Northern Mine Research Society

Newsletter

Society established 1960

www.nmrs.org.uk November 2023 www.nmrs.org.uk

President's message (November 2023)

Sustainability has been a continuing theme in the life of NMRS in recent months. The Charity Commission encourages all charities, including small organisations such as NMRS, to play their part in reducing demands on natural resources and contributing to the national drive towards net zero. This requires drafting a Sustainability or Environmental Policy which sets out the charity's commitment to reducing carbon and environmental footprints. Our first attempt at a policy led to a lively exchange of views amongst the Committee!

NMRS has quite a good story to tell from an environmental perspective as we conduct much of our business electronically and we have no energy consuming premises to maintain. However, there is always more to be done and it was in this vein that a more accessible venue was sought for the cancelled Autumn meeting. While Slaidburn village hall has previously met our needs in terms of high-quality meeting facilities and catering, it was felt that the lack of a public transport option and a lengthy drive were potential disincentives to many of our members. It was regrettable, therefore, that the Autumn 2023 meeting, planned to be held at the well-located Guides NW HQ in Preston, attracted a poor response in terms of bookings and offers of presentations.

Unfortunately, attendance at our two annual meetings has been in decline since the pandemic and there are undoubtedly many factors that influence this. The Committee is keen to reverse this trend and re-energise our meetings programme. Please email me (lmorris768@btinternet.com) if you have any ideas concerning suitable meeting venues, activities or visits that would encourage members to attend meetings. One option, which works well for other societies, might be to replace the Autumn meeting with online presentations via Zoom or MS Teams. Would you be willing to share some of your enthusiasm for mining history in a short online presentation? Again, the Committee welcomes your views on whether this would be of interest to you.

On a more positive note, our Vice-President and webmaster, Malcolm Street, has been working to secure the future of our acclaimed web site and exciting developments are planned. Malcolm has also been working with our Recorder, Mike Gill, to begin the process of digitising mine plans held by NMRS.

This is Mike Gill's last Newsletter as interim editor. Mike has done a great job of keeping the Newsletter lively, interesting, relevant and on schedule, while at the same time working on the mining fatality data and other important records. I am sure you would like to join with me in thanking Mike for all his input at a critical time in the Society's development.

This brings me to our continuing need to fill vacant Committee roles. We urgently need both a Newsletter editor and a Secretary in order to maintain our Society and secure its future. The duties are not unduly onerous and we are open to discussion about how the roles might work out for you. Please think about volunteering, if only for a limited time. I am always happy to have a chat or put you in contact with other Committee members who can tell you more about the role. I will say more about the Committee in the February Newsletter. It's been a great privilege to work with them this year and I should like thank them, as I am sure you would too, for all they do for NMRS

As the year ends and looking to the future, I am encouraged by a piece by Ben Judah in the Sunday Times of 3rd September which suggests that we are on the threshold of a minerals revolution. Mining and refining will have to hugely increase in capacity if we are to hit net zero targets. In particular there will be greatly increased

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Please note that the deadline for inclusion in the February Newsletter is the 28th January 2024.

Submissions that will interest members of the NMRS are welcome. They may be forwarded to me by email or as a USB Flash Drive, by post, or by telephone. If you want anything returning please ask.

Photographs, plans and drawings must be reproducable in monochrome. Colour photo's will appear as such in the electronic version.

demand for lithium, cobalt and rare earth metals for batteries and digital technology. However, as Judah notes, a mining revolution is "*nothing without a revolution in prospecting too*". The historic records maintained by NMRS and other mining societies may once again attract wider interest as new sources of metal ores are sought in a changing geopolitical climate. I am hopeful that this renewed interest in mining can only be beneficial to NMRS and in time will draw new members to our ranks.

Len Morris

NEW MEMBERS: August – October 2023

Mr John Adams	CLEATOR MOOR
Ms Kristine Chapman	CARDIFF
Mr Graham Critchley	WIGAN
Dr Stephen Daniels	STOCKPORT
Mr John Gardner	SKIPTON
Mr Peter Foulston	HUDDERSFIELD
Mr Tony Hargreaves	HUDDERSFIELD
Mr Christopher Harrison	PORT TALBOT
Mr Ethan Hartley	COLNE
Mr Merrick Dean Iszatt	BAKEWELL
Mr Mike James	WHITEHAVEN
Mr Lee Johnson	BOLTON
Mrs Amanda McGrath	BARNSLEY
Miss Nicola MacKenzie	DINGWALL
Mr Andrew Moore	SHREWSBURY
Mr Colin Pitman	MARKET RASEN
Mrs Jane Pratt	ABERGAVENNY
Mr Andrew Sherratt	ALFRETON
Mr Trevor Waites	PETERBOROUGH
Mr Clive Walton-Robson	NEW HARTLEY

Welcome to the Society

Newsletter Editor

I'm sorry to have to repeat my request for a volunteer to take over production of the quarterly Newsletter, but **this is my tenth and last**. I've been forced to submit my resignation because of increasingly poor health. If you want the Newsletter to continue, is anyone willing to take over this important post?

This year has seen four Newsletters distributed to members, and my thanks go to everyone who has sent material for publication or pointed me towards interesting material. It takes more than me to get out the Newsletter to members, however, so I'd also like to thank Tim for producing the address labels, Malcolm for circulating the digital issue and Barbara (plus her family) for posting the printed version. Final thanks go to PrintPlus, of Hereford, for doing such a good job on the printed version. May I remind members that the digital version has colour photographs and figures, whereas the text is exactly the same. For us optically challenged (myopic) members, the text may be enlarged.

Mike Gill

Recorder's Report

The last few years have seen a steady flow of questions about aspects of mining history addressed to the Recorder, which I try to answer promptly.

The database of mining sites continues to attract attention from academics for such projects as Vaccine hesitance on the Welsh and Appalachian coalfields. Also the Science Museum, in collaboration with Historic England, produced a map that shows aerial photos taken within 500 metres of coal mining locations. The photo's may then be examined for traces of mining. It's good to see mining history data being used in new and imaginative ways, when linked to other data.

The population of a database of mining deaths and accidents (1500-2011) is progressing well. Malcolm found a contractor to build a web-based system which will run on the NMRS website. Entry of the available data for 1900-2011 is complete, as is that for 1500-1889. Work on entering the 1890s data continues.

Thanks are also owed to Malcolm for finding, and dealing with, a company which would digitise over 800 of the larger plans and sections in the Records. This has now been completed and the quality seems good. Malcolm is considering ways of making them accessible on the website.

The one job that has suffered in this last two years is my work on creating a UK database of mines and their owners in order to have a reasonable chronology of collieries from 1855 to the present, using the annual *List of Mines*. But I did manage to make time to advance that, by adding a few years' worth of Lancashire entries.

Mike Gill

Publication News

I would like to thank Colin Robinson and James Cleland for their generous donations of both a variety of books and OS maps, Martyn King for taking some of our publications to the North Pennines Mineral Expo (dates for your 2024 diary, 20th & 21st July) and to Martyn and Enrico Rinaldi (the organiser of the event) for selling our publications over the two days.

Thanks are also due to Paul Gavagan for travelling to Nelson to collect some second-hand BMs and various other donated titles to our planned Autumn Meeting. His help and enthusiasm is appreciated. Unfortunately this meeting has now been cancelled.

Special offers for members

As some of the following books are quite heavy, each has its own postage cost so you know beforehand how much is involved. If two or more are required I will recalculate postage. If anyone lives near to Nelson, address in recent publications, you can collect by prior arrangement and view our other books for sale - daytime only Wednesday to Friday.

The Cornish Miner A.K. Hamilton Jenkins, David & Charles reprint 1972. H/b with d/c 352pp with some b/w illustrations. Ex J.H McNeil April 1976. £11 plus p&p £3.60

The Lead industry of Wensleydale & Swaledale vol 1 The Mines Arthur Raistrick. Moorland publishing 1975. H/b with d/c 120 pp with b/w photos, plans, drawings. NMRS property sticker front cover and 2 inside. £4 plus £4 p&p

The Lead industry of Wensleydale & Swaledale vol 2 The Smelting Mills Arthur Raistrick Moorland Publishing 1975. H/b with d/c 120pp with b/w photos, drawings, plans. NMRS property sticker front cover & title page. £11 plus p&p £3

Two Centuries of Industrial Welfare, the London (Quaker) Lead Company 1692-1905 Arthur Raistrick Moorland publishing Company 1977. H/b with d/c. 168pp with b/w photos, drawings and maps. NMRS property sticker to front cover and title page £7.50 plus £3 p&p

City & County Histories: Tyneside C.M. Fraser & K. Emsley David & Charles, Newton Abbot 1973. H/b with d/c. 142 pp with b&w illustrations & bibliography. £5 plus £3 p&p

Annals of Coal Mining and the Coal Trade Vol 1 (up to 1835) Robert L. Galloway David & Charles reprints 1971. H/b with d/c. 533pp with a few b/w drawings and bibliography. £12 plus £5.49 p&p

Annals of Coal Mining and the Coal Trade Vol 2 (1836-1850) Robert L. Galloway David & Charles Reprints 1971. H/b with d/c 409 pp with some b/w drawings £12 plus £5.49 p&p

The Carolina Gold Rush (America's First) Bruce Roberts McNallyn Loftin (Charlotte, N.C.) 1972. A4 size H/b with d/c. 80pp with numerous illustrations and pull out map £17 plus £3.49 p&p

U.K. Journal of Mines & Minerals Issue No 10 Autumn, Winter 1991 Rock Bottom Publications A4 60pp journal with excellent colour photos, interesting articles and adverts. £6 plus £3 p&p

Barbara Sutcliffe

LIBRARY NEWS

Thank you to Robert Walker for kindly donating to the library Anthony Annakin-Smith's "*The Neston Collieries 1759-1855*" and volumes 1 and 2 of M.V. Symons' "*Coal Mining in the Llanelli Area*". These are all substantial volumes, and Robert not only donated the books, but refused to accept anything towards the costs of postage. The library has also acquired Vol.1 Parts 1, 2, & 3 (1964 & 1966) of The Journal of the Glasgow Speleological Society.

Sallie Bassham

Webmaster

This year I have managed to add a few hundred new pages to the website on South Wales collieries from data given to us by Ray Lawrence, and there is loads more to do!

We have 100+ photos of Cornish Engine Houses provided to us by Alex Fraser to add to the site, but each one needs some explanatory text adding. A member did contact me and offer to do it, but unfortunately I have lost his email. If that member would like to contact me again (if he is still interested) I will get some photos to him.

I have started the process of getting the first half of Mike's work on mining deaths, provided to us by Ian Winstanley as an online database. I have found a local web developer who is working on this now and hopefully it should be on line within a couple of months, maybe even as you read this. It will appear as a separate website (which should look the same as the current one) at https://nmrs.uk/ Assuming the quality of the job is good enough (and I think it will be), I will be asking this developer to transfer our current website into the same webspace. This is all due to a number of issues I have with our current hosting company, and errors on the website where they are asking exorbitant sums of money just to look at the issues with guarantee of fixing them without extra cost.

You will have read in Mike's report that we have had the majority of the plans in the Records scanned. Where we have permission to do so, a number will be added to the members' area where they can be viewed. The software will allow you to zoom in to any part of each plan. There are a number of plans already there and more will be added as time permits.

If anyone would like to get involved with the website please get in touch as there is so much to do. You don't need to know anything about the technical side – if you can use a computer to write on and maybe edit photos, that's all you need to know. The website user interface is very simple and easy to use and I can provide written procedure on most things. Please contact me at malcolm@nmrs.org.uk or ring 07923 441523.

Robert "Bob" Burns

Bob was a member of the Society for many years serving on the committee as Vice President and President from 1985 to 1989 and even took over the role of Treasurer for a year. He seems to have dropped out sometime after 2003 and when I became active once again in 2009, he was no longer a member. He is still alive and has just turned 80, but is suffering from dementia and failing eyesight. He has now moved from his long-time home in Barton upon Humber to live with a person he knows well, who has become his carer.

Malcolm Street

John Bentley

We were saddened to hear of the death of one of our authors, John Bentley, on August 22nd, aged 87. He was widely known as a local historian in Haggate, Burnley where he had lived for many years. He co-wrote our BM76 "*Ingleton Coalfield*" along with Bernard Bond and Mike Gill. Some of you will remember John attending one of our AGMs at Ingleton where all three authors signed a few copies of our BM which is in short supply despite a second printing. Also at this meeting were copies of "*A unique Yorkshire Village: The History of Ingleton*" by John.

Barbara Sutcliffe

Rex Cooke

It is with great sadness that we announce the death of Rex, Barbara's partner, on October 18th. Until he became ill, he and Barbara worked hard at promoting this society, especially at mineral shows. Also, they were both regular attenders of Society meetings until the disruption caused by Covid.

Newsletter Editor

Material World

By Ed Conway, this substantial (512 pages) hardback book looks at the development of 6 materials crucial to the modern world – Sand, Salt, Iron, Copper, Oil and Lithium. He traces their development and current importance in a very readable way. I have just bought a copy (£17 from Amazon £22 in the shops) and am very much enjoying his style, as well as the large amounts of very well presented information. Recommended!

Tim Colman

EARLY COAL MINING – WORKING METHODS & PROCESSES

Whenever the history of early coal mining is discussed in mainstream publications, operations are often described as small scale and based around bell pits. I suggest this is inaccurate and misleading and the scale and extent of early coal mining is generally underestimated. By early I mean pre 1750. The purpose of this note is to set out my understanding of early coal mining methods and processes and the scale of the industry, based on research in the Bristol Coalfield, and solicit comments and correction from others with similar interests.

Preamble

Physical/Archaeological evidence of early coal workings and descriptions thereof are few and far between for many reasons but mainly because they have been either removed by subsequent operations or are hidden, collapsed or flooded below ground. The cessation of opencast mining in the UK means that new sites are unlikely to present themselves and so we must rely on either the few available archaeological reports or try to interpret the methods and processes used from historical documentation. Hartley's 1994 account of investigations at the Lounge Opencast site near Coleorton is the account with which I am most familiar and regard as the fullest – it would be useful to develop an inventory list of such accounts? (My own very short list is included as an appendix = additions welcomed!)

Hartley describes a methodical approach to mining coal at depths of up to 100 feet during the 1400-1600 period using pillar and stall techniques with standardised shaft arrangements. I have a strong sense that, where circumstances allowed, similar approaches were widely used and by the late medieval period coal mining processes and methods were well developed and the related management and commercial controls in place.

Without accessible physical evidence, researchers have to rely on archival materials to understand the working methods and processes of early coal mining. My outline of these that follows is based on research in the Bristol Coalfield and offered as a basis for others to critique and provide information on local variations. I believe most methods and processes were common across the UK as I suspect the industry was more fully developed and best practice shared more widely and at an earlier stage than generally recognised.

Early Methods and Processes in the Bristol Coalfield

Whilst documentary sources confirm coal mining was established in the Bristol Coalfield as early as 1282, unlike other areas, archival records with sufficient detail to understand its scale and methods are absent in the period before the end of the Civil War (c1650). However from 1670-1700 the mists clear such that by 1672 in Kingswood alone, 126 open coalpits were reported and by the early 1700s, two coalworks at least, were employing over 100 men each.

It's worth setting out the generic prerequisites for large scale coal working in this early period:

- A large enough area of coal measures above the water table to support a long term approach entailing multiple shafts and adits
- An assured market for coal nearby and the means to transport it easily from pit to customer
- Ownership and control of the mineral rights or a sufficiently robust legal framework to provide the confidence to make long term investments
- The capital to support, expertise to operate and labour to man such operations

Development of Coal Mining

- The earliest workings would have involved simply quarrying the coal, wherever it was found. Such excavations could be safely continued to 20 or so feet in depth, after which the labour required to remove the overburden and the risk of collapse would prompt shafts or drifts to be sunk – probably a combination of the two as explained below. "Bell pit" approaches are only viable where coal seams are very shallow and all indicators suggest "pillar and stall" layouts were quickly adopted. I have seen this method used in early pits at depths of less than 30 feet.
- Where organised and long term programmes of coal extraction occur, random shaft sinking and underground working was soon superseded by methods that minimised labour requirements and maximised potential for coal extraction as detailed below. This is where the role of the bailiff /manager/viewer in laying out and managing the workings becomes paramount. In most cases such men were experienced miners with ambitions to better themselves and/or not do such hard work.
- Vertical shafts are more suitable for raising coal and water – by windlass or horse gin whereas drifts facilitate entry and exit to the workings, particularly around valley sides.
- Lines of shafts were sunk, often at intervals less than 100 yards, to sections of the seams above the water table. These lines were often interconnected by permanent access roadways driven along the strike of the seam. Once these were established, further roadways were driven following the seam upwards at 90%, and at suitable intervals working faces were driven off these to the left and the right This carefully organised layout created the "chequerboard" characterizing pillar and stall

workings and appears to have been predominant both locally and nationally.

- When the coal to the rise of the lines of shafts was exhausted, deeper lines of pits were sunk
- Different seams of coal tended to be worked in isolation from each other and workings rarely interconnected as the character/quality of each seam was different and markets preferred their coal "unmixed" Such isolation of the workings enabled water to be better controlled.
- Separate entrances were often used to access different seams and this practice was perpetuated until abandonment. Connections were sometimes made to assist with ventilation or allow water to drain and were normally provided with means by which they could be closed or secured quickly.
- Shafts and underground roadways were arranged such that working faces were to the rise giving some gravity assistance to hewing and helping face water drain easily. This also applied to the roadways from which working faces were driven, in that the gradient was in favour of loaded carts of coal lowered to the main roadways and thence to the shaft.
- Workings accessed via drifts will still have worked coal "to the rise" but are more likely to raise it directly from the headings.
- Labour specialisations, both underground and on the surface, were well established and sophisticated by 1700, falling into three main categories below surface. Hewers were experienced colliers using picks to remove coal from working faces. Veerers or Carting Boys were younger men and boys responsible for loading coal into small carts and pushing or pulling them along the roadways to pit bottom. There was a landsmen at shaft bottom and top to load and unload full and empty carts which required an agreed signals protocol.
- Other specialisations included sinkers, branchers (driving roadways), and water hallers (haulers), as well as clerks and fillers. A blacksmith, a cart maker and a timber hewer were also normally on the books.
- Hewers and veerers did not work in the same areas indefinitely. It was important to maintain coal output and shaft locations and underground layouts were organised to enable different areas to be worked, dependent on conditions. Thus in the summer deeper seams were worked because the water table had dropped, whilst in winter shallower working areas were needed. Similarly, if a fault or washout was encountered, alternative faces and working areas would be needed to which the men could be redeployed.
- It was normally the bailiff's role to organise underground working areas to provide for all eventualities, and the size of the workable area and numbers of shafts and adits were more extensive than might be obvious
- Coal was not raised at all shafts concurrently but moved from shaft to shaft to minimise underground haulage and maximise extraction from each area. Fencing and protection of shafts in this period was not rigorous, being primarily intended to prevent loss of livestock.
- Water management was one of the bailiff's biggest concerns and there were two main methods for removing water from underground workings before steam power was available. The first was "halling" water by windlass or horse gin in large buckets or barrels from dedicated pits sunk deeper than others so water would gravitate to them and drain the workings. The second method was to dig gently sloping drainage tunnels up gradient from the nearest watercourse into the workings to drain them.
- Known locally as "levels", networks of these tunnels were well established by the 1680s. Given that it took around a year to drive 100 yards of a level underground, their length and number are useful indicators for levels of investment in coalmining operations
- Waterwheels and sometimes Windmills were used extensively for draining water in a number of coalfields, including the Bristol one, but documentation relating to these is sparse at best.
- The other major water management issue concerned abandoned workings which, unless appropriate measures were taken, would fill with water, constituting a hazard when close to working coal faces. It appears to have been normal practice to build dams with clay and planks to seal such areas. Organisation of the hewers work to avoid flooded areas required good maps and surveying, both areas where the requisite technologies were still developing.
- In most coalfields we find references to old men's workings, the term used where unknown workings are encountered/broken into. Because written records and maps of abandoned workings were rarely made or retained until mid-C19th, such workings may be old, or may just have passed from memory.
- Ensuring adequate solid barriers of coal between the working areas of different landowners and colliery operators was a well-established custom, both locally and nationally. Ensuring it was enacted, however, required accurate underground surveying and willingness for neighbouring colliery operators to cooperate, an unusual combination of conditions.

Commercial and Legal Considerations

- Effective commercial control of coal mining operations requires good record-keeping, and surviving examples provide the basis for understanding the nature and extent of the industry in the Bristol coalfield. I have been surprised by the level of detail provided in some materials from 1700 onwards and realise similar materials are available for earlier periods in other parts of the UK.
- Such records normally divide into lists of costs, mostly labour charges, and records of sales both for cash and for credit. These are compiled on weekly and monthly bases in some areas.
- Whilst profits varied, the more successful operations showed consistent patterns and in many cases profits were in the order of 50%, making substantial contributions to owners estates.
- Whilst there is ample evidence of simple

lease arrangements between landowners and colliery adventurers, by the 1690s mining leases of considerable sophistication appear. Their contents point to well-developed understandings of controls needed by both parties to maximise mutual benefit.

• Finally it's clear that in the Bristol Coalfield the financial returns from coal mining encouraged some local landowners to manage their operations directly. Similarly we have at least two instances of lawyers attracted by such profits acquiring control of local mining operations.

Short Bibliography (examples only)

1. *The Tudor Miners of Colerton*, Leicestershire by R.F. Hartley, Vol 12 No.3 PDMHS 1994
2. *A Warwickshire Colliery in the Seventeenth Century* by E.G. Grant, Dugdale Society 1979
3. *Men and Mining in Warwickshire* by A.W.A. White, Coventry Branch of Historical Assoc 1970
4. *The Pembrokeshire Coalfield* by M.R. Connop-Price, Landmark 2004
5. *The Archaeology of Mining and Quarrying in England – A Research Framework*, NAMHO 2016
6. *The History of the British Coal Industry – Volume 1 Before 1700* by John Hatcher, Clarendon Press 1993
7. *The Rise of the British Coal Industry* by J.U. Neff, Reprinted by Cass in 1966

Steve Grudgings

Cononish Problems: From the Corporate Update issued by Scotgold on 29/09/2023:

"*As at 28 September 2023, the Company has placed the majority of its employees on short term unpaid leave until further notice, allowing the Company time to advance the financing discussions and preserve funds to help retain some key trained staff members across mining and plant and maintenance. This care and maintenance team will maintain the Company's assets and ensure compliance with statutory, regulatory and environmental reporting obligations for the immediate future*".

Alastair Lings

Carnforth Slag Banks (SD480.705)

There is a very extensive area of iron slag across the River Keer, just north of Carnforth. Parking is possible in a lay-by opposite Cote Stones which is a couple of miles south-west of Warton. The slag covers several acres and has affected the local flora. People walk their dogs here and the ones I spoke to were very knowledgeable about the area and its past, including pointing out a securely fenced area which was once a local rubbish dump and now produces methane. I am unable to understand why the slag from Carnforth iron works was not disposed of on that side of the river: perhaps it was connected with land ownership? I guess the area is noisy when there is Go-Kart racing taking place; but I found it a quiet and interesting place. I am grateful to Geoff Brambles of Cumbria Industrial History Society from whom I learned of this site.

Sallie Bassham

Carnforth Slag Banks – A Thought

Having had chance to look at the site on NLS mapping/satellite imagery, the site chosen to tip the slag suggests that it may have been part of a scheme to reclaim salt marshes and remodel/stabilise the Keer estuary. Also, in the later C19th, a tramway ran north from the site to Scout Limestone Quarry (now a caravan site). Presumably, this brought in more rock for making bunds.

Recorder

Whitcomb L. Judson not involved

The *Westmorland Gazette* reports intermittently on proposals for another zip wire in the Lake District. (There is one at the Winlatter Forest Visitor Centre.) On 31st August, the Gazette reported "*Lakes zip-wire set to get go ahead*". Officials were recommending a scheme at Elterwater Quarry which would have a fixed line connecting viewing platforms within a cavern. According to the developer "*The proposed experience at Elterwater will provide a blend of heritage-based adventure through caverns and offer a unique immersive experience within the underground mine that dates back to the middle of the 19th century*". On 7th September the Gazette updated with the headline "*Narrow vote blocks zipwire*". The National Park Authority's Development Control Committee voted against the proposal by four votes to three. It seems that the proposed travel plan caused some concern. Burlington Stone has a licence to operate as a quarry until 2042: the stone is removed from the quarry using large lorries.

Sallie Bassham

Land of Iron

Originally opened as the Tom Leonard Mining Museum in 1983, then renamed Cleveland Ironstone Mining Museum, the museum has undergone a major refurbishment, paid for by the National Lottery Heritage Fund. It reopened as Land of Iron after a small, private ceremony in September.

Yorkshire Post, 15/09/2023.

Anglo-American employs six Apprentices

Woodsmith Mine, near Whitby, has employed six cyber security apprentices as part of Anglo-American's undertaking to recruit 50 apprentices as the project advances. All six live locally to the Woodsmith project and are aged from 17 to 26 years-old.

They are working from Anglo-American's base in Scarborough, and will be taught by a team to use the latest cyber security tools and techniques to protect the digital systems that run the company's worldwide mining operations.

Yorkshire Post 9/10/2023.

East Side Mines

Several years ago the National Park Authority found that the calcining kilns, which helped make Teesside an important part of the international iron market in the late 19th century, were at imminent risk of collapse through weathering.

The Government's Rural Payments Agency has agreed to bank-roll the £1.5m needed to shore up the arches of the Victorian Rosedale East kilns, and give it to the Rosedale Moor Commoners, who include tenant farmers – but only under certain conditions.

The agency has stipulated that the money the farmers receive for maintaining the ecosystem cannot be separated from the proposed conservation work on the kilns. Its officers say, because the agency is providing taxpayers' money, the grant will only will be given if all the costs are paid for up front and then a single claim is made by the commoners.

Talks between the North York Moors National Park Authority, Rosedale Commoners and the Rural Payments Agency over how to deliver the funding are continuing.

Yorkshire Post, 29/08/2023

John Smeaton

Next year, one of Yorkshire's most famous engineering sons has his 300th birthday. John Smeaton was born on June 8th 1724 at Austhorpe, Leeds. The city is planning a creative programme by artists, scientists, engineers, designers and anyone who wants to get playful with engineering, inspired by the work of John Smeaton, instrument maker, astronomer and the UK's first Civil Engineer. He was also an Engine-builder and mining engineer. From 1767, he oversaw the Hospital's smelt mill at Langley, and on June 10th 1776 the Receivers of Greenwich Hospital, William Walton and John Smeaton, set-away the Nent Force Level to drain the mines of the Nent Valley and act as an underground, canal bringing out the ore. Unfortunately, relatively little of the latter was found. The level ended at Brewery Shaft, in Nenthead, in 1842.

Leeds Museums and Galleries and Leeds2023 present: Engineery (27/10/2023 – 28/09/2025). This is a brand new exhibition at Leeds Industrial Museum that explores how engineering shapes the world around us. Engineering is everywhere: from lighthouses to space shuttles to the infrastructure that makes our cities tick. Join them as they celebrate the 300th anniversary of Leeds engineering legend John Smeaton.

Newsletter Editor

Coal Mining Heritage Not Dead.

The National Coal Mining Museum (England), at Caphouse Colliery near Wakefield, has employed two electrical apprentices to help it keep the mining heritage alive.

They will divide their time between the museum and Wakefield College, where they will work towards gaining a NVQ Level 2 in electrical engineering and completing the electrical technician (Underground) competence portfolio.

They are able to get their hands on original mining equipment, and will be qualified electricians and mine guides upon completing their apprenticeships.

Yorkshire Post 7/10/2023

Cumberworth Quarry

Plans, by Wavin UK, to reopen and extend Bromley Farm Quarry at Cumberworth have met with 222 objections from local residents. The company is seeking permission from Kirklees Council to extract clay, shale and incidental coal.

Cumberworth Quarry Action Group (CQAG) said "People are really concerned. The scope and scale of the development is huge and people are very concerned about a range of aspects." Some residents had bad experiences during previous quarrying at the site, which ended in 2014. The group believe that the quarry will add 250 HGV movements per day to, an already busy, Barnsley Road.

The council extended the comment period until September 28th and so no decision has yet been made.

Yorkshire Post 03/10/2023, p.8

Free Mines Exhibition

Documentary landscape photographer and Fellow of the Royal Photographic Society, Nick Hodgson, has an exhibition at the National Coal Mining Museum, near Wakefield. '*Free Mines Coal Faces*' tells the story of some mines worked by today's small free mining community in the Forest of Dean.

The Free Mining system dates from the reign Edward III (1327-77) when the rights to mine freely, subject to an annual fee, were confirmed by the Crown. These rights applied to any who was born in the Hundred of St Briavels.

The photographs taken between 2019 and 2022 document the landscapes of one of Britain's oldest forests, as well as the personalities and work of this community, whose principal customer is the local population.

Free Mines Coal Faces' runs at the museum until January 21st 2024. Entry is free. Details ncm.org.uk/whats-on/free-mines-coal-faces

Yorkshire Post 25/09/2023

News from Cornwall

According to *The Guardian* of 8th September, the UK's Infrastructure Bank (UKIB), based in Leeds, is to invest £24 million in Cornish Lithium, a company which is hoping to jump-start a local lithium supply chain for electric vehicles. The article is accompanied by a photograph of a Cornish engine house.

Sallie Bassham

The September News Sheet of the Carn Brea Mining Society also refers to Cornish Lithium Ltd. In addition to the UKIB money, US-based private equity fund EMG is to invest £24 million and TechMet £5.6 million. The funding will progress the Trevalour hard rock lithium project to

'construction-ready' status and complete the engineering design work required to build a demonstration-scale geothermal waters lithium extraction facility. A further £168 million will be necessary to achieve commercial production.

The following items are also from the Carn Brea News Sheet. A deep geothermal heating plant is now supplying the Eden Project. The 5,277m deep (3.3 miles) geothermal drill hole has a single well coaxial system which delivers heat to the project buildings along a 3.8km heat main. £24 million of research funding was provided by the European Regional Development Fund, Cornwall Council and commercial investment sources.

Tungsten West has raised a further £7.1 million to meet ongoing contractual liabilities and annual expenditure at its Hemerdon property. Commissioning of the dry section of the revised mineral process flowsheet has treated residual material left in the circuit by previous operators Wolf Minerals, and resulted in two lots each of tungsten and tin concentrate. Efforts are now focused on securing an operating permit for the fully revised mineral processing facility.

At South Crofty, Cornish Metals Inc. report substantial progress. The water treatment plant has been completed and a temporary rising main made using two submersible pumps which have been lowered down New Cook's Kitchen shaft to the old 190 fathom level. The planned pumping rate is 25,000m^3 a day. A discharge pipeline has been laid to Dolcoath Deep Adit with the treated water entering the Red River at Roscroggan. Drilling results confirm the Mineral Resource Estimate. Results from metallurgical test work studies (including diluted head grades, ore sorting amenability gravity release and past backfill studies) are expected by the end of this year.

Sallie Bassham

Cornish Tin

The Crown Estate has granted permission for Truro-based Cornish Tin to prospect for gold and silver across 123,000 acres of Cornwall. The company is currently focused on obtaining high-grade tin and hard-rock lithium at Great Wheal Vor, near Breage.

Cornish Tin's founder and chief executive, Sally Norcross-Webb, said the lease option from the Crown Estate, first reported by the Financial Times, will open the door to further mining opportunities in Cornwall. She added: "*We are not expecting it to have an immediate impact on the valuation of the company – but it is a long-term, strategic move for us*."

The Telegraph (Matt Oliver) 16/10/2023

Gold exploration near Gairloch, Highland Region

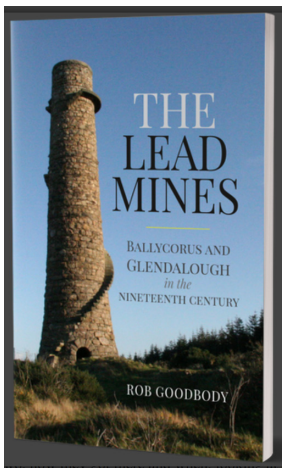
Galantas Gold reports that its fifth hole 23-GL-05 intersected 1.87 grams per tonne gold, 1.17% copper, 1.20% zinc, 131 g/t cobalt and 7.06 g/t silver over 34.25 metres with new mineralization identified a further 100 metres at depth. It adds that recent and historical drilling has identified a mineralized trend with a strike of over 1 kilometre and to a depth of 250 metres.

Mario Stifano, Galantas's Chief Executive, remarked: *"Our first drill program at the Gairloch Project continues to exceed management's expectations, as the results from this fifth hole have further solidified the high-grade copper-gold potential while extending known mineralization to depth. Mineralization has been drilled over an area 1 km in strike, up to 150 metres wide and to a depth of 250 metres, and remains open. The company plans to conduct modern geophysics over the 10 km-long known mineralized belt to prioritize drilling targets for a planned new drilling program."*

Alliance News 16/10/2023
Newsletter August 2023, p. 6.

The Lead Mines - Ballycorus and Glendalough in the Nineteenth Century by Rob Goodbody.

A hilltop chimney in the foothills of the Dublin Mountains is a very prominent landmark, seen from land and sea. In the Glendalough valley and the adjacent Glendasan, ruined buildings and piles of spoil form very different landmarks.



This volume explores the connection between the two, how they got there and when, looking at a very successful and profitable lead mining and smelting business which occupied these sites in the nineteenth century. The book is the result of detailed research and investigations over almost four decades and is illustrated by historic photographs, maps and engravings, as well as more recent photographs, to show the rich mining heritage at these separate, but related, sites.

Rob Goodbody is a building historian with a background in historical geography, geology, local history and building conservation. He was a founder member of both the Mining Heritage Trust of Ireland and the Industrial Heritage Association of Ireland. Over the years he has led many walks to the lead workings at Ballycorus, Glendalough and Glendasan and has delivered lectures to local interest groups, mining heritage organisations and conferences.

£17.49, Published by Wordwell Books, Wordwell Books: Archaeological and Historical Books Ireland

California's 16 to 1 gold mine

No sooner had I completed all the arrangements for a visit to California than my contact, Rosanne, sent a message of 'good news'. I groaned; it did not suggest good news to me.

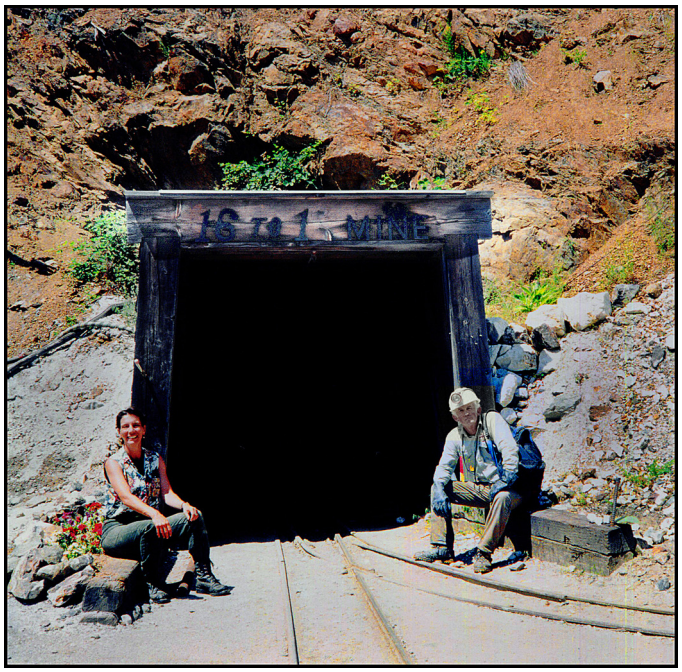


Fig 01 The portal to the 16 to 1 gold mine, in the Alleghany Mountains, California.

Rosanne had struck a bargain with the CEO of the Sixteen to One gold Mine in the Allegheny Mountains. That is to say, if I tackled an underground photograph using my technique of painted light, the CEO, Michael Miller, would provide the VIP tour, which usually costs $500. My misgivings were two-fold. I did not know the location and the project now involved re-packing, to find room for a tripod, a heavy hand-torch, my preferred camera and a personal lamp that clipped to my body belt. It is good policy to carry one extra light source.

Fig 02 The view within 'The Ballroom' of the 16 to 1 gold mine selected for the initial exposures by 'painted light'.

Fig 03 The view within 'The Ballroom' featuring the white rocks in the foreground to boost the 'painted light' penetrating the aperture.

After a few days in California, Rosanne outlined the plans for an early morning drive up to the small community of Allegheny for the agreed rendezvous with Michael Miller at the mine. He enquired about the photographic technique and decided that the best location would be what he called The Ballroom. This sounded ominous and, later when I had viewed it, my worst fears were realised. Compared to the gold mines in North Wales, The Ballroom was enormous but I had to swallow hard and get on with it.

We used a 'tram' which took three of us half a mile into the Allegheny Mountain. We trudged along a 'corridor' and then descended a series of ladders to the Ballroom. Relying on my native wit, I located a potential view, set up my camera on the tripod and attempted to determine the exposure for 120 colour film, rated at 1000 ASA, in a heavy Bronica Q camera. It was not easy, but I trusted the age-old ploy of 'bracketing'; that is, to bang off time-exposures at three, four and five minutes. My notes confirm I felt a bit of a fraud as I waved my hand-lamp around. "*Have you got what you wanted?*" asked my host as we descended to another part of The Ballroom. "*I'm looking for another view … I want to try a second shot*."

Just ahead was a sequence of mining excavations in the characteristic quartz of some gold mines in Wales. This time I worked the hand-torch for five minutes for three exposures but altered my lens aperture from f8 to f11 and f16. There was an image on each and eventually the

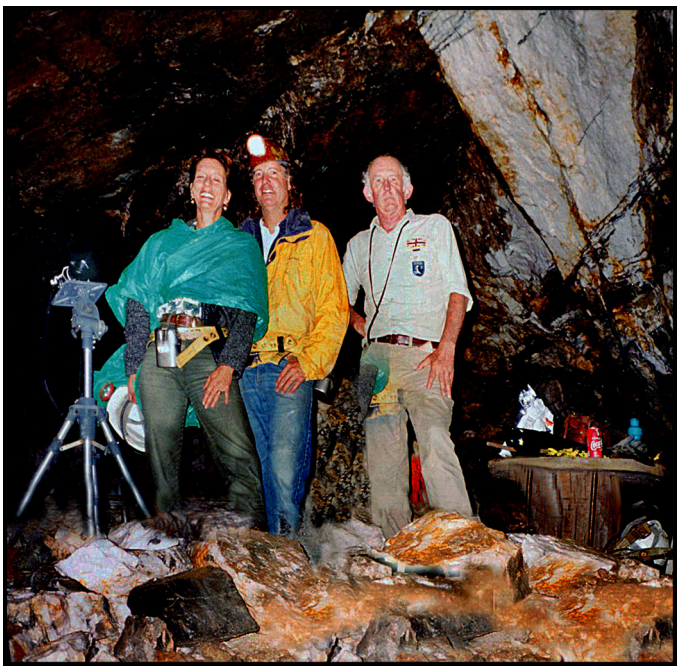


Fig 04 With the painted light demonstration completed, the CEO suggested a group photograph!

colour laboratory produced attractive prints. Reputation would be saved I thought, but Michael Miller explained there was more to come.

As if from nowhere, a miner appeared and led the way to a chain of buckets. Three of us climbed into three buckets for a very long descent. It may have been a joke, but the miner hinted to me we were going below sea level. We arrived at the rock face, amidst a group of miners having lunch. The supervisor was outlining the aims of his shift and, with their CEO present, no one objected to photographs.

Eventually, Rosanne and I returned to the surface via the buckets, the ladders and long hikes. We were exhausted and covered in patches of a grey mud. Some weeks later, however, I relished posting a set of prints to Mr Miller at the Sixteen to One gold mine.

Ron Callender

Fig 05 At the rock face, the supervisor and his colleague discuss the work to be done after lunch.

Addendum: For some reason, I was added to the mine's mailing list and for several months I received news … good and bad. I learned of "The Whopper", a huge gold specimen mined soon after I left California, and then much later, I received copious details of a High Court law suit raised by the Central Valley Water Board. Michael Miller had objected to a fine of $2.1 million following accusations of spilling foul water into a nearby creek when he took an obsolete stamp mill out of commission. Miller defended his case by citing the "*heavy-handed approach*" and in the end, he won. By keeping up to date, in 2022 I also learned that the mine had filed a Pleading Document issued to Quartzview … a company anxious to take over the Sixteen to One by illegal means. Once again, Michael Miller has to defend his mine.

Fig 06 Lighting from one of the installed working lamps, caught the face of one of the gold miners as he stood up.

What's in a name?

'Sixteen to one' is the arbitrary ratio of the number of ounces of silver equal in value to one ounce of gold in the bi-metallic monetary system adopted by the United States of America in 1792. Originally set at an exchange rate at 15:1, it had slipped to sixteen to one by 1834, and was dropped by the United States in 1873.

Newsletter Editor

Fig 07 Michael Miller joined his men at the rock face and cradled his camera although he did not use it.

Fig 08 Lunch over, the miners took up their positions for four more hours of mining.

Fig 09 "Wait for it", said Danial as he launched a chute bearing loose gravel from above.

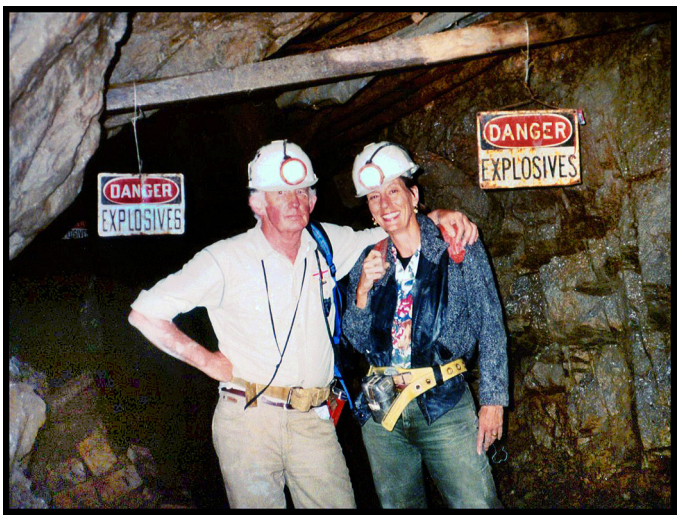


Fig 10 Exploration over, Rosanne and author agreed to pose for one last photograph.

Fig 11 One year after the author's visit to the 16 to 1 mine, he is given the chance to admire "The Whopper" at the world goldpanning championships held in Coloma.

Millstones of the Pennines and North West England
by David Johnson
Pub. Amberley 2023, 96pp, £15.99 ISBN 978-1-3981-1293-3
David Johnson, landscape archæologist, and a small group of volunteers have undertaken the first comprehensive survey of the production of millstones and grindstones in the N W of England, the Pennines and the Forest of Bowland. Over fifty production sites were identified in the survey area and a staggering number of rough outs were found littered across these sites, pointing to a previously thriving industry. Although documentary sources are scarce, it does appear that many sites were abandoned before 1800. Nonetheless, the survey has been able to reveal, evidence of production in a variety of locations and situations across a time-scale ranging from the medieval era to the decline of the industry.

The book describes the evidence of the industry across the

sites in great detail and illustrates how the survey team endeavoured to create a chronological order for some of the production sites by researching written sources, where available, and carrying out systematic field work.

Chapters 3 and 4 set the scene for the book by describing the numerous processes involved in the creation of the millstones, the infrastructure required and the question of transporting the stones off the fells, the latter aspect being the most puzzling. Some documents hint at loading and moving millstones and one document from the 1600s refers to "ye said millstones" which were to be transported an impressive 20k across rough moorland to Bongate Mills in Appleby-in-Westmorland.

In 1702 in Wensleydale there is a reference to a "milnstone sled" which suggests that in some places at least sleds were used in the transportation and indeed some sledways are still visible on the fellsides. The book includes some interesting references to early sleds in Ireland, Northumberland and Embsay Moor in North Yorkshire. There is also an interesting description of a likely stanchion and sledway grooves on Millstone Lumps below Addingham Moor. Amongst the survey group it was decided, however, that it was not possible to offer a definitive explanation regarding removal of the millstones and this aspect of the industry remains a bit of a conundrum – the group could not see how the millstones were successfully removed, particularly in cases where extensive boulder scree lies between the production site and the vegetated moorland.

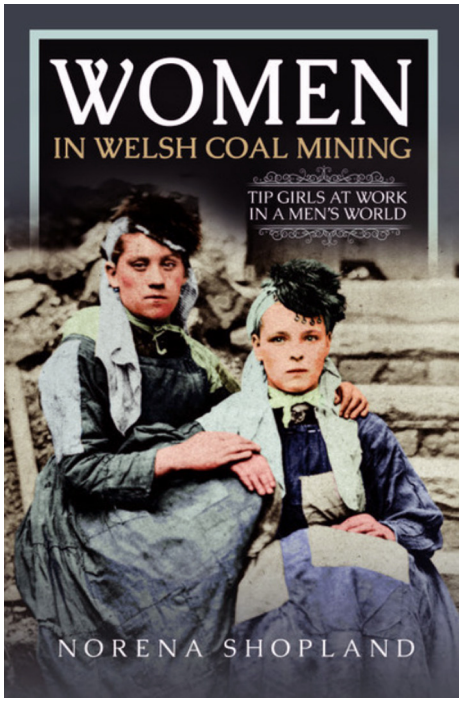
There are seven chapters devoted to the study of specific locations, each chapter containing excellent photographs with explanatory text. The chapter concerning Mallerstang in Westmorland is particularly interesting as this is the location where it was possible to identify about 30 roughouts, displaying every stage in the production process from the first line of wedge pits to the final completion. The author independently researched grindstones and edge-runners which operate in the vertical plane. A comprehensive account of his findings is the subject of Chapter 12.

In summary, this well-produced and very informative book is sure to be of interest to local historians and particularly anyone who enjoys reading about our industrial archaeology. It includes a guide for further reading and a full list of grid references for production sites for anyone wishing to visit these locations themselves.

Carol Dougherty was a member of the survey group and, living at high altitude in the Northern Pennines, she is aware of the tough conditions those workmen would have experienced whilst quarrying the millstones. Her 5 x Great Grandfather left "a grindlestone" in his will in the 1700s and she is now much more appreciative of why he considered it important enough to itemise!

Carol Dougherty

Women in Welsh Coal Mining (Hardback)
By Norena Shopland. Pen & Sword History, 208 Pages: Illustrations: 25 mono. £22.00 +£4.50 UK Delivery



" Society thought they were masculine and society disapproved of masculine women. They smoked, they swore, they were bolshy. People said jump and they went: 'No'. Society said: 'Women don't act like this – it's not ladylike'."

These are the words of historian Norena Shopland, the author of new book Women in Welsh Coal Mining which tells the story of women in south Wales who worked in the mines and fought for acceptance for nearly 100 years to stay there. "*It really is looking at women's history that we need to move away from this idea that women in the past were sort of locked in homes and couldn't get out and had to get a man to accompany them,*" said Norena.

"*Thousands upon thousands of women just passed as men and went off and did what they wanted to do. Some had to do it from necessity – there was no divorce and, if a man died or left, the woman was left to bring the children up on her own. In areas where there was limited work women had no choice.*"

Women were working in mines across south Wales until 1842 when a report looking into working conditions of children also brought people's attention to working women such as those in the mines. "*It's the first report in UK history that is specifically gender-related*," said Norena. *"And they were horrified at this idea of women working down in mines next to men. It was very hot and dusty so they didn't have a lot clothes on while they were working."*

Women were banned from working down the mines from then on, but there were only two inspectors for the whole of south Wales. The inspectors would send letters to the mine owners to tell them they were going to investigate them in advance which would buy them some time to ensure women were not working on inspection dates.

Although some women then passed as men to carry on working underground, many women worked up on the pit

brow. From the 1850s until World War One and beyond women worked on the pit brow, smoking like the men out of clay pipes and dressing in a masculine fashion.

But many people felt this work should also be banned and women were better suited to roles such as factory workers or domestic servants. One issue was that in towns across south Wales these roles were few and far between.

Those opposing the tip girls did not stop to consider the lack of jobs available in the local area, said Norena. "*If they had all stopped working they would have ended up in the workhouse because unless you had a lot of boys in the family you wouldn't have been able to survive*."

Norena explained that through her research of census returns from the 19th century she found that many women working in the tips were from families where the father or man of the house was unable to work due to injury. These women were often became the breadwinners of the family.

Although English women working in mines were referred to by names like the "*pit brow lasses*", the Welsh women were uniquely termed as "*tip girls*". In terms of appearance the Welsh women were known for their extravagant hats. Norena explained that in many old pictures of the tip girls they are wearing fancy hats full of ostrich feathers, fake pearls, buttons, and bows.

Despite being well-respected among men working in the coal mines, Norena said many in society had a "*bizarre attitude*" that if you were dirty you were immoral. "*It was over 100 years of constantly battling society and Parliament. There were so many questions asked in Parliament on how to stop these women. And over 100 years they fought to keep their jobs. They marched on Westminster twice. I love them,*" said Norena. "*They were really feisty women.*"

The work on the pit brow was difficult and involved winding coal up the shaft, dragging the heavy coal off, and rolling it into a shed. Some of the women also had to oil and wash the trams that the coal came up in. Despite the hard, dirty nature of the job, many women preferred it to domestic servitude as this involved living in a home and being at a family's beck and call all of the time. "*The mining women finished in the evenings and they went off and enjoyed themselves,*" said Norena.

With more leisure time came more activities that the women could take part in. Choirs were hugely popular at the time and some tip girls found fame from singing in them including Morfydd Glantaf, Ddriw Vach, and Eos Vach.

You can find out more about the tip girls of south Wales in Norena's book *Women in Welsh Coal Mining* - published by Pen and Sword Books Limited.

'The Welsh Potosi': Metal Mining, Railways and Industrial Society in the Plynlimon Mountains

The Vale of Rheidol Railway has announced the publication of 'The Welsh Potosi', the second book based on Ioan Lord's extensive research into local mining history. It is filled with important discoveries and is available only from the railway. See https://www.rheidolrailway.co.uk/shop/ for ordering information. The book costs £45, hardback, 320 pages.

The Plynlimon Mountains, stretching north from Ponterwyd, in the heart of Mid-Wales, were once known by a different name: the "Welsh Potosi", redolent of the world-famous Potosí silver mines in Bolivia. More than 50 mines were opened to win the ores of lead, zinc, copper and silver, and there were many schemes to build railways and other transportation links from the mountains to the coast.

Villages and scattered communities were established high in the hills, with miners and engineers living alongside farmers and shepherds. Dwellings and landmarks were given such names as the 'California of Wales', the 'Welsh Broken Hill' and 'Spain'. The 'Welsh Potosi' became such an important silver producer that it resulted in the end of the monopoly of the Mines Royal, which was embodied in an Act of Parliament of 1693. Today, the significance of the hills between Aberystwyth and Llangurig is largely forgotten and the name 'Welsh Potosi' has long vanished from maps. It is hoped that this book will correct that failing.

Ioan is a director of the Welsh Mines Preservation Trust and the Cambrian Mines Trust, and has spent many years studying the history and archaeology of metal mining in Central Wales.

This knowledge coalesced to produce a book covering the rise and fall of mining, railways and society in and around the Plynlimon Mountains, with many amazing images taken during his authorised exploration of the mines.

Newsletter Editor

William (Bill) Davidson (1907-2002) the person who inspired my love of mineral specimens.

I first met Bill when aged 16 I was on a cycling holiday in the Lake District with my best school friend, staying at Youth Hostels. We were perched on a stile at Castlerigg Stone Circle when a gentleman approached us and asked if he could take our photo. It later transpired he thought we were sketching whereas we were writing up our diaries. The photo ended up in a local newspaper we were later informed and Bill showed me the article some years later.

Fast forward and our paths crossed again while in the Caldbeck Fells visiting Roughton Gill, renowned for its mining heritage, with my then boyfriend. Bill was with his good friend Norman Thompson, a long-time member of our Society. From this second meeting a strong friendship was born.

One of Bill's photos from the Country life picture book of the Lake District published in 1979

Bill and Norman had made their names collecting in the north of England mining sites in the 40s and 50s, sadly before my time. Bill, we learnt, had traded with mostly American collectors and dealers who were more enthusiastic than the British mineral collector of the time. The pair of them had visited many abandoned mines and waste dumps in the north of England and had written several mineralogical papers together, some of which Norman donated to our records.

Bill lived in Penrith and we were always made very welcome there, sometimes staying the night when an early morning start was needed. He had a second hand clothes shop and I remember his wife, Bertha, undoing knitted garments and reknitting into items for their children. I helped with the balling up of the wool ready for refashioning. The shop had also fuelled his success in mineral dealing as miners used to visit and sometimes swap specimens for shoes and clothes. Bill would talk freely of his dealings with the likes of Scott Williams of Arizona and Minerals Unlimited of California, both well known in the U.K. to the small band of enthusiasts at the time. How I wished I had been around in that time when collecting was freely available. He loved to recount stories of supplying specimens of calcite and Scheelite for research during WWII. He also used to tell us of the tea-chests of sphalerite crystals sent from Alston Moor to the USA. These were then used for the manufacture of cuff links!

Bill told us his love of natural history and mineral collecting had started while he was at Carlisle Grammar School. Back in 1929 he had joined Carlisle Natural History Society. Prior to his enthusiasm for specimens he studied insects, especially beetles and moths. Bertha would add that she never knew what to expect to see in her pots and pans! From the 1940s he became increasingly active as a mineral collector and the Tullie House Mineral collection benefitted. A prize specimen there was a group of fluorite crystals on a Dolomite matrix acquired by Bill from the Ulcoats Mine at Egremont in 1947. He also collected fossils and, though many of his specimens have passed through our hands over the years, we still have some fossils from Kent's Cavern purchased from him years ago.

Unfortunately by the late 1960s, when I was getting interested, specimens became less plentiful as many mines had closed, so Bill had to look for another source of income – hence photography! His photos went all over the world on record sleeves, book covers, postcards, and calendars. He loved to show us what had happened to them when we visited. He had been a very resourceful gentleman and I am proud he inspired me. He grew increasingly deaf with advancing years, Rex and I attended his funeral and met up with his grown up children and dear friend Norman. Bill died 20th October 2002 aged 95. A remarkable and interesting gentleman. I have a great deal to thank him for.

Barbara Sutcliffe

Two of Bill August 1968. Roughton Gill. Note how smart the collectors were at that time. No hard hats or steel-tipped boots.

Railways must look abroad for coal supplies

As reported in the Newsletter of August 2022, Britain's heritage railways (there's around 150 of them) have been worrying about their supplies of high-quality, low-emission 'steam coal' they use as fuel. Now, however, Merthyr (South Wales) Ltd, the operator of Ffos-y-Fran opencast, in Merthyr Tydfil, has confirmed that coal getting operations there will cease on November 30th.

Ffos-y-Fran has been the main supplier of such fuel to the railways, and the Heritage Railway Association is warning its closure will increase pollution if they are forced to import coal from thousands of miles away.

Yorkshire Post, 16/08/2023.

Myanmar Miners Killed

On August 13th 2023, a landslide of mining waste, mud etc occurred near the town of Hpakant, in Kachin state, in northern Myanmar, and over 35 miners (fossicking for jade) fell about 300 metres into a lake. Rescuers using small boats recovered the bodies of 33 men from the lake.

Mining had been stopped because it was the rainy season, but many of those involved in the accident, which happened on a Sunday afternoon, were scavenging for jade. The intense rain had loosened massive piles of mining waste, more than 150m in height, which slid down the cliff and swept away anyone in its path.

Similar falls are not uncommon and had already killed "*at least*" 418 since 2015. Other, smaller falls also occurred regularly – killing many more.

November 2015	100
April 2019	56
July 2019	17
July 2020	175
December 2021	70-100

Jade mining is an important source of revenue for Myanmar's military government. It also finances the Kachin Independence Army, an ethnic armed group.

BBC News – World/Asia, 14/08/2023.

Zimbabwean Gold Mine

On Friday morning, September 29th, at least ten illegal gold miners were killed and others were thought to be trapped at the Bay Horse Mine. Zimbabwe has vast reserves of platinum, diamonds, gold, coal and copper. Owing to the floundering economy, however, illegal mining is rife and often takes place under dangerous conditions. Pillars, left for support, had been removed in this case.

Yorkshire Post, 2/10/2023.

Baby shoes discovered in Austria

Archæologists from the German Mining Museum, Leibniz Research Museum for Georesources, Bochum, have studied salt mines at Dürrnberg, near Hallein, an area renowned for salt mining, which dates back to the Iron Age. Recent excavations, led by Professor Dr Thomas Stöllner, Head of the Mining Archæology Research Department, have made a remarkable find – a perfectly preserved pair of children's shoes that are more than 2,000 years old.

The preserving properties of salt have allowed organic materials to endure exceptionally well at this site - a rarity in archæological discoveries – and have perfectly preserved the footwear. The shoes, roughly a modern-day size 30, were unearthed in the Georgenberg Tunnel.

"*Our research at Dürrnberg has been providing valuable insights into the earliest mining activities for decades*," remarked Professor Dr Stöllner. "*The condition of the discovered shoe is outstanding. Organic materials typically degrade over time, making finds like this child's shoe, as well as textiles and even excrement found at Dürrnberg, extremely rare glimpses into the lives of Iron Age miners. They offer valuable information for our scientific work*."

Several leather shoes have been found at Dürrnberg, but a child's shoe is particularly special, as it confirms the presence of children underground. Additionally, in this case, a rare remnant of a flax or linen lace was preserved, providing insights into the shoe's fastening method. The craftsmanship of the shoe also suggests it was likely made in the 2nd century BCE.

Cover Media 2/10/2023

Miners found Europe's oldest sandals

Spanish researchers have identified Europe's oldest-known sandals, as well as the first direct evidence of basketry in hunter-gatherer societies of southern Europe. Some 76 objects were found during 19th-century lead mining activities in the Cueva de los Murciélagos, (cave of the bats), south of Cordoba, Spain. The prehistoric items were made from organic materials including wood, reed and esparto, or *Stipa tenacissima*, a grass crushed to make twine. They were dated by carbon-14, and the team estimates the baskets are roughly 9,500 years old — 2,000 years older than previously thought — and the grass shoes could date as far back as 6,200 years.

The lead researcher Francisco Martinez-Sevilla, who studies prehistory at the University of Alcalá in Spain, said "*When we realized the magnitude of the findings, we published the paper with all the analysis in less than a year*."

Archæologists previously thought that Neolithic farmers began making woven baskets when humans began living a more settled lifestyle, because they were intricately decorated with geometric motifs, made with dyed fibres and even adorned with human hairs or pigments. C14 dating determined, however, they were made during the Mesolithic era, when hunter-gatherer lifestyles were still prevalent.

"*The quality and technological complexity of the basketry makes us question the simplistic assumptions we have about human communities prior to the arrival of agriculture in southern Europe*," said Martínez-Sevilla. "*This work, and the project that is being developed, places the Cueva de los Murciélagos as a unique site in Europe to study the organic materials of prehistoric populations*."

Most archæological knowledge of past societies comes from the discovery of items more durable than grass and wood. In southern Europe, however, well-preserved artefacts made from organic materials are rare and limited to a few sites where objects have either been charred, waterlogged or desiccated. Nevertheless, plant-based artefacts give archaeologists insight into cultural and technological traditions, trade networks and human-environmental relationships. This new research provides "*a unique opportunity to study social aspects of early human groups*," said study co-author María Herrero-Otal, a physical anthropologist at the Autonomous University of Barcelona.

The cave was first accessed in 1831 by the owner of the surrounding lands, who was seeking bat guano to use as fertilizer. When galena (lead ore) was found in the cave, mining began in 1857. This led to the discovery of a gallery with partially mummified human remains, baskets, tools and other archaeological objects.

Some of the plant-based artefacts were burned and scattered outside the cave; some baskets and other objects were distributed among nearby villagers. Ten years later, archæologist Manuel de Góngora y Martínez visited the cave, gathered archaeological remains and collected testimonies about the artefacts from the miners. He published his findings in 1868, but any information on how the artefacts were historically positioned was lost when they were moved from their original locations.

The new research "*expands our understanding of the technologies of foraging peoples at the time*", said Katina Lillios, an anthropological-archæologist at the University of Iowa, who was not involved in the study. "*The preservation at the site of Cueva de los Murciélagos is truly remarkable and it is great to see that archæologists have been able to date a larger sample of the plant-based artefacts found there*."

Now, the researchers hope to date the human remains from the cave using C14 dating.

Smithsonian Magazine, 2/10/2023

Aberllefenni Slate Quarry: A History of the Last Underground Slate Working in Wales

This quarry is two miles north of Corris, and Jon's book covers its history until 2016. Extensive use is made of good quality colour and monochrome photo's, with plans and sections of the workings.

Self-published by the author, Jon Knowles. Casebound, 277 gloss art pages. R.R.P. £35.00

Transactions of the 2nd International Early Engines Conference, Vol. 2

This volume, with 15 papers crammed with detail from the conference held in October 2021 at the Black Country Living Museum, Dudley, is now available.

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Glück Auf

The Legal Stuff

No animals were hurt during the writing of this Newsletter, although some species did become extinct.

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