

No man is entitled to, or can demand his Wages oftener than once a Month--at the Monthly Pay.

At each Monthly Pay, the last or "Onligging" Week will always be kept back.

NO.

24

Any man who is absent without leave--unless through illness, which must be certified by the Doctor for the Mines--will for each day he is absent be Fined in the sum of 400. 56AUGUST 1989

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Thanks to Margaret & Pete Fleming for Photocopying

Ed. Anne Danson, Ashfell Farm, Raven stonedale, Kirkby Stephen, Cumbria, CA17 4NL.

COVER Courtesy of Alen Mc Fadzean from his new book The Iron Moor. An Account of the 'Silvermines 700' Seminar

9/10 June O'Meara's Hotel, Nenagh, Co. Tipperary

After a reception and the official opening by the (then) Minister of Energy the first presentation was by Dr John Feehan (Environmental scientist and historian) who introduced the area with numerous slides of the countryside and of historical and archaeological sites.

Next morning Professor Adrian Phillips (Trinity College, Dublin) gave a lecture on the geology of the region. This was followed by Des Cowman (Historian) on the mining history from 1289 until the early 20th century.

Dr Martin Crichley (Geologist) showed slides of the mining remains above ground and of the underground workings at Shallee mine. He outlined the plans for a heritage centre which are being considered for Shallee mine, by the hosts of the seminar, Shannon Development. Eamonn Grennan (Geologist) gave an account of the recent mining at Silvermines and the official and actual reasons for the closure of Mogul Mine in 1982.

After a discussion and then lunch the parties reassembled in Silvermines village and toured the remains at Ballygowan mine, and the working Magcobar open pit barytes mine. Refreshments were served at the village hall countesy of the Silvermines and District Development Association, and the final visit was to the remains at Shallee mine, site of the intended heritage centre.

For me the high spot of the meeting was Des Cowman's talk in which he linked the sporadic mining in the area to the state of geological knowledge and to the political state of the country. Des' enthusiasm infected everyone. The meeting was a tremendous sucess and a tribute to the organisers, the speakers and to the helpers.

Alastair Lings 8/8/89.

THE BRITISH METAL MINING HERITACE CONSERVATION, INTERPRETATION & RESEARCH.

A report of the two day conference organised by the association for Industrial Archaeology (AIA) with the support of NANHO- 16/17th June 89 at Loughborough University. Conference convenor Marilyn Palmer.

Approxiamately 60 delegates took part in the conference.Lectures which were very professionally presented covered a national policy for conservation, restoration in Wales, archaeological excavation and surveying, the bat code of practise and the use of disused mines as tourist attractions. Many speakers used OHP and slides as a means of illustrating their talks, this provided impact and added interest.

Speakers in order of appearance, with a brief cutline of lecture contents.

The first presentation was from Dr Michael Stratton - Ironbridge Institute. A NATIONAL POLICY FOR THE CONSERVATION OF NON FERROUS METAL MINING SITES. Dr Stratton spoke about the work of the national monuments protection programme (MPP) 36 and the need for a national criteria to allow priority scheduling of sites.8 considerations were outlined i.e class of monument, condition, period, rarity, potential group value, location, fragility and vulnerability. The ranking of a site should be based on these criteria. English Heritage have a statistical ranking procedure, but the assessment of the value of a site is still subjective. This can lead to sites being underated because of individual knowledge and preference. A crisis in preservation is appearing because for many yrs attention has been focused on non industrial sites. Ironbridge Institute has produced computerised word lists for lead and iron, it is now working on copper and tin. The compiling of word lists using compatible mining terms is very important to allow a national data base to be set up.

Dr Jim Rieuwerts - PDMHS CONSERVATION IN THE PEAK DISTRICT He outlined the work of PDMHS and Derbyshire C.C in clearing open pits fill with rubbish and the establishment of mining trails. Society work at Magpie mine which is scheduled, capping of shafts and preservation of the Cornish Engine house, one of four in Derbyshire.

Rob Vernon - Welsh mines society. CONSERVATION IN THE GWYDYR FOREST AREA OF THE SNOWDONIA NATIONAL PARK. Dealt with early history, mining and milling. Possiblity of an interpretation trail

in the Gwydyr forest.Rob has just published a book about the mining industry in this area.

Dr Sandy Gerrard - Dyfed Conty Archaeological Unit EXCAVATION OF CORNISH STAMPING MILLS AND ASSOCIATED DRESSING SITES. Talk about the early Cornish tin industry and the excavation of a 16th cent stamping mill and dressing site.at Collerford. This project was undertaken as the site was about to be flooded as part of a dem.

Nick Ward - Richards Moorehead & Laing Ltd. EXCAVATION OF THE MINERA LEAD DRESSING SITE,CLWYD Nick Ward talked about the reclamation and proposed re-use of a derelict mine site.The problems of the site,understanding what was there to conserve and also the control of pollution during reclamation.This would affect its end use as a country park. The site has on it 2 engine houses, kilns and a mineral railway. Wrexham C.C and the Welsh Development agency have financed the project.

Peter Crew - Snowdonia National Park EXCAVATION OF THE DOLFRWYNOG TURF COPPER SITE

'Is the time and cost of excavation justified by the results?' Excavation Consolidation Recording Interpretation Surveying Maintainence Archives Publication

There are two pathways after excavation, many factors have to be taken into account when regarding which pathway to take e.g costs, constraints, resources available - people-time-money and future use of the site. Slides of excavated and consolidated sites in N. Wales were shown.

David Cranstone - Freelance archaeologist EXCAVATION OF LEAD DRESSING SITES IN THE N.PENNINES The excavation of 19th cent stamps at Nenthead Brief mention of excavation and recording of building remains at Coniston Copper mines.

Peter Crew - Snowdonia N.P THE RESTORATION OF CWN CIPWRTH COPPER MINING SITE The main aim of this project was to restore the water wheel,work was financed by the W.D.A and N.P authority.

Ian Forbes - Killhope Lead Mining Museum RESTORATION OF A LEAD DRESSING FLOOR Initial problems with getting funding for a site which is not unique in the N.Pennines. Development of Killhope since the 1950's when volunteers dug out the slime pits (partially destroying evidence of other remains) to the MSc teams who helped to excavate and consolidate. Reconstruction of the water wheel and dressing floor were given priority to develop the site as a major tourist attraction.

Robert White - Yorkshire Dales National Park CONSERVATION OF THE REMAINS OF THE LEAD INDUSTRY IN THE YORKSHIRE DALES. REstoration, conservation and consolidation work at the Old Gang Smelt mill and the Grinton Smelt mill and Peatstore.

Peter Crew - Snowdonia N.P THE GLASDIR COPPER MINE Low key development of the site, starting with the clearance by BTCV of the badly overgrown mill area. Decision whether or not to provide interpretation which could attract too many visitors and cause problems with erosion, vandalism, parking, provision of services etc. The site is interesting in that the mill was used to develop the Elmore flotation process. Ivor Brown - Hon Miring Advisor Ironbridge Gorge Museum TOURISM & METAL MINING IN COLORADO As mining has declined, many mines have been opened to the public. A thriving tourist industry has developed to help boost the local economy. Theme parks provide a reconstruction of mining villages and life at the turn of the century.One theme is that of women in mining.

Lynn Willies - PDMHS TOURISM & METAL MINING IN SPAIN Talk about his work at Rio Tinto mine where he was employed as a consultant by the Spanish government. This work was to assess the potential of the mine as a tourist attraction. The tourist project lost impetus because there was no local leadership and it was difficult to control from England. Today Rio Tinto employs 500 men extracting minerals from the gossan.

Nick Ward - Richards Moorehead & Laing Ltd THE NATURAL ENVIRONMENT AND THE CONSERVATION OF THE REMAINS OF METALLIFERCUS MINING: A POTENTIAL CONFLICT. A talk about reclamation and the need for understanding of its effects on the environment.

Dr Tony Hutson - Vincent Wildlife Trust MINING HERITAGE SITES AND THE BAT CODE OF PRACTISE A lecture with slides outlining the problems bats face from disturbance and destruction of habitat.Even today decisions are made that will destroy bat habitat,when alternative sites could be used.Tony showed slides of a tunnel where this was going to happen and also of bat colonies in Polish mines,which are some of the finest in Europe. Tony emphasised the urgent need for site grading for bats.Towards the end of the lecture we saw a slide of a Mouse E_a red bat(a male 13yrs old) which is thought to be the only remaining specimen in England.

Dr Trevor Ford - PDMES

SAFETY, ABOVE AND BELOW GROUND

Land improvement in Derbyshire, how MAFF provide grants to improve land, lead workings are reclaimed, some stock are poisoned and MAFF then pays compensation. General safety guidelines for underground exploration. An interesting slide here **showed** someone near the bottom of a pitch on electron, the cameraman must have been showered with debris as small stones can be seeen in the slide, hardly a safe practise.

Marilyn Palmer & Peter Neaverson - AIA THE COMPARATIVE ARCHAEOLOGY OF TIN AND LEAD DRESSING SITES The necessity to compare mine features acrosss the country. Tin mining sites at Cambourne and Redruth should be given World Heritage status to ensure the preservation of engine houses and pumping engines. 28 engine houses have been earmarked for restoration. Tin streaming site at Redruth should be preserved as at one time 20% of Cornish production came from this area. Field work and research will provide the information for comparative study. Colin Edwards - Cornwall County Records Office. PROBLEMS WITH MINING ARCHIVES Storage of vast amounts of material and public access.

Michael Gill - NMRS RESEARCH IN MINING RECORDS Detailed study and recording of mining remains in the N.Pennines. Records of shafts in the N.Pennines being produced.

Overall the conference was very stimulating many delegates obviously had a great deal of technical expertise and knowledge relating to mining, conservation and interpretation.Discussion followed almost every session of speakers. The conference highlighted the need for adequate funding to create a national data base and also to record and preserve sites of local and national importance before it is to late. The conference was well worth the money, the food and accommodation in the halls of residence was excellent.

New Scientist 5 August 1989

Slow going for British tunnellers under the Channel

T HE BRITISH boring machines digging the Channel Tunnel are between 100 and 300 metres behind their target, according to Eurotunnel, the consortium managing the project. Problems with underpowered electric locomotives and with a conveyor belt have conspired

to delay construction. The delay in itself does not push back the date for opening the tunnel, which has been postponed once already and is now due on 15 June 1993. But the next few months will affect progress critically. Unless boring accelerates substantially, further delays will add to the financial problems that Eurotunnel announced last week.

Eurotunnel's contractor, Transmanche Link, has to dig a total of 12 tunnels. Six connect terminals inland with coastal tunnelling centres. One is already complete. The main tun-

nels, however, are the three that connect Britain and France. The three passages, a service tunnel and two running tunnels, are being bored simultaneously from Britain and France.

The service tunnel is making good progress. Some 16 kilometres have been dug, leaving 18 kilometres to go. The two tunnels are closing at almost 350 metres a week, although the rate will decrease as the tunnels get longer, because of the extra distance needed to carry the spoil.

Mick Hamer

The main running tunnels, crucial to the opening date, are behind schedule. The British end of the northern running tunnel was 300 metres behind target. Over the past



The other side: the French seem to be progressing nicely

three months, the boring machine has dug out an average of 60 metres a week. The British end of the southern running tunnel, also dug at 60 metres a week, was some 100 metres behind target.

Eurotunnel's annual report last year emphasised that: "1989 must show whether they [the boring machines] can reach the necessary combined speed of nearly 350 metres a week . . . and maintain it as an average." Colin Kirkland, Eurotunnel's technical director, blamed the problems on underpowered electric locomotives, needed to haul out spoil and carry in concrete segment for lining the tunnel, and on conveyor belts which manoeuvre the segments to the correct site within the shaft. Eurotunnel is to replace the electric

locomotives with stronger ones, due to be delivered soon. In the meantime, diesel locomotives are helping to heave the electric locomotives out of the tunnel. The logistics of this cause delays, because diesel fuel, a fire risk, cannot be stored in the tunnel.

The conveyor belt takes in the concrete tunnel linings, which can each weigh up to 9 tonnes. Engineers have slowed the belt while they improve its performance. Kirkland said that the choice was between stopping the belt completely, or slowing it down to allow the manufacturers to make adjustments.

Slightly surprisingly, the French tunnellers are on schedule. They confront much more difficult ground for the first 3 kilometres, before they hit the deep chalk marl, which makes for easier going.

The French began tunnelling the main bores before the British to overcome the difficult ground. They were delayed initially because the back ends of the 200-metre-long tunnelling machines protruded into the deep shaft that the French sank at Sangatte, near Calais.

HONISTER UP-DATE

It is now about four years since slate extraction ceased at Honister. The owners, McAlpines, have done little on the site since then and the boarded-up buildings are more or less as they were in 1985. How long it will remain like this is anybodies guess.

Since the early spring this year exploration has progressed apace. Before Easter the "Kimberley" workings were thoroughly surveyed and during the Easter holidays the same was done for the older "Honister" workings. The upper part of this area, especially round level 5, had not been entered by the writer since about 1983 and at Easter was found to be blocked. However during exploration in May a way was found into the inner parts of level 5 and also from there further up into the very old workings high up on the crag.

The condition of various parts of the Honister Mine is not particularly safe. The roof supports in the relatively recently constructed Link Level are definitely in need of attention. Over Easter some work was done to preserve the mechanism of the Old Internal Incline and to prevent water eroding the masonary-work.

For the future, a systematic investigation of the External Incline will be carried out to try and establish exactly how the various sections worked. This is a good task for a sunny day. Although the writer has found a way into the very old workings high on the crag, they have not been explored at all and this is another task for the future. S.R.T. equipment will be useful here. Stabilising the Link Level is another job that will not take too long but is important and further work will probably be needed on the Old Internal Incline.

During the year to date five parties have been conducted round the workings. These have ranged: from hairy-arsed geologists to a small group of A-level students from a girls convent school in Fornby. (They want to come again.)

It is hoped to arrange another C.A.T. trip within the next 12 months. In the meantime, if anyone is interested in helping with the interpretation and exploration, please contact Alastair Cameron on O386 750494 or Coniston 41330. An article is to be published in the next Mine Explorer for those interested in the history and working of the area.

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LMOST 90 years after the last mineworkings closed on Parys Mountain in Anglesey, a specially-formed company is going ahead with a major redevelopment plan which could turn the site into the UK's deepest metal mine.

The company, Anglesey Mining, hopes to be processing 400 000 tonnes of ore a year by 1993, in an area which has a mining history dating from Roman times and which was the largest copper producer in the world during the eighteenth century.

Its decision to proceed with the development follows nearly 40 years of exploratory work, carried out at various times by seven different companies, and is a carefully calculated risk by the Anglesey Mining directors.

The board is putting its faith both in the reliability of the exploration of the rock zone which contains the metal ore, and in the stability of the base metal market, where prices are currently strong.

Three of the four zones most likely to be commercially exploitable were discovered by the Canadian group Cominco during its eight-year stay on the site. When it pulled out in 1981, the way was clear for Anglesey, which started work in 1985 and eventually discovered the fourth metal-rich zone.

Three further years of exploration led to a stock market flotation in May last year to raise $£5^{-1}$ million for a full underground sampling and measurement programme, which should be followed by a full underground development and surface processing plant being built.

The geological information

comes from two reports, by Robertson Research International and Wright Engineering, which based their findings on a series of surface drilling projects. Such techniques can only give a limited amount of information before underground work becomes necessary.

Anglesey has limited the risk by planning the project in two phases. The first phase, costing some £5 million, involves the sinking of a shaft more than 400 m deep, with two horizontal drives at 275 m and at 400 m. From these tunnels a series of diamond drilling stations will be used to enable further, more accurate studies to be made of the ore profile.

Only if the first phase reinforces the findings of the preliminary reports will phase two go ahead. This will cost a further £18 million to £20 million — to be raised from a new share issue and from loans —

Prospect of riches

THE PROCESS ENGINEER

After 40 years of exploratory work, the UK's deepest metal mine is being sunk on Anglesey. Ian Reeves visited the site and reports on the optimism surrounding the project



and will involve deepening the shaft to 540 m and building process plant on the site of the old workings to the south of the new shaft.

Mine manager Ray Oates says that this gradual introduction will allow some production to take place while the rest of the shaft is sunk. Development and production will be integrated during the early stages of phase two, with the ore being processed on a pilot plant. 'The sooner we can get some production underway, the sooner we can get a cash flow to offset the development cost,' says Oates.

A pilot plant for processing samples from phase one may be built on site, but the samples are more likely to be sent away for testing. Metallurgical tests are already underway on samples to confirm the ore grades which have been calculated from the exploratory work. The reliability of the estimates is crucial to the success of the project. These have been obtained from the recent test work and from comparisons with similar mines in other locations. Estimates by both Wright and Robertson indicate that the ore is 1.5% copper, 3% lead and 6% zinc, and also contains 2 oz of silver and 0.01 oz of gold per ton.

These figures are good enough for economic production of metal concentrate. 'All the available information tells us we're sitting on a good reserve,' says Oates.

The calculations also predict a mineable reserve of around 6 million tons. This has been used to work out a production schedule of 400 000 tons of ore per year yielding 25 600 tons of zinc, 12 120 tons of lead and 5 840 tons of copper. Such a schedule would give the mine a minimum life of 13 years. It is also possible that further veins of metal-rich ore exist outside the predicted areas, allowing mining to take place there too.

The ore will be processed using established techniques. The mined ore will be broken up at the face and transported to an underground crushing station at the base of the main shaft. The crushed ore will be hoisted to a holding bin at the surface and then moved on an enclosed conveyor under a road to the processing plant.

The plant itself will use a froth flotation process to obtain metal concentrates from the polymetalic ore. Here ore and water pulps are ground in specially designed mills to reduce the ore to micrometre size. Air is bubbled through the pulp in the presence of an organic reagent, xanthate, which alters the properties of the pulp, allowing

each of the individual metal concentrates to be skimmed from the surface in turn. The concentrates will be shipped for smelting in either the UK or overseas.

The barren rock of the original ore will be discharged to a special compound from which the water can be recycled to the concentrator for re-use.

The present mood on the site is highly optimistic. The shaft is on target at 170 m with much of the good progress due to the use of the Nonel detonating system.

Anglesey Mining's shares, floated last May at 70p, are currently at 140p, reflecting both the state of the base metal market and the confidence that the exploratory estimates of ore grades will prove accurate. If this confidence proves well founded, its patient shareholders could eventually be in for a healthy dividend.

THE ENGINEER 25 May 1989 63

GEEVOR plc

FROM ANNUAL REPORT & ACCOUNTS 1989

ONSULTANCY SERVICES

From its office base at Pendeen in Cornwall, St Just Mining Services Limited provides geological and mine engineering services to other Group Companies and has a contract to provide management services to Nor-Quest Resources Limited, a mineral exploration company based in Vancouver, Canada. The Company also carries out mining searches from its extensive archive records throughout South West England and undertakes mundic block testing to examine concrete decay.

OAL MINING Geevor's first coal mining venture was Castle Colliery, located at Billinge, near Wigan, Lancashire. The mine was purchased in May 1988 through the acquisition of Eurogrange Limited. The coal seam is accessed by a decline shaft and is approximately 3 metres thick, comprising 1 metre of high quality clean coal, overlaid by 2 metres of coal contaminated with clay and shale. Where possible the lower metre is selectively mined, although wet mining conditions have resulted in a shortfall in terms both of output and profitability.



Since the year end, a dewatering programme has been successfully undertaken which has greatly

Site layout, Mainhand, Cumbria

improved working conditions. A limited degree of mechanisation is now possible, which will speed up development of the mine. Our forecast indicates that satisfactory profits are possible at today's coal prices from the new methods which are being introduced.



Mine entrance - Mainhand

Mainband Colliery Company Limited was acquired in October 1988, its principal asset being a new mining project at St Bees, Cumbria, containing a proven reserve of some 11 million tonnes of coal, of which the Company expects to recover approximately 50%. The coal is located in two seams, the Bannock Band seam (2·4 to 3·5 metres) and, 18 metres lower, the Mainband seam (2·7 to 3·2 metres). The coal in both seams is a readily saleable, high quality steam coal. The main declines are currently being driven under contract to access the seams. Although progress has been slower than originally planned, production of coal is still expected to commence in 1989.

GEEVOR plc

REVIEW of OPERATIONS - UK





TIN MINING

The Company's foundations have been built on the tin mine at Pendeen, Cornwall, which was reopened in November 1987 with mining recommencing in January 1988. After the tin crisis of October 1985, the mine had been put on care and maintenance.

The tin price was approximately £4,200 per tonne when the decision was taken to reopen the mine, and it was expected that the mine would break-even at that price level. No development work

was planned pending an anticipated increase in tin prices. In fact, the tin price fell to £3,600 per tonne by May 1988 but recovered such that the average for the year was £4,238 per tonne. By the end of the financial year the mine was able to record a cash break-even, in line with the original forecast, and in the last quarter, tin prices improved to about £6,000 per tonne. We are now planning development work that will ensure the longer term life of the mine to extend the proven and accessible reserves, which at the year end were assessed to be capable of sustaining operations for at least six years. Tin sales were 560 tonnes for the year to 31st March 1989.



Ball Mill & Classifiers

The workforce has increased to 145, of which 78 are employed under-

ground, working two shifts per day. The average stope mining width is about 1 metre, and lodes are extracted by shrinkage stoping methods. Broken ore is trammed in mine cars to the winding shaft, where it is transferred to a skip and raised to the surface. Conveyor belts take the ore to storage bins which feed the mill, where the ore is crushed and the resulting fine material processed by gravity



Preparing to drill development drift

over separating tables. High grade tin concentrates typically average 72% Sn; one of the best grades in the world. Concentrates are sold directly for smelting.

During the year under review, a substantial tonnage of ore has been broken in excess of the tonnes processed as the mine was continuously re-establishing its full complement of working stopes. Also the mine has been developing a particularly wide stope known as the Hanging Wall vein and, as a result of this preparation work, we can expect production of tin to increase substantially during the summer.

The Company caters for visitors throughout the summer, offering guided tours of both the surface facilities and the underground workings. There is a museum with many fascinating exhibits of mining activities from decades and centuries past, together with a restaurant and gift shop. Historical walking tours are arranged from the museum and visitors are warmly welcome to this unique opportunity to experience the life of a working mine.

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19/7/89 DAILY TELEGRAPH * e great gold hunt goes West

LANDOWNERS could literally be sitting on gold mines in the West Country, followingrecent discoveries by the Government-funded British Geological Survey.

Scientists have found gold particles in rivers in Devon and Cornwall, suggesting the area may hold the largest deposits in England.

Jay Mineral Services, of Truro, Cornwall, has already applied to the Crown Estates Commissioners for an exploration licence to establish the extent of gold veins in the land.

Dr Ramues Gallois, of the geological survey, said the discovery was made after studying satellite photographs and chemical

By Paul Stokes

analyses. Students and geologists then panned the Devon rivers Erme and Avon.

The prime site is between Modbury, Aveton Gifford and Kingston. Gold was also found near Wadebridge, Cornwall.

Dr Gallois said: "We are pleased that we have been proved right in finding a group of rocks where we predicted there was a high chance of finding gold where no one had suspected its presence before. It looks like one of the better prospects in the United Kingdom, possibly the best in England.

"We are still only in the very early stages but our aim is to

attract industry willing to invest tens of millions of pounds."

The survey was working on likely mineral deposits for the Department of Trade and Industry when the find was made.

By law any organisation wishing to mine gold in Britain requires a licence from the Crown, which will take royalties.

Private landowners, who would be able to charge for mining rights, reacted to the news with scepticism and concern. Mr David Balkwill, 62, who farms 350 acres at Aveton Gifford, said: "I am not particularly pleased about it, we have enough trespasses."

There's gold in them thar hills



• British Museum gold prospector Alf Henderson who will be teaching the art of gold panning on Sunday.

There's gold-dust up for grabs at the Drunken Duck Sports near Hawkshead on Sunday. In addition to more traditional Lake-

in addition to more traditional Lake-land sports, 100 visitors will be able to try their hand at panning for gold - and keep the loot. The Swediah firm Gold-spear, which sponsors the Lakeland Mines and Quarries Trust has given more than £1,000 of gold and 30 goldpans, as a taste of one of the many attractions which will be available when the Threikeld Museum of Lakeland Mines and Quarries onens of Lakeland Mines and Quarries opens next April.

next April. Every participant will receive a sack containing ten pieces of gold mixed with Lakeland sand, and every tenth sack will have a nugget of gold in it. The mixture will be poured into a large trough and visitors will recover the gold by panning for it after some tuition. The gold can be taken home in glass phials labelled with the date and place where it was found. Trust chairman Chris Lane explained that gold has been panned and mined in the Lake District for centuries. The fun starts at 10.30 am and includes

The fun starts at 10.30 am and includes fall and orienteering races, clay pigeon, welly- throwing and tug-of-war compe-titions, and a sale of Lakeland mineral specimens.

All the proceeds will go to the trust which was set up as a registered charity in 1963 to preserve the mining and quarry heritage of the Lake District. Some £250,000 is needed for the museum and a museum founders' fund has been loughted

launched.

23rd June F9

BOOK NEWS

BOOK REVIEW

The Hidden Side of Swaledale. The life and death of a Yorkshire lead mining community.

by John Hardy 85pp Hardback ISBN 0 948511 40 0 price £9.95

When I first clapped eyes on this book I was astounded that, at last, someone had produced a mining history book that really looked fantastic, and this one does! The full 85 pages are lavishly illustrated with colour photographs and charts which are printed exceptionally well by the publishers, Frank Peters of Kendal.

The author was unknown to me and most of the mining history community will not have heard of him. He is, apparently, a local Methodist minister who has been beavering away at his own personal exploration of the mines of Swaledale.

But what of the contents? Well as I've already described, the text is illustrated by a number of photographs and tables which should be a model for future mining books. This is the sort of book that tourists will buy in their droves simply because it is easy to follow and easy to look at the pictures, the spinoff being that many more will be introduced to Britain's rich industrial past.

Some of you may have noticed that I have made no mention of the text yet and thereby hangs the problem. Having an interest in rescue techniques etc. I was horrified to read of some of the exploits the author and his brother got up to. At one point in a chapter entitled "The Great Escape at Eldorado." we hear of him exploring with an "old hand torch...that had lost the bulk of its reflecting surface" and surprise, surprise he falls down an internal shaft. Luckily he is roped to his brother but "the likelihood is, of course, that far from preventing my fall, he more likely than not would have joined me." What on earth is the point of a lifeline if there is no possibility of being held? He survives the fall and describes it as a "miraculous escape from almost certain death" which hardens his resolve that "it was my duty to the old miners to continue"?????? "Strangely I never allowed these events to seriously affect me.." I feel that this whole incident is treated most me.." carelessly with no mention to others of the dangers involved. In fact nowhere in the book is there mention of the many specific dangers involved in mine exploration and this could be seen as encouragement to poorly equipped tourists to venture underground. Irresponsible? In 1980 he was still constructing his own ladders out of polypropylene rope.

As to the meat of the text I am not the best one to comment on this as my knowledge of the Swaledale area is somewhat lacking, however, one passage sticks out and is worthy of mention as it affects the way I read the rest of the book. At one point the author describes the Waterblast Shaft as being so named as a result of a blast holing into a subterranean lake and so flooding the workings. I always thought a waterblast was a device for blowing air around a mine by water power.

In conclusion I cannot feel very positive about this book as it method of which is condone а mine exploration seems to What excellent foolhardy in the extreme. а waste of an production.

CDJ

Randfontein Estates: the first hundred years

By A. Hocking

Bethulie, OFS: Hollard South Africa, 1986. Hardback, 247 mm × 168 mm, 280 p., illus. ISBN 0-620-09377-3. R60.00



The discovery of gold on the Witwatersrand took place in 1886. Very soon thereafter the men who had made fortunes in the diamond fields of Kimberley came to the Rand and started acquiring mining leases on the gold deposits there. It is, therefore, not surprising that the 1980s have seen a number of books appearing celebrating the centenaries of various aspects of these events. However, most of the books that have gone before have been centenary volumes commemorating the coming of age of the mining finance houses of the Rand. The centenary volume for Randfontein Estates is a bit different in that not many of the mines themselves have lasted, more or less intact, for the full 100 years.

The book is very well produced in an attractive format and is profusely and well illustrated with both drawings and photographs. The text is clearly printed, and I did not notice any typographical or any other errors. The writing style is friendly and easy to read and follow, and there is much anecdote to flesh out the basic historical facts. It is a book that would grace any library.

The book is organized into 12 timeintervals, taking the 100 years from 1886—even though Randfontein Estates Gold Mining Company was only formed in 1889. This is on the grounds that initial mining and prospecting were in progress on the property almost from the first discovery of gold on the Witwatersrand.

The first four chapters deal with the beginnings and the period during which J. B. Robinson was the owner and developer of the mine. This is the period from inception to 1917, when the mine was sold to the Johannesburg Consolidated Investment Co., Ltd.; the first few years under new ownership are also covered. The next two periods start with the miners' strike of 1922, going on to the days when Randfontein was one of the largest underground mines on the Witwatersrand and ending with the outbreak of the second world war.

The next three chapters (1939–1970) detail the war years and the post-war period, when the mine was in its first heyday. The uranium contracts gave it a new lease of life, but at the end of this period the mine all but closed down.

The final three chapters cover the rebirth of Randfontein, mining ground that J. B. Robinson had included from the start, but which was only recently proved to contain gold. This period has seen Randfontein grow once again to become one of the major mines in South Africa.

Randfontein is one of the more interesting of the Witwatersrand mines. It has had a chequered history, has mined more different reefs than all the other mines in the industry put together, has seen the Jameson raid, the 1922 strike, its workshops turned into a munitions factory during the war and the uranium boom, and it has survived to see the gold price rise.

This history gives a good view of the development of the South African goldand uranium-mining industry through the development and life of one mine. It is, above all, a good read.

C. T. Shaw

Historia mínima de la minería en Sierra Gorda

By Adolphus Langenscheidt Windsor, Ontario, and Mexico City: Rolston-Bain, 1988. Paperback, 250 mm × 200 mm, 164 p. ISBN 0-88653-012-1. Spanish text

This 'Brief history of mining in Sierra Gorda', written by an experienced archaeologist, covers Mexican mining activities in the area of Sierra Gorda since the earliest period of prehistory. Langenscheidt dates the mining activities and techniques on the basis of an analysis of the pottery and lithic implements found in the ancient underground mining galleries. The dates based on the artefacts have been confirmed by the carbon-dating of stubs of resinous tree branches, which were used for lighting, as well as worn brushes used to winnow the purified ores during their concentration processes, which have survived in the dry tunnels.

The author's conclusions, contained in the last chapter, are: 'Summarizing what I have written, organized mining activities in the Sierra Gorda for the recovery primarily of cinnabar and mercury were first instituted by the Olmec culture, using local labour, in about the tenth century B.C. Later, these mines came under the control of the Teotihuacán and the El Tajín cultures, followed by a half-hearted involvement of the Toltecs, though probably all mining activity (in this area) had already ended by the twelfth century A.D.'

He adds that when the Spaniards arrived there was no evidence of mining in the Sierra Gorda and that, as the mountainous area was difficult to police with troops or proselytize with priests, only tenuous mining activity had been established during the colonial period when, with great effort and expenditure of lives and funds, the region came under Viceroyalty authority at the end of the eighteenth century. English firms tried to establish themselves in the 1830s to mid-1840s, with little success. It was only after the dictatorship of Porfirio Diaz that the gold, silver, lead, copper and mercury resources were systematically worked. Major mining only started after 1950.

The Sierra Gorda region covers

10 000 km² of a mountainous, arid district, located about 200 km north of Mexico City and to the southeast of San Luis Potosi. Its southern limit is the town of Pachuca, well known to miners as the birthplace of the Patio process, in which silver is recovered by amalgamation. Ironically, the locally available mercury was never used for silver recovery in Mexico.

The existence of outcroppings of cinnabar and native mercury in stream bottoms in Sierra Gorda, concurrent with the very early use of cinnabar in Mesoamerica as a pigment in burial rituals and in the decoration of pottery, resulted in demand for these minerals and their export to the Olmec culture centres. The miners were paid with cloth and pottery and, as a consequence, the archaeologists have identifiable and datable utensils from which to follow the evolution of mining activity and technology.

The chronology used in the monograph is: Olmec, 1250 to 400 B.C.; Epiolmec, 400 to 0; Classic, A.D. 0 to 900; and early Postclassic, 900 to 1200. Special influence over the Sierra was centred in the south central Valley of Mexico cultures of the Teotihuacán (0 to 1000), Toltecs (1000 to 1350) and El Tajín (around A.D. 300 to 1000). Mining ceased with the Chichimec (barbarian) invasion, which started in the twelfth century; the alliance of these with the Toltecs gave rise to the Aztec empire. The Chichimecs were not subdued in the Sierra by the Conquistadors until the end of the eighteenth century, though mining activity did restart in 1728 at the San Juan Nepomuceno silver mine in the El Doctor district.

The earliest mining activity in Sierra Gorda undoubtedly was for flint for Stone Age tools, consisting first in the gathering of scattered stones and then in deliberate open-pit working of outcrops. The religious interest in pigments, such as cinnabar, encouraged very early underground operations as the ancient miners exhausted the mercury outcrops and then followed the veins to satisfy the demand. It is interesting to note that the stone mortars and hammers, illustrated in Langenscheidt's monograph, are identical to those shown in the article by Lynn Willies in the January, 1989, issue of Mining Magazine, describing the archaeology of the 2000-year old Raiasthan lead-zinc-silver mine in India. The extensive underground works reported by Langenscheidt are shallower than those in India, and the rock sounder in the Sierra, so no timbering or fire setting was found in Mexico, suggesting a less developed technology or the greater use of child labour to follow narrow lodes. Fig. 32, a cross-section through a mine explored by Langenscheidt, illustrates the large scale of mining reached by 1000 B.C. and the complexity of the underground layout, with connecting galleries, room and pillar, backfill and caving techniques, as well as ore shutes.

Concentration technology, involving panning in clay dishes, started with the earliest commerce in cinnabar as a pigment. Grinding and screening were seen to increase the value of the product as they enhanced its colour. Mercury, as such, was also known in 1000 B.C., as datable jars of the metal were found. Apparently, the source is native mercury panned from streams, though there are implications that fire refining and distillation of mercury "re ancient. The most unusual technology that Langenscheidt identified from the late colonial period in the Sierra Gorda was an air entrainment compressor, operating as a reverse airlift, which was used, instead of bellows, in lead-silver furnaces. A reconstruction, based on ruins excavated, of how this water-powered air compressor operated is shown in Fig. 55 (p. 124).

The curious fact, that the richest mercury source in colonial Spanish Mesoamerica was never used to support the largest silver-mining operations in the world is reviewed, and explained, by Langenscheidt, in Chapter 13, as a combination of the difficulty and cost of gaining control of the Sierra, fiercely defended by the Chichimecs, with relatively high production costs due to low ore grades. Most important, as a deterrent to investment in local mercury mining, was the self-interest of the Peninsular mercury producers at Almadén, coupled with the relative self-sufficiency of the other major silver priducers in South America, the Peruvian Viceroyalty having its own mercury production at Huancavelica.

R. D. Crozier

I. H. TROUNSON THE CORNISH MINERAL INDUSTRY 1937-1951



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The editors: Roger Burt, BSc(Econ) PhD FRHistS, and Peter Waite, MA, Department of Economic History, University of Exeter

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• MINERALS OF THE • ENGLISH LAKE DISTRICT

Following the success of *Minerals of Cornwall and Devon* the Natural History Museum has produced the second in their series on minerals of the British Isles, this time concentrating on the Caldbeck Fells area of the English Lake District.

The mines and mineral veins of the Caldbeck Fells have produced some of the finest mineral specimens ever found including pyromorphite, plumbogummite, mimetite, linarite, and hemimorphite. It is one of the most popular collecting areas of the country, and is not only of appeal to the amateur; the complex geological history and the relationships between the mineral deposits and their host rocks have presented a stimulus and challenge to professional geologists and mineralogists from the early days of these sciences.

The aim of this book is to document the mineralogy, geology and mining history of the area. The first record of mining dates from the sixteenth century when German miners contracted with Elizabeth I to work copper and silver there, building in Keswick the largest smelter in Europe. Since that time, Caldbeck has attracted a number of well known personalities such as Charles Dickens, Wilkie Collins and William Wordsworth. Its more famous sons and daughters include the infamous hunter and drunkard John Peel and the "Beauty of Buttermere" Mary Robinson.

The industrial and social history of Caldbeck mines and mining is interwoven with the geology and nature of the mineral deposits and the minerals themselves. Of the minerals, over fifty are shown in full colour; the photographs were taken especially for this book to highlight the range of minerals and variations in their crystal form and colour. Many of the minerals illustrated are from the collections of the Natural History Museum and include some of the finest specimens in the world. The chapters on collectors and on the history of mining contain amusing and fascinating accounts of the people associated with the area. Thomas Robinson, Rector of Ousby, for instance, proved to be an enthusiastic if incompetent promoter of mining and by 1714 had been arrested six times for debts incurred through mining. In the end, none of his numerous projects proved successful. A notable collector in the area in the eighteenth century, Dr John Woodward (whose large collection is now housed at Cambridge University in their original elegant cabinets) was called by a contemporary "the greatest curiosity on earth". He was, however, the first person to collect minerals for their scientific value



SEM enlargement of Matteddletite crystals.

rather than as mere curios.

Minerals of the Caldbeck Fells provides a comprehensive guide to mineral occurrences of the area, combining information from previously published works, unpublished works and the authors' own observations, with a study of private and public collections. It is hoped that this book will prove invaluable to anyone interested in mineralogy, geology, industrial history and the Lake District. CHRIS STANLEY is a mineralogist at the Natural History Museum in London where he works on the nature and origins of mineral deposits. He is one of the editors of the Quantitative Data File for Ore Minerals, and has published some 30 scientific papers. He is a member of the Council of the Mineralogical Society and is on the Editorial Board of the Mineralogical Magazine. MIKE COOPER has had an interest in minerals and photography from an early age. He first trained as a chemist but now works on collection catalogues and indexes for Nottingham Museum and as a freelance photographer specializing in close-up and photomacrography. He is a member of the Russell Society and the Micromount Society for which he is magazine editor. He is also the associate editor of the U.K. Journal of Mines and Minerals.

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Knockmurton Revisited - Dec 4th 1988

18

by Dave Bridge

Judging by the weather it couldn't have been a better day for a spot of underground activity as three members of CAT entered the relative calm of Knockmurton forest just to the north of Ennerdale and dropped into No 9 Level (originally High Bottom Level) on the No 9 vein of Knockmurton haematite mine. Unfortunately a combination of circumstances had resulted in a poor turn out for what ended up to be a very worthwhile trip. (It was discovered afterwards that a fourth member in the form of Chris Jones had arrived late and after hopelessly losing his way in the forest had returned home to write his Christmas cards!).

Armed with 140ft of electron ladder and plenty of rope the three members of CAT manoeuvred their way down the narrow air shaft which descends on the vein from a point about 300yds along the level and links with the Cogra Moss Adit some 200ft below. The adit level is lmost totally blocked where it emerges 500yds to the NE beside the Cogra Moss reservoir. The ladders were employed to avoid rope abrasion in the twisting upper part of the shaft. For the last 100ft or so the shaft provides a clean descent at a hade of about 30 degrees with internal levels off to the N and S about 80ft from the bottom. A rope was used for this part of the descent belayed to the ladders as the country rock in the mine is too unreliable for bolt belays. A second rope acted as a safety line from the top of the shaft.

The intermediate levels had been explored by two members of the party on earlier visits in 1985 but the detail had not been fully recorded. That to the N leads to a narrow overstope at 45yds which was climbed for 60ft to a blockage. About 20yds beyond the stope the level is blocked by debris from a second stope. The level to the S of the shaft divides at 45yds, the LH branch forming a dog-leg to regain the course of the vein for another 40yds where it is collapsed. In this section are parts of a waggon (minus chassis and wheels). The other branch is collapsed after a few yards. A detonator box and a variety of unused nails have been found here and at one time tramways ran through these levels. A few rotting sleepers are still in place.

The main aim of today's trip however was to explore the lower workings at the Cogra Moss Adit horizon, although being such a small party we had some reservations about making long excursions from the foot of the shaft as this part is in very deep water. Earlier visits had provided an opportunity to inspect this area briefly and it was known that adjacent to the shaft bottom there is an important junction where the Cogra Moss Adit intersects the vein with levels going off in five directions. The adit had been followed to the W for about 120yds as far as a T-junction where drives were discovered along a second N-S vein. As it so happened the NMRS publication by Richard Hewer on the Kelton and Knockmurton Iron Mines couldn't have appeared at a better time and from the mine plans shown we now knew that the T-junction was on the heavily worked No1/No2 vein. Day levels connecting with this working are collapsed and as far as is known the T-junction is the only point of access.

Angela Wilson, being the smallest in the party and not wanting to submerge her caplamp, decided to stay on dry land and keep herself amused by brushing up the steps to some Irish jigs. Meanwhile the rest of the party (Tim Clark and Dave Bridge) abseiled down to a small island at the bottom of the shaft. After a few slithering paces to the left we found ourselves at the 5-way junction with the cold clear water creeping up to our necks. At first sight the levels all looked well-nigh impassable, their roofs seeming to dip uncomfortably close to the water. Above our heads a rise in the roof appeared to connect with an ore chute which we had passed on the way down the shaft presumably serving workings in the intermediate levels. We started along the Cogra Moss Adit in a westerly direction and found it to be a major roadway with greater roof clearance than the other branches. A narrow rise on a subsidiary vein was passed at about 35yds (possibly the same vein as that linked by a short cross-cut to No 9 level 200ft above).



At the T-junction itself is a major ore chute on the No1/No2 vein and according to the plans this served workings high up the vein at a considerable distance above the level. Moving S along the vein from the T-junction, now in somewhat shallower water, we could feel rails in place amongst the mud and timbers underfoot and beyond two rises, the second merely a short blind trial, the level widened to double track width just short of the point where the vein splits and No 1 vein branches off to the right (at about 115yds). Being partially backfilled the entrance to this branch required a little digging to enable us to follow the level to the forehead at 120yds from the intersection. Here the water was less than chest deep and the floor covered with several inches of thick mud. At 40yds a heavily timbered rise (the only timbering we saw in any of the rises) leads up towards Low Bottom Level on No 1 vein nearly 150ft above - possibly once used as a manway. Also at this point is a collapsed cross-cut to the No 2 vein, everything so far agreeing with the plans. In this section there was a noticeable shortage of oxygen and we were glad to get back into the main drive.

The continuation S along No 2 vein should lead to a further split with the drive on No 2 vein (which is called No 16 vein further S) extending beyond the line af the railway track on the surface and the left hand fork (called No 4 vein) connecting with the shaft from the surface

known as Knockmurton No 1 Pit. However a partial blockage just S of the junction with No 1 vein caused by unstable material in the stopes above was sufficient to halt progress in that direction. Some work is needed to stabilise the slope before the continuation of the level can be entered safely but a clear way ahead can be seen beyond the blockage. It came as a disappointment but it had its compensations. Just as we were about to retreat Tim remarked that he could hear running water and a piece of floating timber demonstrated that the water here was flowing to the S <u>away</u> from the Cogra Moss Adit mouth, seemingly to disappear through the floor beneath the collapse. Furthermore a closer look at the level beyond revealed it to be completely dry. Where is the water draining to?

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In the 1870's a 25 fathom cross-cut was driven NE from the Kelton mine towards Knockmurton with the intention of proving the ground and providing an additional haulage route from the Knockmurton workings. In 1876 this cross-cut reached Knockmurton No 13 vein which lies to the W of the No1/No2 vein system and Richard Hewer is of the opinion that the level connects right through to No 2 vein via No 16 vein to the S. A rough calculation shows this cross-cut to lie below the Cogra Moss Adit horizon. Could it be that the No2/No16 vein beyond the point we had reached drains via the 25 fathom level and out through Kelton mine, a total distance of well over a mile? In the 1880's a 50 fathom crosscut from Kelton mine also reached the Knockmurton No 13 vein . This was driven principally to drain the Knockmurton workings to a deeper level. Yet another possibility is drainage through natural fissures into the Croasdale Level some 400yds beyond the southern end of the Knockmurton workings which was driven to prove the continuation of the Knockmurton veins in that direction. This lies about 60ft below the Cogra Moss Adit horizon. Whatever the explanation a dig at the blockage in No 2 vein could have interesting results and perhaps enable the water level in the Cogra Moss Adit and its branches to be lowered. (Thanks to Richard for his comments on this point and for the plan of the levels from which the sketch below is derived.)



This small diversion had taken our minds off the hard reality that today the water level might be <u>rising</u> as a result of torrential rain from the previous day. We had intended to keep a careful eye on the situation and our return to the T-junction to check this out produced some impressive bow waves! Finding everything in order and the escape route still secure we went on to explore the N section of the No1/No2 vein which we found collapsed after about 100yds, just short of an incline which is shown on the plans leading to a major working above. Several ore chutes in this section are evidence of heavy stoping but any hoppers which may have stood there have long since collapsed. Most of the ore chutes are blocked by deads etc, some of the material quite massive, but access to the stopes is still possible in places.

After reporting back at the air shaft where we were reassured by the distant humming of Irish folk tunes from above we moved N along No 9 vein in even deeper water. Beyond several blind trials in the roof an incline follows the vein, rising up at an easy angle, but this was found to be blocked at about 40ft. A narrow ore pass connects the .ncline with the level below. The main drive beyond here has collapsed at about 150yds from the air shaft.

The other levels from the 5-way junction proved impassable unless one was prepared to take a ducking. An open shaft in the floor which had been reported in this area by Andy Staples after one of the earlier visits was not discovered - perhaps we just happened to be lucky this time!

By contrast the rest of the day was really quite uneventful unless one regards chasing a discarded wet suit across Kelton Fell in a howling winter gale, scantily clad, in the dark, as high adventure. MEET REFORTS

CONISTON MINES EXPLORATION MEET 15. 1. 89

PADDY END WORKINGS

Members attending	The objects of this Meet were threefold:-
P. Fleming (Leader)	Site 1 Complete the exploration of the stope to the NF of Dead Dog Passage on its
Mike Mitchell	SE branch.
Ian Mathieson	<u>Site 2</u> To excavate the tunnel recently noticed by Ian Mathieson at the bottom of
Dennis Webb	Woodends Rise in the same stope on its NW branch.
Dave Bridge	
-	Site 3 To descend via Top Level and Windy
Angela Wilson	Stope to the chamber below Middle Level first entered on 2.4.84, to investigate
Guy Jones	suspected blocked levels.

Everyone made their way to Levers Water and down the crater to Dead Dog Passage via M.A.G.S. Catwalk. New stemples and boards were erected at the end of the passage to hold back loose rubble from the upper reaches of the stope, which is believed to be on the Belman Hole Vein. P. Fleming and D. Webb had meanwhile ascended Woodends Rise to photograph the wooden barrier before work commenced on the dig below. Having done this they then joined Ian Mathieson and Dave Bridge in the higher reaches of the SE stope which had been ascended with the help of a "maypole" placed there on a previcus visit. These workings are close to the surface and a few metres NE of Simons Nick. It is difficult to estimate the date of the workings but there was much evidence of pick marks and a few shot holes lower down.

The maypole was then dismantled and carried and lowered down to Top Level and the Windy Stope. In the meantime the dig was started. This progressed quickly, the material being a fine light-coloured slurry containing no solids. It must have been tipped down the shaft, but why, and where it originated is a mystery. A tunnel was revealed which was pacedout to be approximately 18 m. to a blind heading. This task completed, everyone, with the exception of Guy Jones who had battery problems, made their way down to the site of the third objective. The maypole was erected and raised on a bolt anchor to reach an opening higher in the stope suspected to contain access to a cross cut on Middle Level. Mike Mitchell and P. Fleming ascended the pole and entry to the opening was gained only to find it led into the stope again, with large blocks jammed across it.

Meanwhile, in the top corner of the chamber to the north, a dig was commenced where roof timbers of another branch of Middle Level were identified by compass bearings taken and visual alignments, but no progress was made. More work needs to be done here in the future.

The members then returned to the surface and descended in darkness back to the cottage.

Meet report:- WAR	TON CRAC	S MINES	Satur
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Saturday 4th March 1989

Present:- S.Barker, C.Barrow, D.Bowers, S.Clarke, E.Holland, T.Keates, A.C.P.Thomas, P.Timewell, J.Nelms & 7 members of the North Lancs. Bat Group who had asked for help in checking reports that the mines were used by hibernating bats.

The party first entered Moss House Mine (Crag Foot lower mine) and it was noted that the gated entrance had been forced open although the padlock was still present and locked. Do we know who has the key? During the whole day we were fortunate to have with us Eric Holland whose knowledge and experience of these mines goes back more than 20 years and he was able not only to guide us through the workings but also to indicate many features of interest. The mines yielded ochreous iron ore of satisfactory quality to be used as a pigment in paint- hence the local mame 'Paint Mines', although it is probable that some copper was also extracted.

Although the Bat Group members inspected every nook and cranny no bats were found but their leader stated with authority that they had found some droppings!

After emerging from the mine and a short surface walk to find the tops of the shafts we had seen underground, we returned to the cars for a picnic lunch.

After lunch the party was reduced to 15 when one of the Bat Group went off to the nearest belfry. Who could blame him after the bat less morning? The rest set off for the Upper Crag Foot Mine noting that the fencing done by the club in 1987 was still in perfect condition.

Arriving at the area used, on Sundays, by the Gun Club we were shown by Eric the remains of the ore crusher which had originally been powered by a steam engine. We then crossed over to the entrance to the mine which was located, after some initial uncertainty, by Eric. The entrance, which we had briefly investigated during the 1987 fencing operation, is in a narrow cleft only a few yards from a covered shaft with a manhole entrance. While Tony Keates rigged the shaft for a short descent to a wooden staging below which was an aluminium ladder the remainder of the party cleared the rift of dead wood atc. and the first people wriggled down the narrow tight entrance to where the way on is a squeeze under a rock roof. Arriving at this point, and eager for any excuse not to proceed further. the meet leader surprised himself and everybody else by spotting a hibernating brown, long eared bat. Although it is one of our most common bats it was quite a find and some considerable time was spent getting most of the bat group down to the point to see the creature. Members Holland, Timewell, Bowers and Helme then went on into the mine, noting that a work meet was required to stabilize the loose hanging boulders which were only supported by old rotten timbers. A collapse at this point would make rescue of anyone inside the mine extremely difficult. The mine is a fascinating mixture of natural and mined passages in a maze pattern not unlike the Borrowdale Wad Mines. However, after a few false turns, Eric was able to lead us to the double barrel air pump for which this mine is famous and we were also able to locate the plastic pipes Eric had taken down years ago in an attempt to syphon off the lake. After an interesting tour of the workings we returned to the entrance and the tight wriggles to emerge under the unstable boulders and up the narrow cleft to surface.

While we had been away the surface party had not been idle. Some had visited Echo Pit where large numbers of bat droppings were reported but sadly no more bats. Unfortunately Tony's valiant effort down the shaft had not yielded any horizontal development or connections with the actual mins. Finally to round off the day about half the party proceeded to Grisedale Wood Drainage Level, a 300' level ending in a natural rift which discharges quantities of water. Gamping at Erwbarfe Farm, Ponterwyd, Aberystwyth, Dyfed, NGR SN 749784. £3 per night for a small tent, site appeared 'run down', with poor facilities.

Present: - D Blundell, (Meet Leader), A Lings.

Both members attending arrived by Thursday evening, just in time to experience the gale force winds, and horizontal driving rain of Thursday night. By the morning, the rain had penetrated the inners of both tents.Friday dawned dry, but very windy, a good drying day for the tents. It was expected that additional members would arrive during the day, so it was decided to make a couple of local trips, returning to the campsite in between.

Heading South from the campsite, a halt was made to inspect the portal of Level Fawr NGR SN 739722, the drainage level for the Lisburne group of mines. The level is situated in the centre of Pontrhydygroes village, beneath the sharp bend on the B4343 road. Commenced in 1785, it had the distinction of being the longest drainage tunnel in Central Wales.

To the South of Pontrhydygroes, lies the village of Ffair-Rhos, and the start of the mime road to Esgairmwyn mime NGR SN 754693, the site of a recent attempt by Messrs G W Hall, and R Gunn, to rework the dumps of the old lead mine for Zn. After as false start up the mine road (due to the meet leaders reluctance to chance puncturing another fuel tank on his car on the rough track) an alternative route was found, involving a half mile walk across the moor. There are no levels or shafts remaining open, the principal features are a timber framed, steel-sheeted dressing mill, a timber office and stores building, slimes lagoons, and, of particular interest to Alastair, the remains of 2 Series 1 Landrovers, and 1 Series 2.

After lunch at the campsite, a visit was made to the Llewernog Mining Museum at Ponterwyd NGR SN 733810, £1.95 per head admission, well reccomended if you are in the area. A visit was made to Esgairhir Mine(Pb) NGR SN 735912, and Esgairfraith Mine (Pb/Cu) NGR SN 741912, at the Northern end of the Nant y Moch Reservoir (CECB).

Saturday, a dry and blustery day, it was decided to walk in to inspect two mining sites seen across the Nant y Moch reservoir the previous day Parked adjoining Maesnant NCR SN 775881, at 11am. Walked North up Afon Hyddgen to Hyddgen Mine NGR SN 782907, under Plynlimmon. The mine, which commenced in 1873 produced Zn and Pb_Run in level and pit for 40foot waterwheel and crusher, on east side of stream, with trial level in side valley to east. To west of stream are two flooded shafts, each with a rising main in situ. Small opencut above, with good specimens on the dumps. Followed the vein over the ridge to the west to the valley of the Nant y March, to wade the Afon Llechwedd-mawr, then through the swamps to the Nant y Baracs. After a light lunch, followed track around shoulder of hill, and reservoir to Brynyrafr NGR SN746879, a late (1879) development for Pb. The mine was a shaft working, which reached a depth of 67 fathoms, by the time of closure in 1912. Total production, 5000 tons Pb, 8000 tons ZnS. Little in the way of surviving features. Around an arm of the reservoir toCamdwrmawr SN 751877, the vein was alleged to containappreciable quantities of Manganese, but between opening in 1854, and closing in 1877, only 22 tons of Cu, and 5 tons of Pb were recorded. Again, no surface features remaining. Walked N.E. up hill, over shoulder of Drosgol, and down hill to Afon Llechwedd -mawr , which was waded again, to save heading 1 mile upstream to a crossing place. Waded across yet another bog to Afon Hengwm, for the final river crossing of the day, reaching the car at 5pm, having covered a distance of 92 miles.

Sunday, another windy dry day, headed S.E. to Cwmystwyth MineNGR SN 804747 (Ref. is for dressing mill.) Parked at mill site, and walked up to Copa Hill at the Eastern end of the site.Inspected Taylors Level, Aldersons Level, and the supposed Roman opencuts on the crest of the hill. Walked back down the stream, inspecting the spectacular waterfall into Huberts Stope. Alastair entered Huberts Level, but pronounced it to be dangerously understoped, and made an exit Walked back down the valley, inspecting the collapsed portal of Jackilass Level en route back to the mill site for lunch. After lunch, walked back up the hill to inspect the Graig Fawr opencast,

for ZnS. At the end of the day a 'Welsh Tea' was taken at Cwmystwyth Post Office, excellent value at £1.20p per person.

<u>Monday</u>, another dry windy day. After a late start due to striking camp, visited Frongoch Mime, SN 723744, to inspect the Engine houses, and the opencast workings for ZnS. Travelled down the valley to inspect the generating station built to supply power to the mime, and the mill constructed at Wemyss mine site. Returned to the campsite at lunchtime, with the meet terminating at approx.lpm, with the meet leader returning to Cumbria, and Alastair setting off on a hill walk up Plymlimon, before returning to Pembroke, to catch the ferry back to the Irish Republic.

D J Blundell. 24th April 1989.

FURNESS IRON evening meet 19th April 1989

Present:- S.Barker, S.Thomas, I.Mathieson, C.Jones, P.Fleming, D.Bridge, D.Lyon, A.Thomas, P.Timewell, J.Helme.

The party first visited the 'Magpie' dig and inspected the recently laid narrow gauge track and wagon which has been constructed from items obtained from Elterwater quarry. The surface walk then continued to Whitriggs Horse Level entrance and the restored bogie now installed on a short length of track outside the mine. At this point the party split, Ian, Anton and Paul entering the Horse Level and later Pickshaft Cave while Sheila, Peter, Dave, Derek and John paid a visit to Daylight Hole. The parties later reunited in the New Inn where they were joined by A.Wilson, B.Wheeler, L.Harrison and D.Webb for a social evening.

LAKELAND'S OLDEST INDUSTRY LANGDALES STONE AXE FACTORY SITES,

9th April 1989

Members attending :-

P. Fleming (Leader), Maureen Charlesworth, Mary Kindred and Friend, Barbara Mitchell, Angela Wilson, Don Borthwick, Dave Bridge, Alastair Cameron, Alan Charlesworth, Clive Barrow, Chris Jones, Stewart Cole, Mike Mitchell, Peter Sandbach.

The Meet gathered at the New Dungeon Ghyll car park on a beautiful morning, sunny and clear, with fresh snow on the tops. From the Old Dungeon Ghyll Hotel, a steep ascent was made up the screes to the left of Raven Crag, following the climbers' track up towards Gimmer Crag. At about 1200 ft., where the track crosses a stream, a small mining trial on a haematite vein was examined. A tunnel driven in steep ground for 10 metres has in the roof a continuous but narrow vein of high grade haematite. Higher up on the open fellside, the vein was still carrying good haematite. The period of working here would probably coincide with that on the other side of the valley at Red Tarn, in 1865.

We stopped for lunch higher up with a good view of climbers in action on nearby Gimmer Crag. From here the party split - the larger, more adventurous one ascending South East Gully, alongside the crag. We all met up again at the top and then continued across towards Pike O' Stickle. Instead of going up to the summit, we made a diagonal descent off the East and South face over steep ground above the South Scree Gully. This brought us to the area of major wrking sites for stone axes. The period of working, according to recent investigations by archeologists using carbon dating, was between 2500 to 4000 B.C., and firesetting techniques were employed to wrest the rock from the outcrop. It consists of a fine grained rhyolite (volcanic tuff), laid down as ash. It has similar cleaving properties to flint.

About an hour and a half was spent here looking at various small caves and chipping sites. A number of damaged roughed-out axes were found. The best, a small one and a large one, were found by Dave Bridge. We then descended through the only line of weakness in the crags below, by going NW until a sheep track was reached. Here seven members returned to the valley, whilst the other eight carried on over Mart Crag Moor to Stake Pass, then down to Mickleden, followed by a pleasant walk along the valley back to civilisation.

The day provided convincing evidence to support the theory that there is more to life than going down dark and dirty mines!

Peter Flemine

LOW WATER POWER HOUSE. 23rd April 1989.

In 1960 Saddlestone Quarry on Coniston Old Man closed, and the nearby powerhouse and smithy was left idle. Power had been provided by a Pelton Wheel driven by water piped from Low Water, 500 feet up the mountain. The pipeline remained more or less complete until a couple of winters ago, when the fastenings rusted through and some sections of the pipe slid down the mountain side. The slate roof of the building was stripped off and sold about 1975, but the pelton wheel, compressor, air reciever, generator, and a belt driven pedestal drill still remain in the roofless building. Many of the blacksmiths tools, his workbenches, anvil and a large vice used to be there, but these have been removed over the years by collectors and by vandals. The building itself has withstood the elements quite well, but recently some ominous bulges have appeared in the walls. CATHMS has obtained permission from Burlington Slate to carry out repairs and preservation work on this building and also upon the Brake House of the Moss Head Ropeway. The intention is to repair the bulging walls, to cap the unprotected gables with mortar to prevent the ingress of water, to clean out the building, to replace the machine parts to their working positions, and to erect an explanatory notice.

An article in an earlier Newsletter asking for volunteers produced a response from only one member, so I decided to include it as a scheduled meet in the hope that others would turn up. By a masterpiece of organisational inability I managed to programme this on a weekend when I was obliged to work, and therefore could not attend. Paul Timewell agreed to be Meet Leader, and we arranged to meet, together with John Helme and Chris Jones with his Landrover, on the Friday evening beforehand at the Walna Scar Car Park in order to assess the job, and to transport sand and cement to the site. Athough it was not possible to get the Landrover all the way up the building materials were cached amongst the rocks to be carried the rest of the way up on the day of the meet.

Eight members were present at the meet, and a good start was made. The floor of the Power House was mucked out, and whilst Mike Mitchell and Chris Jones hoisted lumps of machine back into place, Angela Wilson, John Helme, Don Borthwick and co repaired the damage to the walls by skilfull dry stone walling with added mortar. Part of two of the gables was capped with cement. A further visit was made on Friday evening 21st May by Ian Matheson, Dave Blundell, Anton C.P. Thomas, Paul Timewell, Derek Holland, John Helme and Chris Jones. We had another three hundredweight of sand and cement, and this time as well as the Landrover, Chris had brought his motorbike! We hoped to take the materials as far as possible by Landrover and do the last steep and rocky bit on the bike. This was done by means of a sort of chinese cooley system on the back of the bike which was balanced by two runners whilst Chris rode up the hill. It was hard on the runners, but successfull and very speedy. I understand that the back wheel of the bike has been rebuilt in preparation for the next trip! The gable end containing the forge chimney was built up with stone and capped with mortar.

There remains quite a lot to be done, and future visits will be arranged by telephone. If you would like to help, or are willing to be persuaded, then contact the Meets Secretary. (05394 32957)

Ian Matheson.

A superb turnout for the meet, a total of 21 members in all. In view of the large number it was decided that the meet would be split into two groups led by Anne Danson - Ian Tyler.

All members of the meet viewed No 1 level, some tescending the ladderway down to "O" and looked at the new "Calvin barite stope". Most people took advantage of the opportunity to climb the incline between No1 and No 2. The final pitch was rigged for SRT, free climb, assisted climb and those who could not manage any of these were dragged up and then lowered down. It is now easy to see who they were as they have either wasr waists and squint or speak with high pitched voices or suffer all three symptoms. No 2 was explored to the full.Mike Mitchell descended a box hole from the stope down to No 2 level but alas the way on was collapsed. Numerous volunteers began a dig on an incline from No 2 stope up to No 3. This was unsuccessful on the day, but the following week we made the connection (I.Tyler - W. Allison). The sporting side of this little escapade was dampened by the fact that the 5 week drought had reduced the 20' pitch to virtually a dry climb, this is definately not so in ordinary weather. Note. the fixed rope on this pitch belongs to me so leave it alone, anyway it is badly worn so beware heavy SRT men! All returned down to the mine managers office for lunch.

In the afternoon the group proceeded up the fell to No 3 past No 2 (now partly dug open).Inside no 3 we launched ourselves up the Laport incline, leaving the ropes at the trapdoor for the 200' pitch down to No 3. At the top of the Laporte some people decided to climb the re instated ladder and up the mini incline and then on up to the 60' level. Others progressed onto a recently dug outlevel(1100) this was previously 4' deep in water at the forehead, then up the manway to the 60' level, meeting the others. Here the party were able to inspect the timber staging of the shaft up to the High Force. Note, the man way is now totally unsafe.

Pete Fleming and Mike Mitchell took a party up to the High Force via the stopes, others returned down via the incline, some taking the ladderways.

I returned to the Laporte trapdoor and rigged the pitch for the descent. Alistair Cameron was the first to go, the pitch was slightly adjusted to get a cleaner hang and more people started to descend. People then started to arrive from the High Force party who had managed to work their way through to the High Force from the 80' via the 50' and out to day. The average time for descent was about 10mins, in all 7 or 8 members made the 200' pitch down to No 3.

An inspection of the 650' level revealed a large collapse in the stopes and now prevents further progress, this has fallen in the last 8 weeks (future dig).

We all returned to the mill site, thanks were given to the owners of the mine for their help and time which allowed the meet to go so well - thanks Anne.

Overheard on the 80'....."Has anyone seen Guy?"....."Guy who?"....."Lindsay saw him on Zero,oh Guy apparently worked the mill by hand all day, complained that the hand crank on the fly wheel of the jaw crusher made his arms hurt and his eyes water".

EXPLORATION STILL GOING ON READY FOR NEXT MEET.

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The meet was attended by ten pacple of which only 5 were members the others had had their passions roused after my stiring talk to the Caldback Historical Society a few weeks before. After some poor map reading by half the party we managed to meet in Ingray gill some 400 yds from Fellside. The advance party being unable to read or know where they are on a bright sunny day. From here we all proceeded to Long Grain - Short Grain gill and the China Clay mine.Mexico mine was visited after lunch. Here we watched the joy and trepidation of Mrs B. Bradbury, a spritely 70 yr old don my helmet and lamp and venture underground. Meanwhile a local building surveyor/engineer and ex soldier pondered his fate as to wether discretion should be the better part of valour.No choice, his wife lept down the hole with husband in pursuit - two more recruits. All enjoyed the trip and thirsted for more.

Now traversing around Iron crag past Laintons Engine shaft and onto Roughton Gill.The 60fm level was visited and a new coffin level recently dug out explored. Here some of the party returned to Fellside, the remainder went up to the 30fm and then over to Silver Gill. Here the 'Golden Vugh' was explored. Warren Allison started a solo dig on the coffin level on the South side of the gill,near the shaft.The place was heaving with midges and they were truly upset at their dark home being disturbed. However Warrens labours were rewarded after ¹/₂hr he had broken through exposing 40yds of Elizabethan coffin levle.Well done Warren.

By now it was 6pm and the 3mile stroll back to Fellside awaited us - and the weather had been kind all day.

END OF OCTOBER WILL INCLUDE NAMHO CONFERENCE REPORTS AND ANY OTHER INTERESTING MATERIAL MEMBERS WOULD CARE TO SEND IN.

STOP PRESS *****

WHITRIGGS HORSE LEVEL

Combination lock pinched, this has been replaced with a padlock/key. key available from Chris Jones, 3 Bell Hill, Martin, Lindal in Furness, Ulverston (0229) 63892 or Anton Thomas, 189 Greengate St, Barrow in Furness. (0229) 35951.