CUMBRIA AMENITY TRUST

OCTOBER 88

NEWSLETTER NO. 21

MINING HISTORY SOCIETY

CONTENTS

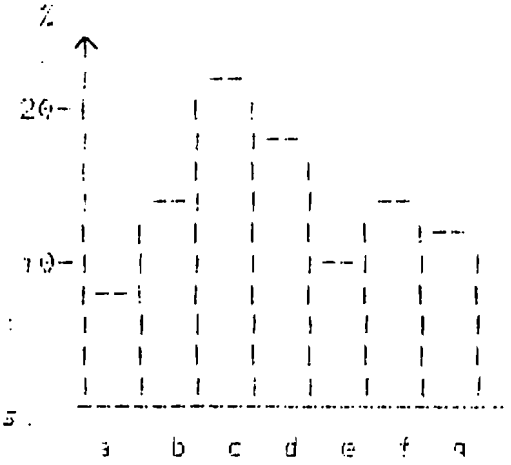
Thanks once again to Margaret Fleming for photocopying and thanks to Pete Fleming for the front cover engraving.

ANALYSIS OF CHAIRMAN'S QUESTIONNAIRE ON MEMBERS' INTERESTS

Many thanks to all those members who took the trouble to return the questionnaire sent out with the Newsletter last Winter. Here is a break-down of the replies and a summary of the suggestions and comments made. Where members indicated order of preference in their responses, this has been taken into account in the production of the bar charts below.

What type of meets do you prefer?

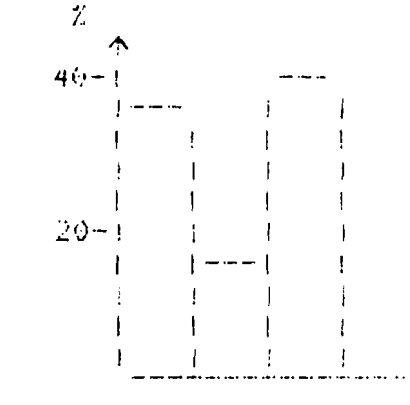
a Social day or evening
b Surface exploration
c Underground walk-in and exploration
d Vertical exploration
e Full weekend meets
f Work meets, digs etc.
g Work, restoration/preservation
f Other - The following suggestions/criticisms were made:



Saturday meets
Visits to Trough of Bowland/Lancs. mines
Dig at Lucy Tongue level
More preservation work
Extra helmets/lamps available for new/novice members
Too many meets require SRT

Do you think CAT should be involved in establishing

a exhibitions?
b museum?
c slide show presentations?
d other?
There were many suggestions here:



1 Publicity leaflets for eg hotel foyers
2 Show mine
3 Establishment of mining museum with help of LDSPB to aid with finance eg at Greenside
4 Try to find permanent museum site, but exhibitions in existing public buildings (eg Tullie House, Carlisle) would be useful
5 Publication of information on local mines/sites would enhance CAT's reputation
6 Involvement of CAT in preservation projects etc. in conjunction with Tourist Board, National Parks etc. eg. trails with accompanying leaflet on
   (i) Coniston Copper Mines (surface)
   (ii) Coniston's abandoned quarries
   (iii) Greenside Mine
   Leaflets to be for sale at Information Centres
7 Establish Society Records/Archives - archivist required to organise and collate
8 Register of members' interests. The compiled information to be circulated so that members with like interests can get together.
9 Wider coverage (national) of discoveries eg in "Descent"

Partially financed trips to mining/quarrying sites abroad for serious research, results to be published for sale to assist further expeditions

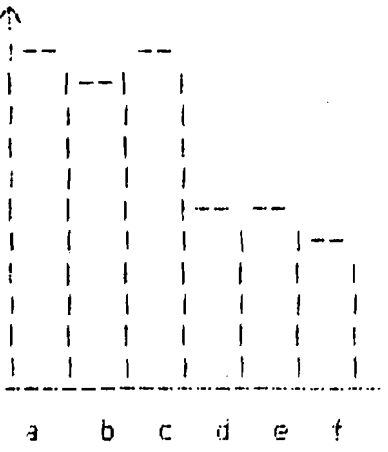
Of the members returning questionnaires,

38% were interested in expeditions abroad
52% were prepared to assist with fund raising
38% thought trips should be open only to CAT members
28% thought trips should be open to CAT and other NAMHO members, but some added provisos (eg other NAMHO members to finance themselves, open to others only if needed to make up numbers, should be open to anyone able to make serious contribution)

How do you think CAT funds are best employed?

a Production of the Journal
b Newsletters
c Mines safety work/preservation
d Preservation of historic sites and buildings
e Production of plans and printing records etc.
f Providing a pool of tackle for loan to new/novice members
g Other - suggestion were:

SRT gear for loan (rope)
Posters printed (for mounting)



Further comments and criticisms

Almost unanimous appreciation was expressed for the Newsletter, although one member did not like its non-uniform format or the cartoons, and another thought too much space was allocated to SRT instruction.

AND FINALLY quite a few members said that they thought the committee did a good job.

The committee will be discussing the results of the questionnaire, and would welcome any further comments.

HERALD, SATURDAY, 22nd OCT

Nenthead mine site "one of country's premier tourist attractions"

RECLAMATION of derelict mine workings at Nenthead and Threlkeld will be carried out next year if Cumbria County Council succeed in a bid for Government funding.

They are among six projects in the county derelict land reclamation program for 1989/90, approved on Monday at the Industry and Estates Sub-Committee meeting at Barrow.

Councillors gave the go-ahead for the annual reclamation bid submitted to the Department of the Environment for funding.

The six schemes include Derwent Howe, Workington; Project Furness; Threlkeld Lead Mine; Rampgill and Smallcleugh mine areas at Nenthead; Waterside, Cavendish Dock; and minor West Cumbrian Groundwork Trust schemes.

Reporting progress on schemes, documents stated at that Threlkeld Lead Mine a borehole survey and soil analysis had already been carried out and a detailed topographical survey was due this month.

A meeting with the Department of the Environment is scheduled for November and purchase of the land has been deferred pending the discussions.

Total cost of reclamation work is set at £25,000 and the aim is create an industrial unit development.

At Nenthead, the report stated: "Rampgill Mine area has immense potential for tourist-related development but essential reclamation works to consolidate the basic infrastructure of the site are necessary as a catalyst to stimulate this investment.

"Surface and underground surveys are presently being carried out in conjunction with a feasibility study for the provision of a second exit to the Smallcleugh Mine, which lies above the deeper Rampgill Mine.

"The development of this mine could present one of the most exciting tourist attractions about our mining heritage in the country," added the report.

Purchase of the land from the Catholic Trust is nearing completion after lengthy negotiations, councillors were told, and construction of the car park is complete, providing parking for visitors to the information caravan on the site.

Smallcleugh had been identified as having potential as a visitor mine after discussions with the Health and Safety Executive of the Mines and Quarries Inspectorate highlighted the legal requirement for a second exit to the mine.

Consultants had been asked to identify a suitable location for the exit and prepare costings on alternatives. These would be included in future development plans.

In all there are 27 hectares of derelict land at the Nenthead site, with £20,000 expected to be spent in 1989/90 and a further £25,000 in coming years to realise the planned tourism project. The eventual aim is to transfer the site to the North Pennines Heritage Trust.

SCHEDULED MINING SITES IN CUMBRIA.

Recent correspondance with both Cumbria County Council Planning Department, and the Lake District Special Planning Board , has revealed how few of the mining sites we visit have any form of statutory protection, against redevelopment, etc. As an example, only three mining sites within the Lake District National Park are classed as Scheduled Ancient Monuments. They are; Hartsop Lead Smelter (Hogget Gill), Greenside Mine, and Coniston Mines.
With regard to listed buildings, the lists are far more extensive, covering structures as diverse as lime kilns, colliery engine houses in West Cumbria, Hodbarrow Mine Office Buildings, and structures at Duddon Furnace.

The Historic Buildings and Monuments Commission (English Heritage) has begun an"Accelerated Scheduling Programme", which will take the next 6 or 7 years to complete, although it is expected that work in Cumbria will probably take place in 2 years time. Don't leave it until it is too late. If you wish to see the Industrial Heritage of this county preserved, send your suggestions for additions to the Sites and Monuments Record to the Secretary, as soon as possible. The preferred format is; Name of site, brief description , including any outstanding features, eight figure grid reference, and any general comments. The results will be collated, and forwarded to both Cumbria Planning, and the LDSPB. Send your suggestions to: D Blundell, 7, Rawes Garth, Staveley Kendal LA8 9QH.

BOOK NEWS

FORTHCOMING PUBLICATIONS

Two publications resulting from the DOE(Minerals Division) funded studies by Freeman Fox are due to be published by HMSO before Christmas, these are:

' TREATMENT OF DISUSED MINE OPENINGS ' and

' METHODS OF COMPILATION, STORAGE AND RETRIEVAL OF DATA ON DISUSED MINE OPENINGS AND WORKINGS'.

Each report should cost about £10.00

NEW PUBLICATION.

The Draft Written Statement of Cumbria County Councils Coal Local Plan is available for £7.50 (plus £1 p&p) from the County Planning Dept, County Offices, Kendal, LA9 4RQ.

"BIBLIOGRAPHY OF THE HISTORY OF BRITISH METAL MINING"
The latest offering from Roger Burt, and Peter Waite is published by the Dept. of Economic History, University of Exeter, in association with the National Association of Mining History Organisations.
This is the first complete bibliography of recent literature relating to the history of metal mining in Britain. It includes references to around five hundred books, a hundred university theses and nearly two thousand articles drawn from over three hundred different journals and periodicals. The collection provides an invaluable guide for newcomers to the subject, as well as established researchers.

The format is A5 softback, and consists of 177 pages. Normal retail price is £8.95 a copy, AVAILABLE AT A SPECIAL DISCOUNTED PRICE OF £6 ONLY, (plus postage if necessary). THIS OFFER IS ONLY AVAILABLE TO MEMBERS OF CUMBRIA AMENITY TRUST.

Orders to the Secretary, Dave Blundell, tel. (0539) 821750.

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TWO CENTURIES OF INDUSTRIAL WELFARE: The London (Quaker) Lead Company 1692-1905. by Arthur Raistrick.
This is the classic work on the London Lead Company, first published in 1938, and last published by Moorland, in 1977, and long since out of print. Davis and Kelsall arereprinting the book, which will be out in November. Costing £16, this will be a reprint of the second edition, with a new preface, and more photographs. It will be available from Davis Books in Westgate Road , Newcastle, or from the North Pennine Heritage Trust, c/o Dick Phillips, Whitehall, Nenthead, Cumbria.

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The North Pennine Heritage Trust has itself reprinted two booklets of local interest. "Through the Ages: The Story of Nenthead" by Louise Thain, first published in 1957. A5 softback format, 47 pages price £2.30.

Also, a reprint of the 1919 edition of "Jubilee Story of Nenthead Co-operative Society Limited 1869-1919". Price £1. Both of the above available from Dick Phillips, address as previous.

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REVIEW.

MINES OF THE LAKE DISTRICT FELLS by John Adams.

Published by Dalesman Books. Price £.95 ISBN 0 85206 933 2

An impressive amount of research has gone into producing this book which covers the earliest history and mining details of each mine and trial up until its abandonment.

Commercial exploitation of minerals in the Lake District dates back to the 16th century. The history of Greenside mine which closed in 1962 is particularly interesting. Greenside must rate as one of the most profitable mines in the Lake District,it was in almost continuous production for 200yrs.

The sections in Part 1,nature of the mineral deposits,prospecting for veins, opening a mine and mining techniques provide us with some valuable mining background. It is interesting to learn that the earliest prospecting methods consisted of only the individuals powers of observation and a hammer. 'If the outcrop is slightly obscured large concentrations of metallic compounds can give rise to striking differences in vegetation'. The 'old men' came to recognise and understand changes in the landscape. Even today modern techniques of geo-chemical surveying include studies of vegetation.

The section motive power gives us an insight into the ingenuity of the 'old men'.The early miners made great use of the vast quantities of water for which Lakeland is famous. The 'old men' used water for prospecting,powering water wheels,ventilation,ore separation and later for driving turbine generators. In 1891 a 60' water wheel existed at Barrow mine in the Newlands valley. Greenside mine was the first to use electric winding gear at the shaft top.

A brief section on the dressing of ore gives us some indication as to how the ore was separated.

Financing the mine tells how during the early years of the industrial revolution speculation in Lakeland mining reached its peak. Very unlikely partnerships were formed,the composition of the Hay Gill Mining Co 1839 includes a tea dealer ,skinners,surgeons,a spirit merchant and several gentlemen. This Company abandoned the mine in 1862.

Part 2 deals with the mines. Most visitors to the Lake District will have heard of the Graphite Mines in Borrowdale,but how many realise that in 1804 graphite was worth £3,920 per ton. The mine operators withheld salesof graphite to the open market so as to artificially inflate prices. Miners were even searched before leaving the mine.

From reading this book we learn how throughout its long history the Lake District Mining Industry has been one characterised by personal misfortune and disappointment, bankruptcy,liquidation and occasionally great prosperity. Various small companies come and go,the failure of one leading to success for another.

Taking into account the nature of the Lakeland terrain and the severity of the climate,we come to realise that the 'old men' were men of great character,tenacity and skill.

Concise plans and sections and grid references for all locations are included in the 160 pages. Sadly no photographs are included. W.T Shaws book Mining in the Lake Counties published by Dalesman in 1970 contains some excellent underground photographs of Greenside mine.

Locating a particular mine in the index proves rather difficult if you do not know the Lake District. An alphabetical index of mines would have been better.

The photograph on the front cover shows the entrance to C level at Force Crag, Keswick. Really this is not one of the best examples of a mine portal.

Finally for the number of locations and facts that the author has researched it is well worth the money. This book should appeal not only to the specialist mining historian but also the general reader interested in Lake District history. Overal a very readable and fascinating book.

Free on collection from the Planning Department, Cumbria County Council, County Offices, Stricklandgate, Kendal , Tel (0539) 21000, (otherwise postage charged),
CUMBRIA TODAY, Report No.3, ARCHAEOLOGY, by W D Biggs BSc FRTPI, County Planning Officer.

Published September 1988.

A 14 page A4 sized document which outlines the County Councils methods, and proposals for preserving the Archaeological (including Industrial) heritage of Cumbria, and outlines their proposals to make available the information held on sites to the public at large, by the commercial production of an Archaeological atlas, scheduled for launch in 1990.

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UK JOURNAL OF MINES AND MINERALS.

Issue No.5 contained 2 very good articles on Welsh mining plus an article on the Mines of Lindal Moor by Alen Mc Fadzean.
This publication is very professionally produced and contains articles dealing with mineral finds and mines throughout Britain & Europe.
Available from Mrs J.C. Spence, 3 Oak Tree Road, Bawtry, Nr Doncaster, S. Yorks, DN10 6LD Tel.(0302) 710244 Price £3.50 inc p&p per issue.

THRELKELD QUARRY PROJECT

September saw the official launch of the Amey Roadstone/L.M.Q.T Threlkeld project.
L.M.Q.T hope to receive planning permission within the next few weeks for this project. Amey have come up with a favourable lease and the group are in the process of acquiring mining artifacts and plant. A 15 ton Scotch Derrick is being dismantled ready to be rebuilt on site. Hopefully the site will be open to the public in 1989.
Amey Roadstone Corporation are to build 8 craft workshops and refurbish a row of cottages to be used as starter homes,on the lower part of the site.

INDUSTRIAL NEWS

Mining to recommence at Parys Mountain, Wales

MINING is to begin again at Parys Mountain, on the island of Anglesey, North Wales, U.K. The property, which was once Europe's most productive copper mine will be worked by Anglesey Mining plc. This company began exploration on the 6 km^2 property in 1985 and has now received the go-ahead from Gwynedd County Council to develop a mine producing zinc, copper, lead, silver and gold.

Although mining activity at the site has been traced back to Roman times, modern exploration techniques have reportedly proved that the former workings only scratched the surface, and at depth substantial tonnages of polymetallic ore (zinc + other metals) remain. Robertson Research International has estimated that reserves are sufficient for at least 14 years' mining and more ore could be found.

A shaft is to be sunk and further development work carried out prior to full-scale production. All major planning consents are in place and within 42 months (from May this year) Parys Mountain could be producing at a rate of 400,000 t/y ore containing some 25,600 t zinc, 5,840 t copper, 12,120 t lead, 810,000 oz silver and 5,250 oz gold. This level of production is thought to make it the largest non-ferrous metal mining operation ever developed in the United Kingdom.

The independent mining reserve, prepared by Robertson Research International and calculated on the basis of economic and mining parameters proposed by Wright Engineers, is estimated at 5.28 Mt grading 6.04% Zn, 1.49% Cu, 3.03% Pb, 2.02 oz/t Ag and 0.013 oz/t Au. A total of 153,579 ft of diamond drilling has been carried out on the property and this is considered adequate to ensure that mining reserves are computed with acceptable confidence. However, the ore zones are said to be at a depth and configuration which handicaps conventional exploration. Surface diamond drilling will not adequately define the ore zones sufficiently to enable detailed mine design and production scheduling and further work must now be carried out from underground.

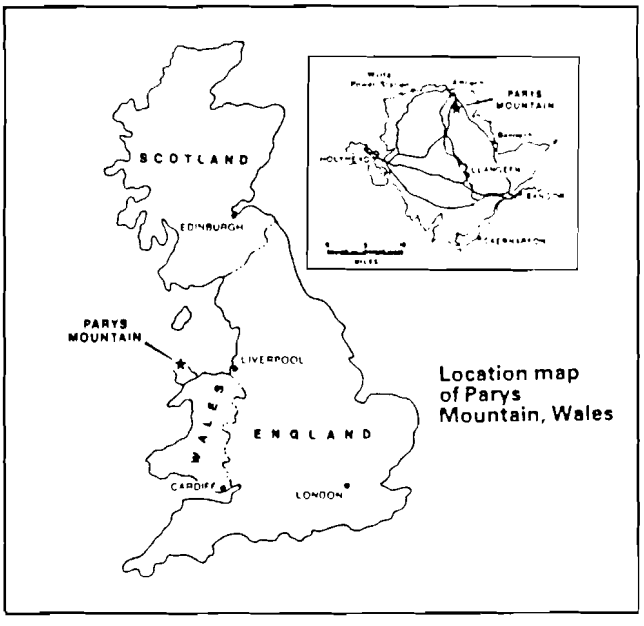
Wright Engineers has concluded that a staged programme is necessary for the ultimate development of the property. The next steps will be the sinking of a vertical shaft (450 m deep, 4.3 m diameter, concrete lined with a single hoist) adjacent to the deposit followed by the driving of sufficient lateral development to intersect the mineralized zones at several locations for the purpose of taking bulk samples for detailed metallurgical testing and enabling diamond drilling to be undertaken to permit final definition of the ore zones. This work (Phase I) will take about 2 years and will cost around £4.5 million. The company has raised funds for Phase I by placing of shares sponsored by Kleinwort Grieveson Securities, London.

Phase II will consist of the construction of the surface ore concentrator and further development of the underground mine and ancillary facilities. On the basis of the optimum milling rate of 400,000 s ton/y it is estimated that a further expenditure of some £13.9 million will be required, financed by a combination of bank loans, accelerated payments for concentrates, such grants as may be available and other sources of capital. It is anticipated that this construction phase would take 18 months to complete, whereafter commercial production would begin.

Mining operations should range from about 160 m to 560 m below surface and extend laterally for up to 650 m. Ore widths vary from 3 to 5.5 m. The ore zones are of a size and configuration which will enable conventional shrinkage stoping or blasthole stoping methods to be used. This should result in high unit rates of productivity and low operating costs.

The ore will be crushed underground to maximize hoisting efficiency. Test work to date, reviewed by Davy McKee, the project's process contractors, indicates that satisfactory rates of recovery can be achieved by using conventional methods. Alternatives for separating the metal sulphides are either differential flotation of a bulk Cu-Pb concentrate with subsequent Cu/Pb separation and parallel recovery of zinc, or sequential differential flotation of Cu followed by Pb and then Zn. The route adopted will be decided when underground bulk samples of the ore become available during Phase I. Most of the Ag will report in the Pb concentrate and Au in the Cu fraction.

Anglesey Mining is the European arm of Imperial Metals Corp., a Canadian public company with two producing gold mines in Nevada, U.S.A. and mineral interests worldwide. The company expects to create 40 to 50 new jobs during construction, using local labour where possible. Full production would involve about 150 jobs.



Location map of Parys Mountain, Wales

INDUSTRIAL NEWS CONTINUED.

Fyne gold (Ennex International) have received planning permission to drive an adit at Cononish,Tyndrum.

Minworth (Derbyshire) have restored the site at Carrock. Landscaping involving removal of all the mine buildings and covering of the mine adit took place during August.

Whiteheaps Flourspar mine,Durham (Minworth) has been abandoned.The mine buildings and mill have been dismantled.

Cambo Keels mine (Minworth) has ceased production. Part of the labour force has been redeployed.

Dufton mine,all the mine machinery and processing plant have been sold. Norwest Holst plan to relinquish the lease at the end of the year.

URGENT.

Articles needed for the Christmas Newsletter,copy deadline 1st December.

Any thoughts about a CAT Expedition in 89? information or ideas for inclusion in Dec newsletter. Could CAT make it to Europe in 89.
Chris Jones spent 3 wks touring in Portugal & Spain during the summer. From what we have seen there are certainly plenty of mines to visit. Chris was so impressed he is going back on the 16th Dec.

Copy to Anne Danson, Ashfell Farm, Ravenstonedale,Kirkby Stephen,Cumbria,CA17 4NL. Tel. (058 73)212.

REPROGRAPHY

Anyone wishing to submit photographs with their articles then please send your prints to me (Anton). They have to go through an intermediate process to enable the production of a reasonable photocopy facsimile. I will submit them for processing a batch at a time and I will need to have them a couple of months before the Newsletter release date.

NOTE!

(i).....It's best if you can trim the photo to show only relevant detail before you send it to me, that way I can get more done at one time.

(ii)....If you are sending more than one photo please indicate order of preference.. ... some photos may have to be carried over to be done next time.

(iii)...Colour prints reproduce best.

(iv)....The process does not harm the photo in any way.

(v).....Send the print alone (not the finished article), I will return the processed print for you to insert and work the text around. The finished article may then be submitted to the Newsletter Editor as per normal.

(vi)....Those submitting prints by post please include an S.A.E.

Disused mineshaft yields deadly secret . . .

Gardai find Provo guns range hidden underground

By ANN O'LOUGHLIN,
Security Correspondent

● An improvised launcher found by Gardai in the mine shaft at Rossmore Collieries.

GARDAI were yesterday called into comb a maze of old mining corridors under the Carlow-Laois countryside following discovery of an underground Provo training ground, and target shooting range, in a disused mineshaft.

Scores of spent cartridges from different weapons, including a heavy calibre machinegun were located by gardai, along with a fully assembled rocket, two handmade grenades and ammunition at Rossmore.

Security chiefs believe the range has been used by the Provos for shooting practice in the past number of weeks.

Gardai searched the forest district in an around the border between the two counties until late last night as fears grew that further caches and target ranges were hidden among the complicated mining network that has entrances and exits in both counties.

The garda operation, led by Supt. John McGroarty, located the latest haul on Wednesday night in an isolated forest district about six miles from Carlow town.

Technical experts were on the scene yesterday. The weapons will later be moved to garda headquarters.

Sources say the disused shaft was an ideal training camp for the Provos: it runs about a mile underground, with numerous off-shoots. Testing of weapons would be easy, as sound would be contained.

● Gardai emerging from the mine shaft at Rossmore Collieries, near Carlow town, where they uncovered a quantity of arms and ammunition.

Security sources also indicated that following the nationwide Operation Mallard sweep for arms some months ago, certain areas are checked on a regular basis, and this had allowed gardai to time when the IRA could possibly have used the disused shaft.

The 100 rounds of ammunition were in a steel case which, according to gardai, had no discernable or distinctive markings, and parts for a heavy machinegun also were found.

IRISH INDEPENDENT
FRIDAY SEPT 16TH 1988

UP FRONT

By A.D.C-P-Thomas.

News Of Furness Activities.

Round up on last report.

Lime Blasting ..... Pursuant to our lime blasting experiments, and in answer to the sceptics, I am indebted to Andrew for drawing to my attention a piece in Lead Mining In The Peak District, p14, where it says "The Ball Eye Sough....is considered in part at least to have been made by lime blasting." To anyone interested in more contemporary applications of lime blasting, may I refer you to an article I recently stumbled across in P.D.M.H.S. newsletter No 35 about CELTAMEX and a recent application thereof.

Bolton Heads ..... The Bolton Heads dig has been suspended to release time for other projects.

Crossgates ..... Attempts are still being made to get formal permission for this project. The secretary is currently writing to the landowner to this end.

Latest Activities.

Whitriggs ..... Widge 2 was completed in August and it is now possible to get tools and materials in to the inner reaches and have enough energy left over to think about using them.
The rise scaling program has almost been completed with no significant leads identified as yet.
Whitriggs digs No 3 & 4, on what we believe to be the N.L.I&S Co crosscut (No 3 dig West and No 4 dig East) are begun.
There is a reasonable display of mining artefacts exhibited in the horse level, and we would welcome the addition of any artefacts which have hailed from these workings. It is felt that a museum type display of this nature, in situ, is contributive to preventing a mine becoming as merely a dirty red hole in the ground.

Logan Beck..... Work has begun at Logan Beck. We are currently digging out the lower addit tail which involves digging a cutting in from the beck at beck level. When completed (next year perhaps) this should be an impressive cutting approx 100 ft long and ranging from 4 to 12 ft deep, dry stone walled along its whole length. For those agog at the enormity of this job, may I just explain that accessing the level is only stage one of the whole plan, the master plan being eventually to suck the underhand stopes dry with pumping equipment and to use this level for the pump discharge. The depth of the cutting should assure us of a dry level sole, it being impossible to pump dry workings that are below addit when there is 5 ft of standing water in the level behind you, unless you reckon on building a complicated dam affair.

Henning Valley

Cave Mine ..... Work on the fall in the level at the far end of H.V. cave has begun. It is anticipated that this level will prove to be a trial heading off the N.L.I & S Co No 2 level. No 2 level is the one which Mr R. Bland attempted to access from under the railway/spoil bank in Henring Bottom opposite Whitriggs. We expect this dig to be impeded by the fact that Crimson Crawl

(contd.....)

often becomes flooded in wet weather.

Margaret Mine

Bogie..... The wooden bodied ore bogie which for ¾ of the year lay submerged in the Daylight Hole entrance lagoon has been removed for restoration. So far we have stripped off the superstructure and had the chassis, wheels and axles shot blasted and primed. Mr E.G. Holland assures us that this was once the Margaret Mine bogie and in view of this we plan to exhibit it, when fully restored, on a short length of track just outside and adjacent to Whitriggs Horse level ..... the portal to the Margaret Mine incline was adjacent to and a little lower than the horse level.

Survey ..... It is hoped ultimately to produce an underground survey of the Crossgates, Henning Valley, Lindal Moor and Whinfield area, all combined on one big plan to highlight promising leads, connection potential etc, and in order to do this we need a theodolite. Does anyone know where we can borrow one from ? It will be used for surface work only mapping and triangulating portals and shafts and their relative vertical and horizontal positions to one another. At a guess it will be needed for perhaps 2 - 3 weekends. Please let me know if you can help on this issue.

Materials ..... It recently occured to me that out of a club of say 100 members, if as few as say 30 of these members could each as a result of D.I.Y., log liberation,spring clearouts etc, donate 5 pieces of timber per year to project materials stock, then this would provide an annual stock base of 150 pieces. Now everybody knows that timber doesn't just grow on trees, it costs dosh, and whilst we have adequate timber stocks at the moment an input of this magnitude, if it were possible, would release any future available project funds for more specialist materials such as steel access tubes and the like. This of course does not only apply to timber but to any material which may have a use under or overground in the name of mine preservation.

As a rough guide:

Steel...any section of reasonable strength, lengths of 2ft plus.

Timber..any section of reasonable strength, lengths of 2ft plus.

Logs....any diameter 2" plus, as straight as possible and preferably bark free ready for treatment, any length of 2 ft plus.

Also; corrigated steel sheets, solid panel doors, scaffolding, bits of rope, ladders etc, etc.

Dig This ..... Anyone interested in Joining in on project work ? There is activity of some form or other in Henning Valley most Fridays (not to mention Mon, Tue, Thurs and Saturdays) and most Sundays there is work being done at Logan Beck Copper mine. Interested?, then give J. Helme, P.Timewell, P.Sandbach or myself a ring.

LA FIN.

A Deadly Family.

Radon and its daughters

One of the recent concerns of the underground explorer is potentially more dangerous than flooding, hanging death or any of the usual hazards associated with mine exploration. This is Radon gas (Rn) and its daughters (radiated particles). Rn is a product of the decomposition of Uranium-238 to Radium-226 to Radon-222. This Radium has a half life of 1602 years and Rn has a half life of 3.8 days. Eventually it decays to a stable lead (Pb) isotope. It is the decaying process which causes the problem where there is an ejection of both alpha and beta particles coupled with a little gamma radiation.

It is the alpha particles which are the most potentially dangerous as they have the ability to mutate human cells and also cause cell multiplication or cancers. This damage is most likely to occur in the lungs as the particles may be inhaled.

The decay of an Rn molecule occurs when it breaks up into three alpha particles and these, of course, may be inhaled. However this situation is not quite as black as it appears as over 50% of Rn and its daughters are exhaled, the lungs only absorbing a tiny fraction.

So what has this to do with us? Unfortunately Rn may be found in the bedrock of many mines and caves (see the wall at Force Crag) especially those that have poor air circulation or are extremely dry. Water too, is a potential carrier of both Ra and Rn, Rn being 20 times more soluble in water than oxygen! (now what about Force Crag's wall?)

Conditions of climate are also critical factors in how much Rn is present. The weather can create a drop in barometric pressure, causing air to circulate and this is especially useful in mines situated in mountainous terrain. Rainfall also creates a faster percolation of water and this will help flush out Rn.

As to which rock produces the most Rn, well this would seem to be spread out over a wide range of types, the discussion of which will warrant an article of its own. Suffice to say that all rocks seem to be capable of this even limestone.

It should be noted that smoking underground causes a dramatic rise in the WL of Rn and its daughters by up to 10 times and this also affects non-smokers who by passive smoking increase their potential take-up.

Rn detection and measurement in disused metalliferous mines is an area which has recieved scant attention until quite recently. Several clubs within N.A.M.H.O. are producing quite disturbing information. It would be an interesting project to install a dosimeter in potentially hazardous mines such as Carrock, Smallcleugh, Greenside and of course Coniston.

LEGISLATION & METHODS OF DETECTION RELATING TO RADON.

Since the 1970's the NRPB have been monitoring radon in mines. Early research showed that some miners in non-coal mines were being exposed to undesirably high levels of radiation.

The Health & Safety at Work Act 1974 and later the Ionising Radiation Regulations 1985 resulted in legislation relating to the exposure of workers to radon.

Exposure to potential alpha-energy(radon daughters)is commonly expressed in the unit Working Level Month (WLM)which is the exposure accumulated by working ina radon daughter concentration of one Working Level(WL)for 170hrs,the period normally worked in a month.
One WL is any combination of the short lived decay products of radon 222 in a cubic metre of air that will result in the ultimate emission by them of 1.3×10^5 MeV of alpha energy.

Miners have an annual rad dose limit of 4WLM this is to allow for exposure from other sources such as surrounding rocks and mildly radioactive rock dust.
The International Commission on Radiological Protection recommend an annual dose limit of 4.8 WLM(50mSv)for people at work.

Radiation exposures in workplaces are controlled by classifying working areas accordin to the likelihood of exposure. Areas where exposures are likely to exceed 0.1 WL are designated as controlled areas and exceeding 0.03 WL supervised areas.

The system of control is summarised in the following tabulation.

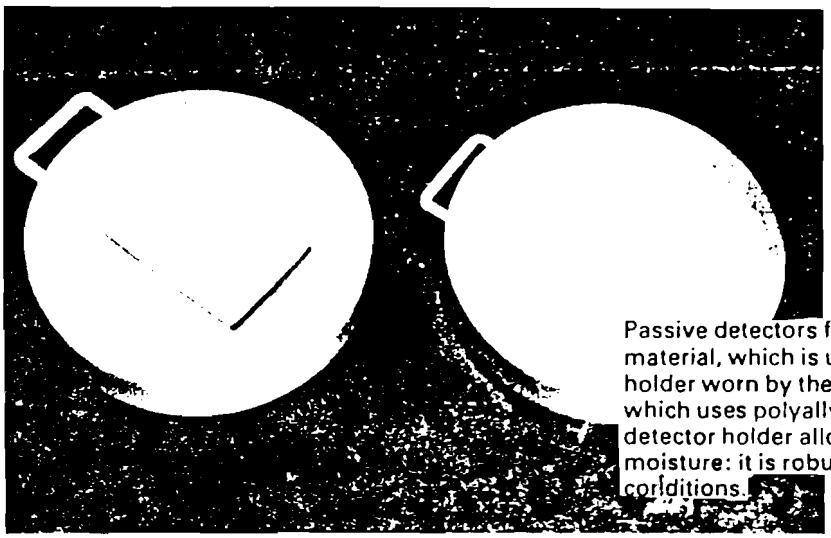
Control parameter	Annual effective dose equivalent, mSv	Annual exposure, WLM	Derived air concentration, WL
Radon daughter limitation	50	4.8	0.4
Reduced to allow for other sources	—	4*	0.33*
Controlled area	15	1.2*	0.1*
Supervised area	5	0.40*	0.03*

*reduced to allow for other sources of exposure in mines.

A five year study funded by the EEC looked at over 60 mines in the UK,France,Germany, Italy and Belgium. This showed that in a substantial proportion of the mines studied, miners might receive doses exceeding 0.3 of the limit.

Methods of detection. To provide miners with a simple and reliable means of detecting radon gas the NRPB have developed the personal dosimeter.

The NRPB radon gas personal dosemeter developed for miners



Passive detectors for radon gas consist simply of a piece of detecting material, which is usually radiation-sensitive plastic, mounted in a hollo holder worn by the miner. NRPB has developed a passive dosemeter[5] which uses polyallyl diglycol carbonate as the sensitive element. The detector holder allows radon gas to enter easily but excludes dust and moisture: it is robust enough to withstand the testing underground conditions.

The Ionization chamber is one of the most common instruments used for measuring radon gas. Air samples are drawn into a cylindrical chamber, a filter removes water vapour, radon daughters & aerosols, so that only the parent radon gas is admitted to the chamber. Ionization currents are then measured.

The radioactive gas monitor RGM1/1 provides a more sophisticated method of radon detection.

RADIOACTIVE GAS MONITOR RGM1/1

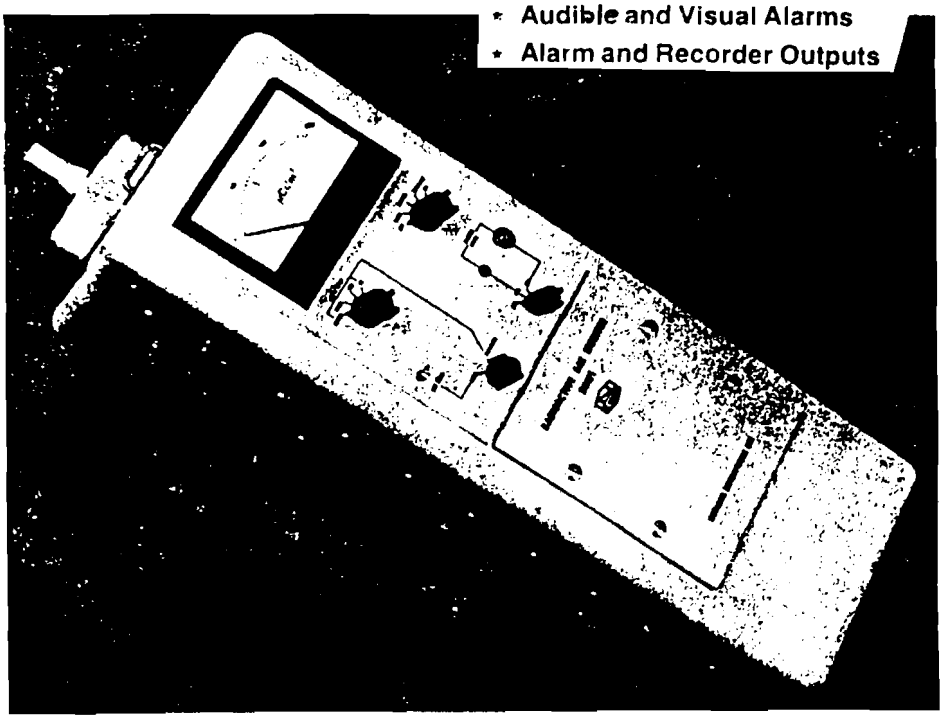
- Range 0-500 Bq/cm^3 of Tritium in Air (0-15,000μCi/m^3)
- Gamma Compensated
- Measures 1MPC of Tritium in Air
- Battery or Mains Powered
- Preset Alarm Levels
- Audible and Visual Alarms
- Alarm and Recorder Outputs

The Nuclear Enterprises Portable Radioactive Gas Monitor RGM1/1 measures the activity of alpha and beta emitting radioactive gases in air, in the presence of a gamma radiation background.

The RGM1/1 is mains or battery powered. It has full scale ranges of 0.5, 5, 50 and 500 Bq/cm^3 of Tritium in air (equivalent to 15, 150, 1500 and 15,000μCi/m^3).

Air is pumped through the instrument by an internal pump at approximately 10 litres/minute.

The instrument incorporates two concentric ionisation chambers, the inner one detecting gamma only. This permits the measurement of low HTO concentrations to be made even in the presence of a gamma ray flux of a few milliroentgens per hour. The difference in the currents from the chambers is measured by a solid state electrometer amplifier.



A copy of the article 'Progress on the control of miners exposure to radon daughters' published in the Radiological Protection Bulletin May 87 (NRPB) and further references relating to radon and its detection are available from the editor.

RADON TESTING 21-23 Oct.

The results of radon testing carried out by John Jones, Dr John Swann, Samantha O'Shea and Alan Swann of the Wirksworth Mines Research Group will be published in the next newsletter. The group visited Force Crag, Greenside and Coniston. On the spot testing revealed no appreciable levels of radon.

ON THE EDGE

By A.C-P-Thomas.

On Sunday 17/4/'88, three C.A.T. members, Sheila, Paul Timewell and myself availed ourselves of the opportunity to view the workings of the Alderly Edge copper mines under the guidance of the N.M.R.S. meet which was scheduled that day. One objective of our visit was to see some of the project work members of the D.C.C. (Derbyshire Caving Club) have been doing here, and it is an understatement to say that we were overwhelmingly impressed with the scope and scale of their activities.

Leasing the mines from the National Trust they have arrested the workings from the consequences of public disfavour and delicate accessibility and now have a well balanced working agreement. Occasionally they lead paying tourist trips into some areas of the workings and the money thus raised is used to finance projects.

It would be fair to say that the scale of these projects is more representative of a period of re-working of the mines rather than just mere exploration....albeit for archeological and historical interest as opposed to pay dirt.. ...., and as such will probably be deserved of mention in the historical record of the mines. With meticulous attention to detail in respect of consolidation of their work, they are turning up literally miles of workings and everywhere you look underground there is evidence of hard consistant digging activity. I must confess that I had as much fun interpreting the modus operandi of their inclinage, tramways, haulage mechanisms etc as I normally get from the genuine article.

To give you an idea of their endeavours here is a brief but by no means exhaustive list of their work.

2 ton side tippers in Hough level.

(i) Bear Pit Shaft... originally infilled to surface, now completely excavated to a depth of 150 feet down to Hough level thus opening the way from Hough level portal through to Wood mine.

(ii) Three other shafts of significant depth have been excavated (all originally full to surface) and even as we were there they were collaring another (preparatory to moving the headgear over from Bear shaft which had just been finished....see photo) with a view to excavating down to prove and discover further workings.

(iii) Shaft excavated down onto Wood level, approx 25 feet, a beautifully done square brick lined shaft with ladder ways via an intermediate platform. (Note, all excavated shafts are collared and capped with access via steel manhole cover).

(iv) Numerous excavations of silted levels etc.

(v) Numerous ladderways installed to provide access, round trips etc.

(vi) Numerous bridges over shafts, galleries etc for access, round trips.

(contd.....)

(vii) Rediscovery of portal to Hough level (located from inside via another dug shaft onto Hough level) and now the portal has been secured they are excavating this which is silted to a height of 4 - 5 feet along its full length. Laying rails as they go they have excavated ½ mile, removing spoil in 2 ton side tippers pushed by hand (see photo). Recently they have availed themselves of an offer of a diesel loco which they have now commisioned and installed in the level and will now speed their progress towards the bottom of Bear pit shaft and beyond towards wood mine ... over a mile in all, eat your heart out Clerks level.

Photo; head gear on Bear Pit shaft, note trap door platform and spoil chute for tipping kibble spoil directly into waiting dumper truck.

IA FIN

HONISTER SLATE MINE 7th AUGUST 1988

ML Alastair Cameron plus 8 members.

The "Lake Poets", those opium-soaked eccentrics of the 19th century, frowned on any form of industrialisation in the Lake Counties; Honister Slate Mine being near the top of their "hit-list". Bill Wordsworth, when he wasn't committing incestuous sin with his sister, penned many paragraphs about Honister and described the "terror in the eyes of the miners" as they hung in woven baskets held by chains driven into the face of the crag. John Ruskin that literary mega-bore and lover of little boys, is supposed to have toured the underground workings inside the crag. Towards the end of his life he is reputed to have had a recurring dream. It involved him standing in darkness on a "tottering and crumbling pile of turmoil and despair" with his pathetic body subjected to intense heat and pressure as the ceiling and walls pressed in on him.

That was all many years ago. Today, 150 years on, a different type of person is inspecting the now crumbling remains of the Honister Mine, this time all nice clean-living guys to a man.

The latest C.A.T. trip to Honister was held on the hottest day of 1988, a fact that caused some discomfort as we struggled into our underground gear in the Honister Hause car park. It also must have caused much amusement to the scantily dressed fell-walkers setting out up the Drum House track with Great Gable in mind. What none of them could ever have known was that in the caverns deep inside Honister Crag the air temperature would be precisely 55 degrees F even on the hottest day of the year.

The previous Honister trip which was reported in newsletter No 19 had been the first official C.A.T. trip to the area. There were several objectives for the present trip including correcting and upgrading the 1971 Collinson mine-plan (reproduced in newsletter 19), carrying out more interpretation of the site, entering some of the many as yet unexplored areas and, not the least, keeping as cool as possible.

Having gained access to the Link Level (and got out of the sun), the internal "Old Incline" was the first objective. There is no doubt that the restoration of the incline, winding drum and the counterbalance system would be a very worthwhile project. Good potential for a future C.A.T. meet.

From the top of the incline the party climbed out onto the external incline which was in bright sunshine. At this point we were about three quarters of the way up the crag face. John Adams climbed the rest of the way up the incline to check the mine map while the meet leader, who

doesn't like heat at the best of times, sat in the shade. We were in an amazing situation. Directly below us a thousand feet down tiny cars looking like toys moved up and down the Honister road. A number of families were picnicing by the roadside. My father always told me never to throw stones or roll boulders down the mountains. I never have, but there have been times when temptation has ------

It is not possible to descend to the bottom of the crag by the external incline because, at one point where it crosses Black Star Gully it has fallen away into the depths of the gully. However it is possible to go into the crag above the gully, climb down the Internal Incline for a short way and pass back to the outside below the gully. Having done this Mike Mitchell and I spent sometime looking back up the incline debating how it had crossed the gully. It was always assumed that this was by a steep timber bridge but there is some evidence that it may have been by a solid masonry structure and we went away feeling that this was the case. Peter Holmes, a C.A.T. member from Newcastle backs this up in a very interesting letter in journal No 20.

Before leaving the incline we were visited by a yellow Sea King helicopter which chomped its way up from Buttermere and hung there opposite us for a few seconds before soaring away only to reappear shortly afterwards. Had someone down below raised the alarm ? Fortunately it didn't come back a third time. We would have looked immensely stupid if they'd tried to rescue us.

By this time the sun was in the zenith and it was time to go back into the cool of the crag and climb the New Incline. This was the point at which we got the first hint of the vandalism that had occured since our last trip.

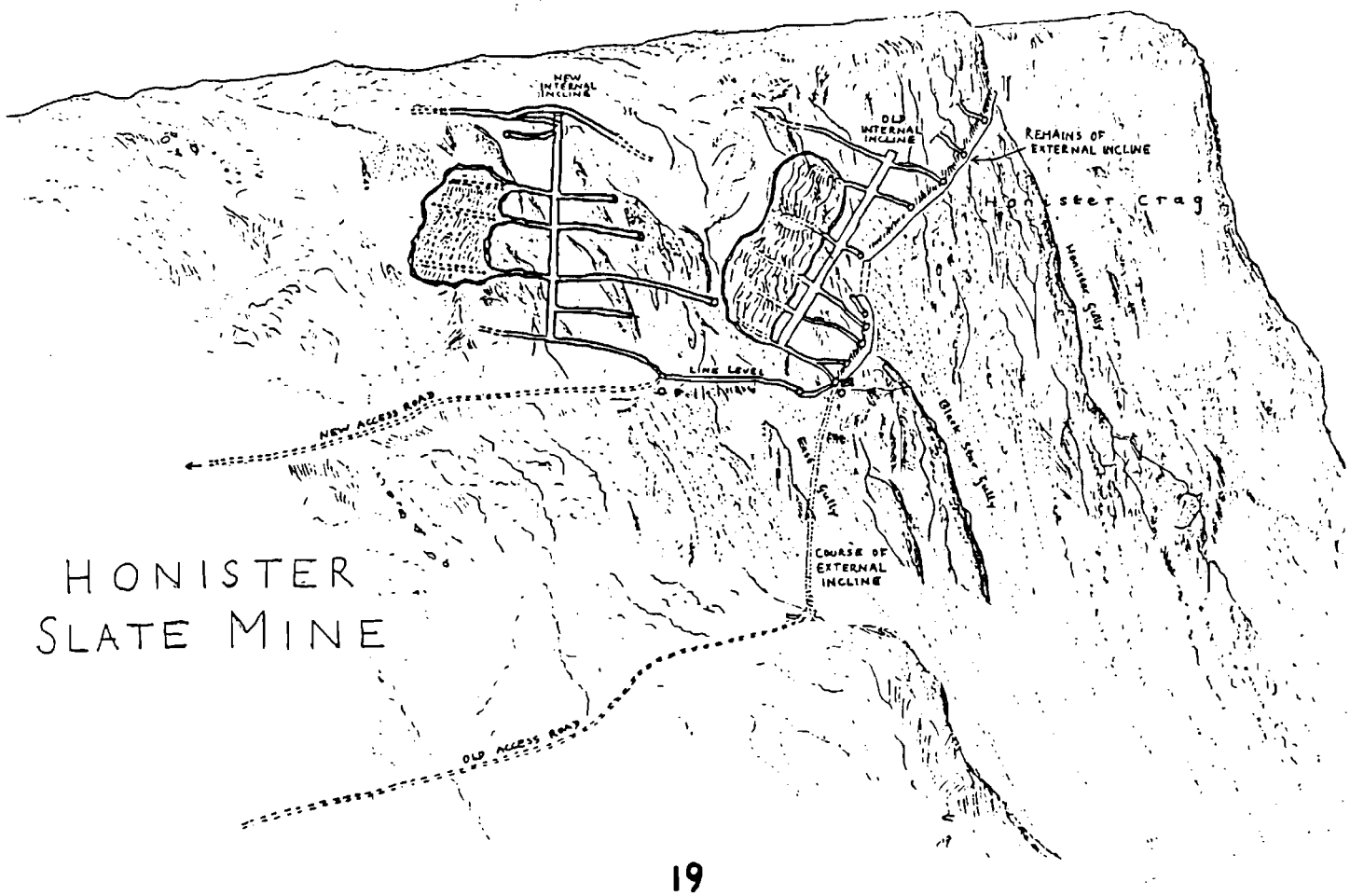
First of all the party explored the bottom level and made corrections to the mine-plan. Then we returned to the foot of the incline and found that the ladder and hand line had been removed. The ladder was found and repositioned. Then we noticed that metal drums had been rolled down the incline, probably all the way from the top. We started to climb the incline and noticed further signs of damage. Most of the hand line had been cut. At one point a section of ladder had been completely removed and mild gymnastics were needed to progress onwards. Finally we found that the silly buggars had lowered the slate trolly with the turntable turned in such a way that the trolly was jammed against the fourth horizon loading station. All very clever.

It was now getting towards the end of the trip. The party members who hadn't been to Honister before were shown the famous graffito in the winding station and then we went out to day to climb down to the car park.

The afternoon was hot and humid and all the shops in Borrowdale had sold out of lemonade.

Each visit to Honister produces more un-answered questions. We will need to organise another trip soon to safeguard the New Incline from further vandalism and get the Old Incline trolley back on the rails. There is also a promising looking tunnel found by Mike Mitchell near the top of the crag which could give access to further unexplored areas.

There is no doubt that some major restoration is needed if, what must be the finest monument to Victorian engineers in the county is not lost for good. A private approach has already been made to English Heritage, but the cost of a restoration project is such that private capital must be involved. The danger is that a tourist-gawping extravaganzer such as those at some of the North Wales slate mines would result. Meanwhile a few of us are prepared to take round small private parties for no charge other than a pint or two in the Scafell afterwards. This, at least is a beginning.



HONISTER SLATE MINE

EVENING MEET, SEPTEMBER 21ST 1988.
CONISTON DEEP LEVEL AND TAYLORS LEVEL. ML Ian Matheson

A small group gathered for a walk in exploration of the more easily accessible levels at Coniston. One tends to pass through these levels quickly on the way to or from some other project, and it was thought that as they contain a lot of interest it would be worth while spending some time looking at them more thoughtfully. Indeed there could well be more to discover - Waterfall Shaft, a ladderway down to Deep Level where there is a complete ore tub, was discovered not so long ago when Peter Fleming took the time to consider why the water disappeared through the floor of Grey Crag Level!

For the past year or so LMQT have been engaged on a dig through the blockage between the old North Cross Cut and Deep Level in order to improve access to the stopes beneath the New Engine Shaft. They finally made the connection sometime in August and so it was decided to have a look at this first. The dig is an impressive work, rising through some 20 feet of rubble. Tons of rock have been removed and stacked in the cross cut, and a lot of timber has been used to support and stabilise the ground in and above the dig. To get through one has first to crawl for a few yards and then squeeze beneath a large boulder before climbing up a timbered rise. The boulder has a shattered base and very little other support, and one should squeeze through with great delicacy so as not to disturb anything. One emerges on a rubble slope, and a short climb down leads into Deep Level. It has a timbered roof in this area, which is missing in places, and the stope rises up to the false floor of Taylors Level directly above. This place is familiar to CAT members who first entered via the Red Dell Stopes back in 1983. Since then there have been several visits, including the boating trip and the mass swim along the flooded stope beneath the New Engine Shaft. On the present occasion we walked along the level to the point where the floor is missing and the water can be seen about 20 feet below. An electron ladder was in place, and down below the LMQT group have begun to construct a walkway just above the surface of the water. This will have to be extended about 200 feet to reach the other end, where it may be possible to enter a section of Deep Level which has not yet been re-explored.

We returned to the Deep Level Portal, and decided to examine Taylors Level Adit, part of which lies directly above the area we had just left. When we reached this area we found the ropes in place which the LMQT group use to access the inner end of their dig, 90 feet below. The floor of Taylors Level in this area is false, and we found that some movement had taken place since our last visit. In particular a new crater was forming, caused no doubt by material dropping out of the bottom of the floor. The whole area is very unstable and in a state of collapse, and lying as it does right above the newly accessible part of Deep Level, threatens anyone exploring below. We returned to the surface in a thoughtful frame of mind.

The new connection makes it possible to abseil from the Red Dell stopes or from Taylors Level and walk out through Deep Level. Already quite a few parties have done this. Whilst the dig must be admired for the skill and perseverence which went into it, there must be concern that the creation of easy access may encourage people who are not conversant with mine exploration to venture into situations where there are dangers about which they have no knowlege or control.

GRANNY'S DAY OUT

Joan Helme

It was a wet and windy September Saturday, just the kind of day when a warm fire, a good book and a pot of coffee seem most inviting, with possibly, between showers, a short walk with the dog for a little gentle exercise.

But the opportunity had come to fulfill John's forty year ambition with a trip into Ease Gill, the longest known cave system in the British Isles, so all thoughts of a comfortable rest day were dismissed.

At Bullpot Farm, H.Q. of the Red Rose Cave and Pothole Club, Don, Sheila, John and myself were met by Dennis the leader who had booked the cave for the weekend. Limited access to the big cave systems is arranged by the Northern Council of Caving Clubs to avoid hold ups at the pitches.

Setting off across the fell we splashed through the standing water until we came to the manhole cover which would pass unnoticed in a suburban street but which here amidst limestone boulders and grassy hummocks looks quite out of place. This is Lancaster Hole, one entrance to a vast and intricate series of caves which, the story goes, was discovered by a resting fellwalker who on investigating a small area of quivering grass found that it was caused by a draught from below.

This is a cave entrance where there is no messing, no opportunity for second thoughts. Lift the grid; secure the rope; attach the cow's tail and descender; ease through the narrow opening ..... and then abseil down, down, down 110 feet into a large shaft with an unavoidable waterfall down the back of your neck.

Within a few minutes we had all landed on the boulder strewn floor from which a short climb leads into a large rift passage and onward through successive chambers, gullies and crawls to reach Colonnade Chamber with its fine stalactite and stalagmite columns, built up, drip by drip, over geological time (and more recently repaired with adhesive!)

Further on hundreds of straws, just a few inches long, hang from the roof and catching the light from car lamps resemble decorations dangling

from a Christmas tree.

Upright, stooping, on all fours or creeping flat out we advanced through passages, pots and caverns with names such as Painter's Palette, Scylla and Charybdis and the Minarets. Progress was not easy for the rocks were covered in a thick mud slime obliterating foot and hand holds so that a push or a pull, or sometimes both, were needed as we climbed higher to traverse the shelves way above the main stream passage.

'Holes in the floor should be avoided' says the guide book with calm understatement but even a gentle slope becomes a hazard when covered with slippery and sticky mud and the thought that first stop down was 80 feet below didn't inspire me with confidence. The worst places were protected with ropes and ladders but getting on to and off these required careful movements which heavy tackle bags and dim lighting made more tricky.

We sat down for a belated lunch about 2pm. "Keep something for later," advised Dennis. "If the rain has continued outside we may find our exit routes blocked and it's possible we may have to return the way we've come. In that case it could be midnight before we're out! "

I tried to push aside the feeling of horror. It had been hard enough crossing that mud and clambering over the rocks when I was fresh but the return journey would be even more tiring and then there would be a long prussik to the surface at the end of it all. I prayed hard that the rain had stopped and that the water level in the passages ahead would be low enough to allow us through.

Food and coffee revived me and when a little further on we met another party coming towards us who said that the exit was still open the feeling of relief gave me a new surge of strength.

Had I fully realised what was still ahead I probably wouldn't have felt quite so relieved but ignorance is bliss and I had confidence that our leader would see us safely through, though at one point when he seemed temporarily unable to find the way I thought longingly of that good book and pot of coffee and warm, relaxing chair that I might have been enjoying.

At Eureka Junction we paused. "This is where I'd like my ashes scattering," said Dennis for whom caving is a way of life.

We clambered down to the stream passage where the noise of the narrowly confined rushing water made it almost impossible to hear instructions. This was no moment to hesitate but to plunge in,feet first, to be flushed round the bend like Harpic, head only just above water and inches below the rock roof. There was no room or time to negociate the U bend timidly as the force of the water caught hold of my body and swept it along.

A moment of panic, a choking gasp for air and I was standing upright again, scoured clean of mud and ready for the corkscrew passages ahead. The water was about a foot deep. Most of the way it was possible to walk upright sliding one's body round the twists and turns and bending into the bulges and hollows gouged out by the stream and its load of rocks throughout the centuries but occasionally it was necessary to climb higher or duck lower where the passage was too narrow to accommodate helmet or wider parts of the body, even sideways on.

Scrambling up waterfalls when you're already wet through is quite enjoyable and now that we were away from that wretched mud comparatively easy. The twists and turns seemed never ending but eventually Dennis reported, "Only about half an hour and we'll be out. Just a couple of climbs, but there's a fixed rope to help."

We stood at the foot of a near vertical wall of rock whose height was difficult to estimate in the semi-darkness. "There's footholds here and here." I strained to see where Dennis was pointing. My lamp picked out a slight dent in the wet rock - not my idea of somewhere to lodge my welly clad foot. I was tired, damp and aching and there was no strength left in my arms and shoulders but somehow I had to get up this rock face. The inconceivable alternative was to do the whole journey in reverse. "I'll put a lifeline on you and give you a pull", said Dennis. Fellow club members know that Dennis, despite his small stature, has immense strength and expertise. I weigh 11 stone, and that's without soaking wet caving gear but if he said he could get me out that was good enough for me.

A rush and a shove from below, a haul from above and a weak attempt by me to pull myself up on the fixed rope but where were those footholds and why was the knot in the wet ropejust out of reach? I was suspended beyond the help of those below and wedged awkwardly so that the pull from above had no effect. I wriggled and rested, wriggled again and slipped back. For what seemed like hours I struggled to gain the few inches necessary to reach the security of the shelf above, my little remaining strength rapidly ebbing away. One last effort! Dennis hauled, I scrambled and collapsed at the top of this first climb. While the others came up with what seemed to me great ease and competence I rested in preparation for the last pitch. A strategically placed length of scaffolding made all the difference and with a good foothold to start off I was quickly up to the top.

"Just round the corner you'll see daylight."

It's at the end of a day like this that the expression ' the light at the end of the tunnel' takes on real meaning.

A final flat out shuffle through the plastic pipe which protects the opening of New Cave and I was out into the open air - soaked, bruised, exhausted..... but exhilerated!

Footnote - Our party of five included one grandad and two grannies- hence the title of my account.

MEET REPORT

BONSOR VENTILATION SHAFT AND THE EASTERN EXTENSION OF DEEP LEVEL. OCTOBER 2ND 1988. ML IAN MATHESON.

Deep Level Adit at Coniston is a cross cut which intersects the vein after some 200 yards. At this point one can see a cast iron pipe rising from below. This rising main carried water from the pumping station over a thousand feet beneath, and fed into a wooden trough which curiously seems to have directed water further into the mine. The pumps were powered by the Old Engine Shaft Wheel, and were driven via pump rods running down the Old Engine Shaft. About two hundred feet of these massive wooden rods still remain in the shaft, suspended precariously by a catch wing situated below the remains of the balance bob. To the left of the rising main on Deep Level is a flooded shaft, Bonsor East, the upper part of which once descended through the stopes above as timbered partition, and which carried the earlier winding gear powered by the 18th Century Bonsor East Wheel. To the right of the pipe Deep Level continued to the east for nearly 300 yards, but is now blocked by a major collapse of the false floors ore hoppers and deads which were stacked in the stopes above. The area beyond the collapse was explored by members of LMQT in May 1987, after they gained entry via a ventilation shaft beside the cart track some 300 feet above. After surveying and making a video recording of their discovery they invited C.A.T. to see it, and a small group were conducted through the workings by LMQT and CAT member Roy Garner. The purpose of the current meet was to enable other CAT members to view this interesting discovery, and perhaps also to simultaneously descend the Bonsor East Shaft. This latter objective proved impracticable as the entrance had nipped in a few months previously.

There were eight members present, Ian Matheson, Mike Mitchell, and Peter Fleming, all of whom had been down previously, and Clive Barrow, Don Borthwick, Paul Witheridge, Guy Jones, and Sheila Barker, who had not. Five of the group set off to view the LMQT discoveries. The first pitch descends cleanly for 90 feet to a false floor which is built in a part of the stope which pinches in to form a gap only six inches wide. A short traverse to the left which was protected by a lifeline and which required care to avoid sending stones through the gaps in the floor led to the head of the next pitch. This was 185 feet with a rebelay at 100 feet. Five of the group descended to explore the Eastern extension of Deep Level.

After climbing down through the remains of the roof of the level and walking along it for 40 yards there is a sump, full of blue green water. This was crossed using old timbers to bridge the water, with a life line for protection. Shortly after this the level leaves the stopes and gains a solid rock roof. The floor here is covered with a sheet of translucent calcite. In places white plates of calcite formed by drips from the roof contained black and white 'cave pearls'. Further along the floor is covered by a layer of bright red mud which is very striking, and a nearly complete gunpowder barrel stands in the middle of the floor. Care was taken to disturb these deposits as little as possible.

At the end of this section is an alcove containing some artefacts. 150 yards beyond the deep sump are three more boarded over water filled sumps at the side of the level. Above is a very interesting stope about thirty feet high and fifty long. It was constructed as an underhand stope with a manway at each end to allow ventilation and access. A climbing chain hangs down each end, and the waste rock was stacked on stemples to form the roof of the level and the floor of the stope. The waste is about 25 feet deep, leaving a tunnel in the roof of the stope in which one has to stoop. . Very little ore can have been produced as practically all the space has been refilled. It is possible to get up into the top of the stope using the original climbing chain, although only the Meet Leader did so. There is a complete tallow candle in a wooden box up there, the remains of burnt out candles on the walls, and some sacking.

Deep Level continues for a further 80 yards to the fore head where it leaves the volcanic rock and enters a vein of slate which has been quarried at some time, forming a small chamber. It was strange to realise that before the collapse of the roof of the level this area could be reached very easily by a few minutes level walk from day.

Messrs Mitchell and Fleming meanwhile abseiled down the Old Engine Shaft as far as the crosscut from Bonsor East Shaft Head, and set about digging out the entrance from inside, aided by Clive Barrow outside. They completed this task and Peter Fleming then joined the group in Deep Level. At this stage the exploration there had been completed, and Ian Matheson set off up the ropes hoping to have a look down Bonsor East. Paul Witheridge put a bolt in for a rebelay to split the bottom half of the 185 foot pitch, and another about 40 feet below the top is desirable to split the whole into four pitches. A loose flake immediately beneath the floor at the top of this pitch also needs removing. Bonsor East Shaft had been derigged by the time Ian reached the surface, so he and Mike Mitchell set off to spend a couple of hours on a reconnaisance of another long standing project. This could well lead to yet another chapter on the re-exploration of Coniston Coppermines, but more of that in the next Newsletter!

Page 19 previous newsletter 'A stomach..... comes from Diderots Encyclopédie of 1763 and descibes an iron furnace.