

Chairman's Chat



Source: IOM3

It gives me great pleasure to introduce this Newsletter. It is the first edition since I took over as Chair in April from Christine Blackmore, who spent the previous six years developing the Mining Technology Division (MTD) to such great effect. The handover coincided with the IOM3 launch of its new structure for technical communities, which saw their consolidation into 22 groups. Together the two introduced inevitable delays, hence this newsletter taking six months to publish. The IOM3 restructure redefined the MTD as the Mining Technology Group (MTG) and its member Board is now known as the MTG Leadership Team. The Ground Engineering Subgroup remains part of MTG. The committee set up by the MTD to represent mining

sustainability is currently being reviewed due to changes in circumstances of its key members.

One of my first actions as Chair was to meet members of the MTG and a local society at the MIMinE 15th Safety Seminar in Sheffield. The MIMinE is to be congratulated on organising such an excellent event after a 2-year COVID hiatus. The rest of the newsletter comprises a blend of updates on various mining topics, local societies and other organisations, a history of mining institutes and thoughts on responsible mining and the MTG. We also say a fond farewell to former long-serving MTD Board member Frances Perry, who recently retired from IOM3.

Please remember, your suggestions are always welcome, so if you want to be in touch then please visit [linkedin.com/in/coldcomb](https://www.linkedin.com/in/coldcomb) where you can find out more about my background and post me a message.

Also, look out on the IOM3 website and social media for my 'IOM3 Investigates' MTG Chair podcast with Ian Bowbrick - just released <https://bit.ly/3cXpOMk>.

Stop Press

See MTG webpage for latest articles:

<https://www.iom3.org/group/mining-technology-group.html>

'IOM3 Investigates' MTG Chair Podcast - just released

<https://bit.ly/3cXpOMk>

Upcoming Events:

11th International Symposium on Ground Freezing, London, 10-12 October 2023. See

<https://www.iom3.org/events-awards/11th-international-symposium-on-ground-freezing.html>

for more details

NEIMME Anniversary

170th Celebration Dinner NEIMME 29 October and 150th since the original opening of Neville Hall

MTG Meeting

The next MTG leadership meeting is to be held in London at IOM3 HQ on Thursday 22 September 2022.

ICMM

2021 safety performance - see

<https://www.icmm.com/>

Contents

Page 2	News and Views	MTG Leadership
Page 4	MIMinE 15 th Safety Seminar	Steve Straw
Page 5	Toys for Boys (and Girls!)	Andy Birtles
Page 6	MTG and the future	Colin Comberbach
Page 7	Critical Minerals Association	Overview
Page 8	Tribute to Frances Perry	Christine Blackmore
Page 8	PERC News	Andy Birtles
Page 9	Mining Heritage	Rod Stace
Page 10	WIMM	Wyn Griffith
Page 11	Climate Change	Laurence Morris
Page 12	NEIMME Annual Dinner	Andrew Dobrzanski
Page 13	A history of the Institutes	Wyn Griffith
Page 14	Powered Roof Supports	Paul Knowles

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News and Views from the Mining Sector MTG Leadership

Sustainability

The mining sustainability sub-group has had to take a bit of a back seat at the moment due to other commitments and also some health issues of the sub-group members. We take this opportunity of hoping that these issues will resolve themselves fairly quickly. In the meantime there are a few articles in this Newsletter that might be of interest to the discerning advocate of sustainable mining!

Mining and the sustainability of metals

There is a theme in this Newsletter of publications and articles that may be of interest to the mining “community” as a whole. This one is published by UK Parliament Post, and is a “research briefing”, dated January 2022. The initial and final paragraphs from the summary state “The mining and processing of minerals underpins modern technology and infrastructure. Each year, over 3.3 billion tonnes of metals are produced globally, and most predictions of demand show increasing consumption of metals in the coming decades, including their use in renewable energy generation, electric vehicles and batteries. The transition of the world’s economies and industries to more sustainable energy and technologies will require more mining and processing of non-renewable mineral resources, with associated positive and negative impacts on the environment and society....



Source: post.parliament.uk.

Mining remains vital to the supply of metals, and will underpin a transition to more sustainable, low carbon energy and infrastructure. Better stewardship of metal resources, and more responsible mining operations can help to minimise the negative impacts on the environment and communities, and improve the overall sustainability of metal use. Although the UK mines little itself, it is home to some of the mining sector’s largest companies, investors and markets, and Government policy has considerable influence on corporate transparency, environmental performance, and good governance.” More information can be found at <https://researchbriefings.files.parliament.uk/documents/POST-PB-0045/POST-PB-0045.pdf>.

Coal Statistics

An interesting statistic appeared during a review of a technical paper soon to be published in our “sister” organisation magazine, the SAIMM Journal. China produces 3,500 million tonnes of coal per year. Quite a lot, I hear you say. This is more than the combined rest of the world (or at least the next nine biggest producers). To think that there is concern about developing a coal mine in the UK, and “home” producing enough coal to keep the “glorious age of steam” heritage sites happy! As an aside, Poland is (almost) self-sufficient in power generation, despite Russia (pre-Ukraine conflict) supplying cheaper coal from 5,000 km away in the Kuzbass coal basin!

Ground Freezing Conference

Following a 16-year hiatus, the 11th International Symposium on Ground Freezing (ISGF) will return to London, UK for the first time since 1988 to present the latest research, innovations and concerns as well as challenges and opportunities in the fields of Artificial Ground Freezing (AGF), as well as the mechanics of Frozen Earth. This will be held on 11-13 October 2023.

Spread across three days, the symposium provides a forum for ground freezing practitioners across the world. Since the last conference held in Maine, USA in 2006, AGF has grown in popularity and its application has expanded to projects including shafts, tunnels and large barrier walls with increased attention to soil-structure interaction. More information can be sourced from <https://www.iom3.org/events-awards/11th-international-symposium-on-ground-freezing/call-for-papers.html>.

Energy transition dilemma

The energy transition dilemma is a joint research paper by LGIM and BHP. It addresses the requirement for change, but also the need for minerals. The executive summary is paraphrased

here.

A common goal of limiting global warming to well-below 2°C - and ideally 1.5°C by the end of the century as set out in the Paris Agreement - does not mean there is a common or accepted path for how to get there.

There are as many 'pathways to Paris' as there are climate scenario models. None of agreed "directions" will be feasible if the supply of metals does not keep pace with the spectacular demands of the energy transition. Metals are essential inputs for the hardware of decarbonisation - there will be no energy transition without a very large increase in the production of critical minerals. Yet the production of minerals can itself be an emission-intensive process. Investors must be a part of the transition through engagement, focusing efforts on creating an environment where companies, governments and allocators of capital work together to build the ecosystem where clean energy alternatives compete with and beat the incumbent greenhouse gas-emitting technologies. More information can be found at

<https://www.lgim.com/landg-assets/lgim/document-library/insights/long-term-thinking/the-energy-transition-dilemma-2022-final.pdf>



Source: lgim.com.

West Cumbria Mining

The government has extended a deadline to decide on whether to go-ahead with this new coal mine, which will produce metallurgical coal for use in the steel making industry. The Planning Inspectorate has sent its completed report on the Woodhouse mine. The new Secretary of state, Greg Clarke has deferred making a decision to November 2022.

Mining and Technology

Rio Tinto has opened its Gudai-Darri mine in Western Australia. The mining company says the iron ore site is the firm's 'most technologically advanced mine'.

As well as autonomous trains and drills, a full digital replica of the processing plant enables teams to monitor data from the plant, which can also produce a true 3D environment for training, monitored remotely from the operations centre 1,500km away in Perth. More information can be found at <https://www.iom3.org/resource/rio-tinto-open-technologically-advanced-mine-in-western-australia.html>.

Critical Minerals Intelligence Centre

The UK's first-ever centre to collect and analyse information on the supply of critical minerals, which are vital to the UK's economic success and national security, was officially launched, Industry Minister Lee Rowley announced on Monday 4 July 2022.

Based in Nottingham, the Critical Minerals Intelligence Centre (CMIC) will improve the resilience of the UK's critical mineral supply chain by providing policymakers with up-to-date data and analysis on supply, demand, and market dynamics. More information is available at <https://www.gov.uk/government/news/uks-first-critical-minerals-intelligence-centre-to-help-build-a-more-resilient-economy>.

See also the article on the Critical Minerals Association on page 7.

ICMM

ICMM has a new visual identity, as of 15th June 2022, and changes have been made recently towards delivering an ever-more ambitious strategy on responsible mining, and the new brand is designed to capture that evolution. 20 years ago, ICMM adopted the Toronto Declaration - the process which set out the founding principles of ICMM.



Source: icmm.com.

ICMM is steadfast in leading through collaboration to harness the power of our industry to support the transition to a net-zero economy, to drive social progress, and build a safe, just and sustainable world enabled by responsibly produced minerals and metals. More information can be accessed at <https://www.icmm.com/>.

MIMinE News

Steve Straw

The MIMinE 15th Safety Seminar



Delegates and regional officers Source: MIMinE

Part of the remit of local societies within the Mining Technology Group (MTG) is to provide a conduit for the sharing of experience and disseminating information, particularly regarding health and safety issues within the industry. In order to facilitate these important matters, the Midland Institute of Mining Engineers (MIMinE) finally, following a two year break due to COVID-19, held its 15th Safety Seminar on Friday, 22 April 2022 at the Crown Plaza Hotel, Sheffield, with technical papers of relevance to mining and mineral extraction.



IOM3 Members

Source: MIMinE

The theme of the event was 'Safely Managing the Challenge of Change'. This was an extremely successful event with over 170 delegates registered. The speakers and topics presented included the following:

IOM3	Dr Colin Church	The role of the professional body in promoting responsible mining
Bauer Technologies	Daniel Hatcher	York Potash Mine Project - Woodsmith Mine
Harworth Estates	John Hind	Managing Regeneration Safely
IOM3	Sarah Boad	Membership matters
HSE	Trevor Lowe & Andrew Smith	Diesel engines exhaust emissions - the transition to a cleaner environment
Fides Oak	Eddie McCullough	Major hazard management, a progress update
TSA Ltd	Kevin Sabin	Developing and sustaining competence through collaboration
CSM	Pat Foster	Mining education for the 21st Century
Alan Auld	Alan Auld	Ground freezing on a large scale & its importance in deep mine development

Further information and an overview of the presentations that were given can be found on the MIMinE website (<https://www.themime.org.uk/wp-content/uploads/2017/02/MIME-Safety-Seminar-Programme- WEB-1.pdf>).

The MIMinE 16th Safety Seminar



Source: MIMinE

The MIMinE is holding its 16th Safety Seminar, with technical papers of relevance to mining and mineral extraction on 21 April 2023. This annual event attracts a diverse audience which includes senior personnel, procurement managers, trade unionists, students and apprentices. The event also features company exhibition stands and ample opportunities for delegates to network during break times. Members of the MTG Board will be in attendance and would welcome meeting anyone who wishes information on MTG activities. More details can be found at <https://www.themime.org.uk/wp-content/uploads/2017/02/2023-04-21-SS-Flyer4.pdf>.

Join the MIMinE

IOM3 Members need to specify the MIMinE as your Preferred Local Society: please log on to your account with www.iom3.org.uk For retired or non-mining members, please apply for Life Membership. Download Membership Application from the MIMinE website: <https://www.themime.org.uk/>.

The MIMinE Annual General Meeting will be held at Tankersley Manor, Barnsley S75 3DQ on 7th October 2022. See the website for more details.

Toys for Boys and Girls!

Andy Birtles

Antonov An-225

What about this for an aircraft? This is no more, as it was destroyed in the battle for Antonov Airport in February this year. This is a tribute to the heavy lifting aircraft...



Source: Dylan Agbagni (CC0), CC0, via Wikimedia Commons

The Soviet Union's Antonov An-225 was designed to transport the Buran space shuttle. It was a "one-off" masterpiece of engineering designed and built during the 1980s in the waning days of the USSR. The aircraft, designated the An-225, was the biggest to ever grace the Earth. It was so large that the length of its cargo hold was longer than the Wright brothers' first flight, from take-off to landing. Although the plane, nicknamed 'Mriya' ('Dream') in Ukrainian, was in fine condition, there are very few jobs that call for something so large. Its main use was to transport large transformers and other equipment to remote mining locations.

Originally built as a transport for the Soviet Union's Buran space shuttle, the An-225 was forced to find new purpose as a cargo carrier after the USSR collapsed. When the USSR collapsed, the programme was shut down and the financing was closed as the need for this plane vanished.

One of the first pilots remembers the bewilderment of first taking the behemoth across the world to visit the United States of America. They were invited to an aviation show in Oklahoma and the media reported that the largest aircraft in the world was coming so that attracted a mass of people. The spectators assumed that the largest aircraft in the world was made by the Boeing company. They had to be told it was made by Antonov, and they asked, 'Where is Antonov?' 'It's a company in Kiev'. They then asked 'What is Kiev?' 'Kiev is in Ukraine'. Finally they asked 'What is Ukraine?'. At least, through recent events, most of us are familiar with the location of Ukraine, and its geographical neighbours.



Source: mark steven, CC BY-SA 3.0 GFDL 1.2, via Wikimedia Commons

The plane is effectively an extension of its "little brother", the An-124 'Ruslan', the largest military transport in the world. Although the An-124 Ruslan was already an impressively sized cargo carrier at that time, The team responsible for the development of the AN 225 set about modifying the structure to increase its maximum take-off weight. They added two engines, rows of landing gear, extended the fuselage and redesigned the tail in order to meet the most important requirement, to ensure that the Buran space-shuttle could be carried.



Source: Oleksandr Ratushniak, CC BY-SA 4.0 <<https://creativecommons.org/licenses/by-sa/4.0/>>, via Wikimedia Commons

The USSR's space missions were then run from what is now southern Kazakhstan, at the Baikonur Cosmodrome. The AN-225's mission was to bring the booster rockets from Moscow and ferry the Buran itself to Baikonaur. They calculated that the An-225 programme would be cheaper than building a road across two rivers and through the Urals.

During February, the Russian forces launched an assault on Antonov Airport, some 10 km from Kyiv. Initially the Russian Forces were repelled, but following airstrikes on the airport, the aircraft was initially confirmed to be intact by an Antonov pilot, despite the fighting. However, on 27 February, a press release claimed that the Mriya had been destroyed by a Russian

airstrike. On 4 March, Russian state-owned television channel aired footage showing that the Mriya had been destroyed. Truly the end of an era.

MTG and the future

Colin Comberbach

Considerations by the Chair

Thanks to the considerable efforts and achievements of my predecessor, Christine Blackmore and the leadership team MTG enjoys a strong position as one of the largest and most active technical communities within IOM3. This couldn't be more timely as the subjects of mining and minerals are becoming mainstream news courtesy of the current energy supply risk and energy transition debates.



Source: www.gov.uk

A common theme under discussion is that of responsible mining. I would emphasise that this is not the sole preserve of the major mine operators. All of us, from governments, legislators and regulators through to schools and universities and to customers, end users and members of the general public have some form of responsibility to maintain a balanced perspective about mining. After all, were it not for the demands and needs of people then there would be no mining industry. In the UK this responsibility includes the development of our own mineral resources, which is in a prospective and promising state at present, particularly in critical minerals and essential metals such as lithium, tin, tungsten and gold, which often occur in dormant old mining domains.

At the same time we have to acknowledge that mining is viewed by some as an undesirable activity and that there is still room to improve the performance of mining and reduce its negative impacts.

Nevertheless I feel that collectively, MTG and its leadership team play a significant role to:

- Share knowledge about new and innovated mining technologies that will be central to the drive towards more sustainable and safer mining practices whilst meeting the projected growth in demand for minerals and materials in food supply, agriculture and the built, communication and transportation infrastructures of the future.
- Collaborate within and between IOM3 and its local and international societies and consult with the wider membership and external bodies to bring mining technology to the forefront.
- Create technical news content, networking and professional development opportunities for IOM3 members with mining interests.
- Develop a wider public and political acknowledgement that mining is global, essential and influences, affects and provides the needs of societies across the world.
- Inspire the next generation of entrants into the extractive industries, which can still offer exciting opportunities for education, learning and career development.
- Support individuals on their professional journeys to perhaps become future leaders of IOM3 and the stakeholders it serves.

As a longstanding member myself I know just how important it is to respect the value of IOM3 member affiliations and subscriptions and the external competition for them. To this end the MTG will endeavour to keep you informed and interested through our regular communications and events. For example, we are promoting the Ground Freezing International Symposium in 2023 (see separate entry) and thereafter we aim to revisit our successful 2017 conference on UK current mining developments. We are also helping to develop our Ground Engineering Subgroup, which is seeing a rise in numbers achieving IOM3 professional and technician grades. Meanwhile the MTG maintains a good presence on various mining-related Local Societies affiliated to IOM3, which run their own publications and events. This is an effective way to meet up on a regular basis and attract new members to add to the growing interest in minerals and mining.

The MTG is for you, our current and future members. Your suggestions for hot topics, events or CPD activities in minerals and mining would be welcomed and given due consideration. The MTG also evolves with time so if you have new mining technology ideas you would like to write about or have an appetite to get more involved and help steer the future of mining and minerals in IOM3 and beyond then please get in touch ([linkedin.com/in/coldcomb](https://www.linkedin.com/in/coldcomb)).

Critical Minerals Association

Overview

Background

Nations need robust supply chains to meet the critical mineral (CM) needs of their local economies and industrial strategies. Now, more than ever, the world must secure supply chains and withstand fluctuations in international politics. With the world's rising dependence on China and other nations, there is an urgency to identify new sources of CMs, invest in extraction technologies and increase government support for recycling and circular economy initiatives. The Critical Minerals Association (CMA) will provide a unique platform for companies and individuals to come together and share key insights with national governments to influence and change policy.



Source: Critical Minerals Association

Mission

The CMA unites industry, academia and other actors while lobbying government to address risks in CM supply chains. The CMA enables industry to generate a collective voice when outlining concerns and future recommendations, providing a direct line of communication between industry and government. Additionally, the CMA aims to improve societal perceptions of the sector by showcasing the economic and social benefits of CMs. We will ensure our CMs extraction and processing adhere to internationally recognised standards and best practice.

Goals

Increase the self-sufficiency, security and sustainability of UK supply chains.

Improve societal/ government perception of the CMs sector.

Provide a direct line of communication between industry and government.

Create a unified voice to maximise industry's influence on government.

Ensure our mineral extraction and processing adhere to internationally recognised standards and best practice.

Working Group Activities

The CMA have several initiatives and activities that are current. Key initiatives for these are outlined below:

International CMs - Support international vertical integration of responsible CM supply chains from producers to end-users to mitigate risks of supply disruptions, by supporting the development of alternative supplies.

ESG Standards - Understand domestic Environmental, Social and Corporate Governance (ESG) considerations in the CM value chain. Understand difficulties in ESG compliance. Support development and implementation of track and trace technologies to verify provenance. Expand civil servants' and government officials' understanding of ESG considerations in CM supply chains

Circular Economy - Work with manufacturers to include recycling into product design and increase the recyclability of end-products. Support research into recycling technologies and substitution. Support energy-saving initiatives in production cycles. Understand UK downstream supply needs. Educate civil society on the circular economy

Public Perception of Mining - Communicate the importance of CMs for the environment/ advanced Technologies. Encourage young people to pursue careers in CM industries by raising awareness of opportunities. Re-framing the public perception of CMs & mining

UK Domestic Mining - Understand difficulties facing UK mining. Review and standardise legislation to minimise pressure on UK mining companies. Support development of junior UK domestic CM mines. Support ongoing CM UK mining activity. Support UK CM processing plants. Support research of UK CM production.

For additional information please contact Kirsty Benham, Co-founder kirsty@criticalmineral.org, Jeff Townsend Co-Founder jeff@criticalmineral.org, Olimpia Pilch, Business Development olimpia@criticalmineral.org.

Tribute to Frances Perry

Christine Blackmore

Our friend, Frances

It is hard to know where to start with Frances!



Source: IOM3

I have known Frances Perry for over ten years in her differing roles within IOM3, but especially for her assistance with the MTD. An accomplished information researcher, she has also authored articles in the MTD Newsletter and other IOM3 publications. One of her many key achievements was her editing and collating of the MTD's 150 anniversary booklet we produced as our contribution to the celebration.

For over 25 years, Frances has shown her dedication to the Institute, and she was known by colleagues and Institute members alike for her willingness to help and support. Added to this, she always had a positive "can do" attitude and treated her work rather as a vocation than as "just a job". Her colleagues greatly appreciated her persistence, determination, and tenacity in finding solutions.

People who encountered Frances hold her in very high regard and have a high level of confidence in her abilities to unearth even the most obscure of references in her pursuit of the relevant information emanating from the most innocuous of enquiries.

Frances will be sorely missed by the MTG, so we should like to say a big thank you for all your years of support to us in the Mining Industry. Good luck in your retirement.

PERC News

PERC

Source: percstandard.org.

PERC, the Pan-European Reserves and Resources Reporting Committee, has recently announced the release of translations of the PERC 2021 Standard Definitions into seven different European

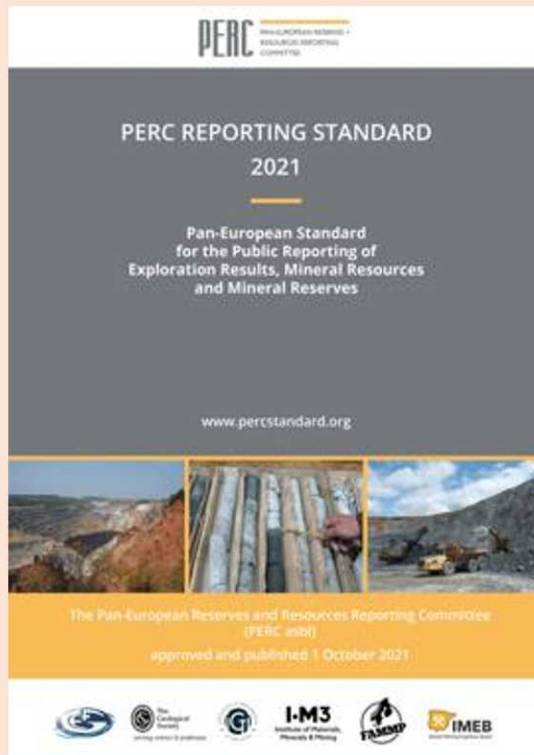
languages, namely: Finnish (FI); French (FR); German (DE); Italian (IT); Portuguese (PT); Spanish (ES) and Swedish (SV). These are now available to download from the PERC website at: <https://percstandard.org/perc-standard/#2021>.

The PERC 2021 Definitions are based on the widely used CRIRSCO Standard Definitions as published in the CRIRSCO International Reporting Template (November 2019 version) and do not differ materially from them.

If you are interested in participating in discussions about Minerals Reporting in Europe and the PERC Reporting Standard, please join PERC's LinkedIn discussion group:

<https://www.linkedin.com/groups/7489875/> or subscribe to the PERC mailing list using the option provided on the PERC website: <https://percstandard.org/>.

Andy Birtles



Source: percstandard.org.

Mining Heritage

Rod Stace

Parys Mountain Copper Mine, Amlwch, Anglesey

On the northern edge of the Isle of Anglesey (local name Ynys Mon) lies the small port of Amlwch. In the late 18th century this port was developed into a bustling commercial harbour, shipping large quantities of copper ore from the local mines, primarily to the lower Swansea Valley in South Wales, for smelting. The mines in question were situated on Parys Mountain, which rises in elevation to circa 150m above sea level and is some 4 km south of the coast.

Although mining boomed in the late 1700's, evidence has subsequently been found that exploitation of the orebody had begun 4000 years ago and had sporadically continued throughout history.

Parys Mountain was claimed to be the largest copper mine in the world at the end of 18th century, employing 1000 miners and producing 4000 tonnes of copper per year. The whole area, the mine and the port, became known as the 'Copper Kingdom', a title now given to the museum at Amlwch harbour. Copper at this time was in great demand as the Royal Navy had recognised the significant technical advantages of lining the hulls of its warships with copper plate, opening up a huge market for the metal. As with so many mining operations, activity on Parys Mountain fell away quickly in the early years of the 19th century as the cessation of war against France led to a reduction in demand for copper and a collapse in its price, as well as in a reaction to foreign competition.

Mining at Parys Mountain had taken place, both as an underground activity but mainly as an open-pit operation, the evidence of which can be clearly seen today. Underground workings are known to extend to 300m below the surface.

Visitors to this site can enjoy free access to the pit and its surroundings and by following way-marked trails, can see evidence of mining related activity from extraction to processing throughout their visit. Information boards are placed around the site.



View from the southern end of the pit. Source: Rod Stace



Car park access and modern shaft headgear Source: Rod Stace

What is most striking is the picturesque landscape of the mine, with its low level of vegetation and the red, yellow, orange, and purple rocks strewn as waste in the pit. This unique vista has attracted film and TV companies to use it as a backdrop for sci-fi feature films.

When I visited recently, I met a local guide, who informed me that some of the older shallow underground workings had been accessed and that visits could be arranged, so long as visitors could demonstrate that they had suitable insurance in place!

The ore body at the mine site is said still to be substantially unexploited at depth and consists primarily of zinc, but also copper and lead with smaller but significant amounts of silver and gold. It has attracted the attention of modern-day mining companies. A shaft was sunk to 300m depth by Anglesey Mining plc in the 1990's adjacent to the old mine site and some underground mining was begun before negatively fluctuating metal prices made this exercise uneconomical. The headgear remains in situ. The Anglesey Mining website gives a report (published in June 2022) on the findings of the drilling programme which is being conducted as part of ongoing site investigation.

Whilst not being directly associated with the mine but offering obvious transport advantages to any new mining scheme, Amlwch is linked by a 29km disused railway to the main Holyhead - Bangor line at Gaerwen. This line was closed to passengers in the Beeching cuts of the early 1960's but freight traffic was retained until 1993. The track is still in place and the potential for re-opening is being studied by local and national authorities.

If you are in the district don't miss the opportunity to visit the mine and the heritage centre at Amlwch harbour. They are both well worth the effort. Lots of information can be found on the web and in local tourism literature.



View from the northern end of the pit. Source: Rod Stace

References

www.angleseymining.co.uk/

copperkingdom.co.uk/mynydd-parys-mountain/

Anglesey: Past and Present - Wendy Hughes (Gwasg Carreg Gwalch) 1999

WIMM

Wyn Griffith

Local Society Overview – Western Institute of Mining and Minerals

The North Staffordshire Institute of Mining Engineers formed in 1872 along with several other associations and societies at that time were formed to advance the art, science and engineering in their respective fields of expertise.

Following the paths and mergers with other Mining Institutes over the next century and a half, the then North Staffordshire Institute of Mining Engineers has become the Western Institute of Mining and Materials (WIMM), which is an Affiliated Local Society of the Institute of Materials, Minerals and Mining (IOM3).

The Western Institute is based in the Stoke on Trent region of the West Midlands and holds its meetings on the first Monday of the month at 7:00pm from October to April (with the exception of the month of January). The meetings are held in one of the lecture rooms in the William Smith Building at Keele University. Both members of IOM3 and the general public are welcome to attend.

We try to have a diverse set of papers from several speakers covering a broad range of topics encountered in the mining and minerals sector which can also count towards your CPD record.

Over the last two years, along with other organisations, we have resorted to holding our meetings virtually using the ZOOM Video Conferencing platform, but we hope to run a full set of "hybrid" meetings for the forthcoming season with participants being able to attend the meeting in person at Keele or log-in via the internet.

If anyone is interested in joining or contributing to our meetings, please get in touch with our Honorary Secretary at honsec.wimm@gmail.com who will send out the necessary meeting links once we have finalised our calendar for the next paper season.

We have a web page on the IOM3 website (<https://www.iom3.org/group/western-institute-of-mining-and-minerals-westimm.html>) which does present a brief history of the development of the mining institutions, and the development of the IOM3.

This will be updated with our forthcoming meetings in due course.

Our first meeting of the new season is scheduled for Monday 3rd of October 2022. You will be made most welcome if you come along and refreshments will be available after the meeting. This is an excellent opportunity to chat with mining professionals formally and informally.

Climate change – cutting through the claptrap Laurence Morris

Some quotations...

This is above all an emergency and not just any emergency. This is the biggest crisis humanity has ever faced. This is not something you can like on Facebook - Greta Thunberg

The Prince of Wales (is to issue) a warning that the world has only "100 months to act" before the damage caused by global warming becomes irreversible - Guardian, March 2009

The world must act now to slow global warming otherwise there will be a climate catastrophe - COP26 President Alok Sharma

Climate change...

Nearly half the British public said that climate change was their top issue, as quoted by the New Statesman from a poll last November, beating even the pandemic. The BBC, most of the media and the government had hyped up global warming in advance of COP26, the international conference on climate change, that took place the following month. At the event the British government widely touted its solution to 'runaway' global warming, the zero-carbon economy which is enthusiastically supported by most institutions and NGOs, though with far more scepticism by the public.

A note on why I have plunged into the shark-infested waters of climate change; it seems to me that 'zero-carbon' policies are wrong-headed and will prove to be costly in capital, operating costs and even lost opportunity costs. Already we hear of electricity bills, even for families reliant on foodbanks, doubling and tripling to over £1,000 per year, and this is just the start. For now, the Ukraine war will take the blame, but this disguises an energy shortage chiefly driven by a rush to shut down domestic fossil fuel generation, refusal to develop nuclear power, and a reliance on Russian gas and imported electricity to overcome the created shortage. Scarcity means price rises, and natural gas spot prices rose to around \$400 per therm as opposed to \$50 a year ago. Naturally the price increase will be passed on to the consumer, both domestic and commercial.



Clean coal power station Source: MTG Member

The government is already claiming that it is market forces as well as the war that are to blame, rather than its energy strategy that was nobly and carefully designed to save the planet. The response from Greens is that we should wear more sweaters and learn to love weekly cold baths. The IPCC and the IEA long ago suggested that natural gas was a 'transitory' or 'bridging' fuel as it has a far lower carbon footprint than coal, and natural gas can be burnt while coal is phased out and renewables (and nuclear) developed. Instead, the UK government ran down domestic natural gas as well as coal, effectively banned fracking, and has dragged its feet on nuclear. To mix metaphors, it has put all its eggs into

the less reliable wind power basket.

I'm only discussing energy policy as an example of how climate change mitigation is going to make life very expensive for most people and limit their basic freedoms. For example, the government intends owning a car to be almost impossible, unless you are rich enough to buy an electric car and afford the charging station. Transport is a major generator of carbon dioxide emissions, and it is an open secret the government wants to reduce domestic travel by both fair and foul means; meat-eating is also another one on the government's bucket-list as animals emit methane and carbon dioxide.

The more outlandish measures only make sense if you believe that global warming is an existential crisis that threatens the extinction of humans and most life on earth. Then nothing - conquest, war, famine and death, economic collapse, personal freedoms, democracy - matter as much as mitigating climate change. As Extinction Rebellion state on their website: "Life on Earth is in crisis. Our climate is changing faster than scientists predicted and the stakes are high. Biodiversity loss.

Crop failure. Social and ecological collapse. Mass extinction. We are running out of time". The danger is that many luminaires in the British establishment are swallowing climate catastrophism; Boris Johnson has said the world is at "one minute to midnight" on global warming, a statement usually associated with nuclear war.



Ice sculpture Source: MTG Member

The trolls will undoubtedly yell at me that I'm a climate-denier. I'm not. Global warming is happening, the evidence is very strong from satellite measurements to ice-cores, and the earth has warmed 1°C since 1850 and is continuing to heat up. IPCC projects 4°C warming by 2100 taking the average of their climate models. While that amount of energy pumped into the atmosphere is bound to have some impact in terms of extreme weather, on warming, on moisture and sea-level rises, it will be unequally distributed and although highly unpleasant for many, it is most unlikely to create a global extinction, nor result in a second Venus. Instead, mishandling of the geopolitical process, the global

economy, and even dictators resurrecting the old phantom of limited nuclear war is a much greater threat, as we are starting to see.

I accept climate change or global warming is happening, and a four-degree heating is going to be grim and even dangerous for some regions of the planet, and we need to mitigate where possible, and adapt where we cannot. But to paraphrase Dad's Army that "we're all doomed" is a wild and dangerous exaggeration, which is already distorting government policy and causing great harm.

The other criticism will be that I'm not a climate scientist and I should shut up and accept the word of my betters. However, I'm a graduate geologist and mining engineer, a chartered engineer, and have spent many years trained to read graphs, numbers, numerical analysis, reports and even some physics and chemistry that control the behaviour of atmospheric gases and fluids, and in my university days the study of paleoclimates. In addition, there is excellent and detailed information put out by the IPCC, the Met Office, the IEA, the World Bank, the IMF, and many universities that can be cross-referenced and checked. In fact, I'm often flabbergasted how many journalists and even government ministers who cannot understand the information given by a graph or a table of numbers, and instead listen to and paraphrase other people instead of their own fact-checking.

I'm hoping in Part 2 to explain some basics of climate change and why the apocalyptic version of climate change is becoming predominant - and even perilous. Part 3 will look at the impact climate change politics is having on the mining industry and on its sustainability policies.

NEIMME Annual Dinner

Andrew Dobrzanski

The North of England Institute of Mining and Mechanical Engineers 170th Anniversary & The Newcastle Mining Department Alumni Society Annual Reunion Dinner is a celebration of both the work of the Institute over the past year, and an opportunity to meet up with old friends and colleagues from the Newcastle & Durham University Mining Department alumni.



Source: NEIMME

This year's dinner will be held at Neville Hall in Newcastle on the 29th of October 2022.

There are a range of sponsorship benefits on offer for those companies who wish to support this event. For further details on these please contact the Hon. Secretary (Dr Andrew Dobrzanski) at: office@mininginstitute.org.uk.

To learn more about this event, or to sign-up for the 170th Anniversary Dinner, more details can be found on the NEIMME website, <https://mininginstitute.org.uk/events/annual-dinner/>.

A brief history of the Mining Institutes

Wyn Griffith



Source: Herbert Rose Barraud, Public domain, via Wikimedia Commons

The history of the Institute of Materials, Minerals and Mining (IOM3) can be traced to 1869 with the formation of Iron and Steel Institute which was organised by the iron trade of the north of England, and is a predecessor of the Institute of Materials. Its object was the discussion of practical and scientific questions connected with the manufacture of iron and steel. The first meeting of the Institute took place in London on 25th February 1869. Beginning in 1874 it annually presented the Bessemer Gold Medal, for some invention or notable paper. Presidents of the Institute included: (left) 1869-71 William Cavendish, 7th Duke of Devonshire (MP) and (right) 1871-73 Sir Henry Bessemer.



Source: Unknown (Mondadori Publishers), Public domain, via Wikimedia Commons

During the 18th century there was a dramatic evolution from the craftsman to the factory and the birth of the professional engineer with a scientific background in what is called the Industrial Revolution. Through the 18th and 19th and 20th centuries, they found a need to band together for the purposes of identification, the safety and wellbeing of others and to further their expertise by regular meetings to discuss great matters of importance to the day. During this period, many professional societies and Institutions were formed throughout the country.

In the coalfields of the United Kingdom, there was a growing need for mining professionals to join to discuss common problems to their mutual benefit. In the Great Northern Coalfield of Northumberland and Durham, the North of England Institute of Mining and Mechanical Engineers was the first to form in 1852 (right). This was followed by others such as the South Yorkshire Viewers' Association in 1857, based in the Yorkshire Coalfield which became the Midland Institute of Mining Engineers. In other coalfields, such the Staffordshire Coalfield; the home of my own Local Society, the Western Institute of Mining and Minerals, it can trace its history back to its formation as the North Staffordshire Institute of Mining Engineers in 1872.



Source: mininginstitute.org.uk

From the very beginning, it was mooted that these provincial organisations would benefit from becoming part of a national federation. This did not happen until 1889, when The Institution of Mining Engineers was formed by the mutual agreement of four Institutes with others joining later.

In 1915 the national Institution gained a Royal Charter with the object of: "The advancement of coal and iron ore mining and allied industries and the promotion of the acquisition of the knowledge necessary for the control and direction of mining operations in relation to stratified deposits." On a parallel path, the Institution of Mining and Metallurgy gained its Royal Charter at the same time but confined its interest and activities to non-stratified deposits. The Royal Charters enabled the Institutions to maintain a definite and high standard of professional competence and conduct on the part of their members. The Institution of Mining Engineers merged with the National Association of Colliery Managers in 1968.

The Association of Electrical Mining Engineers was formed in early 1909, becoming incorporated in 1911. It became the Association of Mining Electrical and Mining Mechanical Engineers (AMEMME) in 1941 and in 1983 this became the Institution of Mining Electrical and Mining Mechanical Engineers (IMEMME), before merging in 1995 to form the Institution of Mining Engineers.

The Institution of Mining and Metallurgy and the Institution of Mining Engineers merged in 1998 to bring all the mining institutes in the United Kingdom together as the Institution of Mining and Metallurgy. The Institute of Materials, Minerals and Mining (IOM3) was formed in 2002 with the merger of the Institution of Mining and Metallurgy with the Institute of Materials. Minor mergers have occurred since 2002, with the Institute of Packaging in 2005 and the Institute of Clay Technology in 2006 being absorbed into the IOM3 and similarly the Institute of Wood Science in 2009 and the Institute of Vitreous Enamellers in 2010.

Powered Roof Supports

Paul Knowles

With the volatility in the global energy markets and the geo-political turmoil going on around the world, I'm happy to report that Powered Roof Supports for Longwall mining are still being designed in the UK at Komatsu Mining Corporation's facility in Bolton, Greater Manchester.

The Komatsu Mining corporation strategy on Powered Roof Supports (PRS) has changed over the last year. We no longer actually build the PRS ourselves and our Worcester facility is going through the controlled process of closure.



Source: Komatsu Mining Corporation

We are still very active in the global Longwall market, supplying Electro-Hydraulic control systems and design services functions out of Bolton as well as AFCs and Shearers for customers around the World.

We have a cooperation agreement in place with China's second largest Energy company, Shandong Energy. They are about to commence operation on a Longwall in which we have designed the PRS, and they have done the manufacture, in one of their own facilities in China.

We are in the process of working through a PRS project for a longstanding Australian customer. We have just completed the prototype phases of this project. This customer will be moving into lower height reserves with the new equipment and aims to be producing Coal by the end of the year.

Moving forward, the Bolton facility will be the build centre for the Electro-Hydraulic control systems and the UK service centre. Also various elements of Komatsu's Armoured Face Conveyor and PRS products will continue to be tested in the rigs we have here.

We are finding that there is global interest in the new PRS strategy, and we are optimistic for a long and prosperous future for our products.

Members that are familiar with our previous site in Wigan may be surprised to hear that this site is now completely covered by new houses



Source: Komatsu Mining Corporation

with virtually no witness of the many years of mining history that went before. The Wigan facility was on the site of an old mine, and we brought the nameplate from that mine with us to the new facility.

More details relating to Komatsu Mining Corporation's wide range of products and activities can be sourced from:

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