

CAT

The Newsletter of the Cumbria Amenity Trust
Mining History Society



Graffiti from the 1940's. Alderly Edge Mines. Photo by Mark Hatton

Cumbria Amenity Trust Mining History Society

Newsletter No 136, August 2019

Contents:

Membership

CAT 40 th Anniversary	Page 2
New members	Page 2
Forthcoming meets	Page 3

News

A Proposed North Pennines Research Group	Page 3
Current state of the slate industry in Cumbria	Page 4
Copperheaps	Page 5
Mines Forum, 17 th June	Page 6
NAMHO Conference	Page 11
John Muir Trust publication on Glenridding Common	Page 12
Florence Mine	Page 15
Cumbria GeoConservation walk to Coniston copper mines	Page 16

CATMHS Meets and Activities

Coniston Coppermines, 28 th April	Page 17
Nenthead 5 th May	Page 20
Photo workshop 19 th May	Page 24
Roanhead evening meet, 9 th May	Page 26
Langdale Quarries, 9 th June	Page 27
Duften mines 30 th June	Page 28
Alderley Edge, 14 th July	Page 29
Underground in Scotland	Page 30

Articles

The geology of Borrowdale in 300 words	Page 33
Investigating Yew Crag Slate Workings	Page 34
Company of Mines Royal coat of arms	Page 36
Building the new Kepplecove Dam in 1927	Page 38

Society Officers and Committee Members	Back cover
---	------------

CATMHS 40th Anniversary

The Society is forty years old this year, which makes it one of the oldest mining societies in the country.

To mark this momentous event, plans have started to celebrate this on Saturday 13th and Sunday 14th December at Rydal Hall, through a series of lectures, surface walks and underground trips to suit everyone. The AGM would be held before the dinner on the Saturday.

Provision has been made for people who would like to stay on Friday night, although nothing will be specifically arranged for the evening.

Possible ideas for Saturday include a surface walk and an easy underground trip in the morning followed in the afternoon by talks and presentations (speakers welcome) which would hopefully cover the early years to the present day. It would be good to have on show some of the superb photography that is now being taken.

Sunday could potentially consist of short or medium surface walks as well as an easy or difficult underground trip.

The committee is open to suggestions about how this event could be celebrated and if there are any, would they please contact Warren Allison warrenallison82@gmail.com or on 01228 523923 or Ian Matheson imatheson007@btinternet.com

In conjunction with the proposed event Ian Matheson, with help from some members, has drafted a publication on the history of the Society. I have read it and it is really good, very informative, easy to read, humorous, snippets of information long forgotten about, and it gives a fascinating insight into the Society from its initial conception. The intention is to launch this at the event in December and it will be provided at no cost to members.

Also the Society has been asked to present at the Lake District National Park Authority's Archaeological Conference on the 9th November on the Society's forty years of exploration and conservation.

CATMHS has been and continues to be well respected in the world of mining history societies, and I would hope that as many people as possible could come to the event to help celebrate this fantastic society which has contributed so much to the understanding of Cumbria's mining heritage.

Warren Allison.

New members. Welcome to:

Colin Keighley, from Pickering.

Colin is a member of the Cleveland Mining Heritage Society.

Jonathan Lynch, from Edinburgh.

John Duxbury, from Preston

John has extensive mine diving experience.

Forthcoming meets

Quarter 4 2019 Meet plans

On September 15th CATMHS are heading to Ecton Coppermines in Staffordshire to explore these rather special workings. Copper was worked here from The Bronze Age through to the late 19th Century. It was amongst the first mines to use gunpowder, and deployed advanced pumping technology due to the great depth of the workings.

On October 13th CATMHS are heading over to Arkengarthdale to explore the rarely visited lead mines in this Yorkshire dale. This area was extensively and intensively mined for lead throughout the 18th and 19th Century and today it is hard to imagine just how large and important this industry was in the Dales and Pennines. Britain was the world's largest producer of lead during much of this period and lead was a critical component of the industrial revolution. Please note that the Ecton and Arkengarthdale Meets are already fully subscribed.

November 3rd, Florence Mine.

Future Meets are being planned at Snailbeach Lead Mine in Shropshire and other more familiar local Cumbrian Mines (dates and details to be confirmed).

The CATMHS AGM and Special Events later in 2019 will also include visits to local mine sites. Details will be finalised and members notified soon.

If any CATMHS member would like to suggest future meet locations, or volunteer to be a Meet Leader, please contact Mark Hatton at mhatton304@aol.com mobile 07774 499589. If any CATMHS member would like any advice on self-guided trips to local Mine sites or would like to request assistance with visiting these sites, please contact Mark who will be happy to help.

A proposed North Pennines Mines Research Group

Peter Jackson has proposed a new group for the North Pennines covering the area that the Area of Outstanding Natural Beauty (ANOB) operates within. A meeting was called for on the 20th July to be held at the Upper Weardale Town Hall at St John's Chapel.

Twenty-five people attended the meeting where Peter explained that he and Arthur Roberts had thought many years ago about setting up a research group for the North Pennines. Following Arthur's death, the idea disappeared until recent events where a number of organisations such as the Environment Agency, Historic England, Natural England, Rivers Trust, Wildlife Trust and the various Councils have started to take an interest in the area's mining legacy, botany, ecology, geology etc. There is potential funding available for projects and Peter gave a resume of some, including the recent OREsome project run by the ANOB into the area mining past and are about to start work on a new HLF application.

With so many organisations taking an interest in the area there was an opportunity to set up a new group, which would hopefully be able to bring the various organisations together and provide credibility to the new projects being proposed. Peter gave an outline of the ANOB's HLF proposal called "Our Mining Past", which would benefit from such a group being formed.

Discussions were held by each table of people who gave their views on the proposal. I gave a brief outline of how a similar group had been set up in the Lake District, which was the Mines Forum and the benefits that it had brought to all the organisations involved, with examples such as the re-opening of Carrock Mine, the Coniston Copper Project and the £450,000 HLF grant.

At the end of the meeting it was agreed to set up a group along similar lines of the Mines Forum, but not formalised with constitutions etc and that the first meeting was planned for October. I agreed to do a short paper for the meeting on the Mines Forum including the benefits, what it has achieved and any pitfalls that the new group may encounter, etc.

Warren Allison.

Brief summary of Slate Industry in Cumbria

Honister continues to do well with steadily increasing sales of slabs and tiles from the Kimberley Mine within the Crag. The quantity of traditional slates and walling stone sold is steady but is now only about 12 or 13% of total slate product output. Despite an appearance of ‘quaintness’ on the site, virtually all the equipment in the mine and down in the workshops at the Hause is state of the art and less than four years old.



Serpentine project, Kensington Gardens, London

The team is now attending trade-shows; one recently was the Headstone Manufacturers Show in the South of England. An interesting project for Honister has been the Serpentine Project in Kensington Gardens, London, which has required a huge amount of slate for the roof and interior. The project was kept ‘under wraps’ until the launch on 18th June. We understand that a further quantity will be required for a similar project next year, possibly abroad. Anyone planning to visit London this summer should go along to Kensington Gardens and have a look.

A few weeks ago TV film crews descended on Honister to produce two features for UK television. It’s quite remarkable how many hours it takes to produce a twenty minute slot for broadcast. The features involved the history of slate working at Honister and the whole production operation was covered, from working the face to polishing tiles and riving slates in the workshop. Honister’s slate river (Paul) took over in the workshop, and starred well!

Burlington has now closed and vacated their Petts site at Kirkstone, and Elterwater is now only being used for production of aggregate. However Brandy Crag, in the Coppermines Valley, continues to be worked, although the team there has had to be moved temporarily to their Baycliff site for a short period to help with urgent orders. Burlington's new site at Broughton Moor is giving excellent quality light-green slate. The Kirkby quarry continues as normal.

As well as the traditional Coniston Old Man silver-grey slate, Brandy Crag is also working a deposit of dark grey slate which is giving beautiful results when sanded and polished. This particular slate has only previously been worked in a small way at the Low Water workings, just below the summit of the Old Man, as well as at Goldscope on Brown Pike (see p108, *Slate From Coniston*) and, in a very small way, at Low Bank, lower down on the Old Man. (see p137).

Brathay, Brossen Stone and Peat Field (at Hodge Close) are currently not being worked.

Alastair Cameron.

Borrowdale copperheaps

I felt it would be useful to email images of the copper heaps in the Borrowdale area to friends who live in Germany and who often go down to the Bavarian Alps for mountain walking. They were down there recently and took the pics to a mining museum near Augsburg.

The staff there immediately recognised what they were and were surprised that evidence still existed in Cumbria. They explained that they provided back-up stock of poorer quality ore for use in the old style of blast-smelter to reduce the copper content before the first roasting stage. This prevented the ore-mass solidifying, which badly affected the ore during subsequent roastings. After about 1650, when the old blast smelting process was phased out, this technique was no longer necessary.

Since hearing back from Germany, CATMHS member Robert Gurr has told me that this is exactly what was done during this period in South Wales!!

Alastair Cameron.



Copper heaps at Dalehead

Mines Forum meeting

The meeting in June was different to the normal ones as it was to discuss the proposed conservation management plan for Force Crag Mine encompassing the Coledale valley, and started in the morning with a site visit to the mine followed by a meeting at the National Trust offices at Bowe Barn near Keswick.

Representatives from the National Trust, LDNPA, Archaeo-Environmental Ltd (consultants for the National Trust), Environment Agency, Coal Authority, CATMHS as well as Donald Angus and Alistair Cameron met at the gate just off the main road and drove up to the mine. Once there discussions were held at No 0 level, the new mine water treatment plant which uses the old settling ponds, to No 1 level and then into the mill.

The various aspects of the proposed plan were discussed in what was a very fruitful meeting and was probably the best mines forum meeting that has been held. It demonstrated how the various interested parties from Government bodies to charities such as the National Trust and CATMHS can work together in what is probably a quite unique situation.

The draft notes of the day's discussions follow on and were taken by Niall Hammond from Archaeo-Environmental Ltd although the photographs are not part of them.

Warren Allison.



Down at the treatment plant

What is there at Force Crag you feel is unique and ought to be cared for and conserved?

The overriding conclusion from the entire group was that Force Crag is a unique site. This was interesting given that the forum brought together so many different views and interests who could all agree that the site was unique. The near complete set of machinery was seen as a particularly precious and unique asset. No similar mining mills and interiors exist outside Devon and Cornwall, and even those are not always authentic and honest like Force Crag. The word 'unique' has been used again and again and reflects that Force Crag is a site that was abandoned just at the right moment, just as industrial archaeology had matured into a recognised aspect of heritage enabling voices to speak up for its conservation. Had the mill closed a decade earlier, it might not have survived at all. The existence of the water treatment scheme is also unique in terms of its technology and situation and is in part the continuation of the industrial history of the site. The spirit of place, with the building maintained as it was left in 1991, is unique. It is an authentic and honest site that lends itself well to interpretation and visiting. It is an irreplaceable part of the industrial history of the Lake District; other sites which survived into the recent period have often been sadly lost, examples were given of mining/mill sites being flattened at Carrock and Greenside. It was seen as interesting that the wider site, including its industrial landscape, has multiple conservation significances and multiple issues associated with pollution, but that an innovative solution to pollution

management has been found that won the support and backing of all partners and agencies. Force Crag is a good example of partnership working that is actually working.

Issues of long-term care of the mill buildings and how much effort to put into conserving them.

A conversation took place about the philosophy of the mill building, its contents, its immediate setting and the surrounding landscape. This conversation touched upon the scheduled status of the site, its Outstanding Universal Value (OUV) importance, its SSSI designations, the Special Area of Conservation (SAC) designation of Bassenthwaite and its interest and value for different partners. It was mentioned that the management of Force Crag was a useful opportunity for the National Trust to show that it is not just about country houses and that reveals the breadth of the charity's conservation portfolio and interests. It was suggested that fixed point photography would be useful to record and monitor the site and its landscape setting. The conversation then talked about the danger posed by the mobile scree slopes. This conversation had begun on-site and various interesting views were expressed (the machinery should be removed if the building was about to be lost, the building should be dismantled and rebuilt elsewhere, that the scree slopes should be transported away), however, these views were not expressed during the following discussion of the issues. Instead there was a strong recommendation that a detailed survey of the screes should be undertaken with the benefit of borehole samples and laser scanning. The Coal Authority and EA had experience and expertise of this. Durham University might also be useful in terms of predicting change and likely pollution impacts. There was a warning that this work needed to be undertaken by competent professionals. It was also recognised that the screes threatened not only the mill and the heritage significance of the site, but also the investment made by the Coal Authority and Environment Agency (EA) and that any catastrophic slippage could compromise the effectiveness of the water treatment plant. As such all partners were interested in looking at the screes and the risks associated with them in more detail.

A discussion also took place on the wider valley and consensus was reached that areas of natural regeneration of mixed woodland along the beckside and on crags were to be seen positively. The fenced area around the entrance to Level 0 was seen as a positive contribution to the mine and landscape. The prevention of woody growth in more sensitive areas of the scheduled site to preserve archaeological remains, and within the fenced Coal Authority area to prevent damage to the functioning of the lagoons, were also noted as key management requirements (along with prevention of litter). Katie (Coal Authority) and Hugh (EA) offered to provide a note on their management approach to the leased area around the lagoons and which could be reflected in the conservation management plan.



It was suggested there ought to be a disaster plan for the mill and its contents in the event of catastrophic or unavoidable threat, to ensure as much as possible was safeguarded. This would be part of a management philosophy for the site, and while one argument might be

managed decay, the unique nature of the site strongly suggested that on-going management and stabilisation approach should be seriously considered and investigated.

Key things the public ought to be told about as part of their tour.

The valley has a story to tell about the Lake District in general, and a wider appreciation of the context of the Lake District and metal mining to the site was important. However, the key story is the recent mining history that has transformed the valley head and which the site is best positioned to tell. This story would tie in well to the first theme of the OUV. The water pollution story is also very interesting and links back into the third theme of OUV and the continuation of conservation. (albeit environmental asset conservation, rather than landscape conservation which is at the heart of the third theme of OUV) The group agreed that the mine is still the number one theme for Coledale to tell. However, it is now rivalled by the theme of the conservation which we harness to talk about industrial archaeology, environmental management and managing landscapes for public benefits.

The current approach to public interpretation of the mill with the feeling ‘the miners had just left’ was still felt by all to work well and be a key element of the spirit of place. A way of experiencing the noise and activity as part of a visit to site was seen as something which should be explored, perhaps using the 1991 Leeds Uni video. Linking the entrance to level 1 with the Grizzly with rails was also suggested as a small reintroduction of material to aid understanding of process, as was placing site specific engineering items such as tubs, engine, machinery, back around the site in the open air.

The use of interactives and panels within the mill building should be kept to a minimum to maintain the spirit of place, but it was discussed how difficult it can be to get complex



process over to the general public. The use of the former mine manager’s office and other space around the site was seen as a potential solution to providing a home for the collection of objects on site and providing interpretation to help with the understanding of the historic site, its context and the on-going issues of pollution management.

Lack of connection for the public between underground and over ground was noted and it was suggested that a 3D graphic/model of the mine should be produced showing the mine in relation to the above ground scenery/topography. A similar method at South Crofty was noted.

The use of art in interpretation was raised as worthy of consideration.

The Ball mill

Identification of artefacts, collections or archives from/regarding the site, location and access.

The fixed plant was recognised as being something of an amalgam of different processes belonging to different periods of mining history which was whittled down to just a zinc processing suite by the New Coledale Mining Company. We understand what we have got in terms of plant and how it worked. We do not think that there is anything else that we need to bring back to Force Crag. The use of mineral specimens and end products made from barytes, zinc, lead was noted as useful to help interpretation. Warren noted that he had geological specimens from Lindsay Greenbank together with a plan showing their origin of collection.

A ‘photo call’ and production of a photo archive for the site was identified as needed to bring together the widely spread but valuable material for the site. Following a similar successful exercise at Coniston an appropriate home for this material would be the CATHMS archive.



Battery loco

Value and ID of collections on site

See comments elsewhere.

Research; what still needs researching, exploring, locating or excavating?

The WW2 era is a period of great interest and is not adequately researched. So too are the two earlier nineteenth century mill sites and the water power to them. It seems likely that Ian Tyler’s book did not make use of the National Archives and that a reappraisal of his book and confirmation of references would be very useful. There isn’t at present a full and detailed building survey/record including phasing and interpretation of the Mill buildings themselves.

Drone surveys of the site by Newcastle Uni, Geomorphological Survey by Durham University and EA lidar were all mentioned as possible additional information sources for the site.

Vandalism and security issues.

Carry on as we currently are, there are no obvious improvements to make and it was noted the site has had incidents of vandalism from the 1960's onwards. Continue to manage the building as secure. It was felt the installation of better quality but subtle interpretation outside would alleviate some of the curiosity driven vandalism. The Coal Authority also noted some vandalism to their leased area and expressed concern about access/damage to the pollution management infrastructure. Again, it was thought better explanation might help manage this.

Underground access; balancing amenity, management and legal responsibilities

Hugh confirmed that the EA is minded to not pursue any third party who is willing to undertake work at abandoned mining sites if the work seeks to improve environmental asset management or tackle pollution problems. Hugh suggested that within the context of the portal to Level 3, some clarification is needed on the mining inspectorate approach to works carried out by the Coal Authority as opposed to the NT and/or CATHMS. The forum was content that the historic aspects of the site were a part of the solution to pollution issues not a barrier.

It was agreed that a controlled access into the mine workings was essential for future management purposes including the possibility of a blow out at Level 0, and that a new portal at Level 3 is the logical location for access and a priority; we just need to find a way of making this happen. It was noted that water above Level 3 is relatively uncontaminated with heavy metals and ideally would be piped out at this point to reduce the flow through the contaminated levels below this. This would beneficially reduce the flow of water through the treatment lagoons. Concern was raised that any pipework taking water out at this point must be designed to make sure it didn't cause additional erosion, additional leaching from spoil tips, did not damage the scheduled site nor affect the setting of monument and landscape.

It was agreed that CATMHS had a potential role to play in making this happen and the group asked them to return with a costing for the work needed to open up the Level 3 portal; works to manage water flows underground would need a subsequent and separate discussion.

Water quality; monitoring and management

It was agreed that the risk management plan for Level 0 and the crown hole needs to be formalised as part of the CMP so that the responsibility doesn't sit too heavily on John Malley's shoulders. The current approach has been prepared by the CA for discussion and agreement with the EA and NT, with an annual review, but some work is needed to agree responsibility for actions and communications if trigger levels (e.g. height of water within the CA's monitoring borehole) are reached. The CMP needs to reference out the leased bits that the EA (Katie is going to write a mini management plan for the leased area and this will be dropped into the CMP). The EA would quite like to tell the success story at Force Crag Mine and to hold it up as a model of integrated landscape management.

Any other business

None, but it was agreed the group would be consulted on a draft of the conservation management plan later in 2019.

NAMHO Conference

The 2019 NAMHO conference was hosted by The Cambrian Trust near Aberystwyth in Mid Wales. Five days of glorious sunshine, in gorgeous scenery would be good enough, but combine that with some truly magnificent mines, some very knowledgeable speakers and a couple of hundred like-minded mine explorers and you have the perfect recipe for a brilliant conference.

Mid Wales was extensively worked for metals from the 16thC through to the 20thC. And much still remains of the work done, both above and below ground. A wide variety of mine sites contain much of interest with few apparent access problems. The true beauty of the NAMHO conference is the amount of effort volunteers put in to help mine explorers new to the area experience so much of the mining heritage the area has available. I squeezed in as many mine tours as possible. The standard of guiding was excellent and the knowledge and experience of participants was generally very good. Highlights for me included seeing the magnificent underground water wheel at Ystrad Einion, the in situ pump rods at Frongoch, the hoisting gear at Bwlch-glas, the beautifully preserved lifting cages and the hand chipped adits at Allt y Crib.



As a means of increasing your knowledge of mines and mining explorers, the NAMHO Conference is hard to beat. Next year the conference will be in Cornwall in April. Mark Hatton.

John Muir Trust publication on Glenridding Common.

In late 2017 The John Muir Trust (JMT) took over management of Glenridding Common from the LDNPA on an initial three year lease. This is the first time that the Trust has been directly involved in managing land outside Scotland. Their main concern is to 'manage wild land ... and to conserve our wildest places' In their bulletin Common Ground, for summer 2019 there is an interim report on progress.

So far, using various grants, work has been carried out on footpath maintenance and repair, enhancement of arctic alpine plants, and a survey to establish base line information for a variety of species.

At the outset CATMHS made sure that the JMT were aware of the mining heritage of the area, which includes Greenside and Brown Cove mines, and indeed conducted guided walks for JMT personnel. However, whilst relations with commoners and farmers are discussed in the report, and even the Lakeland Ski Club, there is only a passing mention of 'vast spoilheaps ... at odds with the rugged natural beauty of Helvellyn and ... it's the story of ecological renewal on the hill that is most compelling today.' So there doesn't seem to be great value or interest placed on industrial heritage.

There is a good deal in the reports about working with young people and volunteers and equipping them with knowledge and understanding about the natural environment. Admirable of course, but it would be good if they were also to be given an equal understanding and concern for industrial heritage, and that that could be given greater emphasis in literature and through guided walks

On the plus side, the Trust recently donated £750 to a project led by Tim Clarke of Patterdale Parish council which is exploring 'the potential development of the dilapidated Greenside mine as an educational and tourist asset.'

Ian Matheson.

Florence Mine- a new use

In February's newsletter I wrote an article on a couple of underground trips while the mine was still working. Liz Withey and I had paid the mine a visit while we were in West Cumbria and some of the buildings are being used as a thriving art centre, although Gilbert Finlinson still has the lease on the mine from the Leconfield Estate and goes up on most days.

After looking round the arts centre, we had a look around the outside of the buildings and headframe for the shaft which were listed by Historic England as grade II status on the first of October 2018, but not the current art centre or the incline sunk into the workings below the shaft.

The following is taken from Historic England's web site;

Reasons for Designation

Florence iron mining pit head, which opened in 1947, is listed at Grade II for the following principal reasons:

Architectural interest: As a remarkably intact mining pit head complex including a full suite of buildings retaining most of its machinery and equipment in situ: one of the best surviving

mining sites of any type nationally, certainly the best surviving example of an iron mining pit head in the country.

Historic interest: Iron mining from the mid 19thC fundamentally altered western Cumbria, but has left very little direct evidence in the form of surviving structures. Florence marks the culmination of the iron industry in the region, built just before peak production, and was worked through the decline of the industry through the second half of the 20thC, being the last mine to close.

Details

Iron mining pit head, 1940s for the Millom and Askam Hematite Company.

Layout: the head frame rises from the heapstead building which encloses the head of the shaft. The winding engine house lies immediately to the south-east; ore processing plant, connected via belt conveyors, extends to the north-east; the fan house lies to the south-west. To the east of the winding engine house there is the compressor house and a larger workshop.

Headframe: this is of steel girder construction, rising from the heapstead, the backstays extending from the engine house to the south-east. The western backstay supports a stepped access to the platforms at the top of the frame. The frame carries a pair of spoked winding wheels. The run for the lift cages between the roof of the heapstead and the platform above is enclosed with corrugated iron sheeting.

Heapstead: is of three storeys, being steel-framed with brick infill panels and a flat concrete roof. The top floor, accessed via an external staircase, is lit by picture windows divided into twelve panes. On the north-east side a large door gives access to the head of an ore conveyor. Just below this there is a single storey flat roofed projection forming part of the ore processing plant. On the north-west side there are a pair of ore chutes extending out at second floor level, originating from the top floor. On the south-east side there is a single storey lean-to which provided access to the ground floor of the heapstead, this being used by miners entering the mine via the shaft. This remains uncapped and the interior of the heapstead retains much of its original equipment and fittings, most obviously the cages, guides, railings and gates forming the working parts of the headframe and shaft.

Winding Engine house: this has a concrete and brick basement supporting a large, but light-weight steel-framed shed that is clad and roofed with corrugated-iron, the roof being low-pitched, supported by fink trusses. The building retains most of its original equipment and control gear including the electric powered winding engine with its electrical equipment and operator's cabin. The winding engine is thought to be the earliest electrical winding engine nationally to still survive in situ. The building also includes a travelling crane which was used to facilitate maintenance work. Many smaller details such as signage also survive in situ.

Ore processing plant this extends north eastwards from the heapstead and includes a first stage jaw crusher, vibrating screens, trommel, secondary crusher, ball mill and final stage screens, all being belt driven. Some of the equipment is housed within a single storey projection on the north east side of the heapstead, with some housed within small sheds clad with corrugated iron that lie to the north east, linked to the heapstead by two conveyor belts, one being enclosed.

Fan house: this includes the concrete walled fan drift which descends at an incline north-eastwards to join the shaft below the heapstead. A short, square-section, brick-built chimney

rises from the head of this drift, this being the evasée for the fan. Attached on the north side of the drift is a small, single storey brick building with a corrugated iron roof retaining a ridge ventilator. This houses the electrical motor for the fan and associated electrical equipment.

Compressor house: this lies immediately to the east of the winding engine house and is a low, single-storey corrugated iron shed lit with square windows. This retains its equipment; The air reservoir tank being sited immediately outside the building.

Workshop: lying immediately to the east of the compressor house is a larger brick-built building with two large openings in its northern gable end. This retains a simple forge along with some pumping equipment.

We saw items of equipment which served the mine in amongst the scrap outside the buildings as shown below.





Ball mill



Man rider



Man rider and tubs



Lamp charging station



Last of the hematite from the mine

This is a fascinating site and a meet has been arranged here on November 3rd.

Warren Allison

Cumbria GeoConservation walk to Coniston copper mines

Cumbria GeoConservation Group is a voluntary geological conservation group working to record and look after important geological sites and is an affiliated member of UK RIGS (Regionally Important Geodiversity Sites) and has the responsibility to:

- Identify new RIGS sites in Cumbria
- Monitor and review existing sites
- Develop an awareness of the educational value of earth science field locations not only for essential teaching but for recreational and for research purposes
- Liaison with other county or regional RIGS groups in the UK RIGS system
- Seek to maintain responsible access to valued sites

Currently there are some 280 recorded sites, all of which have been evaluated by its members and external advisors. Site details are logged with local authorities and the County Council. A Steering Group, comprising members of local geological societies and the main environmental bodies in Cumbria, oversee the working of the group. Cumbria GeoConservation is affiliated to Cumbria Wildlife Trust.



The organisation had organised a GeoWeek, which was a new initiative that aimed to promote 'active geoscience' via a week of field trip activities taking place across the UK and Northern Ireland between 4th and 12th May 2019. GeoWeek wanted to introduce as many members of the public to geoscience as possible, mainly through outdoor activities such as urban, rural or coastal field trips. During the walks people would learn about the dramatic events that took place around 500 million years ago that formed our mountains, and the glacial processes that shaped the landscape seen today. The aim was to get up close to some rock and minerals, and learn about the mining and quarrying that dominated this valley for four hundred years. The above is taken from the organisation's web site and publicity.

Carolina Goodship from Cumbria Geoconservation had asked if CATMHS could accompany her on the walk to Coniston copper mines to explain the history of the workings. Mark

Hatton, Liz Withey and I met everyone, numbering around twenty people, at the Ruskin Museum where the group would visit the museum before walking up to the copper mines valley. Liz and I drove up to the mines as we wanted to see if Philip Johnston was in for a chat, having first arranging to meet the group at the intake for the Hydro scheme, which we did. Here Carolina explained about the geology of the valley and it was interesting to learn how the change in the type of rocks had formed a hanging valley. A brief history of the copper mines was given and George Tarr who was on the walk and is a local quarryman (worked Tilberthwaite Horse Crag level in the 1990's) explained about the Hydro scheme.

We walked on up the track behind Irish Row stopping to look at the rock formations and about halfway up using old photographs, I explained how the Upper and Lower Bonsor Mills operated. Arriving at the area around Bonsor East Shaft and the Old Engine Shaft, the mining operation from the Elizabethan period through to closure was described, before going onto the New Engine Shaft and up the track to the left where part way up the hill, we stopped for lunch. It was a lovely day and there were superb views of the copper mines valley and the fells around Coniston.

We followed the leat below Kernal Crag round until it met the road to Levers Water where we slowly walked up the hill to the dam. Here Carolina explained how Levers Water came to be there, and from memory it is due to a change in the rock where a dyke of basalt comes through forming a hard lip, and behind it Levers Water. The change in the rock also impacts on the mineralisation and may account for why the copper veins in this part of the mine running down to Paddy End were much shallower than the Bonsor vein.

Running out of time we made our way back to Coniston after having a superb day and one in which I certainly learnt a lot more about the geology of the area.

Warren Allison.

Coniston copper mines surface meet

ML- Warren Allison, Mark Hatton, Claire Harvey, Kevin Crisp, Jim Cannell, Iwan Fletcher, Conrad Hancham, Rosemary Vidler, Rose Lord.

Meeting in the lane behind the Ruskin Museum we got into as few cars as possible and drove up the track. Parking at the Low Bonsor Mill, Mark and I gave a brief resume of what we would be doing on the day's trip and used old photographs to show what was on the site.

We stopped at the Upper Bonsor Mill where Mark gave a sermon using part of the book titled "Ramblings and Ravings around Conistone" written by Alexander Craig Gibson in 1849, giving detail of the author's trip underground and on the upper dressing floor.

Following this we walked up to Deep Level and on up to Cobblers Level, stopping to discuss the



German period and the possibility that they had a stamp mill just below the level. No-one ventured into this lovely coffin level as it was presumably too early in the day to get wet feet.



Stopping again at the two buildings just below the Old Engine shaft waterwheel, there was a discussion about what purpose they served, before setting off to the Bonsor East Shaft, first playing find the bucking stones in the spoil below the open workings. There are a lot of these stones large and small and each time one visits the site more seem to appear.

After arriving at the waterwheel pit serving the shaft, which was conserved as part of the Coniston copper project, we explained the history behind it before Mark took some of the more intrepid explorers into the level to visit the shaft where the pump rods would have run.

Having safely returned, the Old Engine shaft was soon reached, and we all had a look at the shaft top and the sheave wheel which members of CATMHS had restored many years ago. A brisk walk brought us to the bottom of the Thriddle incline and waterwheel pits where Mark gave his second sermon of the day, on the accident to Thomas Millican, who, in 1850, was unfortunately killed by falling into the waterwheel which he was looking after.

We then slowly walked up the Thriddle incline where the middle section has been rebuilt as part of the Coniston Copper Project, a fine testament to the contractors, before



soon arriving at the top of the incline. Here we decided it was time for lunch with fantastic views down the valley to Coniston. Mark took the time to show people to the top of the shaft.

Setting off we reached Glory Hole, which was worked as late as the early 20th century and then over the hill towards Levers Water. It is here that you get a superb view of Simon's Nick and the workings at Top and Middle level.



Following the track, we soon arrived at the dam, where the water in Levers Water was quite low, before crossing and heading to look at the workings at Levers Water Mine, where it was explained how the level was discovered on a CATMHS meet. The stoping to surface is quite spectacular here. Moving on we came to the top of Simon's Nick and spent some time in this fascinating area before heading down through the remains of buildings and spoil, once again looking for bucking stones.

Following the track back down towards Paddy End Mill, Mark opened the gate to Kernal Crag level which was again a CATMHS project to gain entry to the workings. Everyone had a look underground, which can best be described as interesting and dodgy.

After locking up, the brave members who didn't mind getting their feet wet had a look in Gaunt's level before heading to Courtney's crosscut and then down to the Upper Bonsor Mill.

Here a visit was paid to see how Philip Johnston's project to reinstate the waterwheel at the saw mill was coming on. It must be said that he is doing a fantastic job, the waterwheel pit had been cleaned out, launder towers re-built, and the launders were being installed. It will be a tremendous sight when the project is finally finished.



It was now only a short walk back to the cars after a fantastic day in this wonderful valley and in lovely company. A big thank you to Mark for all his help on the day. Warren Allison.

CATMHS Meet on 5 May 2019 - Scraithole, Allendale (part 2)

This was supposedly the ‘moderate’ of the day’s three Nenthead area trips supported by Nenthead Mines Conservation Society, but quickly became the underwater/sludgy one! Expertly led by Nick Green, the team was Chris Twigg & Iwan Fletcher aided by Mark Hatton and abetted by Cumbrian OverandUnders (Sue & Charlie Fowler)

The historical details of the mine are well recorded in Adit Now and are summarised as:

“Ownership was Beaumonts / Vielle Montagne Zinc Co., then Eric Richardson during the 1970’s. Industrial Minerals tried in 1980 for witherite and spalerite including reopening of the Dodd Level (crosscut) to the Gudhamgill Flats and of the Wellhope Head Top Level but it proved uneconomical & closed in 1981. Three levels, Low, Middle and Top. The High Level was driven beneath the Firestone Sill looking for the continuation of the Wellhope Head Veins on the east side of the fell in 1820. By 1829 the Middle and Low Levels had been started as well; however due to the poor mineralisation of galena the workings were abandoned. The mine was next worked from 1861 to 1878, when the Middle and Low Levels were further driven towards the west. The Middle Level was driven in the White and Pattinson Sills and the Low Level below the Great Limestone in the Quarty Hazel”

As is the case for most mines in this area, reaching the adits is very easy from the road (no mid-Cumbrian style 5 mile treks to reach them). The Low Adit was entered first, and Mark Hatton has reported separately on this so is not repeated.



Boggy Location of the Top Adit

A short climb up Smallburns Moor towards Wellhopehead going past two shafts took us to the easily found and significantly wetter Middle Level that exhibited some extremely impressive calcite flows. To complete the hat trick we found the entrance to Top Level which unlike the lower two levels that trended west, this one drove south before branching west above the others. The entrance was partially dammed with vegetation so lunch was taken while an element of bog removal took place, thus allowing a fractionally drier entry to follow. This adit proved to be the most interesting, but also the most difficult due to the depth and extent of very soft sludge and water found throughout. Once this reached waist height the more sensible (or less well equipped) explorers waited while Nick and the intrepid Iwan disappeared to explore the western extremities of the sludge.

A better equipped return visit should reveal more of the sludge mine. Sue & Charlie Fowler.



“The vein cuts the Namurian Great Limestone, and consists predominately of witherite with small quantities of sphalerite and numerous clasts of limestone wall rock”

Photo credit ‘British Geological Survey’ via Earthwise (Photo T F Bridges, 1983; P601083).

The Happy Team viewing the Calcite flows in the Middle Level – before the Top Adit saturation





Calcite flows over the shaft in Middle Level.

Brownley High Level, Sunday 5th May.

Attending members; Martyn Langley (trip leader) Colin Agnew (deputy trip leader) Michael Oddie, Carl Barrow, Michael Pringle, Derek Mitchell, Chris Bunker.

We started the trip in the usual fashion, consisting of chaos in the smeltpark car park, before finally heading off to the far side of Nenthead village to get changed into our underground wares. Upon entering the mine we soon raced past the engine shaft, headed left past the main flats to the climbing wall on the right and all quickly ascended into the upper workings.

Brownley High Level is an interesting place. There's sporting sections of knee deep water and the occasional bit of old miner's graffiti, and not to forget crawling through loose shaley passageways. (But who's not to like that kind of environment Colin)

Once arriving at the pitch down into Tatters String, Colin was kind enough to demonstrate the use of the Italian hitch for abseiling. We spent roughly an hour in Tatters String which involved plenty of scrambling, crawling, climbing and a play on the ropes between the last pitch down and a sub level.

I was fortunate enough to be the last one down and was greeted by a vast cloud of candy floss smelling vapour part way down the pitch. (You know who you are Michael!) We then exited Brownley with a quick trip into the so called Italian stopes, to then regroup not far from the blue pool. It was then I realised we were missing Speedy Gon Barrow. Next time I'll borrow Bonnie's retractable lead.



Photos from the CAT meet at Nenthead in Brownley by Michael Oddie

All in it was a great trip that was enjoyed by all (and Carl did reappear eventually, having covered much more of the mine than us slow folk). Looking forward to seeing you all again soon at Nenthead.

Martyn Langley.

Hodge Close Quarry photographic meet, 19th May

ML Liz Withey, Lorraine Crisp, Kevin Crisp, Robert Gurr, Alistair Cameron, Warren Allison.



Flooded quarry at Hodge Close.

We all met at the car park at the quarry on a beautiful May day, sun was shining, and it was very warm. The view as we got changed was fantastic looking over to the quarries at Mirk Hole, Sty Rigg, Broad Moss and Moss Rigg with the spoil heaps from Hodge Close in front of us; this is the true Lake District. After some time chit chatting we walked the few yards to look down into the quarry, which is quite awe-inspiring, and the cameras were soon out.

Then we walked to the top of the old incline which leads into the quarry and started the trek down, passing remains of the incline including the carriage which brought the flat tubs back up. The way nature has reclaimed the quarry is quite remarkable and it makes it one of what is a special place in the Lake District. Soon we arrived at the bottom of the quarry at water level, remarkable to think there is as much again under the water. Cameras were out again, and some time was spent here as it is a very photogenic place.

Walking back to the cars it was time for a leisurely lunch before heading a short distance to Bakerstone Barrow Wood level where we all got wet feet, but it is an interesting place with a close head and rails with a set of points to photograph.

On exiting the level Warren, who had come in a bit later than everyone else, took us to see a piece of the wood he had found where the bluebells were in full bloom, and cameras were out again to try and capture this fantastic site carpeting the wood for a long way.

We returned to the cars and ventured down to Peat Field Quarry where Lorraine explained the geology of the site, which makes a trip more interesting when you have someone with that

interest. Some of the group explored the workings between Peat Field and Klondyke Quarries while the remainder looked at the surface workings.



The Meet Leader in action



Lorraine reviewing images on her compact Canon



Robert recording every setting on his camera, which takes an old fashioned thing called film!

As time was getting on we decided to return to the cars by the old tramway round the bottom of the spoil heaps and back up through a footpath to Hodge Close Quarry. This had been a very enjoyable day where people had the time to be able to spend taking photographs without feeling rushed to move on.

Liz Withey.

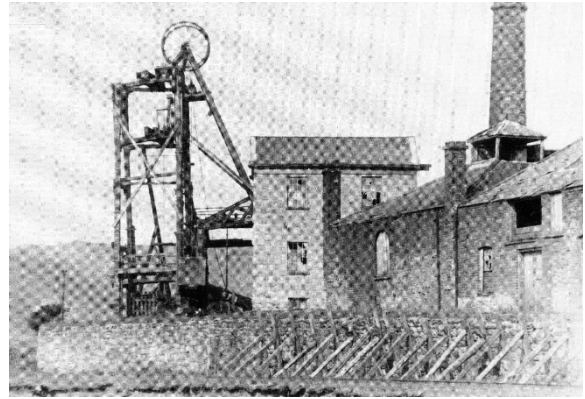
Roanhead evening meet, 9th May

Present: D. Mitchell, J. Wignall, P. Sandbach and dog

The rain cleared up just in time to look at the blind trial on Bennett Bank but only the dog went underground. At Burlington Pit the site of the shaft is just visible but completely overgrown. We looked at the site of No 16 pit and the store but failed to get through the dense undergrowth to view Kathleen pit change-house and the privy. Peter Sandbach.



Burlington Pit 2019



Burlington Pit 1940



The Blind Trial



The Privy



Jonathan Wignall inspecting the engine bed at No 16 Pit. It was later converted to an air raid shelter,



The Change house

Langdale Quarries 9th May

The CATMHS meet in Langdale Quarries on 9th May was blessed with perfect weather and an enthusiastic group. Ten members (Clare Harvey, Derek Mitchell, Chris Bunker, Rosemary Vidler, Stephe Cove, Ormonde Joel, Phil Patterson, Bob Mayhow, Peter Sandbach and Mark Hatton) met at The Wainwright Inn, which nestles beneath the large spoil heaps from the Elterwater quarries.



We walked up through these workings and saw how the large quarry seems to have recently been abandoned. The only current activity seems to be crushing some of the spoil to make slate chippings. We then walked up to Sawrey's Wood where a delightful slate working hides amongst the trees and bracken. The group then strode purposefully along the excellent quarry road across the northern flanks of Lingmoor Fell. There are extensive workings here, all above the road, with much to seek out and enjoy, with numerous curious buildings, infrastructure and a few small closeheads. Climbing higher through the workings and across open fellside, we reached the Lingmoor Quarries. Here the scale of the workings increases, as does the associated infrastructure. Most notable is a beautiful incline with drum house and a Quarry office building with a pit for a weigh bridge. Lunch was taken here soaking in the glorious views up Langdale.

We then carefully descended the incline and re-joined the quarry road, following that down through Elterwater Quarries, through Chapel Stile and into Thrang quarry. These extensive workings are cheek by jowl with the village, which apparently caused some concern when they were working. There is a large closehead at the upper level (18 inch deep water) and a shaft down to much lower closehead workings. In between the slate has been blasted from the crag face leaving a very shattered area.

One further effort was needed to walk to Copt Howe to visit the Neolithic rock art that decorates the huge boulder. The view up Langdale from here is breathtaking and perhaps explains why this site was chosen to be decorated 5,000 years or more ago. The final visit was to The Wainwright Inn to rehydrate and discuss the delightful day we had shared.

Mark Hatton.

Dufton Mine Trip 30th June 2019

We met in the small village of Dufton at around 9.30am. Myself, Michael, Mark, Steve, Wanda, Magnus, Roger, Dave, Ormonde, Rosemary and Julian set off on the three mile walk round Dufton pike up into Rundale Gill. The weather was nice to us for a change, although blustery.



We ascended the gill before climbing up to the south to look at the open cast workings done in the 70's/80's, mining for Baryte, while also having a look at a series of bell pits, probably some of the earliest workings. There were other older workings here, which were destroyed by the open cast work, and the subsequent landscaping. We then headed northeast to re-join the Gill, before coming to the “High Level” adit. The main interests in this adit are a stone lined shaft of depth, areas of natural caves and a coal seam. Extending several hundred metres, and not overly wet.

Once back to daylight, we made our way down to the next adit, “Atkinsons Level”. This level has had a concrete ramp installed fairly recently; I'm sure it only had a plywood board the last time I was there. Opposite this level is the remains of a bothy, and from here down are also the remains of bouse teams and other buildings.



Looking across to the lime Kiln from Dufton Horse Level, with Whit Rake Hush visible behind.

We then made our way down to the “Dufton Horse Level”, opposite the lime kiln. This has a low entrance, with a healthy flow of water, and was cut to meet the Barrow vein, before following it due east. Where the crosscut turns to follow the vein it has some interesting curved stone arching and is stoped above. The level continues for a couple of hundred yards via a barrel crawl to a collapse with water to the adit roof, and a large precarious looking slab. Making our way out to the others, we then had a bite to eat before the return walk into Dufton. We were unable to sample the delights of the “Stag Inn” due to there being several deep at the bar, and it being late already.

Dez Mitchell.

Alderley Edge, Sunday 14 July 2019

Present: Mark Hatton, Chris Bunker, Carl Barrow, Nigel Addey Michael Pringle, Derek Mitchell, Garry Parsons, Kevin Crisp, Lorraine Crisp, Alastair Cameron.



Alderley Edge Mines were worked for Copper from The Bronze Age through to the 20th Century. As a result there is a great deal of workings here with a lot to see. Today's meet visited The West Mine, which was the largest scale and most recent working on the set. Our guide was Nigel Dibben who literally wrote the book on these mines. Nigel is the Treasurer of Derbyshire Caving Club (DCC) who run the mines on behalf of The National Trust.

Alderley Edge today is perhaps more famous for the local house prices and the footballers who live in these houses, than it is for its mines. Yet this was a very productive and profitable source of copper for many centuries. The unusual feature of the mines is that the rock is sandstone, which is a highly competent rock, creating large underground voids and passages which feel relatively very safe and are very dry. No muddy, wet and risky mine exploring for us today. DCC have done a lot of work over the last thirty years to reopen the mines and improve their accessibility.

The West Mine is a subterranean labyrinth with some very sizeable stopes. There is also a great deal of graffiti, mainly dating back to the 1940's when it appears that many adventurous souls explored here and all felt the need to etch their names in the sandstone or write on the stone using the smoke from a candle. Nigel Dibben knows the mine like the back of his hand and he plotted an adventurous and varied route through them, lasting around three hours. The mines are very warm, so eleven rather sweaty and tired souls sought refuge in the adjacent pub to rehydrate afterwards. Another highly enjoyable CATMHS meet.

Mark Hatton.

Underground in Scotland

Scotland isn't blessed with a lot of caving opportunities, but you might be surprised by what there is. We set out on a long road trip to explore the caves that Graham Derbyshire had identified by extensive asking around, googling and poring over maps. The planned itinerary started near Dunoon, followed by a long drive up to Assynt, then a quick visit to Applecross, before a final day in Argyll.

A few miles North of Dunoon in The Trossachs, is Loch Eck. This is a long narrow loch with a road down the eastern side. On the western side of the loch are The Paper Caves, so named because the Clan Campbell once hid important paperwork in the caves during a rebellion that was fought in 1685. These are a type of cave system called a Slip Cave, formed by a huge slice of rock parting company with the cliff face, but only slipping a few yards. This leaves a large cavity and various smaller fractures which are worth exploring. After canoeing across the loch and climbing up through the tall forest, we quickly located the caves. We furtled around the caves for a few hours, discovering various entrances and routes. This is an interesting and unusual place that deserves a visit by the lovers of all such things.

The Slip Cave



We then committed to the 220 mile jaunt up to Assynt (stopping to refuel cars and people in Fort William). We had booked in to the Grampian Speleological Group (GSG) Hut at Elphin, fifteen miles north of Ullapool. Arriving late at night we found the hut was a well-appointed bungalow equipped for a couple of dozen cavers. Thankfully we were the only residents, as arriving at midnight we would not have been popular with any sleeping souls. This hut overlooks the most magnificent scenery, with superb views of the surreal mountain landscape of Cul Mor, Suilven and Canisp. It is also strategically located in Karst Topography (limestone with a natural drainage system) so is surrounded by potholes.

Our plan for day one was to explore the biggest, deepest and most impressive one. We started our day by walking up to the Bone Caves, which are found at the base of the cliffs on Creag Nan Uamh, above the talus slope. Bones of various now extinct animals and humans from prehistoric times and other artefacts of human settlement were discovered inside and so the caves are now a protected area. These are well worth a visit alone, but our destination was further uphill. Rana Hole was originally a bold and extensive dig on the top of Creag Nan Uamh in a successful attempt to connect with Uamh an Claonaite, which in turn allows access to the Great Northern Time Machine. A vertical pitch of some forty metres, leads to a series of tight passages and boulder slopes, followed by some more vertical pitches, before arriving in a huge chamber called The Great Northern Time Machine, reputedly large enough to contain Edinburgh's Usher Hall.



The Bone Cave at Inchnadamph

Bear bones have been found in here, suggesting it was a favourite hibernation cave thousands of years ago when this place was more easily accessible from the valley floor. When discovered in modern times this place was only accessible by cave divers, but following a huge and prolonged effort by GSG members, a vertical route into the system was created by digging out an aven. This entrance/exit sits amongst glorious scenery. Returning to daylight after some four hours underground, we soaked up the sunshine and views of Ben Moore Assynt, feeling truly blessed.

The following day involved a trip in to Cnoc Nan Uamh (Hill Of The Caves System) where we explored The Cave of the Water and The Cave of the Roaring. This is a completely different experience from Rana, with an impressive series of stream passages creating a magical trip.

Cave of the Waters



The rest of the day was spent driving around the majestic and mysterious mountain landscape and seascape of Assynt in perfect weather. Stunning! Decamping from GSG we travelled south to Wester Ross, to reach Applecross via The Bealach na Ba. Applecross has a wonderful atmosphere, creating the impression that you are at the 'edge of the world'. It attracts many visitors who arrive pleased with the hairpin road adventure necessary to simply reach this place. But very very few have any knowledge that hidden away in the woods just a few hundred metres from the bustling village street, is a truly wonderful cave. A rather damp entrance passage leads to some of the best dressed limestone caverns in the U.K. But we could not linger, as our next venue was a long way south near Glen Coe.



South East of Glen Coe is another limestone landscape, peppered with tight passages. Our plan was to explore Uamh nan-Claigg ionn, The Cave of Skulls, Scotland's deepest cave. Unfortunately these passages are so tight I refused the first tortuously squeezey bit and returned to day.

Looking back on a magical few days in glorious Scottish scenery, before the clouds of midges arrive, potholing may actually be a reasonable occasional alternative to mine exploring.

Mark Hatton.

The Geology of Borrowdale in 300 words!

This is an article I wrote for the Borrowdale News. They said they wanted 300 words so I had to squish some very complicated geology into a very small space! It might make a good starting point for anyone trying to understand the geology associated with the Borrowdale Mines.

In the beginning Borrowdale wasn't where it is now. The earth's crust is made of a number of moving plates and 450 million years ago Borrowdale was miles away in the Southern Hemisphere on the edge of a continent that was slowly colliding with an ocean plate. As the ocean crust got swallowed the rocks melted and a rim of volcanoes formed, creating havoc by spewing out lava and plumes of ash (think Mount St Helens). The ash and lava (Borrowdale Volcanics) settled in the water on top of the Skiddaw Slates, sediments that were previously washed off the land and already deformed by earlier movements. The final stages of the volcanic activity were accompanied by hot liquids squeezing through cracks forming crystals as they cooled. These became the source of valuable materials such as lead, copper and graphite.

Time passed, the volcanoes were worn down and the land masses carried on drifting to where they are today. On the way they were folded and heated by other collisions to form mountains. The pressure and heat this generated caused the crystals in the ash deposits to line up making them easy to split into layers (Honister Slate).

Much later, during the Ice Age, glaciers smoothed the valley bottom into a U shape with hanging valleys left behind as smaller glaciers joined from the side. As the moving ice lost energy it left behind its own deposits in the form of moraines such as the one between Stonethwaite and Longthwaite. In the North the softer Skiddaw Slates were worn into rounded shapes, whereas the harder Borrowdale Volcanics in the South remained rugged.



A little rain and a little human intervention completes the story and leaves us with the amazing valley that we see today.

Loraine Crisp.

Investigating the Yew Crag slate workings

There are a number of slate workings, large and small, located on the slopes of Dale Head, high above the head of Honister Pass. These are the Yew Crag slate workings. For many years we have assumed that the slate bands worked by them are similar to those on the Honister side of the pass. But we never had any real proof. It was obvious, as time went on, that this was becoming a significant area of absence from our proven knowledge of the slate bands in this part of Borrowdale. Clearly we had to take some action!

What was needed to start a project going was to obtain good 25" OS mapping of the Dale Head area which we could geo-reference accurately. We then needed to obtain good drone images of the area produced by a specialist team, who knew how to do it, then accurately record on the geo-referenced map exactly where the working faces were of the various open quarries and underground slate mines. We then would need the help of competent geologist who had experience in the Borrowdale Volcanics. Finally we needed to select representative slate-rock samples from each of the working areas and take them down to the workshops at Honister for a skilled slate-river to split the samples for examination.

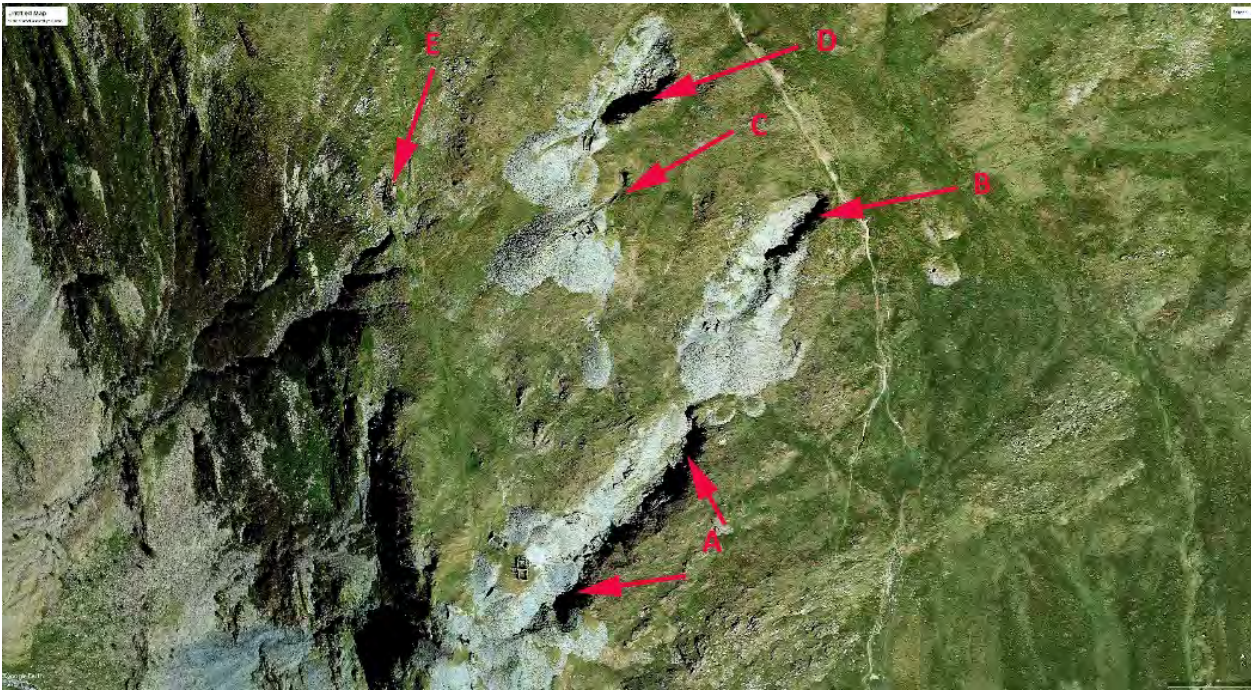


Drone image of part of the Yew Crag slate workings. © Mark Simpson

We successfully obtained good digital 25" OS mapping from the National Library of Scotland. Apart from this the rest of the requirements came from within CATMHS or from Honister Slate Mine.

It took a couple of weeks to get the digital map geo-referenced. We used eight fixed points and obtained 12-digit grid readings on each using a hand-held positioning unit that accessed both Glonass and GPS signals. Mike and Mark already had extremely good drone images available and two of us spent quite a bit of time wandering round the workings recording positioning data.

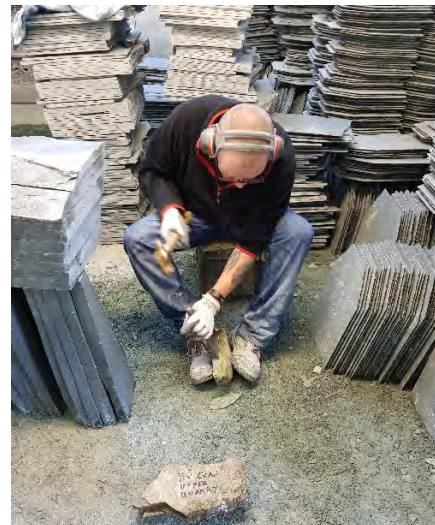
In the end we decided to restrict the sampling to just three sites. Late one November morning, in pouring rain, we walked down to honister from Yew Crag with an extremely heavy rucsac and handed the samples over to slate river Paul in the workshop.



Satellite image of the sites sampled for slate pieces

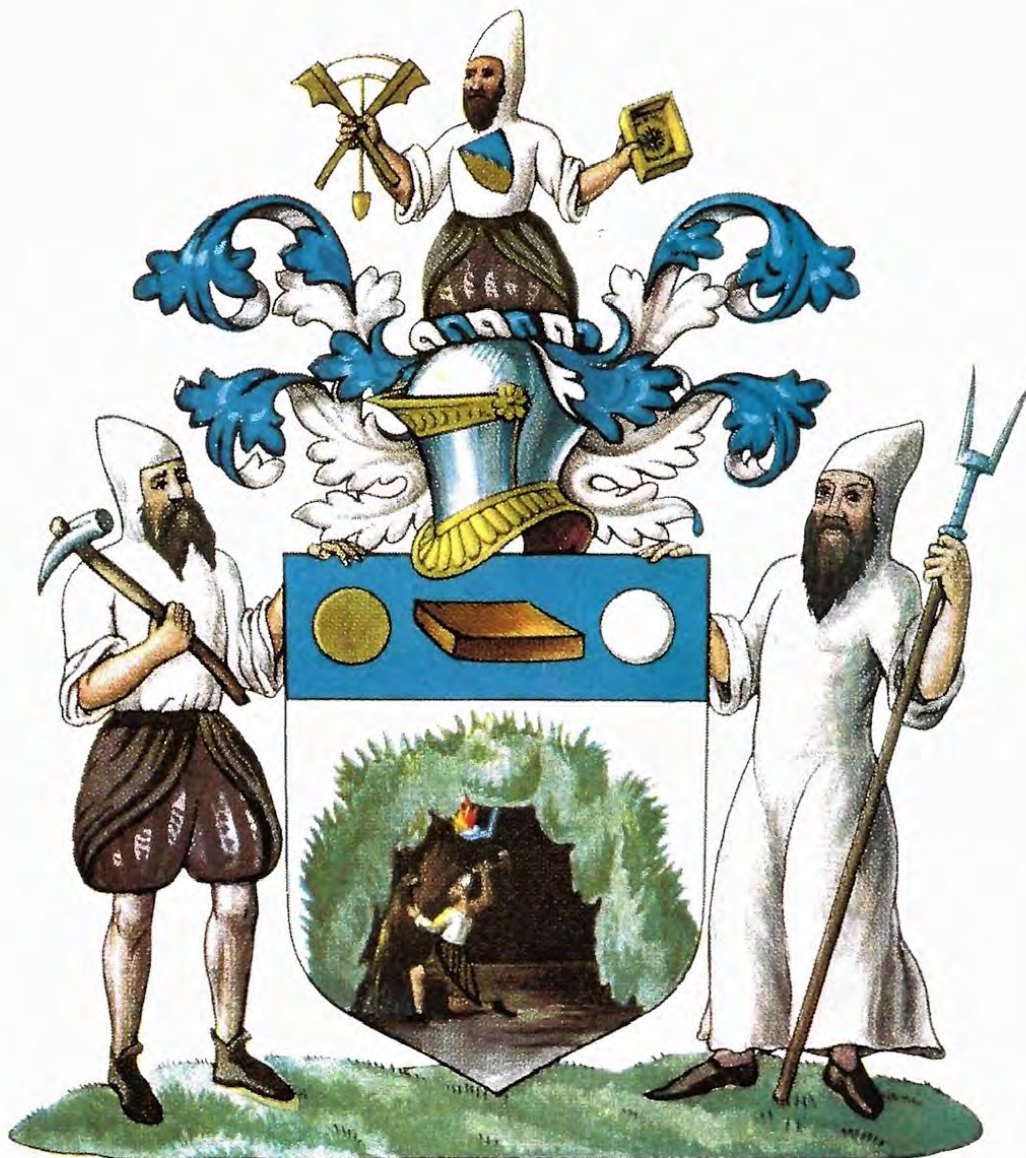
In no time Paul had the slate neatly riven and clear mineral oil applied to the freshly exposed surfaces. Results were quite obvious and are summarised in the captions of the photos below. We now need to review the results with geologist Lorraine Crisp, a CATMHS member. Lorraine has some large scale geological maps of the Borrowdale area and we need to 'superimpose' the data from them onto our 25" OS maps from NLS, hopefully to complete the picture!

Once this is complete yet another of the many 'unknowns' relating to Cumbria's slate industry will have been understood.
Alastair Cameron.



*Left; Samples of slate brought down from Dale Head into the Honister workshop
Right: Samples of slate freshly split and treated. The colour of the split surfaces clearly shown that the left hand sample (collected from B in the satellite image) is olive-green and therefore from the Kimberley slate band, centre sample (collected from C) is pale green and from the 'Honister' slate band and the right hand sample (collected from E) has a blue / grey tinge and is therefore from the Quay Foot slate band.*

The Coat of Arms of the Company of Mines Royal



The Arms of
The Company of Mines Royal
1568 - 1605

The Coat of Arms of The Company of Mines Royal was granted on 26th August 1568. Keswick was the Head Office and centre of mining and smelting operations of this Company. The main activity of the Company was mining copper ores, with Goldscope being the largest source. Smelting took place at Brigham on the River Greta in Keswick. The miners and smelters were from central Europe and possessed knowledge and skills far more advanced than anything known to Englishmen at that time.

The Coat of Arms was granted to the Company by The College of Arms under a system that dates back to the 12th Century. The Coat of Arms acts as an identification mark (like a Trademark or Corporate Logo). Great care went in to the design of the Coat of Arms, following a strict set of rules.

By studying this Coat of Arms we can learn a great deal about how these German Miners appeared and worked in Elizabethan times, including what equipment and techniques they used. The image on the shield in the centre of the Coat of Arms is of a miner working underground and shows how they

used a pair of hammers. Each hammer has a sharp pointed end and a flat, blunt end. The pointed end of the first hammer appears to be held against the rock face like a chisel and the blunt end of the second hammer is used to strike the blunt end of the first hammer. There is an oil lamp or a candle in the roof of the level providing light. The miner is wearing a pantaloon type of trousers with the addition of a miner's apron, usually a leather garment worn to cover the bum; it keeps the miner dry when sitting down and prevents wear & tear of the trousers. And all of the figures in the image have a beard and wear the same headwear. This headwear appears to be a padded hood which would serve to protect the head and provide insulation just like a helmet does today.

The top of the shield, above the working miner, shows two round objects and a square one. These objects are different colours and may be a gold coin, a copper plate and a silver coin. These objects illustrate the main metals that the Company was seeking and examples of the goods manufactured with those metals.

The figure to the left of the shield shows a miner wearing the same clothing and carrying the same kind of hammer as the figure on the shield. The figure to the right of the shield is carrying a long two pronged fork and he is wearing a very distinctive garment. His job may well be to work in the smelter and the garment is to protect him against the heat, sparks and splashing of molten metal. It appears to be made of fustian (a thick mixture of linen and cotton) rather than leather. The flared trousers serve to prevent drips of hot metal falling on to his shoes, although it is surprising that he isn't wearing thick boots. The fork would be used as a tool for tasks such as to open and close hot furnace doors, stir the molten material and lift kibbles.

The figure at the crest holds a compass in his left hand and in his right hand appears to be a device for measuring angles, possibly an inclinometer for measuring headings when driving the level. Adits had to be driven on precise headings, for measured distances and on a gentle upward slope so the water would run out. A device like this, taken together with a compass, would be essential surveying tools.

Mark

Hatton.

From Wickipaedia:

The miner's apron ([German](#): *Arschleder*, *Bergleder* or *Fahrleder*) is part of the clothing worn historically by miners in German speaking Europe. It was a leather apron that served to keep the seat of the trousers from wearing out when working or moving around the mine, as well as keeping out the cold and moisture when sitting. It also provided protection especially when entering inclined mineshafts. The miner's apron was a triangular piece of leather and was supported by the [body belt](#). Permission to wear the miner's apron was only granted to miners and mining officials and it represented a symbol of miners' status. [Agricola](#) wrote in his book *De Re Metallica* (1556) '*So sat the miners on their aprons, which were tied around their loins and hung down behind them.*'



Miner entering a mine sitting on his apron, Georg Agricola, De Re Metallica.

Building the new Kepplecove Dam after the tarn burst in 1927

After Kepplecove Tarn burst on the 28th and 29th October 1927, No 1 power station lost most of its water supply, so the Greenside Mining Company decided to build the concrete dam that is still there today. According to Sam Murphy in his book on Greenside, "Grey Gold", work started immediately and by around September 1929 construction was more or less completed. There appears to be little known about the actual building of the dam and until recently I had not seen a photograph of it being built.

I met Dr Moon's Grand daughter (he was the parish doctor during the 1920's) over fifteen years ago and she recently got in touch to say she had some more photographs of Patterdale Parish, one of which turned out to be the building of the dam.

On the back of the photograph, dated 1929, is the name Bob Shaw, who is standing in the middle of the photograph and it appears that the dam is close to being completed.

I have looked through the 1911 census records and the only person who I have found which could be Bob Shaw was living at number ten Stybarrow Terrace, Glenridding with his wife Margaret (born in Penrith) and their daughter Alice, aged twenty one. Bob was born in Patterdale and at the time of the census was a miner, and his father George was also a miner who was born in Kentmere. I think that perhaps Bob was the person in charge of building the dam.



What is also interesting are the buildings (possibly four) and a pipeline in the background which produced the hardcore taken from stone on the fellside, and the concrete appears to have been taken in a tub on rails by an incline down to the dam. I suspect that the rail was laid at 22 inch as it was at the mine, and the tubs used came from there. This appears to have been a much larger operation that had been previously thought. Now this photograph has come to light the dam needs revisiting and the area surveyed to see what remains there are still on the ground and how they fit with the photograph.

Warren Allison.

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Registered Charity No. 1180198

Honorary President:

Lord Egremont
Petworth House

Chairman

Warren Allison
Phone: 01228 523923
Email: chairman@catmhs.org.uk

Secretary:

Colin Woollard,
Phone 01900 823686
Email: secretary@catmhs.org.uk

Treasurer:

John Aird,
Phone: 0208 997 5985
Email: treasurer@catmhs.org.uk

**Membership Secretary
& Newsletter Editor:**

Ian Matheson
Phone: 015394 32957.
Email: membership@catmhs.org.uk

Meets Secretary:

Mark Hatton
Phone: 07774 499589
Email: meets@catmhs.org.uk

Webmaster

Chris Cowdery
Email: webmaster@catmhs.org.uk

Librarian / Archivist:

Don Borthwick
Email: archivist@catmhs.org.uk

Committee members:

John Aird, Warren Allison, John Brown,
Chris Cowdery, Mark Hatton, Ian Matheson,
Mike Mitchell, Michael Oddie, Mark Scott,
Angela Wilson, Colin Woollard.

CATMHS website:

www.catmhs.org.uk