Northern Mine Research Society

Newsletter

Society established 1960

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Please note that the deadline for inclusion in the May 2018 Newsletter is, 26th April 2018.

From Your President

The first newsletter of another year and thank you to all who have paid their **membership fees** promptly which is a big help for our new membership secretary, Gary Topping. Those who are now paid up will find their membership card and meet list enclosed. Watch out for any other events added in future newsletters. A gentle reminder to those of you who have not paid up this will be your last newsletter! Thank you to Graham Topping for organising and posting out membership cards and newsletters where needed. It is a welcome break for Rex and I.

Our **A.G.M** this year is on Saturday 28th April at Mealbank Hall, Ingleton SD69497394. A word of warning for those coming via the M65 and the A682 – there are now average speed cameras between Higherford and Gisburn, with differing speed limits on different sections of road. This will also apply to members using the road for the Autumn meeting at Gisburn.

As usual book sales will commence at 11.30 (please let me know if you intend to bring some of your own) with **the pre-booked free lunch** at 12.00 noon. In order to arrange catering for this please book your place with me prior to April 18th on **01282 614615** (there is an answer machine should we be out) or email **mansemins@btopenworld.com.** Also in order to save time and photocopying please look at the minutes of our Autumn meeting on our website prior to the meeting. If you are unable to access a computer please let me know on booking and I will make sure a copy with your name on it is available when you arrive at the Hall. The AGM will follow lunch after which Bernard Bond will lead a short surface walk. There is more information about this elsewhere.

The weekend of 19th & 20th May the **Yorkshire Mineral & Fossil Fair** is taking place at Tennants in Leyburn and as last year Northern Mine Research Society will have a stand for our publications. There is a flyer printed elsewhere in our Newsletter. As it is a free event with free parking and plenty to see on site please try and come along and introduce yourself to me. Also if you want to save on postage you could collect orders from me there.

On behalf of NMRS I would like to welcome the following **new members**

Rodney Agutter	- Coventry
Fiona Arscott-Smith	- Leyton Buzzard
Paul Brown	- Earby
Adam Clenton	- Otley
Nicola Cryer	- Swinden
James Fraser	- Edinburgh
John Gander	- Liskeard
James Gillespie	- Alexandria
Nick Hawes	- Scaynes Hill, West Sussex
Jim Macpherson	- Ebchester
Keith Pearson	- Brixham
Martin Rushton	- Rochester
David Scurrah	- Carlisle
James Tuck	- Cramlington
Alan Woodland	- Rossington

Our Facebook page continues to be well received and we now have over 1000 followers eager to read both our news and that of other members and organisations with similar interests. In our last newsletter there were some unfortunate errors in the transfer of part of Ron Callender`s

gold article into actual print. To attempt to rectify this I put some of the corrected part on our Facebook page. Alan J Wylie contacted me to say his great grandfather sailed through Tierra del Fuego in the 1800s and wrote a pamphlet **https://planet.davewylie.uk/personal/robert-hine/** which is very interesting and Alan said I could share it with our members.

Our former newsletter Editor is also actively involved with the **Railway Lea Bailey Light Railway.** If you would like to see a sample of their newsletter please contact me. Obviously they are interested in adding to their membership and this offer may encourage some of you especially if in the area.

Our **website** continues to expand and it is worth checking it for added information. There are added resource pages with more to come. Malcolm is continually updating and adding so please have a look.

Please remember this is **your** newsletter. It is so much more interesting when contributions are from our members. We all have so many diverse interests. Please consider sharing yours with our membership.

Just a reminder that we at NMRS are well aware of the **Data Protection Act (www.gov.uk/data-protection-act)** and how it should be implemented and can confirm that we use any data we receive in approved ways. It is kept for membership purposes only. If a member resigns their entry is erased from our database. Details are never passed to third parties.

Checklist
Do I need to renew my membership?
Have I booked for the AGM?
Can I offer a contribution to our next newsletter?

Barbara Sutcliffe.

LIBRARY NEWS

Thank you to Julian Holmes for a copy of Cyril Noall's book "Levant", for several Yorkshire Geological Proceedings and for British Regional Geology Reports on Scotland. Thank you to David Lewis for A.P. Cartwright's book "The Gold Miners" about South Africa, and for Dartmoor Tinworking Research Group's leaflet "Brimpts Tin Mines". Thank you to Tom Greeves, and the Dartmoor Tinworking Research Group, for a copy of their 2016 Conference papers on "The Tinworking Landscape of Dartmoor in a European Context".

Issue 96 of "Archive" has been added to the library. It is mostly about coal mining. There are several pages of photographs of Quaker House Colliery (Lancashire), taken by Steve Grudgings in 1989 and an article on Parc Level (South Wales) by Paul Jackson which concentrates on the Ruston diesel locomotives used. There is also an article about Porthoustock stone quarry.

Sallie Bassham (Honorary Librarian)

The Ingleton Coal Mines walk

Following the A.G.M. Bernard Bond will lead a short surface walk around the following sites, please bring with you your "hard hat". First we will visit Bernard's garage on Beech Terrace, having set up a small local mining display, Beech Terrace was known as Brick Row. Built in 1874 and was miner's cottages built during the opening of the Wilson Wood Colliery. Being a short walking distance and after this visit we will return to the A65 and visit Brian Hucks Vehicle store and scrap yard the site of the New Ingleton Colliery, it's closure 1940. A full report will be included in the May Newsletter.

Bernard Bond

British Mining needs your help

Hitherto NMRS has not experienced problems in attracting articles for its journal, British Mining. These can be either papers of up to 50 pages or so in length or more detailed monographs of 70 – 250 pages. Subjects can be on any form of mining and can include associated topics such as mining geology, smelting, ore dressing and quarrying. Unfortunately some of our most prolific authors have passed away recently and unless new contributors step forward this essential part of our activities will decline.

The existing literature on mining subjects is very extensive and at first sight it appears that most of the accessible source material in the record offices has been written up. This may be so but there is always new material appearing, many of our monographs deal with wide overviews of mining areas and for reasons of brevity have had to leave out detailed descriptions of individual mines. Furthermore, there is always scope for new topics, such as guides to surface features, which may attract new members to the Society.

Please contact me if you think you might have a contribution and wish to discuss it or submit it for publication.
rsmith6@btinternet.com

Editor. Richard Smith.

Open Day and Working Party, Saturday 13th January 2018

The first Open Day of 2018 dawned with great anticipation. The Friends opened the gates to regular volunteers Keith, Alan, Nigel, John, Paul and Chris. Having downed tools in December 2017, everyone was keen to continued excavating the coal tub, or corve and the intriguing remains at the rear of the site.

For this discovery we can let the images speak for themselves, as we follow the day's dig...

Read more of this post The Friends of Hemingfield Colliery Thursday 18th January, 2018 at 7:05 pm Categories: Archaeology, General, Volunteers, Working party **https://wp.me/p4KB4S-3SH**

The Friends of Hemingfield Colliery.

Germans mined in Lakes for vital war mineral until eve of First World War.

WHILE Barrow and other yards were engaged in a race with the Germans to build the biggest and best warships, the British government was missing a trick over the value of a rare Lakeland mineral.

German private investors, probably a well-funded front for the German military authorities were searching the world - including the fells near Penrith - for Wolfram. The ore is better known today are tunsten - a wonder material which improved the toughness of armour plating for battleships of the First World War. It also raised the effectiveness of the shells they fired and the tools which made them.

Its value to the war effort was explained by Warren Allison in a talk to a conference held in Caldbeck by the Cumbria Industrial History Society. Mr Allison is a mine explorer and researcher who is chairman of the Cumbria Amenity Trust Mining History Society. He said: "Caldbeck fell was Britain's only source outside Devon and Cornwall of Wolfram ore." Carrock is unique to Britain for the range of different minerals its yields - up to 30 - and saw extensive prospecting for veins worthy of commercial exploitation. He said: "Carrock was probably originally a lead mine." The wolfram found in the area was a black mineral found dispersed in other material and at a purity of only 1.5 per cent He said: "It was dotted about all over the place. It is not found in big lumps." Victorian miners fund the tungsten veins at Carrock but had no use for it.

By 1900 the Carrock Mines Limited took over a lease on the mines and extracted the tungsten ore for use in early light bulb filaments. By the end of March in 1905 two Germans were ready to take over the site as the Cumbria Mining Company and came up with the money for a new crushing mill as employment expanded to 38 miners and 20 surface workers. Wolfram was £75 a ton but soon shot up to £140 as it became more widely understood that small amounts of tungsten had a dramatic hardening effect in steel - making it ideal for use in the thick armour plate needed for warships. He said: "The Germans were mining tungsten ore all over the world. “Our government hadn't even realised the benefits of tungsten." As war approached it is difficult to work out the politics involved over Germans mining a vital military resource on British soil. He said: "The equipment they were using was the most modern available." What is known is that the Germans had gone by 1913 and the British mining engineer Anthony Wilson took over for the Carrock Syndicate.

In October 1914, a few months into the war, a new contract was signed with mineral royalty owners Dalemain Estates and the site was rebuilt. There was even £5,000 in government cash to help refurbish the mine equipment. A mill driven by Pelton wheels provided the mine with electricity. Just the foundations are left on the site today.

By May 1915 the mine was in production but like all Cumbrian mines it suffered from a shortage of labour as men were called away for the armed services. Mining costs - for explosives and for timber to support mine workings - rose greatly during the war. He said: "Even though the mine was being worked for the war effort it was still running at a loss." Much cheaper Wolfram was available from Australia and Burma - so by 1918 employment at the Caldbeck mine was down to 25. It has been suggested that some women worked on surface jobs at the mine during the war but no documentary evidence has emerged so far. He said: "We can't say for definite."

During the First World War some 14,000 tons of Wolfram ore was mined at Carrock – producing around 200 tons of tungsten. By 1918 the United Kingdom was producing around 20,000 tonnes of hardened steel – needing 3,000 tonnes of tungsten. A second mine was opened at Castle-an-Dinas in Cornwall, with the rest being imported. Demand for Wolfram and the tungsten it produced fell dramatically after the war and mining ended. There was a revival of interest in 1942 when the fall of Burma to the Japanese cut

Carrock Foundations today.

supplies of Wolfram to Britain. Canadian, Spanish and Italian prisoner of war workers made a start on reopening the mine but the activity was short lived. Modern machinery came to the site in 1971 but it closed again the following year.

By October 1981 the last attempt as mining ended, 35 jobs were lost and by the end of the 1980s the site was cleared.

The North West Evening Mail. Oct 2017.

Spanish Government act to keep coal power stations running

Last week, the Spanish government announced it would seek a veto vote on the closure of coal power plants to ensure energy security for the country. This comes after the announcement that two of Endesa’s coal power plants in Spain would close down. Following this decision, the Ministry of Energy, Tourism and Digital Agenda said it would form a regulatory instrument that would allow the government to intervene in a company’s decision to close a large combustion plant. The proposed instrument was subject to a public consultation procedure which concluded on 15th September and is now awaiting feedback from the national Expert Committee on Energy Transition.

The reason given by government on why such a body would be needed, was to preserve the country’s security of supply. Spain’s decision to maintain its coal industry comes as the Trump administration in the US has backed its own coal power stations, by introducing new regulations over power pricing. The proposed legislation will reward electricity producers that can maintain 90 days’ worth of supplies to ensure there are continuous provisions.

The Energy Advocate. Dec 2017

Robotic underwater miners can go where humans can't

The scene around the flooded Whitehill Yeo pit in Devon, UK, resembles a lunar landscape. Until it was abandoned just a few years ago, an endless stream of diesel trucks carried china clay out of the mine seven days a week. But don't be fooled by the silence: this is very much an active site. It's just that all the excavation is happening deep beneath the placid waters. This is a test bed, the first, for a new type of mining by underwater robots.

Damen Dredging Equipment.

They are part of a European Union-funded project called ¡VAMOS! for Viable Alternative Mine Operating System. The goal is to extract mineral resources from abandoned, flooded mine sites previously considered too dangerous or costly to access. If the demonstration here at Whitehill Yeo works, these robots will go global, producing raw materials without digging new mines, and minus the environmental or noise problems that plague traditional mining. Any time a mine is dug below the water table, it floods unless water is constantly pumped out. But mines have to be deep: many metallic ores are the result of volcanic action, and the deeper you go, the higher the ore quality.

Geothermal depths Eventually, even mines with resources still untapped are abandoned because it becomes too costly to keep pumping out water, too unstable to keep miners safe, and too hot to keep them comfortable at geothermal depths. But what if you could let a mine flood and keep working it anyway? Then, instead of fighting you, the water would turn into an ally: the liquid helps lift and transport rocks, cools motors and lubricates cutting equipment.

That means drilling and blasting, would become unnecessary. So would cooling at geothermal depths. And because separation of ore and rock is done on site, fewer trucks are needed to transport it for processing. The robot runs on swamp tracks on the floor of the lake, connected by an umbilicus to a small barge on the water's surface. It crushes the minerals it finds and sends them as a slurry back up to the barge; after the water is removed from the slurry, it is returned to the flooded pit.

This approach even removes the toxic wastewater associated with mining. "Limiting the movement of wastewater seems an appealing component of this new technique," says Gillian Galford at the University of Vermont. The road to Whitehill Yeo as been rocky; one of the biggest problems the team had to overcome was how the robot would navigate and locate itself in the turbid, nearly opaque mining water. A new location system developed by the team's Portuguese collaborators can pinpoint the mining vehicle's position.

The trial at Whitehill Yeo is due to be completed at the end of October when a detailed environmental impact assessment will be published. "So far, we haven't observed any environmental effects beyond the immediate working area, and nearby water bodies do not seem to be affected," says Ian Stewart an independent environmental consultant with Fugro GB Marine Limited. "From an environmental perspective, it makes sense to reopen an existing mine rather than excavate a new pit," says Stewart, but warns it may not be suitable for all mines. In its second trial, planned for June 2018, the mining robot will face the granite bedrock of the Smreka iron open-pit in Bosnia and Herzegovina.

Edine Bakker of ¡VAMOS! told New Scientist that she hopes the work will lead to a world where mining operations are more sustainable as robots will work unseen, unheard and with minimal environmental disturbance.

The New Scientist. Oct 2017.

Rio Tinto's driverless trucks program shifts gear to make Pilbara mine fully auto

Rio Tinto will expand the driverless truck program at its Pilbara iron ore operations, retrofitting Caterpillar trucks for the first time for automated operations. Nineteen Caterpillar haul trucks at the Marandoo mine will be retrofitted with the so-called Autonomous Haulage System technology starting mid-2018 for completion by the end of 2019. And another 29 Komatsu haul trucks will be retrofitted starting next year at the mining giant's Brockman 4 operation. The program is scheduled for completion by mid-2019, allowing the mine to run entirely in driverless mode. Westrac CAT will play an ongoing role in managing and supporting the AHS system. About 20 per cent of Rio's existing fleet of almost 400 haul trucks in the Pilbara is AHS-enabled.

Following the completion of the projects, Rio Tinto will have more than 130 autonomous trucks, representing about 30 per cent of its fleet. The projects are expected to make a significant contribution toward Rio Tinto's $5 billion productivity programme.

Rio Tinto Iron Ore chief executive Chris Salisbury said the company was excited to be starting a new chapter in its automation journey with Caterpillar. "And we are proud to be extending our successful partnership with Komatsu on this world-first retrofitting initiative," he said. "Rapid advances in technology are continuing to revolutionise the way large-scale mining is undertaken

across the globe. “The expansion of our autonomous fleet via retrofitting helps to improve safety, unlocks significant productivity gains, and continues to cement Rio Tinto as an industry leader in automation and innovation.lbara is AHS-enabled. “We are studying future additions to our autonomous fleet in the Pilbara, based on value, to help deliver our share of $5 billion of additional free cash flow for the company by 2021.

“Rio Tinto is committed to working closely with our workforce as we transition to AHS including providing opportunities for new roles, redeployment, retraining and upskilling.” The company said the retrofit program would assist its iron ore business deliver an additional $500 million of free cashflow annually from 2021.

Last year, on average, each of Rio’s autonomous haul trucks operated an additional 1000 hours and at 15 per cent lower load and haul unit cost than conventional haul trucks. From a safety perspective, automation has been shown to reduce the number of people exposed to potential hazards as **well as re**duce the number of critical risk scenarios.

The West Australian News. Dec 2017

Belstead chosen for new quarry to help with sand and gravel demand

Residents in Belstead are being asked their views on proposals which could see a new quarry opened up to provide much-needed material for the construction industry. Suffolk County Council has launched a six-week consultation on the idea, along with plans to extend the life of nine other quarries.

Picture Archant Library.

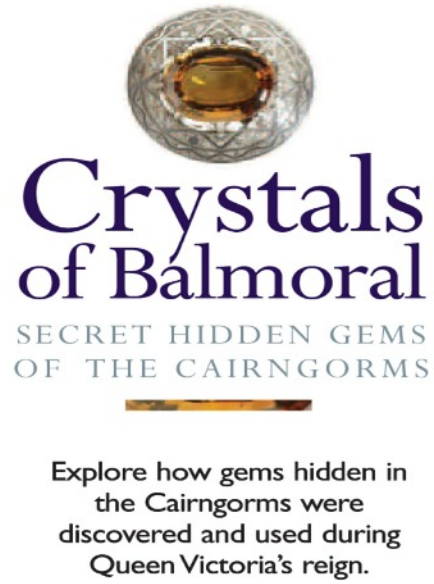
Sites in Suffolk have been identified for extra sand and gravel extraction - including the possibility of a new quarry at Belstead. The council has also decided to allocate Sizewell A as a possible site for the treatment and temporary storage of radioactive material. The new minerals and waste local plan should be sufficient to supply enough sand and gravel until the end of 2036 based largely on the average of sales over the previous 10 years of 1.12 million tonnes per year.

Extensions of quarries with planning permission would take place at Barham, Barnham, Cavenham, Layham, Tattingstone, Wangford, Wetherden, Wherstead and Worlington. Belstead is the only new quarry site proposed. Officials said once the plan has been adopted by the county council as policy quarrying companies will still need to submit a planning application to the county council to extract materials. Companies will also pay landowners to dig up the materials on their fields – before selling it to construction companies. This work is likely to create additional employment in the area.

Matthew Hicks, cabinet member for environment and public protection, said: “All sites, other than Belstead, are extensions to existing sites with planning permission. Belstead has been proposed as it meets site selection criteria. “I invite people to take part in the consultation and have their say online via the county council website or by email, over the phone or by letter. Drop-in sessions are also taking place and further details can be found on the website.”Sizewell A currently sends waste to Bradwell Nuclear Power Station in Essex for treatment and temporary storage. However, it could in future be used for material removed as part of decommissioning from Sizewell and other decommissioning stations. The county council said while there are no current proposals to share the facilities in Sizewell, it is considered sensible to have policies in place if such a proposal is put forward in future.

Ipswitch Star. Oct 2017.

I am working with Gary Marsden, Visitor Enterprise Manager for Balmoral Estate, to put on an exhibition of mineral specimens, jewellery and artefacts, from the collection at Balmoral Castle. The Castle, and exhibition, will be open to visitors from 30th March to the end of July 2018.



The exhibition, in the Ballroom at the Castle, will offer a unique opportunity to see the large smoky quartz crystal found by James Grant in 1851, and presented to Queen Victoria, together with a selection of other fine specimens, some rough pieces of fabulous gem quality ‘cairngorm’, and three of the largest beryl crystals ever found in the Cairngorms.

Another notable item of interest is the elaborate Atholl Inkstand, designed by Prince Albert as a gift for the Queen at Christmas in 1845. Please visit:
www.royalcollection.org.uk/collection/themes/exhibitions/victoria-albert-art-love/the-queens-gallery-buckingham-palace/the-atholl-inkstand

If you are in the area, don’t miss this one-off chance to see these historical treasures.

For reasons of copyright, it is unfortunately not possible to reproduce sample images here, but you can see some of the specimens in my book Crystal Mountains – Minerals of the Cairngorms, published in 2014 (see pages 53, 59, 60, 64, 67, 71 and 72).

Roy Starkey.

West Cumbria Mining successfully completes initial underground investigations – Sandwith Anhydrite Mine drift inspection works

West Cumbria Mining (WCM) has successfully completed, working together with its specialist contractor Hargreaves, the initial re-entry and inspection of the abandoned Sandwith Anhydrite Mine drift tunnels.

This is another key milestone for WCM in the development of its plans to construct a new 21st century underground metallurgical coal mine, located off the coast near Whitehaven and to be called Woodhouse Colliery, which would supply the UK and European steel making market.

Over the last six weeks the mining team has successfully gained entry into the tunnels by removing the concrete walls and backfilled stoppings at the entrances to both tunnels, and then carried out detailed inspections of the condition of the upper sections. The conditions within the tunnels was as anticipated by our engineers, with clear signs of deterioration and failure of the tunnel linings from 135m in the south drift and 230m in the north drift.

Commenting, Mark Kirkbride, CEO of WCM said 'I'm very pleased that we have safely and successfully inspected the upper sections of both tunnels; the conditions further down the drifts have, as we expected, deteriorated since they were abandoned more than 30 years ago, and this work has been essential to confirm the extent of the work needed to be undertaken to repair and reinstate these drift tunnels for our planned new mine'.

The team are now securing the drifts with new steel gates and the site remains protected by 24-hour security.

In May 2017 WCM submitted its planning application to Cumbria County Council to seek approval to proceed with the development of Woodhouse Colliery, it is currently anticipated that a decision will be reached in early 2018.

WCM will also be hosting its next community update event at Haig Museum on the 6th and 7th December 2017.

Digger opening up the drift entrance.

Pumping out residual water in front of the sealing wall.

An over view of the site

The cleaned out drift entrance.

West Cumbria Mining. Nov 2017.

Update on West Cumbria Mining. Coal Mine plan

Work is ongoing to bring mining back to West Cumbria. West Cumbria Mining wants to extract coking coal off the coast of St Bees, with a processing plant on the former Marchon site at Kells.

It has submitted a planning application to Cumbria County Council and it is hoped a decision will be forthcoming next spring. If the application is successful, work would start in winter and be completed by autumn 2020. Full mine production would begin in 2023. There were some signs of deterioration, which the company said was expected and work was carried out to secure them. The offshore exploration programme, which began in June by St Bees Head, has been successfully completed. Five boreholes were drilled and coal samples recovered have been sent for analysis.

A artists impression of the new 165 million West Cumbria Coal Mine.

More than 1,600 people expressed an interest in working at the mine. West Cumbria Mining said it was working with local training providers to help make sure people in the area have the right skills. It has committed to employ 80 per cent of its workforce from within 20 miles of the mine and offer up to 50 apprenticeships. Until the planning application has been determined, people will not find out if they have moved onto the next stage of the recruitment process.

The firm's annual spend would be around £100m, with most of this flowing back into the local economy, said head of communications Helen Davies. There will also be a community fund of at least £500,000 each year to support local projects.

Mrs Davies said: "We will run apprenticeship programmes which are designed to deliver the high standard of learning needed to gain a recognised practical qualification. "Our approach aims to provide opportunities for those who are keen to take on new challenges in the modern world of mining."

News & Star newspaper. Dec 2017.

UK Coal production expected to double by 2025

Coal Power generation is to double in the early 2020s, due to the carbon price freeze announced in last week's Autumn Budget, according to analysis by Aurora Energy Research. Chancellor Philip Hammond announced during the Autumn Budget that he intended to keep the carbon price at current levels, close to £23 per tonne.

The current European carbon price paid by generators is set by the EU Emission Trading System (ETS), which Aurora expects to rise to £11 per tonne by the middle of the next decade, and a top up levy called the Carbon Price Support (CPS). Analysis from Aurora suggests that this price freeze will see annual coal output double from 17 TWh in 2017 to an average of 32 TWh in the years between 2021 and 2025. Similarly, coal's share of total energy generated will also double from 5% to 10% during this timeframe.

According to the report, "Under Aurora's central fuel price forecasts, and a flat overall carbon price, it would be economic to ramp up coal generation in the early 2020s before the planned closure in 2025."The analysis also suggests that flows across the inter-connectors between Britain and Europe will decrease by up to 15% between now and 2025, due to the falling price difference between the two.

The Energy Advocate. Nov 2017.

Undermining the Miners – by Steven Daniels

A version of this article was recently presented at the NMRS Autumn Conference, held on 21st October 2017 at Gisburn Festival Hall.

To many of the members of the NMRS, the fate of the coal industry and the union that represented it is well known. An industry whose post-war peak came in 1963 by producing 251,500 million tonnes of coal ended in December 2015 when Kellingley, the final industrial deep coalmine left in the country, closed down. The National Union of Mineworkers (NUM), whose membership peaked in 1948 with some 716,500 members, barely has 100 active members today, and finds itself very much in the late winter of its life as an active trade union. The National Grid recently announced the first 24 hour period of electricity generation without coal since the Victorian era, a trend that is surely set to continue. Recent figures released from the Coal Authority reveal that there are only 54 men left in the UK still working in underground coal mining, at five private, small-scale pits.

Factors such as the changing economics of energy supply (cheap imported coal, cheaper gas), and the increasing importance of sustainability and the green agenda in production (renewable energy) can help explain the decline of the coal industry. But they do not explain the decline of the union that represented it. How is it that the NUM, at one point unquestionably the most powerful trade union in the country, suffered such a rapid and terminal decline? The NUM reached the peak of its power in 1974, with defeat and removal of the Heath government following strike action. Such was the power and influence of the NUM, it was even able to secure that rarest of things – a U-Turn by Margaret Thatcher – in 1981. However, even the most ardent supporter of the NUM would be hard pressed to deny that defeat in the 1984-5 strike was a major body blow, and represented the beginning of the end for the union.

The union was now down, but far from out. Not with the industry still producing thousands of tonnes of coal per year, and supporting thousands of jobs and families. The NUM was still a vitally important component of pit life. Yet, to say that Thatcher believed the NUM was now a non-issue, a crushed entity incapable of mounting any further opposition, is a false one. Archival files reveal that even after the strike, Thatcher feared another conflict with miners, and believed the NUM was still a force to be reckoned with.

I believe that after the strike, the Thatcher government continued throughout the 1980s to deliberately weaken the NUM as a warning to the rest of the trade union movement – fall into line, accept the new order of things, or be crushed. In particular, I believe that the role of the Union of Democratic Mineworkers (UDM) in undermining the NUM is far larger than previously believed. I plan to use newly released archival material to show this.

To those active in the industry or the union at the time, this must seem like an obvious statement, particular given that feelings towards the UDM still run high in many former mining areas. However, the major problem facing academia is that such statements have no official government sources backing them up. With the majority of material from the 1984-1990 period being publicly released for the first time, now is the ideal time to revisit this period. Recent revelations have shown that such material can have an explosive impact, such as files showing that Scargill was correct in his pre-strike claim the government planned to close 70 pits.

The UDM was unquestionably a major player in the post-strike coal industry, at their peak controlling 26 collieries and representing between a fifth and a third of the total workforce. Newly released files provide fascinating insights into how the National Coal Board (NCB) and Thatcher government used the UDM to play the two unions off against each other, in classic divide and conquer fashion. Using such files, I discovered that the UDM had three secret meetings with Margaret Thatcher between 1986-89; two with John Major between 1992-4; and regular meetings with various government ministers. Every time, it was made clear to the UDM that the government was willing to provide training, support and guidance to the UDM, in return for their continued co-operation. In particular, documents from 1989 reveal that the UDM leadership was even willing to co-operate on privatisation, something which Roy Lynk et al privately favoured, despite public statements to the contrary.

Their reward for co-operation was that UDM pits were kept open longer, despite being uneconomic. Cadley Hill colliery is singled out as one pit which, had it been under NUM control, would have closed earlier. Development of Asfordby pit in Nottinghamshire continued as a reward for the UDM accepting the 6-day week; a similar new pit in Magram, South Wales, was delayed due to NUM refusal to adopt these new working practices. The Board, still flush with victory and feeling the 'right of management to manage' had been reasserted, became bolder in their dealings with the NUM – a proposal to turn Betteshanger into a co-operative in 1989 were swatted away by the Board, with the NUM blamed for closure, claiming that union co-operation could have saved the pit. Indeed, because of the NUM's refusal to accept the reality of a two-union industry, the NCB refused to negotiate wages with the NUM for several years after the strike. Perhaps most egregiously of all, UDM members at Ellistown colliery were paid a higher wage rate than NUM members, for doing exactly the same job – it was only legal action by the NUM in 1986 that put a stop to this.

These are just a handful of examples however, which I believe demonstrate the wider point – the Board, via the Thatcher government, used the UDM to reshape and redefine industrial relations on their terms, with classic divide and conquer tactics used to further weaken and demoralise the NUM. A broken NUM became a trophy for Thatcher to proudly display, a symbol and message that the rest of the trade union movement could not ignore – fall into line, or suffer a similar fate.

Steven Daniels is a PhD candidate at the University of Liverpool, researching the decline of the National Union of Mineworkers, c.1985-1990. He is interested in talking to anyone who may have first-hand experience of this time period, and particularly welcomes those involved in trade union relations (NCB, NUM, or UDM) who would be interested in being interviewed to please get in touch.

Email: s.j.daniels@liverpool.ac.uk
Twitter: @stevandan

Safety grills fitted at Higher Bal

Wire fencing secured to Levant pumping engine house.

Before and after work carried out at Levant mine.

Safety grills fitted at Levant Mine.

National Trust 'desecrated' Poldark death mine to protect health and safety of 'idiot' tourists.

Levant Mine.

The National Trust has been accused of vandalising and desecrating an industrial heritage site in Cornwall which has been used as a filming location for Poldark - and has been granted the same historical importance as Stonehenge and the Great Pyramids at Giza.

The rugged Atlantic coastline of West Cornwall has been shaped by mining, and the substantial remains of this once thriving industry are seen as being of such outstanding value to humanity that they have been granted UNESCO World Heritage status. However, recent health and safety works carried out by the National Trust at Levant and Botallack, near St Just in Penwith, have been slammed by furious industrial heritage enthusiasts, locals and visitors alike - with several cancelling their National Trust membership in protest. They say the work carried out by the Trust is 'vandalism' that has 'violated' and 'desecrated' an historic site - to keep 'idiots' safe.

The works come after a visitor from Wales fell down a mineshaft at nearby Porthnanven and - after a six hour rescue operation - called for more to be done to make the area safer for visitors. The site at Levant is particularly sensitive as it was the scene of one of Cornwall's worst ever mining disasters, when 31 men lost their lives in 1919.

The National Trust's works on the site aim to make the site safer for visitors, who are flocking to the area in ever greater numbers after it 'starred' in the BBC's hit period drama Poldark. The organisation told The Herald it is "committed to allowing people to safely access Cornwall's unique mining landscapes".However, Industrial heritage enthusiast Paul Smith, who was a member of the 'Greasy Gang' group of volunteers who helped restore the beam engine at Levant before its management was taken over by the National Trust, took photographs of some of the works - and describes the work as "clueless vandalism".

Richard Hoare commented: "I think we need to strike a balance between keeping people safe, whilst respecting the landscape, and it's history. "If measures are going to be implemented in the interests of public safety, surely, in a sensitive area such as this - subject to listed building status, and a designated world heritage site - those measures should have a limited visual impact? "I'm thinking more of a simple fence around an open shaft, not the wire fence reminiscent of an assault course.

In response to the criticism, The National Trust told The Herald: "We're committed to allowing people to safely access Cornwall's unique mining landscapes that are in the care of the National Trust. "We use traditional methods of protection where possible, such as Cornish Hedging, or industrial solutions like wire rope or steel. "We take a Risk Assessment based approach to the work we do and try to ensure it's proportionate.
"The safety works at Levant are unfinished and contractors will be returning to complete them shortly.

The Herald. Nov 2017 {Edited}

The coal industry in war-time.

Bevin Boys Wales.

Coal was central to the war effort. It not only kept people warm but powered industry, railways and shipping. After the loss of French and Belgian coalfields to the Allied war effort, Welsh coal was all the more important. This meant that the war saw some form of prosperity return to the south Wales coalfield after the long, hard inter-war years.

Labour shortages

25,000 Welsh workers left mining for the armed forces and other jobs between 1938 and 1941. The coal industry moved from having tens of thousands of unwanted men to a serious labour shortage. To combat the problem mining was made a reserved occupation, exempting its employees from military service, whether they liked it or not. The government then took over control of the coal industry from its owners in 1942. The effect was quickly felt as Welsh miners were moved to coalfields such as Kent and the Forest of Dean where labour shortages were more acute. The labour shortage also led to the introduction of the 'Bevin Boys' in 1943 - named after Ernest Bevin, the Minister of Labour and National Service. One in ten eighteen-year-olds were drafted into mines rather than the forces, something not popular with the draftees who often felt denied their opportunity to fight abroad. Nonetheless, after some initial culture shock, the introduction of middle and working-class Englishmen into the hard world of the south Wales coalfield did help the sense that the war was a shared experience for the whole of Britain.

"One in ten eighteen-year-olds were drafted into mines rather than the forces."

Fears and complaints

The Bevin Boys were not always popular with existing miners who feared that they might take away local jobs once the war was over. The memory of inter-war unemployment was never far away among the miners and there was a constant worry that such conditions would return. Such fears were made worse by the fact that that unemployment never even completely disappeared during the war. Elderly and disabled former miners unable to work in the coal industry anymore were the most vulnerable. Munitions factories had not been built in the valleys because of a lack of space and transport was often too expensive for ex-miners to travel far to work.

Those miners in work had their own complaints. There was a deep sensitivity about the difference between miners' and munitions workers' wages. Although the latter were better paid, munitions workers were also working 60-70 hours a week, compared to the miners' 47 hours. Nonetheless, discovering that he earned less than his daughter or wife angered many a Welsh miner. There were at least overtime opportunities and with whole families in employment the mining communities were earning more than ever.

"The Bevin Boys were not always popular with existing miners."

Strikes

A combination of war weariness, fears for the future and the new bargaining power that the labour shortage created for the miners meant industrial relations in coal were often poor. Trade union leaders were committed to the war effort and involved in its planning at a local and regional level. But at the coalface there were tensions, especially when miners were prosecuted for petty offences such as being late for work without permission. There were 514 stoppages in the south Wales coalfield between September 1939 and October 1944. Most were unofficial like the 1942 and 1943 'pit boys' strikes by young miners who were angry at earning less than older men. In the spring of 1944, 100,000 Welsh miners went on strike over wages. The dispute won the miners a healthy minimum wage but it meant that some saw them as unpatriotic.

The writer and miner Bert Coombes noted that many young miners during the war were bitter about conditions, distrustful of officialdom and often had little respect for older workers and community institutions. He put this down to them growing up in period of idleness and misery. More sympathetically, a miners' agent in the Swansea valleys noted the strikes were as much a revolt against the conditions of life during the war' as they were about wages. He pointed out, "you couldn't get anything, see, you went to the pit, came out of the pit, and that was the end of the bloody day for you". See, you couldn't go down town, or if you went down town, you wouldn't be able to buy anything or spend anything'.

Towards a better future

During the war, Dylan Thomas wrote a wartime Ministry of Information film which showed footage of unemployed Welsh miners and concluded 'it must never happen again". In 1943, The Times said that, "Wales faces the future with hope and fear. Will history repeat itself?" The war showed that coal was still needed and that state control could create a situation where both wages and employment levels improved significantly. The determination to ensure those gains were not lost after the war meant that the miners did not let themselves be manipulated in the name of the war effort in every way the government wanted. Welsh mining communities wanted to win the war of course, but they also wanted to win the peace.

"The war showed that coal was still needed."

BBC Cymru Wales.
{ Dr Martin Johnes University of Wales Swansea.}

West Ardsley oil works

The production of oil was part of an ambitious enterprise which used the latest technologies to produce a wide range of useful products from the iron, clay, coal and cannel mined at West Ardesley. Crude oil was produced from "hub", a shale mined along with the ironstone, which had previously been discarded. Little expense seems to have been spared in purchasing the retorts and distillation equipment from George Bennie & Co.

of Glasgow. The oil works manager, Mr. Petrie, may also have been a Scot's emigree. A wide range of refined products, from lamp oil to paraffin wax were manufactured and the venture was widely publicised in the local press. It seems likely that the collapse in oil prices soon made the works unviable, and the costly equipment was auctioned off in 1873. Full descriptions of the operation were published in a number of publications, including:

The Yorkshire Post and Intelligentsia. {extract included}
The Leeds Times.

Location probably in the vicinity of 53.735989, -1.580002,
Former parish and county Ardsley, West Riding of Yorkshire
Current local authority area City of Leeds
Opened c.1867
Closed c.1873
Number of Retorts 30 (in 1869)
Ownership history Messrs. Firth and Co
West Yorkshire Iron and Coal Company (Limited)
Current status of site Warehouse

References.

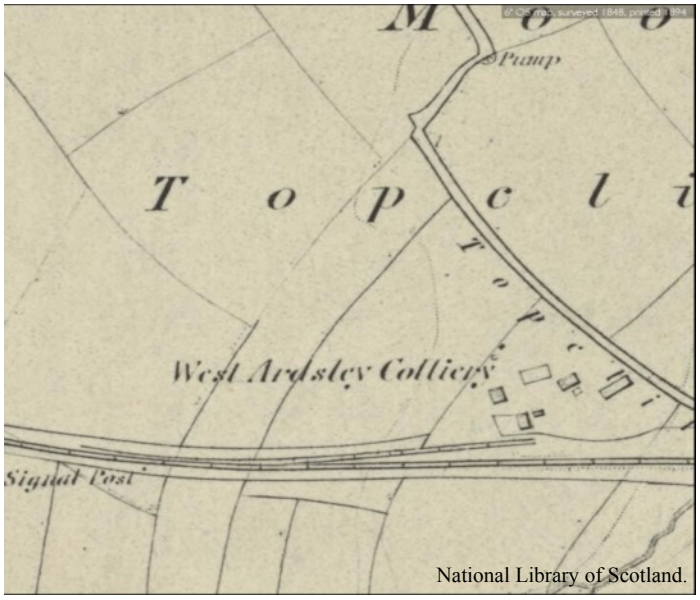
Extracting Oil, Coal from coal shale in the West Riding.—The West Riding Iron and Coal Company, whose extensive collieries and iron works are situated at East Ardsley and at Tingley, between Leeds and Wakefield, have now no fewer than thirty retorts employed in extracting oil from coal shale. The shale found the seam black coal, or top bed, at a distance 65 yards from the surface. The shale is chipped off the coal at the pit top, and is then taken the retorts, which are charged with it every hour. The vital part the shale passes away in vapour, and is caught by condensing pipes, being thus liquified, and so passed into tanks. It is then pumped into stills, where is chemically treated, and the tar extracted from it. After going through other processes rendered fit for use. Two kinds oil are thus made. The lighter is used lamps, and the heavier for greasing machinery. The sediment placed in cloths and pressed by hydraulic power, after which used for making paraffin. ***Paisley Herald and Renfrewshire Advertiser 28th August 1869***

PARAFFIN OIL WORKS – TO BE SOLD by private treaty, the whole of the PLANT of the complete and costly PARAFFIN OIL WORKS, belonging to the West Yorkshire Iron & Coal Co. Ltd., situated at Tingley, near Leeds, consisting of retorts, condensers, stills, agitators, refining apparatus, hydraulic tanks, steam engine &c. by Geo Bennie & Co., of Glasgow, with stock of barrels and other articles necessary for the manufacture of oil from shale. Apply to Mr. Chas. Dawson, Secretary, Wallington-street, Leeds. ***The Leeds Mercury, 15th July 1873***

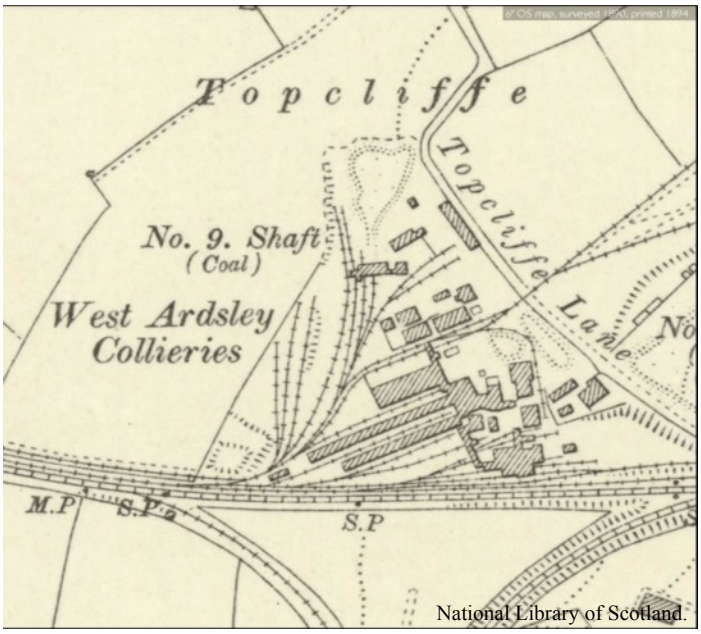
The Yorkshire Post and Intelligentsia. Works report article.

The Paraffin and Shale Oil Works at West Ardsley.

Perhaps in no branch of scientific inquiry, pursued in recent years, has more wonderful discoveries been made than in that which has reference to coal and its associated strata. Under chemical manipulation this invaluable mineral now assumes an infinite variety of surprising and beautiful forms, some of the products being of great commercial value. In the minds of most people coal has few out-door associations beyond those which connect it with smoky manufactories, grim-looking blast furnaces, the motive power on railways, and the lighting of our streets. Science, however, like the prince in the nursery tale, has lifted this Cinderella of our national industries from her humble, but highly useful station, and introduced her to the saloons fashionable life. The delicate perfume which refreshes the languid beauty of the heated ball-room, the waxy lights which shed a soft effulgence over the enchanting scene of her night's triumphs, and even the rich colours of her flowing dress, may be only so many of the marvellous forms



6" OS map, c. 1884 prior to the development of colliery site



6" OS map, c. 1898, probably following clearance of oil works buildings.

Google earth image, c. 2009.

rich colours of her flowing dress, may be only so many of the marvellous forms which it is possible for coal to assume. By its aid the confectioner tempts the youthful appetite for fruity flavours in sweetmeats, and heightens the enjoyment—and swells the doctor's bill —of the juvenile period of our lives.

To revert to the utilitarian aspect of coal, we find it supplying an oil cheaper than gas, and little inferior to it in illuminating power, and yielding in the process of manufacture a waxy matter known as " paraffine scale," in addition to lubricating substance of considerable value. The most familiar objects around pits in the northern coal fields are gigantic heaps of shale and refuse coal, brought from the depths of the mine, and left to take their chance of spontaueous combustion. For years and years past these accumulations were a trouble to the coal-owner, and were regarded as utterly worthless. Now it is discovered that in many cases they possess a commercial value of no insignificant character.

We are glad to find that steps have already been taken in this locality, by an influential and enterprising company, to reap the full benefit of this valuable and important discovery. We refer to the West Yorkshire Iron and Coal Company (Limited), who have established, at their colliery on Tingley Moor—commonly known as West Ardsley—extensive works for distilling coal oil and paraffin from the shale and bastard cannel found in the pit, and hitherto thrown aside as valueless. During a visit to the works, which we had an opportunity of making recently, many highly interesting processes were seen in operation. But, novel and ingenious as these were, there was another feature in connection with the undertaking of the company which was even more worthy of observation. It was the complete utilisation of every product of the mine which was carried out on the spot. Most people have read of the wonderfull adventures a piece of linen after leaving the loom—how, after ministering to the comfort of the well-to-do portion of the community, it may in its adversity fall into low company and come to clothe the shivering form the mendicant; then be cast aside as even unserviceable to him; afterwards be picked out of the dust-bin or the gutter to re-appear, purified from its sordid stains, and recommence its mission of usefulness in the familiar form of paper. Wool, in a similar manner, seems to pass through circle of changes of infinite variety. From broad cloth to rags, from rags to shoddy, from shoddy to broad cloth, and on almost ad infinitum , are processes daily in operation in our midst. This resurrectionary work may not be a pleasant theme for some minds to dwell upon, but of its value and importance there cannot be doubt.

At West Ardsley the products the mine are common coal, cannel coal, bastard cannel, shales, clayband ironstone, and clay. The common coal is made into coke, and used in the blast furnaces of the company for smelting the valuable clayband ore ; the true cannel finds a ready sale amongst gas manufacturers; the bastard cannel and the shales are distilled into spirit, burning oil, paraffin, and lubricating oil, without the expenditure an ounce of coal for firing the retorts, the coke left after distilling the bastard being used for that purpose the clay is made into pressed bricks, which affords another opportunity for utilisation, as the very ashes from the retorts are ground up with the argillaceous material.

Every process is so economically carried out as to make it impossible to put to any substance brought from the mine and say, " This is valueless or wasted." The bastard cannel, or " hub," as it is locally termed, is wrought with the true cannel, and men separate the two at " bank." The "hub" and shale (described as "curly" shales) are conveyed to the retorts, which are situated at a distance of about 20 or 30 yards from the pit mouth. The retorts are iron, and are arranged in what are called benches, containing 25 retorts in each bench. Each retort is charged with about half ton " hub," and distillation commences. It is important that this preliminary process should be carried at a low temperature, or the result would be merely gas, with little chance its condensing into oil. Hence it is that the coke left by the distilled " hub" is better adapted for firing the retorts than coal itself, as it gives that degree of low steady heat required. The oil passes in vapour from the retorts into iron pipes, along several lengths of which it makes a sinuous journey, and, being condensed in the passage, is finally collected in a large tank sunk in the earth.

Each retort is charged once in 24 hours, and the yield of crude oil averages 25 gallons the ton of "hub" or shale. We peeped through the trap door of the tank, and saw a thick, brownish-black, greasy-looking fluid, which seemed to have no affinity with the bright amber-coloured oils and waxy paraffin candles of daily use. The skilful and experienced manager of the works, however, clearly established the relationship before the end of the visit The crude oil is pumped from the subterranean reservoir into an elevated tank, from which the stills are supplied for the first distillation of the crude oil. The stills having done their work, the oil is conveyed to the "agitator," where it is put in violent motion, after the manner of a churn, and at this point the process of purification is assisted by the addition of chemicals. From the agitator the fluid passes into a second sunk tank, is thence pumped into elevated tank, and again into stills, to undergo a second distillation.

At this stage the first separation takes place, by the removal of the true paraffin from the oil. The oil again undergoes the ordeal of the agitator, and is chemically treated for final distillation. It now passes into the refining stills, and at the end of the process the substance treated takes a triple form—spirit, burning oil, and lubricating oil. These are conveyed into separate tanks, lined with lead, and are finally barrelled and sent to market. The paraffin, the first substance separated in the course of distillation, is placed in canvas cloths, and subjected to heavy pressure in a hydraulic press. The lubricating oil retained by the mass is squeezed out, and a light amber-coloured substance, something like beeswax, is left. This is "paraffin scale" It is sold to the candle manufacturers, and used by them in making those beautiful waxy-looking candles, which give such a mellow and brilliant light may mention that the crude oil obtained these works is very rich in paraffin.

From the commencement to the close the process of manufacture, the crude oil, reckoning its journeys from tank to still, and from still to tank, makes a round of upwards of a quarter of a mile in length. The arrangements of the works are so perfect that the oil is passed through the whole of the processes by the aid of a single engine. Mention has been made of the spirit resulting from the separation in the refining stills. This spirit is likely to come into extensive use for burning in the ingenious sponge lamp recently patented. The lubricating oil is much used for greasing the wheels of corves, and in other ways where a cheap grease is a desideratum. A certain proportion of tar is yielded by the distillation. This is sold to the makers of patent fuel. Every product of the manufacture is thus turned to profitable account.

The oil works are under the management of Mr A. Petrie, who has had considerable experience in this branch of manufacture. The many surprising industrial processes to be seen in operation at Tingley Pit, that of brick-making is certainly not the least. By the aid of a most ingenious set of mechanical appliances, clay fresh from the pit can turned into bricks almost faster than they can be carried away. Compared with the rapid rate of production here, the old plan is slow and tedious in the extreme. The clay is ground to powder by broad revolving wheels, set in motion by a steam-engine. As it is ground, the pulverised clay runs into an elevator, composed of numberless small buckets, which carries it upwards and deposits it in the hopper of the brick-making machine. This machine is really a most ingenious invention, both on account of the beautiful simplicity of its movements and the precision with which it executes its allotted task. It would be impossible by mere words to convey clear idea of its construction. We shall content ourselves by stating what we saw it do. The pulverised clay runs from the hopper into four moulds, into which four projecting square-headed parts of the machine descend with the force of a steam hammer. Rising slowly, they rush downwards a second time, and these two tremendous blows convert the dry clay into true-shaped, compact, and homogenous bricks. drying is required, and the workmen hurry oil to the kilns with the bricks as fast the machine turns them out. This machine can produce bricks per day.

Within a few yards from it are live kilns, each capable burning bricks at once. Mr G. Anderson has charge the brickworks. connection with the pit are 32 coke ovens, producing about 200 tons of coke per week the average. Two large kilns are now in course of erection, and when in operation are expected to yield about 400 tons additional per week. The whole of the coke produced will be used at the blast furnaces of the company. At this colliery, which is under the management of Mr S. Whitehead, a very efficient coal cutting-machine, worked by compressed air, is employed, and has been in profitable operation for some time past. An excellent "slack," for engine purposes, is produced at this colliery. In Yorkshire the value the oil bearing shales of the coal measures has only been recognised within a comparatively recent period, and the works at West Ardsley are the first to commence the process of distillation on an extensive scale.

The Yorkshire Post and Leeds Intelligentsia, 14th March 1868

The museum of the Scottish Shale oil Industry.

{Submitted by a member}

Sinkholes Explained

The word sinkhole has become a term broadly used term to describe any hole in the ground created by erosional processes and the drainage of water. Ground hazards in the UK are often synonymous with the word sinkhole which can span from just a few feet in diameter to gigantic chasms large enough to swallow whole buildings. They can have devastating consequences as can be seen on the new three-part Sinkhole documentary which began on Monday 20 November on Channel 5 and features extensive commentary from sinkhole expert and Terrafirma CEO and founder, Tom Backhouse.

Cont.

A global phenomenon
I most countries across the globe, notably Florida, they often occur as a result of natural processes but here in the UK their cause is varied, often attributed to the countries long history of mineral extraction, the dissolution of bedrock, such as chalk and gypsum and utilities failure in roads and drains.

Simply, sinkholes can be categorised as:

1. those that are created slowly over time (a cover-subsidence sinkhole)
2. those that appear suddenly (a cover-collapse sinkhole)

Both varieties are formed by the same basic mechanism but as you would expect it's the latter type that create headlines.

However, sinkholes created by wholly natural processes do occur in the UK and are found in what is known as 'karst terrain'; areas of land where soluble bedrock (such as limestone/chalk, brine, gypsum) can be dissolved by water. With "cover-subsidence" sinkholes the bedrock becomes exposed and is gradually worn down over time, with the holes often becoming ponds as the water fills them in. In the UK, this occurs readily in locations such as Cheshire, Droitwitch, Ripon and Kent.

With a "cover-collapse" sinkhole, this same process happens out of sight. Naturally occurring or more commonly, man-made voids underneath he surface are enlarged by water erosion, with a cover of soil or artificial material (Tarmac/foundations) remaining over the top. The voids migrate as groundwater fluctuates seasonally, a heavy rainfall follows a storm event or utilities fail and eventually, as the void expands, the overlying cover can no longer support its own weight and suddenly collapses to reveal the cavern underneath.

Hidden Hazards
The ground beneath our feet conceals many different kinds of hidden hazards and although rarely evident to the naked eye they are ever-present and often reveal themselves in the most dramatic and terrifying ways.


Figure 1.

These hazards can vary from landslides to mining collapses and from radon exposure to building subsidence, their invisibility making them all the more frightening as well as being difficult to perceive and therefore proactively manage.

A rich mining legacy
As has already been mentioned, here in the UK many sinkholes occur as a result of its rich industrial mining heritage. But what immediately springs to mind when the word mining is mentioned; is it Sunday nights in with Aiden Turner on 'Poldark' and the extensive tin and copper mining industry that criss-crossed Cornwall? Or more likely, is it the vast underground network of coal mines that span large parts of England and Wales, fresh in the memories of families and local communities alike?

In reality, mineral extraction is one of the UK's greatest industrial legacies, spanning the ages of civilisation nationwide, dating back over 5000 years. As well as coal and tin, over 60 additional minerals have been scraped, quarried and mined from beneath our feet, defining the country we live in today. The results of several millennia of mineral extraction has inevitably left a scar on our landscape, some of which are represented in a city's stunning architecture, such as in Bath, or in dramatic landscapes such as the lead rakes in the Peak District. It has also left hidden hazards beneath our feet which has led to a recent increase in sinkholes,subsidence and collapse affecting property and land, even new build housing estates such as in Bayfield Estate, Newcastle.

As part of the current series of Sinkholes on Mondays at 8pm, Channel 5, Terrafirma visit a recent sinkhole that has collapsed in the West Midlands. On the 13th August 2017, a 3-metre wide and 3.6-metre-deep hole (figure 1) appeared beneath a property in Wednesbury. The homeowner's driveway, car and main building all sustained damage and an evacuation of the property was required. In this case, the sinkhole is believed to be the result of former coal mining activity, although investigation is suspected to be ongoing for up to 6 months. As figure 2 shows, there has been extensive surface, shallow and deep underground mining recorded in the region – leaving behind a significant industrial legacy, now all but lost beneath the quiet suburban streets of the West Midlands.

This sinkhole in Wednesbury is one of several dozen that have occurred across the UK and have been attributed to historical mineral extraction, within the last 12 months alone. Now more than ever, it is essential both professionals and the public understand the ground so any remaining risks can be effectively identified, managed and resolved.

Using data to identify risk
The potential local and community damage caused by ground collapse, subsidence and/or sinkholes is substantial and any hidden hazard in the vicinity of property or land can cause significant disruption, structural damage and impact upon insurance and value.

Although it is not (yet) possible to accurately predict when sinkholes will occur, with advances in data and risk modelling, it is now very possible to proactively identify where sinkholes will occur, allowing those affected to proactively identify and mitigate the impact of ground collapse and other hazards.

Continuing on Monday 27th November and spanning three weeks, Sinkholes from Boomerang Productions and Channel 5, explores the devastating impact these geological hazards can have on livelihoods across the UK and the globe.

Cont,

Terrafirma and our CEO, Tom Backhouse, feature throughout the series providing expertise and intelligence to the real risks faced by homeowners, the public and businesses who have been and continue to be affected by these hidden hazards. The three-part

Figure 2.

documentary investigates mining and natural sinkholes across England, Wales and Scotland, looking at the science behind their occurrence and the human impact left in their wake.

Terrafirma Mine Searches. Nov 2017

Restoration work at Rusha surface Mine progressing well

Restoration work at a former West Lothian surface mine is moving towards its final stages. Banks Mining has been working on the restoration of its Rusha surface coal mine near Breich since coal production finished in April last year, and has made good progress in replacing the overburden material from the storage mound into the excavated mining voids, as well as in replacing the sub-soil and top-soil over large parts of the site.

Work at the Rusha site has now been suspended until next spring, when it is hoped that weather and ground conditions will be suitable for the final soil replacement to be completed. The site will be regularly visited by the Rusha management team over the winter to ensure no issues arise unnoticed, and it is expected that restoration will be complete by the end of next summer.

The company is also looking for further applications to the community benefits fund linked to the Rusha surface mine, from which 17 grants totalling over £49,000 have already been allocated to a variety of community projects in the local area, including Breich Valley Church, the Stoneyburn & Bents Future Vision Group, the West Calder Bowling Club, and the Bee Happy Craft Group. A further £19,264 is still available to support suitable groups and good causes in the Fauldhouse and Breich Valley ward, and the firm is hoping to be able to distribute this money over the next year.

Mark Dowdall, environment and community director at The Banks Group says: "Banks Mining has a proud record of fully restoring every single one of the 111 surface mines that we have worked in the last four decades, and we're pleased with the


Bulldozer carrying out restoration work at a surface mine in Scotland.

progress of restoration work at Rusha over the last year. "The very wet weather over the last few weeks means that we can't now carry out soil handling and replacement work, and so need to wait until drier weather and ground conditions arrive in the spring in order to complete the job. "Our aim is to complete this work by the end of next summer, at which point a five-year aftercare plan will come into effect which will see further landscaping work involving under-drainage, ditching and cultivation, tree and hedge planting carried out to deliver the approved restoration plan.

"The Banks Community Fund for the Rusha site has supported many worthwhile community projects over the last few years, making a big difference to the facilities that are available to local people, and we know there will be other groups and good causes around the area that could also benefit. "We're keen to allocate the remaining monies in the fund within the coming months, and would encourage local community groups to make applications sooner rather than later."

Any issues relating to the Rusha site over the winter period can be reported to site manager Ian Ritchie on 07714 702323.

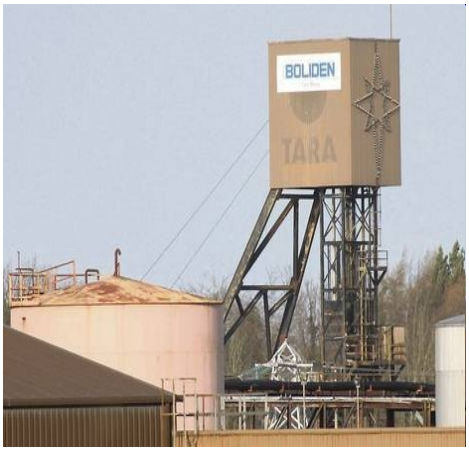
Banks Group Mining. Nov 2017.

Tara Mines bids to extract last of Bula resource and end long-running saga

Boliden Tara Mines - which operates the huge Co Meath mine - is seeking permission to finally extract ore that was once the subject of one of Ireland's longest-running corporate legal battles.

The Swedish-owned company has applied to Meath County Council for permission to resume underground mining at the Nevinstown ore body, the closest section of the zinc resource to the surface at the Meath complex.

The Nevinstown resource became the subject of a high-profile legal battle when its then owner, Bula Resources, went into liquidation in 1984. The subsequent battle for control of the resource played out over the following 30 years.



Tara Mines in Co Meath.

Tara Mines is Europe's largest operating zinc and lead mine, with more than 80 million tonnes of ore mined there since it opened in 1977. It was reported earlier this year that the company is planning a €44m investment at the mine that could extend its life by at least a decade.

Two million tonnes of ore remain in the Nevinstown ore body and will be mined at an average rate of 230,000 tonnes a year, the company said.

A rich seam of lead and zinc had been discovered near Navan in the early 1970s. Tara Mines was set up and went into production with an underground mine that was controlled by Finnish company Outokumpu. The much smaller adjacent Nevinstown portion of the site was located under land that came under the control of Bula, in which the State received a share. Bula planned an opencast mine but failed to bring its mine to production before going into liquidation. The company began litigation against Tara and the Minister for Energy. The case was in and out of the courts over subsequent decades, with one particular High Court hearing running for a then record 277 days.

In 2002, Tara Mines finally completed the acquisition of the Nevinstown ore body for €35m, following a High Court ruling that cleared the way for the sale. Much of the resource was mined following a previous permission in 2004 but that has since expired. Now, under the current planning application, Boliden is seeking to mine the last of the once Bula-owned resource.Meanwhile, a government economic review of the geoscience sector - which includes the mining industry - found that it was worth €3.3bn to the economy in 2016. Including indirect employment, it found the geoscience sector contributed 25,000 jobs. The report, published last week, found that extraction of lead and zinc is worth more than €300m to the economy and directly employs almost 600 people. The two zinc-lead underground mines in Ireland, Tara and another mine at Lisheen, account for 24pc of European zinc mine output and 7pc of European lead mine output.

Business Irish. Nov 2017.

Rockets fired to remember those who died in the Pretoria Pit disaster, spark a fire alert

Fireworks to commemorate one of the worst mining disasters in UK history sparked panic when police and fire crews were rushed to the scene. The memorial to the Pretoria Pit disaster, where 344 people died, was held at Ditchfield Garden, Westhoughton, on Thursday morning. And when maroon rockets were fired as part of the event the loud bangs and flashes of light made some nearby residents dial 999 to report explosions. Firefighters from Atherton and Leigh station were sent to the scene at around 8am as well as police and an ambulance. But a fire service spokesman confirmed it was classed as a false alarm and crews quickly left.


A pocket watch which stopped at the time of the explosion.

The explosion claimed the lives of 344 men and boys.

The rockets were fired at 7.50am as that was the time that an underground explosion happened at the Hulton Colliery on December 21st, 1910. It killed 344 men and boys and is the third worst mining disaster in British history after the Oaks Colliery Explosion and the Senghenydd Colliery disaster.

The memorial was followed by a service at nearby St Bartholomew's Church.

Manchester Evening News. Dec 2017.

Publications available.

We are very fortunate to have books donated to us and I am hoping to mention a few in each newsletter. All are plus £2 each postage. Payment via cheque to NMRS or via our NMRS publication account,

Lead Mining in the Peak District
2nd edition, p/b1975. Compiled by members of the PDMHS. Previous owner's name on front. £2

The Copper & Lead Mines of Ecton Hill, Staffordshire by John A Robey & Lindsey Porter
1st edition , p/b 1972. £4.00

Lead Mining in the Mid-Pennines, the Mines of Nidderdale, Wharfedale, Airedale, Ribblesdale and Bowland by Arthur Raistrick. 1st edition,1973 D. Bradford Barton Ltd p/b. £7.00

Pennine Lead-Miner, Eric Richardson of Nenthead by W.R. Mitchell. 1st edition, 1979 Dalesman Books p/b. £5.00

Mining in the Lake Counties by W.T. Shaw.
!st edition 1970 Dalesman Publishing p/b. Previous owner's name inside and signed by the author 1973. £4.00

The Lakes & Cumbria Mines Guide by Ian Tyler
1st edition 2006 Blue Rock Publications p/b. Signed to the previous owner by the author in 2007 £12

We have copies of all the above in our NMRS library. If interested please contact

Barbara on e-mail: mansemins@btopenworld.com.

New Society in North East Yorkshire 'n' Cleveland

After giving a short flag waving talk about The Cleveland Mining Heritage Society at the NMRS autumn meeting, It was suggested that I might put some words and photos together for the newsletter for the benefit of members who couldn't make it to the meeting.

About seven years ago group of individuals who first met on an organised walk lead by the local industrial archaeologist Simon Chapman got together to carry out a dig to uncover and record some hauling engine house remains in Upleatham Woods, this was the inspiration for the founding of The Cleveland Mining Heritage Society. The society now has a membership of around 40 with a dozen or so regular working members attending meetings. They currently hold two weekly meets; on Saturdays the society meet at one of their sites in the area for work, and on Tuesdays they are to be found working at Skelton Park Pit. Occasionally a Saturday away play day is taken to visit other industrial sites or mines out of the area.

The Society's logo depicts two mine related landmarks, the Huntcliff Guibal Fan House near Skinningrove and the Kilton Mine Spoil Heaps, which were saved from their planned removal after objections were made by some of the society members.

The CMHS is very privileged to have access to a number of access sensitive sites that are on private land in Cleveland and the North York Moors: **Skelton Park Pit** is a grade two listed site which has been described as being the most complete collection of mine buildings in the country, the buildings are in a derelict state and have been suffering heavily from vandalism.

Recently permission has been granted for CMHS to work on the remains of Shaft Mine which is 0.8 miles down the old rail track from Skelton Park Mine and includes a lovely Guibal Fan House and what is to me a rather spectacular explosives magazine;

Coate Moor Mine was accessible to trespassers through a single roof fall entrance for several of decades until CMHS was granted access. Several other entrances were excavated and gated with secure steel gates, generously made and donated by Cleveland Potash Mine.

Eskdale Mine ventilation drift was entered after a two year long dig which gave access to kilometres of workings that had been closed and flooded for about a century, exploration and surveys are ongoing. Repairs to the mine powder house roof took place a couple of years ago along with excavation work on some mine building foundations. Work is planned to repair damage to the ventilation shaft chimney which can be seen to the left of this photograph.

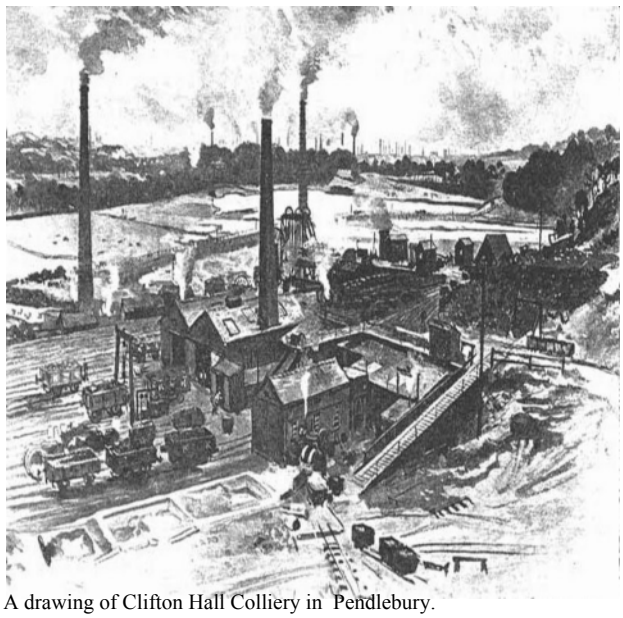
The **Grinkle Mine** surface remains were almost lost when Boulby Potash Mine sank their shaft and dumped the waste onto the Grinkle Mine Site. Local industrial archaeologists saved their total loss. The remains now consist of the old drift entrance which is kept locked and remains of the winding engine house and boiler plant foundations that CMHS are uncovering and recording.

2013 to 2014 saw the CMHS clearing out an 1849 tramway tunnel under the Sleights to Grosmont road and part of the cutting was cleared of debris, a bridge support pillar that supported the same tramway over the river Esk was also cleared of vegetation that was threatening the structure.
The work goes on.

Colin M. Keighley

Black Country miners who broke a strike at a Lancashire colliery

The connection between the miners of Bilston and mines in Greater Manchester Coal pit disasters were all too familiar in this neck of the woods during the 19th century when conditions at the coal face were incredibly dangerous, even allowing for certain safety features that had been introduced over time.



A drawing of Clifton Hall Colliery in Pendlebury.

Firedamp is a flammable gas (methane) found in coal mines, particularly where the coal is bituminous and many accidents were initiated by a firedamp incident that would send shock waves through the mine which in turn raised coal dust from the floor of the mine creating a potentially lethal mixture .In June 1885 such an explosion occurred at the Clifton Hall Colliery in Pendlebury, Salford, which is now part of Greater Manchester, causing the deaths of 175 men and boys who were underground at the time. But what interest is there in a mine disaster in Manchester to the good people of the Black Country, apart from feelings of empathy to those who lost their lives?

During research into his family tree Gary Fellows came across an intriguing story which he is still investigating and he has been kind enough to share with fellow Bugle readers his findings so far: “My initial objective was to glean further information about miners’ migration, when times were hard at their own pit and they had to seek employment elsewhere, sometimes in a different part of the country.

"That is when I came across a connection between the miners of Bilston and mines in Greater Manchester. “Clifton Hall Colliery was located at Pendlebury which in the 19th century was a small coal mining community consisting of just a few pits owned by the company Andrew Knowles & Sons. "In about 1869 the local miners went on strike over safety conditions, but the owners stood their ground and refused to accept the miners’ claims. With no coal being extracted for several weeks and the company therefore losing money they called upon miners from the Black Country to fill the roles of those miners who were on strike. "However, there is very little documentary evidence of this event taking place and most of the information I have been able to collect so far has been anecdotal in nature. “One source suggested the Black Country miners were duped into moving north and had no idea they were replacing striking miners. However the striking Pendlebury families were physically forced out of their homes, which were tied cottages, and the newcomers from the Black Country duly installed.

Monument to 64 of the victims of Clifton Hall Mining Disaster.

"Apart from the obvious distress that was caused to miners and their families who were already struggling to survive while on strike, the scenario inevitably caused a lot of animosity, resentment and hostility, and barriers of contempt were erected between the two communities. Because the strike-breaking miners came from Bilston the Pendlebury locals gave the newcomers the insulting name of ‘Bilston Scabs’, a name which stuck around for several generations. “Ironically a semblance of reconciliation emerged in the form of tragedy when the explosion occurred at the Clifton Hall Colliery. After fifteen years of bitterness, empathy and compassion appeared to plaster over the cracks of mistrust and hatred. The miners who lost their lives were both native to Pendlebury and some from Bilston, and both communities would have been united in their grief and the mutual support they had for each other. “The area where the Bilston miners lived entered the cultural vocabulary of the district and was nicknamed Little Bilston. In fact, even in officialdom this term was used and the National Archives hold records of municipal plans for slum clearances to that estate and the drawings are clearly marked Little Bilston.”

Before the disaster of 1885 Clifton Hall Colliery (known locally as Lumn’s colliery) had been open for fifty years. The depth of the shaft was 540 feet and it had three main seams: Doe mine, Quarters mine and Trencherbone mine. Jonathan Hall, a certified colliery manager was in charge and the “Patent Safety Lamp” was used by miners, although naked lights were still permitted when there was good ventilation. On the morning in question a huge explosion occurred that shook the ground for half a mile around. It was thought that there were about 200 men underground at the time and immediately a rescue was initiated.

At the second attempt of getting to the location of the explosion the rescuers were faced with an horrendous scene of dead bodies, men badly burned and men suffering the effects of afterdamp (carbon monoxide poisoning). One hundred and sixty-eight miners died at the scene and another 10 died of their injuries after being rescued. If any Bugle readers can add weight to the story about the Bilston miners and their connection with the striking miners at Pendlebury in Salford, please contact jworkman@blackcountrybugle.co.uk or phone 01384 880533.

The Birmingham Mail. Nov 2017.

International Early Engines Conference (IEEC)

Over three days, from Thursday 11th until Saturday 13th May, the inaugural IEEC saw over 80 delegates from the UK, Germany, China and New Zealand, including several NMRS members, travelling to Elsecar in South Yorkshire to hear an extensive programme of papers on the history and developments of early heat engines. The purpose of the conference was to provide a forum for presentation and discussion of new research into heat engines prior to 1812 under the headline theme of "Newcomen & colleagues' achievements untainted by the smoke-screens of Watt". The NMRS was one of the sponsors of this conference proved to be well attended and extremely successful.

As is usual at such conferences the programme included a full programme of papers along with the opportunity to visit a range of sites in the vicinity. Delegates were able to see the latest conservation work on the Elsecar pumping engine which can now be operated by electric power. A short walk led to the fascinating collection of buildings, headgear and shafts at Hemingfield Colliery where extensive work has been carried out by the Friends group. Other visits took us to see the remains of the charcoal-fired cold blast furnace at Rockley and the nearby engine house for a Newcomen Engine to pump water from an ironstone mine from 1813 to 1827. The engine had previously worked at Elsecar Colliery.

Dinner at Wortley Top Forge.

The conference dinner on the Saturday evening was hosted by the enthusiastic team who manage the extensive site at Wortley Top Forge. Not only did we enjoy our meal, and local beer, amongst the exhibits, but they were running just about everything that could be operated. This forge with its large helve hammers is well worth a daytime visit with more time to spend there.

Rick Stewart. Talking about Newcomen engines in Cornwall.

The papers were wide ranging in scope and avoided repetition. So much detective work is necessary to unravel the early history of early engines and this is a thread that ran through the presentations. Even the few surviving engines pose many questions about their construction and history. There was an analysis by John Kanefsky of the number of per-Watt engines and Phillip Hosken took a look at the inventors and engineers and who benefitted from their endeavours.

Turning to specific engines a number of papers looked at their development and history. Tony Coverdale spoke about John Padmore's water commanding engine at Bristol in 1695 and James Greener covered what is known about Yorkshire first engine erected at Austhorpe in 1714, and the events leading up to Newcomen's first engine were introduced by James Greener. The spread of steam engines and the influence of George Sparrow was investigated by Peter King and Victoria Owens spoke about the engines built by James Brindley. James Watt's analysis of the performance of the Ranter engine at Wednesbury amongst others.

Group Photo Elsecar.

Archaeological excavations of engine sites were covered by Mike Nevell who has been working on pre-1812 sites in Manchester, and John Barnatt who spoke about the various changes to the 1794-95 Newcomen Pumping Engine at Watergrove Mine in Derbyshire. David Hardwick entertained us with the story of his investigations into what he reckons is the UK's oldest complete Newcomen Engine House at Brislington. This ended with the revelation of the dendrochronological date of 1736. This was followed by Steve Grudging's look at the discoveries and dilemmas from excavating the 1791 Serridge Engine House. The Elsecar Newcomen Engine was not forgotten and Geoff Wallis explained some of the findings and mysteries unearthed during the recent restoration works.

Two papers that fell somewhat outside the above were David Perrett's entertaining look at the role of Herbert Morton in collecting engines for Henry Ford in 1928. This included the purchase and removal of the Fairbottom Bobs engine from Park Bridge and the subsequent installation of this and other engines in the museum at Dearborn. Equally entertaining was Ken Pointon's explanation of the building and running of a small full size Newcomen pumping engine in 2012 by the Auckland Steam Engine Society, New Zealand. This 18ft high engine provides rotary power by raising water onto an 8ft diameter waterwheel with cog and rung transmission. The whole set-up was transported to a number of shows from 2013 and can be seen on video .www.youtube.com/watch?v=g889PoZZUMc
www.youtube.com/watch?v=4DZxwGoNSQ

A most interesting, entertaining and educational conference for which thanks are due to the organising committee comprising Steve Grudgings, Chris Jones, Peter King, David Perrett, Richard Smith and John Tanner for making it happen. All who attended agreed that further conferences would be a good thing and it is likely that the next one will take place at the Black Country Living Museum in a few years time. I now have to get to grips with the compendium of published papers about Newcomen Engines that was provided for each of the delegates.

David Kitching. Dec 2017.

Abbeytown

Abbeytown is a historic lead-silver mine situated within an active limestone quarry operated by the Harrington Group. Ore was extracted over centuries before an industrial-scale lead mine was operated 1951-1961, initially as an open pit, and then as an underground mine. Abbeytown is in an industrial setting. A fully permitted quarry is in operation, and industrial infrastructure is present. Road, power, rail and port are all available nearby.

Since the last exploration phase at Abbeytown in 1986, Erris Resources has developed a new geological model. Geological thinking has evolved from a strict 'Irish-type' horizontal model to a Carbonate Replacement Deposit model, with structurally controlled replacement breccias and vertical as well as horizontal components to the ore distribution.

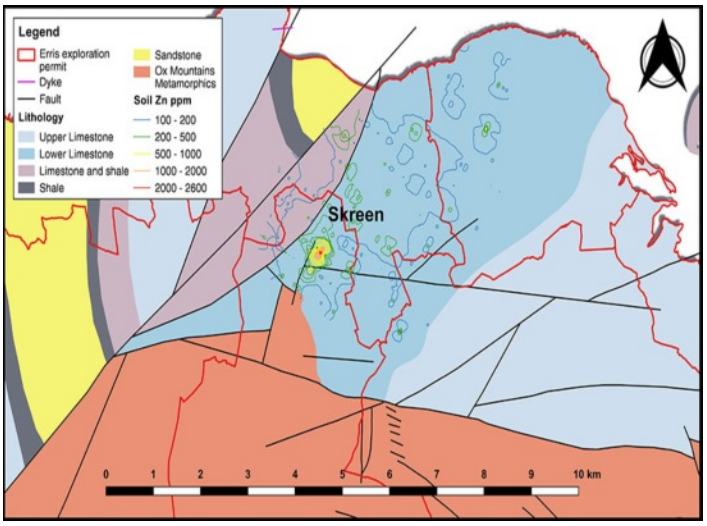
The Lugawarry prospect 3.8 km to the west-southwest of the Abbeytown prospect was also the site of old workings for lead and silver. Mining is believed to have begun in the mid-18th century. Intermittent drilling in the 1950s to 1970s was generally less than 100m depth and often the core was not assayed. Archived drill logs record stringers of calcite with pyrite and dolomitised limestone, along with some sphalerite, galena and chalcopyrite. Sampling by Erris resources indicates a zinc-lead geochemical anomaly in the area that extends over 800m.

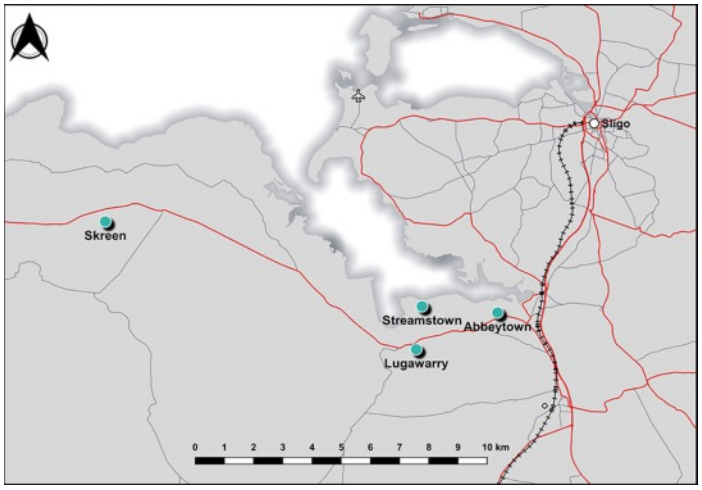
Streamstown

At the Streamstown prospect gossan has been discovered in outcrop, along a 700m stretch of shore. Soil sampling by Erris has defined an anomalous zinc-silver-lead zone approximately 1.7km long and 500m wide. Near to the gossan outcrops the soil sampling returned highly anomalous silver values up to 14 g/t silver. Streamstown is 3 km west of Abbeytown along the coast.

Skreen

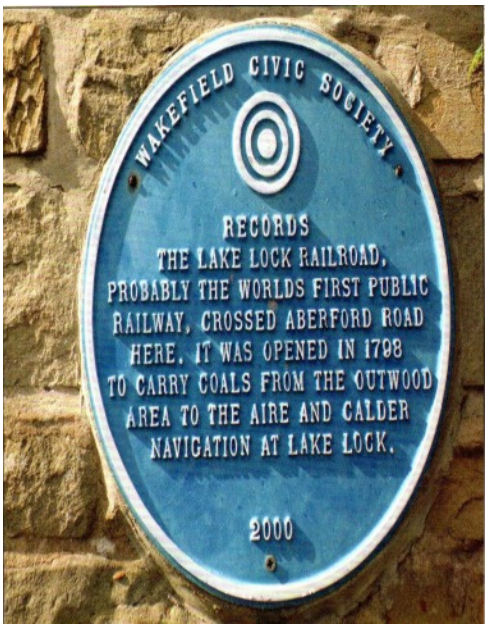
Skreen is a large, under-explored prospect 15 km west of the Abbeytown prospect. The area was last drilled via a series of shallow drillholes in the early 1980s. A large soil anomaly (3km x 2km) is located close to a junction of major regional geological structures and adjacent to a regional fault kink. Several kilometres away from the main soil anomaly, outcrops containing pyrite, calcite, barite and sphalerite are visible on the shoreline. High grade sphalerite bleeder veins are visible, and the potential exists for a large zoned mineralising system at Skreen.





Erris Resourses.

The Nov/Dec issue of Narrow Gauge World.



There is a 4 page article on the Lake Rock Railroad near Wakefield (this railway is mentioned in Eddie Downes 'Yorkshire Collieries'). This railway was opened in 1798 to carry coal from pits near Outwood to Lake Lock on the River Calder and can claim to have been the first public railway as it could be used by anyone on payment of a toll. A blue plaque as placed in 2000 by the Wakefield Civic Society to commemorate the place where the line crossed Aberford Road on the way to the canal basin at Lake Lock {see attached photo}

Rob Needham.

Have you ever wondered how much oil is left ?

Oil reserves, are an estimate of how much oil can ultimately be recovered from the ground. This Broad definition includes undiscovered or "yet to find" reserves. It's based on the probability that reserves will be located in certain geological areas. And that new technology will make it possible to economically extract the oil. Economists are constantly forecasting that the earth's oil reserves will run out by a certain date, this is not true as oil will become far too expensive to use long before it runs out.

Michael Interisano/Design Pics/Getty Images

A more precise definition is "discovered oil reserves". There are three main categories (the three "P"s). These are based on how likely it is that oil can be recovered using current technology.

1. **Proven Reserves: There is greater than a 90% chance that oil will be recovered.**

2. **Probable Reserves: A greater than 50% chance of recovering the oil.**

3. **Possible Reserves: The chance of recovering oil is significant but less than 50% chance.**

A key point to keep in mind is that part of an oil field's, probable and possible reserves are upgraded to proven over time. Theses figures are also allowing for the fact that it is impossible to recover every last drop of oil in a given reserve.

Proven Reserves
The most commonly used term is "Proven Reserves". This is based on analysis of Geological and engineering data that prove with reasonable certainty that oil will be recoverable from the reserve. Only the oil that is commercially viable under current economic conditions is counted. This is because, if the oil price rises or new technology makes cost lower, then more fields become viable.

Reasonable Certainty.
Means that actual previous production or conclusive testing has taken place. Testing includes the actual drilling of the area or immediately adjacent to the area or previous drilling in surrounding areas. The size of the field is determined by the edges where the oil contacts adjacent gas or water formation. Oils which fall outside of the above criteria is not included in the proven reserves. Some prospecting engineers also do not count oil that is locked up in Shale, Coal or Gilsonite.

World Reserves.
Oil is measured in barrels. As of the 1st January 2016 there was 1.665 trillion barrels of oil in the worlds reserves. The world uses 90.5 million barrels per day so theirs enough to last another 50 years. Only proven reserves are included in this figure. This number fluctuates slightly from year to year as new reserves are proved and old ones are exhausted.

Largest Reserves.
Theses are located in just a few geologically sensitive areas. The reason for this is that oil reserves of today are the product of previous plant and marine organisms from 3 to 400 million years ago. Their remains settled to the bottom of ancient lakes which were then covered with layers of sediment. This had the effect of increasing the pressure and temperature which changed their chemical composition into oil.

Oil is categorised as a non- renewable resource .
The reason for this is we are using it up faster than Nature is creating new reserves. Most of the big fields are in the, Middle East, Venezuela and Russia. The oil production of these county's is market driven where supply and demand are carefully monitored and manipulated to keep price and production constant and thus little thought is given to reserves.

Proven Reserves in barrels of the top 20 oil producing countries:

1. Venezuela. 300.9 billion
2. Saudi Arabia. 266.5 billion
3. Canada (includes shale oil). 169.7 billion
4. Iran. 158.4 billion
5. Iraq. 142.5 billion
6. Kuwait. 101.5 billion
7. United Arab Emirates. 97.8 billion
8. Russia. 80 billion
9. Libya. 48.4 billion
10. Nigeria. 37.1 billion
11. United States. 36.5 billion
12. Kazakhstan. 30 billion
13. China. 25.6 billion
14. Qatar. 25.2 billion
15. Brazil. 13.0 billion
16. Algeria. 12.2 billion
17. Angola. 8.3 billion
18. Ecuador. 8.3 billion
19. Mexico. 7.6 billion
20. Azerbaijan. 7 billion

Most of the above countries export oil to other industrialized nations. Thus generating revenue.

Who holds the power?
To increase the bargaining power some of the oil exporters have banded together to influence supply and price on the world markets. This sort of practise is illegal in most of the countries but legal under international law. Since oil is a non-renewable resource once it's gone these exporters will have nothing to sell. Thus the highest profit possible is their goal while reserves lasts. They can only achieve this if they cooperate rather than compete.

OPEC.
Organization of Petroleum Exporting Countries. Established in 1960 this select group of 12 member countries hold 80% of the

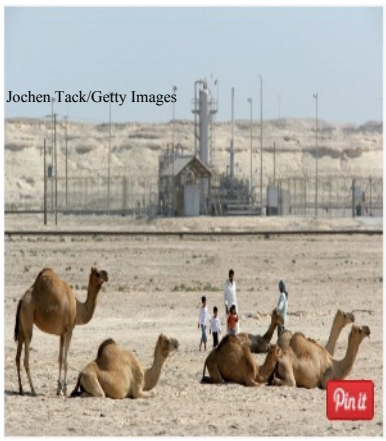
world's Proven Reserves. The biggest importers are the United States, European Union and China.

U.S. Reserves.
The U.S. Energy Information reported 32.2 billion barrels of reserves. These are in, Texas, North Dakota, the Gulf of Mexico (offshore), Alaska and California. The U.S. reserves have stagnated for many years but are now on the increase this is due to higher oil prices making more expensive technologies more cost effective. The technology involved are, Horizontal Drilling and Hydraulic Fracturing which can be used successfully in oil bearing shales.

Strategic Reserve.
The U.S. also holds the world's largest strategic reserve, at 727 million barrels of petroleum. This is used to stabilize supply and U.S. petroleum prices. This is not included in their Proven Reserve figure.

Shale Oils.
The Colorado Green River shale oil formation holds 3 trillion barrels but it is to expensive to extract in today's markets. There are also some environmental issues to be addressed before large scale extraction can begin. This also is not yet included in their proven reserve.

Oil Sands.
Oil sands are various sands mixed with bitumen. Two tons of sand must be mined and three barrels of water are used to heat the sand to produce one barrel of oil. The largest reserves are located in the, U.S., Canada, Venezuela and Russia. Canada has the largest reserve at 166 billion barrels of Proven reserves. This also has environmental issues attached to its extraction.



Conclusions on the World's Oil Reserves.
A fact that needs to be highlighted is that no one can know for certain how much oil is hidden below the earth's surface. All the numbers quoted here and you also see quoted in the media are based on geological and engineering surveys. Which are interpreted by professionals and calculations.

As oil prices increase and technology improves which lowers costs thus more exploration will take place. This will lead to higher production. For these reasons the world Proven Oil Reserve projection is a moving target. Demand will also increase in line with population growth along with undeveloped countries becoming more developed.

Estimating Proven Reserves is also an inexact Science. For example the estimates for the U.S. Reserve has remained at 20 billion barrels since 1948. Despite a production output of 2 billion barrels a year the reserve has not decreased. Economic factors also influence the proven reserve. If oil in the ground appreciates faster than any other investments the producers have an incentive to leave it were it is. However with the increase in non-fossil fuel technology's which will reduce our reliance on oil then they have an incentive to increase production while the oil still has a value. The trend at the moment is that oil prices are falling as new technology is being developed.

So when will our oil run out is our question? Probably never. It will either become worthless or priceless.

References.
The Economist.
The Balance.
Wikapedia.
O.P.E.C.com.
U.S. Energy Information Administration.
International Petroleum Consultants Association Inc.

Researched by Graham Topping.

Stoney Cove. Stoney Straton, Leicestershire.

An unusual wreck was recently discovered at the, Stoney Cove Inland Diving Centre in Leicestershire. During preparatory work for a new sunken attraction at Stoney Cove a metal box was discovered sticking out of the sediment. Removal of years of sticky mud and stones revealed that it was in fact an original narrow gauge truck. In its former life Stoney Cove was a working granite mine. Started at the beginning of the 19th century stone was mined from hear for use in repairing roads. A railway line was subsequently built to the nearby village of Stoney Straton, linking the quarry with the Birmingham-Leicester main line.

Spring water was a constant threat to the workings with pumps operating almost constantly to keep the quarry dry. Mining finally ceased in 1958 and the quarry soon filled up with water. Within five years divers were using the site for sport diving and training. Wooden remains known as the Gresham Ship were placed on the bottom at Stoney Cove recently. The Gresham Ship is actually what's left of an Elizabethan Merchantman.

Photos. 1. British diving. 2. B&W Hinckley past times. 3. My Map.

The quarry truck was uncovered by,Tim Kociuch and other divers as they cleared obstructions from the bottom. As a symbol of Stoney' industrial past the quarry stone truck will now be tidied up and put on display at the diving centre.

British Diving.

Not one, but five UK gold mines

At the start of 2018, I was bombarded by emails drawing my attention to revised plans for the Clogau gold mine in North Wales. This coincided with news of two ventures in Northern Ireland and, of course, Cononish in Scotland is always "hoping to start serious digging any day now", says my snout in Glasgow.

Of the three, the intriguing one is Clogau, close to Bontddu village by the Mawdach estuary. Like other mines, it has had a chequered history. To cut the long story short, when Bill Williams bought it in 1989, he engaged a few miners to produce enough gold for Bill to justify marketing jewellery "containing a touch of Welsh gold" in each piece. The company, Clogau Gold of Wales Ltd, is still going strong but by 1998, Bill's son, Ben, realised the reserves were diminishing. At the end of 2017, he sold the mine. However, he had also purchased Gwynfynned gold mine, once the property of Sir Mark Weinberg, who worked it in 1981, and later, by Roland Phelps, who operated his venture as Welsh Gold Plc, so as to combine mining, tourism, jewellery and a retail business based on gold. Roland gave up in 1998 and, since then, the mine has lain derelict and the mining equipment was moved to the Omagh Gold Mine in Northern Ireland when he took on the post of President & CEO of the Irish Galantas Gold Corporation.

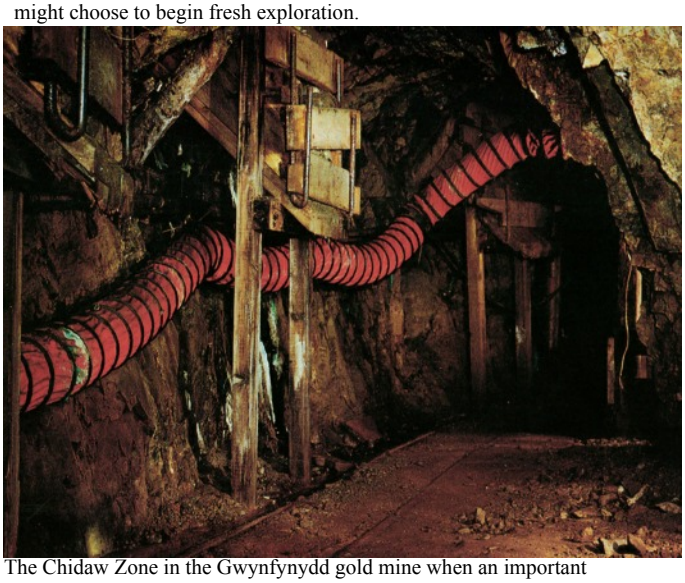
Another enterprising undertaking in Northern Ireland, which is taking the attention of the Irish newspapers, is the re-opening of a development known as the Curraghinalt Gold Project, which is located in the Sperrin Mountains. Of course, the undertaking has attracted protesters from the 'Save Our Sperrins' group who are anxious to discourage "the evils of mass industrialisation".

To complicate the picture further, a company Gold Mines of Wales (with the website name of GMOW) asserts it has an agreement with HM The Queen. For a few years, the company promoted an ambitious undertaking; that is, a project comprising the Clogau St David's gold mine and just over 100 km2 of land containing 'gold targets' and former gold workings. As far as I can tell, the company did nothing.

However, in a sensational move in the last month of last year, Alba Mineral Resources used eighty three million shares to acquire a 49% interest in GMOW, having concluded that "there is a high potential to find unworked veins containing gold …" Now the focus is to bring the Clogau gold mine back into production and to explore the project area. (I hope the shareholders have their fingers crossed.)

A further complication is that GMOW once had the rights to the Gwynfynnedd gold mine but that was withdrawn and in the summer of 2016, Ben Roberts of Clogau Gold of Wales Ltd annexed the site. As creator of Clogau Jewellery, it makes sense to own a gold mine but a recent visit by me and a colleague failed to reveal that anything was happening … other than the installation by Welsh Water of a new and huge water pipe nearby.

The Ty-y-Cornel adit of the Clogau gold mine, where Alba Mineral Resources might choose to begin fresh exploration.



The Chidaw Zone in the Gwynfynydd gold mine when an important strike was made in 1996.

The Famous "Grandfathers" vein in the Clogau gold mine, Bontddu, taken when things were going well in the 1990s.

So, to summarise:

* Clogau gold mine will now be mined by Alba Mineral Resources along with "regional exploration" elsewhere in the Gold Belt
* Gwynfynydd gold mine might be mined after (i) new equipment is installed and (ii) some anti-flooding walls are removed
* The Canadian company, Dalradian, has submitted a ten thousand page application to operate a gold mine in County Tyrone at a potential cost of £125M … having recently reached an arrangement with the Police Service of Northern Ireland on use of explosives and cyanide.

At the height of the "troubles" in Northern Ireland, gold mining was carried out in the Sperrin Mountains, but instead of explosives, the company was compelled to use compressed air.

To represent the four constituents parts of the UK, the coin for Northern Ireland used a design inspired by the Celtic gold Broighter collar.

A billet of gold from the Gwynfynydd gold mine bearing the Unique "Welsh Lady" imprint.

One of the many core samples at Cononish gold mine on which future mining will be based.

* Galantas has exhausted gold mining at the surface and following exploration by drilling, the company is "ramping up underground operations".The Police Service supervises limited blasting; that is, two hours on three days of the week.

* Scotgold at Cononish gold mine in Perthshire recently announced it "is hopeful of forging ahead with the project" in 2018 … having secured A £2.65 funding boost".

Ron Callender.

Statement on Gayle Mill

The North of England Civic Trust (NECT) – which owns Gayle Mill, one of the finest industrial heritage sites in the Yorkshire Dales National Park – has formally announced the temporary closure of the mill.

The Director of Conservation and Community at the Yorkshire Dales National Park Authority, Gary Smith, said: "Gayle Mill is both a national treasure and treasured locally. That is why the Authority gave more than £140,000 towards its restoration between 2003 and 2007.

"The mill is a really important part of the tourism offer in Gayle and Hawes, and we want to see it conserved and brought back into use again as soon as possible. We know how much time and effort has already gone into restoring and then running the mill. The Authority stands ready to assist if it can."

Bainbridge Jan 2018

Help needed with these Grassington Moor photos?

One of our members has sent in these four photographs that he took of a site in the mid 80's but can't remember any of the details. If you can help with their identification or have any information please contact him

"I took the photos in the early 1980s (1983-84) at Beevers Mine dressing floor on Grassington Moor. I remember speaking to the chap operating the plant, he told me that he was working to get either fluorspar or barytes and when he had a full trailer load he took it to either Sheffield or Buxton.

I apologise for the inaccuracy of my memory. I expect that there will be someone in the membership who will be able to put flesh on these few bones of information"?

Contact details.
Email.colinmkeighley@tiscali.co.uk Tel. 01751 474310. Or 07442173889

Colin Keighley.

Editor. Please could we also have a copy for the news letter?

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