C A T

The Newsletter of the Cumbria Amenity Trust Mining History Society

Mark Simpson surveying Kernal Level, Coniston

No. 88 August 2007

Cumbria Amenity Trust Mining History Society
Newsletter No 88, August 2007.

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Editorial

Pete Sedgewicke from Heskett Newmarket has been a CAT member for many years and a long term member of the digging team. He was involved with the original dig at Greenside, with Hudgillburn, Hospital Level, Levers Water, etc, and is currently active at Kernal Level. It seems that in several reports I have called him Singleton, not Sedgewicke. Pete Singleton is a past CAT member and is still involved in local history ….. My apologies to you both!

John Brown would like to announce that after seeing himself on the cover of the May newsletter he has purchased a new pair of braces. Only trouble is that now, every time he bends down, his eyes water!

News

First the non news:

Coniston Trail Guide Project.

Following the meeting with the LDNPA Archaeologists reported in the last Newsletter the committee concluded that we would have to fund a revised and updated Coniston Trail Leaflet from our own resources. Nothing further has been done so far.

Paddy End Survey.

The field work for this survey was carried out some time ago by Oxford Archaeology North. We understand that the project was funded by United Utilities and that the final document will go to the LDNPA Archaeology Department. CAT was promised a copy, but nothing has been heard since the completion of the field work.

CATMHS Journal Number Six

We hope to publish journal six next Spring. Twelve articles have been promised so far, on a wide range of topics and I know that some of the contributors have made a start on their contribution. We would still like another six or so articles and it is not too late to begin. Articles can be of any length and obviously should be on mining related subjects. They can be submitted in any format and we will do the layout Pictures are welcome but not essential. If you can help please contact the Journal Editor, Ian Matheson. Phone 015394 32957, email ian@rothayholme.freeserve.co.uk.

Miner's Memorial Service

From the Whitehaven News:
A special outdoor service of remembrance to commemorate the 60th anniversary of the William Pit disaster is being organised for Sunday, August 12 at 3pm. It will take place in St Nicholas' Gardens, led by Rector of Whitehaven, the Rev John Bannister, and proceed to the William pit-head on the Wagon Road for another short service to remember the 104 men who died in the August 15, 1947 explosion. Around 250 people are expected to attend.

Organisers have welcomed a £2,000 grant towards staging the service. The money has come from the Cumbria Community Foundation's Champions Fund. A further £250 has been received from the Neighbourhood Forum (South Harbour). The Champions Fund, from the Department for Education and Skills, is for volunteers or groups to develop projects that will make a difference to their community.

Secretary of the William Pit Memorial Committee, Joe Bragg, said the money will help pay for staging, seating, buses and sound system for the event which will be followed by refreshments at St James' Community Hall, High Street.

Plans for Honister Quarry
Cumbria Tourism have been working with Mark Weir of Honister and Marc Mallam of Mallam & Co to identify ways to conserve the industrial heritage of Honister and to bring this alive for visitors whilst mapping out a sustainable future for what they describe as an important visitor attraction as well as a working quarry.

Delegates have been invited to attend a presentation at Seatoller Barn on 18th September. Peter Fleming and Ian Matheson have been invited to represent CATMHS

More activity at Coniston
Coniston Copper Mines saw some activity on Bank Holiday Monday. Our two newest members, Tony Holland and Wendy Brown entered Flemings Level and descended to the bottom of Triddle Shaft at Deep Level. As we were talking a torrential downpour set in and we departed for shelter our own separate ways and so I got no further details.

Later that day Simon Exley, a cave diver from Lancaster rang me to say he had just descended the Old Engine Shaft to a depth of over 200 ft below Deep Level. He was aware of Mark Ellyatts dive there in 2002 when he achieved a depth of over 550 ft (See report of this in Newsletter No 81) by Jeff Wilkinson.

Simon knows Mark and sounds equally competent in technical diving. He was interested in other areas of the mine to dive in and mentioned the sump in Courtneys Cross Cut and also the New Engine Shaft. The fact that it involved a 300 ft abseil from Red Dell to reach the water level with his diving gear and tanks etc. didn't seem to bother him. I have sent him some copies of mine sections and other information on this area and also Smiths Shaft at Greenside. So, watch this space. He may require additional backup sometime. He has said he would provide us with reports of his mine dives. Peter Fleming

Who was Chadwick?
Email from Peter Sandbach:
Some months ago, I asked 'Who was Chadwick?' I may have a partial answer. In 1820, the Newland Company was negotiating to buy Backbarrow furnace for £3000. Richard Roper would help finance this for a 2/16 share of the company. But a draft contract had Edward Chadwick assigned the 2 shares, with his name deleted and Richard Roper inserted. So, was a long time associate of the Newland Company promised a stake and then died before it was finalised, RR steps in with the money? The snag with that theory is that his shares in the company fleet are only recorded in 1786, and might go back to 1770, too big a time span. As usual, the more you learn, the less sense it makes.

CRO Barrow, BD/L box4/2/16 It deals with the sale of Backbarrow furnace to the Newland Co, mentions Cunsey, Spark Bridge and Nibthwaite.

The CATMHS GPS Device
The history of CATMHS and GPS mapping starts about a year ago when I was involved in the landscape survey of an area near Settle called Giggleswick Scar. The Society, the North Craven History Research Group, acquired a Thales Mobile Mapper Pro GPS mapping device to aid the recording process. Over several months I learnt about the device, it's capabilities and how to use the software.

The system consists of the GPS software that sits in the mobile and the Office element (GIS) that is in the PC. I also found out that there were several varieties of Differential GPS and that accuracy is only to the nearest 3.0m. To improve the accuracy the GPS satellite data has to be combined with Ground Based Beacon data.

This could be achieved in real time (RTK) or afterwards by downloading OS beacon data off the internet (PP or Post Processing) Post Processing would give 0.5 m accuracy (At least 6 satellites up)

Sometime in November 2006 I managed to borrow the device (MMPro) to see how easy (or difficult) it would be to map the Paddy End dressing floors to a useful standard of accuracy. The results of this can be seen In CATMHS NL86. This took several days and has been Post Processed

.

The idea of CATMHS buying such a device was promoted to the committee. The main thrust of my argument was that CATMHS has carried out very little mining landscape mapping (mainly due to the difficulty) and that members who did not wish to be involved with underground exploration or projects, could carry out useful work on the surface.

Committee members replied with useful and pertinent observations, the main one being 'who will use the device?' A chicken and egg situation – Any member who has an interest in recording the mining landscape whether it is in Furness, Nenthead, Wales or the Lake District.

Early in the New Year at the first committee meeting the MM Pro device was tried out by various members; the cold weather did not help but several points were brought up. How to convert the MMPro into a usable map and the difficulty of typing the data into the MMPro. The first point has been covered by my article in CATMHS NL86. The second point could only be answered by looking at alternative GPS Mapping devices. i.e ones that use a stylus to enter data.

To this end a demonstration was arranged at my house with a representative from Ormston, to look at The Thales Mobile Mapper CE with Digiterra Explorer V4 as the Mobile and Office Software. Ian Matheson, Don Borthwick and Mike Mitchell were able to attend.

Their comments were favourable, the main plus point being the ease of use. Good screen, stylus, option to use different software, (Windows CE OS on the mobile) and post processing could be achieved, albeit with Mobile Mapper Office software. About the end of January I sent the committee the

prices of the MMPro and MMCE including software.

About this time (7 Feb 2007) Oxford Archeology North (Jamie Quartermain) were to carry out a survey of the Paddy End Mill Site, and included in the deal was an offer of training for CATMHS members. It was felt that the decision on purchase should wait until after this occasion, when advice could be sought. In the meantime the general feeling was to obtain the best GPS device available and to this end I investigated what else was around.

As it so happened there were only two alternatives to the MMCE and these were Trimble (the market leaders) and Strata, who could supply devices and software within a realistic price.

Both I and John Aird contacted Korec about Trimble equipment and I endeavoured to engage with Strata. The Trimble Geo Explorer series is the nearest equivalent with their Geo XM, XT, the XT being the most accurate of that range of devices. Both sent prices for their devices and software. Korec were very helpful; Strata did have a promising device, but were unable to provided information or demo at that time.

Come the 11th March and the OAN Training day, and an interesting time was had by those members who turned up (I.M did send out a letter on the 12 Feb to all possible interested members, only a few were able to make time to come). GPS was demonstrated, a £20,000 Leica 1200 system using RTK, the beacon info being obtained by mobile phone. (Note: some mobiles do not work in hilly areas – ah hum!!)

About the middle of March, on my request, Eleanor Kingston of the LDNPA sent me a list of monument types so that the naming of feature/layers could be standardised. A week or so later I had a demo of the Trimble Geo XM. Device.

My first impression was of size and sturdiness. I felt immediately that there was no way I could operate this one handed, pole mounting would be a necessity for device and operator safety. The device functioned similar to the MMCE, the software being Trimbles Terrasync for the mobile and Pathfinder Office, both looking more difficult to use than the Digiterra. There was also a small thing of £1000 difference in the price, for apparent similar accuracy.

There was other software that could be used on both the Trimble XM amd MMCE and that was ESRI's Arcpad for the mobile and Arcview for the office. Industry standard software, but from what I saw difficult to learn.

The committee reiterated many times that the device should be simple to use, and my efforts were directed to this end. After much deliberation I recommended to the CATMHS committee that the MMCE should be purchased with Digiterra software for the Mobile and laptop. This was duly agreed and the device ordered with detail pole and bracket

As of now I have had the use to the MMCE and have found out how to obtain the best out of it, and feel competent to instruct people in its use. A manual is being prepared. The MMCE will be brought to the next committee meeting, 23 July 07, to be passed on. Also the conditions of use will be presented for approval.

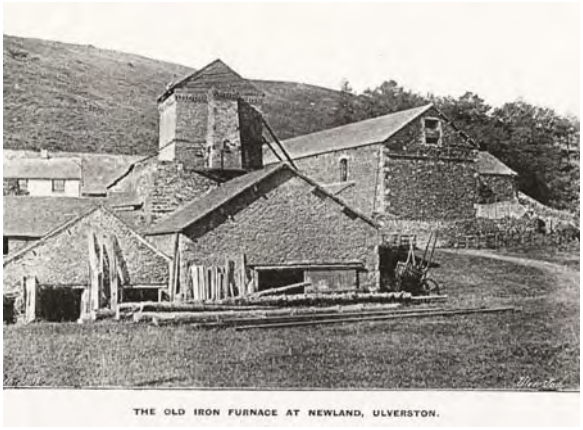
Mark Simpson.

"however ..."

"The main tasks appear to be as follows:

1) Capping or concreting the top of the furnace stack, however ..."

No, not an extract from minutes of a recent Newland Furnace Trust meeting but part of the first paragraph of a letter sent by Dr John Marshall in April 1991 (yes 16 years ago) to inform interested bodies and organisations, including CAT, of progress and plans for the preservation of the Newland site since work had commenced in the Autumn of 1989.



Newland Furnace showing the extension to the stack taken in the 1890's shortly after the furnace ceased production.

So what's taken so long?

Perhaps you noticed that the above quote finished with "however..." It goes on to detail some of the existing problems; dangerous state of the masonry, the need to stabilise the sides of the furnace, the condition of the charging house ... , the list goes on and on. Now, after all these years, *many* of the "howevers" have been resolved and at last we can return to that 1991 number 1 priority, **"Capping".**

June 2006 - a meeting with Andrew Davison (English Heritage), and agreement that capping was a necessity to prevent the ingress of water, that a "Management Scheme" might be the solution, only limited financial support would be possible and that the top of the furnace should be surveyed and recorded.

August 2006 - Application forms arrived but with only two weeks to prepare the case, obtain quotes, draw plans etc. before the end of August deadline for the September meeting. The plans included a membrane under a concrete cap with slate inset into the concrete, a linear drain leading to a soak away in the wheel pit, a safety grill in the top of the stack and repairs to the outer wall.

October 2006 - Disappointment - our application had been deferred to the January 2007 meeting.

January / February 2007 - Management plan received from English Heritage and agreed at the February Trust AGM, Funding total £2835.

Permission to line the stack with rings of our imitation fire bricks had been given in previous agreements, so while the above desk work was progressing, the casting and building of the firebricks had continued. Collapse of the top of the stack, years ago, resulted in a crater being formed on the top of the furnace. Replacing missing fire bricks lower down the furnace was relatively easy as the shape and size of existing blocks could be duplicated. Near the bottom of the crater we were in unknown territory, there were no bricks to duplicate. Many were the attempts to calculate the size, shape and the angle of the sloping face needed to reach the

surface, obtain the required bottle shape and finish with the estimated diameter of about 33" at the top. This required several modifications to our casting moulds to produce the different shaped blocks to achieve these aims. The dedication of the Friday evening FMA team was particularly valuable at this time as they produced weekly casts (8 blocks at a time) to enable a sufficient supply to be available for building by the next monthly work meet.

As the rings of fire bricks were laid the crater was slowly back filled until an inner wall was uncovered. The wall was identified as the probable foundation of the stack extension believed to have been built in the 1870's as part of the, then, modernisation of the furnace stack. English Heritage was notified and arrangements made for these remains to be surveyed by Oxford Archaeology North.

OAN survey in March 2007.

Back filling could now resume, but, as the south side overburden was removed, more remains were uncovered, this time the actual base of the extension wall, a paved drainage walkway, drain holes in the outer wall and a mortar skim of the lower layers of the outer wall.

So where are we now? The firebrick lining to the stack is close to completion, with perhaps another two or three rings to go. The safety grill and stainless steel supports have been purchased and are ready for

Recently exposed wall bottom and walkway. (Photo. Dave Robson)

installation, a skip has been ordered for July 20th and we shall commence removing the overburden from the remaining sides then. English Heritage has been notified of the latest finds and we await their instructions regarding further surveys.

Newland Furnace Trust is grateful for the continuing interest and support of CATMHS. Our normal work meets are on the last Saturday afternoon of each month and any help at these or the digging sessions (July 21st onwards) will always be appreciated. As I write a small hole has appeared in the drum of our half bag electric mixer, although it will last a little longer a replacement will be needed shortly. Any information regarding second hand redundant mixers would be helpful.

John Helme, July 2007.

Coniston Geophys Project
Subject: minerals from Hospital Level email, 29.04.07 from Dr Ruth Siddall, Department of Earth Sciences University College London

I finally got around to analysing those minerals we collected from Hospital Level last summer.

As suspected the pink-purple encrusting minerals was cobalt bloom, erythrite (hydrated cobalt arsenate). Optically the crystals show the typical pink colour and are arranged in radiating aggregates of fibrous crystals. Raman spectroscopy produced nice spectra with the arsenate compound showing very clearly.
You also gave me a sample of a black, 'mystery mineral' from Paddy End Vein. This caused us some problems. Optically there were no distinguishing characteristics and the spectra we produced were poor. However, the closest match, which is reasonable, is that it is the manganese oxide mineral bixbyite (manganese iron oxide). This is not particularly common, but generally found in association with haematite. Given the setting of the Coniston ores it is not too much of a surprise to find it. However, I haven't come across this phase being reported in the literature before? If you know better please let me know!

I will put together a short report with the spectra (and explanations) plus photos of the minerals and put it in the post to you in the near future. Jack has produced a very nice piece of work in the end. (In fact he got a First. Ed) Phil will get you copies for your archives.

Professor Phil Meredith subsequently provided copies of Jack's Report, together with all the data and photographs, and gave permission to print some abstracts. Much of it is quite technical, but here are his introduction and conclusions:

Jack Walpole
MSci Exploration Geophysics
UCL Earth Sciences
GEOL9005/C10
Independent Project Report
March 2007

Abstract
Documents and archaeological records preserve an incomplete history of mining in the English Lake District. Due to its destructive nature, late mining has obliterated much of the evidence of earlier mining activity. Some of the records of early mining have been buried beneath the spoil of more recent workings, obscuring them from sight and often preserving them. Documents and field observations suggest that a drainage adit dating back to the early 17th Century may reside beneath a talus slope at Levers Water Mine, near Coniston, Cumbria (Grid Reference: SD 280989). A non-invasive geophysical survey employing magnetic gradiometry and GPR was conducted over the talus slope to search for the early 17th Century drainage adit. An anomalous GPR feature was found. It has been suggested that the location of this GPR feature is a possible candidate for the location of the buried adit.

Introduction
The English Lake District has a long history of mining; this mining has played an important role in England's heritage, and as such it carries great historical significance. In particular, mining in Coppermines Valley near Coniston Village (Fig. 1) has yielded abundant copper from the fractured Ordovician rocks of the Barrowdale Volcanics Group (BVG) (Millward *et al.*, 1999). It has been suggested that the first exploitation of Coniston's copper reserves may have occurred in the

Bronze Age (Bridge, 2000); this is based upon mortar stone evidence, whereby mortar stones found in Coniston are reminiscent of the positively identified Bronze age mortar stones found at Great Orme Mine in North Wales (Ixer, 2001). It has been argued that the Romans might have exploited the copper to some small extent early in the first millennium; however, there is no evidence to support this claim (Holland, 1986).

The first definitively documented mining in Lakeland commenced in 1564 under the Company of Mines Royal, commissioned by Queen Elizabeth I[1]. By 1567 the production of copper had reached an industrial scale, although work had not yet begun at Coppermines Valley, and did not begin until 1599 (Holland, 1986). The Mines Royal Commissioner's report of 1602 provides the first documented reference of work at Levers Water Mine in Coppermines Valley.

> *'There have been three several mines discovered there by Ffabian, one called Sebastian sunk about 4 fathoms deep which was said to have good rich ore 10" thick and 4 fathoms long. It hath a natural hinget and ligget[2] but is filled up with water and may be cleaned for some 5 marks and then 4 pickmen set to work there'*

The mines referred to above constitute the Back Strings of Levers Water Mine, situated on the south bank of Levers Water. Sebastian Vein was the richest of these workings, bearing the highly sought after carbonate copper ore (primarily malachite), as opposed to the more commonplace and relatively copper-poor sulphide ore (Bridge, 2000). In the January of 1617, a letter sent by Daniel Hechstetter the Younger[3] reports on the desirability of cutting an adit to drain the workings of Sebastian Vein.

> *'This Levers Water is an old work and in divers places fallen in and drowned with water, yet it is a place of great hope if an adit some 40 fathoms[4] long might be driven under the old works upon the leader which being by this means set dry all that part being full of veins the ore might then be had at a reasonable rate, and the many poor workman encouraged to try his fortunes which now they cannot by reason of the water. This adit will cost some £180 or thereabouts and will be some 4 years before it is gotten through. On driving this adit upon the leader there is good hope that some ore may be hit upon to bear the charge'*

By January 1618, Hechstetter's letters inform us that 10 fathoms (~18 m) of the adit had been driven, suggesting that the adit had been started 12 months earlier

[1] (Fleming, 2002 and Holland, 1986) Queen Elizabeth I employed German miners for their unparalleled mining expertise: Daniel Hechstetter, originally from Augsburg, arrived in Lakeland in 1563 to prospect for minerals. Satisfied with his findings, mining commenced with the arrival of more men the following year with Hechstetter managing the mining enterprise. Daniel Hechstetter died in 1581; his post was later filled by his sons Emanuel and Daniel Hechstetter.

[2] A hinget is an old word for a hanging wall; a ligget is a foot wall.

[3] The original Hechstetter manuscripts are now in the possession of the Duke of Northumberland; the letters of Daniel Hechstetter the Younger, from 1600 to 1639, are documented by Hammersley G. (ed) (1988).

[4] 40 fathoms is approximately equal to 73 metres.

(Fleming, 2002). A letter dated 20th January 1620, tells us that the adit had been completed, and the workings dewatered.

> '*we are gotten through with our level at Levers Water and have set off the water there for which we could not work'*

Gunpowder was not introduced to Lakeland until 1694 (Fleming, 2000), all workings prior to this time were laboriously driven by hand; in order to maximize efficiency, adits and levels were cut to a size and shape that would just about accommodate a man. The characteristic shape of these tunnels lends them the name 'coffin levels' (Fig. 2). It is probable that the drainage adit cut to Sebastian Vein was a coffin level.

Mining temporarily ceased after the outbreak of the English Civil War in 1642, and little further work was carried out through the rest of the 17th century. The introduction of gunpowder in the late 17th Century facilitated a surge in activity which reached its peak in the 19th Century. As the ore diminished, copper mining activity in Lakeland gradually slowed until it finally ceased in the mid 1950s.The late mining activity has created a palimpsest effect whereby many of the earliest workings have been lost or destroyed. Indeed, explosives were used to combine Sebastian Vein with an adjacent vein in the 19th Century (Fleming, 2002); today it remains a mystery as to which remaining workings originally corresponded to Sebastian Vein. Furthermore, the drainage adit to Sebastian Vein has been buried beneath the spoil of later mining which piles up against the hillside of Grey Crag (Fig. 3). Consequently the exact location of the portal of the buried adit is not currently known. Attempts to find the internal end of the adit by descending the workings from their northern side, by mine explorers from the Cumbria Amenity Trust Mining History Society (CATMHS), have so far been unsuccessful.

By virtue of the fact that the tunnel has been buried it is thought likely that it will be immaculately preserved, indeed, once the Back Strings had been worked below the depth of the drainage tunnel[5], the tunnel would have been obsolete, and there would have been no apparent reason to alter it in any way. The finding of this tunnel is not only of interest to mine explorers keen to map out the entire network of mines, but also to historians and archaeologists, keen to unravel the secrets of early 17th Century mining, the evidence of which has largely been lost or destroyed.

Due to the fact that this land is a designated site of special scientific interest (SSSI), is contained within a National Park and is privately owned, there are restrictions in place which prohibit the removal of talus. Therefore it is not possible to search for the buried adit by conventional, invasive mine exploration methods on the tunnel's southern side. One way in which the tunnel could potentially be found is by deploying non-invasive geophysical methods to search for a characteristic anomaly that could be associated with the tunnel. If such an anomaly were to be found it would lend weight to an application for an archaeological excavation at the site, and would influence the decision of where to position the trench. We therefore collaborated with members of CATMHS to obtain the necessary permissions and conducted a geophysical survey during

[5] (Fleming, 2002) In the 19th Century, the workings beneath the Back Strings reached a depth of over 200 metres, the drainage tunnel would certainly not have been any deeper than about 50 metres.

August 2006 using non-invasive techniques over the talus slope beneath Grey Crag to search for the portal of the 17th Century drainage adit.

Conclusion:

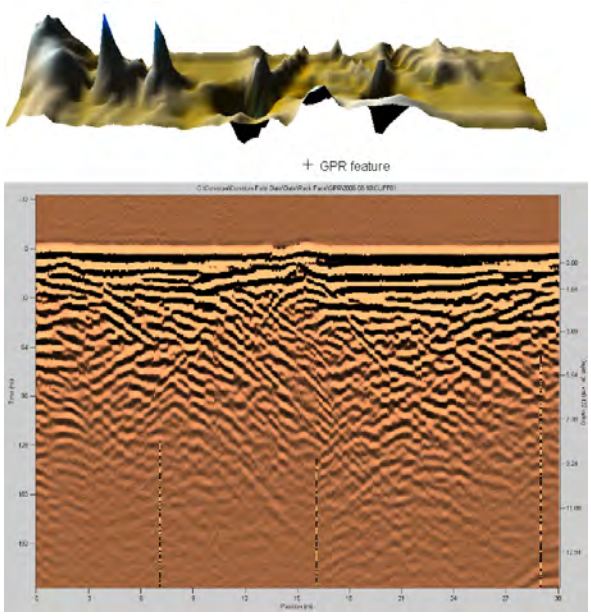


Figure 1 | Surface plot of the gradiometer record from the Sebastian magnetometer survey aligned with the GPR section from the Sebastian GPR survey.

"A geophysical survey has been conducted over the talus slope beneath Grey Crag to search for the buried portal to a historically documented drainage adit cut to dewater the workings at Sebastian Vein in the early 17th Century. Magnetic gradiometry and GPR were the geophysical methods employed in this survey.

The results of the magnetometer survey were inconclusive. It has been suggested that the rhyolitic bedrock which occurs at the main survey site does not have a sufficiently large magnetization for the magnetic method to successfully detect a void.

The results of the GPR survey highlight one area where a hyperbolic feature was observed (Fig. 39); this feature is consistent with the anomaly expected from a void. The area of interest is situated 0.6 ± 0.4 m northeast of a break in slope at the tip of a tongue of rock that protrudes from the north-eastern lip of a recognisable cleft known as Simon's Nick. It has been estimated that the target is 1.3 ± 0.3 m below the ground.

The results of this survey have been used to suggest that the location of the aforementioned GPR feature is the most likely location of the 17th Century drainage adit. Furthermore, from a mining perspective, it is considered that this location would have been a suitable

Figure 2 | Photograph of the main survey site showing the ground position of the GPR feature, this position is marked with a yellow star.

place from which to bore a drainage adit. Even though the results of this survey are not as conclusive as would have been liked, given that there are indications that the tunnel exists at a specific location which is relatively shallow, CATMHS members are seeking permission to dig a small trench in search of the lost adit."

Although the results were not conclusive this project has been quite a success. Jack got a First class Degree and we have some useful information to work on. Thanks to Phil Meredith, Ruth Siddell, Richard Rabe, Peter Fleming, Mike Mitchell and all who were involved last summer.

Kernal Level, Coniston

There will be a comprehensive report on this project in CATMHS Journal No 6, which we hope to publish next Spring. Meanwhile, here is a record of progress to date:

Work has continued at Kernal Level nearly every Sunday. The gate was installed and the team broke through the collapse at the third visit. The workers, John Brown, Collin and Andrew Woolard, Pete Blezzard, and Alan Westall together with supporters, Mike Mitchell, Clive Barrow and Ian Matheson, scrambled over the pile of debris to find that fifteen meters into the bedrock the level was stoped both above and below. It was hard to estimate the height, but it was thought that the top of the stope would be not far beneath the surface. The floor was badly collapsed so it was impossible to see how far it extended. During the next visit a rope was fixed in order to descend the rubble slope beneath the

Looking down into the stope beneath the floor. The Motorway crash barrier in place.

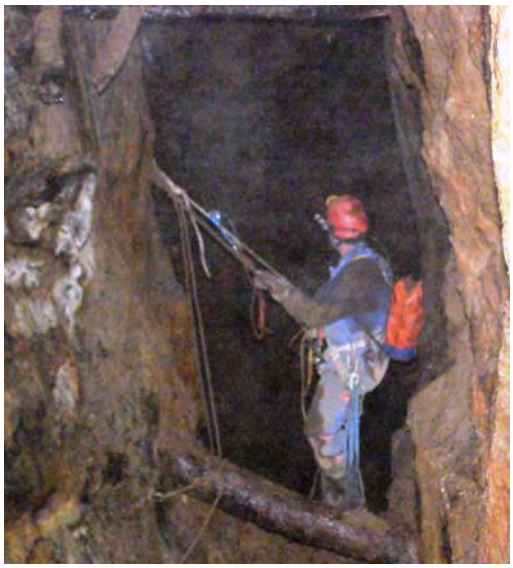
collapsed floor. It slopes down for about fifty feet to a dry sump, but there was no way on at that level. Back up at the adit level a steel motorway crash barrier section was positioned across the gap in order to aid access It was decided that at this stage it would be better to try to continue on at adit level rather than plumb the depths, so John Brown, encouraged by Mark Simpson, set about bolting across the next section.

Looking inbye from the last picture. John Brown on the bolt traverse.

He placed four bolts to reach about half way across before it was time to call it a day. John found it easier to abseil down to the sump below and up the rubble slope rather than come back along the bolt traverse. The following week was wet, and quite a lot of water was dripping above, but John was able to complete the traverse, with some difficulty, as there was little sound rock in which to place the bolts. He found that around the corner a detached flake of rock sloped down to a drop off. Meanwhile the rest of the team assisted Mark Simpson to begin a survey. It was not possible to measure the height of the stope as the Disto range finder wouldn't work due to the damp atmosphere and falling water drops which interfered with the with the reflection of the laser beam. A week later, 8th July, it was dry and sunny. The plan was to descend the rock slope beyond the traverse and to use an aluminium extension ladder to regain the height back to the level.

John Brown's bolt traverse was now redundant, as the way in became to descend the slope beneath the first collapse, prussick up to the in-bye end of the traverse, descend the rock flake slope and ascend the ladder to reach the next section of floor. John, with Andrew Woolard, later joined by Pete Sedgewick, reached this point and found the continuation also to be in poor condition, so a section of the

ladder was used on its edge to cross the next gap. Pete Blezzard found his SRT technique required more practice, and went home. Meanwhile Andrew's dad Collin enjoyed the warm sunshine outside the adit and Ian Matheson went home for a while to watch the Tour de France prologue in London on the TV. Peter Fleming arrived later and prussicked up to the far end of the traverse in order to review progress.

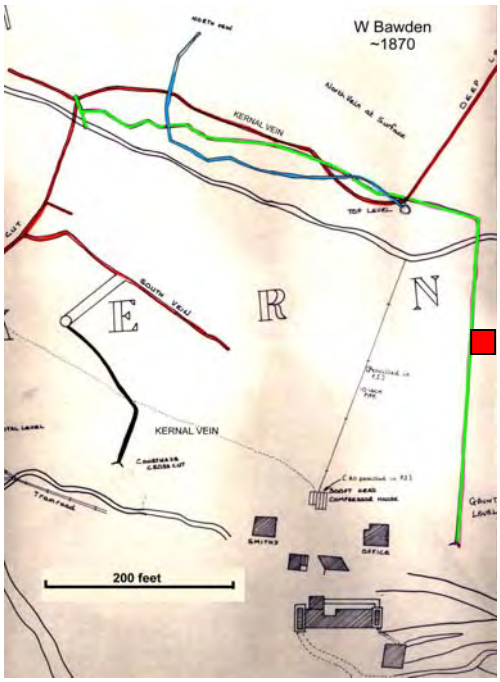


The end of the bolt traverse looking towards the rock flake.

At the end of the day the ladders were left in place. There is a lot of work to do to follow the continuation of the level, let alone descend the stopes. The level appears to continue as a rock tunnel and There are two shafts(?) descending into the depths, each with a miners climbing chain in situ. We think that the stope probably goes all the way down to deep level.

The following day Mark Simpson & Ian Matheson returned to repeat the underground survey under drier conditions and to use the new Mobile Mapper GPS surveying equipment to try to locate some surface features. We surveyed the level as far as the viewpoint at the beginning of the redundant bolted traverse. The Disto wouldn't read distances over 10 meters, so we were still unable to get an accurate reading of the highest point of the stope, estimated at about fifteen meters. In order to get a stable base for the tripod we cleared the floor of the viewpoint. This resulted in a collapse at the bottom of the slope below which filled in the dry sump, making access easier and safer.

We then went outside and used the new GPS Mobile mapper to survey the track and the leat and to record the positions of Kernal Adit, Top Level, Courtney's Cross Cut Portal and several other features. Top Level is marked on the 1970 Bawden plan just above the leat, and can be seen today, exactly as shown on the plan, as a pit, with a level running off to the left. In Newsletter 83



it states that 'Kernal Level is named Top Level here', but that is not correct, they are two different features. Kernal Level is not marked on any of the plans that I have seen, but from our survey I think that it is situated in the vicinity of the red square in the plan above, and that it probably exploits Parke's lode as shown in the Dewey sketch map on page 11 of NL 83.

All this raises more questions than answers, but it is a start.

Ian Matheson

Honister Via Ferrata
Highest Tourist Attraction in England Unveiled!

Honister Slate Mine in the Borrowdale Valley has unveiled what will become England's highest tourist attraction and the country's first ever mountain Via Ferrata.

Via Ferrata is a Latin name meaning Iron Road and is used to describe exposed, high level walking routes traditionally found in the Alps and Dolomites. It provides walkers with the minimum of experience and equipment, access to the kind of terrain usually only used by climbers.

From Honister Slate Mine, which is situated at the head of a remote mountain pass between Buttermere and Derwentwater, walkers wearing protective headgear can secure themselves to a fixed cable and then re-trace a Victorian miner's route which zig-zags diagonally up the craggy cliff-face of Fleetwith Pike to its 2,126ft summit.

Following a path of traditional walk-ways, steel ladders and solid bridges, peak baggers will be rewarded with an uninterrupted vista across Crummock Water, Yew Crag and Dale Head, views cherished by Alfred Wainwright. Honister Slate Mine already offers a visitor centre and café as well as guided underground mine tours.

Owner Mark Weir said Via Ferrata was being introduced for the increasing number of people looking for a different kind of high adrenaline mountain adventure in the Lakes.

Mr Weir: "Honister Via Ferrata is not just a first for the Lake District but the first in England. Not only will this be popular with those looking to make hill walking more exciting and challenging, but it will also introduce people of all abilities to try out hill walking in a completely secure environment with the success of achievement at the end."

The new experience was launched during the first ever Keswick Mountain Festival during May 16th-20th. Alastair Cameron arranged for Ian Matheson and Peter Fleming to join the first ever paying group. The weather was awful that morning, and a planned VIP trip had had to be cancelled. However, by lunchtime conditions had improved

and Mark Wier went up to reconnoitre. He was concerned that violent wind might cause stonefall but returned to report that it was OK, and gave us a lift up to the start in a Landrover.

The entire ascent is protected by a substantial plastic coated stainless steel cable attached to the rock with epoxy bolts. All trips are guided and clients are kitted out with a helmet and lamp and a harness and cows tails, and are required to sign a form promising to remain clipped on at all times. The route follows the external incined tramways, passing through tunnels on the Monkey Shelf and at Ash Gill, emerging near the top of the crag to walk back down via the quarry road. It is a walk rather than a scramble, and in climbing terms there is no difficult or exposed ground, but it will enable the general public to ascend the face of Honister Crag and to see how the mine was worked in the past, something that few people would contemplate before the via ferrata was made. Our thanks to Mark Wier and to Alastair Cameron for letting us see at first hand.
For more details go to www.honister.com or call 017687 77230. I underatand that guided trips will cost £19.50.

Forthcoming Meets:
16th September: A visit to the thriving Threlkeld Quarry & Mining Museum, with perhaps short excursions elsewhere. The museum operates in conjunction with the Vintage Excavator Trust, and this is one of the weekends when they have machinery working. Check out the museum website:
www.threlkeldminingmuseum.co.uk
There will be a small entry charge. Please phone the ML Ian Matheson if you want to come. 015394 32957.
A new meets list will be circulated shortly.

CAT Meet at Keld 29th April 2007
Five CAT members plus two new members, Tony Holland and Wendy Brown met in the car park at Keld on a fine sunny day. We set off up the track across the River Swale, passing the waterfalls and on towards Beldi Hill. Taking a right hand turn off the main track, we dropped down (through masses of primroses and violets) to Beldi Low Level. Here a very well preserved dressing floor (conservation work done by Yorkshire Dales National Park) was explored. The Low Level was driven to try the Underset Limestone in the first half of the 19th C. It followed the Sun Vein east as far as Crackpot Hall Level. It finally closed in 1882 after a flood, said to be caused by the miners breaking into old workings.

Next we visited Beldi Smelt Mill (near the junction of Swinnergill and the Swale) Built in 1771 with a single hearth, then re-built in 1840 with a slag hearth and in a separate building a roasting furnace. The short flue built in the steep crag also dates from this time. There was a very ruinous peat house 300feet to the west.

Beldi Smelt Mill (Photo Ian Matheson)

We followed the steep track up Swinnergill to Parke's Level. In 1742 two brothers called Parke took a lease from Lord Wharton, they drove shafts on the North and Sun Veins. They

soon needed to drive Parke's Level for 1200ft from the side of Swinnergill to drain them. Carrying on up to the head of the gill Swinnergill Mine and smelt mill were reached. Miners were working in Swinnergill in 1705, but had to increase their activity in the late 1740's when Parke's Level was blocked in a dispute. They then had to drive their Main Level at the junction of Swinnergill and East Grain. They used the Beldi Smelt Mill first, and then built the Swinnergill Mill in 1807. It was a simple two-roomed building with an 18ft waterwheel to drive the bellows, two ore hearths set side by side with a short horizontal flue. It was not in use long; by 1818 they were using Lownathwaite Mill (over in the next valley). Here we had lunch.

After looking in the gill bed at an early dressing floor, we carried on up the higher reaches of Swinnergill Kirk and explored the North vein workings (level open) and a natural cave higher up. A quick look up East Grain showed a higher level (run in) and an airshaft. The mine ceased in 1877.

We returned via Crackpot Hall; the smithy here is in very good repair and contains an excellent hearth. Crackpot Hall Level became the principle level of the mine, it worked the Main Limestone, and the attached dressing floor had a water wheel to drive the roller crusher. Other levels on the site are: Thomas Raw's Level driven to the junction of Rose and Jarvis veins with the North, Middle and Sun Veins, Jammy Milner's Level, Calvert's Level, Star Vein Level and Katy Will Level. To the west are West Landy and New Level, (near main track), neither of these last two were a success.

We returned down Keld Lane to the village. The two new members being more energetic took a detour up the old hush. We all met in the farmhouse for tea. Question of the day; who had the last piece of chocolate cake?

Sheila Barker

Information mostly from: 'Swaledale, its Mines and Smelt Mills' by Mike Gill, of the Northern Mine Research Society, published by Landmark Publishing Ltd, Ashbourne.

Further reading:
The Lead Industry of Wensleydale and Swaledale. VOL 1 The Mines.
Arthur Raistrick 1975.
The Lead Smelting Mills of the Yorkshire Dales and Northern Pennines.
Robert Taylor Cleugh 1962.

New Publications:

Archive papers from Engineering Institutions
Newcomen Society: Online archive of Transactions dating back to 1920.
www.newcomen.cm/archive.htm

Painting a Mine with Light: A pictorial history of Wheal Jane a Cornish tin mine by John Peck
Peck Publications 64pp, 85 illustrations many in colour £6.95 The author was the official mine photographer for Wheal Jane.

A Famous Scottish Silver Mine
Bonanzas and Jacobites: The Story of Silver Glen by Stephen Moreton
NMS Enterprises Limited (National museums of Scotland) 154 x 232 94 pp BW & Colour plates £9.99 (Includes postage) from NMS Chambers St., Edinburgh. EH1 1JF
Four chapters: "The Discovery of the Mine and the 1715 Rebellion"; The Government steps in; A Second Bonanza – the Discovery of Cobalt; Description of the Mine and Minerals.

News from NAMHO

Underground matters at Nenthead

A one day open forum was held at the Nenthead Mines Visitor Centre on the 31st of March to discuss underground access on the land administered by the North Pennine Heritage Trust. Speakers gave short presentations on the importance of maintaining access to the mines (Rampgill, Smallcleugh, Capplecleugh, etc.). Peter Jackson outlined the scheme for the day and discussed underground archaeology; Trevor Bridges outlined the importance of ongoing mineralogical research; Chris Woodley-Stewart explained conditions imposed by the North Pennines Geopark, Brian Young described the sites importance from an Earth Science perspective; Mike Hrycyk put the mine explorers case and Alistair Meyers discussed access from the perspective of Outdoor Centres and mine rescue (COMRU), Paul Mercer considered the site as an educational resource.

There were important contributions from the floor, these included: Peter Wilkinson on the history of mining at Nenthead, David Walker Barker on mining history in art; Stephen Moreton on private mineral collecting for research and Steve Holding with a NAMHO perspective. In the discussion following presentations, the key issues were: health and safety, insurance issues, damage to the fabric of mines, mineral collecting and the removal of artefacts. The day closed with the official opening of the 'Under Nenthead' photographic exhibition.

NPHT will produce a discussion document, this will be circulated to delegates and other interested parties later this year. Those who did not attend but would like to see the discussion document should contact Paul Mercer at the address give below.

Education Officer Pennines Education North Pennines Heritage Trust, Nenthead Mines Heritage Centre, Nenthead Alston Cumbria. CA9 3PD.
Email: education@npht.com

An Evening At Moss Rigg Quarry

NGR: NY023313

Members Present: Tony Holland

Moss Rigg quarry is a site I had paid only cursory attention to. However, a tip off from a friend led me one fine Wednesday evening to quickly throw some gear into my car and make my way to Hodge Close at Tilberthwaite.

I parked at about 6.15 then made my way down the extensive spoil heaps to the valley bottom and then up the other side, clambering & slipping up the Moss Rigg heap and onto the dressing floor area. From there I climbed higher still until I found myself standing on the edge of the very substantial quarry pit of Moss Rigg. At first I could see no way down to the base of the quarry, but by skirting around the edge to the southern extremity of the pit, I found the old access road down into the quarry, heavily disguised and overgrown with thriving shrubbery & trees. Part way down the road I was forced to clamber over a large section of the cliff wall that had detached itself and lay deposited on the ground. Looking up, the rock face looked terribly shattered and loose. Not a place to be making a lot of noise, I thought, as I hurried on down to the floor of the quarry.

The entrance my friend had told me about was at the base of the east wall. It was draughting strongly, and looked very promising and soon I was inside. The passage immediately forked but the right passage was soon blocked by fall. The left passage looked better and soon entered what at first sight looked like a small closehead. The floor area, however, was almost completely occupied by garage sized lumps of slate that were of such sizable proportions that they could not have fallen very far, to still be in one piece. The chamber I soon discovered was a 3 way junction of passages. Starting with the left hand passage I followed its remaining rail tracks, passing a slate clog pulling machine and other artefacts to where a collapse prevented further progress.

At this point the roof was supported by large section steel girders, but the immense weight they bore had bowed them severely. It was a most alarming spectacle. I returned to the junction and followed the next passage. This one had a curious concrete dam about 1mtr high spanning the width of the passage, but a pipe passing through its base ensured there was no water build up behind it. After climbing over the dam, I followed the passage further, beneath a wonderful arched roof of slate until it too was blocked by collapse. At this point, there was a strong draught and if I needed any further proof I was near to day, I heard the sound of an overhead airplane! I suspect that this passage was a transport way for material from the quarry to the dressing area.

Returning back to the junction, I followed the third passage, but it too was all too soon blocked by collapse and so I made my way back out to the surface. I was disappointed not have gained entry into a closehead and so continued exploring the quarry bottom looking hopefully for another open entrance. Eventually I arriving at the northern extremity and here I found a large cavity almost completely blocked by rock and debris that had fallen from the face above. I squeezed through the blocks and edged my way around the wall. Unfortunately I could find no way on and I was happy to retreat at this point, the whole place being very unstable. I climbed the northern slope of the quarry and made my way back down through the trees, passing numerous ancient shed like buildings back down to the dressing floor area. I could locate no sign of the “transport passage” on the surface.

Conclusion:
In short, not a huge amount to see at Moss Rigg, most of the buildings having been demolished within the last 10 years or so, but certainly worth spending a couple of hours there if you happen to be in the area. What underground there is, I found to be quite interesting though not extensive. For a historical outline of Moss Rigg, consult “Slate from Coniston” by Alistair Cameron.

Tony Holland

A Visit To Brownley Hill Mine (Or Going Round In Circles)

Sat 26th May 2007
Brownley Hill Mine, Nenthead
Members Present: Tony Holland

With a free weekend ahead I pondered what underground trip to enjoy. The previous weekend I had spent with Wendy, my partner and non member, Simon in Wales exploring some large slate mines and I did not relish the thought of too long a drive. Nenthead was the obvious choice, but which mine? I had neglected Brownley Hill for far too long it seemed and there were large areas that I had so far, not photographed, particularly the three veins terminated by the Wellgill x-Vein. So a leisurely time in the near reaches of this mine was the order of the day. That is until I remembered my previous visit and the warning notice I had seen just inside the entrance that advised explorers not to attempt the high level through trip, as it was now blocked due to a recent collapse. This trip, as anyone who has done it will testify, is physically demanding but fun and takes the explorer into the deepest reaches of what I have always considered to be the most complex of the Nenthead mines. An opinion that was to be bolstered before the day was finished. So this seemed a worthy exercise, to investigate the blockage and also to take some occasional photographs along the way. The only problem was, although I knew Brownley Hill very well indeed, I did not know all of the veins by name, so although the warning notice named the location where the collapse had occurred, I did not know where it was. I had a suspicion though that it was somewhere along the shale tunnel of the high level which I knew to be in a very fragile condition.

With an early start, I was at the portal at 08.45. I kitted up and proceeded along the horse level to the Wellgill x-Vein. I spent some time taking photographs on the Brownley Hill Middle Vein, and then made my way to the eastern end of the vein where a fixed rope affords access to the high level. (It was my intention to follow the through trip in the normal anti-clockwise way until I reached the collapse, rather than my usual clockwise route).

Section of false flooring on the the Brownley Hill Middle Vein

I was ultra cautious about ascending the rope, regarding it with suspicion after a recent frightening experience in the Admiralty Flats, however it seemed to be in reasonably good condition and was even double belayed at the top, as I soon saw. From memory I knew I had to follow the passage, which is in rather poor condition, until I reached a junction, then turn left and follow the high level for a considerable distance to where a another fixed rope is descended down to the Brownly Hill High x-Vein. Anyone who has travelled this passage will know why I have named it “Purgatory Passage”. Driven through shale, there are many collapses and very few places that the explorer can stand up straight to relieve an aching back. It’s only positive point, and in the Nenthead Shale tunnels this is a genuine bonus, is a total lack of

water. This meant that I could bash my knees, bang my head and torture my poor spine all without getting my feet wet!

A fine pair of axles on the Brownley Hill / West High Cross Vein junction

After what seemed an age of stooping & crawling along "Purgatory Passage" I was beginning to wonder just where was the collapse? Passing a number of sumps & rises including a particularly interesting, heavily calcified shaft, I eventually arrived at another shaft on the left. I remembered that there was a shaft that rose next to the fixed rope I was looking for. I suspected I had arrived at my goal, but wait…. here on the left was a collapsed, filled in sump. Was this the collapse? Had the rise from below caved in? It certainly looked that way, but as the passage I had travelled along continued on, I decided to follow it and see where it took me. Soon I was surprised to notice the condition of the passage improving to the point where I walk continuously upright. I passed numerous sumps and rises for quite a long distance, until utterly unexpectedly I saw a fixed rope disappearing down a sump! Was this the rope I was looking for? It had to be. No question, but the area did not seem familiar to me. And again I wondered where was the collapse? What did this rope mean? I pondered this in a growing state of confusion as I clipped on my descender and lowered myself over the edge of the sump. After a drop of about 6mtrs I touched down and looked around for the rope that led down the second pitch. There was no other rope. There was no second part of the pitch and what's more, I did not have any idea where I was.

Excitedly, I made my way along the tunnel I had landed in, to emerge into a large stope. I left my bag of photographic equipment and went exploring. Oh joy. New ground. I seemed to have arrived in a complex of narrow vertical stopes so typical of Brownley Hill Mine. Yet, I knew this mine very well and this looked to be an important area of extraction, so why did I not recognise any of this. And what had happened to the High Level Route ? Hmmmm …

With a sense of curious puzzlement, I worked my way along the undulating base of a large stope and eventually I arrived at a beautiful masonry lined oval shaped sump. A tricky climb down some deads led me to a passage at the end of which was a rope hand line and the remains of an old wooden ladder. Carefully I negotiated the climb down to be met with a big surprise. In front of me was a section of glorious arching in pristine condition. I immediately recognised this, in fact it had impressed me enough to photograph it a long time ago, perhaps 1998 or so. But annoyingly, I absolutely could not remember where in Brownley Hill this arching was. I had no option but to continue on along the passage, which now dropped down into a wet shale tunnel. A short distance further and I emerged out of the right hand passage of a Y fork. Good heavens! I knew where this was… I instantly recognised my current position and it was a very long way outbye from where I had imagined I was at that point. Quickly I retraced my steps to retrieve my bag, which I found via a different route, then made my way back to the Y junction on the Brownley Hill North Vein, all the while trying to remember noteworthy

points of reference along the complex route, for future trips.

Twin railed service tunnel beneath the the Brownley Hill Middle Vein stopes

I checked my watch. It was 11.15. If a collapse had indeed blocked the high level through trip, then it would appear that here was another through trip that was still possible. This was enough, in my view to chalk the day up as a success. However, there were too many unanswered questions. In particular, I wanted to know why, where & how I had taken the wrong route to arrive at my current position. To quote Russell Crowe in Master & Commander, "Quick's the word and Sharp's the action". So after splicing the main brace with a tot of brandy followed by a mars bar, I set off at speed inbye along the Brownley Hill North Vein. The route along this passage is quite arduous with crawls and frequent stretched of cold water, but before long, I was at the right turn which would take me along the High Cross Vein. (Or West High Cross Vein, on this point I am still unsure). Eventually I reached its terminus where a climb up gives access to a further passage. I quickly made my way along this passage (Leaving my bag behind at the base of the climb), noting 3 fingers of old explosives in a sidewall pocket, until the fixed rope that I was looking for came into view. Now I will find out what's going on, I thought. I clipped on and made the tricky ascent in double quick time. Soon I was once again on the high level. There, on the right was the shaft going up. But again, I thought to myself "where was the collapse?"

A short way further on I could see that some large lumps of shale had come down from the roof, narrowing what was once a hands & knees crawl to a belly crawl. I spent a while shifting some of the smaller pieces to the sides of the passage thus improving the way forward. Was this the collapse? Possibly. But it was certainly not blocked so maybe there was worse further on. There was only one way to find out for sure. Once I was past this section, the condition of the passage improved slightly.

I stooped and staggered my way along the high level route for what seemed an age until; what was that ahead? Daylight! Of course! A shaft comes in from the surface along here. I certainly had not seen this earlier in the day. I continued on until I arrived at the right turn that would take me to the first rope I had ascended earlier. And here on the left wall was a knife shaped piece of metal I recognised seeing a few hours ago. I had arrived at exactly the same place from two different directions and this could only mean that the high level through trip was definitely not blocked, which was really good news. It was at this point that I realised that there is in fact two junctions at this point and not one. I had taken the first left, when I should have continued on and taken the second left. As this was the first time I had done the trip anti-clockwise, I had not known this.
Feeling pleased to have resolved the mysteries that had so confounded me I was beginning to feel weary at this point. I slumped down and checked my watch. It read 13.05, time for another tot of brandy & another mars bar. I was faced with the prospect of a long journey back along Purgatory Passage to retrieve my bag. Not a happy prospect at all, I thought. While I enjoyed my break, I

remembered my first trip along this route when I had made my way along here and then descended down onto the Brownley Hill Middle Vein, but not recognising the terrain, and not realising I was very close to the portal, I had retraced my steps all the way back through the mine. Ironically, today I was again traversing the Purgatory Passage two times on the same trip.

The Y junction at the Brownley Hill Vein Level with the Moss Cross Vein

I roused myself and set off back along the high level. When I arrived at the partially collapsed section, I spent some more time clearing the way a little from that side. Soon, I was back down at the bottom of the rope. This area of the mine I have always found to be quite interesting. Further inbye, I had once encountered bad air and so I had no idea where the passage ultimately led. So instead of returning to my bag, I decided to make a short journey along the passage, but with great care, ready to turn around at any moment. It was not long before I found myself becoming breathless. I also began to experience mild distortion of vision. It was with relief that I soon saw before me the forehead, which was my signal to beat a hasty retreat. Soon I began to feel better as the air improved. I climbed down to where I had left my bag and then remembered a vein nearby where I had in the past seen some fine specimens of yellow fluorite. I climbed up and had a good search but I could see no fluorite left. I concluded that specimen hunters have been there. My suspicions were confirmed when I saw a copy of the Daily Telegraph from 1994, the specimen hunter's signature. Whilst looking, I was very pleased to see a section of the sidewall that had remained intact. It comprised an area of 1cmtr sized cubes of beautiful amber fluorite that had clearly gone unnoticed.

I made my way back down to the Brownley Hill High Cross Vein collected my bag and started to make my way out, regretting that I did not have enough time to visit the huge stopes that sit above the level in this area of the mine. Whilst making my way along the level, I spotted another old newspaper, but this one was dated 1970. I think that some of the discarded garbage in the mines at Nenthead (and other places, probably) is now getting old enough to acquire a charm of its own. I reflected again on this theme later on as I sat down and opened my shiny plastic bottle of Lucozade. Within arms reach of me was a much older, glass bottle that had contained the very same product. I could see no date on it, but the person who enjoyed its contents had paid 39p for it and got 20% extra for free!

After making a few stops for some photographic experiments, I was once again at the portal at 16.15, and whilst driving home I pondered the day's adventures from which I drew three conclusions:

1. Not only is the High Level through trip not blocked, but there exists a second thru trip as well.
2. No matter how well I think I know a mine, the possibility of new ground is always possible.
3. The spirit of discovery is alive and kicking !

Tony Holland

Small Mining Artifact

The object shown in NL 86 on page 16 was a

'Beanhole' connector (part sectioned)

These formed part of a system for firing explosive charges giving almost all of the control advantages of electrical systems but without the higher costs and sophistication associated with the latter. The system involved three components, (i) safety fuse and detonator, (ii) beanhole connector and (iii) plastic igniter cord.

Safety fuse and detonators were utilised in the traditional manner, the detonator being crimped to a length of safety fuse selected to give a suitable time interval between the lighting of the fuse and the detonation of the main charge. Instead of the fuse being lit directly by the shotfirer the end of the safety fuse was cut clean and straight across to avoid blinding the powder core. The fuse was then inserted into the beanhole connector so that its end was in good contact with the incendiary composition. The connector was then securely crimped to the fuse. The plug of incendiary composition completely surrounded the oval aperture designed to take a loop of igniter cord and being waterproof prevented any penetration of moisture into the safety fuse. The connectors were developed to

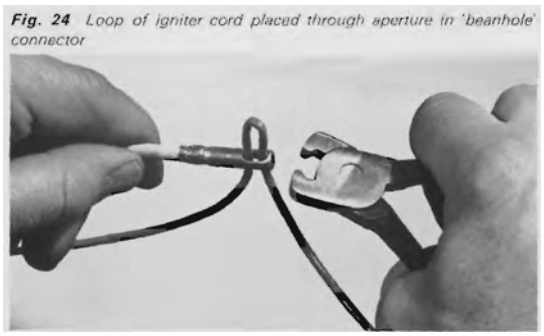


Fig. 24 Loop of igniter cord placed through aperture in 'beanhole' connector

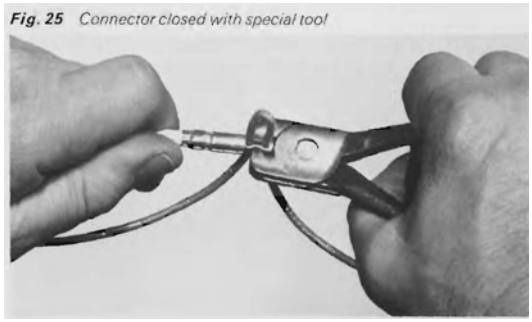


Fig. 25 Connector closed with special tool

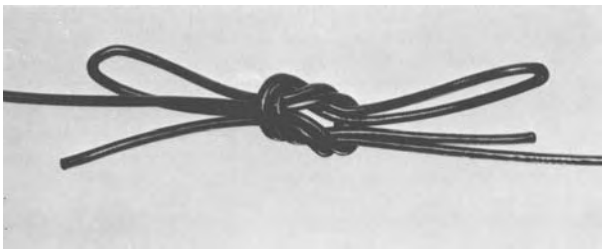
Fig. 26 Plastic Igniter Cord connected to safety fuse

be reliable under conditions of water blast or heavy rainfall in the field.

When the aperture was closed round the igniter cord a highly efficient and reliable connection was made.

Plastic Igniter Cord was a fuse burning with an intense flame progressively along its length and was advantageous in that any number of safety fuses could be lit in the desired rotation. Safety was increased since only one lighting point was required for all the shots being fired. Plastic Igniter Cord was available in both fast (4.9 secs/metre) and slow (33secs/metre) burning speeds. It was used in underground mining operations (other than coal) and in secondary blasting in quarries, having excellent water resistance and good storage properties and was capable of withstanding reasonably rough handling. A particular advantage in heading blasting was that a version was available with a thin iron wire running along the incendiary composition to give sufficient carcase strength after burning so that the carcase remains in place without breaking This eliminated the possibility of a collapsed cord igniting the fuse train at some point other than the intended sequence of ignition. An additional

advantage was that the cord could easily be joined by doubling and tying the ends together in a reef knot.



Shotfirers using the system for the first time were warned of three important features, firstly that on no account must they remain in the vicinity to observe the lighting of the safety fuses since the integrity of the connection between the cord, connector and fuse was guaranteed, secondly only the length of the safety fuses gave a suitable time to reach safety and that no account should be taken of the cord burning time and thirdly the igniter cord must never be held in the hand when lighting, as the flame was intensely hot and would cause very severe burns. Not everyone heeded this advice as is clear from this extract from **CAT NL 12 (1986)**

"One of our older members, relating his experiences as manager of Greenscoe Quarry near Askam-in-Furness, told me a similar tale of a quarryman belting his overcoat with igniter cord, a slow burning fuse which burns with an extremely voracious flame, devouring all in its path. "I first noticed the foolish man," said our member, "when he was frying bacon on the cabin stove."

From the location in which it was found in Braich Goch this connector probably dates from the 1960's, towards the end of the quarry's life, and was being used to drive an adit.

William Bickford

For details of the prize winner see inside the back cover. Ed.

Hudgill Burn Mine Silver

I first heard this item on Radio Cumbria, then discovered the following article in the 14th October 2006 Cumberland and Westmorland Herald (page 2):

Rare Alston snuffbox up for sale - at £3,750

ONE of only four known silver pieces from Hudgill Burn lead mine, Alston, is up for sale at the LAPADA autumn antiques and fine art fair in the coming week.

Photograph of snuff box by kind permission of Schredds of Portabello.

Quoting his own article in The Connoisseur (August, 1975), J. B. Luddington described his discovery of "what might be the rarest of all 19th Century (British) hallmarks". On vinaigrette by Thomas Shaw, with normal Birmingham assay marks for 1823, including the sterling lion, there was an oval shield enclosing the figure of Britannia, denoting the higher (95.8 per cent. pure) standard. In 1975, the Assay-Master, at Birmingham, was unaware that such a mark had been struck in Georgian times.

Those are also the hallmarks which appear on Schredds of Portabello's silver snuffbox, which will be for sale at the

autumn antiques and fine art fair, running from Thursday to Sunday inclusive, at The Centaur, Cheltenham race course, Gloucestershire. As on the vinaigrette, there is engraved inside the box the inscription "The Produce of Hudgill Burn Lead Mine, 1823".

Hudgill Burn is located near Alston in what was for centuries noted as good mining country. The mine there was started in 1812, but the money ran out in 1814 and the workings were to be abandoned. However; the miners decided to work on for two weeks without pay. After 13 days under ground, they struck a massive vein of lead. The work force downed tools and marched to the owners' house, announcing their success by hurling a brick of newly mined lead through the front window.

Silver is found as an impurity in raw lead so it was to be expected that a considerable quantity would be extracted from the lead from Hudgill Burn mine. Yet, after much searching, only three examples of these marks have come to light, all by Thomas Shaw in 1823. Although the Britannia mark was briefly used again in Birmingham in 1894-95, there are no other Georgian pieces recorded. The item for sale is only the fourth example. The snuffbox weighs 106 grams (3.4 Troy Ounces) and measures 3.2 x 2.1 x O.9 inches. Schredds of Portabello are asking £3,750 for it. Details are available at www.schredds.com.

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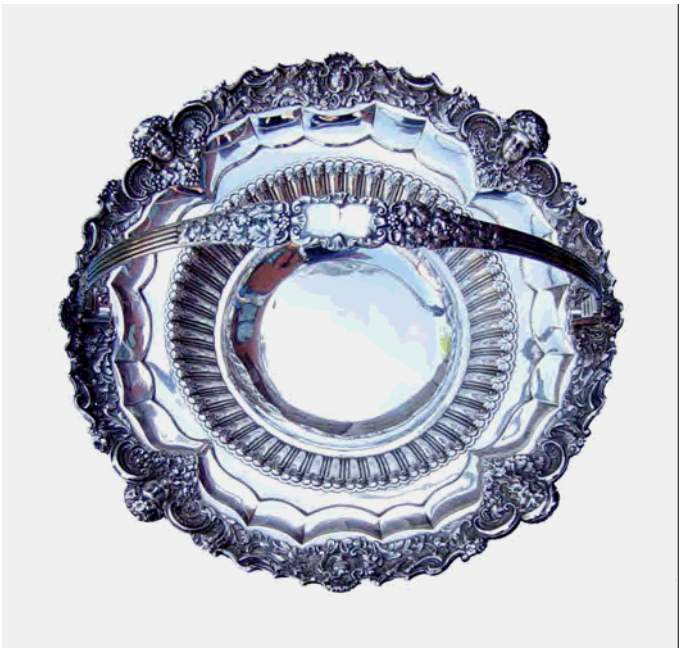
Earlier this year I was contacted by Allan Glyn, who had acquired another piece of HGB silver (was this one of the four known pieces mentioned earlier?), a cake basket, also marked ‘The Produce of Hudgill Burn Lead Mine’ and dated 1823, but hallmarked London.



Photograph of cake basket by kind permission of ALLAN GLYN Antiques.

Allan also commented” centrally, on the underside where the Britannia silver is blackest, there is scribed, most prominent amongst other things, 'No.17 JW' (in signature!)”. He wondered if this was an inventory by John/Jacob Wilson.

Sheila Barker.

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 21st May 2007 at the BMSC Hut at Coniston, starting at 6.30pm.

Agenda.

1	Apologies for absence	2	Minutes of the last meeting
3	Matters arising	4	Secretary's Report
5	Treasurer's Report	6	Membership Sec. & Newsletter Reports
7	Field research policy	8	Meet Secretary's Report
9	Publications	10	Library
11	Coniston Coppermines	12	GPS
13	Hudgillburn	14	Middlecleugh
15	Mines Forum meeting	16	CATMHS website
17	Date and venue next meeting		Any other business

Present M. Simpson (MS), J. Aird (JA), S. Barker (SB), I. Matheson (IM), D. Borthwick (DB), P. Fleming (PF) & M. Scott (MSc).
The meeting commenced at 6.30 pm. 7 committee members attended.

1 Apologies for absence from: D.G. Bridge (DGB), J. Brown (JB), M.Mitchell (MM) & A. Wilson (AW).

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 20th March had been previously circulated to members**.**

It was **PROPOSED** by IM and **SECONDED** by MS that the minutes be signed by the chairman as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

3.1 Item 3.1 Mandall's - JA reported that English Heritage had decided that Mandall's Office at Coniston was not suitable for 'Listing'.

3.2 Item 3.3 JA had received correctly dated cards for new members, but was still awaiting cards for the rest of the membership.

4 Secretary's Report

Received since last meeting. None, that was not covered by separate items.

5 Treasurer's Report

JA had circulated the balance sheet to committee members, covering the period from 26th March to 21st May. Income was from: subscriptions, donations, Gift Aid reclaim and the sale of 180ft of rail. With expenditure going mainly on the conservation of Middlecleugh Mine and Kernal Level. Expenditure on Middlecleugh Mine was approved although it had been higher than expected. As income from publications would start to decline next year, closer monitoring of expenditure on conservation projects will be required.

The current a/c stood at £1920.77 and the Scottish Widow a/c at £15500.00.

6 Membership Secretary's Report & Newsletter

IM reported that we had three new members: Ian Davies, Tony Holland and Wendy Brown.

The recent newsletter had run to 42 pages. Ian had no difficulty acquiring articles to print. This was the fifth issue printed on the present printer, which would need replacing shortly. A new Epsom would cost £69.99, purchase approved.

7 Field Research Policy

The CATMHS artefacts statement (April 1999) was amended to include rare geological features in November 2006, to read:

- The policy of the Trust is that any artefacts or rare geological features found on CATMHS meets should be left undisturbed. A photographic record should be made and details of the find given to the meet leader.
- They should only be removed if they are under threat, they then becomes the responsibility of the Trust, but can be held in the possession of the discoverer, providing he/she is a CATMHS member and has suitable storage facilities.
- The arrangement is subject to the condition that they may be recalled for display at some future date.

It was decided to add the following paragraph:

- The initial agreement with landowners regarding future conservation projects carried out by CATMHS should include:

A) Discussion on access arrangements once the work is finished.
B) State our policy on the protection of any artefacts and rare geological features found.

8 Meets Secretary's Report

MS to contact Jon Knowles as next meets list was due shortly. The need to fill in a risk assessment form for surface meets was discussed. To be considered further at the next committee meeting.

9 Publications

A meeting had been held with the LDNPA Archaeology to discuss the proposed Copper Mining Interpretation Project. The outcome was that we would produce our own trail leaflets. MM had re-designed the first leaflet (Coniston copper mines), which all agreed was concise and attractive. He would review the text and produce a draft. Quotes for printing would be needed.

Comments about wear and tear by walkers on the Thriddle Incline had been made at the LDNPA meeting. It was decide that it would be very difficult to re-route the trail, as there were no public footpaths in area. It was suggested we ask JH to include the consolidation of the incline in a future funding package for the area or as part of the 'Fixing the Fells Project'; to be discussed at next Mining Forum meeting.

PF had made a CD of old photographs of CAT members, from a slide show he gave at our 21st anniversary celebration. A discussion followed regarding the storage and archiving of members mining slides. The possibility of us buying a slide scanner was discussed, as it would be very expensive to have them done professionally. To be discussed again in the future.

10 Library

On average 1 day per month was spent at the John Ruskin aided by Sheila Barker.

Rules for access to the archive had been updated on the CAT web site in line with current policy and our agreement with the Vicky Slowe of the John Ruskin. Thanks to Webmaster.

The old Cardfile records were being converted into MS Word and .PDF formats. Currently about ¾ of the way through processing the existing records. After the new additions to the library have been added the PDF files become a useful tool to answer broad 'anything on' questions.

11 Coniston Mines & Quarries

The LDNPA were awaiting the Oxford Archaeology North (OAN) report of the Paddy End dressing floor survey.

Kernal Level All the permissions were obtained for the exploratory dig at Kernal Level and work started on 15th April. JB is keeping a dairy (see article in last NL). The gate had been fitted and work was going ahead well, spilling through loose ground, more boards would be needed. A tally inscription had been found on level wall.

JB asked that the Designated Responsible Person (on working meets) be given the authority to control access and to enforce H & S conditions on any CATMHS conservation sites. All agreed.

MSc reported there had been a collapse in the Spion Kop Quarry.

PF had photographed the inscription found by Eleanor Kingston on the Paddy End smithy.

The John Ruskin Museum have been asked to take part in the Coniston Walking Festival (last weekend in September) and asked if we would lead a walk in the Coppermines valley, will let us know details later.

12 GPS

A Trimble Mobile Mapper had been purchased, MS would buy a bag, anti scratch protection and register the software, will keep all the equipment at his home at present. A training day (? a Saturday in July) would be organised.

13 Hudgillburn Mine

PDMHS have requested a visit into HGB. JB will try and fix the ladder up to the Cavern before their visit.

14 Middlecleugh Mine

JB is doing work on the old gate, which will be reinstated at the entrance. A group of NAMHO members had visited the mine, taking pictures of graffiti (dated last quarter 18th C) above 2 of the underground shafts, one featured a dromedary. A letter of thanks for CATMHS's work at Middlecleugh had been received from Peter Jackson, vice-chair of NPHT. They suggest an official opening with a barbeque, sometime in July/August.

14 Mines Forum meeting

Next meeting on the 26th October at Threlkeld Quarry Mining Museum at 10.30am.

15 CATMHS Website – Nothing to report.

16 Date and venue of next Meeting

This to be held on 23rd July 2007, at the BMSC Hut Coniston at 6.30 pm.

17 Any Other Business

17.1 PF brought up the topic of the suggested reopening of the portal of Lucy Level; he reminded us of the picture in 'Grey Gold' which shows the original arched portal. Also discussed was the Carrock Mine portal, which is still more or less intact.

There being no further business the meeting closed at 10.15p. SB 30/05/07

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 20th March 2007 at the BMSC Hut at Coniston, starting at 6.30pm.

Agenda.

1 Apologies for absence
2 Minutes of the last meeting
3 Matters arising
4 Secretary's Report
5 Treasurer's Report
6 Membership Sec. & Newsletter Reports
7 Meet Secretary's Report
8 Publications
9 Library
10 Coniston Coppermines
11 GPS
12 Hudgillburn
13 Middlecleugh
14 Mines Forum meeting
15 CATMHS website
16 Date and venue next meeting
17 Any other business

Present M. Simpson (MS), J. Aird (JA), S. Barker (SB), I. Matheson (IM), D. Borthwick (DB), J. Brown (JB), P. Fleming (PF), M.Mitchell (MM), M. Scott (MSc) & A. Wilson (AW).
The meeting commenced at 6.30 pm. 10 committee members attended.

1 Apologies for absence from: D.G. Bridge (DGB).

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 29th January had been previously circulated to members**.**

It was **PROPOSED** by PF and **SECONDED** by JA that the minutes be signed by the chairman as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

3.1 Item 3.1 Mandall's - JA had contacted English Heritage again but had not yet received a decision regarding the 'Listing' of Mandall's office.

3.2 Item 10 (20/11/06) SB reminded us of our intention to inform landowners of our policy regarding the removal of artefacts, minerals, or geological features and also to discuss access arrangements as part of the initial agreement made when CAT reopens a mine. Action - **CATMHS field Research Policy to be reviewed as a separate item at the next meeting.**

3.3 Item 4.3 JA had contacted Nick Williams (BCA) who assured him that we were all insured and that the cards would be amended.

3.4 Item 5 JA was compiling a list of CAT assets to send to the Charity Commission, he also required a copy of the CAT Constitution (Clause 3 was amended at the AGM).

3.5 Item 10 PF had been in contact with Holly How YHA and has fixed dates. He needed to arrange for somebody to do a talk on 14th October. Action - **DGB to be asked at next meeting**.

3.6 Item 12 Cost of the rails at Middlecleugh was discussed. It was **PROPOSED** by JA and **SECONDED** by JB that no charge would be made, all were in agreement.

3.7 Item 15.2 JB would contact J.Helme regarding fast setting additives for concrete.

4 Secretary's Report

Received since last meeting

4.1 Correspondence regarding 'Bassenthwaite Reflections' a new 3-year project, this is an archaeological and historic landscape survey of the Bassenthwaite water catchment area. They are looking for enthusiastic volunteers.

4.2 LDNPA - They have produced a Draft Historic Environment Strategy for the Lake District, in partnership with EH, NT, NE, & CWAAS. They have asked interested groups to look at it on their website and make comments.

4.3 NAMHO – Attended the 2007 NAMHO AGM held in the Village Hall in Threlkeld on 10th March, after which representatives visited Threlkeld Quarry mining museum. See NAMHO website for details of the 2007 Conference in Devon.

4.4 BCA – Received BCRA Transaction and newsletter.

4.5 Cumbria Record Office at Whitehaven has launched the new British Steel archive.

4.6 History dept. Lancaster University are looking into the feasibility of producing a new Victoria County History for Cumbria and Lancashire, and are looking for people to participate in research etc.

5 Treasurer's Report

JA had circulated the balance sheet to committee members, covering the period from 29th January to 26th March. Income was from: subscriptions, donations & publications, with expenditure mainly on the conservation of Middlecleugh Mine and the newsletter. He told the committee that income from Gift Aid would be reduced by 3% next year as a result of tax reductions announced in the last Budget. The current a/c stood at 1885.77 and the Scottish Widow a/c at 15500.00.

6 Membership Secretary's Report & Newsletter
IM reported that 82 members had renewed to date (9 had not renewed). The next newsletter would be out at the end of April; articles needed ASAP. Welcome to new member David Young of the Durham Dales Mining Society.

7 Meets Secretary's Report
JA reported a successful meet at Greenside on the previous day, with a good turnout. The boulder was restrained and gear removed (140ft. rope was abandoned). The Glencoynedale adit was found unlocked on arrival. Lucy Level was locked but the entrance is deteriorating and will need work in the future. PF had a list of suggestions for future meets; he would send it to J. Knowles.

8 Publications
IM reported that he had contacted 20 contributors to past journals asking them to write articles for Journal No.6. To date half had replied. More suggestions for articles were made, including the Paddy End survey, JA and J. Knowles would produce an article on certain Welsh Quarries. Only a few copies of LMH now remain unsold.

9 Library
The archivist reported he had spent two full days working in the archive, there was a lot to do but he hoped to spend 1 day per month at the Ruskin Museum. The first task was to ensure all new material was recorded. He said that a policy statement for the archive was required, space was and would always be limited and that it was impracticable to keep everything that was donated.

10 Coniston Mines & Quarries
Ten members attended the surveying training day organised by Jamie Quartermain (JQ) of Oxford Archaeology North (AON) as part of the LDNPA Archaeology Unit Paddy End dressing floor project. We were instructed in the use of two generations of total stations and very high accuracy survey grade GPS. All agreed it had been a very worthwhile session. Karl Taylor, Geophysicist with OAN would be spending the following 7 days carrying out the survey.
Also discussed was the production of new Coniston Trail leaflets, JQ would explore the possibility of us getting funding for the project. A meeting has been arranged with Eleanor Kingston to discuss this matter further on 30th April.
Kernal Level It is hoped the exploration dig will be able to start at around 15th April. JB has arranged to meet Natural England on site on 30th March to agree were the spoil is to be deposited. JB will contact Andrew Davidson regarding a change in the Method of Work statement.

11 GPS
It was felt that we had a greater awareness of different systems since the surveying training day. The accuracy of GPS systems is limited in mountainous areas. MS would arrange a demo of the Trimble GEOXM, if he thought it suitable; he has the committee's authority to go ahead with purchase.

12 Hudgillburn Mine
PDMHS have requested a visit into HGB. JB will try and fix the ladder up to the Cavern before their visit.

13 Middlecleugh Mine
JB reported that the project at Middlecleugh Mine had been completed; the collapsed arching had been rebuilt and drainage pipes added. The portal had been rebuilt using a mixture of old and new Flinty Fell sandstone and the whole area had been tidied and reinstated. SB said all stages of the work had impressed people and it was an undertaking that CAT could be proud of.

14 Mines Forum meeting
SB, PF & IM to attended the 2nd March meeting hosted by CAT at JRM Coniston, followed by a walk around the Coppermines Valley. See CAT NL for minutes. The next meeting will be on 26th October at the Threlkeld Quarry Mining Museum at 10.30am.

15 CATMHS Website – Nothing to report.

16 Date and venue of next Meeting
This to be held on 21st May 2007, at the BMSC Hut Coniston at 6.30 pm.

17 Any Other Business
There being no further business the meeting closed at 10.15pm.

SB 30/03/07

Small Mining Artifact

In the last Newsletter a contributor, writing under the pseudonym William Bickford, invited readers to let the editor know exactly what the small object above is and how it was used. A small prize was offered for the most accurate answer, probably involving a Sunday out with the John Brown working team on a day specially selected for the appalling weather and lack of shelter. This was the only response:

'The name William Bickford rang a bell and after a little research, I found that he was the inventor of the safety fuse. Indeed, the item in the newsletter is a safety fuse which was used when blasting with black powder. If my answer is the correct one, then I am keen to forgo the prize and for you to hand it on to the next person with the correct answer (been there and got the (wet) T shirt)'. John Brown.

So the prize is still up for grabs!

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY