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## The Newsletter of the Cumbria Amenity Trust Mining History Society

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MAGS Catwalk, Coniston Coppermine. Photo by Carl Barrow

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No. 149 November 2022

# Cumbria Amenity Trust Mining History Society
# Newsletter No 149, November 2022.

**Changes to the CATMHS membership structure**
Following clarification of relations between the Society, the BCA and the BCA insurer there is a need to re-organise CATMHS membership with effect from the end of our financial year on 31st October 2022.
Members of the Society will now be required to have one of the two categories of BCA membership, either:

**Caver** which is required for all members who attend Meets irrespective of whether above or below ground or

**Non-Caver** which has only very limited application to CATMHS members providing PLI cover for attending Society Annual or Special General meetings and fundraising (CATMHS does not conduct any fundraising).

Both Cavers and Non-Cavers are full members of the Society with full voting rights.

All those who at present have Basic Membership of the Society will have to make a choice between one of the two above categories or becoming "**Friends of CATMHS**". Friends will **not** be members of the Society **nor** have voting rights but will continue to receive the Society's Newsletters (as they do now) and will be very welcome to attend the Annual Dinner and AGM. This would seem to be the obvious choice for all those Basic members who have their BCA membership (Caver or Non-Caver) with other clubs or as DIM's.

Subscription rates from 1st November 2022.

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| **Caver** (Electronic Newsletters) | **£32** |
| **Caver (**Printed Newsletter) | **£52** |
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| **Non-Caver** (Electronic Newsletters) | **£17** |
| **Non-Caver** (Printed Newsletters) | **£37** |
| | |
| **Friends of CATMHS** (Electronic Newsletters) | **£10** |
| **Friends of CATMHS** (Printed Newsletters) | **£30** |

If you have any questions please don't hesitate to contact the Treasurer. treasurer@catmhs.org.uk It will take a little time to adjust the website and paperwork to reflect the above changes.

**New Members**
Michael Westwood, from Barrow in Furness
Ruth Noonan, from Cockermouth
Mike Williams from Keswick

**Journal 7**
CATMHS Journal 7 is now complete and will be printed shortly. The format is similar to that of the 40h Anniversary publication. A4 softback, softback, glossy cover. It has 18 articles, 220 pages and numerous colour pictures. I think it will be a good read. It will be launched at the CATMHS AGM and Dinner at Rydal Hall on 10th December. It will be free of charge to current members and additional copies will be available for £12 or £15 delivered.

**CATMHS AGM & Dinner**

The AGM and Annual Dinner will take place at Rydal Hall on Saturday 10th December. It is a great opportunity to meet other members on a social level. Please come if you can. You will be able to collect your copy of CATMHS Journal 7. The cost is £31.00 pp for the three course dinner and £92.00 for Dinner, Bed and Breakfast. Application forms have been sent out and another one is attached to this newsletter.

**Forthcoming meets**

**6th November. Greenside Mine Lucy Tongue Level**

Warren Allison will lead this trip along the level using old photographs to show what it was like when the mine was working as well as explaining how the society dug through six roof falls to reopen the workings.

Grade Easy, wellies advisable.
Meet at the Glenridding Information Centre at 10.00am.
Contact Warren Allison on 01228 523923 or
warrenallison82@gmail.com

*Smiths shaft circa 1910*

**26th November SRT Training**

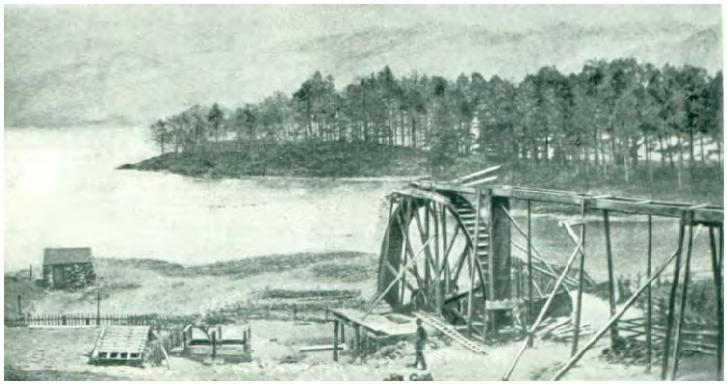
An SRT Training session has been booked at Ingleton. Check the CATMHS Facebook page or contact David Lund. davidlund3k@googlemail.com phone 07584 993049

**10th – 11th December. CATMHS AGM**

To be held at Rydal Hall, Grasmere at 4.30pm. Dinner at 7.30pm. Followed on Sunday by a visit to Elterwater slate quarries. There are extensive old working here and a substantial closehead (Peppers Quarry) which are usually inaccessible but we have secured permission from Burlington Slate to allow access. See the CATMHS Facebook page.

**15th January - Derwentwater mines**

Lorraine and Kevin Crisp will lead this surface meet, with opportunities to pop your head into a few holes (bring a helmet if you want to do that) to the slate quarrying around Castle Crag, Copperplate Mine and Brandlehow Lead Mine. Grade Easy. The meet will finish at St Andrews Church where the kettle will be put on and there will be an opportunity to look at the Borrowdale Story Mining Exhibition.
Contact Lorraine on loz.crisp@outlook.com 07883 864388 or
Kevin on kcrisp1961@outlook.com 07577 819053



*Brandlehow mine 1862.*
*Top of Old Shaft*

**Mineral display day - Sunday 5th February 2023**

It has been suggested that the Society organises a day where members could show off their mineral specimens to others. It would be very interesting to see what people have and something totally different that has not done before. Liz Withey has offered to photograph samples, which is not easy to do, but she has had advice from Roy Starkey, one of the finest mineral photographers in the country.

The Wesley Room at the Ambleside Parish Centre, which over-looks Rothay Park and the fells beyond, has been booked from 13.00 to 18.00 on Sunday 5th February 2023. There is a kitchen available and offers of homemade cake have been made to add to the refreshments.

*Calcite - Greenside Mine*

*Fluorite - Weardale. Photos- Liz Withey*

If you would like to bring your specimens along, please contact Warren Allison warrenallison82@gmail.com and 01228 523923 or Kevin Crisp on kcrisp1961@outlook.com 07577819053

Meets planned for Spring. Details will be in the February newsletter.
Langdale Axe Factory- 12th March
Newlands Valley walk- 2nd April
Hodbarrow Mine walk- 16th April

**Force Crag Mine guides wanted**

The National Trust owns the mine and runs tours for the public round the mill during the summer, explaining the history of the mine and how the mill last operated during the time the New Coledale Mining Company was working the mine in the late 1980's and early 1990's. The mill is as it was when the mine was abandoned, and the tours are popular and show a side of the Lake District that few members of the public know about.

Some of the guides have retired and the National Trust is asking if there is anyone who would be willing to help as a guide. There are around five tours a year and if anyone is interested, please contact me at warrenallison82@gmail.com or 01228 523923 and I will forward your details to the Trust.

**Ambleside Roman Fort**

In the February 2022 newsletter it was reported that the Trimontium Trust from Melrose had found Roman lead shot at a recent dig at Ambleside fort and there was potential to determine which mine it came from by analysing the lead ore. Samples of Galena from Hartsop Hall, Greenside and Silver Gill mines have been sent to Dr John Reid to be sent to Germany for analysis.

**Possible Viking mining in Cumbria**

As president of the Cumberland and Westmorland Antiquarian and Archaeological Society (CWAAS), Warren Allison was asked to give a vote of thanks at a recent Viking conference and in a chance discussion it was mentioned that lead ore has been found in Norway from the Viking period from either the North Pennines or the Lake District. Warren is trying to get a contact in Norway to find out more about this.

**Gilkes turbines**

Following a recent discussion with someone whose son-in-law works for Gilkes Turbines at Kendal, who built many of the turbines used in mines, there is the potential offer to see and possibly obtain copies of the drawings of the turbines. If anyone else is interested, please contact warrenallison82@gmail.com or 01228 523923.

**Florence mine**

Gilbert Findlindson, the owner of Florence mine, has given us permission to catalogue his collection of mine plans and ledgers. Colin Woollard, Bob Mayo and Ian Matheson have made several visits and made considerable progress, but it will require more visits to complete the task. We have photographed a large ledger, The Millom Hematite Ore & Iron Company Output and Deliveries for 1962 until the mine closed in September 1968, and scanned a detailed notebook, Ullcoats Surface & Underground Boreholes and Shafts.

There are hundreds of mine plans, not just of Florence but other mines too. We have identified about twenty which are of particular interest which we would like to get scanned and perhaps printed for inclusion in the CATMHS archive.

**Lake District Mining Forum Meeting**
Tuesday 4 October 2022 at the LDNPA offices, Murley Moss, Kendal and on Teams.

Present at LDNPA office: Eleanor Kingston (LDNPA) Warren Allison, Mike Mitchell, Mark Simpson, (CATMHS), Andrew Davidson (Historic England) Peter Bardsey (Environment Agency), Alastair Cameron.
Teams: Liz Withey (Environment Agency) Nick Cox (Coal Authority) Jamie Lund (National Trust) Pete Owen (Historic England) Jessie Binns (National Trust) Ian Matheson (CATMHS).

**Management Plans**
Force Crag and Greenside
Plan have been completed. CATMHS has provided information on issues relating to the mine. Decision is needed as to who actions them.

Greenside Mine & smelt mill
LDNPA are monitoring activities. Footpath repairs have been carried out in the area.

**Updates:**
Coniston Copper mines
Mark Simpson & Mike Mitchell expressed concern at some inappropriate developments at Coniston Coppermines.

Greenburn
National Trust are currently working with two dry stone wallers to consolidate some of the structures including the wheelpit, the powder magazine and a door lintel.

Tilberthwaite
High Fell quarry has closed. It is hoped that someone will take it over. Mark Simpson has recorded it and has a 3D model. Two sites at Hodge close are currently being worked.

Threlkeld
Nick Cole reported that the landowner didn't want a footbridge which might encourage public traffic. They are considering alternatives, possibly stepping stones.
Ochorous discharge is being monitored. Liz Withey reported that the Environment Agency are to restart monitoring. They have been checking the beck at the cricket club and found that it becomes ocherous in dry weather.

Honister Slate quarries
Alastair Cameron reported that quarry is doing OK. They are seeking to understand the history and geology of the slate bands at Honister with Lorraine Crisp. They have discovered signs of an old roadway across the face and will investigate further in the spring.

Yewthwaite mine
The Environment Agency is to start a sampling program in the area. Warren Allison commented that an article on MoLES exploration of the mine will appear in the forthcoming CATMHS Journal 7.

Coniston Old Man
Alastair Cameron reported that he is continuing to interpret the area which has been worked countless years for slate. They are undertaking a 3D survey of the underground workings. Donald Kelly, ex quarryman and his son Ian, who is production manager at Burlington are interested. Mark Simpson has expertise and considerable experience of 3D surveying and would assist if asked. Mark enquired if there were any photos of the Coniston ropeway inclines when they were working.

**Cumbria 2022 Geoweek**
GeoWeek was a national event seeking to introduce as many members of the public to geoscience as possible. GeoScience UK website listed events across the UK and some self-guided trails. Here in Cumbria there were more than thirty events. Ten were organised by Cumbria Geoconservation Group, others through the museum network and organisations in Cumbria.

CATMHS was one of the organisations involved and helped with some of the events in conjunction with other organisations. From this the National Trust through Jessie Binns have agreed to collaborate with CATMHS on projects which have a mutual benefit to promoting our mining and quarrying heritage..

**NAMHO update, including 2023 conference at Grasmere**
CATMHS is hosting the conference from 7th – 9th May 2023 based on Grasmere village hall. Warren Allison reported on progress so far.

**Force Crag Mine**
A volunteer training day has been arranged at the mill where Warren Allison will give an idea of what it was like while the mine was worked by the New Coledale Mining Company in the late 1980's

The National Trust had acquired a battery locomotive which was thought to have operated at the mine. Peter Holmes from CATMHS confirmed that the loco was WR 2489, which started its career at Greenside in 1943. It's rare to find a WR loco that still has its maker's nameplate!

Mike Mitchell and Mark Simpson visited Force Crag to examine damage from recent break-in. The lighting system was damaged and lights stolen. It will be made secure for the winter.

Jamie Lund, mindful of worst case scenario, scree collapse etc. is taking action to record the mill properly in case of loss by catastrophic event which might make the mill unrepairable The value of the mill and its contents is its situation and context. The National Trust is very aware of risks of liability.

CATMHS had proposed reopening No3 level and there was a need for CATMHS/NT/EA/CA to work together to find a solution.

Nick Cox reported that the Coal Authority have negotiated some flexibility of the mining regulations regarding access to non-working mines. Jamie Lund said that Force Crag would be a good pilot site to test these.

**Yewthwaite Mine Trustees level entrance**
Permission has been in place for twenty years or so. A plan has been made and the work will be done by CATMHS to secure the entrance. Colin Woolard and John Brown met on site with the National Trust ranger Roy Henderson to agree the repairs to the entrance. These will be completed shortly at CATMHS expense. Jamie Lund said that the NT is keen to carryout works to enhance the appearance of historical mine sites.

Newcastle University has a sophisticated drone and will offer it to the Environment Agency to monitor water flow etc. The Agency reported a source of zinc in the area, probably from Yewthwaite, and was looking for other sources of zinc in the catchment. They are considering sampling at Stoneycroft and Barrow mines.

**CATMHS publications**
Ian Matheson reported on Journal 7, to be launched at the CATMHS AGM in December.

**Possible Roman and Viking mining in the Lake District**
Lead sling bullets have been found in the vicinity of Galava Roman fort at Ambleside. The LDNPA is working with Trimontiom to determine where the lead came from. Samples of Galena from Hartsop Hall, Greenside and Silver Gill mines collected by Warren Allison have been sent to Dr Reid. Early information shows the lead in slingshots found at Galava is not from the Lake District.

Warren Allison commented that in his role as CWAAS President he had been asked to give a vote of thanks at a recent Viking conference. In a chance discussion it was mentioned that lead ore has been found in Norway from the Viking period which is from either the North Pennines or the Lake District. He was trying to get a contact in Norway to find out more about this.

Eleanor Kingston said that there is evidence that Romans smelted lead at Ravenglass

**Other business**
Jamie Lund is soliciting advice regarding the implications on heritage of widening of access at Holme Fell for forestry access and of expansion at Guards Quarry. Are these places part of intrinsic heritage?

Laser scanning results of the Cobalt mine at Alderley Edge are on the website and will feature on the next series of Digging for Britain, with Professor Alice Roberts.

Mark Simpson asked if there was any information on development of the Skelwith Bridge slate mill site. Nothing is known.

Alastair Cameron is thinking about possible new books, one on Honister Crag railway. Some of the track bed is still in place. Drone photos are needed.

The next meeting of the Lakeland Mining Forum will be a hybrid event on 7th February 2023, based at the LDNPA offices at Murley Moss.

**NAMHO 2023 Update**

The meets list for the conference is almost complete. Many thanks to the various leaders who have volunteered or been volunteered to lead trips. Most of the trips will appear on the next CATMHS meets list, giving an opportunity for a rehearsal for the leaders. If there are any more members out there who would like to get involved in leading trips, please let the organisers know.

Ian Matheson is writing a potted history for each of the trips, and this along with a trip description will form the basis of an information sheet for the delegates. The draft lecture programme is also looking good. We have about eleven of the sixteen slots filled, but are still looking for talks relevant to the theme of 5000 years of mining and quarrying in the Lake District. In fact, any talks will be considered! The Audio Visual equipment from Hidden Earth will be used, we are told this is a comprehensive setup.

The next major piece of work is to upload all of the relevant information to the currently empty Conference website with a view to opening for bookings early in 2023.

## NAMHO 2023 LOGO

Pretty well all CATMHS members will be well aware of what follows but just for information:

The outer diameter with wording represents a water wheel the only source of mechanical power used in the Lake District until the advent of the water turbine; steam power was very little used and when it was the cost of coal transport made it uneconomic.

The hard felt hat and candle comes from a photograph of a group of Hodbarrow iron ore miners taken around 1895.

The stone axe is from Ehenside Tarn in Cumbria held by the British Museum and is believed to be the only British stone axe to have been found complete with its wooden handle.

The wagon or ore tub is taken from “De Re Metallica” by Georg Agricola, published in Basel in 1561. The vertical pin at the right hand end engaged in a slot in boards laid on the floor of the level making this the very first form of mineral railway. CATMHS found the remains of exactly such a system at Silver Gill.

The compressed air drill was massively involved in increasing mine and quarry production on replacing hand drilling from around 1880 onwards. There was the very significant downside that the clouds of dust produced caused many premature deaths from silicosis. It is notable that the first mention of water feed down the drill stem, in the Lake District, did not occur until 1929 in Oscar Gnosspelius’s Brim Fell level.

**A newly discovered Coniston mine plan**

CATMHS member Charlie Fowler recently came across a previously unknown Coniston mine plan whilst researching the Cumbria Archive at Whitehaven. It had been wrongly indexed with Alston area plans. Original plans in the Whitehaven collection have been scanned in the past by the Coal Authority, who still hold the scans. Whitehaven are unwilling to scan them again and refer to the CA, who will happily sell copies of any that they have as a high resolution scan for £35+VAT.

The plan shows Deep level, Taylor's level and part of Fleming's level, noted as 39 fathoms above Taylor's level, with associated lodes and trials. Various lodes and crosscourses both in the level and at the surface are shown and labelled. There is a small part annotated '*Bonser level – 43 fathoms above Flemings level, Bonser lode in highest workings'*.

It includes an inset, a coloured section with the title *'Section of East and West Bonser Mines in Coniston'* and shows parts of Deep Level and Taylor's level, with sections of worked out ground coloured in green.

Sumps below Deep Level are named: West sump; Michells sump; Wilsons sump; Cadmans & Sulphur sumps; Flemings sump

It is not dated and there is no attribution.

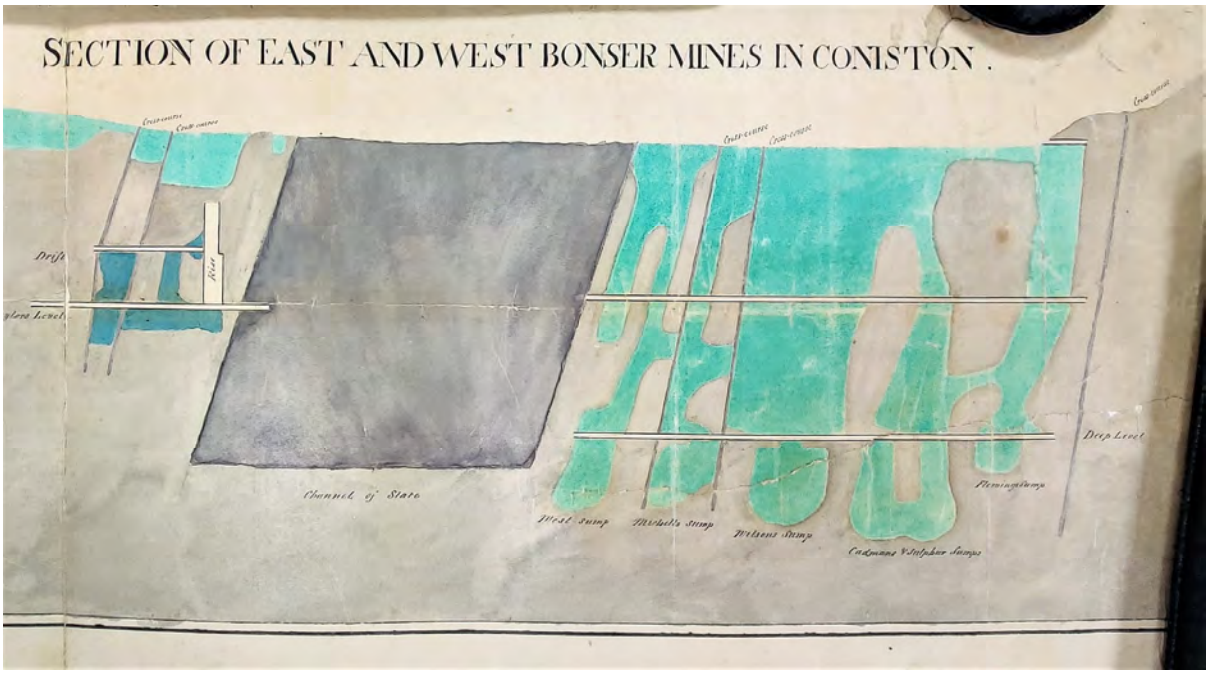
We only have one original Coniston mine plan in the CATMHS archive at the Armitt Library and Museum in Ambleside. (Most of the others are tracings or copies made by Dave Blundel.) It came from the Eric Holland collection, courtesy of Mo Holland.

It too is not dated and has no attribution, but shows a much larger section. It shows the Old Engine shaft which has reached a depth of 70 fathoms, and the New Engine shaft which was slightly deeper at that time. The plan has been dated circa 1845 from documentary records:

*'At the Eastern part of the mine we are already down to a depth of about 90 fathoms and at the Western part of this mine 70 fathoms under the Horse level.'* EH LC 08.2 Letter book 1837–1861. Image 82. Nov 29th1847

The Whitehaven plan appears to be somewhat earlier, as the only workings below Deep level are the series of sumps which appear on both plans and the 20 fathom level has not yet been reached. The workings above Taylor's level are less well developed and neither engine shaft is shown.

Deep Level was commenced in 1825. When Barratt and Taylor first started at Coniston they used the old Bonsor East shaft at first, and the Old Engine shaft wheel was not commissioned until 1833. New Engine shaft was started in 1838. This might suggest a date circa 1830 for the Whitehaven plan?




*Part of the Whitehaven plan*


*Part of the Eric Holland plan.*

It just goes to show that there are still discoveries to be made about the Coniston mines if one is vigilant or prepared to search. The CATMHS committee has resolved to request a license from the Coal Authority and to obtain a digital copy of the plan and get a print made to add to our archive collection.

Ian Matheson.

**A morning's gardening at Coniston.**

Many years ago, shortly after the weighbridge on the Coniston railway station site had been destroyed, the office of Mandalls slate company was leased by CAT so as to prevent it being demolished or collapsing from neglect. The building was made secure and the roof and guttering put into good order. It is used for storage and houses CATMHS ropes, bolting equipment, books and pamphlets, a ladder, a water pump and temporarily, the NAMHO lectern.

Reports had reached the committee that Mandalls was being engulfed by the local vegetation so a plan was made to fight back. Dave Hughes and I arrived with loppers and bowsaws followed shortly after by Mark and Sandy Hatton with a similar selection of what can only be called "ante-garden tools". Bramble, bracken and small trees began to fall in the face of the onslaught. Mark's shears were a revelation, like sometime out of the Jabberwocky –

"One, two! One, two! And through and through
The vorpal blade went snicker-snack!"

It took some time to forge a path through all around, with the section of the rock-face at the back being quite a challenge. All the branches over the roof were cut and much of the moss was cleared. A massive bracken clump by the door took some removing but a similar clump on the roof was left for a later visit.

I had come prepared with bags to transport the debris back to the tip at Millom but that turned out to be unnecessary. We cleared a big patch at the car-park side and piled up an enormous heap from our clearance.

The roof is in need of some attention but everything seems dry inside.
Dave and I will keep an eye on signs of re-encroachment as we pass by. I hope it will never get so overgrown again.

Stephe Cove.

**British Geological Survey Tour of Critical Minerals in Cumbria**

In March I gave a Zoom presentation to CATMHS on how the minerals came to be in Cumbria and in the discussion that followed Warren Allison pointed out that the Society had considerable involvement with the British Geological Survey (BGS) in the past and suggested it was possibly time that we got back in touch. As luck would have it, I was on a fieldtrip attended by a member of the BGS the following week and put into contact with their minerals experts who treated our offer to visit old mines in Cumbria with glee as they had recently been tasked by the UK government to review the situation for what are termed Critical Minerals.

To achieve the ambition of energy transition away from fossil fuels the UK requires a secure supply of Critical Minerals such as graphite, tungsten, cobalt, lithium and rare earth elements which are needed for electric vehicle batteries, wind turbine motors and other renewable technologies. We have examples of mines for the first three in Cumbria so arranged for Dr Kathryn Goodenough and Dr Eimear Deady to visit Seathwaite, Carrock, Stonycroft and Coniston mines between 2nd and 4th of August.

First up was Seathwaite Wad mine lead by Mark Hatton and assisted by Jonathan Lynch and myself. The expertise of Kathryn and Eimear was immediately apparent and the change of generation from previous BGS visits allowed them to consider the geology with fresh eyes. The Grand Pipe was viewed from surface and an underground tour of Gill's Stage enjoyed. Initial thoughts were that the graphite pipe locations were controlled by fault locations but no evidence was observed for the dioritic (igneous) intrusion thought by some to be a key feature in the trapping of the deposit here and they were not convinced by existing theories on the source of the graphite. A walk up onto the higher workings of Seatoller Common only found evidence of graphite in the spoil heaps nearest the Moor wall and further away black shaley material was noted which could have the potential to be the organic source material for the graphite. More mapping and analysis of samples from this area would appear warranted to gain a better understanding of the graphite formation.

*Eimear Deady (BGS) Julian Cruikshank (CATMHS) Jonathon Lynch (CATMHS) and Kathyn Goodenough.*

The second visit was to Carrock Tungsten Mine led by Warren and assisted by Mark and myself. Kathryn and Eimear were in raptures at the geology on view as soon as the mine was entered, pointing out the changes in vein mineralogy as different bedrock types were crossed and spending way longer than the time Mark had possibly thought anyone could spend looking at rocks and minerals. The relatively short time-span of corporate memory was apparent as

little knowledge of the size or interest of the mineral resources in this mine had crossed the generational gap in the BGS since it's last visit here and there was a great deal of enthusiasm for return visits to understand more and spread awareness. Next, following an excellent lunch stop at the Friends Meeting House café in Mungrisdale (recommended), enthusiasm for Critical Minerals was tested by the walk up Stonycroft to the less than obvious Cobalt Mine workings in the Coledale district. Mark was disappointed to learn that the red colour he had taken to be evidence of cobalt was actually haematite but samples of vein material were collected from the underground exposures for analysis, the feeling being the association of cobalt with arsenic in the ore had probably given rise to problems in smelting the mine's output.

The final day was led by Mark in his familiar stomping ground of Coniston Copper Mines due to its reported small scale production of cobalt, assisted by Jonathan and myself. An above ground and underground tour of Levers Water Mine and the Hospital Level then opened Mark's eyes to the possibility that he (and everyone else) may have been looking at it wrongly all this time. Received wisdom is that the ore is in veins crossing the volcanic bedrock intruded by hydrothermal mineral bearing fluids, but to Kathryn, who has travelled the world looking at mineral deposits, the collection of minerals present and the pervasive brown 'gossan' surrounding the workings is far more reminiscent of Volcanogenic Massive Sulphide (VMS) ore deposits.

*Looking at a cobalt mineral (they called it erythrite) in Grey Crag Level.*

This is a new term to all of us but in simple language at some stage in the life of the volcano a liquid layer rich in sulphides got trapped in amongst the layers of ash and solidified and then much later all the deposits got pushed up vertically during the final stages of the collision between England and Scotland (closure of the Iapetus Ocean) giving the impression of the ore being in later vertical veins. This thought that Coniston may be a VMS deposit is only a theory based on a quick look-see, but would explain the variety of minerals present and if confirmed by careful future mapping it could change our understanding of the formation, composition and extent of the resources in the area. Finally, to reassure Mark that all his previous understanding of minerals had not been mistaken, patches of pinkish-red deposits in the Hospital Level were visually assessed to probably be a cobalt mineral (erythrite).

The visit was very much enjoyed by all and huge thanks goes to Mark and Warren for being such generous guides. It confirms our knowledge that we in Cumbria have some extraordinary mines and that members of CATMHS have been custodians of access to mineral workings that are of enduring interest to geologists and that potentially could still educate the wider interests of the nation. We hope further visits will follow and will try to create opportunities for other members of CATMHS to engage in them.

Julian Cruickshank.

**Introducing the new CATMHS Meets Secretary**

The post of Meets Secretary has been vacant for a while following the excellent program offered by Michael Oddie. We are grateful to Julian Cruickshank, who has agreed to take on the task. In order to help him please respond to his request below with your thoughts or ideas:

'I have little idea what the duties of a Meets Secretary are, having yet to be granted access to the inner sanctum of CATMHS documentation, but am incredibly grateful to those who have made possible the trips I have enjoyed since the advent of the Facebook events and am keen to do my bit to keep them going. I am also aware that the opening concerns reportedly expressed by the Meets Secretary Ian Matheson in 1992 are somewhat eternal:

*The retiring Meets Secretary expressed concerns that attendances were falling and there was little new to offer long term members, repeat visits being less attractive than exploring unknown territory. Perhaps there should be more work meets, should there be more weekend meets or more meets outside Cumbria? Can we develop links with other groups outside the County? Is it time to reinstate the annual caving meet? Should there be fewer meets or should we have more, so as to appeal to a broader spectrum of members?*

*CAT Members at the start of the very first Coniston through trip meet, April 1985.*

Looking forward to meets we could consider for the coming year, I thought that it would be helpful to remind ourselves of what CATMHS has done in the past and to get feed-back on what trips folk would like to see, and in some cases lead. At the end of this is a non-comprehensive list that I have put together from the Facebook events history, but in summary a roughly monthly schedule seems sustainable (maybe a little more in summer, less in winter). I think we should also offer one or two SRT training events each year and of course a winter programme of online presentations if volunteers can be coerced.

Safety for meets has to be key (what people get up to in private is their own affair) requiring clear competent leadership and contingency plans and appropriate ability of the group for the trip. The danger of this if we make the arrangements unnecessarily onerous is a complete lack of volunteers to lead underground trips, and ending up with only surface walks or very easy meets. The Coniston through trip and similar are on most non-claustrophobic members wish lists so we will have to work out how to run such potentially hazardous trips responsibly at scale to meet the demand for interesting underground experiences. Please respond to meets@catmhs.org.uk with your thoughts, suggestions and offers to lead or support.'

Julian Cruikshank.

## History of CATMHS meets compiled from Facebook

### 2022

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|---|---|
| Eagle Crag mine | October |
| Nenthead weekend | September |
| Midgeholme Coal Mines, Brampton | August |
| Roughtengill & Silvergill, Caldbeck | July |
| Caplecleugh, Nenthead | June |
| Coniston Slate | May |
| Hartley Birkett, Kirby Stephen | April |
| Tilberthwaite Slate | March |

### 2021

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|---|---|
| SRT Training, Ingleton | November |
| Nenthead Traverse | November |
| Tilberthwaite Gill | November |
| Coniston Through Trip | October |
| Kells Coal Mine features, Whitehaven. | October |
| Burlington Stone Quarry, | September |
| Kirkby Stephens Lead & Copper | September |
| Florence Mine, Egremont | |
| August | |
| Williamson Tunnels, Liverpool | August |
| Dinorwic & Festiniog Slate, N Wales | July |
| Jet Mines, Cleveland | July |
| Dorothea Slate, N Wales | June |
| Walney Island Gravel, Barrow | June |

### 2020 (Covid Lockdown)

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|---|---|
| Greenside surface walk, | September |
| Lathgill, Derbyshire | March |
| Middlecleugh, Nenthead | February |

### 2019

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|---|---|
| Florence Mine, Egremont | November |
| Arkengarthdale Mines, Richmond | October |
| Ecton Coppermine, Staffs | September |
| Alderley Edge Coppermines, Cheshire | July |
| Dufton Mines, Appleby | June |
| Langdale Slate | June |
| Nenthead | May |
| Coniston walk | April |
| Dinorwic Slate, N Wales | March |
| SRT Training, Nenthead | February |
| Lucy Tongue Level, Greenside | January |

### 2018

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|---|---|
| Tilberthwaite Mines | December |
| Dale Head Copper mine | October |
| Carrock Mine, Caldbeck | September |
| Rhiwbach Slate, N Wales | August |
| Cleveland Ironstone mines | July |
| Hudgill Burn, Nenthead | July |
| Goldscope, Newlands | July |
| Rigghead slate, Keswick | May |
| Coniston Slate | May |
| Great Orme Head Copper Mine | April |
| Welsh Slate, Portmadog | March |
| Nenthead Mines | February |
| SRT Training, N Yorkshire | February |
| Lucy Tongue Level, Greenside | January |
| SRT Training, Nenthead | January |

### 2017

| | |
|---|---|
| Hodge Close Slate Quarries | December |
| North East Wales Mines | November |
| Hartsop Area Mines | November |
| Greenburn Mines, Little Langdale | October |
| Stoneycroft Gill & Cobalt Mine | October |
| Alderley Edge Copper Mines, Cheshire | September |
| Roughtengill & Silvergill, Caldbeck | September |
| Nenthead weekend | August |
| Swaledale Weekend, Yorkshire | July |
| Castle Crag, Keswick | July |
| Coniston Mines | June |
| Backbarrow walk | June |
| Duddon Valley Slate | May |
| Goldscope, Newlands | April |
| Seathwaite Wad Mine, Keswick | April |
| Grisedale Valley Mine tour | March |
| Greenside Mine Through trip | March |
| SRT Training, Ingleton | March |
| Coniston Copper Mine walk | March |
| Grasmere Mines walk | February |

### 2016

| | |
|---|---|
| Parys & Mona Mines, Anglesey | November |
| Derwent Water Mines walk | October |
| Arkengarthdale Mine walk, N Yorks | October |
| Tilberthwaite Mines walk | September |
| Seathwaite Wad Mine walk | August |
| Birks Head Gypsum Mine, Eden | June |
| Greenside Mine Surface walk | June |

### 2015 (Start of CATMHS use of Facebook)

| | |
|---|---|
| Arkengarthdale weekend | October |
| Tilberthwaite Copper & Slate | September |
| Greenside Mine | September |

**NAMHO 2022 Conference trip**

Liz and I decided to attend this year's conference at Grosmont in Cleveland, and a huge thank you should go to the Cleveland Mining Heritage Society for a wonderful weekend. It was extremely well organised, and the facilities were very good. We camped next to the bunk house, about a fifteen-minute walk from the village with a mine right behind our tent - what more could you ask for! One of the best parts was, having ordered the cooked breakfast for 7.30am, the social part started, and for me that is what the conference is about. It is an opportunity to meet so many other like-minded people from all over the country, 'nerds' as my family call us.

We had opted on the Saturday to do the nine-mile surface walk, and on Sunday morning along with John Aird, we visited the Coate Moor Ironstone Mine on the Kildale Estate. As we got changed our hosts gave out notes detailing the history of the mine. It seems that by 1858 the railway to Kildale had been built which allowed the ironstone in the valley to be exploited. In 1864 the Kildale Estate leased the ironstone mining to John Watson, and in 1865 he sublet the section north of the railway to the Lonsdale Vale Iron Co. Ltd. In 1866 it was reported that mining developments were progressing satisfactorily, and local newspapers carried advertisements for miners. On the 26th August 1872 a lease was signed to allow a new company, Coate Moor Mines, to exploit the Coat Moor section of the Kildare Estate, with the ironstone being sent to the blast furnaces at Glaisdale, Grosmont and Middlesborough. However, the ironstone was not rich enough and the cost of production and transport too high so the mines closed in 1876.

In 1982 there was a roof fall in some of the shallow workings leaving a hole on surface which was apparently entered by a fox and twelve hounds of the Farndale Hunt; the gamekeeper and his son crawled into the mine and recovered the hounds. Local Industrial Archaeologist John Own and others entered to explore and record the workings.

In 2012 the recently formed Cleveland Mining Heritage Society, having gained permission, reopened an old flooded roadway to the surface.
In 2014 a new entrance to the workings was excavated to the west end of the workings.
In 2017 a drainage drift was excavated and entered the east end of the workings.

All the entrances have gates which are locked in accordance with the landowners' wishes. The workings have been surveyed and an up-to-date plan produced. To preserve the new west mine footprints, access has been limited, but this year someone broke into the mine and trampled many of the old clog prints and removed artifacts. We were allowed to take photographs for our own use but not to publish them in any format.

Arriving at the entrance, we eagerly ventured underground armed with our map of the workings. 4.25 kilometres have now been surveyed by John Dale and Tony Harrison from the Moldyworps Speleological Group (The same group surveyed the natural cavern at Hudgill Burn Mine). The workings were fascinating and reminded one of the flats at Nenthead. Our guides were very informative and passionate about the mine, which made for a thoroughly enjoyable trip. After a couple of hours, we exited the mine having had a great trip and caught up with the next group preparing to visit.

What none of us could understand was how the mine had only lasted around four years and yet such a labyrinth of workings had been created.

Warren Allison

**Midgeholme Coal mine, 7th August.**
Meet Leader: Clive Seal. Ian Hebson, Kirsten Crowther, Sue Fowler, Charlie Fowler, Steph Cove, Liz Withey, Michael Pringle, Bob Mayow, Warren Allison, Dave Hughes, Roger Ramsden.

Clive had been a coal miner in Lancashire before moving to work at the coal mines at Alston and was a keen historian. Having known him for many years I asked him if he would lead a meet around the coal mines at Midgeholme, on the road between Brampton and Alston. This was an area the Society had not visited before, but had been a huge coal mining area relatively unknown. It was where Stephenson's famous Rocket finished its working life hauling coal, as well as reputedly being the place where the gauge for main line railways originated.

The coal field had been worked on the border of Cumbria with Northumberland. It is the largest of a series of small coalfields along the south side of the Tyne Valley which are intermediate between the Northumberland and Durham coalfields to the east and the Cumberland coalfield to the west. Like the other small coalfields to its east, this small outlier of the Coal Measures at Midgeholme occurs on the Stublick Ninety-Fathom Fault System, a zone of faults defining the northern edge of the Alston Block, otherwise known as the North Pennines. It is recorded that coal was being mined at Midgeholme in the early seventeenth century and underground finished in 1955. However opencast mining was started in 2014 but has now finished.

To say that this is such a complicated area is an understatement, and some of what is written may not be in the correct order. There is much that has probably been missed out, for which I apologise.

We met on a cool cloudy day at the layby as you come into Midgeholme from Brampton, where there had originally been a row of cottages known as known as Low Midgeholme Cottages. Clive explained the route we would be taking and off we set down the road towards a group of houses which had originally been associated with Catch Pit which was located just behind where, in 1830, James Thompson sank a sixty-foot shaft drained by a waterwheel

*Clive explaining the area around Catch Pit.*

Following the right-hand side of the river we came to where Craig Nook Pit had been. Although there seemed to be little in the way of remains, Clive explained that the area on both sides of the river had been intensively mined.

*Remains of Craig Nook Pit*

As we walked further down the valley passing other old workings, Clive stopped to speak about the disaster in 1908 at the Roachburn Pit further towards Brampton when three men were killed by an inrush of water, and it was very moving to hear him describe what happened that fateful day.

We then came to North Drift, the last one to be worked by the Narworth Colliery Company in the early 1940's.

*Remains of North Drift*

Slightly further on Clive showed us where a set of coke ovens had been, this was a becoming a bewildering tour with so much to take in as there were remains all over the place demonstrating just how large an area had been worked. Clive said that the workings extended underground from Midgeholme to Greenhead on the A69 and had connected.

*Remains of the coke ovens*

*Tramway*

Walking on we came to the remains of a tramway and Ian Hebson disappeared into the river, where he pointed out the remains of an old tub, of which there were quite a few in the bank along the river.

*Heb with the remains of a tub behind him*

Turning back towards Midgeholme we crossed back over the river where Scarr Pit and the Old Engine Pit had been and had lunch. Clive and Heb thought that water had been brought from higher up the valley to drive pumping equipment.

Having feasted, we made our way back towards Midgeholme, passing the recent opencast workings which had allegedly been landscaped, to arrive back at the cars. Here most of us decided to go and have a look at King Pit. Walking up the track off the main road we soon came to a row of cottages built by the mining company and came upon the bed of the railway where Stephenson's Rocket had spent the last of its working life.

*The remains of the railway below King Pit.*

Arriving at King Pit there were the remains of a building and shaft top built in 1947 following the nationalisation of the coal mines under the National Coal Board. The 478-foot dep shaft was cleared, and a new head frame erected along with new screens and coal washing plant. By 1952 there were 205 men working underground with 80 on surface, but by the 18th of February 1955 the pit closed mainly due to the volume of water having to be pumped out.

*Building at King Pit circa 1950's.*

*Shaft top*

*Stephe has a collection of bricks (don't ask why) and he has been after one with NCB on it. It just so happened that he found one at King Pit and cleaned it up under the careful watching eye of Bob Mayo.*

Although remains of this large coalfield were largely absent, Clive's enthusiasm made the day, with his knowledge which included individual stories about the people. So much so, that we have asked him and Heb to lead another walk next year to Gairs pit, which closed in 1936, and other workings including a huge network of tramways, which promises to be another very interesting day.

There is a wonderful Facebook page called Coanwood, Lambley, Featherstone, Hartleyburn, Knarsdale, Kirkhaugh, Plenmeller, Tindale, Roachburn areas which has much information, including original photographs of the mines.

Warren Allison.

**Nenthead weekend, 3-4 September**
Leif Andrew posted on the CATMHS Facebook page a suggestion about organising a weekend of exploration at Nenthead with a barbeque and speaker on the Saturday night. There was an instant response and so frantic organising by Leif commenced, and he decided to make it a joint meet with Nenthead Mines Conservation Society (NMCS). This is only a short summary of the weekend, otherwise the newsletter would be about nothing else,

**Saturday**
People gathered at the smelt mill preparing for the following trips:

1. Rampgill Horse Level to the Boundary Gate and beyond.
2. Exploring the stopes and flats around Cowshill Cross Vein in Smallcleugh Mine.
3. A round trip taking in the less visited parts at the back of Brownley Hill Mine via Brownley Hill High Level.
4. A photographic trip to Scaleburn Horse Gin and the Top Sill area.

Liz and I opted for the photographic trip to Scaleburn Horse Gin and the Top Sill area, led by Stuart English with help from friends. Entering Rampgill mine we soon stopped to look at where Brewery shaft came down through the level, with our guides explaining the unique compressed air system that was installed.

Turning left we headed for Scaleburn Mine admiring the fantastic arched levels and stonework along the way which are an integral part of the Pennine mines.

*Looking up a stone lined shaft*

*Stone arched level*

I had forgotten how much secondary mineralisation there was in the mine, with beautiful formations adorning the walls of the level. Our photographers Celia and Liz seemed to be in photographic heaven. After a while we arrived at the remains of the Horse Gin and everyone started to take photos of it. It is without doubt a fantastic piece of mining remains. As we were going to be here for some time it was decided that lunch would be a good idea.

*The horse gin*

While the photographers were clicking away some of the group were exploring the other parts of the mine before starting to make our way to the Top Sill Flats, the entrance to which we had passed on the way in. To gain access you make your way up a remarkable set of steps which is very unusual in a mine. Here the levels in the flats run all over the place with shafts dropping you down to lower workings, graffiti in several places, flooded sumps, etc.

*Stone arched level at the top of the steps on the right hand side into Top Sill Flats*

Having explored some of these workings, we made our way back down the steps to the main level before commencing the walk back to surface. However, Celia and Liz wanted to photograph parts of the level which Stuart very patiently lit up for them. Alan one of our guides jokingly said “I don’t like photographers or geologists”

*Stuart (hidden) lighting up a stope for the photographers*

*Rampgill Engine Shaft*

Arriving back at the junction with Rampgill level, our guides decided to take a left turn towards Whiskey Bottle junction passing yet more formations on the walls and roofs. We were asked if we wanted to have a look at Rampgill Engine Shaft which on arrival is quite a site with timbering and pipes still in-situ. Time was marching on, so we headed back out to the entrance and to the smelt mill having had a fantastic time with brilliant and very patient guides.

**Saturday night.**
Following the barbeque, Julian Cruikshank gave a fascinating talk on ‘Men and Geology in Northern Pennines Mining’ (which I hope he will offer as a zoom talk this winter). The raffle raised £100 which was donated to COMRU.

**Sunday.**
The day's trips were to:

1. The famous Ballroom via the flats in Smallcleugh Mine.
2. The less visited parts of Smallcleugh Mine going in via Middlecleugh visiting Barron's Sump (without the squeezes) and the stopes around Pickering's rise.

As Liz had not been to the Ballroom and it had been some twenty five years since I had last been there, we opted for that trip led by Nick Green and friends. Having got kitted up we walked to the entrance to Smallcleugh Mine passing through the remains of the dressing floors.

*The entrance to Smallcleugh Mine*

Entering the level, we were soon into stone arching which you cannot fail to be impressed with the workmanship no matter how many times you see it. Nick then took us into the flats to start heading towards the Ballroom. The flats are huge with levels going off in all directions, stone-built shafts, hoppers, stacked deads, etc.

*In the flats*

Nick stopped off at points of interest passing through Wheel Flats before arriving at Hetherington's crosscut which was a low 60-yard crawl to the workings on the other side. The miners were to be admired having hand drilled on their knees taking out the minimum amount needed, but their hunch pulled off on discovering a huge rich area of Galena.

*One of the many hoppers*

*The Ballroom*

Eventually we arrived at the famous Ballroom where a dinner party for twenty eight people was held by the local Masonic Lodge on the 2nd September 1901. Rosemary (Vidler) made an executive decision that it was lunch time, quite apt considering where we were. Photographs were taken and Bob (Mayow) put the rubbish left by other people in his bag.

We then had a look at the roof of part of a stone arched level where water droplets have formed giving the impression of it being an upside-down river.

*Upside down river*

*Smallcleugh Horse Gin, modifiesd at a later date*

Heading back the way we had come but ending up on a different route, Nick stopped off at several other interesting places before leading us back into the flats to what is called the second ballroom, then heading towards the letterbox which looks like one, where you lay on your stomach and inch yourself into the main level. The last place of interest before exiting was to view the remains of the Smallcleugh Horse Gin, accessed by a rising level up which the horse was originally taken.

It was only a short distance before we came back to surface having had another brilliant trip.

The weekend had been a huge success and the Society is very grateful to Leif for organising it, and to his friends who helped and acted as guides on the trips. Everyone enjoyed the weekend and Leif has suggested having another one next year, which I would advise people to join as there is so much to see for all abilities, and great hosts as well.

Warren Allison.

**Eagle Crag Mine meet**

Meet leader: Warren Allison, Roger Ramsden, Julian Cruickshank, Rose Lord, Liz Withey, Phil Newton, Jonathan Lynch, Chris Little, Mike Williams Michael Pringle, Kevin Timmins, Richard Bungay, Lorraine Crisp, Kevin Crisp, Bob Mayow and Pete Archer.

*Level 2 (bottom left) to the top workings (top right) with the vein running diagonally between the two. Photo by Pete Archer*

Little has been written about the mine which is large and one of our hidden gems. Ian Tyler in his book "Greenside A tale of Lakeland miners" mentions a lease being granted on the 24th May 1784, with a subsequent lease being granted on the 12th February 1807 and worked for a number of years.

In December 1832 Dalemain Estate drew up a lease for the Eagle Crag Mining Company which had thirty shareholders who worked the mine until 1845.

The next lease was granted in January 1862, then August 1872.

The mine appears to have had seven levels driven on the lead vein with another level driven on the eastern bank of Nethermost Cove beck and another one beneath St Sunday Crag which was stone arched.

Liz and I were late due to Cumbria County Council Highways incompetence which said the road from the south was closed at Patterdale and we had to go round by Keswick and Troutbeck, but it was only during the week. Rose had sent a message to say the group would set off slowly up the valley and we caught her up after a short while after stopping to look at an old barn so we met everyone else in the area round No2 level after they had been to look at No1 level.

We stopped for a break while I explained what little is known historically about the mine and Roger then described the time when he and other members of MoLES explored new ground that showed just how large the mine is. We were unable to locate the entrance to No2 level and I will have to look at my photographs of digging it out in the mid 1980's, to see if we can identify where it is.

I explained that people were at liberty to go where they wanted and didn't have to stay together, as the mine is huge and much is in steep ground. People slowly made their way to No3 level which has a hand dressing floor about fifty feet below it, fed by a chute cut into the bedrock, a stone flagged roofed entrance leading to a collapse and a house with a lovely fireplace.

*No3 level entrance is unusual as it has a slab roof.*

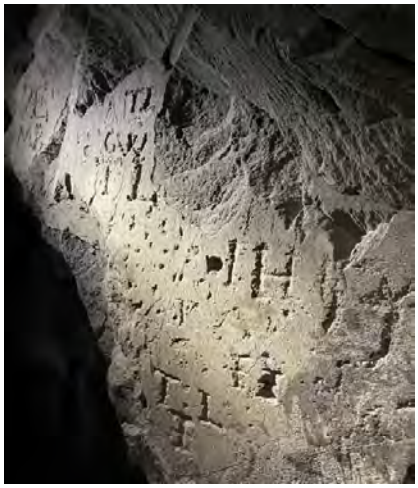
*House at No3 level*

*Fireplace in No3 level house*

The ore was brought out of the mine and tipped down a chute cut into the crag in places or by a stone wall down to a hand dressing floor at the base of the crag. Water was fed from the beck by a leat to a small reservoir with a walled front, and settling ponds had been built lower down the fell.


*Dressing floor* *Chute* *Level entrance*

*Photo by Liz Withey.*



Others led by Roger had made their way to No 4 level, which they entered. One superb feature is the graffiti along with stopes and wood rail which is a feature of this mine.

*Graffiti. Photo by Rose Lord*

Some people went back down to No3 level/dressing floor to examine the area in more detail while most of us made the slow steep walk to No5 level. Here the remains of the buildings are even better which include a house, smithy with a hearth and attached building, probably one of the best examples of an ore bin in the Lakes and a hand dressing floor with a bucking stone.

*Photo by Pete Archer*

These remarkable buildings are built onto a steep slope, and I would suggest certainly pre-date 1800, with the level entrance just wider than one's shoulders.

*Ore bin*

*Bucking stone and hand dressing floor*

Roger showed some into the level, which has large stopes, artefacts, wooden rail and there is still much exploration to do. The rest of us spent time examining the buildings which originally had been slated and there was much discussion on what went on here.

We then moved up the crag onto the top workings where there are flooded stopes, trenching, and impressive open stopes which are dry and must connect with the lower workings. There are some small ore bins and dressing floors and the remains of a remarkable building assumed to be a house. This area seems ancient and must have been one of the first worked.

As time was marching on, we decided to call it a day and started to walk back down the miners track to meet the others at the smithy on the valley floor. Pete and I were well behind the others as we discussed the tracks on the fell to the various workings, with Pete coming back with his drone when the bracken is down.

This had been a very interesting day and a site that many want to come back to. During the day there was discussion about surveying the buildings and carrying out an underground survey of the workings as this had not been done before.

Surveying of the surface remains could be a joint project with the LDNPA volunteers who have expertise in surveying techniques. This would enable us to understand more about this fascinating mine.

A few days later after looking at one of Pete Archer's drone footage which he posted on the Facebook page, Bob Mayo and I think the crag slightly to the south of No5 level has been quarried for stone and this was a question on day as to where the stone for the buildings came from.

I would like to thank Julian and Roger for all their help on the day as I couldn't have managed without them, as well as Pete, Liz and Rose for letting me use their photographs in this article.

Warren Allison.


*Area above No3 level showing the vein where No4 level has been driven directly on it. Photo by Liz Withey.*

**A Simple(ish) Geology of West Cumbrian Iron Ore.**

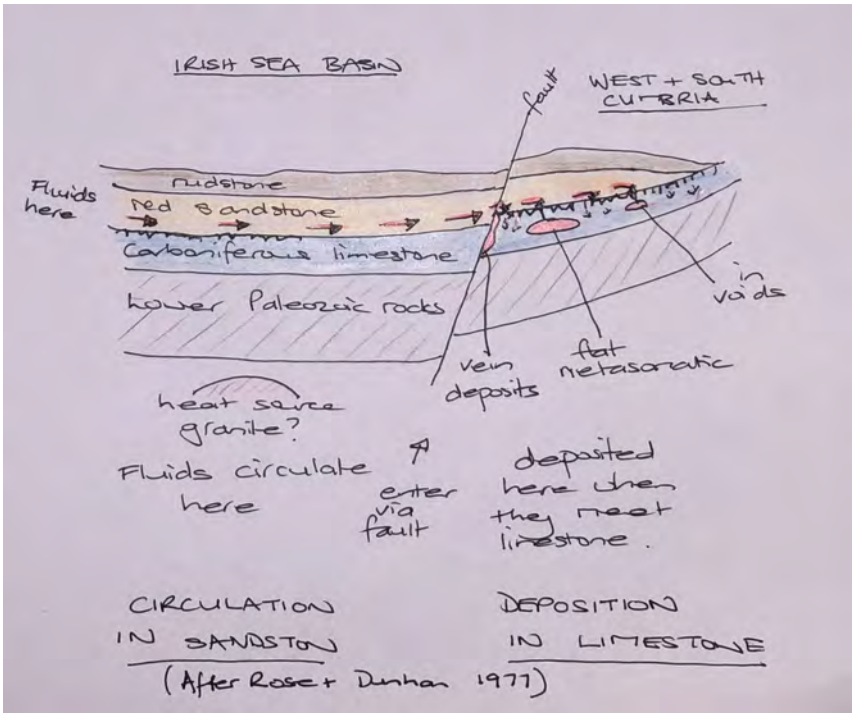
Haematite, an iron ore, is one of the most abundant minerals in the world so it's no surprise that we have large quantities in the UK. High quality iron ore occurs along the West of the country from Cornwall to Cumbria but by far the largest quantity, and highest quality, is to be found on the Cumbrian coast. The haematite here can contain more than 70 percent iron, whereas elsewhere maximums are around 35 percent. It is also low in phosphorous, resulting in soft and easy to work pig iron.

The Carboniferous limestone in West Cumbria hosts many haematite ore bodies. The limestone is around 325 million years old with iron dating to between 250 and 300 million years ago (Triassic). It occurs primarily in a strip about 8 miles long and 1.5 miles wide running NE-SW between Lamplugh and Beckermet. It sits on Skiddaw Slate and is overlain by coal measures, with some red St Bees Sandstone to the South. The deposits are mostly flat with a highly variable thickness.

The source of the iron and mode of deposition has been the subject of much discussion:

**Where did the iron come from?** Some believe it was leached out of the red sandstones overlying the limestone in which it is situated. Others believe it was the underlying igneous intrusion. It could be either, but current thinking tends towards the latter.

**How did it get there?** Put simply, there are two possible sources of circulating fluids. One is water from the surface, percolating downwards through cracks. As it heats it begins to circulate. The second is very hot liquids escaping from magma chambers.
The most likely case seems to be salty, oxygen rich brines from the surface that have heated to 80-120C, with the source of heat being a magma chamber lying underneath.




**The deposits are found in three different forms** at the edge of a basin roughly where the Irish Sea is now. When the salty iron rich brines circulating around the rocks met a faulted area at the edge of the basin the iron was deposited. Some went in **veins** along the faults, some in **voids** within the limestone (imagine caves formed within limestone), and some as a **replacement** of the limestone itself. The fluids dissolved the limestone and replaced it with haematite. Original features such as bedding planes, are still visible. This is a process called metasomatism (Greek again! Meta = change, Soma = body). The dissolution and deposition occurred simultaneously, and the rock stayed solid.

The ore occurs primarily as haematite, $Fe_2O_3$. Haematite can occur in more than one form but here it's mostly seen as botryoidal hematite, known as kidney ore.

Both names give some indication of the visual appearance of the mineral. Kidney is fairly obvious, but you need to know that 'butros' is grape in Greek to understand the botryoidal part. Haematite comes from the Greek for blood which becomes most obvious once you see the red colour of the powdered rock.

**So how does botryoidal haematite form**? It occurs in this form when the chemicals start to crystallize out around some sort of nuclei or 'seed' within a space. Perhaps, a tiny speck of dust. The individual crystals aren't visible, and they grow outwards in an ever-expanding sequence. When separate growths overlap, we can see the appearance of a bunch of grapes. The layers of deposition can be seen easily in individual specimens, often giving an 'onion skin' appearance.

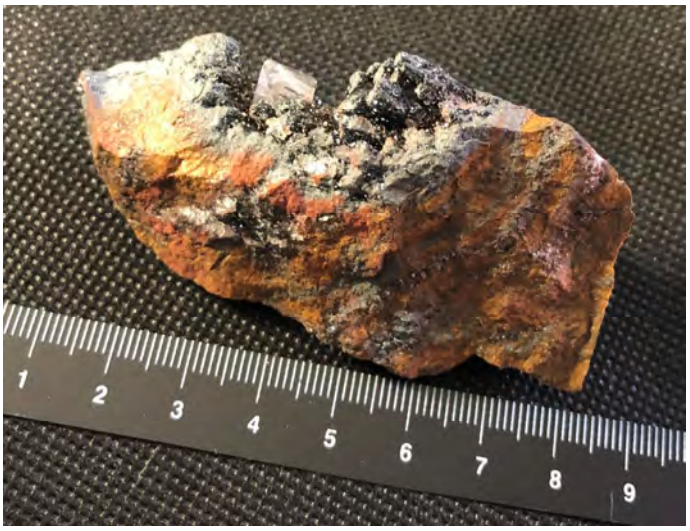

*Botryoidal haematite*

*Radiating growth*


*Onion skin layers*

*Magnified image of grape-like structure*

One form is ‘pencil ore’ which is harder and can be split into stubby grey pencil like lumps. (Used in the past for marking). Here you can see harder grey haematites with some signs of the characteristic ‘pencil’ top which formed when the crystals grew from different directions.



*Specularite and quartz on altered limestone.*

*Pencil ore, outer edge*

Iron also occurs in smaller amounts as specular haematite or specularite. Specular means mirror like. The mineral appears slightly metallic with plate like crystals. This is the crystalline version of $Fe_2O_3$. Good crystals form when there is slow cooling and space. It accounts for 2-3% of the deposit and occurs in vugs.

If you think you’ve found some specular haematite and want to check, the simplest way is to check the ‘streak’. For this you need some unglazed porcelain (I use the bottom of a ramekin!). Both kidney ore and black specularite will give you a red mark if you scratch them along the porcelain. Be sure that you have a powder, rather than just flakes, otherwise the streak won’t appear red.

*Microscope image of flaky specularite crystals next to a large quartz crystal*

The image on the right is a photograph of haematite that has been ground to make pigment (Florence Mine Arts Centre). This is the colour of the 'streak'.


Subsequent dissolving and re-deposition of the iron itself resulted in a yellowish-brown coating of siderite ($Fe_2CO_3$).

*Siderite on quartz (Magnified)*

If you'd like to learn a bit more there is plenty of material available online, but I can thoroughly recommend that you take a look at http://www.normannicholson.org/april-2017haemetite.html which not only gives clear explanations of the mineralization but also makes links with Nicholson's poems and haematite. With mentions of blood, and brown drizzle and wagons that sprayed blackberries red it paints a vivid picture of life in the times when 'the red men' mined this ore. He leaves it unsaid that the 'life-blood' drained from these communities when the mines closed.

Red Earth Revisited, by Cubbon, Sandbach and Woollard provides further geological detail, along with a thorough history of the mining district.

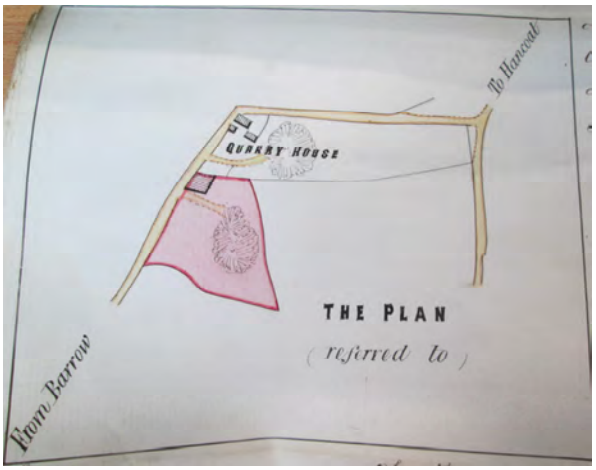
Lorraine Crisp.

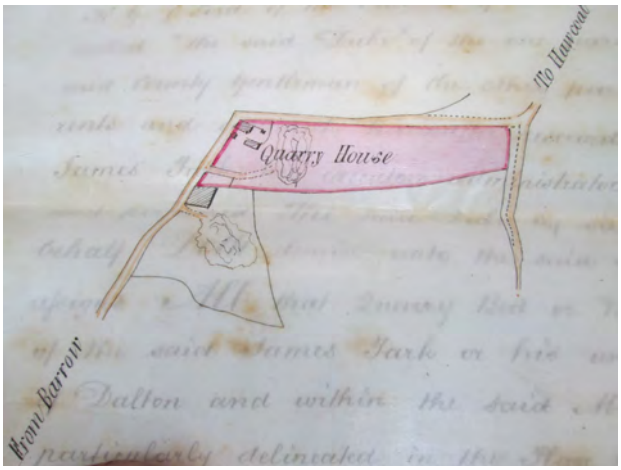
**Hawcoat Quarry, Barrow–in-Furness**

As you come into Barrow along Park Road there is nothing to show that the wooded high ground on your left hides the site that provided the raw material for the docks and churches in the town. Soulby's Ulverston Advertiser claimed that the quarry was opened by the Romans to fortify their Dalton garrison but James Melville thought it started shortly after the dissolution of the monasteries. Two small quarries were in existence when the land was bought by the cabinet maker John Romney. He built High Cocken where he raised eleven children. George Romney lived there from 1742 until 1755 when he left at the age of twenty-one to pursue an apprenticeship as a portrait painter.

*George Romney's self-portrait in the National Portrait Gallery*

The Romney family later became dissatisfied with their payments for damages. The Rev W Romney applied for the royalty of the freestone quarries on his own land in 1822 and again in 1829 but was turned down by the Duke of Buccleuch is favour of the existing tenants, Hughes and Dilworth. Mrs Romney tried again in 1853 following the death of S Waites but was told that Waites' widow would carry on the quarry.

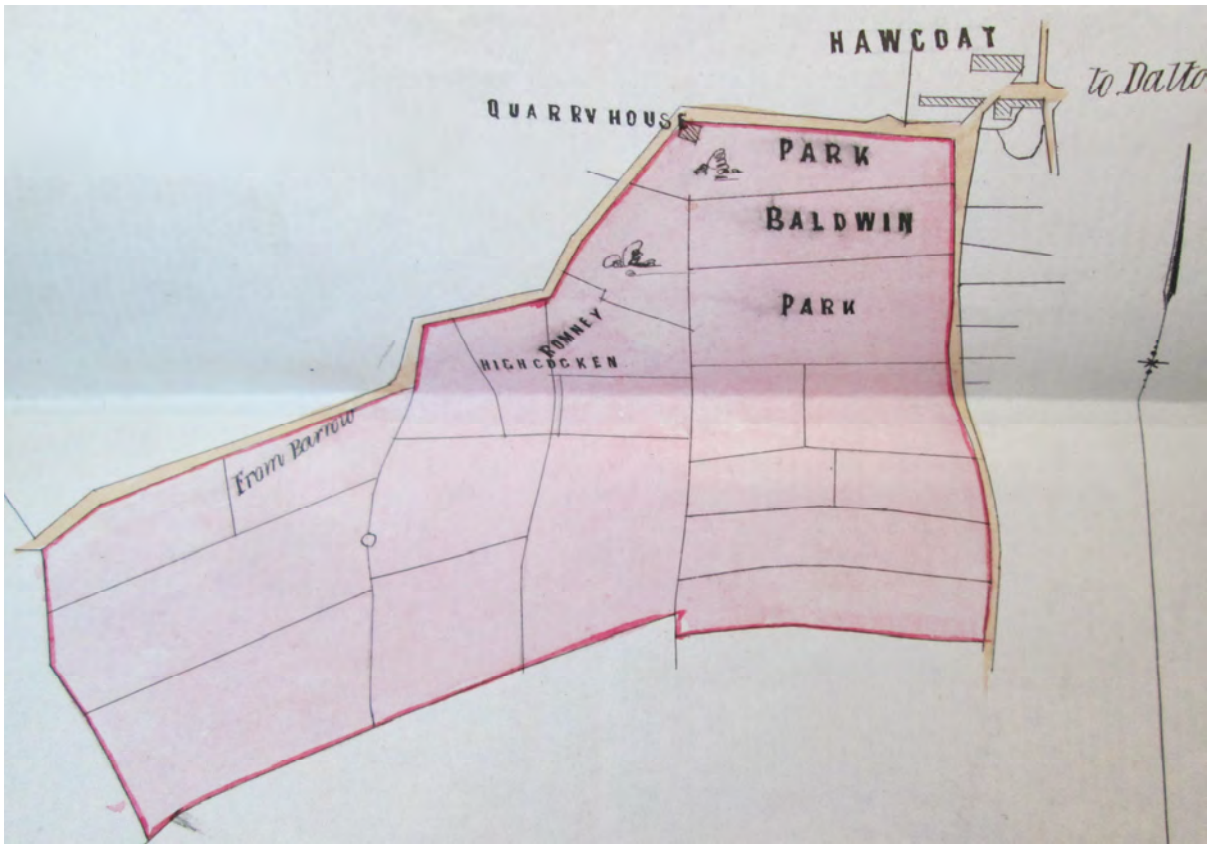



*The two quarries on the Romney's copyhold land shown on 1855 leases. Barrow Records Office, BDBUC 46/1/1 and BDBUC 46/1/2*

New leases were drawn up in 1855, William Waites paid 7 guineas per annum for the upper quarry and James Park paid 8 guineas per annum for the lower one, but the Furness Railway

already had their eye on them. Edward Wadham took James Ramsden along on his inspections in December 1854 and September 1855. The next surviving lease was to the Furness Railway dated 4th August 1863. They paid £150 rent on a much larger area plus a royalty of 3/4d per cubic foot of ashlar stone, and 3/4d per ton of sand and rubble. The new lease was for a five year term. Edmund Tatham and George Romney sold their surface rights to the Railway Company in February 1864.




*Land leased to the Furness Railway Company in 1863, Barrow Records Office, BDB46/1/3*

The Furness Railway Act was passed in 1862; it allowed the company to build the Hawcoat branch into the quarry as well as the right to purchase the Ulverston Canal, to operate steamships, and to subscribe to the Coniston Railway. Tenders were requested for the construction of Barrow docks in August 1863. Brassay and Field won a contract which included the operation of Hawcoat quarry.

The first recorded accident was in October 1863 when some children released the brakes on a loaded wagon standing at the quarry, sending it crashing down the incline. This incline was dangerous enough when used properly. It seems that wagons were sent down through a tunnel, four at a time with a brakes-man on each. William Trotter was working for the contractor when his foot missed the brake and he was crushed between the wagon and the tunnel wall. The report of the inquest in the Barrow Herald indicates that the quarrymen lived on site at Cocken.

The travelling cranes also caused fatalities. In 1865 William Greenwood attempted to lower a large block single handed. Without a hand on the brake he was struck by the handle of the winch and thrown from a height. The next year John McVay was struck by fragments when

the wheel of a crane broke. The inquest jury spoke of shocking ignorance and carelessness in that the injured man was carted to Hindpool in a dirt wagon rather than allowed to rest in the nearest house.

Thomas Waddington, a foreman, fell from the quarry face in 1871. George Walker was killed by a large stone falling in 1872. Adam Taylor, the overlooker was a witness at the inquest and W Butler, the coroner, had a lot to say about his work. He said that the quarry was worked in a scrambling manner and ought to be worked in proper heights. He threatened to record the next fatality as manslaughter and the Ulverston Mirror quoted him: "The quarry was in a very disreputable state and ought to be worked in a different manner. He would inform Mr Ramsden, when an opportunity occurred, and was sure he would attend to it. If it had been an old horse that had been killed by the fall of stone there would have been a row about it, but as it was a man it did not matter". The verdict was "accidentally killed" and the same page recorded that another man had been severely concussed by another fall of rock at Hawcoat. A year later Martin Madden was killed when a block weighing 14cwt fell from the face. The foreman giving evidence said that the method of working was to be altered so as to reduce the danger. The contractor during this particularly dire period was Joseph Hunter, but it was the Furness Railway Company who bought the stone cutting machines. The first was ordered from Messrs Munro of Arbroath in June 1871, the second was assembled the following year, with four more on order. The men threatened to strike for a fifty four hour week.

John McDonald Ross and Charles Liddelow, railway contractors of Workington, took an eleven year lease in 1882 in time to supply stone for the Town Hall and the high level bridge. They advertised for sixty quarrymen in the Annandale Observer and advertised the building stone in the Belfast Newsletter, but after only seven years Edward Wadham was looking for a new tenant.

George Hunter Young came from Whitby in 1873 to manage the quarry for the Furness Railway. He advertised for sandstone getters and scapplers in the Bradford Observer and the Preston Chronicle and sold off twenty of the three-room huts. He is said to have leased the quarry in 1878 but it seems more likely that his lease began after Ross and Liddelow abandoned the works in 1889. In his time as quarry-master there were a further two fatalities. William Kendal died in 1892 when a quantity of stone fell from a crane and Samuel Morgan died in 1899 when a rock fell on him.

GH Young was elected to Barrow council in 1896, he campaigned for the introduction of electric light, for payment of trade union rates in council contracts and longer opening hours for public libraries but in 1909 he was made bankrupt. He said that the gross takings at the quarry had been £8000 in 1900 but it had gone down to virtually nothing for the past four years. The official receiver made comments about his visits to Harrogate, Paris and Canada but he claimed that "when you have to do business you have to spend largely". G H Young died 0n 23rd March 1911; at his funeral the coffin was carried by the quarrymen. A new fourteen year lease was granted to his widow in 1916 but she transferred the remainder of the lease to Fitzwalter Butler after only three years. The last advertisement for quarry workers appeared in March 1914.

High Cocken was standing empty on the edge of the precipice in 1906. It was bought for demolition by Alderman Cox but he started the preservation movement himself by inviting painters and photographers to record it first. Alfred Aslett saw the potential for rail tours and swiftly bought it back for the Furness Railway. It opened as a museum on July 1st 1909 and was marketed as George Romney's Early Home, new tour No.20.

*High Cocken abandoned and derelict about 1900. Ref. Barrow Records Office, Z34303/2*

Tours of Romney's early home must have been popular because the Furness Railway opened the Tea Pavilion in 1912, but it was not advertised in 1913 and the last tour of the cottage was in 1916.

Fitzwalter Butler was the son of TF Butler, the iron and coal merchant who was five times mayor of Barrow. He renewed the lease for another fourteen years in 1930, but there seems to have been little activity in his time. Cocken Junction was closed in 1936 and the rails were lifted.

In its final years Hawcoat quarry was the scene of a series of accidents and suicides. John Eden was found at the foot of the quarry in 1890. He had been running away after a drunken raid on a pigeon loft. Peter Leigh was found drowned by the caretaker of Romney's home in 1912. He had been missing for a month after taking a short cut through the quarry. The following year John Grimshaw drowned while bathing. Richard Burrows drowned himself in the same spot in 1930. In 1934 Audrey Alice Lucas threw herself and her baby from the top of the quarry face. A schoolboy William Henry Smith fell from the top in 1939.

In November 1947 the entire site, including the land used by the branch railway, was sold by the British Transport Commission to Barrow Borough Council. It was used as a tip by the Council and by Cairds and was still an eyesore when James Melville wrote his article in 1973.

It was only at the turn of the century that the area was planted up as woodland. High Cocken survives as a private house. The few remaining rockfaces give only a slight indication of the quantity of rock that was taken to build Barrow.

*Sankey photograph 2762 "the New Pavilion" ©Sankey Family Photography Collection. High Cocken is seen directly above the "Gantry Hole" where Peter Leigh and Richard Burrows drowned. Behind High Cocken is the disused works of the Steel Casting Company which shared the Hawcoat branch line. The company was formed in 1877 and wound up in 1879.*

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Peter Sandbach.

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