Northern Mine Research Society

Newsletter May 1985

I'm having to do it again - apologise for the state of the last Newsletter. Thought that had all finished when we got a new machine. It should have by now though - Mr. Roneo has been and done things to it under warranty. Wanted to charge £35 for the visit but we've talked them out of "that". Cheek! but not a bad idea if it comes off.

That's the sackcloth and ashes bit over with, penance done, promise not to let it happen again (hopefullt!).

Future Meets

Spring Bank Holiday 25/27th May, 1985. Wales. Leaders E. Gray-Thomas & M. Griffith.
Meet each day in lay-by opposite The Warren Caravan Park, SH317298 (1 mile north of Abersoch on A499) at 10.30am. Details in February Newsletter or from M. Griffith, Tel. Sheffield 557958.

NAMHO Conference May 31/June 2nd, Matlock Bath, Derbyshire
Please apply for Conference details to:- Mr. A. Mutter, c/o Peak District Mining Museum, The Pavilion, Matlock Bath, Debys. DE4 3NR. Cost £6 per delegate.

June 29/30th Dufton & Silverband Mines, Cumbria. Leader F.D. Heaton.
See last Newsletter for details. Do NOT forget to book with leader. Tel Boston Spa 842101 prior to Meet.

Sept. 1st General Meeting, Sicklinghall Village Hall at 2pm.

Sept. 22nd Coal Mines in the Ingleton & Lune Valley area. Leader D.M. Goth
Meet in car park next to Masons Arms, Ingleton (on A65) SD693726 at 10.30am.

Oct. 12th Annual Dinner . The Plough Inn, Wigglesworth, near Long Preston, N. Yorks. (See below for details. See also separate Booking Form).

Nov. 9th (Sat) General Meeting followed by Presidents Talk-in & Pie & Pea Supper at Sicklinghall Village Hall at 2pm.

Nov 16th Lecture by Ron Storer (ex National Mining Museum) at Yorkshire Archaeological Society, Claremont, Clarendon Road, Leeds 2 at 11am (Tea & biscuits are served from 10.30)

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All you need to know about the Dinner

Having dined around to find a suitable location for this years Dinner we narrowed the choice to two places:- 1) Harry's van, with its smokey clutch or 2) and our final choice- 'The Plough Inn', Wigglesworth, Nr. Long Preston, Skipton, N. Yorkshire in the Furrows Restaurant.

Our friendly little hairy moron (more on, than most people!) sampled the delights of Hartley's beer (produced by the Jam manufacturers) from hand pumps (musn t have paid the electric bills) and I sampled the various dinners on offer. All to our satisfaction.

There is ample parking and a field available for camping. (dues to be settled with the Inn). There is limited Bed & Breakfast at £12.50 per person, book direct with the Inn - Tel Long Preston (07294) 243.

The Dinner at £7.50 per head comprises:- Home made Soup; Roast topside of Beef & Yorkshire Pud with a selection of fresh veg. in season; choice of Sweets; Coffee & Mints. A bar is situated within the barn section and is exclusively for our use.

All bookings, with full remittance, to R.E. Hewer, 36 Benomley Cres. Almondbury, Huddersfield HD5 8LU on booking form provided with this Newsletter, as soon as possible, but no later than 1st October, 1985. Please book early.

Approach - From M6 - Exit at No. 31, taking the A59(T) Billington, Clitheroe, Skipton road to Gisburn. Turn left here on A682 to Long Preston.

At Long Preston turn left on B6478 marked Slaidburn, Wigglesworth. Approx 2 miles along the narrow road, with passing places, the Plough Inn may be seen on the right. The main car park is on the top side of the Inn.

From Skipton take the A65(T) to Hellifield and on to Long Preston. At L.P. continue as last paragraph, above.

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Some say I aint; some that I have; Me - haven't a clue either way, but just in case I've forgotten to let you know - We're now a Charity. I know I've had that reputation for years when standing at the Bar, but it's the Society which is now blessed with official Charitable Status.

An article in the last Memoirs by Peter Brears regarding the Iron Mines of Lindale & Dalton in Furness, encouraged Peter Holmes to contact him with the following extra information:-

"....I assume the original author wrote the name as "Lindale", this is the old name and I daresay he had consulted an old guide book, however by the late 19th century the name Lindal was commonly used and is used today.

The two principal pits described are probably the Frank and Backguards pits. Frank Pit was purely a pumping shaft and had a Davey differential pumping engine which came second hand from the Stark-Yorkside (? Ed) system nearer Barrow in about 1902. This fits his description of the twinned bell cranks but I am at a loss to explain the additional "balance box" on the extended horizontal rod.

The description of the second pit as "resembling a coal mine" would fit with Backguards as this was an imposing-looking place with very tall A-frame headgear, unlike the pyramidal headgear which I think was almost universal in Furness. The odd thing about Backguards was that the winding engine house was directly behind the pumping-engine house and the ropes passed over the roof. The place closed in or by Jan 1914.

The pumping engine was a Cornish one of about 45" cylinder and I believe the winder was a "first motion" horizontal one (viz. not geared) - your author suggests that it was geared though. It is a pity the sketches were omitted from the article, was this an accident on the part of the Editor, maybe?

It is interesting to see that the winder had a dial-type depth indicator as a lot of the older engines had a "miniature" in which a nut travelled up and down a threaded rod. The voice-pipe system sounds terribly hit-and-miss as I thought that even by 1907 winding drives were supposed to "fly on their instruements" and not rely on hand or voice signals or a direct view of the leading cages being discouraged for this reason.

I think it was common for winding drums of metal mines to be clutched to the crank-shaft, the two holes of the drum being independently adjustable, so the chalked calibrations on the dial may have been to allow "adjustment" when the drum was clutched.

The small horse-gin which the author saw closer to Martin would be the B 46 (or Gin) pit, which was at NGR SD246771 approx. Frank and Backguards were at SD247761 and 247758 respectively.

The reference to "Treleth" is actually Ireleth. The ironworks referred to is Askam Ironworks, closed in 1919, and it is possible the author may have been able to see Millom Ironworks as well, which is some distance away across the Duddon estuary.

The workings seen near Dalton will be at Crossgates, around SD236755. I had no idea that ore was moved at this place by the "whipsy derry" method, I can't pinpoint the exact site of this but I certainly know the patches of "broken ground". Some of these, I believe are genuine opencast workings dating from the 1850's, and not strictly "broken ground". The abandoned shaft seen nearby is probably the Crossgates No. 1 pit (or "Rock Shaft") at SD235755. There was a rotative pumping engine here which drove 2 lifts of pumps via twin bell cranks as at Frank pit - as the author recalls. Wooden engine houses were common around here, which could account for the engine being in the open, the house being moved elsewhere. I have an idea this pit closed about 1900-1902."

P. Holmes.

(Had difficulty deciphering this piece.Ed.)

Wanlockhead Up-Date Jeremy Landless.

On 25th January, 1985 it was considered prudent to form "The Wanlockhead Trust Mining Research Group". The aim of the group is three fold:- Firstly, to give this small and dedicated group who have been working at Wanlockhead for 4 years an identity; Secondly, to try and encourage new members whilst still showing the land owners that we are a respectable body, and therefore keep our access across to the mines, and hopefully gain access to more; Finally we hope to widen the scope of the Group to look at the whole of Scotland. This we hope, will be done by small local groups throughout Scotland, but particularly in the Galloway and Ayr areas.

All members of the Group will be encouraged to become members of N.M.R.S., and the Newsletter of NMRS will still be getting my scribblings.

Any members of NMRS in Scotland are welcome to join. The Group is a working group, but hopefully some Meets can be arranged at Wanlockhead.

Anyone interested contact Jerry at 169 Causewayside, Edinburgh,EH9 1PH.

1984 Greenhow Excavation - Fact or Fiction? A personal View by Roger Turton.

Following a series of announcements in the Society's newsletters, (see Sept, Nov '83, Feb, May '84 and the Meets card) I managed to convince the better half that a weeks dig, on Greenhow, was going to be the best thing since sliced bread, and accomodation was duly arranged. In retrospect actually arriving at the site was the highlight of the week. Certainly everything went downhill from then on, but we put it all down to experience.

Then came the latest Newsletter with an obituary (pretty good word that) which most certainly does not match with my recollection of events.

1) Definitely no work done on Saturday.
2) 10.30am Sunday, arrive to find work already underway at two locations approx. 40 yds. apart.
3) Site pedged out? What a load of rubbish!
4) First location was old dressing floors, associated with West Gin Shaft - well, maybe!
5) Second location was site of engine house and boilers, it might very well have been, but with all the controversy was it really "Old Engine Shaft"?

We cannot comment on the rest of the week, with the exception of a trip to Ashfold Gill on Wednesday, which on the whole was interesting, but does running around with a tape measure for twenty minutes and a few sketches on a scrap of paper constitute measuring an Engine house?

Right, now having got that off my chest, I have to say that at least it was an attempt to carry out a fieldwork project in the Society's name, a rare bird indeed.

I know that the majority of members have their own interests and either singly or in small groups do a vast amount of fieldwork and research, which in most cases eventually gets published through NMRS facilities. However, none of these items are directly attributable to the Society.

One possibility would be to set aside certain periods, say the first weekend in every month, for Society activities. These could take several forms:- Long term projects which may take a year or more to complete, down to subjects that would only take up one weekend. Even assisting members with aspects of their own researches, which for one or two persons would take a substantial amount of time, but could be accomplished quite quickly with a large influx of manpower:- e.g. Digging out a large collapse; or excavating a surface feature, necessary to interpret a site.

Perhaps now might be the time, to consider whether the Society is to become purely a publishing agency and clearing house for information, or to start taking an active part in the field as well. If the latter is decided upon, then several points must be highlighted:-

1) The success of any venture depends upon the support it receives.
2) Projects must be planned well in advance, and have an effective level of organisation.
3) Out goes THE CALL - "Dig deep into the Society's coffers and find some brass for materials and equipment".....Please!

Roger Turton.

I've printed the above in the hope that it might generate a positive responce. Appeals in the past have only resulted in apathy and a singular lack of interest. The Snag is that anyone not already doing their own thing are only prepared to be led, but not if this actually means them having to instigate anything in the first place.

The active groups seem fully involved and perfectly happy going their own way.

I, too, would like to see more Society projects on the go, but also know that I don't, personally, have the time to organise any, and can't commit myself to going every week-end. However, this subject's open for anyone who wishes to take it up. Ed.

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Book Reviews

Industrial History from the Air by K. Hudson, published by Cambridge University Press 1984. Price £12.95.

A glossy publication, this book contains 110 black & white aerial photos each with a descriptive text covering approx the same area of page. About 90 of the photos were taken between 1950 anf 1982 with the remainder dating mainly from the 1930's. One quarter of the photos are from the extractives industry covering both quarrying and mining while others of housing, canals and railways are of related interest.

The subjects featured in the extractives section include the quarrying of chalk, Portland stone, limestone, slate and various types of clay. In the mining field there are views of bell pits of Catherton Common, Shropshire and Bentley Grange, Yorkshire; shallow underground limestone working subsidences in Northamptonshire; tin in Cornwall; lead in Durham and old collieries in Yorkshire, Strathclyde and Staffordshire. All these photos

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are fairly recent (since 1950) and are well chosen and very clear.

The texts accompanying the photos contain some errors and have serious omissions.e.g. the photo on page 130 must have been cut during printing since it no longer shows the Iron Bridge as a white ribbon, nor the Blists Hill Museum complex near the Madeley Recreational Centre (not 'Madison' as given in the text). Similarly the text accompanying the often published Bentley Grange Bell Pits fails to mention the very prominent fairly late ridge and furrow pattern upon which the bell pit mounds have been superimposed. This obviously makes the mineral working much later than their "12th to 16th Century" attribution which, in turn, upsets their monastic origins as described. This does not appear to be a serious omission since it is only really from the air that the full impact of the agricultural activity can be seen and appreciated. Similarly one would have expected a mention of the opencast coalworkings to be seen on the right-hand half of this photo, but there us none.

This is an attractive book for borrowing and browsing over one's favourite areas but the inaccuracies in some of the subjects well known to the reviewer cause doubts to be left elsewhere.

Aerial photos are exceedingly useful and this book is probably the first attempt to cover the fullest range of industries in this way. In view of this it is an important contribution to our resources.

I.J. Brown.

Dylife - A Famous Welsh Lead Mine by D.E. Bick. 32pp; 11 plates; maps, plans, glossary etc. The Pound House, Newent, Glos. GL18 1PS. Price £1.95.

A revised and enlarged edition of the same title first published in 1975. Originally intended as the first of a run of publications in the great metal mines of Wales, this booklet is, unfortunately, the alpha and omega in this series.

Mr. Bick has included new material and illustrations, the former chiefly dealing with John Taylor & Sons' attempts to secure this rich operation for themselves instead of merely acting as managing agents. In the event, this "ripe plum" was retained by a Manchester company, the principles being Messrs. Cobden & Bright.

As in David Bick's other books, this reprint retains the balanced and well researched style, aided by line drawings and half-tones, an essential ingredient in retaining even the casual reader's interest and spurring the 'experts' into deeper and more comprehensive study.

Mike Gill's article on wire rope haulage (BM25) gets an honourable mention on page 25!

Dick Bird.

Wanted

BM6 "Mines of Merioneth". Good price paid, as needed to make up set. Any offers to David Ifold, 42 Castle Hill Gardens, Torrington, Devon EX38 8EX.

A Cornish Export to the World (from AIA Bulletin Vol 12 No. 1.

One result of the industrial revolution was that Britain became a pre-eminent supplier of manufactured goods to countries throughout the world. A more tangible export was, however, the skills developed by working people, and of these a particularly outstanding example is the spread of mining skills throughout the world by virtue of emigration from Cornwall.

Mining in Cornwall was an old established industry, before the industrial revolution, and the development in Cornwall of steam pumping technology by Richard Trevithick et al, after the initial work of Newcomen, Savery and Watt, resulted in its expansion on the grand scale. But, with the discovery of overseas ore deposits the Cornish industry suffered a decline from the 1860's.

This was not to say that the Cornish miners had not left the County much earlier - local newspaper advertisements clearly confirm a history of emigration to North America where they were known for their ability to work mines in hard rock areas. Whether they landed in Canada or America, the first large Cornish community was established in Wisconsin, but Northern Michigan, California and the south western states can all provide evidence of the industry and expertise of Cornish miners.

It is said that wherever a hole has been dug anywhere in the world, a Cornish miner will be found in the bottom of it. Another example was the part played by Cornish Miners in the re-opening and further development of the Pachuka Pachuka and Real Del Monte Silver Mines in Mexico in the period 1824-1947. Here there had been a previous history of mining

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but one which had suffered during the wars of independenace from Spain. Worked at a height of some 8000' above sea level, these mines had first been developed and worked in 1528. The expertise of Cornish miners included their steam technology, and the experience and judgement of John Taylor, the well-known mining promotor. With no possibility of obtaining mining supplies in Mexico itself, everything had to be taken from Britain - including 9 cornish beam engines, The Cornish found Mexico a very differant place, but it is perhaps one of their established characteristics to be adaptable.

The effect of emigration is perhaps nowadays hard to understand. There is clear evidence that in the 10 year period between 1841-51 & 1871-81 and even as late as 1891-1901 individual Cornish parishes lost over 20% of their population, and this was a continuing loss. In Australia, the greatest period of Cornish immigration was between 1836 & 1886, and they mostly went to South Australia. It is said that in South Australia in 1900 there were some 30,000 people of Cornish birth or descent. Advertisments were placed in the Cornish newspapers advertising free passages to Australia and a common thought must have been that for the unemployed miner in Cornwall, there was little to lose by taking up such an offer. While Cornish miners left physical evidence of their presence in the characteristic design of their chapels and mine buildings, it is undoubted that the memory of their skills will outlive even the works of their hands.

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Some Mines of the S.W. Fells of the Lake District by Albyn Austin.

Mines in the Duddon area mentioned in the 19thC county Histories.

A couple of evenings in Whitehaven Library produced the following information about these little known mines. In 1829 at Ulpha two copper mines were formerly worked and zinc had also been found. 1400 tons of light blue slate were quarried each year in the northern part of the valley (1). In 1842 for the parish of Millom and the southern area around the Duddon it was recorded that "iron ore has sometimes been got at Hodbarrow and in Millom Park. Copper ore has been obtained at different times, but not in sufficient quantity to repay the working. Joshua King esq, of King's College Cambridge, a few years since made an unsuccessful attempt". For Ulpha the same source says "A very valuable vein of copper has been lately discovered in this Manor. Report for sometime was abroad that the workmen engaged a few years ago then made the discovery, but from some selfish motives immediately abandoned the workings to try some other place, first taking care to cover up their treasure. In consequence of these reports, George Harrison esq., the present lord of the Manor lately set workmen to clear away the superincumbent earth and after about 4 weeks labour they suceeded in discovering, from all appearance, a rich and extensive vein of ore, the further pursuit of which, we are glad to hear, he has ordered the workmen to commence - Whitehaven Herald."(2)

The 1847 Directory under Millom notes that "Copper ore has been obtained at different times though seldom in sufficient quantities to repay the working, but a rich vein was discovered a few years ago in the manor of Ulpha and is now worked by George Harrison Esq. (3). Under Rainsbarrow Wood it notes that "Zinc has been found here and a copper mine is now worked in the chapelry." An entry in 1860 for Ulpha says that "Copper has been worked in this chapelry but at present the working is discontinued." (4). This history also lists the population of Ulpha parish from the census returns: 1801 - 292; 1811 - 298; 1821 - 268; 1831 - 405; 1841 - 375; 1851 - 370. Could the increase be due to mining activity? or were the parish boundaries changed during local government reorganisation?

The 1883 Directory has the following entries - "A rich vein of copper ore was worked some 40 years ago in Ulpha but the yield of metal became unremunerative a few years ago and the working was discontinued" and "Copper was extensively worked on Hesk Fell, but the ore is now exhausted at that spot, and an attempt is being made to obtain it near Long Garth (182920). Zinc has been found but not in sufficient quantities to be profitably worked." (5)

Land was owned in the Ulpha area in the 1770's by the Huddlestons of Millom and Thwaites Manor by Joseph Thwaites of Ulnerigg (6) Corney was owned by Penningtons and Singletons. In 1860 the land between Eskdale and the Duddon was owned by Edward Wakefield of Kendal. The Lowther family later took over much of the Huddleston estates.

References.(1) 1829 Parson & White Directory of Cumberland & Westmoreland. Page 225.
(2) 1842 S Jefferson The History & Antiquities of Allerdale Ward. Pages 146 &181
(3) 1847 Mannix & Whellan History & Directory of Cumberland. Pages 344 &349
(4) 1860 Whellan History & Topography of the Counties of Cumberland & Westmoreland. Page 410.
(5) 1883 Bulmer's History & Directory of West Cumberland Pages 152 & 169
(6) 1777 Nicolson & Burn History & Antiquities of Westmoreland & Cumberland.

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Notes on Copper Mines in the Duddon area

Information supplied by Mr J.C. Braithwaite, Broughton in Furness. "In 1697 the owners of the copper mines in Dunnerdale, Millom erected works in Moresby for the smelting of their ore with coal." Victoria County History of Cumberland. About 1710 Charles Leigh wrote a Natural History of Lancashire and Cheshire. On page 85 et sequential he describes how copper ore is smelted on a small scale for assay purposes. In this account he says "After the ore is thus prepared, if it be that of TILBERTHET or COCKLEBEG in High Furness in Lancashire....." This refers to Tilberthwaite near Coniston and Cockley Beck mine in the north of Duddon valley.

Copper was discovered in the Logan Beck and Bowscale area in the 1790's. In 1809 the Pennington family granted a lease for Copper, Lead and Iron mines in Ulpha parish to John Watkins of Ditton, Lancs and Cuthbert Atkinson of Carleton Hall. This is D/PEN/141 in Carlisle Record Office.

Some Germans are supposed to have been buried in Rainsbarrow wood, Ulpha, many years ago according to local legend. This may refer to the Germans who came to Keswick in the 1500's to seek Copper ore at many places in the Lake counties.

Some small Copper trials near Swinside Stone Circle, Millom.

These trials are marked on the 1899 Ordance Survey Map 25" = 1 mile as an old level (Copper). I'm told they are also marked on the most recent edition of the $2\frac{1}{2}$" = 1 mile map of the area.....

I visited these trials in February 1982. I parked beside the uninhabited Windy Slack farm SD176888. An old farm track leads through the field parallel to the stream to 173888 where there are two fairly big tips from run-in levels. The tips are made of a hard black rock with a thin quartz vein about 1" wide. This contains very small traces of iron/copper pyrites. I guess the levels were driven at least 40'. Retracing my steps beside the stream I found the second working at 174888. A 20' adit has been driven into the north bank of the stream. There is a little stoping in the roof. The level walls are stained blue/green with copper and the forehead shows a rather longer quartz vein than the previous trials. On the south bank of the stream opposite the level a small depression in the ground may indicate some workings here also.

Returning to the car I noticed a small slate working behind Thwaite Yeat farm at 182887. This ends in a short adit but also has an interesting hole half way up the east side of the quarry face, about 30' from the ground. I was unable to explore this at the time and have not yet returned to investigate it.

Mr J.C. Braithwaite of Broughton in Furness has a reference to copper ore being discovered in this area on "9th June 1771 in the Cumberland manor of Thwaites" in a letter from Major Cooper of Wha House, Dunnerdale to Sir James Lowther. The trials described are in the side of Thwaites Fell. The Manor of Thwaites was owned by Joseph Thwaites of Ulnerigg in 1777. Mr. Braithwaite has noted that some of the waste at these trials is very finely pulverised and thinks that a small stamp mill was set up to treat the material obtained.

The land is owned by Mr. Atkinson of Fenwick farm, and his permission should be obtained to visit these workings. It is unlikely to be refused as he is keenly interested in local history.

A small iron mine at Carter Ground, Dunnerdale.

The farm of Carter Ground is now a holiday cottage or similar and was empty when I parked there. I followed the public footpath up the fellside behind the buildings which runs beside the mine. The NGR is SD228924. The mine begins just beyond the farm and follows a north-south vein about 15' wide up the fell for about 150 yards. There are a couple of large tips and run-in levels at the lower part of the mine. On the eastern side is a flat area partly cut out of the hillside that was probably a dressing floor. Further up the fell are a whole series of collapsed areas on the vein. A level runs a few feet to a collapse and another collapse has formed a chamber about 10' deep. On the east side of the vein has been dug a bypass channel, presumably to direct any drainage away from the workings. The uppermost working is a shaft about 20' deep.

This mine is presumably the one entered on page 11 of Roger Burt's Lancashire and Westmoreland Mineral Statistics (1). It was known as Dunnerdale mine. This was briefly worked in 1872-74 by the Carnforth Iron Co., agent Ed. Barton. Production of iron ore was 2105.6 tons in 1872; 1650 tons in 1873 (as Duddon Mine) and 2800 tons in 1874. It seems to have been abandoned by the company after 1879.

I found this mine in the company of Mike Atkinson, co-author of the mineral statistics. We knew it was somewhere in the dale and after a pint at the very old-fashioned pub at Broughton Mills drove up the valley and spotted the tips on the fellside.

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(1) Mineral Statistics of the U.K. Vol 4. Lancashire, Westmoreland and the Isle of Man. R. Burt, M. Atkinson, P. Waite & R. Burnley. Exeter University, 1983.
(2) Mannix Directory of Lancashire (?) 1882 page 290.

Some small Trials in Dunnerdale

Mr J.C. Braithwaite of Broughton told me about several small trials near the river Lickle and Appletreeworth Beck:-

1. Iron at Lind End Bridge. SD229913. Near the public footbridge across the river is a short iron trial a few feet along. This is about 20' above the path on the north bank of the river where a stream valley joins. This may be a continuation of the vein worked at Carter Ground, SD228924, as a small iron mine. This may be the Knott End Iron Mine mentioned in the 1882 Mannix County Directory.
2. Copper at Stock Beck. SD235918. In the bank of the Beck downstream from the ruins is an old run-in copper trial. Date and extent unknown.
3. Wad (?) beside the Hawk. SD242922. Upstream from the Hawk bridge follow the public footpath forestry track. Just above this in the hillside is a short trial on what appears to be a narrow vein of Graphite or Wad. It maybe an incomplete cross cut to reach a vein in the hillside.
4. Iron at Appletreeworth. SD243925. Follow the forestry track up to Appletreeworth. Back track on the path leading upwards. Remains of small iron mine and smelting site nearly lost in the trees above the track was noted by Mr. Braithwaite.

Possibly other small surface trials lower down toward the stream can be seen with difficulty.

5. The Knott. A small trial level is reputed to exist high up on this fell. Location unknown. NGR for summit SD225919.

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Monkton Farleigh Mine

Members of NMRS may be interested to learn that a stone mine, near Bath, has recently been opened to the public.

Monkton Farleigh Mine was the source of large quantities of Bath Freestone until it was taken over by the Ministry of Defence and became Europe's largest underground Ammunition Dump in World War II. This secret complex of miles of tunnels has been recently bought privately, and is at present undergoing restoration.

The public can see the underground Power House, with the Generator Hall and Switch Room, with its period electrical equipment; a narrow gauge railway network and impressive overhead Catenary railway; massive underground storage areas, sophisticated machinery, and giant Fans which made up some of the Air Conditioning Plant.

At present, conveyors are being installed to further the scene as it was 40 years ago. On view also are the complex plans of the tunnels and photographs of the mine when it was worked for stone.

The mine is open each weekend and some week days around holiday periods. It is quite dry in the passage ways and negotiable even with a push-chair - whose young occupant we quite envied after the long walk round!

Telephone Bath 852400 for further information.

Sue Cowdry.

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Proposed Development of Cononley Mine Site

Minworth Ltd have applied to Craven District Council for planning permission to remove old mine spoil heaps at Cononley Lead Mines.

By the time you read this it will be too late to object 'cos all representations must be in by 29th March 1985. Watch this space.

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Killhope Excavations 1984. - Progress Report.

The 1984 season of excavations was confined to a four-week period in July, but proved extremely productive. Excavation of the west end of the washing floor was completed, and overburden removed from the rest of the washing floor in preparation for future excavation. An area at the east end of the washing floor, including the site of the Brunton Buddles and adjacent features, was also excavated.

Preliminary investigation (in 1983) of the west end of the washing floor had revealed the presence of platforms along both north and south sides of the area, the former being largely concealed by a bank of veinstuff rubble. These features were fully revealed in 1984, and examination of their stratigraphy showed that both are likely to have been original features of the washing floor layout, but that the northern platform had gone out

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of use before the southern. The southern platforms were of narrow reused timbers to the east, but of wider elliptical-sectioned planks to the west, the two parts being spearated by a gap. The northern platform consisted of a flat stretch of narrow planking along the front of the bouse teams, with areas of wider planking to the south, sloping northwards towards the teams. It is likely that these areas were used for preliminary washing and sorting of the bouse, movement of material being by barrow.

At the west end of the washing floor, the area between the platforms was devoid of features. Further east, it was occupied by a complex of wooden structures, clustered round a square stone foundation, interpreted as the base for a grating. To the south of the foundation lay a wedge-shaped wooden platform, possibly the base for a flat buddle. To the west of the foundation, a series of beams (Mostly robbed out) had been set into the ground in a rectangular pattern; these could have been the bases for picking tables. To the north and northwest of the foundation lay a group of four rectangular timber-lined structures, set to varying depths into the ground surface, and containing traces of lead concentrate in their bases. The structures had been supplied with fresh water by a wooden launder, and two of them retained piped outlets. They had no source of mechanical power. It is hoped that analysis of the concentrate samples will reveal the function of these features; the author suggests that they may have been Hotching Tubs (lever-operated jigging seives for the manual concentration of lead ore).

Mechanical topsoil stripping of the remainder of the washing floor quickly revealed that this also contained complex archaeological features, and therefore that full excavation would not be possible within the very limited time and budget available for the current year. However advantage was taken of the very dry conditions to remove the whole overburden of the area, since marshy conditions would normally render machine access impossible. It is already clear that a second area of timber structures containing lead concentrate is present, and that there is an extensive area of heavy planking in the southeast quarter of the area.

The area opened around the site of the Brunton Buddles divided itself into four parts; a rectangular platform projecting north into the east end of the washing floor; the site of the Brunton Buddles themselves immediately below this platform; a small building immediately east of these two areas; and the area of the washing floor adjoining the west side of the platform and the Brunton Buddles.

The platform was defined on its northern half by stone walls reveting the 1m drop to the level of the washing floor, and adjacent areas on other sides being at similar levels to the platform. The remainder of the west side was defined by a stone wall, and the south side by the north side of a set of settling tanks taking the wastes from the buddle house. The southern part of the east side had no delineating feature, and was adjoined by a small dump of tailings. The platform had been floored with timber planking, which survived in parts, with few features of interest. It was bisected by a south-north ditch, which contained traces of robbed-out iron pipe, feeding into the wheelpit. The north end of the platform had been built up from the origianl sloping round surface, and was divided by a central north-south wheelpit, which extended north beyond the platform. Consistent slight differences between the construction of the east and west halves, and the detailed stratigraphy of the wheelpit, suggested that the eastern half of the platform was an addition. The platform had probably been used for mixing sediment from the settling tanks with water, and feeding the resultant slimes onto the heads of the Brunton Buddles, but little evidence of detailed arrangements survived.

The Brunton Buddles themselves consisted of an endless conveyor belt carried on sets of rollers, the upper face of the conveyor travelling upwards; motive power was provided by a small waterwheel. Slime was fed onto the upper surface of the belt, along with a supply of clean water, the gradient of the belt being adjusted so that particles of waste were carried downwards by the water, whereas the heavier ore particles clung to the belt, were carried over the top, and were washed off by passing the belt through a trough of water. The arrangements at Killhope cerresponded closely to text-book illustrations, with two pairs of belts divided by a central wheelpit. The head of each belt was carried by a pair of horizontal beams projecting from the north face of the platform. Beneath each pair of beams was a vertical-sided, flat-based timber cistern, containing traces of fine-grained concentrate. Each pair of cisterns overflowed into a small box between their north ends, from which a small launder below floor level led away to the north and east. The wheelpit was 2.9m long by 0.50m wide, and appeared to have been fed by a pipe only 0.6m above its base; in view of the small power generated by this arrangement, it is possible that the pipe was carried up to the top of the wheel, forming a syphon feed to an overshot or pitchback wheel. The area north of the wheelpit and the wooden cisterns

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had been paved with stone slabs, which had been partially robbed. The north side of this paved area was not exposed, as it was overlain and disturbed by a roadway of compacted rubble, which post dated the dismantling of the Brunton Buddles. This feature may date from the dismantling of the mine, or from re-processing of the spoil heaps for fluorspar.

Immediately east of the south end of the Brunton Buddles lay a small rectangular building, with its floor at the level of the washing floor; the walls of its southern half were revetted against the higher ground beyond. The building had been severely robbed, so that its function could not be ascertained; its floor had included both flags and planking, with remains of heavier beams in its centre. These latter may have formed the base for some form of machinery.

The area of the east end of the washing floor immediately adjacent to the Brunton Buddles and platform was partially examined. Most of the area had contained a surface of large flat planks, which had been partially robbed. A drainage culvert was also present at the north end.

Recording was also undertaken on a small area at the base of the incline to the crusher house, to investigate the railway system shown on the 1896 O.S. map. This showed that the railway, supported on chairs and sleepers of normal type, did indeed curve westwards towards the washing floor. However, a set of points was present at the base of the incline, a secondary track to the north coming to an apparent dead end. The purpose of this may have been to provide an escape track for runaway waggons on the incline.

Conclusions. The 1984 season demonstrated that the washing floor, and probably the whole remainder of the surface working area of the mine, contain complex and very interesting structural remains. The interpretation of these structures, and if possible their reconstruction, would add greatly to the interest and attractions of the site. To achieve this result, however, the duration and expense of excavation will have to be considerably greater than was envisaged when the washing floor was thought to be almost devoid of interesting features.

In a brief progress report, it is not possible to acknowledge all who have helped. I wish however to record my thanks to the skilled and hard-working excavation team, and to all the staff of Durham County Council, and of the Manpower Services Commission team, for their unfailing and willing help.

David Cranstone. August, 1984.

By coincidence as a follow on from this I have been asked to publisice the "Friends of Killhope". No sooner said, than done. The Magic Fairy (?!!!) waves his wand, and voila!! ...."This group has been set up to assist Durham County Council with the development of the Killhope Lead Mining Centre in Upper Weardale. While the initial emphasis so far as research, conservation and reconstruction is concerned, will be at the Killhope site, the group also wants to foster an interest in lead mining in general. Restoration of artefacts and the manufacture of replicas as well as retrieval of materials from elsewhere all feature in medium term plans.

A series of lectures and visits (which are free to members) has already been arranged and a short course in practical archaeology is being finalised so that work undertaken by the group will be as sympathetic and professional as possible. Members will also have unlimited free admission to the site as well as 3-4 newsletters per year. All types of members are welcomed whether skilled or otherwise. Subscriptions are Ordinary Members £3, Senior & Student £2, Family £4.50. The group will be officially launched with a lecture by the President, Sir Kingsley Dunham, F.R.S. on 29th March, 1985."

For more details or to join please contact B. Chambers, 18 Cheveley Walk, Belmont, Durham DH1 2AU. Tel Durham 68491.

Obituary

It is with regret that we have learned of the deaths of two of our members.

Mr. H. Audsley died in August last year.

Mr. W.J. Kynaston-Lloyd died on 7th March, 1985.

Our condolances to both families.

Further Book Review.

"Burtersett Quarries" by David Hall, Sunnycroft, Thirn, Ripon,N.Yorks.HG4 4AU. £1.

The quarries, or more correctly stone mines, lie at the head of Wensleydale near the town of Hawes, and although they have been explored by most people visiting the area they have, so far, evaded documentation by the mining historian. This booklet deals with the history of the mines during their brief life from the early 1870's to their final

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closure in 1931. From the scant remaining documents and through interviews with the surviving miners, David has managed to put together a thoroughly informative booklet, which helps to illustrate a long neglected episode in the history of mining in the Dales.

Price includes postage & packing and is a good pounds-worth.

Les Tyson.

Mine Atmosphere

The air we breathe is composed of 79% Nitrogen and 21% Oxygen, by volume.

The Chart below gives details of gases which, due to their possible presence in the mine atmosphere, could adulterate this mixture; all percentages are by volume.

Name of Gas	Possible Sources	Prognosis
Carbon Dioxide "Black Damp" CO_2	Present in most sedimentary rocks. From burning of lamps; people breathing; blasting; rotting timber.	1½ times heavier than air. Most common in our type of work especially in poor ventilation. 5% - no light; 10% soon fatal.
Carbon Monoxide "White Damp" CO	From Blasting, poor combustion of u/g fires, methaneor coal dust explosions.	Slightly lighter than air. Unlikely to affect us. Very poisonous-0.5% death within 1 hour; 1% death very quickly.
Methane "Fire Damp" CH_4	Given off from coal as a result of decay of vegetable matter. Discharge may be continuous or sporadic. Usually found near roof of drift. Sweet smell - usually!	6/10 as heavy as air. No effect on breathing until 50% concentration. Highly explosive between 6 & 15%. Detected by tested Safety Lamp. Not common in metal mines.
Hydrogen Sulphide "Stink Damp" H_2S	Rotting timber or animal matter gives off H_2S, so does the de-composition of pyrite.Often found in flooded areas in shale after drainage.	Slightly heavier than air. Distinctive "rotten eggs" smell. Very poisonous. 0.1% can rapidly cause death.
"Nitrous Fumes" NO & NO_2	From imperfect detonation of Nitro-glycerine based explosives.	Brown in colour. Slightly heavier than air. Very toxic. Causes septic pneumonia when in visible quantities.

During the Easter holiday in Cornwall, I had a unique experience, well for me it was anyway. Somebody accused me of not talking to them.

At first sight this may not seem strange, but to anyone knowing me they'll grasp the significance. I mean to say , it's more common for me to captivate individuals (or whole sections of the masses even) with views on any topic, no matter how obscure, as seen through the eyes of a jaundiced gnome.

I won't say my outpourings arn't biased, or even that I agree with what I'm saying, and whether or not I understand the conversation has no bearing whatsoever on the equation.

You will, therefore, understand my "flabber" and how "gasted" I was to be so hurtfully accused.

A lesser mortal would have been driven to abstinance for at least the rest of the evening, such was the unjustness of the attack.

The next edition of the Newsletter is expected to be issued in September, at the General Meeting .

All contributions to H. Houghton, 29 Parkside Road, Meanwood, Leeds LS6 4LY in good time please - we will be in the midst of school holidays and it's always difficult getting a bit of free time to fit it in.