the independent miner retired.

The floor is now, in places, 135 feet above the original workings. Driving up the dry gully it was hard to visualise the activities of years gone by. There were pieces of sluicing pipes lying around. Several recent trials could be seen along the base of the valley flanks, it was here that I recovered a nice sample of Blue Spur! However gone were all the trestles that conveyed water from afar as 29 miles away, gone were the monitors, pipes, recovery boxes, tents and cabins.
It is an awesome, silent valley.
(References. Department of Conservation Notice Boards. Note 24 Gabriel's Gully NZETC. Otago Goldfields Heritage Trail. Goldfields of Otago.)

By now it was 7pm and we had a fair way to go. We passed Millers Flat and the road to Horshoe Bend Diggings and the Lonely Graves, intending to visit the next day, we never did! We reached Alexandra and drove up Letts Gully Road to our accommodation at Hawkdun Rise Vineyards. Now that was a nice ending to the day, our hosts, the owners allowing us to sample their gold award winning wines, yummy!
We awoke at 6.30am to the sounds of a helicopter droning up and down the lower valley, upon enquiring we were told that the helicopter was employed to fly over the cherry orchards, the down drought was used to blow residual water from the tops of the fruit so that they would not rot! That's novel.

After a hearty breakfast we made our way to Alexandra Museum to view the local relics, obtain literature and to have a chat with the curator, who wasn't there! However there was a beautiful four foot long working model of a river dredge and a film show using original movie footage of the building of the Molyneux Dredge in 1935, brilliant!

It was time to move on, using the DoC signs to Earnscleugh Dredge Tailings (pronounced as Earnscloo) only to find the road closed and now private. So much for updated signs. Having purchased a local map (OS look-a-like, but somewhat inaccurate). Eileen directed me down a road terminating at an active quarry but just prior to that, I spotted a DoC sign so we drove along a rough track to a fence. A just managed to squeeze through the stile and on the far side were the remains of a dredge, granted spread out a bit! There were ropes, a winch, buckets, feed pipes and a shaft supporting a wide rim containing buckets, a bit of a mystery but I think could be transfer buckets. Below the remains and at the base of the massive sweeping white herring bone tailings were two dredge lagoons, the final resting place of the dredges. I managed to climb the very soft tailings bank where I was greeted by half a mile of elevated tailings and several other lagoons.

Earnscleugh Dredge Tailings, reworked three times. The herring bone tailings cove a huge area by the side of the Clutha River

The tailings are a relic from the early dredging days of the River Clutha and adjacent sides, dating from 1896 until about 1924 though a further period continued from 1951 until 1963. Huge dredges worked the river. Dredges were developed from Spoon dredges (1863) whereby a large canvas bag fitted to a ring on a pole was dragged along the Clutha River bottom from a shallow boat, the gravel was hauled up and dumped into a sluice pan. It worked with a limited success close to the river bank. This was followed by a proposed submarine that had an open compartment in the keel however, when tested in Dunedin harbour a leak developed nearly drowning the operators and it was given up. Further variations were tried and improved upon until the multiple bucket and ladder dredge was developed. With the vessel anchored, waterwheels were used to power the equipment. These were followed by steam and electric powered dredges. 187 dredges were operating along the Clutha river and its gravels banks during 1900.

The dredge was secured by either a stirrup or by ropes by which it could pivot and swing from side to side before moving forward, thus producing the distinctive herring bone pattern of waste at the rear. Buckets powered on a long linked roller arm descended to the river floor continually scooping up the gravels and stones, these were lifted and supported on the arm to the top of the elevator where the gravels descended through graded rotating circular tube screens, the pebbles, stones and boulders were removed by means of a tailings elevator that dumped the waste as far behind the dredge as possible. The fine material dropped on to vibrating screens and various mats that recovered the gold. (The above is a very basic description). There were many operations on the river and panning continues when the river is low. I decided to return to the bridge at Alexandra and follow the river side track (with my gold pan) to the Fraser River, where I had heard that there were substantial remains of a dredge (wrong). The track followed the river but there was no opportunity to pan, for the river was running high. I did reach the tailings of the Golden Beach Gold Dredging Co. and the Eureka Gold Dredging Co. One of the Golden Beach Dredges was powered by water under pressure, in pipes that drove the turbines which powered the machinery. The tailings were quite large but overgrown, however it was obvious that dredging in this locality was concentrated to the sides of the river. (References Gold Fields Heritage Trail. Gold & Gold Mining. Te Ara Encyclopedia of NZ. Goldfields of Otago. The Speculators Dream. IPENZ Engineering Heritage)

We then drove beyond Cromwell to view Quartz Reef Point rising from the side of the road, where there are supposed to be superb terraced herring bone tailings, unfortunately I was caught up in the middle of a bike race and could not access the site. Much aggrieved for I had seen the tailings before but not filmed, we returned to Alexandra and hunted out the 'gold pan ally' at Conroys Gully

and Gorge Creek at Fruitlands (the area grows fruit!). We found Mitchell's Cottage in the middle of a rainstorm. A beautiful cottage, the stone used in its construction was cut from the outcrops behind where the drill marks can still be seen. Mitchell, a miner, came from the Shetlands and was renown for his cottage construction. He built the cottage, outhouses and a smithy in 1904. Well maintained they stand as a testimony to his skill. Mitchell was married and had 10 children. He toured the gold mining areas of Australia and America with his cousins the Whites, the latter were one of the early miners in Gabriel's Gully and Mitchell followed them to work in the gully sometime afterwards. Mitchell prospected around Fruitlands (then known as Bald Hill Flat) and struck gold on Old Man Range where his company of men sank a 152 foot deep shaft and drove a level for 750 feet. 19 men worked for him at the mine and battery. He sold the business and continued to build on the flat and then took up a sluicing claim taking three years to construct the tail races, followed by working a small hydraulic elevator plant, he continued to recover gold. His life was hard but successful. (Reference. Department of Lands and Survey)

Abandoned portable gold extraction rig, at Tinkers (now Matakanui). Gravel fed through graded screens to fibre mats.

Finally we made our way north west from Alexandra to Tinkers (now Matakanui) where most of the half dozen hand crafted mud stoned buildings have been converted into week end 'cribs' (holiday cottages). The old pub looked particularly good. I couldn't see any workings, though there was a sluicing monitor in the undergrowth. We drove up the rough track to a gate which was unlocked, so we tentatively drove through and onto the moors (akin to Dartmoor). There were several stacks of boulders and evidence of sluicing but nothing to shout about until I came over a sharp rise and there in front of us stood a portable gold extraction unit. Abandoned, it looked about ten years old, bushes were growing through the lower structures and it was sited on level ground. I think that the gravels were delivered by a dumper truck into a small hopper; the unit shook the gravels through graded screens and the large stones and waste dropped onto a short elevated conveyor belt. At the bottom of the graded screens were the beds that held the mats used to recover the gold, of course they had gone. The waste must have been dumped into another dumper and taken away either onto a spoil heap or sold as aggregate, there was no sign of the graded gravels except for in one small area. Water for the operation was pumped from a nearby pond. I scoured around for a sight of gold bearing gravels but was somewhat at a loss. I think the feed to the plant was very selective. Nearby lay hundreds of thick polythene bags that had been used during the process. We made our way back and tried to reach another digging called Drybread. We could see the piles of stones and sluicing remains but could not find the track. It was the end of the day so we returned to the vineyard.

Golden Progress Mine battery. Viewed from the tramway. Note the two oil drums on the chimney for increased 'pull'!

The following day was glorious, the early morning helicopter flew away and we set off for Golden Progress Mine, near to Oturehua. Once again one had to be sharp, spotting the signs and tracks. The track to the mine crossed the site of the mine workers camp in a lovely little dell by a row of poplar trees and a small stream. A slight rise led to the grassed over tailings dam and then we entered a shallow gully. Ahead stood the remains of the smithy and a couple of workers huts. Rising up and further beyond lay a solitary boiler and smoke stack, I thought that

the headgear and frame had fallen down but in fact I was looking at the battery site. The foundations for the battery were in place as was part of the drive shaft. The boiler must have had a draught problem, the long chimney had been extended by adding two oil drums, beaten and riveted in place!

Golden Progress Mine. Original headgear from the 1930s. Australian timber. Two boilers still in situ. Shaft 200 feet deep.

A track led from the hopper point round the bluff and up into the gully where the twin boilers feeding two steam engines, the shaft frame and poppets were still in place. An excellent site. The frame (poppet head) was the original Australian hardwood timber from 1928. The shaft was 200 feet deep with 165 feet of drives from its base and the frame 46 feet high. Two wheels supported, via the ropes, a cage and ore box hopper. Another cage lay nearby. Part of the steam winch lay further back. An adit entered the hill side just above the shaft for some distance. The boilers bore the marks of the pressure inspection tests stamped into the end faces. One retained the firebox and some bricks. By now parts were rusting away. The site is well worth a visit.
The mine started operations in 1868 and closed in 1896, it then reopened in 1928 and continued into the 1930s. It employed 35 men who resided in a settlement near the approach road. There have been recent drilling test in the area including 1,500 metres of core and reverse circulation drilling by Underworld Resources. Samples revealed 48.8g/t Au.
Golden Progress Mine in the past produced 4,990 oz of gold. (References. Golden Progress Info. Board. NZ South Ltd. Ministry of Economic Developments; Crown Minerals. Otago Goldfields Heritage Trail. Goldfields of Otago).

St Bathans. The once 340 feet high Kildare Hill was mined down into 190 feet deep pit. Now called Blue Lake!

I was a happy man. We then moved on to Hayes Engineering works in Oturehua which is world famous for making the patent 'wire fence' tensioner. The site is a throw back to the 1930s, the machinery belt driven and archaic, wonderful. Fool me bought the DVD of the work shop in operation. Off we continued to St. Bathans for lunch at the Vulcan Hotel and to view the Blue Lake that nearly devoured the town. Gold was discovered in Dunstan Creek in 1863, a year later 2,000 miners lived and worked in the vicinity. It was a rough town, buildings and homes roughly thrown up until order prevailed and buildings were then constructed of wood and corrugated iron. The three hundred and ninety four foot high Kildare Hill was the source of the miners attention, work started in 1864 and by 1934 it was reduced to a 190 feet deep pit. Hydraulic Elevators were used to raise the gravels. Here was the greatest Hydraulic lift in the world, recorded at 226 feet in two lifts. The pit was allowed to fill and sluicing on the St Bathans side stopped for there was a danger that the town might slide into the Blue Lake. The small township is now a charming place, a steep track turns down to the base of the Blue Lake (now distinctly turning green) where one can

launch various boats into the deep water. All around are the signs of sluicing but few material objects remain. (Reference DoC Notice Boards. Goldfields of Otago. Otago Goldfields Heritage Trail).

From St Bathans we moved down the valley to Cambrians occupied by very patriotic Welsh / Maori settlers. (Welsh flags flying and numerous carvings). The sluicings were apparent as were the natives collection of cars, including a Bedford, dating back to at least 1950, mostly overgrown with creepers and definitely in need of a bit of TLC. I arrived carrying gifts, but there was no one about, so Captain Cook look-a-like retreated. Eileen said I was sensible, at least there were no spears in my back! We carried on to Naseby and then drove for miles up a very dusty road to the Kyeburn Diggings (this is where the car changed colour, loosing much of the red to a light clay colour). Once again the diggings were not a lot to shout about, though I did shout at the maniac drivers hurtling by. There were several areas of stacked stones and pebbles by the river side and huge banks of gravel where sluicing operations had cut deep into the banking. I tried my luck at a suitable spot and panned, but nothing appeared except for goose pimples on my legs. That water was cold. Eileen shouted. “I hope you've taken your sandals off, they are the only pair you've got?” I looked down at the sandals under two feet of water and shouted back. “Yes they are here.” I didn't say exactly where. She seemed satisfied, I thought I'd wing it when I got back to the car; in trouble again! So it was back to our new accommodation near Ranfurly and the pub for a nice meal, Hoggart roast, yummy!

The final day had arrived and we were heading back towards Dunedin airport, calling in at Macraes Flat first and to see Golden Point Battery in Deepdell Creek. We arrived at the village, the Mine Tour shop was closed, which was just as well for we were short on time. I followed the dirt road that crossed over the main Macraes access road down a steep hill to Deepdell Creek, expecting to walk half a mile or so to the Golden Point Battery complex, however, I ended up only 30 yards away, well there's a bonus! Eileen sat in the sun whilst, I like a child hurtled down to the mill.

The veins of scheelite and gold bearing quartz were exposed by the Deepdell Creek that cut through them and both types of ore were easily treated by the batteries. The Gold Point scheelite was exported to Germany just prior to the first world war. The gold bearing ore was crushed and passed through stampers (originally powered by a waterwheel) and then washed over mercury coated copper tables where the gold adhered to the surface. Muntz metal comprising of zinc, copper and tin was also used. The plates were cleaned and the gold was recovered by heating the amalgam in a retort. The gold would precipitate at the bottom of the retort. The first battery company used the cyanide process to recover gold from the tailings not recovered by the Muntz process.
Scheelite was recovered by utilising the Wilfley table though a considerable amount of mineral was lost by this process. Pure scheelite was recovered by hand sorting.

The complex, sited in a shallow basin was well set out. The mine managers cottage is maintained as are some of the mine workers huts. There were four batteries on the site. Two were built on the east side of the creek and two on the opposite bank. The first was built in 1889, later in the year a new company built another battery on the west bank (Maritana Co.), however the latter company suffered from a poor water supply so transferred their machinery over to the, now Callery Battery. The Gold Point Battery (built in 1905) was to the east of the present battery, it went into liquidation in 1933, rose like a Phoenix from the ashes and suffered a similar fate again in 1940! The battery continued to operate in a restricted way until 1944. The mine/battery produced 13,000 ounces of gold and 800 tons of scheelite from 70,000 tons of ore during it's life. The battery now commonly called Gold Point Battery is actually the Callery Battery.

The Callery Battery contained a five stamp battery originally powered by a waterwheel but later in the 1930s was powered by a 16hp Tangye kerosene engine. The battery had been greatly modified

through the years, yet still retained the 1889 general lay out. It was operated by the Callery brothers from the late 1920s, had the capacity to treat half a tonne of ore per hour. Much of the machinery was replaced in the 1930s and a heavier stamp introduced, each head weighing 495 lbs. (Sorry folks, I still work in old English measures) . The scheelite was processed by a Wilfley table.

Five head stamps, powered by waterwheel, later by a 16hp Tangye Kerosene engine.

The Callery Battery treated the Ore obtained from Round Hill this was transported to the mill and crushed by a Dodge stone breaker at the rear of the building. The ore was then stamped by the five head stamp to a wet sand and passed through a fine mesh onto the table. Muntz plates were used to collect the gold which was later recovered in the retort. With regard to the scheelite, the process was the similar in that the fine ore was allowed to pass over the table to the Wilfley table where the slanted, grooved, shaking table recovered the heavy concentrate. The scheelite was in demand through both wars and the plant continued working until the 1950s.

The mill was protected by a frame of corrugated iron. What amused me was that obviously the sloping roof was too low for the replacement stamps, a slot had been cut and a little do it yourself mini roof covered the stamp rods that poked out at the top. The battery was locked but a viewing door could be opened and this allowed one to enter about 6 feet into the mill where a cage prevented further progress. The stamps could be seen at the top of the stepped foundations, the plates were in front and a channel continued down to the Wilfley table by the side of the cage. There were a series of drive shafts with belts running off to other (?) machinery. Nearby I could see a vertical boring drill and a retort. In the background I could just see the large flywheel coming off the Tangye engine. The engine itself was hidden.

Gold Point Battery (Callery Battery). Deepdell Creek. Macraes. Battery treated gold and scheelite.Tramway and hopper can be seen to the rear.

The ore was delivered by a tramway to a hopper which fed a Dodge stone breaker, the ore then passed into the battery to the stamps.

I managed to get some superb photographs using a couple of slaves and enhancing them on the computer. The battery was a well laid out small operating unit. At the front was a small run off catchment dam (from the Wilfley table) and an active leat flowed nearby. To the rear and up a slope stood a hopper, grizzly and the Dodge stone breaker. A track led to the adit. Further up the rise there was an eclectic collection of dressing equipment from the nearby Huntington Mill. These

were salvaged as the scrap men moved in and brought here for safe keeping. (Comprising of Berdan pans, heavy duty roller pans and crushers, shafting etc.) There were no boards to explain their use, shame.

So it was off to the huge Fraser Pit at Macraes. (Started in 1989, after ten years it had produced over 1 million ounces of gold). Luckily there was a visitor viewing area and it was bitterly cold. Really it was a huge stepped inverted pyramid of blue grey material. The notice board did not indicate the rock type.

Fraser Pit, Macraes Flat. Started in 1989, after ten years it produced over 1 million ounces of gold

The gold occurs along a major line of weakness called ' The Hyde-Macraes Shear Zone' stretching some 22 miles in length and dipping at 20 degrees into the Shag Valley. The ore is only mined during the daytime so that the mineralised cut off points can be seen. The waste rock is excavated 24 hours a day. The gold bearing ground was discovered in 1862 and initially recovered in the normal way by panning, using the riffle box and sluicing. From this dredging was developed and many lagoons remain. The Macraes treatment plant is sited near the old Battery area. Huge 200 ton dump trucks continually drive out of the winding pit road and through to the mill. It's an awesome and dare I say, ugly site, with spoil stacked high near to the road. I'm glad I saw Macraes but I'd rather search out the smaller mines and batteries up the gorges and the sluicings, though I suppose, they too were an eyesore when in operation so many years ago. (References. Oceana Gold notices. DoC Notices. Goldfields of Otago.)

Recommended Reading:

Otago Goldfields Heritage Trail Pamphlet
Goldfields of Otago by John Hall-Jones
The Speculators Dream by T.J.Hearn and R.P.Hargreaves.
Department of Conservation Information SheetsNew Zealand (Internet)
Goldmining and Goldfields. Http://www.uniquelynz.com/nzgold-3.htm
Mountain Water and River Gold by John McCraw

Richard E Hewer. February 2009

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 14th January 2009 at the BMSC Hut at Coniston, starting at 6.30pm.

Present: J. Aird (JA), S. Barker (SB), I. Matheson (IM), D. Borthwick (DB), D. Bridge (DGB), J. Brown (JB), P. Fleming (PF), T. Holland (TH), M. Mitchell (MM), M. Scott (MSc)**,** & A. Wilson (AW).
Wendy Brown was present as an observer. The meeting commenced at 6.30 pm.11 committee members attended.

1 Apologies for absence from: M. Simpson (MS).

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 17th November had been previously circulated to members**.** It was agreed that Mike Mitchell would act as Chairman in the absence of Mark Simpson. Amendment - JA wished the words 'J. Knowles and' to be removed from Item 7. After which; it was **PROPOSED** by JB and **SECONDED** by MSc that the minutes be signed by the Chairman (at next meeting) as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

3.1 Item 3.2 Florence Mine artefacts - MSc had contacted the Florence Mine manager; who said that there were no CAT artefacts stored there. MSc had phone D. Banks who said he had been very busy but was dealing with it.

3.2 Item 3.6 DGB had arranged a visit to Ghyll Scaur Quarry, Millom Park and The Hill at Millom. Date 1st April was confirmed.

3.3 Item 14.7 JB - The larch boards had been picked up by P. Blezard and delivered. The work had been completed in Greenside and would be done in Hudgillburn shortly.

4 Secretary's Report

Received since last meeting:

4.1 An appeal from PDMHS to raise funds to replace the aging generator with mains electric (£120,000) at Magpie Mine. IM would put this in our next newsletter.

4.2 From – the Agency for the Legal Deposit Libraries, from March 2009 the Library would be relocating to the Nat. Library of Scotland in Edinburgh.

5 Treasurer's Report

JA had circulated the balance sheet to committee members covering the period from 18th November to 14th January. Income was from: Gift Aid repayment, subscriptions, donations and publications. Expenditure on: printing of Journal 6, lagging boards and BCA PLI. JA wished the committee to approve his expenses of £81.57. Approval **Proposed** TH, **Seconded** PF, all in favour. The current a/c stood at £4207.59 and the Scottish Widow a/c at £13,000.

6 Membership Secretary & Newsletter Editor's Reports

IM reported that 62 members had renewed their membership to date. The sad loss of Major JWB Hext; our vice president for many years was reported. His funeral would be held next Friday 16th Jan; SB had sent condolences from the society. The next NL would be going out the last week in Feb. IM had replaced his printer.

7 Meets Report

PF wished to discuss the increasing amount of requests received from non-mining groups to be guided on trips both above and below ground; recently received from:

1 Cambridge University caving group – to go on Paddy End through trip on 9th May. Decision - no, as it has nothing to do with mining history and sporting trips can damage the fabric of mine. Information is readily available on the web. ACTION - PF.

2 15 members of ex BT employees group – walk / short underground trip at Coniston on 31st Jan. MM, PF, TH and IM will arrange, as they have taken them before. One day insurance cover to be arranged.

3 Thomas Thwaites a student from Royal College of Art, London, who's MA project includes mining various metals to make a pop up toaster from scratch (see attached email). It was explained to him that we no longer removed minerals from the Coniston mines which are scheduled. He would have to join CAT if he wished to go on the next meet in February. SB to contact him.

4 To lead a walk for the Coniston Walking Festival next September. This was agreed, MSc would do.

5 The Warden of Holywath YHA at Coniston has asked for our help to again support events on a mining related course he runs in October. PF agreed to co-ordinate this.

6 A discussion followed regarding points made by the Meets Secretary J. Knowles at the recent AGM. He stated "This year I have received no risk assessments or log book entries, although work at Kernal level will have been covered by those submitted in 2007. Based on this I request that the committee reconsider their position on this issue, since it is clear that what is requested and what is happening in practice are completely different. My own view is that the requirement to provide risk assessments, except for long term Project meets on a single site, be withdrawn".

After a lengthy discussion the following proposal was made and agreed;

The Risk Assessment (RA) forms would be of a written tick box type forms, which must be filled in before all meets. The committee will carry out a written risk assessment for forthcoming meets, bearing in mind the standard meet controls and forward it to the meet leader before the meet takes place. He/she will carry out a dynamic risk assessment during the course of the meet. SB would be responsible for sending the R A form to the meet leader and on return sending it on to the meets secretary.

On the day of the meet the leader must point out any hazards to members and ask them to sign the back of form, fill in the Log Book entry and return the form to SB. **PROPOSED** IM, **SECONDED** JB, all were in favour.

The next 3 meets on the list were reviewed:

1 Feb.1st – Brownley Hill mine. Meet leader TH, he would complete the RA form as required.
2 Feb. 22nd – Coniston Copper Mines, graded easy/underground, will visit Gray Crag and Deep Levels. RA form filled in by committee. Members to be told what gear is needed when they phone to book a place.
3 March 14th/15th Lake District Weekend. Meet leader JA, he would complete forms as required.

8 Publications

I.M reported that Journal 6 had been distributed to members. Names for review were suggested. JA would contact local libraries to ask if they would like to buy copies. TH had experimented selling some copies on Ebay, with success. Several members of the committee had taken 4 boxes to sell to different outlets. Journal 6 pricing was discussed, it was thought the wholesale price was too high, so it was reduced to £6 per copy, making prices: wholesale price - £6.00, trade – £8.00, retail – £12.50 each. TH thought we could sell copies of A.D. Cameron's drawing of the Coniston Copper mine plan (done some years ago), he would contact Alastair.

9 Library

Major effort, DB has scanned, mine plans, slides and microfiche. There had been an archive session today at the JRM photographing CAT mine plans. Several had attended. Another visit to be planned to finish off.

Brian Cubbon had enquired about journal's 1 & 2. TH also would like a copy of J2. MM and JA may have spare copies, or send a PDF.

DGB will make a **CD** of his index of the classic North Pennine Mining books.

10 New Projects

10.1 Carrock Fell Mine – E. Kingston (EK), LDNPA archaeologist has been in contact and says the Dalmain Estates wish to have a meeting with us to discuss the other entrances to the mine and long term maintenance of the site. JB, IM and MM would attend a meeting to discuss the repair to the portal as intended, we do not wish to be responsible for the rest of the site.

10.2 Silver Gill – No developments.

10.3 Tilberthwaite

A) Mapping of surface features – to continue in Spring.

B) Horse Crag level - JB thought it could be a viable project. PF would speak to Rydal Estates as a first step. It was thought A. D. Cameron had a good mine plan.

10.4 Sebastion Level - PF had consulted with EK regarding submitting a proposal to explore the area.

10.5 Lucy Tongue Level - JB & Co. would like to do more exploratory work in the vicinity of Lucy Shaft, he would make a proposal.

11 Publicity Officer

MSc had offered to take up this post, all agreed he should, MSc made various suggestions, it was decided to; review the CAT publicity leaflet and distribute – SB would contact Karen Beer, who produced the earlier copy. Put a CAT membership form in with the copies of Journal 6 when sold by post. Design a poster for display in libraries and centre's etc. PF suggested a project which could be publicised in local press to CAT's advantage. A boundary stone laying on its side on a pier in Bardsea Lesiure Park could be retuned to an upright position (see meets report on page 8 of CAT newsletter No.92). A site meeting to take place to discuss the possibility.

12 Coniston Mines & Quarries

Work was still needed at Leverswater Mine as the drainage pipe was blocked and the level was flooding. A work meet would be arranged shortly to deal with the problem April/May. MM would measure the pipe.

13 GPS

The GPS had been used on the last meet in Bannerdale. Mark Simpson now has the GPS equipment and DB has the laptop for use in the archive.

14 Mines Forum meeting

The next Mines Forum meeting will be on 16th March at JRM, Coniston. In the afternoon a walk up to Sebastian Level is suggested.

15 Any Other Business

TH wished to discuss changing of our Constitution to include preserving mine access. SB to put item on next agenda.

16 Date and Venue of Next Meeting

This to be held on Wednesday 16th March 2009 at the BMSC Hut, Coniston at 6.30 pm. There being no further business the meeting closed at 10.00 pm. SB 15/01/09

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY