

NORTHERN MINE RESEARCH SOCIETY

NEWSLETTER



FEBRUARY 1993

FUTURE MEETS

- 27th March 1993 The Society Annual General Meeting and Annual Dinner. This will be held at the Miners Arms, Greenhow, N.Yorkshire. The AGM will be held at 4.00pm. and the Dinner will be 7.30pm for 8.00pm. Booking Form at the back of this Newsletter.
- 28th March 1993 Greenhow. Leader M.Street.Tel.0422 839749. Meet in the Miners Arms car park at 10.30am.
- 17th April 1993 Wet Earth Colliery. Manchester. Leader A.Sinar. Tel.0942 728096 Meet at Clifton Marina NGR SD770048 at 10.30am. Further details on page 3.

NAMHO CONFERENCE 1993

The conference is to be held at the Manx Museum, Douglas, on the Isle of Man, from the 23rd to the 26th April 1993. Details on the Friday night registration will be sent out with confirmation of booking. The Saturday night function will involve a ride from Douglas to Laxey on a Manx Electric Railway tram plus a one minute walk from Laxey Station to the Glen Gardens Pavillion for the meal and entertainment. There will be a return tram ride. The weekend will host a series of repeated trips both above and below ground to cater for all. Details on field trips and booking forms will be sent after a conference booking has been made.

Time is now running out and this must be your last chance to book. Please contact Rachel Robertson, Conference organiser at :-11, Western Avenue, Ballabrookie, Douglas, Isle of Man. Tel.0624 674702 The Conference fee is £8 per person, children under 5 free. The Saturday night is £10 per person, children under 5 free.

MEET REPORTS

Teesdale 12th and 13th September 1992

The last field meet for the 1992 season was held in Teesdale on the 12th and 13th September 1992.

On Saturday morning 14 members and 5 non-members met in Middleton Market Place prior to driving up the west side of the Hudeshope Valley to the Firestone Level.

Here the party split up into five small groups led by members of the Durham Dales Mines Society who think of Firestone Level as their home. A full tour of all accessible areas was made including the latest laddering project to find the connection between the high and low levels.

Lunch and a well earned rest was taken on regaining day.

The afternoon entertainment consisted of a steep climb down the hillside to Skears Low Level, an uninviting timbered portal with a healthy flow of water, a feature of most of these workings. Alex Fitzsimmons of DDMS replete in dry suit led the way, followed by the longer legged and thus more intrepid of the party.

The rest of us took different routes at a more leisurely pace eventually leaving yours truly on his own (were they trying to tell me something?).

After checking that everyone was out I made my way back to the car to find most people had gone home.

On Sunday 13 members (some of them survivors from the previous day) turned up for a mystery tour of the Pike Law and Flushmere area. After walking over many acres of moorland covered in old shaft workings, hushes and a few prematurely blocked levels I sat down to lunch in almost despair of finding something really interesting. At this point Roger Bade recalled seeing in the distant past another level further up the valley. Most of us had great difficulty keeping up with his long strides but the effort was well worth it.

On the east bank of the stream there are the remains of a small shop and a partially walled area containing two concrete blocks with four stub bolts in each. The level entrance is the worse for wear but passable. The straight level runs for approximately 400 yards and is quite unlike any others yet found in Teesdale and has now been identified as Bropery Gill Level. There are six shafts alternating on each side of the level each contained in an offset chamber. The second shaft has the remains of a timber head-gear with the shaft divided for winding and climbing and is about 60 feet deep. Beyond the final shaft which is full of water there are some wooden rails.

If anyone has any information on this level other than the reference by Prof. Dunham it would be appreciated.

We returned to the road and crossed over to the Westerbeck workings. More shafts, hushes and blocked levels but a pleasant walk nevertheless. At this point it was time for the long distance travellers to return home. The homeless ones decided to make a day of it by going into Weardale to look at Swinhope Head Level. They found, I am told, wooden rails, a barrow, a shovel and a vein of galena in a waterfall.

Thanks to all those who came, especially the young 76 year olds from Nottingham. Thanks also to the members of the Durham Dales Mines Society for their help on Saturday.

John M. Harrison.

LETTERS

Further information on Thomas Saunders Cave.

Further to my article on Thomas Saunders Cave in the 1991 Memoirs, page 9 et seq., there was recently an auction in Penzance of the Penrose Estate archives, formerly the property of the Rogers family, from some of the deeds of which I have

obtained the following additional information:

Cave obtained a number of mining setts or leases from Rev. Rogers in 1835-36, some through the good offices of Captain Thomas Teague of Redruth, uncle of Cave's Cornwall manager Captain William Richards. The setts are named after the farms on which they lay, as the ground had not been mined before. They included Tolvadden and Henver Gollie in Marazion and a number of areas north of the A30 in Ludgvan parish, running west from Collorian. The properties named were East and West Polgrean, Treassow, Treassow and Tregadjack, Tregallast and Collorian, and Collorian. The last named was misprinted as Curlurim, in the Times, from which I drew my information, and was thought by me to be Gurlyn.

In February 1835 Cave's address was Carlton Cottage in the County of Surrey, but by May 1836 he had moved to Ludgvan. He failed to comply with the terms of the leases, and they were all revoked by Rev. Rogers on 31st July 1840.

I have sent a copy of the foregoing to the secretary of the Cave Family History Society.

Justin Brooke.

Visit to Wet Earth Colliery. Sat 17th April 1993

Wet Earth or Clifton Colliery, to use its official name, was sunk before 1750 and immediately lived up to its name, severe flooding closing the pit. James Brindley, later to be associated with the Bridgewater Canal close by, was brought in in 1752 to drain it.

He did so by an elaborate system of weirs, tunnels, syphons and leats to bring the water to the wheel chamber by the shaft, this wheel pumped the water up the 150ft shaft, discharged it into the wheel chamber to drain out into the River Irwell via the colliery sough. This worked from 1756 to the 1860's with minor modifications to supply water to the colliery canal. In the 1860's a turbine replaced the wheel and worked until 1924 when it was replaced by steam until the pit closed in 1928.

The tunnels etc. remained in use to feed the canal, which supplied water to local industry, until the 1960's when sewerage work destroyed the tunnel. Still to be seen is the syphon, leat, canal dock and supply tunnel to the wheel chamber. The wheel chamber has been dug out and made accessible, the elaborate sough system is now being excavated.

All work has been done by a group who have just formalised themselves as the Wet Earth Exploration Society and joined NAMHO. As to conditions underground, a letter from our late President John McNeil sums it up perfectly. "Numerous tunnels to explore and you can get as wet or dry as you want". Boiler suit and wellies can suffice, helmet and lamp of course. For full exploration wading trousers or wet suit.

The colliery is in the Irwell Valley Linear Park and all around is an urban area. The easiest way is to make for junction 15 on the M62. The colliery lies on the Bolton side of this junction. About half a mile away watch for the sign Clifton Marina and park in the car park at the Information Centre. Note junction 15 is not available from the SW side. Approaching from the SW change to M61 at junction 14 and leave M61 at junction 3 so gaining access to A666 and head away from Bolton.

A.Sinar

Understanding the Early Lead Industry

In a recent letter (Newsletter Nov.'92 p.5) and the opening paragraphs of his

paper on Yorkshire Smelt Mills (BM45), Mike Gill has highlighted the lack of detail available for lead smelting up to the late 16th century, particularly in respect of Yorkshire.

Perhaps it is unfortunate that the late Derbyshire bole, for which there is some good documentary evidence, should be used as a model for similar sites in other parts of the country; but without detailed archaeological and/or documentary research there is little else to use. It is already evident, without the help of identifiable remains, that the late Derbyshire model does not fit easily into the silver-lead smelting complex during the late medieval period in Devon.

The Yorkshire Dales are well endowed with archaeological evidence for bole (or bale) smelting, and a structured investigation could yield information on which to construct an accurate model. We should, however, be wary of random Carbon 14 dating of charcoal from such sites. Remember, the charcoal heaps found at sites like Calver are not the legacy of bole smelting but of the associated blackwork furnaces (or ovens) which are not necessarily contemporary with the boles. The field evidence at Calver, and elsewhere, indicates that there was more than one phase of activity, and excavation could establish their sequence. Given this, Carbon 14 dating can help trace the spread of the blackwork furnace; thereby throwing light on the economics of the lead industry and possible transfer of technology from the silver-lead industry.

Peter F. Claughton.

Bings & Pieces

In the latest edition of the Society's Memoirs there is an article by R.A. Fairbairn on the cost of producing lead from Sharpley lead mine, Northumberland, during the 18th century in which the author ends with "Why a mill that dispatched all its lead to Blaydon where it was refined or sold, should use a larger piece than one sixteenth part of a Newcastle fother is a mystery". I should like to take the opportunity to answer this and a few other points raised by the article.

The solution to the above puzzle lies in the use of Dukesfield mill, and Blaydon. These belonged to the William Blackett Co. (W.B.Co.), often referred to as the Blackett - Beaumonts. For nearly all the 18th century, and back into the 17th century, this company sold its lead in Stockton fothers, a probable throwback to its owner, William Blackett, obtaining the Moormastership of Weardale, and the mills that went with it, in 1696. This whole mining field was geared to produce lead for sale at the port of Stockton, and when the W.B.Co. took over they quite naturally started to sell from Newcastle, where William Blackett, father and son, were noted members of several merchants guilds. Thus the W.B.Co. came to selling lead in the larger Stockton fother at the port of Newcastle, and any comparisons of lead prices at Newcastle during this period require considerable caution to avoid assuming that the Blacketts were more expensive - you got more for your money with Blackett lead!

The author also states that a piece is a sixteenth part of a fother. This is certainly not the case in the 18th century or later, where the only noticeable link is that the piece is usually a convenient fraction of the chosen fother. For example, when the Blacketts did change to the smaller Newcastle fother, they increased the pieces from 11 stone to 12 stone, with 14 pieces to the fother. They also produced a very large number of 8 stone pieces, which was refinable lead and not for resale.

The article contains a section on profits from the lead, in which the author declares that he has problems in trying to get the total value of the lead calculated from the price per fother and the number of pieces, to be the same as the value stated in the document as £54.5.8¹/₂d. In brief they don't agree because they are not the same. This little conundrum occurs frequently when mill output is compared to sale figures, and the reason is simple but obscure.

It all depends on the true weight of the piece. Pouring molten lead into moulds was not an exact science, so the pieces did not weigh exactly 11 stone. The errors could be in pounds, and in a shipping order this could mean giving away valuable lead, or being accused of selling short. One mill agent in 1759 was chastised for his pieces being 4 pounds short per piece! This is clearly excessive, but with annual production mid-century running at around 50,000 pieces, even a half-pound error per piece would amount to some 11 tons of lead. To take account of these errors, the lead was therefore weighed at the lead yard, and the total recorded in cwts, stones and pounds (or similar), but not in fothers, nor is it a round number of stones, which in theory it should be.

When considered from the point of view of the "Sales Dept.", the fother was used as a unit of wholesale lead to simplify pricing and ordering between producers and merchants. It would be accepted practice that when the order was executed the true weight was measured and a bill prepared based on the quoted price and number of fothers ordered, but corrected for the actual weight shipped. This is based on my understanding of the W.B.Co. production in the 18th century, but I would imagine it to be common practice because of the inherent errors in the production system.

Finally, in his discussion on the transport of lead ore, the author suggests a possible load for a pack pony of "about 300 lbs.". There is undoubtedly a problem in trying to assess the typical pony load, and yet the answer is actually in the accounts of most mines. In this particular case, the total of ore carried is recorded as 18 $\frac{1}{4}$ Bings. Yet this is not strictly correct, because it ignores a unit of measurement that is almost as common as the Bing, but whose significance is rarely appreciated. That unit is the $\frac{1}{4}$ of a bing, called a "Horse". This little unit is so common in documents, yet so often ignored, that it is in danger of being lost. The consequence of this is that historians have to search for possible estimates of what a pony might carry, while the answer lies in their discarded evidence.

While the origins of the Bing might be a shade elusive, the Horse or Horse-load, could hardly have been given a clearer name. Since the Bing weighed 8 cwt., then the Horse weighed 2 cwt., and with the conventional 18th century method of carriage being two long thin ore sacks per pony, each sack would weigh 1 cwt. This simple system stretches well back into history, and was ideal for the illiterate miners and carriers, who could keep an account between themselves by counting horses, and notching their tally sticks for each horse, or per Bing (4 horses).

Alan Blackburn.

Old Gang Smeltmills

I read Mike Gill's article on "Yorkshire Smelting Mills" in the latest British Mining (BM45, pp 111-150) with interest; it is high time some of the orthodox interpretations were tested anew against the primary documentary evidence, and Mike nails a few myths. But it is a shame that he wrote the article before reading the archive reports on our own detailed building recording on the two smeltmills at Old Gang (as mentioned by Robert White in the November 1992 Newsletter), as he has perpetrated a couple of fallacies of his own which are contradicted by the structural data on the site, and are best corrected before they become embedded in the literature themselves!

The Upper Mill at Old Gang (ie. the one cut into the hillside, which Mike refers to as the "New Mill") was not sited to accommodate a flue; the structural evidence shows clearly that the flue and its arch were a later addition. There is no evidence that the standing Upper Mill as first built had any flue, and I think it is far more likely that it vented directly by a central chimney over the hearths.

The four flues from the Lower Mill (Mike's "Old Gang Mill" - the one by the track, for those who know the site) do not unite before being "led into the old flue via the New Mill's southern hearth" (p 122). They converge, but remain separate as a "double-decker" structure of two pairs of superimposed flues, the lower pair passing through the site of the southern hearth to rise up over the site of the northern hearth. The structural evidence shows that the dividing walls between the two hearth sites, (despite their visual similarity to the "coving" over ore hearths), were contemporary to the insertion of the flues; in fact it would be virtually impossible to insert the flues under these walls without bringing them crashing down, quite apart from the positive evidence that they are keyed into the walls of the flue but butted against the original walls of the Upper Mill. The evidence also suggests that these flues are of one build with the flue leading out of the building to the north (the one that isn't original, as was pointed out in the preceding paragraph), though on this point it isn't conclusive.

So it would not be possible to insert the flues from the Lower Mill while the Upper Mill was working; it would have to close down for long enough for all the stonework between the hearths to be taken down and rebuilt, and the flues completed, before the Lower Mill could replace it. That doesn't disprove Mike's suggestion that the three month break in smelting in 1846 marked the transfer between the mills, but it does seem a bit short (allowing for the slow setting of lime mortar), and surely there are specific references to a long flue before this?

I wonder if the reference to construction of the "New Mill" in 1801 isn't to the Lower Mill rather than the Upper? I very much hope Mike will find some conclusive historical evidence for the dating of the two mills, whatever those dates are.

PS. Members who know the site will doubtless enjoy the argument, and can of course go and see the evidence for themselves. My apologies however to those who don't know it; the above text must be pretty incomprehensible without illustrations!

David Cranstone.

Crusher House, Baravore Mines, Co. Wicklow

Whilst in Ireland recently a visit was made to Glenmalur, Co. Wicklow, to examine the site of a small 18th (?) 19th century lead smelter. As it turned out the site is now a picnic area - plenty of slags in evidence, but virtually none of the structure visible.

Spoil heaps and dressing waste on mines in this area, and at Glendalough to the north, stand out clearly, virtually white against the heather and bracken covered hillsides, apparently due to their mica content. But on the south side of the upper part of the glen, in the area of the Baravore Lode, much is obscured by softwood plantations; and it is only through a local contact that I became aware of the crusher house.

Crossing the ford, three and a quarter miles from Drumgoff crossroads and half a mile downstream from the youth hostel, and then forking west along a forest track it cannot be missed; standing intact, apart from its roof, a substantial building of random rubble with dressed corner stones set into the hillside below the track. On its eastern side are the remains of a pit for a waterwheel of about 25 feet diameter, fed by a leat running round from a stream to the south.

A doorway from the track opens into the upper of three floors, the timbers of which are now missing, and alongside the track is a small yard for ore storage before it was fed through the door to the crusher rolls. The hole for the axle is visible in the eastern wall, as are the mountings for the bearers supporting the rolls just above it. However, openings for weighted levers are not in evidence indicating later design rolls using springs to apply pressure.

In fact the building shows little sign of use - no wear marks from waterwheel or raff wheel.

An adit, a few yards west of the crusher, driven to cut either the Baravore Lode or the southern extension of one of the Bally na goneen lodes, would have been ideally placed to tram ore to the crusher - but the dump is only small and it probably did not reach its objective. Perhaps a case of lavish expenditure on surface installations in expectation of returns which did not materialise.

Any further information on this or any of the other mines in Glenmalure would be appreciated.

Peter F.Claughton.

BOOK REVIEWS

Mines of the Gwydyr Forest. Part 4. Aberllyn Mine, Betws-y-Coed and Adjacent Setts.
By John Bennett and Robert W.Vernon. A5. 120pp. ISBN.0 9514798 3 0. £5.95 from bookshops and the publisher Gwydyr Publications, 7 St.Johns Way, Cuddington, Cheshire. CW8 2LX.

This fourth volume in the series of seven looks at the history of the well known Aberllyn Mine and the mines in the immediate Betws-y-Coed area, mainly to the north of the town.

In its time Aberllyn was the largest employer in the Betws-y-Coed area and was, unusually for that area, a zinc ore producer at that time.

The history of the adjoining mines is well described and the reader will realise that there was in fact much less mining carried out than there was company promoting. In fact it is rather surprising how little actual mining was done in the majority of ventures. However it did provide some employment for local people as well as lining the pockets of the company promoters. The description of the mineral lodes and mine workings is well set out and if this had been around at the time of some of the company flotations, they would not have had even the limited success they enjoyed at the time.

There are interesting maps and sections including a fold-out section of Aberllyn Mine Western workings dated 1905. As with previous parts of this series there is again a shortage of photographs other than a few of current vintage which are themselves a little disappointing. Considering the fact that Aberllyn and Penyrallt were worked up to the 1920's, it is surprising that there are no photographs of the mines during their active days.

That said, I must admit that I found this volume every bit as readable as its predecessors - I read it in two sittings - and it maintains the high standard already set in this series.

Damian J.McCurdy

GENERAL NEWS ROUND UP

Pollution Problems

Coal may no longer be king but its environmental legacy is providing a substantial headache for the NRA. The watchdog's Yorkshire, Welsh and Northumbrian

regions are grappling with the increasing problems of discharges from abandoned mines. Although the NRA is quick to stress the pollution is not as acute or toxic as the infamous Wheal Jane disaster in Cornwall, these discharges contain high concentrations of dissolved iron, particularly ferrous sulphate.

They can have a dramatic effect on the watercourse, transforming champagne clear streams into vivid orange. The effect is not just aesthetically unpleasing. The discharge coats the river bed with iron oxides, killing fish, plants and invertebrates alike.

The problem is likely to increase in the future as more and more pits close. In Wales for example British Coal has closed 50 of its 54 pits in the last two years and pollution control officers are already uneasy about the future.

"We have identified 50km of rivers and streams that have been affected by mine waters, of which 30km are classified waters", says Welsh NRA pollution control officer Alan Hawkins. "Much of the discharges tend to be in smaller streams and head waters of the rivers and have a greater impact because there is less dilution".

Part of the problem for British Coal and the NRA is identifying the source of the discharge. Many deep mines are linked underground and an abandoned mine in one valley can easily discharge into another.

Yorkshire NRA has so far identified 36 discharges from abandoned mines, causing serious river pollution. As many of these workings ceased operating before the coal industry was nationalised, they are exempt from control under river pollution legislation. The most severe trouble spots are at the head of the River Calder near Todmorden, the River Don and in tributaries of the Rother.

"Treating mine waters is difficult as we are either talking about expensive chemical systems or biological treatment with reed beds, which require large areas of land." argues Hawkins. "These sort of areas do not exist in the South Wales valleys".

Northumbrian NRA has now entered the fray by warning that closing the Vane Tempest and Easington pits could lead to contamination of rivers in the region. Pumping stations which currently protect the mines and divert good quality water into the River Wear would be switched off, swelling water levels.

Northumbrian NRA wants potential mine discharges to be considered as part of any British Coal review of a colliery's future. Nationally, the watchdog has raised the matter with the DoE and called for changes to the 1991 Water Resources Act. Marsham Street so far remains silent. "The legislation as it stands gives mine owners exemption from pollution from abandoned mines," says Northumbrian NRA principal pollution officer Bob Pailor. "We feel there should be some provision of aftercare in these circumstances.

Surveyor Sept '92.

Miner's Health Problems!

They call it puna in Chile, scoroche in Peru. The mining industry will have to learn new tricks to live with it.

Puna is the catch-all term for the very many symptoms caused by what English speakers call altitude sickness. It will have a profound impact on the way mining companies operate in Chile, a country that many see as the most attractive in Latin America for exploration and development.

Much of that country's mineral treasure is locked in the high Andes. Some of the best mines and projects are located above 2,800 metres (9,000feet), the level at which most people begin to feel the onset of puna symptoms.

In no particular order these mines include: Coldelco's Andina and Salvador copper operations; Exxon's Los Bronces copper project on the same ore body as Andina; La Coipa gold project (Placer Dome and TVX Gold) and Bema Gold's Refugio project nearby, both in the so-called Marikunga gold district. There is Cominco's Quebrada Blanca copper project. Billiton, Falconbridge and Chevron are partners in the Collahuasi copper project (but Chevron is selling its stake to Minorco). RTZ owns Cerro Colorado, another copper project.

Homestake has the El Heeuso project, Cominco the Lobo project and Cocar owns Cancan, all seeking gold. Chile also boasts, for a short while longer at least (its owners Billiton, Northgate and Citibank intend to close it at the end of this year), the world's highest operating gold mine, Choquelimpie, in the mouth of a dead volcano at 4,825 metres (15,777feet). Billiton is part of the Royal Dutch/Shell group and Shell Chile is helping to finance a study of the effects of high altitude on miners - research that will be of immense value as activity builds up in that country.

The air above 2,800 metres is generally described as "thin". It contains the same proportions of Oxygen, carbon dioxide and nitrogen as at sea level but with increasing altitude there is a decrease in atmospheric pressure. The decrease is gradual and proportional up to about 2,800 metres, but rapidly and disproportionately accelerates as higher altitudes are achieved.

When high altitude-low pressure air is breathed into lungs adapted to the higher pressures of lower altitudes, transfer of oxygen from air to blood is reduced and the body experiences oxygen depletion. The body is then forced to work harder to take in extra oxygen and in doing so slips back into oxygen deficit again, creating a vicious circle.

The symptoms of puna can include one or all of the following (and the list is not exhaustive): headache, gastric problems, nausea, heart arrhythmia, listlessness, vomiting, diarrhoea, lapse of memory, anxiety attacks, feelings of insecurity, loss of appetite, insomnia, shortage of breath, muscular cramps, indecisiveness, lack of motivation, obsessive behaviour, persistent colds, sinusitis, sore throat, painful eyes and loss of vision, fevers and inability to concentrate.(sounds like the morning after the night before, to me! Ed.) All of these are particularly unwelcome on mining sites, where so much heavy equipment is used and operators must feel on top of the job.

The impact of puna is different for each individual. Mr.Jim Platt, Billiton's chief geologist on the Collahuasi project for four years, has produced a paper on altitude sickness based on his personal experiences. He says there is no way of knowing if an individual needed for the current \$40m exploration programme at Collahuasi will be able to work at that altitude except by taking each one there to see what happens.

"There seems to be no pattern. Extremely fit and active people have been known to suffer badly while some overweight, heavy smoking types feel no effects," he says. Mr.Platt points out that to guard against the short and long term impact of puna, companies in Chile have begun to make use of a "buddy" system. This involves everyone looking out for the health and condition of everyone else, spotting and signalling any observed deviations from the norm or onset of puna symptoms.

This system promotes team-work and safety-consciousness. Mr.Platt suggests the buddy system is particularly important for detecting potentially dangerous psychological symptoms, such as anxiety attacks, feelings of paranoia and insecurity,

a sense of entrapment, intense claustrophobia, obsessive thinking and the edge of a nervous breakdown.

By the end of this year, the study sponsored by Shell Chile and carried out by the Catholic University of Santiago's cardiology department should be available to throw fresh light on this subject.

Among other things, researchers have been checking the Choquelimpie employees at the mine, also at Putre which is 1,100 metres lower and where the mining camp is based, and finally in Arica, a sea-level town, in an attempt to identify any with heart problems or others potentially at risk.

Mr. Patricio Palma, Choquelimpie's safety officer, says: "We want to know more about how hearts and lungs function at high altitudes to prevent problems developing, possibly with the help of drugs". It might also be necessary to change working patterns at the mine, he points out.

Fortunately, the cure for puna is simple: the patient is taken to a low altitude as quickly as possible. In severe cases time may be vital. The cure is then so rapid and so complete that some of the afflicted immediately want to return to high altitude, unwilling to believe that they ever had difficulties.

Mr. Platt insists, however: "They should under no circumstances be permitted to make a return". Mining companies wanting to establish a fully-adapted high-altitude crew can expect that for every 100 people selected, 30 to 35 will drop out quickly. Of those, two or three are likely to be very ill indeed. The 65 or 70 who remain may also be subject to significant attrition in the medium term either because they cannot put up with the working environment or as a result of delayed puna symptoms. Mr. Platt points to the bottom line for many mining companies in Chile: "When you are planning to staff a high-altitude project, it is likely that twice the required number of personnel will eventually have to be selected to ensure that basic mining needs are met".

Financial Times 17/11/92.

EDITORS COMMENTS

Thanks. Thanks to all the contributors to this newsletter both those named after certain articles and the following who have also sent in information which has been used: Dave Blundell

The next Newsletter will be published in May 1993. Please send any material for inclusion to the Newsletter Editor, at the address below before 31st March 1993.
Damian J. McCurdy, "Denefield", 111 Barn Lane, Golborne, Warrington. WA3 3PR.
Tel:- 0942 718192.

The views and opinions expressed in this Newsletter are those of the correspondents and are not necessarily agreed with or shared by N.M.R.S. its officers or the Editor.

The accuracy of submissions is the responsibility of the authors and will not always be checked for validity by the Editor.

NORTHERN MINE RESEARCH SOCIETY



Booking form for the Annual Dinner to be held at The Miners Arms, Greenhow on Saturday 27th March 1993 at 7.30 for 8.00pm. Price: £10.50 per head.

MENU

A: Starter

1. Soup of the Day
2. Prawn Cocktail
3. Melon and Water Ice
4. Peaches filled with Curried Prawns

B: Main Course

1. Sirloin Steak with White Wine, Cream & Peppercorn Sauce
2. Half a Roast Duckling with Orange Sauce
3. Home Made Fishermans Pie
4. Chicken Breast with a Mushroom Sauce

C: Sweet

1. Lemon Tore
2. Summerfruit Pudding
3. Hot Chocolate Fudge Cake
4. Fresh Fruit Salad

Tea or Coffee and Mints

Name

Address

Telephone

Number in Party

Please Indicate choices;

Starter

Main Course

Sweet

Please make cheques payable to NMRS and send to: Malcolm Street, 7, Salisbury Street, SOWERBY BRIDGE, West Yorkshire HG6 1EE by the 6th March 1993

STOP PRESS

HELP URGENTLY REQUIRED!!!

At a time when the membership is steadily increasing, Northern Mines finds itself in desperate straights to fill the necessary committee posts.

A Treasurer is vital - where would the British economy be without Norman Lamont? - and yet we are going to lose our Treasurer in March, as Bob Burns is unable to continue after the AGM due to increasing work commitments. Two deaths and three resignations in 12 months has left us struggling, notwithstanding the co-option of two members to help us out.

In accordance with our constitution, all 9 committee posts become vacant at each AGM; a nomination form was attached to the November 1992 Newsletter. Please use the form, or write or phone the Secretary, Malcolm Street if you are interested, particularly in the jobs of Treasurer or Newsletter Editor, or know of someone who can be persuaded.

Out of a membership of 455 surely we must have at least one numerically literate member for Treasurer, and one budding lexographer for Newsletter Editor. Malcolm's phone number is 0422-839749, and he needs nominations by the end of February'93.

John Hopkinson - Acting President.