

Friends of Killhope

President: Sir Kingsley Dunham, F.R.S.

MAY 1990

NEWSLETTER No. 18

The Committee regret that we will be unable to publish our Eric Ryan Memorial book in June as promised in the last newsletter. Unfortunately we have found that conventional publishing costs are prohibitive. However, we are determined to publish in some form and we are exploring other avenues in the hope that we might have the work on sale later this year. We have, of course, attempted to attract funding in the form of grants but with very little success, and we now ask anyone who might help us financially to get in touch and at the same time we are inviting subscriptions of £5 plus £1 postage and packing in advance for this memorial volume. Please see back page for further details and application form.

Annual General Meeting

Our fifth Annual General Meeting will be held in the King's Arms Hotel in St. John's Chapel on Wednesday 20th June 1990 at 7.30 p.m. Once more this will be followed by the ever popular Brains Trust with Sir Kingsley Dunham and Mr. J.R. Foster-Smith.

Friends are reminded that nominations for the positions of all Officers and one Committee member should be forwarded to the Secretary (Mrs. D. Chambers, 18 Cheveley Walk, Belmont, Durham DH1 2AU) not less than fourteen days before the meeting. Do please try to attend.

Membership Subscriptions

Your subscriptions became due on 1st April. A membership renewal form is enclosed which please ignore if you have already renewed. Subscription rates remain unchanged at £5.50 for family membership, £4 for individual members and £2.50 for junior members and senior citizens.

B. Chambers, Newsletter Editor, 18 Cheveley Walk, Belmont, Durham DH1 2AU (091 3868491)

Eric's Wheel

Ian Forbes

In the last newsletter I said that the party to celebrate Eric's work at Killhope and to "launch" the waterwheel on the buddle house would be on June 10th. When we fixed that date we thought the new visitor centre would be finished and open, but that will not now happen until the end of July.

As Di has commissioned a glass screen in the visitor centre and wanted guests to be able to see it on the day of the wheel launch, the whole event has been postponed until Sunday September 9th. As before all Friends are invited to Killhope on that day and I hope many of you will make the journey.

Meanwhile June 10th is still a "Friends" day for this will be the day of the Fifth Annual Killhope Open Quoits Championship. I look forward to seeing you at Killhope then; for enquiries about the quoits ring Peter Nattrass on Weardale 517373. Entries will be taken on the day from about 1.30 p.m.

LETTERS TO THE EDITOR

We are always pleased to hear Friends suggestions, opinions, queries or their answers to questions raised in newsletters. This time two members have responded to Les Blakett's item on mineral exhibitions.

Certain queries have appeared in Newsletters on which I may be able to give a little information.

Peacock Ore is one of the copper ores (Bornite) so named because of its colour. It is rare in both Weardale and Teesdale, though I do have a good specimen in my collection of rocks and minerals. This came from the lower part of the Wrentnall Shaft at Cowgreen Mine when it was sunk from 200 feet to 350 feet in the early 1950's.

Brangle or Brangled Ore is a name used to describe a mixture of minerals and rock of which there are many variations, very often of doubtful commercial value.

Vogue is a name that was given to a mine wagon, or an underground mine wagon. However, some levels and drifts located deep within mines are found to bear the same name. What the connection is I am not sure unless it is that the wagons were devoted to that particular level or part of the mine. The name appears to have been rarely used and I have only seen it on mine plans which seem to have been made before 1850. A Vogue Level appears on an undated plan of Ashgill Head Mine, Harwood-in-Teesdale. Fortunately, as is very often the case on early mine plans, there are dates appearing alongside the drifts and levels (both names are used) showing progress from time to time. It is a long level with the forehead dated "June 4 1832" which appears to be the date upon which the plan was completed. Also shown on the plan is "Drift about 4 Fa above Vogue Level." A later mine plan dated 1847 shows what appears to be the vogue level as "Wagon Drift."

Another such level is to be found on an early undated plan of Manor Gill Mine in Great Egglesthorpe Valley. Manorgill Low Level was commenced in 1816 and amongst the maze of cross cuts and drifts, some bearing dates in the 1820's, is a short Vogue Level which appears to have been driven off from a winze sunk from the horizon of the main Level. Having regard to the available information I am of the opinion that levels bearing this name may be lower levels, that is, lower than the main level of the mine in question. My comments may produce other opinions, or even factual information, from some of our readers who are more expert on metalliferous mining than I am.

Harold L. Beadle

Sir, May I, through your columns, express my appreciation and then attempt to answer a contributor's query?

I arrived at the Member's Night two hours late after an interesting drive from Teesdale. After the slide show and its attendant discussion, the video recording of steel-making techniques was re-run for my especial benefit. For the first time I saw techniques which, as a schoolboy, I was required to understand. Thank you Friends for making the journey worth while.

In the last issue of the Newsletter Les Blackett asked for information about "steel, peacock, potter and brangle ore". I can offer some snippets of information and some speculation which may stir a memory or begin a discussion.

The list of classes for the 'Grand Mineral and Geological Exhibition' of 1887 is quoted by T A Milburn¹ and the names in question are in the first group of classes under the heading 'Ores'. Since no mention is made of galena in the list, perhaps this heading was used to indicate varieties of lead ore.

Steel ore I can only guess at but, assuming that it was named for its appearance, there are few minerals with a metallic lustre and a colour between silver-white and grey. A good candidate from this small group would be Arsenopyrite (FeAsS) which occurs in association with galena. I cannot find any illustrations of galena which would justify the appellation 'steel'.

Peacock ore is currently used as a synonym for Bornite (Cu_5FeS_4) and in the past has been applied to oxidised specimens of Chalcopyrite (CuFeS_2). The use of the term in Weardale is explained by W R Mitchell² when he quotes John Lee³ as saying "Galena or lead ore is attractive more on account of its cubical form than of its dull silvery colour, though it is occasionally found in all the colours of the rainbow, and is then known by miners as peacock ore."

Potter ore proved to be elusive though the adjective was once used to mean confused.⁴

Brangle ore was not found either, but the adjective 'brangled' has been used in the area to describe lead ore which is so closely mixed with fluorspar and other minerals that it is impossible to separate on the washing rake.⁵

Though the word is now obsolete, it had the meaning squabble or wrangle.⁴

Sincerely,

Doug Tyerman

References:

- 1 Life & Times in Weardale 1840-1910, T A Milburn, 2nd impression 1988, p64.
- 2 Pennine Lead-Miner, Eric Richardson of Nenthead, W R Mitchell 1979, p61.
- 3 Weardale Memories and Traditions, John Lee, 1953.
- 4 O.E.D., Johnson's dictionary, and others.
- 5 Lead and Life at Killhope, 1987, p18.

FARBERRY MINERay FairbairnHistory

About one mile S.E. of Alston, the Farnberry Vein crosses the west flank of Middle Fell at an angle of N52°E.

The early workings were in the Great Limestone, near to outcrop, the lead ore being raised from flatts which occurred at some distance from the vein.

John Jackson and partners worked the vein prior to 1736, giving it up believing it to be exhausted. No proposals were made for the vein during the general lettings of 24th August 1736. The vein together with several others, was advertised in the Newcastle Courant on the 31st March 1744 to be lett for 21 years on 15th August 1744. Again there were no takers, but on 26th January 1782 the lease was taken by two families of working miners, the Waltons and Selreys. The families were poor, and their taking of the mine caused a great deal of talk. Their enterprise met with success, and in less than 10 years they raised 850 bings of ore from amongst and near the old workings. A sad aspect of their success is recorded in the Dickensons report, "if they had been as prudent as they were industrious, they might have been in pretty easy circumstances". Nevertheless their success in mining encouraged other working miners to try other mines working in partnerships.

The vein was next mined by William Hutchinson Jnr. and Christopher Wilkinson without success. William Walton then took the lease, driving a level under the Quarry Hazle, but was disappointed. Not to be put off, he then drove a level upon the Great Limestone from near High Skellgill in the Nent valley, hoping to cut the NE extension of the vein, but failed to find anything worth while.

At about the same time, i.e. c1795, William and Henry Coulson worked Farnberry North in the Great Limestone (near the outcrop) raising 200 bings of lead ore. Soon after this John Leathart and partners tried the middle vein in the Great Limestone also near to outcrop and raised a few bings of lead ore.

Richard Holmes and John Shield took a lease of the Farnberry Vein from 24th March 1819, and continued the High Skellgill Level further south cutting two veins in the Great Limestone. They worked the mine with four pickmen for several years, increasing to 6 pickmen and two labourers in 1830. Annual production was low e.g. 17 bings in 1820, 15 bings in 1830. They forfeited the lease of the mine in 1833.

Peter Anson and William Longstaff worked the vein in about 1840 but production was poor, only 4 bings were produced in 1840, and by 1844 they gave up the lease.

The lease was held by the Nenthead and Tynedale Lead and Zinc Co. Ltd. in 1883 and was probably worked for zinc which would be smelted at the Tindale Fell smelter. This was the last major attempt to develop the mine.

The workings

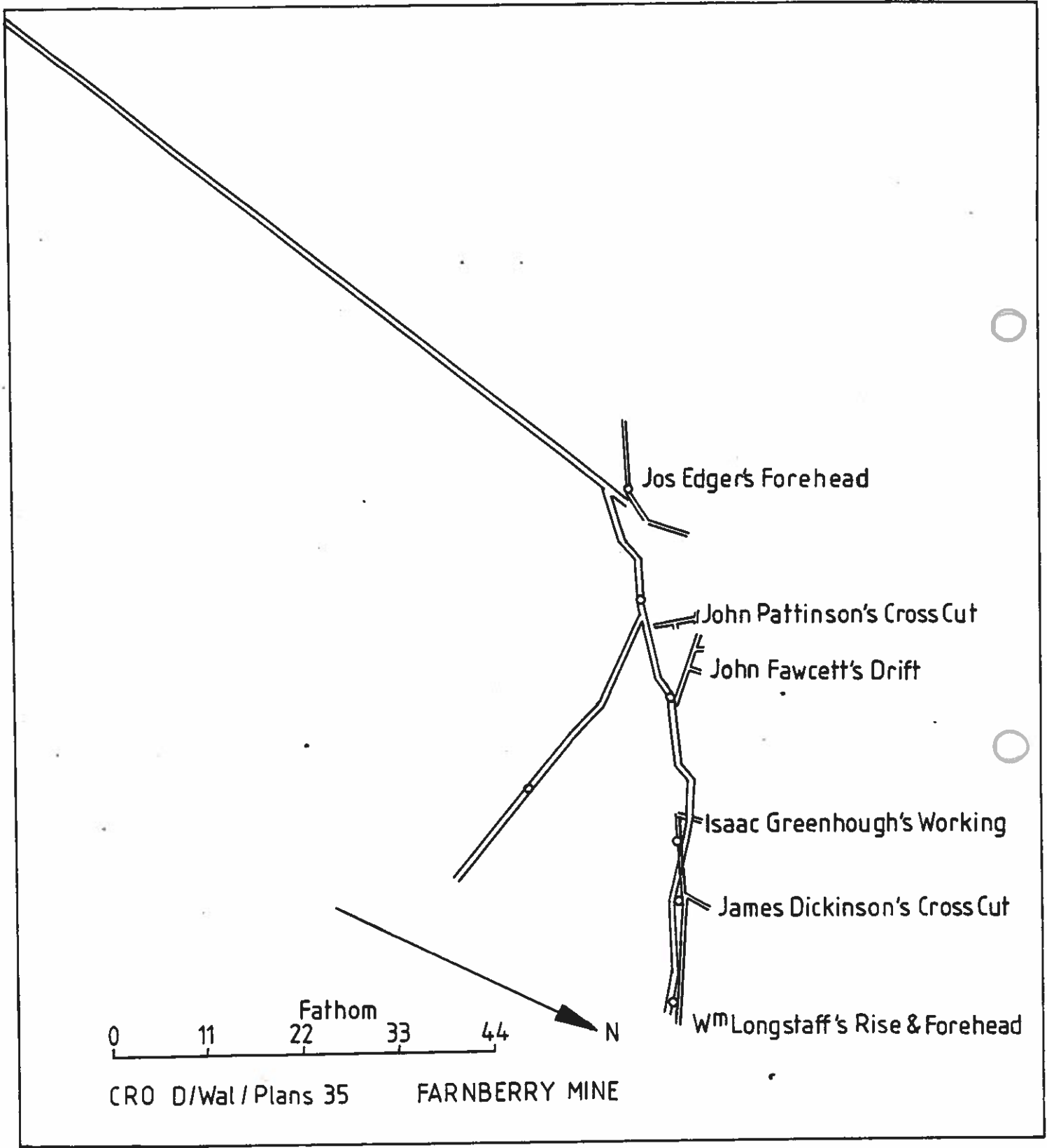
A plan of one of the workings has survived and is now in Cumberland Records Office (D/Wal/Plan 35) it shows the level from Holyfield which was driven at the base of the Great Limestone 675 feet to the north. The level was then driven in the vein for about 400 feet. Six shafts are shown, presumably rises into the limestone, and a series of workings are shown in yellow, testing the ground to the west of the vein. The east end of the level is marked Wm. Longstaff Rise and Level Forehead, indicating 1840 workings. The main level is probably that driven by W. Walton in about 1800.

A second level was driven from the vicinity to Potters Lane for about 1,500 ft SE in the High Coal Sill coal and overlying shale, reaching the Farnberry Vein near to the forehead. The date of this working is not known but may have been driven near the end of the 19th century.

Other levels have crossed the line of the vein from near Watergreers at about the horizon of the Four Fathom Limestone. One of these levels was driven in about 1795 by Thomas and Henry Walton looking for the Holyfield Vein, apparently without finding Farnberry Vein.

References:

1. J.K. Almond, Zinc Production at Tindale Fell, Cumbria. J. of Historical Metallurgy Soc. Vol II, No. 1, 1977.
2. J. Dickinson & T. Dickinson, "Greenwick Hospital Report 1821" Wigan Central Library, pp 277, 281.
3. K.C. Dunham, Geology of the Northern Pennine Orefield, Vol. 1 Tyne & Stainmore, HMSO 1948 p.149.
4. Westgarth Forster, A Treatise on a Section of the Strata from Newcastle upon Tyne to the Mountain of Cross Fell. 3rd Edition, Revised and Corrected by Rev. W. Nall 1883 p.150.
5. J. Hilton, 1778 Report incorporated in J. Dickinson & T. Dickinson Report 1821.
6. W. Wallace, Alston Moor, its Pastoral People, its Mines and Miners, Newcastle 1890 p.130.
7. Plan of Farnberry Mine. Cumberland Records Office, D/Wal/Plan 35.





THE FRIENDS OF
KILLHOPE WHEEL
A P P E A L

FRIENDS OF KILLHOPE WHEEL APPEAL

Ian Forbes

No Project Officer's report this time, for my usual space in the newsletter deserves to be given over to the biggest challenge Friends have yet tackled: the Friends of Killhope Wheel Appeal.

The big wheel at Killhope remains the dominant and most potent symbol of the site, and it now seems likely that we can realise what until recently, seemed an impossible dream: we can get it repaired and working again.

The County Council has committed £60,000 to this one project and the Friends have pledged to try to raise another £30,000 to meet the total estimated cost of £90,000.

The work will be undertaken by a specialist company, Dorothea Restorations Ltd. and if all goes well, should be started in the autumn and finished by this time next year. This will be an authentic repair, using wrought iron plate, rivetted together in the traditional manner.

Dorothy Chambers, the Friend's Secretary, is co-ordinating the appeal and has worked tremendously hard at it over the last few months. So far she has raised over £12,000 towards the target.

However, if any Friend thinks they can help, through contacts in industry or with ideas or offers for fundraising, please get in touch with Dorothy on 091 3868491.

It would be a truly magnificent achievement for Friends to be instrumental in getting what is the biggest waterwheel in the North of England (excluding Laxey on the Isle of Man of course!) turning again.

The following figures give some idea of the scale of the task.

The wheel, which was made in 1877 or 1878 is made of wrought iron, with cast iron axle and hubs. It is 33'8" in diameter and 6'2" wide. It must have been put together at Killhope from a giant kit; its 72 buckets and 32 spokes are all held together by 7,808 rivets! We estimate it weighs about 18 tons and produced about 47 horse-power.

In fact it will be an awesome sight in full working order revolving at about 3 revolutions per minute, and, if we follow our dreams, in a few years time working machinery and crushing rollers!

As I said at the beginning, no Project Officer's report this time, but a few thanks as always to the many Friends who have helped in and around Killhope. In particular to Judith Watson and her mother who donated a chest of tools which belonged to Judith's father, to Tom Grylls for making a donation box for the Wheel Appeal, to Dorothy Chambers who managed somehow to find time to paint the jigger house doors and windows, to Russ Parkin and his team

building Eric's Wheel, to Angus Oliver and his mine diggers, to Peter Wilkinson and Leslie Blackett for donations to the library and to Blue Circle for donating some gear wheels for the Brunton Buddles.

Finally a special word of appreciation to Jack Gardiner who has been helping with Eric's wheel. Jack, at 80-something, is not one of our youngest members, but he can put in as good a shift as the rest of us, even when he's been dancing till midnight the night before!

AN EXACT SCIENCE?

Eric's wheel, the waterwheel the Friends are building for the Buddle House, is 10' in diameter, with buckets 1'9" wide. Although obviously not the original wheel it must be about the same size as the original, for it fits into the existing wheelpit.

You can calculate that such a wheel will, at full load, generate about 4 horse-power.

Inside the Buddle House were four round buddles for separating out fine ores. Buddles used very little power - Ure's Dictionary reckons about 1/10 horse-power each (7th Edition 1878.) Thus the total load on the wheel can't have been more than about $\frac{1}{2}$ horse power.

Thus the wheel was far bigger than it needed to be, suggesting either that the loadings were not calculated when the plant was designed, or, more likely, that WB Lead's fitters and engineers used a waterwheel they had handy and weren't really interested in whether it was working to its full capacity or not.

It's nothing short of amazing what turns up from time to time within the confines of your own family circle. There I was reminding my mother of the time she "disposed" of those London Lead Company invoices 23 years ago (Newsletter No. 8) when she said, "Here, I would like you to have this", handing me a small brown envelope, obviously, by its condition, a good number of years old. It contained a coin and a letter, which I had not seen for 25 years or more. I can remember being told by my father that he unearthed the coin while digging in the garden, and that it had been sent away somewhere to be identified, but at the time I was not particularly interested. It wasn't until I re-read the letter that I realized the significance of it all. I think the best way to illustrate this is to show a copy of the letter :-

Copy.

UNIVERSITY of DURHAM

King's College,
NEWCASTLE-upon-TYNE, 1.

15. xii. 1948

Dear Mr. Trelear,

So far as we can make out the coin you sent along to me is as follows.

Silver Crown of 1620. Netherlands.

motto is as follows

CONCORDIA PARVAE RES CRESCUNT

ie. "Small things (or states) grow by concord (or increase by concord)"

It would make an interesting link with the German miners who used a good deal of Dutch money, and no doubt it was lost by one of them. It seems to have been in circulation a while, and if one might make guesses, entirely suppositious, we could say that it was lost by one of the German miners who left Keswick about 1660 and came to Alston Moor to follow his trade in a quieter place.

Many thanks for letting me see this coin - please thank its finder for me. I hope great care will be taken of it, it is the first of which I have record.

Kindest regards,
Yours sincerely,

Arthur Raistrick.

Mr. Amos Treloar was the Area Manager for the Vieille Montagne Zinc Company before they sold out to the Imperial Smelting Corporation and Arthur Raistrick is, of course, the celebrated author of many books on our subject.

METHODISM IN THE NORTHERN PENNINES
Part 3 - ENTER JOHN WESLEY

C C Short

As we have seen, the establishment of Methodism in the mining dales was the work of many people other than John Wesley himself. It certainly arose from the first visit to the north east of the Wesley brothers in 1742, but in all his 43 years of visiting the north east, some 48 visits in all, brother John spent no more than about two months in total in the area. In making this estimate, Geoffrey Milburn ('The Travelling Preacher', the Wesley Historical Society (North East Branch) 1987) includes the Yorkshire dales too. Charles Wesley had no ministry in the north eastern dales as far as is known.

In this part of our account we are going to make extensive use of John Wesley's Journal. It tells the story of the early days of his work in a way no other could reproduce. It must be remembered though that the Journal was not a neutral document; Wesley published it, as much as an apologetic for the Methodist movement, as for anything else, and to this end it was carefully edited.

John's first visit to the dales occurred in 1747, on his eleventh visit to the north east. He had been at Newcastle since March 2 and presumably heard then of the work done by John Brown in the Derwent Valley (see Part 2 in Newsletter 16). Thus we read in the Journal:

Tues 24. I rode to Blanchland, about twenty miles from Newcastle. The rough mountains round about were still white with snow. In the midst of them is a small winding valley, through which the Derwent runs. On the edge of this the little town stands, which is indeed little more than a heap of ruins. There seems to have been a large cathedral church, by the vast walls which still remain. I stood in the church-yard, under one side of the building, upon a large tomb-stone, round which, while I was at prayers, all the congregation kneeled down on the grass. They were gathered out of the lead-mines from all parts; many from Allandale, six miles off. A row of children sat under the opposite wall, all quiet and still. The whole congregation drank in every word, with such earnestness in their looks, that I could not but hope that god will make this wilderness sing for joy.

In the evening I come back to Newlands, where also John Brown has gathered a society.

The reference to men from Allandale (Wesley's spelling, which I'm going to use throughout) reflects the coming of Christopher Hopper to Hindley Hill in 1746, to begin the work there. It

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Methodism in the Northern Pennines - John Wesley

also probably means that John Wesley's visit was anticipated. Yet this in turn is also typical of his work in the dales: the ground had already been prepared, Methodist Societies were already in existence and oft-time John was only coming to advance a work begun locally. I think it can be argued that the great success of Methodism in the mining dales is in no small way due to its 'home grown' nature.

Wesley then spent the next fortnight travelling and preaching in County Durham and Hexhamshire, but April 8 saw him back again. His brief comment, '.. the congregation at Blanchland abundantly increased,' is all he tells us, but the words reflect Wesley's regular and perhaps arrogant expectation that his preaching would yield spiritual gain. He was a complex man! On April 20 Wesley left the region.

Next year saw him return to the north east in July and August, in a visit embracing Berwick and Yarm, and the dales in July. Again the account is direct from Wesley's Journal.

Wed 27. I ride to Blanchland, intending to preach there. But at the desire of Mr. W., the Steward of the Lead-mines [can we identify this man? CCS], I went about a mile further, to a house where he was paying the miners, it being one of their general pay days. I preached to a large congregation of serious people, and rode on to Hindly-Hill in Allandale.

This congregation has always been assumed to have been at Baybridge where a chapel survives to this day. I wonder if it might not have been Shildon though. We continue in the Journal.

Thur 28. We rode over the moors to Nint's Head (Nenthead. CCS), a village south west from Allandale, where I preached at eight. We then went on to Alesden (Alston. CCS), a small market town in Cumberland. At noon I preached at the Cross, to a quiet staring people, who seemed to be little concerned one way or the other. In the evening I preached at Hindly-Hill again, and we praised God with joyful lips.

The 'we' must include Hopper. A congregation at 8am at Nenthead might seem to suggest an established work here, and Wesley makes no comment, often his way with established Societies (contrast the comments on Alston), but we are no nearer knowing when the work at Nenthead was begun. It may just be that this occasion was the establishment of the Methodist work in the village, in which case this is the only northern Pennine Society that owes its origins to John Wesley's preaching. The next day brings some opposition, from the clergyman then at Allendale; brother John again.

Fri 29. At noon I went to the Cross in Allandale town, where Mr Topping, with a company of the better sort, waited for us. I soon found it was, but a vain attempt to dispute or reason with him. He skipped so from one point to another, that it was

Methodism in the Northern Pennines - John Wesley

not possible to keep up with him. So after a few minutes I removed about a hundred yards and preached in peace to a very large congregation, it being the general pay-day, which is but once in six months.

The next day finds John at noon in Newlands again and so back to Newcastle.

There is no further Wesley visit for another four years. Yet as we have seen, those years were formative ones in dales Methodism (see Newsletters 16 & 17). Three times in the period John is in the north east, yet not one visit to the dales results. Was he quite content with the Assistants and lay preachers at work in the dales? Did he perhaps sense that these very isolated but determined people needed to grow in their own and God's strength without his interference? He was a man of strange decisions at times, but also a man gifted with some remarkable insight from God, so I prefer to think that both were true. Yet the next visit that we must note does throw some doubt on this.

It was in April and May 1752 that Wesley was in the region again. He visited the Society at Newlands on 18 May, but travelled no further up the Derwent on that occasion. Then a week later ...

Mon 25. We rode to Durham, and thence through very rough roads, and as rough weather, to Barnard-Castle. I was exceedingly faint when we came in: however, the time being come, I went into the street, and would have preached; but the mob was so numerous and so loud that it was not possible for many to hear. Nevertheless, I spoke on, and those who were near listened with huge attention. To prevent this, some of the rabble fetched the engine, and threw a good deal of water on the congregation. But not a drop fell on me. After about three quarters of an hour, I returned to the house.

Tues 26. At five, the preaching-house would not contain one half of the congregation. Many stood at the door and windows, far more than could hear. When I come again, perhaps they will hear while they may.

We rode hence to Weardale. I had been out of order all night, and found myself now much weaker. However I trusted in the Strong for strength, and began preaching to a numerous congregation: and I did not want strength till I had finished my discourse; nor did the people want a blessing. [Wesley is using 'want' in the eighteenth century meaning of 'lack'. CCS]

In the evening we came to Allandale, and

Methodism in the Northern Pennines - John Wesley

found the poor Society well nigh shattered in pieces. Slackness and offence had eaten them up. When I came into the Room, I was just like one of them, having neither life nor strength, and being scarce able either to speak or to stand; but immediately we had a token for good: in a moment I was well: my voice and strength were entirely restored, and I cried aloud, "How shall I give thee up, Ephraim?" The mountains again flowed down at His presence, and the rocks were once more broken in pieces.

The incident with the fire engine at Barnard Castle is justly famous. It is a pity that on this his first visit to Weardale brother John was not well, for he notes little. The work had been established here almost four years (see Parts 2a and 2b in Newsletters 16 & 17). He tells us nothing about the Society, nor even where the meeting was. I believe the implication is that they met indoors, but where? is an unresolved question.

Several of the allusions to Wesley's illness are hard to pin point, as are the references to the state of the Allendale Society. The passage quoted is from Hosea 11:8, but the only clue from that is that if brother John was quoting it in context then there is the possible hint that he might have been thinking of closing down the Society. However Wesley was a man of his age, and often quoted scripture well out of context. What can be said is that clearly all had not been well in Allendale, but Wesley went on the next day to Penrith, so it seems all was restored.

MORE TREASURESBRIAN SHORT

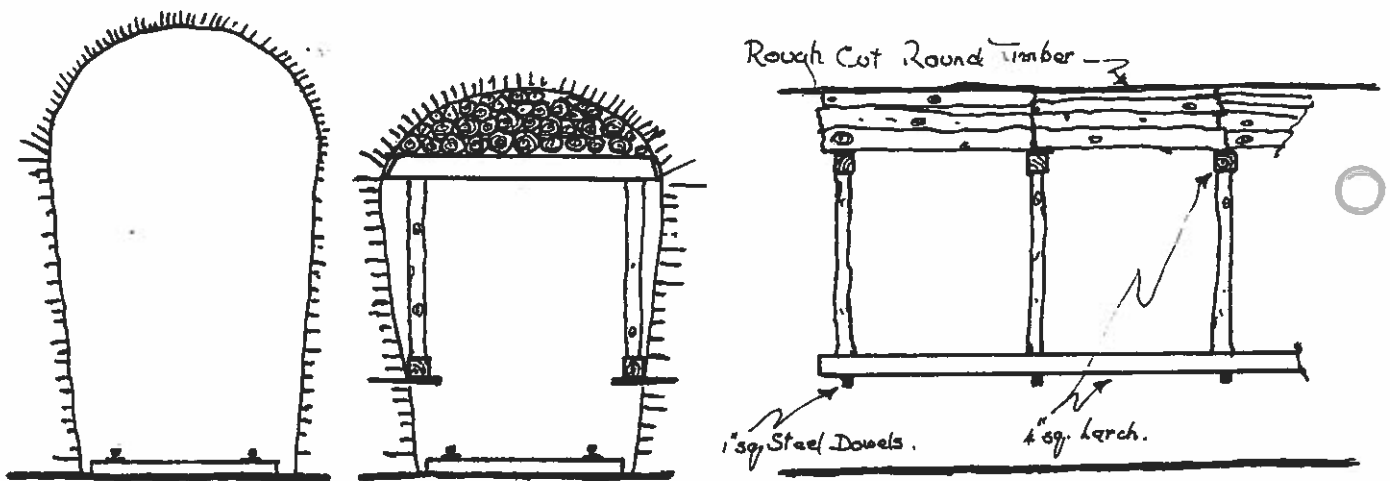
I have a photostat copy of the Schedule for the 1887 Mineral Exhibition which was featured in an article on page 13 of Newsletter No. 17. It is of interest to me because one of the exhibitors, W. Heatherington, was my great-grandfather. For most of his lifetime, 1843 - 1918, he worked in the Nenthead Mines and consequently amassed a large collection of first class specimens, some of which, I believe, eventually found their way to the Natural History Museum in London. He married Hannah in 1862 and she bore him 13 children, between 1863 and 1890. It was his custom, when each child was married, to present them with a unique gift, made from minerals found underground at Nenthead. I have acquired to date, two of these items, one an egg cup, complete with separate egg, made from a barytes like mineral, and the other a powder bowl, of the same mineral, with a fluor-spar inlaid lid. Unfortunately, there is now little chance of tracing any more of the items, but I live in hope!

Below is a report on last season's work on the Park Level dig by Angus Oliver who is the professional engineer in charge of operations. The new season's activities are underway and diggers, first aiders and watchpersons are all cordially invited to lend a hand on a regular, occasional, or part-day basis. Contact Ian Forbes, Projects Officer on 0388 537470.

PARK LEVEL

Angus Oliver

In the adit we have now cleaned out and laid permanent track for 103 yards and set temporary supports under 13 yards of suspect arching.

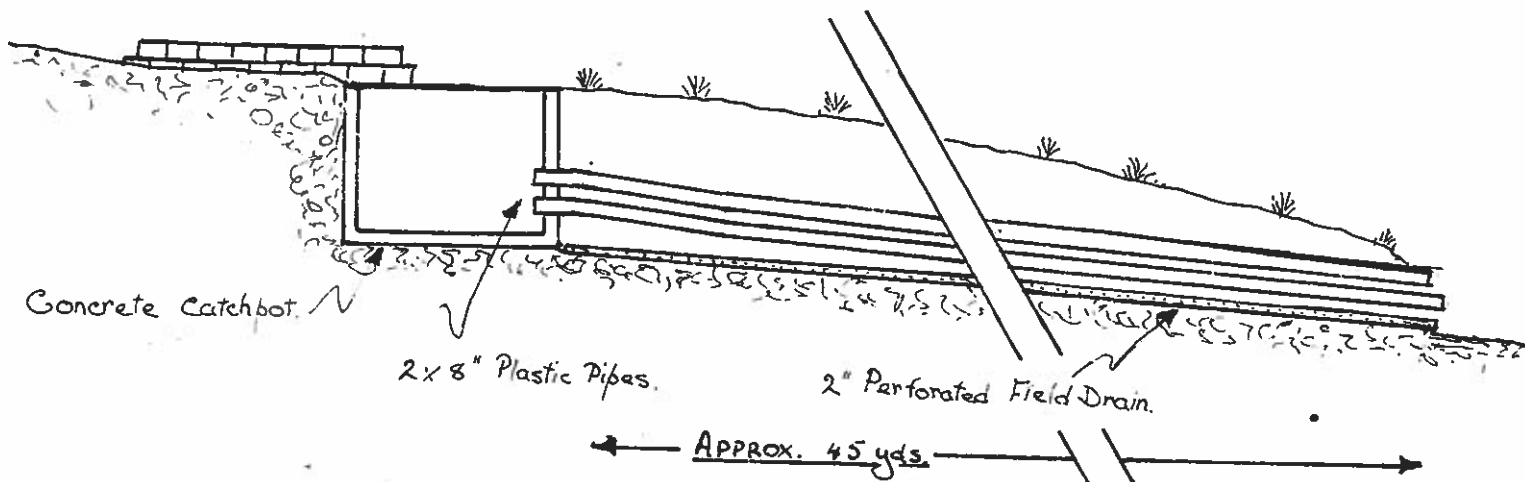


ORIGINAL PROFILE

CRUSHED SECTION WITH FLATTENED (WEAKENED) CROWN.

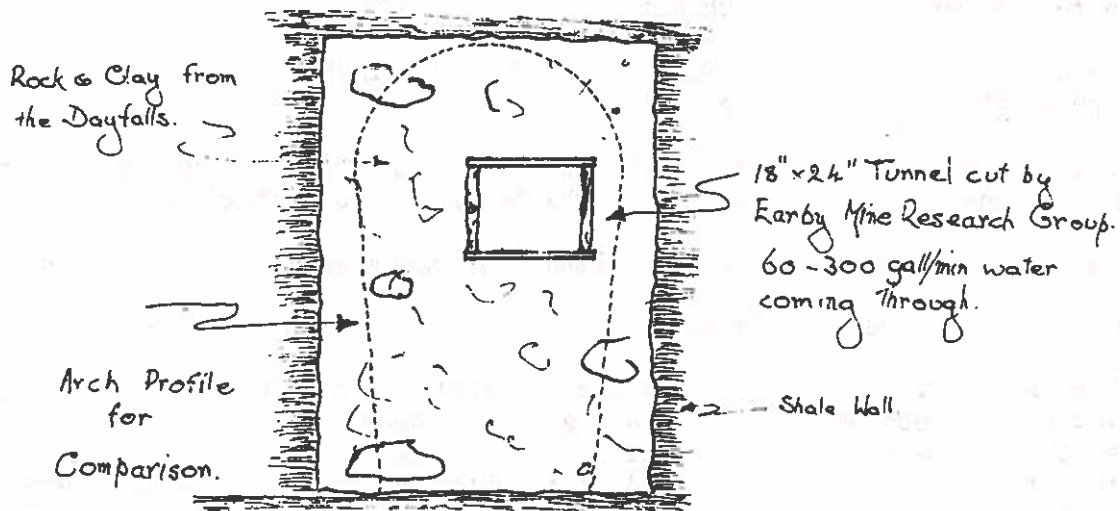
ALL TO SCALE.

Last summer we concentrated on finding the source of the water running in through the roof of the adit in the 95 yd region. The arching is crushed in this region and we must divert the water before we can take down the stone and rebuild to the original profile. The semi-drought conditions were the perfect opportunity to find where water disappeared into the stream bed in Hymers Hush. It should also have been the perfect opportunity to excavate for catchpot and dig a trench 4 ft deep and 45 yds long for the drainage pipes, unfortunately Killhope Friends doubled as Midgie Gourmet meals and this took a bit of the fun out of the work.



Hopefully this work will achieve the desired result but I will not be surprised if we have to look again at the problem. The dam could well be contributing through leakage.

In the adit we now have 7 yds to go to the end of the arching and after that the real work begins.



For each foot of advance we will have to remove about $1\frac{1}{4}$ ton of debris, and every 3 ft or so we will have to set supports. There will still be the problem with water, 60-300 gallon/minute depending on when it last rained. On the bright side, this section is only 25-30 yds long and when we get through it we will be close to the point where the display is to be erected and where we must join a second way out. It will be worth a lot of effort this year.

Editor's Note: While I have the highest regard for our engineer's professionalism, my memory convinces me that his dimensions of the drainage trench are a serious under-estimate! The experience gave the diggers some idea of what it must have been like building the Burma railway. Fortunately "they" let us go home about 5 pm on Sundays. However, I am assured there are no midgies at the "face" in Park Level so it could be the most comfortable place on site on those calm, muggy summer days when those voracious insects are in search of prey.

THE GRAHAM LETTERS

I know many members enjoy reading the Graham letters, copies of which were given to the Friends by Mrs. Harry Cripps, Joseph Graham's great granddaughter.

The firm designing the exhibition for the visitor centre display room were also fascinated by them, and intend to feature the Graham family and the letters strongly in the exhibition.

The Grahams lived at Hill Top, just west of Killhope, and were in lots of ways a typical lead-mining family.

Mrs. Cripps is being very helpful and is sending the original letters over to this country from Delaware for the designers to photograph.

Meanwhile this letter is from Jonathan to Joseph Graham in the United States.

Killhope December 27 1856.

Dear brother I now take the pleasure of written a few lines to you hoping to find you in good health as it leaves me at present for we are all in good health at home and all my brothers and sisters are all in good health at present except Joshua Stubbs eldest daughter which came home from service on the first of November bad of the tipus fever but she has got a turn now of it and she is in a fair way for recovering and my mother hath had her health very well this winter so far and she saise she would like to see you but she thinks she never will see you any more in the flesh and so she gives her kind love to you and my brother John received a letter from you in October which brought us good news that you are dowing so well in America and I am very glad that you are getten so well on for we are all doing very well in the mines this year for we all have a pay this year for John and Christopher and I are all working together and other five men with us and we will have above 20 pound a man (this is interesting, for it means at the annual pays each man will get £20, which, on top of their monthly subsistence money of £2, gives them an annual income of £44)..... we have bought very little (beef) for we killed an heifer of our own..... and we soald a small ox for 5 pound a year and a half old and we sold a few wedders for 18s per head 2 year old (wedders are castrated tups - at 2 year old mutton rather than lamb!) and we have 2 cows one stirk and a horse and 2 score of sheep (this was the Graham family's stock on their smallholding which consisted of 15 acres and fell grazing rights. Not all families could afford to keep a horse, so the Grahams must have been relatively prosperous).... we have had a very wet and coald summer this last summer and there was light crops all round but we had a fine harvest for we had a fortnight of very hot wedder at harvest and that was the greatest part of fine wedder we had this summer, and we have a greate storm of sno on at present and a very hard frost. so dear brother I must tell you a little more about our friends for Thomas Millburn married a gain foreteen months after my sister marys death to hannah Milburn but your daughter is still stoppen on with us (Mrs. Cripps thinks it likely that Hannah Milburn was the mother of Joseph Graham's illegitimate daughter Jane Anne, who continued to live with the Grahams).... as for my old ant Betty and John I think thay are as gready as ever but my old ant is waring down I think for she has to keep a servant girl to wait on her now and as for my self I think I would like to come to America, for I would like to be a farmer and I think I must come over to pay you a vized this next summer for it is an unhealthy buiseness in this mining. so please to answer this letter as soun as it lands to you and conaveience will allow you to answer it so no more from your

Dear brother Jonathan Graham

KILLHOPE NEWS

The visitor centre is finished externally and looks very good; R.C. Wade, the builders, have done a first class job. There is still some fitting out to do inside, mainly for the new exhibition room, and the opening date for the building seems likely now to be the end of July.

Judith Watson, who has been working as one of the information assistants, has been promoted to Deputy Centre Manager, thus making a second permanent full-time job at Killhope, and we congratulate Judith on her appointment. The rest of the Killhope team is the same as last year.

Killhope is still changing and developing, even if round the site the pace of change is slower without the Community Task Force. Do come and see us, introduce yourself to the staff as a "Friend" and encourage your friends to come to Killhope as well.

The washing floor in particular is taking shape this year with water running through the whole system of grates, boxes, trunk buddles, hotching tubs and slime pits.

Usually a huddle of visitors can be found shovelling, grating, hotching and breaking up ore at the knockstone for all they're worth. Playing in running water seems to appeal to kids of all ages, be they toddlers or grandparents!

Also this year for the first time we are actively trying to encourage our visitors to combine a visit to Killhope - the highest "heritage centre" in England - with a visit to the South Tynedale railway at Alston - the highest narrow gauge preserved railway in England - by taking the A689 between the two - the road which is of course the highest classified road in England!

Visitors can save money by buying a joint ticket to both attractions, valid at either throughout the season and giving a discount of around 20% on admission charges.

Both the Railway and the Killhope team are very keen to forge links between attractions across the North Pennines and this ticket is the first tangible result of that spirit of co-operation. We all hope it sells well.

Ian Forbes, Centre Manager

ORNITHOLOGICAL NOTE

The workers on Eric's Wheel were delighted to see that the swallows who successfully nested inside the Buddle House last year had returned by Sunday 20th May. These superb fliers gain access through a missing window pane near the wheel pit. The aperture seems barely greater than their wingspan and yet they seem to fly through without reduction in speed. We hope they're fond of midgies!

CEREAL THOUGHTW. Drea

Sitting down to breakfast one morning the head of the average British healthy/ 'Green' family passed the muesli to her husband. Their daughter passed it to the youngest who emptied the remainder into the cereal bowl whilst coughing a protest unhygienically across the pine table. "Why do I always get the dust at the bottom of the packet? It's not fair. Dad why does the dusty stuff float to the top? Dad?"

"Eat your breakfast"

The biggest densest pieces, the raisins and the sultanas are almost always found in the upper parts of the container. Why do Brazils always sit above the other nuts in a jar of mixed nuts. When generations of farmers clear rocks from their fields how come they seem to reappear time and again? We assume that large heavy objects should find their way to the bottom but why doesn't it always work out that way.

It's not only the lad suffering the bran cloud from the muesli packet who questions his luck. Learned scholars from the Carnegie-Mellon University of Pennsylvania have investigated the phenomenon. Not because of a mis-managed breakfast but because this problem applies to many more important situations. In metallurgy and alloy making, to name but one group of industries, powder mixing by shaking causes the opposite effect - separation. Precisely the *raison d'être* of the Killhope dressing floor. It is not a new problem for physics. The phenomena has been studied before. Physical details such as particle size, weight, centrifugal force, rotation, acceleration, were taken into account. But unmixing seems to happen no matter what the characteristics or performance of the particles.

Enter the computer. A university model produced an hypothesis which, like all good solutions of complex posers, was quite simple. Random shaking or "ploughing", the professionals said, bounces particles upwards. This forces gaps in the material. Since more small gaps appear than large ones only the smaller pieces can drop into the void below. So over time the fine fragments finish near the bottom.

Obvious? If so what can be done about it. According to Dr Robert H Swendsen and his colleagues, if you can prevent vertical shaking of the mixture and limit the vibration to side to side movements then the mixture will not unmix. So when you drive home with your extra crunchy fruity cereal remember you can drive around corners but you cannot motor over bumps in the road. Beats me what you do about rocks in farmers' fields though.

