THE NORTHERN MINE RESEARCH SOCIETY



Newsletter

MAY 1995

1995 Annual General Meeting and Dinner

The 1995 Annual General Meeting and Dinner were held on 25th March at the Dog and Gun, Glusburn.

Various officers gave reports to the AGM and copies of the Editor's, Librarian's and Recorder's reports together with a copy of the certified accounts of the Society appear in this newsletter.

We now have a new secretary for the Society; he is **Clive Torrens**, and can be reached at:

Jubilee House,

Preston under Scar,

Leyburn,

North Yorkshire,

DL8 4AH.

Clive is not on the telephone.

A further important item agreed at the AGM was that the Society's official address should be changed. It is now:

38 Main Street.

Sutton-in-Craven,

Keighley,

West Yorkshire,

BD20 7HD.

Tel: 01535 635388.

The more perspicacious among you will no doubt have noticed that this is Mike Gill's address.

NAMHO is looking for societies to volunteer to host future field meets and conferences. It was suggested that NMRS may host the 1997 conference. So please, let's have your opinions and ideas on this one.

Fears on the part of the organisers that refurbishment work at the Dog and Gun would not be finished on time proved groundless, and the Annual Dinner was well attended with 34 people enjoying meals chosen from a varied menu at a reasonable price. The beer was excellent too! Ed.

Society Officers for 1995

President	John Hopkinson
Vice-President	Bob Burns
Jnr Vice President	Sallie Bassham
Secretary	Clive Torrens
Treasurer	Colin Hindle
Editor	Hazel Martell
PRO/Newsletter Editor	Keith Nolan
Librarian	Eleanor Greenough
Recorder	Mike Gill

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Diary Dates

Saturday, 10th June & Sunday, 11th June,

Cross Fell/Nenthead.

Start from Kirkland Church, NGR NY 645325, at 10.30 each day. Cross Fell is home to numerous unexplored mining remains. Prospective attenders should anticipate route marches of over 20 miles and finishing at 22.00 each day. Bearing in mind the nature of the terrain and the elevation, Nenthead is proposed as an alternative in the event of bad weather. Leader: Roger Bade. For further details contact Roger. Tel: 0181 540 6229 (Home) or 0171 283 7500 (Work).

Friday, 14th July, to Monday, 17th July.

NAMHO Conference.

This will be hosted by the Shropshire Caving and Mining Club. The venue is Lilleshall National Sports Centre, Newport, Shropshire. The centre has full catering facilities plus reasonably priced single and twin rooms on site, so there is no need to search locally for accommodation. There will also be camping on site for tents and caravans. There will be something for everybody including talks, seminars, surface and underground trips and a social event on Saturday evening. For further details and a booking form please send an A4 self-addressed envelope to: Adrian Pearce, 72 Hopkins Heath, Shawbirch, Telford, Shropshire, TF5 0LZ. Tel: 01952 405362.

Saturday, 12th August.

A member of NMRS has been asked to lead a surface walk for the Manchester Geological Association. The walk will start from Gunnerside village at 10.30. The aim is to walk to Blakethwaite Smelt Mill, looking at surface features and explaining lead extraction and processing. Anyone from the society who does not know Gunnerside Gill is welcome to join the walk. Anyone who is particularly knowledgeable about the area is very welcome to come along and assist. It seems that most members of the Manchester Geological Association will not want to go underground, but some of the younger ones may be interested. The walk leader cannot leave the many in order to take the few underground, but if any NMRS member would be willing to give a brief introduction (i.e. to Bunton Level) for people who have not been underground before, their help would be much appreciated. Enquiries or offers of help, please to: Sallie Bassham, 4, Pen-y-ghent View, Horton in Ribblesdale, North Yorkshire, BD24 0HE. Tel: 01729 860446.

Saturday, 19th August to Friday, 25th August.

International Symposium on Souterrains.

The city of Maastricht will host a symposium about man made underground structures. Full details appeared in the February newsletter. Further information may be obtained from: International Symposium on Souterrains, c/o P.J. Orbons, P.O. Box 1614, NL 6201 BP Maastricht, The Netherlands.

Wednesday, 13th to Monday, 18th September.

British Museum/Early Mines Research Group Joint Conference.

To be held at the British Museum (13th-15th) and Bangor, North Wales (15th-18th). For further details apply by 1st June, to: P. T. Craddock, Department of Scientific Research, British Museum, London, WC1B 3DG. Tel: 0171 323 8797. Fax: 0171 323 8276.

Saturday, 16th September.

Weardale-Bollihope Valley.

Leader P. Wilkinson. Meet in car park at Frosterley. NGR NZ 026370 at 10.30. Mostly surface, including extensive limestone quarries.

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Saturday, 14th October.

Mining Remains in The Halifax Area.

Leader: M. Street. Tel: 01422 839749. Meet at Shibden Hall, Halifax. NGR SE 107258 at 10.30.

Saturday, 11th November.

General Meeting, Slides, Pies & Peas.

Sicklinghall Village Hall NGR SE 364484 at 14.00.

Meet Reports

Ingleton Coalfield, 25th March, 1995.

It was dark and raining heavily yet again and the high winds were not helping you to find your footing amongst the new shale face of Barker's Brickworks spoil heap. Over the past few weeks of rain the heap had slipped in steps and extra large rabbit holes had appeared. It was 7.15 pm. on Friday, and the walk the following day was going to take much more than forty minutes!

However, fine weather greeted Saturday, 25th March and the third Ingleton Coalfield meet. Nineteen society members and two dogs gathered in my garage to view the local coalfield artefacts displayed there. The day began with a visit to the site of the Newfield Colliery, which was sunk in 1870 and abandoned in 1890. Site evidence includes two large spoil heaps and an almost flooded open shaft top. Grove, Richard and Nellie pits stand on an even more extensive spoil heap. Heaps from the Barker Brickworks also spread their spoil around the fields. There was some confusion regarding the whereabouts of Nellie Pit, but I hope to clear this up later in the year with John Bentley. All three pits, Nellie, Richard and Grove began life in 1870. Grove continued until 1912, when the much larger New Ingleton Colliery opened. It should be noted that Grove was also known as Old Ingleton Colliery or Ingleton Colliery.

Fast footwork led to the site of the New Ingleton Colliery. From an elevated position it was possible to appreciate John Bentley's wealth of research which gave an insight into the workings of this long-gone colliery, yard and buildings together with tales of the escapades of some of the local men who worked there. In 1920 the pit employed 374 underground and 149 surface workers; by no means a small employer. The colliery went into receivership in 1935-1938 and was abandoned in 1938. It finally closed in 1940.

The meet then moved on for a lunch stop at the Bridge Inn, Tatham, where the landlord, Keith, provided pie and peas.

Phil Hudson took the meet to its conclusion at Clintsfield Colliery and buildings, standing by the bridge at NGR SD 631700. The north wall of these fine colliery buildings is now showing signs of movement. Further information on the site can be found on page 128 et seq. of the 1994 Memoirs. Permission to visit the site can only be given by a firm of chartered surveyors in Lancaster, and Mr. Hartley, the tenant farmer, should not be approached.

I should like to thank R. Chalmers for printing the handouts and surface drawings, also Phil Hudson and John Bentley for sharing their knowledge and expertise with us.

Bernard Bond.

Lumb Clough, Cononley Mine & Earby Museum, 26th March, 1995.

Faced with losing an hour in bed, Sunday's meet was designed as a gentle day, with no underground trips. A group of members enjoyed a gentle stroll through the wooded gill, called Sutton Clough, to visit the remains of an 18th century smelt mill (see BM 33), which was excavated by Society members in 1973. The mill's outline can still be seen, along with the wheel-pit, keeper stones for the ore-hearth, a chop kiln and the reservoir.

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Following lunch at the 'The Laughing House' (White Bear) in Crosshills, members assembled at the Cononley Mine (see BM 33), where both the Earby Mines Research Group and the Friends of Cononley Mine have done much work in consolidating and conserving the remains. A leaflet describing the mine and its history was handed out.

The afternoon was rounded off by a visit to the Earby Mines Research Group museum at Earby, which has better displays than some larger and better funded museums. These displays include the waterwheel powered crusher from the Old Providence Mine at Kettlewell (see cover of BM 49) and Frank Woodhall's models of pumping engines and dressing floors.

Hazel Matell

Chinese Interlude

On October 21st, 1942 the United States Army Air Force, 7th Bomb Group, bombed the Linsi Mine north of Tientsin, China, which was under Japanese occupation. The Linsi Mine was under the Chinese - British Kailan Mining Administration before the Japanese took over. A history of the 7th Bomb Group is being written and any information as to the damage inflicted on the Mine or the electrical generating plant would be of great interest. If anyone has any information that would be of help, please contact the Recorder, Mike Gill, 38 Main Street, Sutton-in-Craven, Keighley, West Yorkshire, BD20 7HD - Tel. 01535 635388.

Always seeking opportunities for our readers, the following good news is given for members with a bob or two to spare.

Foreign investors are being encouraged to explore and mine metal ores jointly with Chinese partners. Wang Xionglin, director of the Department of International Co-operation of the Ministry of Geology and Mineral Resources, said that the State Council will approve measures to protect the interests of foreign investors investing in the Chinese domestic mining industry. Mr. Wang said that the new provisions will include articles concerning the maximum proportion of foreign investments in the joint ventures, foreign partners' rights to transfer possession of developed mines and a required international standard mining contract.

Officers' Reports to the AGM

Ken Geddes

Librarian's Report

Thirty one loans had been made in the past year. Several donations including *The Mines of the Forest of Dean* from Tony Oldham had been received.

A request has been received for the loan of Roger Burt's A Short History of British Mining Technology in the 18th and 19th Centuries, but the library does not possess a copy. If any member can help, please contact the Librarian.

Recorder's Report

Despite the chaos caused by building work, the Records have had a good year. Both members and the public continue to donate material, for which I am grateful, and I get regular requests for information. Many are from people wanting to know about their distant family tree, with which I can rarely help, but sometimes more intriguing questions are asked. Today, for example, I've had a letter from a former B24 pilot in the USAAF. (See item above). I am often also able to help those members writing for British Mining with details of which they were unaware.

Already this year, I have helped Roger Burt, of Exeter University, to put a major update of his Mining Bibliography onto the Internet. This is part of a proposal which arose at the World Mining History Conference in Denver, Colorado, to make details of each country's mining history more widely available. I am now working on details of the Society and its Records to go on the Internet and am collecting details of foreign papers to enhance the bibliography.

Treasurer's Report

The membership at the end of 1994 stood at 399, a fall of 36 on the previous years figure. The fall in membership was made up of 14 full members, 14 family members, 7 associate members and 1 overseas member. Subscription income was 26% higher than the previous year. A copy of the audited income and expenditure account appears below.

Income & Expenditure Account - Year ended 31 December, 1994.

Income	£	£
Subscriptions	5 762	
Gross bank interest received	793	
Pulications	5 046	
Donations	970	
Annual Dinner/President's Talk-in	274	12 845
Expenses		
Printing	5 098	
Postage	646	
Stationery	1 315	
Annual Dinner/President's Talk-in	278	
Secretary's expenses	108	
Subscriptions	48	
Donations	10	7 503
Net surplus for year		5342

Note: Printing & stationery costs do not take account of the value of stocks held at the year end.

Editor's Report

1994 saw the overall value of sales rise by 25% from £4280 to £5341. This is largely thanks to our policy of pricing realistically and offering competitive discounts to bookshops - a gesture which encouraged them to order more.

This year promises to be even better, with five publications planned - at a time when other Societies are struggling to produce one a year. Of these five, The Grinton Mines is being tidied up ready for the printers and I have secured a grant of £500 towards publication from the Yorkshire Dales National Park. The latter has also provided photographs and drawings for the book.

An updated edition of The Great Orme Copper Mines needs a final proof read and some resetting before it too can go to the printers, while an updated and revised edition of the Arkengarthdale Mines is at an early stage of editing.

Work on the fourth British Mining Supplement - Mine Waggons - is well advanced and there are also about 60 pages of the 1995 Memoirs already set, with two more papers received and the firm promise of a third (since arrived) in the last week.

Publications Account - Year ended 31 December, 1994.

£	£
5 046	
1 500	
260	
51	6 857
5 098	
646	
78	5 822
	5 046 1 500 260 51 5 098 646

Income + opening balance (£6 857 + £1 273) = £8 130

Expenses + closing balance (£5 822 + £2 308) = £8 130

Books

Les Lampes de Mine - Michael C. Dupont & Gil Lebois.

This book, which is published in collaboration with the Museée de la Mine at St-Etienne in France, deals with the development of the miners' lamp. The emphasis is on the safety lamp, but includes some acetylene lamps and electric hand lamps, but not the more modern type of rechargeable electric cap lamps. Most of the lamps are European, with a large proportion of them from Britain, and a few from the USA.

The first chapter discusses the dangers involved with mining, especially collieries, and includes a number of historic photographs. The next chapter deals with mine illumination before the introduction of the safety lamp, while the next seventeen chapters detail the development of the different type of lamp since the inventions of Sir Humphrey Davy and George Stephenson.

This well designed book of 144 pages with 245 illustrations is printed in full colour throughout. It contains superb colour photographs of the lamps, mostly taken by Gil Lebois, many of which appear to be in a suitable underground setting. The colour photographs are interspersed with black and white photographs (many of lamps from the London Science Museum), catalogue illustrations and more historic mining scenes.

Although the text is in French, the illustrations form the main part of the book. As there are French/English captions the book is still of great value to non-French readers. It is of large page size (320 x 245 mm) making it possibly too large for some bookshelves. It has a sewn paperback binding with the addition of a laminated dust jacket. This book will appeal to those who have an interest in mine safety, especially collectors of old mining lamps. The only criticism is that there is no index.

The book is published by Edi Loire Recto. It is distributed in the UK by David Aldous-Cook, 1, Love Lane, Cheam, Surrey, SM3 8PS. Tel: 0181 642 4842. The cost is £30.00 + p & p.

John A. Robey

Does anyone know the whereabouts of a copy of Boyce, H. *The Mines of the Upper Harz 1514 to 1589*, Menasha (Wisconsin), 1920, to buy, borrow or just read? If so, please contact Peter Claughton, Blaenpant Morfil, Rosebush, Clynderwen, Dyfed, Tel: 01437 532578 or 0831 427599

Society Publications in Print

British Mining

33 Yorkshire & Lancashire Lead Mines	M.C. Gill	£7.50
35 The Goginan Mines	S. J. S. Hughes	£6.00
37 Memoirs 1988		£6.00
38 The Marrick Mines, Swaledale	L. O. Tyson	£6.00
41 Memoirs 1990		£7.50
43 Memoirs 1991		£7.50
44 Mining on Dartmoor and the		
Tamar Valley after 1913	P. H. G. Richardson	£9.95
46 The Grassington Mines	M. C. Gill	£9.95
47 The Mines of Alston Moor	R. A. Fairbairn	£9.95
48 Memoirs 1993		£7.50
49 The Wharfedale Mines	M. C. Gill	£7.50
50 Memoirs 1994		£7.50
British Mining Supplements		
Coal Mining, A Technological Chronology	A. Hill	£2.50
Index and Bibliography of NCMRS & NMRS		
Publications and Newsletters 1960-1991.	M. C. Gill	£2.50
Copies of the above are available to members at the following discounts:		• •

One copy

25% + £1.00 p & p.

Two copies

 $33^{1/3}\% + £1.75 p \& p$.

Three or more copies

50% + p & p at cost.

Justin Brooke has offered the following for sale.

The Metallurgy of Lead and Silver - Henry F. Collins. (son of the great J. H. Collins)

Two vols. 1899. Bookplate of Oswald J. Bainbridge. (son of T. H. Bainbridge, mining engineer)

The Lead Smelting Mills of the Yorkshire Dales - Robert T. Clough.

1962. Published by the author.

The Lead Smelting Mills of the Yorkshire Dales and Northern Pennines - Robert T. Clough.

1980. Published by the author.

A Treatise on the Exploitation of Mines - Robert T. Clough.

1974. Published by the author.

Summaries of Mineral Statistics - Roger Burt, et al.

Eight volumes covering Cardiganshire, Flintshire and Denbighshire, Cumberland, Durham and Northumberland, Yorkshire, Derbyshire, Lancashire and Westmoreland with the Isle of Man, Shropshire and Montgomeryshire with Cheshire and Staffordshire. Offered as a set lacking Somerset, Devon and Cornwall. Offers to Justin Brooke, Chymorvah Vean, Marazion, Cornwall, TR17 0DQ. Telephone 01736 710468.

Yorkshire History Magazine

Stephen Welsh writes to say that he is planning the publication of a Yorkshire History Magazine. The date for the first edition to go to the printers is sometime this year but this depends on his receiving articles which people would like to see published.

There are several academic magazines which cover Yorkshire history as well as many Historical Societies producing their own magazines. The new publication is aimed at providing a bridge between these in the form of a magazine which is accessible to the historically minded, publishes well researched articles and can reach a wide readership.

Articles should ideally be between 1,000 and 2,000 words although it may sometimes be necessary to go beyond this figure. They should preferably contain one or two good photographs. Payment will be made for articles, but in the early days it will not be possible to pay large amounts.

If you want to submit an article, or want to know more, please contact Stephen Welsh at 11, Littlewood, Crag Vale, Mytholmroyd, West Yorkshire, HX7 5TL. Tel: 01422 884157.

Emma, or The Miner's Cottage

"Emma, or The Miner's cottage: a moral tale, founded on the recent adventures of poachers and the attempts of the soldiers and constables to take them, in Alston Moor. 1819, Alston, Cumberland. Printed (at the Geological Press) and sold by John Pattinson, 1821. Price eighteenpence."

Thus reads the title page of a most interesting book. In the preface, dated 1 March, 1819, Phoebe Brown states that "...the scenes between the military and the poachers are related nearly as they took place...". Today though, we may be more interested in the details and the rounded picture of everyday life during the difficult years after the Napoleonic wars when the price of lead fell and times were hard for the lead miners. Perhaps most remarkable is the general level of literacy indicated by the writing and publication of such a book

Finding Emma took some time and was the third piece of exceptional luck associated with my family history researches. The first was to find that Westgarth Forster II had written a book on lead mining in 1808 (Treatise on a Section of the Strata, etc., etc.); the second was finding that the 3rd edition had been reprinted; the third was "Emma" and came from Nall's memoir, which prefaces the 3rd edition. Lucy Forster, the widow of Westgarth Forster senior gave four pounds to her daughter Phoebe, the authoress of "Emma". After a lot of researching I eventually traced the text to the British Museum Library and obtained a copy on microfilm.

If anybody wants to know more, please get in touch with Malcolm Henry, Scott Bank, Hollins Lane, Sowerby Bridge, West Yorkshire, HX6 2RS. Tel: 01422 831923.

Welsh Gold

In order to finance further development at the Gwynfynydd Gold Mine near Dolgellau, a company to be known as Welsh Gold is to be floated on the London stock market The prospectus gives no profit forecast but suggests that the output will increase from the current 980 troy ounces per year to some 2,450 troy ounces per year. The mine has proven reserves of 10,000 tonnes, with probable reserves at 14,000 tonnes. Further "indicated" reserves are estimated at 140,000 tonnes. Gold is processed on site. The cost of mining, milling and smelting is estimated at £49 per tonne, each tonne averaging 0.49 troy ounces of gold.

The mine is owned by Roland Phelps who has turned the site into a tourist attraction. Some of the proceeds will go towards jewellery making and tourist facilities.

Peter Donovan & NAMHO Newsletter

Carn Dochan

The item on the history of Carn Dochan mine which appeared in BM 50. (p.67 et seq.) has prompted pens to be raised and put to paper. David Bick writes on the subject of Mineral Statistics:

"I have just read Simon Hughes' interesting account in 1994 Memoirs of the Carn Dochan gold mine near Bala. He has unwittingly demonstrated the serious limitations of the official Mineral Statistics, at least in their earlier years. It seems not to be generally realised that prior to an Act of Parliament of 1872, it was not compulsory for returns of output to be made.

Hence, to use the Mineral Statistics as evidence of a mine's productive state before 1872, and sometimes after, is a chancy business indeed, and Carn Dochan is a a good example. Based on the published record the author states that after 1866 the site was, for a number of years, unproductive and that, in effect, nothing was happening at all.

This, however, is far from the truth, as was revealed a few years ago when a bundle of documents relating to the mine came into my hands. Amongst them was a complete record of output from July, 1865 until March, 1872, and signed by either Readwin or John Parry.

For 1866 -1872 the figures to the nearest ounce are as follows, and may be compared with the gospel according to the Mineral Statistics.

Year	True Output	Mineral Statistics
1866	632	529
1867	50	************************************
1868		
1869	4	
1870	8	
1871		
1872 (to March)	9	

Incidentally, I am told that visible gold can still be seen in the opencuts on the hillside."

In a different vein (no pun intended), Peter Naylor sends the following concerning his ancestry:

"Having read the item in BM 50 on Carn Dochan by Simon Hughes, I must correct an error he has made concerning my ancestry.

The great-great-great-great grandson of Rhirid Flaidd (Rhirid ap Blaidd) married into the Myddelton family. He was a Rhirid ap David of Penllyn (17 & 19 Richard II) who married Cecilia, daughter and heiress of Sir Alexander Myddelton of Myddelton in the parish of Chirbury, Shropshire, Governor of Montgomery Castle, and descended from the Lord Chancellor of England. (Henry III).

The Myddeltons of Chirk started with the purchase of the Chirk Estate by Sir Thomas Myddelton in 1595, six more generations after Rhirid ap David. Sir Thomas was the son of the Governor of Denbigh Castle. His brother, who is not mentioned was Sir Hugh Myddelton, from whom I am descended. Apart from being the progenitor of the New River, he held the Patent of the Mines Royal from Cardiganshire under James I. It is odd that he is not referred to when discussing the Myddelton family in a mining memoir.

The hostelry at Ruthin called the "Myddelton Arms" is commonly believed to refer to the Myddeltons of Chirk. This is not so; it was named after Sir Hugh Myddelton as the Baronet of Ruthin.

The article also implies that the Myddeltons descended through Madog ap Iorweth. The branch whose descendants married into the Myddeltons was Iorweth's eldest brother, Rhirid Fychan.

The business about the wolf goes back to Rhirid ap Blaidd's grandfather, one Blaidd Rhudd, a warrior who fought bloodily against the enemies of Wales. He was dubbed "Bloody Wolf" and "A friendly wolf to crush th'insulting foe". The name Rhirid is believed to be an old Welsh word for wolf. One of the Myddeltons of Chirk in the 17th century kept two wolves in the dry moat of Chirk Castle.

Another direct ancestor of the family is St. Cadwalladr, and the family goes further back than Cunneda Weidig. His great grandfather was Teidig, flourishing *circa* 4th century. Cunneda Weidig originally came to Wales from Scotland (Mannaw Gododdynn) to expel the "Irish" from Wales. His reward was the crown of North Wales and certain of his nine sons gave their names to parts of Wales, *eg.* Ceredig to Ceredigion. This latter was the grandfather of St. Kentigern (St. Mungo of Glasgow)".

Jessie Guthrie

The Society regrets to announce the death of Jessie Guthrie on April 18th. Jessie had not been active in recent years, owing to ill-health, but she was a regular attender of meets in the 1960s and 70s, and was President of the Society in 1978. She leaves a husband, Bob, who was himself President in 1966, and to whom we send our condolences.

Bishopdale's Mediaeval Iron Smelting Industry

Stephen Moorhouse, an archaeologist studying the mediaeval landscape of the Yorkshire Dales, has identified an extensive complex of at least three late medieval water-powered iron working sites around Smelter Farm at the head of Bishopdale. The significantly named William Inman (Ironman) was a tenant at the farm in 1473/4. The remains include traces of buildings and furnace, loading ramps, leats and hammer ponds.

Stephen's work is greatly expanding our knowledge of the early extractive industries in the Dales and we can expect many surprises yet.

1995 Subscriptions

Mike Gill

If you have paid your 1995 subs to the Society and your membership card is not enclosed with this newsletter, please contact the Treasurer, Colin Hindle, as soon as possible. If you haven't paid, then sorry, but you'll get nowt else from us till you do. If you have still to get your hand down, please remember the deed of covenant. It costs you no more but it helps the Society.

Finally

Thanks to all who contributed to this newsletter. If the piece you sent hasn't appeared, then it will be in a subsequent issue. The AGM reports and a bumper postbag have meant a shortage of space in this edition, but please, keep the contributions rolling in - they are very much appreciated.

Contributions for the August newsletter by 15th July please to: Keith Nolan, West End Cottage, Woodhall, South Duffield, Selby, North Yorkshire. YO8 7TG. Tel: 01757 638503.

The views expressed in this newsletter are those of its correspondents and are not necessarily agreed with or shared by the Northern Mine Research Society, its officers or the editor. The accuracy of submissions is the responsibility of the authors and will not necessarily be checked by the editor for validity.