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The Newsletter of the Cumbria Amenity Trust Mining History Society

Tilberthwaite Mine – Penny Rigg Horse Level Forehead. Photo by Liz Withey

No. 134 February 2019

Cumbria Amenity Trust Mining History Society
Newsletter No 134, February 2019

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Society Officers and Committee Members Back cover

39th CAT AGM and Dinner

The AGM and dinner was held at Rydal Hall, once the residence of the Le Fleming family, land and mineral rights owners at Coniston and elsewhere. After the AGM there was a slide show. Liz Withey showed some photos of the Digging Team pacing a plaque on the tub in Tilberthwaite Horse Level to commemorate Pete Blezard, Jon Knowles gave an update of explorations of quarries in Wales and mines in Snowdonia, and Ian Willis showed us some interesting slides of Weardale mines when they were working. Thirty nine people attended the dinner. Thanks are due to John Aird for organising the events.

The AGM was preceded by a Special General meeting to ratify the proposed change to CIO status. The motion 'That the charity "The Cumbria Amenity Trust Mining History Society", Registered Charity Number 519424, shall be dissolved and the Assets and Membership transferred to the charity "The Cumbria Amenity Trust Mining History Society", Registered Charity Number 1180198', was passed unanimously.

Chairman's Report, Warren Allison

Once again, can I sincerely thank members of the society and committee for their support without which the society would not be as successful as it is. It is worth considering that many societies are not in the enviable position as CATMHS is, especially after nearly 40 years.

The Heritage Lottery Fund grant of £450,000 (known as the Coniston Copper Project) to carry out conservation work to the Coniston Copper Mines and Penny Rigg Mill at Tilberthwaite, as well as public involvement, has finished apart from tiding up some loose ends. Coniston Copper Mines have been taken off Historic England's "At Risk Register" of Scheduled Monuments. The work to conserve around 150 different structures has been quite outstanding and the contractors deserve a huge thank you. An example, being the work on the Thriddle Incline which is quite unbelievable. The involvement of the local community especially the Primary and Secondary schools has been fantastic. Examples such as when we looked at the electrolysis plant which was built just before the First World War and one of the pupils wanted some water from the sump in Courtney's crosscut which was put through the electrolysis process back at the school and a smidgen of copper was produced. This led to the children thinking there was still so much copper left that they looked at forming a copper club, so they could make money out the mines. A working model of the mine has also been built which appeared on Youtube. Even a French lesson was got out of the project, where the school has started to translate the documentation in the Ruskin Museum on the electrolytic plant, which has not been done before.

The various publications including the archaeological surveys, trail leaflets, information packs for the schools, etc are of a very high standard. The various interpretation panels around the site informing the public of key parts of it, are low key but a huge departure from the policies previously in place for the National Park. On a personal level, I have got so much enjoyment out of this project that I have committed another five years to taking the school children on field trips to the mines. CATMHS, from its inception, has highlighted how important the copper mines were and the need to conserve them which after nearly 40 years has been accomplished, and this would not have happened without the support of its members over those many years for which they should be very proud. This project would also not have happened without the support of LDNPA members, John Hodgson and Eleanor Kingston.

Once again, a huge thank you should go to Ian Matheson and the contributors for continuing to produce a good quality newsletter and Mark Hatton for running the Facebook page. However, I would just encourage any member to write an article no matter how small on what they have been doing, you can do it for Facebook, why not a few lines and photographs for the newsletter?

The finances continue to be healthy and membership is at its highest level ever, most meets are oversubscribed and the photography by members is of exceptional quality. There are two potential projects currently being scoped up at Buttermere Copper Mines and the Wad Mines, which the National Trust are willing to consider which could lead to new ground at both sites. This will also involve some digging, but don't panic, it is not on the scale of Tilberthwaite Horse Crag Level.

The website continues to be developed and its capacity is to be increased to allow more material to be placed on it which is also available to the public. The societies archive, held by the Armitt Museum in Ambleside, continues to grow as does the collection of publications which is probably the finest on mining in Cumbria. The Society has provided speakers to present talks to other societies and at various conferences, as well as carrying out a number of guided walks. Dialogue also continues with the various agencies through the Mines Forum which is unique in this country.

It is the Societies 40th anniversary next year and a special edition of the newsletter for December 2019 is being planned which should be a fascinating insight into its history from the start to the present day, which Ian Matheson is leading.

Lastly, I would like to offer a vote of thanks to John Aird for continuing to organise the AGM and Dinner and I hope you all enjoy yourselves during the rest of the evening.

Secretary's Report, Colin Woolard

Four committee meetings have been held this year. Minutes of meetings are on the member's page of our web-site.

At our last AGM both the Chairman and I outlined the potential for CAT to transfer to become a CIO (Charitable Incorporated Organisation) under changed government legislation. The committee considered this option, agreed that the change was beneficial, and the way forward. To dissolve the old CATMHS (Charity no. 519424) and transfer its funds to the new a Special General Meeting was called which was held just prior to this AGM. At the SGM it was agreed that the transfer would proceed in accordance with the proposal considered.

Because of this, this AGM will be the last of the original CATMHS and election of officers would be impractical since the planned date of dissolution is 31st December 2018. Proposals for members to join the committee of the new CATMHS should be made to me and we will take these proposals forward at our first committee meeting of the new society.

Sadly, I report the death of Dave Bridge, a long serving member of the society, at the end of January. Many knew Dave and have memories of lots of adventures and exploration over his years of leadership and direction. Dave left no will, but a simple wish list, which I believe included a desire for his mining books etc. to be donated to CATMHS. The situation with his elderly wife is complex and it will take some time to understand the position fully.

Liaison: This year we have continued to receive a regular number of enquiries for information to support academic research and to advise visitors to Cumbria on access, routes etc. We have collectively provided 15 walks, talks and advice to people outside our society.

Paul Marvin has made a video of the Tilberthwaite Deep Level which is accessible from our web-site.

Keith Russ, a Cornish mining engineer, approached us for information on Coniston mines. Keith has constructed 3D images of the Cornish Mines over many years and is looking to extend his work to the Coniston Area. See "Abandoned Mines in Cornwall"
A potential scheme to develop a Heritage Centre at Glenridding was proposed by Tim Clarke. The scheme followed work undertaken through Lancaster University Postgraduate Students and they delivered a feasibility study which showed there was interest and potential to develop a Heritage Centre. CATMHS made available their Greenside documents for study but were unfortunately unable to support the project with photographic study within Lucy level as the landowner withheld permission for this work at the time.
The ownership of the Hudgillburn Caravan site has changed. At a recent meeting it looks like continued access will be possible as long as we take care not to impact on the caravan business.

Jessica Horton, a ceramic artist, has approached us to view the Coniston mines. Mark Hatton has given Jessica and her friends a tour and some of the clays are of great interest to the artist.
A Durham university student has asked for help with her dissertation of an Industrial Study of Whitehaven. This is mainly coal. We await her questionnaire.
CATMHS has assisted Dr Simon Howell at the National Graphine Institute in Manchester with information on the Borrowdale Wad Mine so he could set up a graphite presentation display in the institute.
CATMHS had offered to give some financial support to Brian Cubbon's redraft of David Kelly's "The Red Earth" book on the Furness Iron Industry. Unfortunately, Brian has now decided that the task to reach print ready format is beyond his capability and will provide a manuscript for CATMHS and the Barrow Record Office. A considerable amount of detailed research had been put into this document to collate all aspects of the industry.

Membership Secretary Report, Ian Matheson
This has been a record equalling year for membership. At year end we had 161 members, the same as last year. So far about 100 have renewed.
Membership renewals have traditionally become due on 1st November each year. So as to rationalise our membership year and to align it with BCA insurance, I have suggested that we regard our membership year as being the same as the calendar year, 1st January to 31st December. If accepted this would mean that the November newsletter, which is currently sent out before renewals have been received, would become the last one of the membership year and the February one would then be the first of the new membership year, and would be sent to all the previous year's members, with appropriate reminders.
In practice the only noticeable difference would be a change in the wording of the reminder sent out with the November newsletter, to request early payment so that the Treasurer can arrange insurance for 1st January, rather than, as at present, a statement that membership is due on 1st. (I have since been persuaded that this isn't a good idea, so I have dropped it. IM)

Newsletter Editor's Report, Ian Matheson
CAT has produced regular newsletters since the very beginning. The next one will be number 134. It has always included reports on CAT meets and activities and also articles on local mines and mining history. It usually runs to about 40 pages, and the collection could be regarded as an archive of nearly 40 years of mining history. My thanks to everyone who has sent me material, and especially to new contributors.

40th Anniversary publication - Next October it will be 40 years since the formation of CAT, and I intend to produce a special publication to mark the anniversary. It will be in the form of a timeline to record CATMHS history, illustrated with photographs, and amplified with reports on our activities and articles on our projects and achievements, which I hope will be written by those who were involved. It will be presented at the next AGM.

Meet Secretary's Report, Mark Hatton

2018 saw 20 meets run by 12 different meet leaders. Can I start by thanking all of the meet leaders who took the time, effort and responsibility to put on the meets.

Warren led meets at Lucy Tongue (3 times!) and Rigghead. John Brown led at Hudgill Burn (twice), Nigel Addy ran an SRT practice course and Graham Derbyshire ran an SRT beginners course. Nick Green and Peter Jackson and Martyn Langley led us still further into the Nenthead Labyrinth and Chris Twigg took us around the Cleveland Ironstone Mines - which quite literally left us all breathless. Liz has lead two Photo workshops (to Carrock and Horse Crag) and Alastair led a Coniston Slate meet (delegating leadership to Warren). Michael Oddie led a trip to Rhiwbach and we were hosted at Great Orme Head on a very memorable trip.

We ran a Beginners trip to Goldscope and also visited Dalehead Mines, Hodge Close and tried once again to get to Bannerdale, and failed again! And let's try to forget the Gaping Gill meet which I found totally gripping. So gripping in fact I got stuck 10 yards from the entrance and had to go home for a very early bath. But everyone else had a truly magnificent trip into the depths of Gaping Gill via Bar Pot. And thanks to Peter Sandbach for putting on half a dozen Newland Furnace Work Meets (although only he went) and an evening meet near Lindale.

So in 2018 we have been to Wales, Yorkshire, The Pennines, Cleveland and Cumbria, visiting Lead, Copper, Slate, Tungsten, Iron and Limestone. We saw workings dating from the Bronze Age through to the 20th C. Plans for 2019 include a couple of Projects (including reopening and surveying Buttermere mines with the NT permission) and also further piecing together of the Wad Mine maze. We need work meets at Levers Water and possibly Carrock. And we plan on a trip or two to Derbyshire (Ecton) and possibly Scotland (Tyndrum).

And most of all we need your ideas, requests; we need volunteers to lead and we need people to sign up then turn up. We did have a lot more sign up than turn up in 2018! So thanks once again to the Meet Leaders and for everyone who so enthusiastically joins in on Meets.

Chairman's Award, Warren Allison

This award is for the person who has made the largest contribution to the society in the last year. It is always difficult to pick out a single individual as not all the members will realise the effort that people have put in, much of it in the background to help make the society one of the most respected in the country. It has been very difficult to choose an individual, but this year's award goes to someone who has had a serious medical condition, but has continued with their exploration with boundless energy, enthusiasm and some superb photography of the places visited, which has contributed hugely to the Facebook page and it gives me great pleasure to award it to Carl Barrow.

Change to Charitable Incorporated Organisation (CIO)
Registered Charity Number 1180198

Following the vote to approve the conversion of the Society to a CIO at the SGM on 8th December 2018, the change became effective on 1st January 2019.

The website reflects this change with a headline announcement and makes available the constitution of the CIO. This is longer and more convoluted than the original charity's constitution because it grants the CIO greater powers, e.g. to borrow money, employ workers and rent property. It is not CATMHS's intention to use any of these additional powers in the near future.

Until the first meeting of the Trustees of the CIO (Monday 11th February 2019) all the charity consists of is the registration with the Charity Commission and the Trustees At the meeting the intention is that the Trustees will set up the structure of the CIO, appoint officers and decide a date for the first AGM. It is very unlikely that these will depart in any meaningful way from the arrangements of the original charity.

The CIO obviously requires a bank account and setting this up has proved more time consuming than it should; at the moment the bank account is open with cheque and paying in facilities. The PayPal account has been successfully linked to the bank account and website transactions are fully operational. Regrettably obtaining online access to the bank account has proved difficult but hopefully by the time that the News Letter is published this difficulty will have been resolved. Once this has been achieved the original bank account will be closed and the balance transferred to the new account. All that will remain to do is to advise the Charity Commission that the original charity has closed and ask them to cancel the registration.

Hopefully from the membership point of view none of these changes should be apparent and the transition should be completely painless.

John R Aird, Trustee CATMHS

New Members

Jim Cannel, from Dalton

John Pickin, who now lives at Brampton. John is a professional archaeologist who has been involved in the Coniston copper Project and was author or co-author of the four reports commissioned by the LDNPA

And also Paige Craik and Ian Bretherton, who have re-joined after a year away.

Newland Furnace

The photo shows recent progress on lowering the floor at Newland. A small group of Newland Furnace Trust members are working on the project and would welcome some help on the last Saturday of the month.

Contact Peter Sandbach for more information.

Phone 01229 464892, email p.metasequoia@tiscali.co.uk

Re-instatement of the saw mill waterwheel at Coniston copper mines

Philip Johnston, who owns the Upper Bonsor Mill dressing floor, has started work to reinstate the waterwheel as it was when it powered the saw mill. The waterwheel pit has nearly been cleaned out of rubbish and the launder towers are currently being re-built.

Warren Allison

Launder towers being re-built

Waterwheel pit nearly cleaned out

Photo taken by G W Wilson circa 1865.

Buttermere Mine and Wad Mine- potential new projects

On the western side of Buttermere at Burtness Wood, near Comb Gill and then on the southern edge of the lake at Low Wax Knotts, are some very old copper workings.

According to Ian Tyler in his book "The Lakes and Cumbria Mines Guide" the level at Burtness Wood is reputed to be Elizabethan and possibly re-worked circa 1830 and there are the remains of a substantial smithy nearby. There is a German openwork at Coomb Gill with surface trials and remains of dressing floors and small buildings. At Low Wax Knotts is a (*beautiful hand cut coffin*) level (*which was dug out in 1994*) as well as a 19th Century level and an Elizabethan one which undercut an openwork, and to the east is another open trial, openwork, dressing floor and another Elizabethan level which is now closed.

In "Daniel Hechstetter The Younger" by Hammersley there are references to the Germans working these mines from around 1615 to 1620.

Very little else is known about the workings, and Mark Hatton has approached the National Trust to ask if there was the opportunity for the society to possibly re-open the level in Burtness Wood and the Trust was apparently quite favourable, providing a project brief was submitted.

So, at the November committee meeting, it was agreed to carry out a survey of the surface remains and pull together what archive material there is, to draft up a brief. I have since spoken to one of the LDNPA archaeological volunteers and as they have the experience and equipment to carry out level 1 and 2 surveys, they have offered to help the society to do the survey which hopefully will be in the spring.

In addition, Colin Woollard has been researching the Wad Mine in the archives and on the internet, while Mark Hatton has been visiting the mine, and again there isthe opportunity to survey and carry out exploration as the information they are discovering could lead to a re-evaluation of the mine with the possibility of new undiscovered ground.

Members will be made aware of the dates for the survey of the Buttermere mines, which will probably involve a few days to help in the survey work, as I believe there could be a lot of new discoveries to be made.

The following photographs were taken in 1994 but give an indication that there is much to do there and which, as far as I believe, has not been recorded very well, judging by my comments.
Warren Allison.

Possible Elizabethan open cut

Smithy

*I called this the southern le*vel

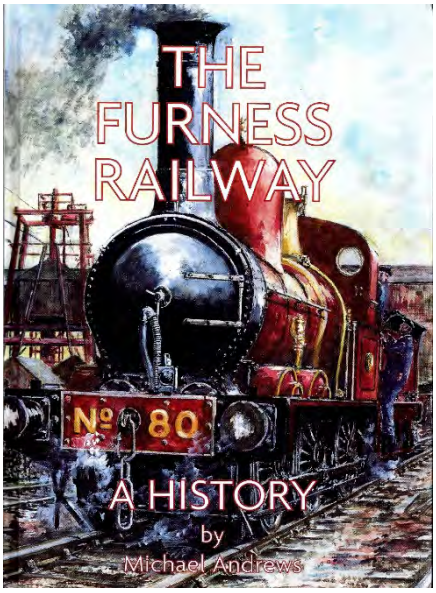
*19th century leve*l

Elizabethan level on Low Wax Knotts dug out in 1994. *I called this the southern open work*

Book Reviews

The Furness Railway - A History

By Michael Andrews, hardback, 250 pages, published by Barrai Books, 2012, £25.



I came across this book in the café at Ulverston Train Station, although no doubt there are other sources. I leafed through it and, although railways aren't really my thing, I was intrigued by the obvious connections between the mining industry and the railways. It turned out to be a really good buy.

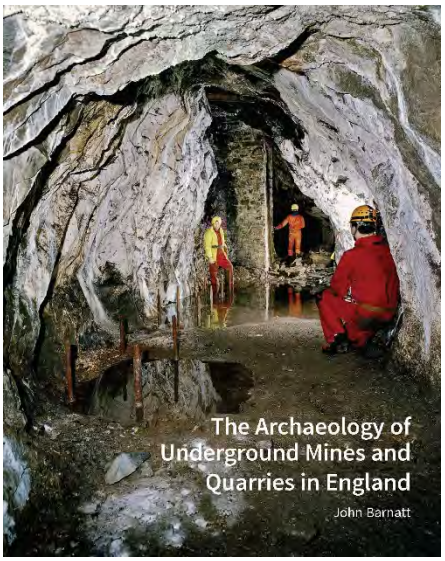
The book is the fruition of 50 years research by the author, who died in 2010, before his book was published. It is beautifully presented on good quality paper, with many excellent coloured maps and diagrams and nearly 200 historic photographs. It has an appendix with colour pictures, an index, and a bibliography.

As well as the Furness Railway, the lines of other companies, such as the Whitehaven, Cleator and Egremont Railway and the Cleator and Workington Junction Railway are included. Many railway lines originated as mineral lines or tramways, established to get iron and stone to the harbour at Piel or to the Port of Barrow, so the story of the mines and quarries, the railways and the port are interdependent.

Most works of reference are not an easy read but this one is. It is divided into 27 referenced chapters, each a topic in its own right. Examples are 'Before the Furness Railway', 'The Whitehaven Cleator and Egremont Railway 1854-1856 - Rails into the Cumberland Ironfield', 'The Furness Iron Trade and the Development of Barrow'. And so on.

I got my copy at a discounted price of £20. A bargain. Ian Matheson.

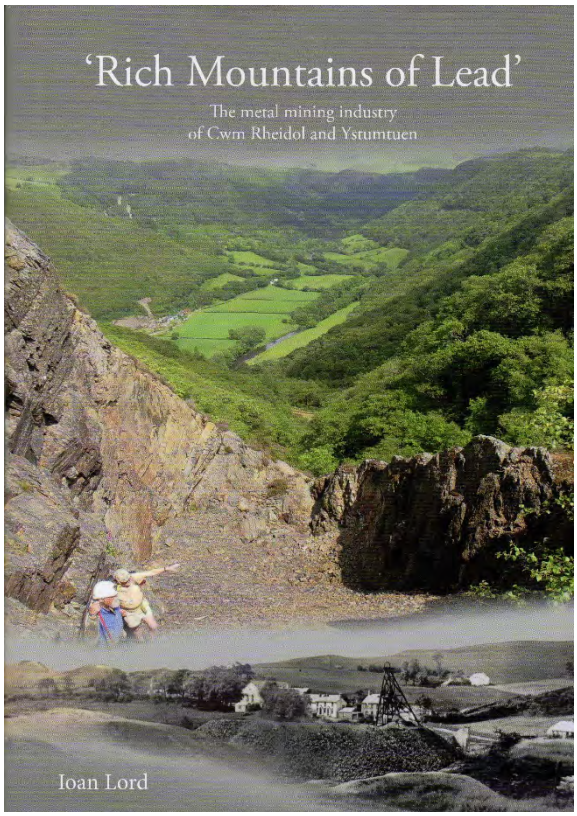
The Archaeology of Underground Mines and Quarries in England.



In February Historic England will publish a new book by John Barnatt entitled The Archaeology of Underground Mines and Quarries in England. The book covers both a review of all the raw materials exploited in mines and quarries in the past across England, and a review of all known types of underground archaeological evidence that exists underground. It is extensively illustrated, with many photographs by the late Paul Deakin.

Members of CATMHS can receive a 20% discount and free p&p by entering discount code **AUMQ19** on the basket page of the Historic England bookshop.
https://retail.historicenglandservices.org.uk/index.html

"Rich Mountains of Lead"
Ioan Lord
The Vale of Rheidol Railway
ISBN 978-0-95445-463-0
271 pages, £45



The Afon Rheidol flows from the Nant-y-Moch reservoir, high on the western slopes of Plynlimon, down to the sea at Aberystwyth. The valley through which it runs is famous for the narrow gauge Vale of Rheidol Railway, running from the coast to Devil's Bridge. Opened in 1902 the intention of the projectors was the transport of timber (for use in the South Wales coal mines) and lead and zinc ores. As was so frequently the case, by the time this type of railway opened the mining industry had gone into near terminal decline, leaving the tourist trade to ensure the line's survival.

Prior to the publication of this work David Bick's "The Old Metal Mines of Mid Wales" Part 2 "The Rheidol to Goginian" was the bible for mine explorers, but is only A5 sized and runs to 52 pages. Ioan Lord, a youthful resident of the valley (born 1998) has produced a masterful book covering all the mining enterprises undertaken in the valley with detailed histories of each mine along with precise descriptions of all the accessible underground areas. Virtually every mine has a surface plan of the remains along with sketch plans of every significant adit and level. The amount of effort required to achieve these results must have been truly mind boggling. The author has been assisted by stalwarts of the Mid Wales mine exploring cognoscenti, a number of whom the Welsh CATMHS group will recognise in the photographs.

To introduce a very minor note of criticism, the author is inclined to ignore or minimise the influence of fraudulent promoters and projectors of mining enterprises in the period from 1850 onwards. The first thing any Victorian should have done on hearing the name "Francis" in connection with any Welsh mining project was to have checked his wallet and locked away his cheque book. Unfortunately most investors who received the enthusiastic reports of Absalom and Matthew Francis were the trustees of widows and orphans living in England who would never have dreamed of travelling to inspect operations or investigate the bona fides of the operators.

Ignore this carping, yes this book is expensive but this really is a case of "you get what you pay for" and here is a genuine reference book which anyone interested in this area of metal mining should have on their bookshelf.

William Waller

Archaeology in the Lake District 2018. The annual LDNPA Archaeology Conference was held this year at Rheged on 10th November.

Programme:
Archaeology in the Lake District National Park 2017-2018, an overview by Eleanor Kingston

World Heritage one year on, working with a World Heritage Site, a review of the first effects and benefits of World Heritage Inscription by Mairie Locke of the LDNPA, who succeeded John Hodgson as co-ordinator and Jamie Lund, of the National Trust

Woodland Industries: The Rusland Valley's Hidden Heritage. An account by Rebecca Cadbury–Simmons, Northern Archaeological Associates, of a woodland survey by volunteers, revealing lots of charcoal burning sites.

Early Rural Buildings in the Duddon Valley, by Peter Mathieson of Duddon Valley Local History Group. The Group has carried out a comprehensive survey of archaeological remains in the Duddon Valley. A 3 year ongoing excavation program of selected building remains highlighted differences between longhouses, used for permanent dwelling and sheilings, used for seasonal grazing.

Satterthwaite Medieval Bloomery, a community excavation, by Professor Harold Mytum, University of Liverpool. A selective dig on a very large site revealed hundreds of tons of bloomery slag, which had been deposited in an organised way. The site seemed to have been used because of its resources – wood for charcoal burning, water and clay soil to control burning, and a network of medieval tracks for access. Iron ore would have been imported, probably from Furness. So far the investigation has failed to find evidence of a hearth or other infrastructure, just lots and lots of slag, indicating that the site might have had continuous use for 100 years. In its day the bloomery was owned by Furness Abbey, who would probably have used it output on its extensive estates and perhaps sold iron elsewhere.

Langdale Revisited: new fieldwork at Copt Howe by Professor Richard Bradley, University of Reading, and Dr Aaron Watson, University of Durham. In summer 2018 they carried out a study and partial excavation of the rock art at Copt Howe Boulders. Modern imaging technology enabled details to be seen in great clarity; excavation revealed that the carvings extended below present ground level, which counters suggestions that have been made that the carvings are recent. It had been thought that the rock art might have been associated with the Langdale Axe Factory or the numerous Lake District stone circles, but dating evidence suggests that they might be earlier. There was a discourse on orientation with sunrise or sunset at the summer solstice.

Not much on mining interests, but, despite the lack of expected findings, I found the presentation on Satterthwaite Medieval Bloomery to be interesting, especially as it hinted at how the site had been organised. Eleanor Kingston related the achievements of the recent Coniston Copper Project, and also on conservation work at Backbarrow Furnace, that, after previous assurances failed, has at long last been carried out. When finished it is hoped that the furnace site will be put in the hands of a trust to manage it and to arrange public access.

Tilberthwaite Horse Crag Level Photographic Meet

Present: Liz Withey, Dave Donkin, Robert Gurr, Peter Sandbach, Anthony Brooke, Nicola McGuckin and Warren Allison.

Looking down on the wheel pit

This was the second photographic meet that had been organised for people who wished to hone their skills and to be able to have the time to do so, as well as learning from other people. Meeting at the car park on a cold day, we sauntered up to the mine, first looking at the interpretation panel which had been erected just above the road as part of the Coniston Copper Project. Arriving at the mine, the work that had been done as part of the project was explained before we donned helmets and started to walk up the cut which forms part of the open slate quarry to the mine entrance.

After about 80 yards you enter the slate closehead, worked at various times from the late 19th Century to the mid 1990's when it was last worked by George Tarr. A quick history lesson was given as to how CATMHS cleared the first fall on the level, especially after the storm in December 2009, which wrecked the initial work. As a result the level was railed out and the material from the fall deposited in a worked-out part of the closehead, supported by a slate wall.

Lighting the closehead

It was now that the cameras came out to photograph the closehead from various angles and using different lighting techniques. It was very interesting to see the contrast between most people using digital cameras and Robert using a 50-year-old 35mm film camera. Quite a bit of time was spent here, before slowly moving up the level, photographing it as we went.

Robert using his 50-year old camera looking back to day

After passing through the impressive bag wall, built to get rid of the debris from the next two falls, lunch was had at the last purpose-built bait station used on the dig. A challenge was set for the day as to who could produce the best photograph of the ladder way and orepass at the end of the level, which is not easy to do. Dave also suggested that we should see who could get theirs posted on the web by 5pm.

People were now spread out along the level with quite a bit to photograph, steel work from the dig, stoping, rail still in-situ, two ore tubs which are the largest seen in the Lake District mines and finally the ladderway and orepass.

Ladderway expertly lit by the group

Time was getting on and camera batteries had finally gone flat, but Robert with his old camera was still going. (See cover photo. IM) It had been a hugely enjoyable day, lots of banter and talk, advice given and more meets to be arranged for next year.

Liz Withey and Warren Allison.

Tilberthwaite Mines, AGM weekend, 9th December

Attendees: Mark & Sandy Hatton, Chris & Joanne Cowdery, John & Lesley Aird, Dave & Irene Donkin, Robert Gurr & Angus Gurr, Chris Bunker, Maureen Fleming, Keith Sykes, Stuart Morley, Michael Pringle, R Wickstead, V Caurdrey, Bob Mayow, Tom McNally, Stephe Cove , Dave Hughes, Peter Burrows, Steve Sim, Magnus McIntosh, Alastair Cameron (part).

Some of the 26 participants, in the slate working of the Horse Crag Level

We were blessed with a day of blue sky and gentle breezes today, perfect for a walk around the mines of Tilberthwaite. The first half of the meet was spent walking up to and around the Tilberthwaite Copper Mines at the head of the Gill. Many eyes were put to work to spot a rich array of interesting features, minerals and workings in this fascinating area. We found bucking stones a plenty, some delightful carved initials, some really interesting minerals and lots of evidence of the labours, ingenuity and determination of the miners who worked here on and off during the 17th, 18th and 19th centuries.

We took lunch back at the Penny Rigg Car Park and most enjoyed the mulled wine and mince Pies that were on offer (with tea, coffee, hot chocolate and Jaffa cakes for those who aren't big fans of mulled wine. Once fed and watered we prepared ourselves for an excursion in to Horse Crag level. Many of the group were visiting Horse Crag for the first time so there were plenty of amazed faces and questions about who had done all of this work. Indeed some guests were visiting a mine for the first time today and I suspect some of these will definitely be coming back for more.

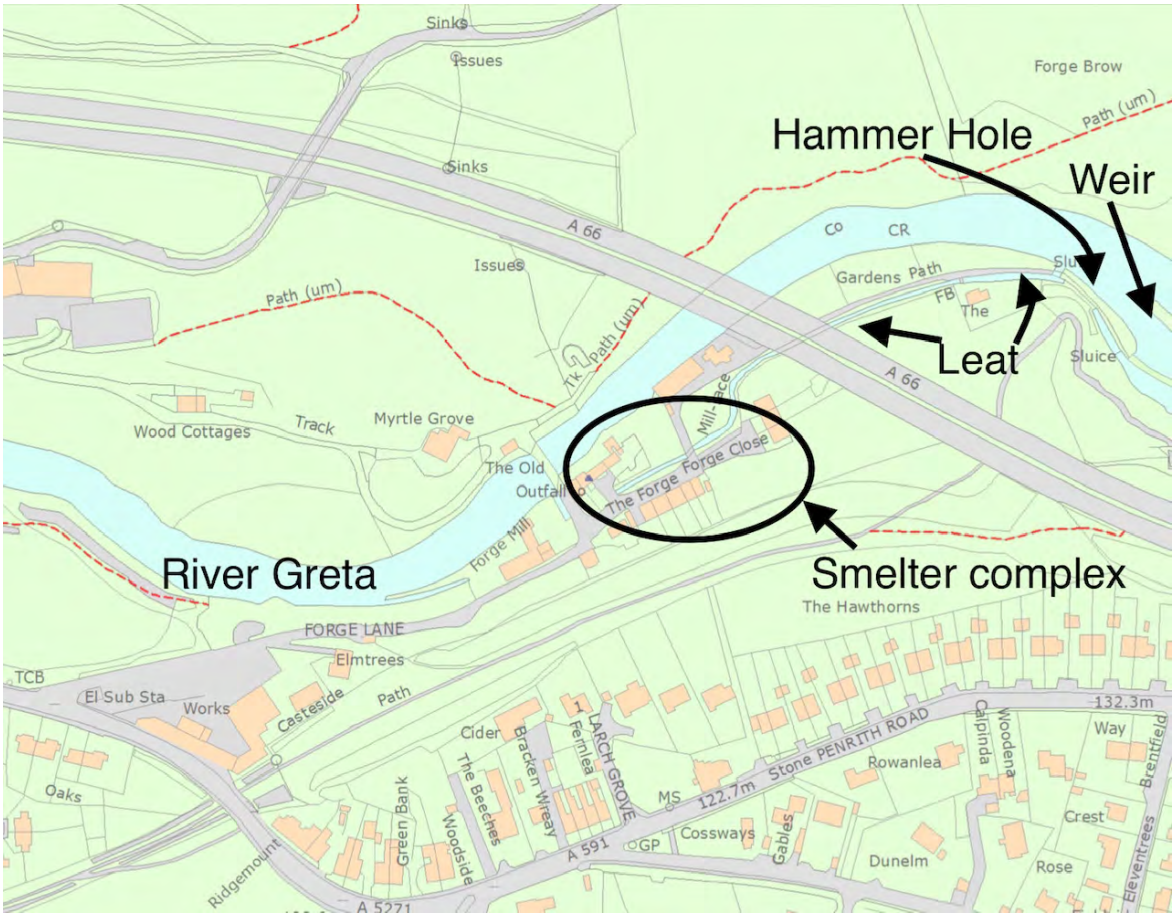
We returned to the cars and polished off all the food, drink and sweeties that we had left, before heading off home. Thanks to everyone who joined in so enthusiastically today, and let us hope 2019 has many equally enjoyable CAT meets. Mark Hatton.

Brigham Smelter

Copper Ores as found in the Derwent Fells are not native copper metal and so must be smelted and refined. The smelting and refining process requires very high temperatures (around 1,200 degrees centigrade) and just the right blend of materials and air flow to successfully create fine copper metal. Before Copper Ore can be smelted it must be prepared through a process called dressing. This involves separating the copper ore from the rock and then breaking the ore up into small pieces thereby increasing its surface area, essential for the smelting process.

In many ways the smelting process is far more complicated than the mining or dressing process. And different types of copper ore require different smelting techniques to achieve a successful result. The science of smelting in the 16th Century was akin to Rocket Science today.

The first German Miners who came to Keswick in 1564 were men with the skills to find and dig metal ores. Once they had established that there were rich veins of copper and lead in the area they sent samples of the ore to Germany to be assessed for its metal content (assaying). The results of these tests proved there was good quality Copper and Lead capable of being smelted. Only then did the Miners bring over from Germany men who had learnt the science of smelting over many years in their native land. These men were technologists who commanded the highest wages and greatest level of protection. Once they arrived in Keswick in the summer of 1566 they set about planning and constructing the smelter. This was a great undertaking, involving meticulous plans, large quantities of materials and a lot of labour. All in a land where a building project of this scale and technical complexity had few if any precedents. But despite this the Germans were determined to build a Smelthouse of which they would be proud. The site chosen was at Brigham, on the banks of the River Greta just to the east (and so downwind) of Keswick.



Here there was a suitable flat area of land adjacent to the fast flowing waters of the river and surrounded by thick woodland. The land was owned by Lady Radcliffe and she was prepared to lease it to the Company of Mines Royal for a modest rent of only 1 shilling a year.

The initial building project soon started to cost way more than had been expected and the shareholders in England and Germany watched with growing apprehension as the bills mounted up. But what was created over the next few years was arguably the first large scale manufacturing site in Britain, employing technology that was a huge leap forward from anything known in the country beforehand. Indeed it could justifiably be argued that this Brigham site was the hearth in which the Industrialisation of Manufacturing in the British Isles was forged.

The smelthouse complex grew so large that it was later described as looking like "a little town" that was "not without admiration to those who behold it". Yet visitors were not allowed inside. The technology being used was a closely guarded secret and visitors could only marvel at the site from outside, just as today we might look towards a large scale oil refinery or power station, impressed by the flames, smoke and sounds coming from within. Visitors would be able to see a large weir built across the River Greta to capture the waters and feed them into a tunnel. This Tunnel is called The Hammer Hole and is about 20 yards long. It had been hand chipped through solid rock to feed the water into a large stone lined leat. The leat was around 200 yards long and fed the water to the smelt house. The water powered the machinery within the smelthouses, principally the bellows, which were so essential to pumping air into the furnaces and bringing the temperature within up to the required levels. The chimneys above the smelthouses would have been huge in comparison to anything the locals had ever seen before, and the flames and smoke coming from within 24 hours a day, seven days a week, would have impressed and perhaps frightened all who saw them. Around the smelthouses would be large piles of timber, charcoal, coal and peat. All essential fuels for the furnaces. A large supply chain to bring these fuels to Brigham was required and the Germans were constantly worried about finding reliable sources in sufficient quantities. It is said that to smelt one ton of ore requires 60 tonnes of fuel of which wood was the principal source. The forests around Keswick didn't last long and timber had to be brought at great expense from further and further afield to feed the voracious appetite of the furnaces.

And yet just a few decades later, by the mid 17th century this had all gone. Sir Daniel Fleming wrote in 1670 that "The smelting-houses were so many that they looked like a little town, yet now there is but one house". So what happened? Why did the smelting houses disappear? And why do we know so little about them today? The popular story is that the Parliamentary Forces at the start of the English Civil War in 1642 destroyed the Smelting Houses as these were owned by The Company of Mines Royal, and anything with a Royal connection was the enemy. If this is true, we might ask why were they never re-built? Copper was never again successfully smelted at scale in Cumbria, with all local ore being shipped down to South Wales where smelters, which had originally been built by the same German technologists who had earlier been in Keswick, had survived the Civil War.

But perhaps the biggest question for us today is 'why is the Brigham site so invisible and largely unknown?' Given the importance of this site to the history of Britain it feels as if it should be far better understood and cherished. If you did happen to visit the site today you would need a great deal of imagination to be able to envisage how it would have looked some 400 years ago.

Today the A66 flyover towers over the site in a way that seems far removed from any other scene in The Lake District. At ground level there are a collection of slightly shabby 19th century buildings, most of which are now used as holiday cottages, and a joiners yard.

Walk past these and under the flyover and you will find the leat and follow that to The Hammer Hole. Beyond the Hammer Hole there is precious little remaining of the once magnificent weir, which was comprehensively wrecked by Storm Desmond, yet not mourned, it seems, by anyone.

If you know where to look you can find some fine lumps of slag, which may well be the residue from the smelting process. However this site was reused as a large forge in the 18th and 19th centuries and it is for that purpose that it is now known. The lane leading to it is called Forge Lane and the cottages Forge Cottages and the site of the smelter is now known as Forge Close. The Forge would have re-used the weir, tunnel and leat to supply water to their bellows. Part of the site was also used as a pencil factory (powered by a waterwheel) in the mid 1800's and in 1889 it was re-used as a hydro-electric power station.

Mark Hatton.

Copperheaps around Derwent Water

Mark Hatton's article in the November newsletter on the Copperheaps around Keswick prompted an interesting discussion by email involving Mark, Alastair Cameron, Warren Allison, Mike Mitchell, Mark Simpson and Ian Matheson. The debate is ongoing, and anyone is welcome to join in. (email meets@catmhs.org.uk or membership@catmhs.org.uk) Here is an edited and abridged version so far - IM

On 21 Dec 2018 Alastair Cameron wrote:
I have been reading the recent Historic England reports on their progress on scheduling/listing sites. It occurred to me that suitable structures for listing may be the copper-heaps in Newlands Valley and Borrowdale. There is no doubt that they are historic structures and form quite a significant part of local history when it comes to the English Civil War period.

The source of ore that formed the heaps can usually be identified. Jeff Wilkinson and I looked at the heaps at the head of Newlands about ten years ago and Jeff has theories as to why they were not removed when life got back to normal after the Civil War. We have always assumed that ore in the heaps was on its way to the Brigham Smelter at Keswick when the Civil War stopped operations and it has remained there ever since.

Mark replied:
… I have suggested that we consider protecting and maybe further examining these sites. Copperheap Bay is the most interesting, extensive and possibly vulnerable site. There is more there than the Copperheap, as there are also what might be the remains of the 16thC loading wharf and some small buildings (albeit very scant remains). The area is infested with Rhododendrons though.

Copperheap Bay, photo Mark Hatton

The Copperheap at Manesty is small, scruffy and surrounded by bog.

The Copperheaps at Dalehead are well out of harms way and hard to harm as the ore has fused together. Having said that, the whole of the Dalehead area is full of fascinating and rare mining history, and deserves protection.

On 22nd December Warren added:
There has been the assumption that the mining operation was stopped by the Civil War, but I don't think there is any hard evidence that it was. It appears that the Society of Mines Royal became the Mines Royal and then became the London Lead Company.

During the Civil War, Lady Anne Clifford was rebuilding her vast estate stretching from near Keswick to Brougham at Penrith and down to Richmond, and was left alone by Cromwell. There is much research to do on this subject, which ties in with the copper heaps.

25th December (Christmas Day!) from Alastair
Lady Anne Clifford was an amazing lady. Her diaries were published and I borrowed a copy from the library a few years ago. (The Diaries of Lady Anne Clifford, Ed D J H Clifford, Sutton Publishing 1990. Ed) It was incredible that she embarked on journeys from the south coast to Appleby several times in the 1600's without any thought of dangers on the way! The journeys must have taken weeks. She was 86 when she died and she was active almost to the end.

I think we are safe to assume that the copper heaps of stored ore were destined for local smelting houses, probably the Brigham Smelter. The ore from the copper heap on the shore of Derwentwater that had been part-despatched was almost certainly sent by boat over to an unloading facility close to Keswick. This suggests that a heap, once assembled, would take several loads to despatch. Mark has made an estimate of the quantity in the heaps that remain at Copperheap Bay which suggests it would take up to five boat journeys to clear a heap. The reason that the whole heap was not cleared was probably because an event occurred at the same time this was taking place (probably the destruction of the smelter) that meant no further smelting could occur. Were there other smelting facilities further north near Mungrisedale which were used for a period of time? Whether the closure of the Brigham Smelter was responsible for ore mining ceasing or whether the mines themselves were also targeted during the Civil War is unsure.

The English Civil War ran from 1642 to 1651. But Lady Clifford did not return north until 1650, after she successfully won '*the struggle of a lifetime*' in 1643 to gain back her full inheritance to her land. It seems she may have stayed clear until it was safe to travel. It is reported that she spent the next 26 years '*restoring the most ruinous of her family castles to their former glory*'. These included Skipton, Appleby and Brougham castles. However it is very possible the conflict of war then turned to commercial conflict with land owners and lease holders battling it out to re-start operations of sites such as Goldscope.

Response from Mark H, also on Christmas Day:
I am interested in trying to establish where the copper ore in the copper heaps came from, and when. If we think these heaps were produced in or around 1642, then we need to consider which Coppermines in the Derwent Fells were productive then. Taking the heaps in turn:

1. The heap at Manesty can only have come from Copperplate (at Grange) or the Salt Well workings. And the ore must have been hand dressed in that area. Copperplate started working in the 1560's and was worked quite vigorously for say 15 years. So was there really still productive reserves of copper there 80 years later? I can't see this. As far as I know there was never any water powered dressing plant in that area. But was hand dressing of copper ore still being done in the 1640's?

2. The story at Dalehead is similar. The Germans worked the Longwork and Pluckhor veins vigorously during the 16thC. And then pursued that vein 200 yards further west up to The Great Bunch. The Copperheap is beside the Great Bunch. But that working must surely have been completed in the 16thC. It is simply a surface working and was never pursued underground more than a few fathoms. No productive adits were driven in that area at that time. And the water powered dressing plant at Goldscope is a mile to the north. So this copper ore in the Dalehead heap must have been dressed by hand.

3. The larger heap at Copperheap Bay might well have come from Goldscope itself. But as far as I know Goldscope copper reserves were running down in the early 1600's. As the mine went

deeper the vein got narrower and the problems of working at depth increased. The Royal Inspector, Bowes, was killed falling from ladders at Goldscope in 1603 and that is the latest period of working that I have come across. At that time the miners were relocating down to Coniston and starting large scale workings there. By the 1640's I think there had been no copper mining at Goldscope for several decades.

So my current sense is that these three copper heaps may well be quite a bit earlier than the 1640's. So the question then arises, 'why was so much work expended, mining, dressing and transporting this copper ore, but it was never smelted?' The easy answer would be that the smelter was destroyed. But I suspect there may have been a period in the 16thC when it wasn't economically viable to smelt the ore. Or maybe it wasn't technically feasible to smelt the ore (either due to its properties or the smelting skills dying out). And maybe the ore was then exposed to the elements for long enough to become too badly oxidised or decomposed to subsequently be capable of being successfully smelted. My point is that the story of these heaps might be more complex and maybe even more interesting than the Civil War story. Which is why they are worthy of more study.

On Boxing Day Warren came back with:
I agree that the history of the heaps could be more complex than we think and even what was happening around the Civil War period. My personal view is that historians have looked at this period too simply and we need to take a much wider view. A book called "Two Centuries of Industrial Welfare", which is about the London Lead Company, gives some information on how the company came into being.

The Society of Mines Royal appears to have carried on until the Mines Royal Act of 1690 when some of its mines were leased to a mining syndicate known as the Mines Royal Copper, overseen by Dr Edward Wright, who I think I have seen reference to working mines at Caldbeck.

From the book, which describes the five main phase of the London Lead Company:

(1) 1692-1704 The period of the "Royal Mines Copper" and the "Ryton Company" with the first period, 1692-5 of the "Governor and Company for Smelting Down Lead with Pitt Coal and with Sea Coal" (easier referred to as "the Bristol Company").

(2) First period of the consolidated "Quaker Company" (known by its minute book title and among business records in general as "the London Lead Company".

I am still of the view that mining during the Civil War period carried on. I will contact people within CWAAS who know a lot about the Civil War Period and Lady Anne Clifford.

On 28th December Ian queried:
The logistics of the heap at Copperheap Bay puzzles me -

If the ore came from Goldscope then they would already have transported it over a mile or so by cart to get to Copperheap Bay. They would then have to unload it and re-load it onto a boat to cross the lake. Once on the other side they would have to unload the boat and re-load it onto carts to transport it a further mile to the Brigham smelter.

The lake crossing involves a lot of handling and only saves about a mile of level road transport.

Once loaded at Newland it seems a straightforward journey by cart to Brigham Smelter. Why bother with boats?

Mike responded: They could of course put the copper carts onto the barges!!!

And Mark gave a considered reply
I have been pondering just that question. There four possible reasons I can think of why the Germans used Copperheap Bay and a boat/barge to cross Derwent Water to get the ore to Brigham Smelter rather than use land transport all the way, as follows:

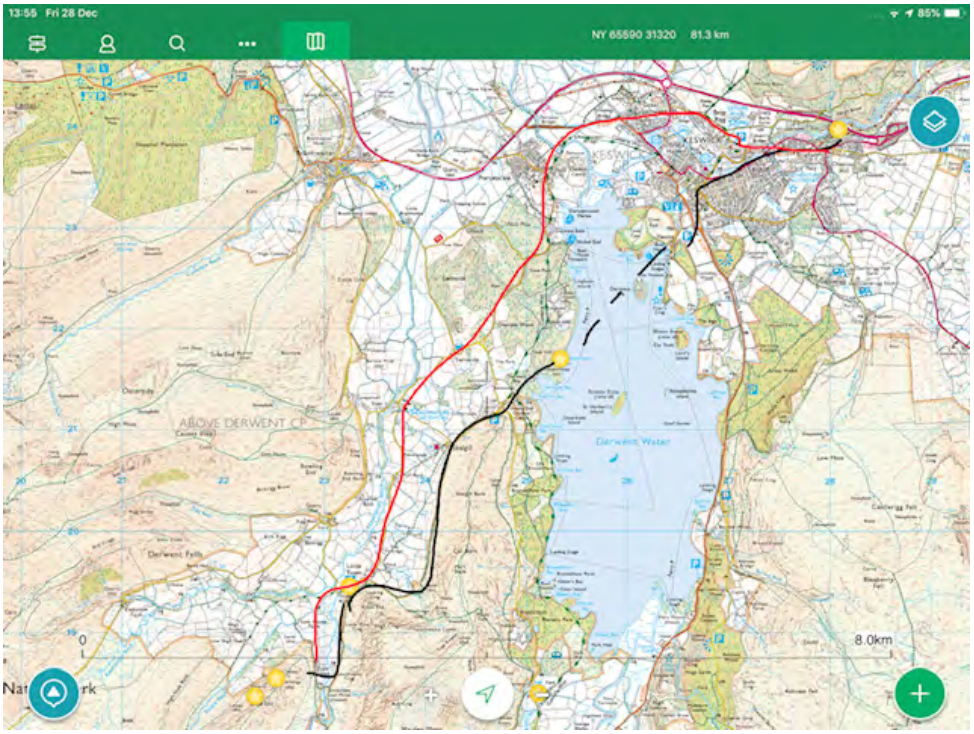
1. The land route from Newlands to Brigham involves two river crossings - The Derwent and The Greta. The route that uses the lake avoids crossing any rivers. I suspect the bridge crossings in the 16thC were dangerous, unreliable and possibly involved an expensive toll.

2. The landowners on the longer route may not have liked the miners crossing their land or may have tried to charge high fees for the right of passage. We know landowners were often against mining as they earned no royalty and yet suffered from the damage to their land and pollution of the water courses.

3. The Germans occupied Derwent Isle at times during the 16thC, and the crossing of the lake would pass by Derwent Isle. Possibly the loaded barges were parked at Derwent Isle each night for security reasons.

4. The land route would pass through thick woodland and over very marshy ground. Neither making easy passage for cart and horses.

In practice I suspect the reason the preferred route to Brigham that involved a crossing of the Lake was at times a combination of all four of the above. Here is a map showing the 2 routes I imagine the miners could use to get to Brigham. The road around the west side of Catbells is very well made and crosses dry ground all of the way, as it avoids the valley floor.



29th December, from Alastair:
There's another aspect of the copper heaps that we shouldn't forget. One of the main problems with industrial production processes is to ensure the processing side of a system does not run out of raw material. For that reason the storage of stocks of raw material is paramount.

The new smelter at Brigham, which was constructed during the period 1568 – 1570, required a constant supply of raw material. If the supply dried up the smelter would have to be shut down until more was received, and then re-started – a lengthy process. From data in Ian Tyler's book on Goldscope, the supply of prepared ore from Goldscope fluctuated during the period 1567 to 1584 from 5 tons a year to over 60 tons. Clearly a good buffer-stock of raw material had to be retained to keep the smelter operating, hence the copper heaps. Mark estimated the total mass of the Copperheap Bay heap to be in excess of 50 tonnes. This would have ensured the smelter was kept operating with no shut-downs.

29th December, from Mark Simpson:
I have been reading with interest the emails about copper heaps and transport.
Roads, (more like tracks) were not easy things to use, I think rough might be a good term. Also double handling in any age was a thing to be avoided. So moving material by water was to be most desired. Mike's idea about putting carts on barges is a sensible one. It would not be difficult to crane a cart with ore from land to boat and visa-versa. This would also keep all the ore of the same quality together.

One of the things I remember from the digitising session we carried out not so very long ago, were references to different grades of ore produced at Coniston, the good stuff being worth more than the less pure ore. One assumes that the different grades (were) kept separate during transportation? Now were the ores produced by the mines referred to in emails just one grade? It is logical that the premium grade would be used first as it was more valuable, giving a quicker return to the mine, the less pure material left until there was a demand for it.

Ian's response:
At Coniston the ore, from different parts of the mine, passed through a sophisticated 19C dressing mill before shipping, whereas at Goldscope etc in the 16/17C it was probably just hand dressed stuff, done at the mine site. However, your point about leaving less pure material until there was a demand is a valid one. It would be interesting to know the copper content of the heaps. The copper may have oxidised or suffered other changes, but surely it wouldn't have just disappeared, so might it be possible to analyse some samples?

31st December, from Alastair,
It should be possible to analyse the copper content of the ore in a heap. Perhaps the heap at Copperheap Bay could be a good one to try. We might need to grind a sample down ourselves and then get a lab such as a university lab to do the analysis.

From Mike:
As the sites are (I understand) not yet scheduled; we could perhaps get permission from the land owner to take a core sample through each heap for future analysis. I think we could easily hire the tools for this.

And from Mark, on 1st January 2019:
To my mind, the Smelter at Brigham is in some ways the most important site of Industrial Development in Britain. Here we see a leap forward in technology being applied to a manufacturing process. Indeed it might be the first large scale manufacturing site relying on technology ever established in the British Isles. Brigham's role in the Industrialisation of manufacturing and processing industries of Britain has, I feel, often been overlooked…

… The industrial production process that the smelter represents would have required a continuity of supply of raw material to allow it to operate efficiently. Historical records suggest that the sourcing of copper ore was not nearly as problematic as the sourcing of fuel, in the form of wood and charcoal. And the other two things any industrial production process requires is stable demand for its product and economic conditions that allow the process to be adequately funded (by investors, lenders, creditors and profits from the sale of the output). We know that the Brigham Smelter never enjoyed such ideal conditions. The demand for Copper seems to have varied quite substantially, such that the output of Copper appears to have exceeded demand on many occasions, giving Hechstetter the age old problem of one cash flow crisis after another.

And the investors became more and more disappointed, disillusioned, suspicious and resentful. Their suspicion was that Hechstetter was spending excessively and creaming off profit for himself or his German backers. However the insolvency of the German Investors in 1579 would suggest that they were getting just as poor returns as the English Investors. From that point onwards The Company of Mines Royal stopped mining in its own right. Instead it reverted to a licensing model whereby it granted mining rights to third parties in exchange for royalties. I don't actually know for sure how the smelting process was operated and paid for after that. I imagine the Mines Royal retained ownership and operation of the Brigham smelter, but that is an area my research has yet to get to grips with.

But getting back to the Copperheaps. The quantity of ore within them is to my mind much greater than a simple buffer stock theory would support. I suggest the output of the mines exceeded the demand for copper by quite a substantial amount at times. If the Company of Mines Royal had not been funded by such deep pocketed investors such a situation would have led to bankruptcy within a short period. The problem was perhaps the original business plan (or lack of it). The Company was perhaps set up to be too big. The number of men brought over from Germany was perhaps too great. The investment in infrastructure (including the Smelter) was perhaps too big. But once in place, this created mines which were too good at producing ore than either the market could absorb or, possibly, that the smelter could process. Hence the excess stocks of raw materials within the supply chain. These excess stocks aren't measured in weeks, or even months, but could be as much as a year or more's output.

3rd January, from Warren:
I think Sam Murphy and his friend Richard Smith produced a plan of the Brigham smelter during the German period from using the records and their understanding of the process. They may have even produced a paper on it.

On 07/01/2019 16:49, Ian Matheson wrote:
Elizabethan Copper, MB Donald 1955, has quite a lot about Elizabethan copper smelting and the Brigham smelter, which was being built in 1566 and first produced copper in 1567; there is a whole chapter on the complex smelting techniques. Basically the ore was roasted in air numerous times to remove iron and copper sulphides and then further smelted several times to produce malleable copper. It was heated up to 20 times and could take six months to process. At various stages it was stamped to produce a suitable grain size and cooled with water to remove impurities and to make it softer. Silver was extracted from refined copper by adding lead.

A chapter entitled 'Production, Cost Accounting and Keswick Smelting House' gives annual production of coper metal from 1567 to 1584 (total c515 tons), after which the smelter at Neath came into operation. Production costs of copper from various localities are listed and there is an inventory dated 1580 of the buildings and contents of Keswick Smelting House. By studying this it should be possible to get a good idea of the layout of the smelter site.

There a chapter on Decline, 1570 – 83, which points out that, whilst the mines continued to be productive, there was no market for the copper. Copper couldn't be exported because of the political situation, the smelter was in debt, and several requests had been made to Queen Elizabeth to purchase copper or to loan money to support the operation. Supplies of ore were lying on the surface at the mines.

Donald also suggests that the men with expertise in smelting techniques were dying out; they were not being replaced nor were successors being trained. This all supports Mark Hatton's contention in NL 133 that 'the output of ore exceeded the demand for ore so the copper heaps were effectively surplus stock.' It seems to me that the whole operation was failing for political, financial and technical reasons and that the story that it was destroyed by Cromwell's forces is imaginative. Is there any evidence for it?

08.01.2019 from Mark Simpson:
Reference should be made to Elizabethan Copper (Collingwood RG), there is a facsimile on the internet. It comprises extracts from the company records. Outputs from the various mines were kept separate and used during the different smelting process, the principle mines being Goldscope, Calbeck, and Grasmere. Coniston ores being used relatively later in the smelters existence.

For those interested in the smelting process itself, reference can be made to Mining Before Powder (PDMS 1994, Smith R page 116 - 123). By the way we are not talking about one furnace but about half dozen under the collective name of the Brigham Smelter. The Royal Commission did a survey in 1995 of the Cumbrian Copper Mines with an indication of their importance. This too is on the internet.

Minerals of the English Lake District - Caldbeck Fells. Pages 2.9 - 4.0 gives a rundown of Elizabethan mining. Apparently at the height of the smelters operation 4000 people were involved both directly and indirectly. If you are really keen then there is **De Re Metallica.**

Whiteoak Mine

The many mines around the Loweswater area, of which little is known, are infrequently visited and predominantly mined lead. In newsletter 76 (August 2004) Dave Bridge wrote a meets report on a visit to Whiteoak Mine, part of which is reproduced below.

"The mine is on a NW-SE lead vein that intersects the north spur of Gavel Fell and was worked by a consortium in the mid 1860's. Clifton Ward, writing in 1876, says that a good deal of ore was extracted, though the workings were not extensive. In the 1880's a new venture was started under the name of the Loweswater Lead Company, but that rapidly failed and it seems that no work has been carried out since.

The vein outcrops at 800ft OD where it was worked from the surface and from two shallow cross-cuts. A short level on the vein can be still be entered by climbing down into the open working. Below these workings there is an ore bin and the remains of a retaining wall to hold back the spoil. Nearby is the spoil of another cross-cut serving the upper part of the vein. It is not clear if or how ore was transported from here to the dressing floors beside White Oak Beck, there being no obvious track or incline.

Some years ago, Moles (Mines of Lakeland Exploration Society) opened up a level further down the slope, and a few moments hard graft saw us exploring the cross-cut to its forehead about 120ft in-bye. About 40ft from the portal the principal vein is intersected. This is up to 8ft wide and driven along in a north-westerly direction, all the vein material being taken out. In the floor of the drive, about 30ft from the intersection, is an 8ft square shaft spanned from wall to wall by two massive timbers. Above the shaft a space about10ft across has been opened up to a height well above the roof of the level as if to accommodate headgear, possibly a sheave wheel. The shaft reduces in width to about 3ft below and connects with adit level at about 80ft. The adit is blocked out-bye and waterlogged. During the early exploration a well-preserved kibble was discovered in the shaft. Also, the continuation of the level was found to end at a forehead only a short distance beyond the shaft. There are signs of a tramway but no evidence of any winding gear.

This working is not connected to the higher workings on the vein and could well date from the unsuccessful venture of the late 1880's. From the impressive dimensions of the shaft top and its surroundings it seems that a substantial operation may have been planned but never came to fruition.

According to the geologist J D Kendal (The Mineral Veins of the Lake District, 1884) ore in White Oak mine occurred as irregular strings which branch out from the vein into the vein walls suggesting that much of the material extracted would have had a low lead yield and thus be expensive to process. A 40ft waterwheel with 4ft breast was installed to power the dressing plant and a leat brought from a considerable distance up the valley, which is now almost impossible to trace when the bracken is high. When the mine was finally abandoned the waterwheel went to Threlkeld together with other plant and was re-erected at Woodend Mine. A photograph of the same from about 1890 showing it operating as a back-shot wheel appears in Ian Tyler's book on Carrock etc. Down by the beck we located the collapsed adit that still provides some drainage, though allegedly walled up for hunting purposes to keep foxes out. Further down the valley are the dressing floors with little to show now apart from a depression in the fell-side at the supposed site of the waterwheel, now being used as a repository for dead sheep".

I was on the Moles trip which opened up the level which Dave mentioned in his report and have found the photographs taken on that day in June 1993. We parked in Loweswater and walked part way up Mosedale Beck before heading up over the northern end slope of Little Dodd to approach the mine from the east. Part of the reason for coming this way was that we were carrying a set of ladders and thought it would attract less attention.

Arriving at the mine it did not take very long to dig out the upper level to enter a sizable level with a shaft down to the lower level by the beck. Dave gives a good description of the underground workings and I will only add that there were a number of artefacts, a beautiful kibble probably one of the best I have seen in a Lakeland mine, a drill steel, glass bottle and surprisingly what looked like small boxes to hold detonators suggesting that dynamite had been used.

A subsequent trip recovered the artefacts, but this time we walked from the village via High Nook Farm as it was a much shorter route.

The mines of the Loweswater area have been neglected and are worthy of some meets being organised to address this.

Warren Allison.

Looking towards the mine from the shoulder of Little Dodd.

The lower workings with the remains of the dressing floor.

The upper level leading to the shaft .

The top of the shaft.

Forehead of the upper level.

The kibble and glass bottle at the shaft top.

The drill steel and possible detonator boxes.

The lower level heading to the forehead with sleepers in the floor.

Forehead of the lower level; notice the tide mark on the walls.

The lower level looking out-bye.

Greenside Mine electric supply from No 1 power station

It is well documented that in the very early 1890's Greenside was the first metal mine in the UK to have an underground electric locomotive and winding engine, supplied by No 1 hydroelectric power station near the confluence of Red Tarn and Glenridding Becks, with the water coming from Kepplecove Tarn.

The electric cables ran on 58 larch poles from the power station three-quarters of a mile up the track to Low Horse level, through the adit to the top of the Willie Shaft and down to the Lucy Level, to be distributed to where the electric was required. This carried on until the Basinghall Mining Company brought the national grid to the mine from Penrith in the mid 1930's.

Between 1999 and 2003 a friend and I (with help from CATMHS members) put on an exhibition in the Glenridding Public Hall on Greenside and life in the parish as it used to be while the mine was working. People came and brought their photographs and other memorabilia, allowing the photos to be copied or even giving them to me and saying do what you want with them.

I have been sorting out my photographs, many from the exhibitions, and there was a book of family photos taken in 1920 on a family trip to the Lakes by F H Baber from Bakewell, who ran a blouse factory. One photo stood out, and that was taken on the track up to the Low Horse Level, which showed the larch poles and cables. The track was in much better condition than it is today. It is the only photograph I have seen of the poles and cables coming from No 1 power station.

It shows that family photos can be interesting if you look beyond the family, which has happened on more than one occasion at Greenside, showing some very interesting structures not previously seen before.

Warren Allison

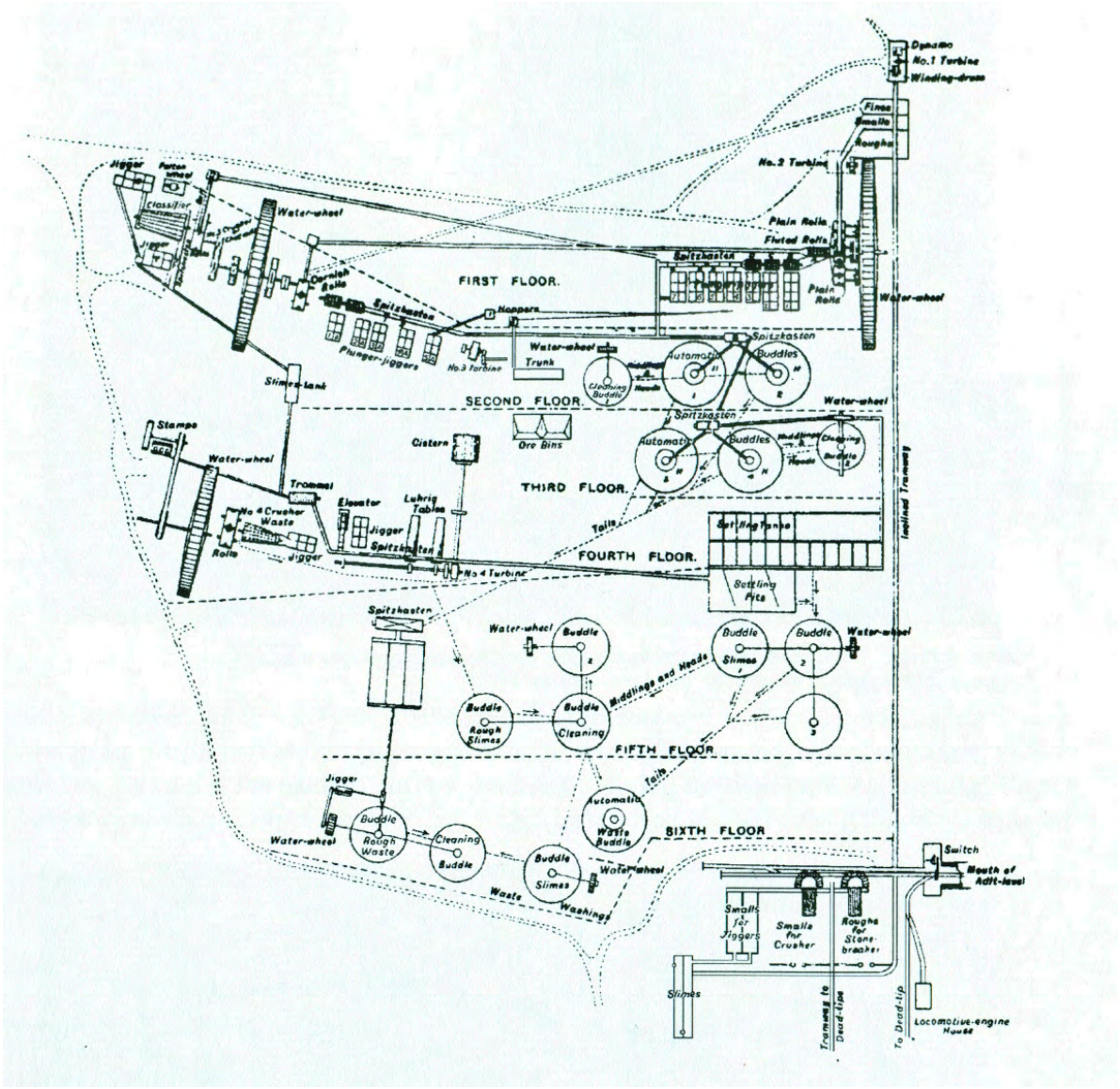
Greenside Mine, Re-profiling of No 2 tip.

In 1936, when the Basinghall Mining Company took over the mine, they replaced the old dressing plant with a modern flotation plant which was much more efficient and meant that lower grade ores could be mined. However, this caused a problem in what to do with the fines from the plant created by the ball mill and the solution was to pump the slimes up onto the old Lucy Level dump**.** Here a man with a wheelbarrow and shovel built the front up, so that the water from the slimes would run to the back of the dump and out through a specially constructed drainage system. This worked well until around 1954 when there was no space left on what is now called No 1 tailings dam and so a second (No 2) was started, which was built on top of the old dressing floors from pre-1936.

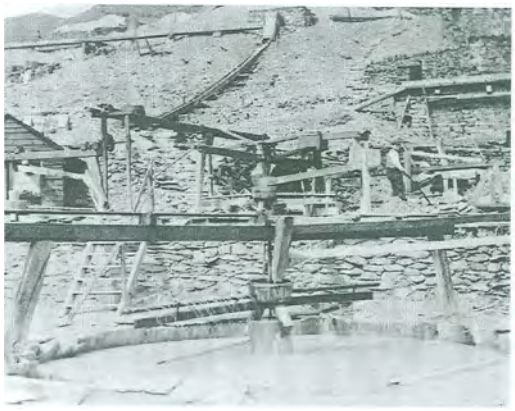
No 1 tailings dam was built on a solid foundation, but No 2 was not. However, in 1966 the LDNPA commissioned Cyril Conner, who had been the mine manager from the mid-1940's, to inspect the tailings dams, and his recommendation was to keep the drainage system designed to keep water from getting on the tailings dams clear and there would be no issues. However, this advice was not heeded and in 1985 a large part of No 2 tailings dam collapsed and ended up in Ullswater. Still the advice given by Cyril was not taken and on one Sunday in 1995 after a period of heavy rain the tailings dam was getting washed away once again. That day we arrived at the mine to continue work to dig though the falls on the Lucy Level and found two feet of water on top of the tip, with the beck and bottom of Ullswater white. Roy Harding, the LDNPA Ranger for the area, came racing up the track and asked if "we had been pumping out". We pointed out that the drainage leat built in the 1820's, which comes diagonally down the fell and was designed to take water away from the slope, had got blocked and that was why the water was getting onto the tip. As we had picks and shovels we proceeded to walk up the leat from the bottom, clearing the debris which had accumulated over many years. After a few hours the water getting onto the tip had subsided and the beck returned to its normal colour.

In 2000/2001, there was great concern that the issue had not been resolved and so the LDNPA held discussions with various agencies as to what could be done to re-profile the tip, install additional drainage and carry out other remedial work to the site. At that time a friend and I were putting on an exhibition in Glenridding Public Hall on Greenside and life in the Parish while it was working (helped by CATMHS members) and we well remember some suited people coming in and saying "we have just learned more about the mine and what is under No 2 tailings dam for the £1 entry fee than all the thousands of pounds we have paid to consultants". They were from the Environment Agency and following the visit John Hodgson (LDNPA Archaeologist) asked if I could be an unpaid adviser on the £750,000 project to be carried out in 2002 to carry out the works. This project seemed to finally make the various agencies recognise the wealth of knowledge that local people and groups like CATMHS had, which they did not have access to or understand could help them.

Pointing out to the Agency's and contractors through old photographs and documentation which they could never have obtained that there was the real possibility of a huge amount of archaeological remains still being in situ under the tip, meant the project brief changed as the site is a scheduled ancient monument and remains were uncovered during the work.



Plan of the mill in 1902 from "Grey Gold"



Photographs showing the old dressing floors (from "Grey Gold")

The tip showing the washed-out section

The concrete pillars which carried the incline

Remains on No 4 or No 5 floor

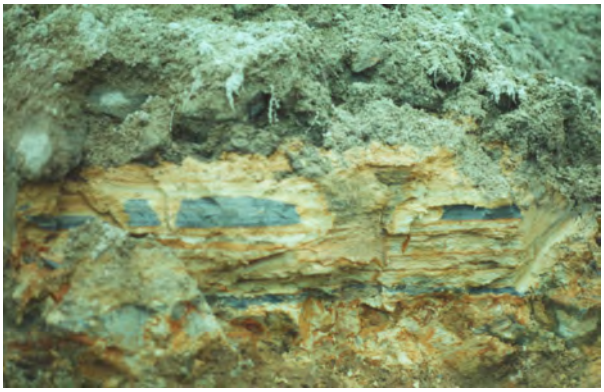
Remains of the floor of a buddle.

Remains of a buddle and the outlet to the right

Outlet from a buddle

Note the taper on the timber of a buddle

Remains of another buddle



Settling pits, note the blue deposits of lead

Possible remains of the smelt mill flue

Remains of a leat

The contractors appear to have uncovered remains of No4 and/or No5 floors and they were very good in not damaging the remains, in-fact the site manager wished they could have taken the tip away, so it exposed the remaining floors. However, it did show that there is a wealth of archaeological remains still in-situ under the tip and the same could be said for the area below the tip, which appears to have just been covered over with fines from the jigging process when the mine was being cleared.

Warren Allison

Greenside Mine smelt mill

In the early 1990's, I asked John Hodgson (Lake District National Park Authority Archaeologist) if a small group of us could take down the top part of the half arch which was on the front of the smelt mill building, thinking it could be the inlet for the flue to the smelting hearths. John got permission and so we took down the top part of the wall and climbed over. We were slightly disappointed as it was not part of the flue but, according to Sam Murphy in "Grey Gold", was probably the lime hopper which was fed from above, from just in front of the door to the upper floor of the smelt mill. Lime was used in the smelting process.

The walling and arching were quite beautiful and amongst the small amount of debris on the floor was an old brazier from when the mine was working. I suspect the archway was bricked up when the mine closed and after photographing the inside, we rebuilt the wall.

Looking in-bye

Looking out-bye

The brazier

The top of the hoppers is in front of the brown door

The bottom of one of the hoppers

Pete Blezard rebuilding the wall

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CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Registered Charity No. 1180198

CATMHS Newsletter No. 134, February 2019