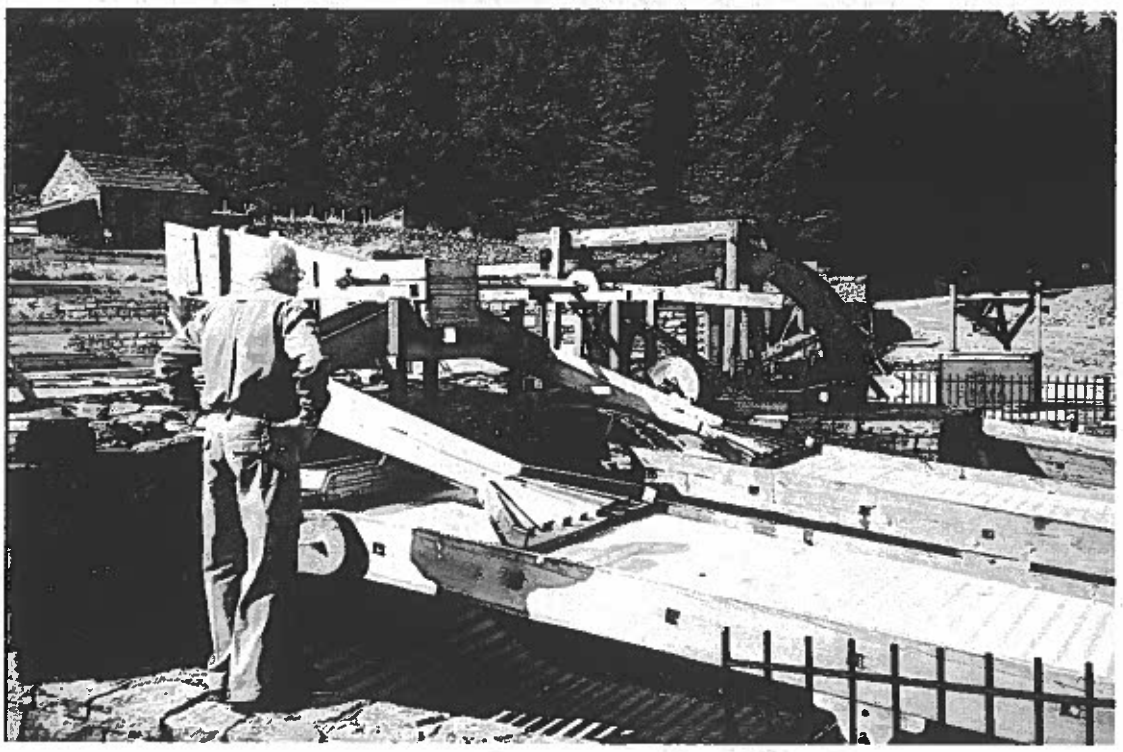
THE · FRIENDS · OF
KILLHOPE
Charity No 517647

Newsletter No 58 **April 2003**

Congratulations!

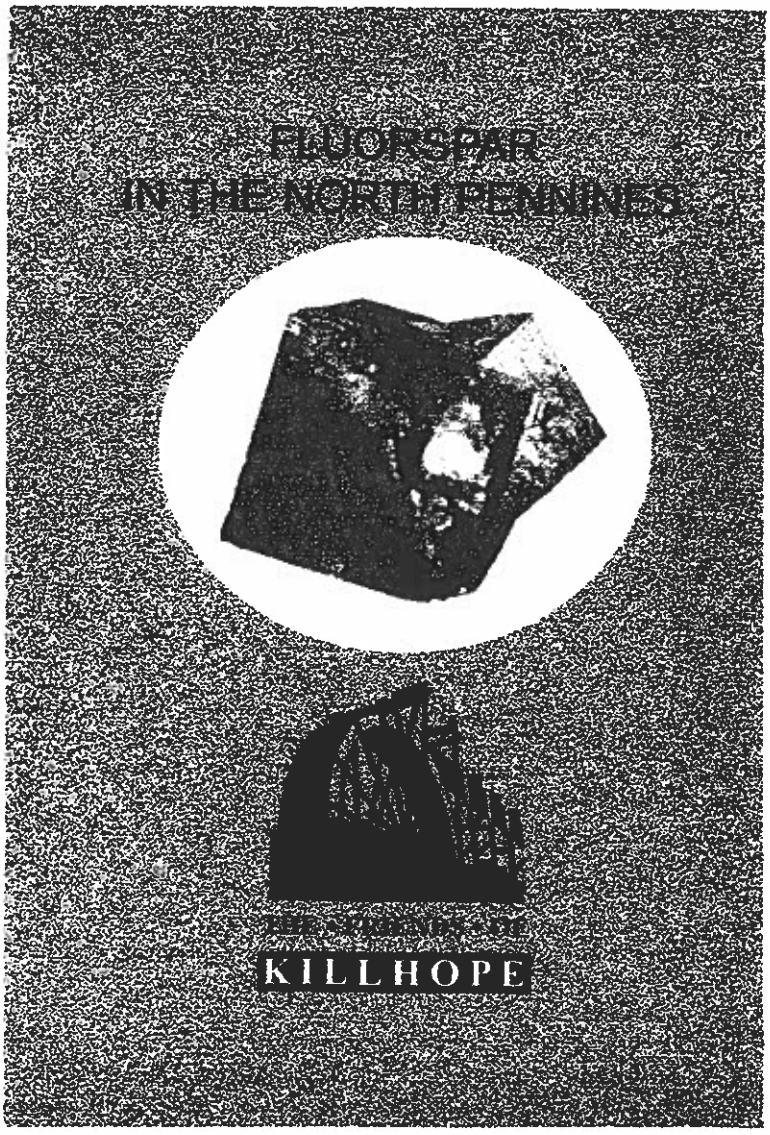
Friends can celebrate two major achievements this spring and heartfelt congratulations are due to those most involved - Ian Jowett for his momentous and virtually single-handed work on the Brunton buddles and Ray Fairbairn for producing our fourth publication which contains what are probably the definitive papers on various aspects of the fluorspar industry in the Northern Pennines. Both projects have involved countless hours of work and no doubt their own peculiar frustrations and stresses. Hopefully they will have been rewarded by a large slice of satisfaction for a job well done - all on our behalf. Bravo to all concerned!



Launch day! Ian Jowett surveys his machine in action. General view.
Photo Dick Graham

Another new Friends publication and a special offer to members

Those of us who were privileged to attend the Friends Day School on the North Pennine fluorspar industry were aware that the papers presented on that day were probably the definitive works on those particular aspects of this surprisingly little recorded industry. Fluorspar working in the area had just come to an end and Ian Forbes had the vision to realise that if some attempt to mark the event was not quickly made then the moment would be lost. He assembled a cast of speakers of unique experience and quality and the result was a memorable day. Now you can share our pleasure because Editor Ray Fairbairn has collected all this material in our fourth publication - Fluorspar in the North Pennines and members can buy the book for the discount price of £5.00 at the AGM only. Thereafter it will be available at Killhope and elsewhere for £7.50 or by post from Killhope for an extra £1, ie £8.50 inc post and packing. I hope to have a full review of the book in the next newsletter.



CONTENTS

AGM

This will take place at 11.00 am in the upstairs room of the Visitor's Centre at Killhope. Pip will offer a set meal but needs to know the numbers beforehand. To make a reservation please complete the slip below the AGM Agenda enclosed with this newsletter and return to Ray Fairbairn before the 14th May. Cost (including tea or coffee, starter or sweet and main course) is £5 per head to be paid on the day.

The meeting place for the afternoon walk led by Ian Forbes is outside the Allenheads Inn starting at 2.00 pm.

This is your annual chance to have a say on the running of the Friends and to talk to committee members. You will also be able to buy our new book at the special discount price of £5 and lunch affords the opportunity to catch up with old friends. A pleasant, information packed walk in the afternoon will round off a good day. Don't miss it.

Calder Lead Works, Elswick, Newcastle upon Tyne

We have heard from the Company that lead sheet manufacture is to be transferred from Elswick works to their Cheshire works in July. Dr Forester has kindly offered the Friends one last visit to see lead sheet manufacture at this historic works before it closes. It has been agreed that the visit will take place at **10.00 am on Tuesday, 13th May**. **If you would like to attend please inform Ian before Wednesday 7th May.**

Another new book

One of our members Ken Pirt has collaborated with John Dodds to produce the long awaited Lead Mining in the Derwent Valley - a monograph of the Northern Mine Research Society (No 70). This is a comprehensive account of the mining of the area with many photographs and diagrams on 165 A5 pages. It is available at the usual outlets including Killhope and a full review will appear in the next newsletter.

Membership Subscriptions 2003

Many members pay their subscriptions by Standing Order, for which we are grateful. Normally this arrangement works very satisfactorily. However this year many of the Standing Order payments were continued at the old rate.

Some members, who pay in this way, took advantage of the form enclosed with the last newsletter and submitted a new Standing Order. Unfortunately we were not able to use these in cases where the existing Standing Order had already made a payment at the old rate.

Other members, who have recognised the problem, have already sent a cheque to cover the difference between the old and the new subscription rate and have asked their banks to adjust the Standing Order for payments from 2004.

Please will other members, who use this method of payment, please check their January 2003 payment against the new subscription rate and ask their bank to adjust the Standing Order for future payments.

2003 Subscriptions are:	Individual	£10.00
	Family	£15.00
	Senior	£7.50
	Student	£7.50

Membership Secretary: David Redfearn Telephone: 01833 650311
E-mail: david.redfearn@virgin.net

Day School

Unfortunately it has not been possible to organise a Day School for this year.

Committee Contacts

Members are advised that their main contacts with the Friends committee are:

Ray Fairbairn, Secretary, Pethfoot Cottage, Allendale, Hexham, Northumberland NE47 9ND
☎ (01434) 683492 ✉ raymondfairbairn@lineone.net

Bryan Chambers, Newsletter Editor, 18 Cheveley Walk, Belmont, Durham DH1 2AU
☎ (0191) 3868491

Dick Graham, Chairman, Wingrove House, Wingrove, Rowlands Gill, NE39 1DT
☎ (01207) 542422 ✉ dickgra@aol.com

Ian Forbes, Project Officer, Peat Hill, Westgate, Weardale, Co Durham, DL13 1PG
☎ (01388) 517365 ✉ ianforbes@flobco.freeserve.co.uk

David Redfearn, Membership Secretary, 5 Sunnycroft Cottages, Cotherstone, Barnard Castle, Co Durham, DL12 9QF ☎ (01833 650311)

Next Deadline

Material for the next newsletter should be in the hands of the Editor by 1st September, please. Hard copy to Editor and on disc if possible or by e-mail to dickgra@aol.com.

Editor, Bryan Chambers, 18 Cheveley Walk, Belmont, Durham, DH1 2AU.

Contents

The Brunton buddles

Ian Jowett

This saga began in December 1997 – an appropriate noun to use perhaps, both due to Killhope weather being what it can be – somewhat Scandinavian – and the fact that it's a long story relating to complicated adventures. Well, not exactly adventures! I've had great difficulty remembering much of what was involved in the project. As my wife will testify, I have a hard time trying to recall what took place last week, let alone in 1997! In fact, you could feasibly run a readers' 'Spot the greatest number of mistakes' competition. The simple critical path analysis network that I drew up at the outset, mainly to arrive at an agreed approach with Ian, fairly soon went pear-shaped and is now little help in establishing the true sequence of events.

I have to acknowledge that without the stimulus provided by Judith Watson, I probably would not have become involved in the thing at all. She it was who told me it was a FoK project and voiced a wish to see it completed.

The start was the removal of the original settlement pits. Due to a restraining order from Ian, these were saved from a fiery demise to which I was minded to consign them and laid out on the planking at the top of the buddle in the same configuration as when *in situ*. After the installation of replacement, replica pits and associated bits and pieces, the stone-flagged front apron was re-laid, using mainly original material, under which barrow-loads of grit were laid to get the necessary sub-striate. The slope was something of a guess in the absence of any clear evidence as to what it had been.

At this point, I think I ought to explain that a set of seven drawings were given to me, the work of a Durham County Council (DCC) draffie, done way back but on what archaeological authority, I cannot remember. They were fairly detailed but owing, for instance, to the adoption of modern (well, certainly not 1870s!) shaft bearings, could be held to be a bit suspect. However, in all fairness, I gratefully made extensive use of them.

Before I go any further, somewhere in this piece, I hope our editor has managed to include my rather rudimentary orthographic view of the main moving parts (Figure 1). Don't come to Killhope, however, expecting the real thing to look much like that. Apart from all the associated timberwork having been omitted, more crucially it shows the very opposite half to that actually restored! Nevertheless, it may help you to follow the plot.

By gluing two thicknesses of one-inch timber together, two-ply blanks were formed from which Steve Wright of Queensbury cut the 16-inch diameter discs on which the top and bottom rollers were formed. Onto these were nailed standard slating laths, close-butted for the two bottom rollers and pitched at approximately 90 mm for the two top ones. This gap allowed the transverse cloth support laths (of which more later) to slot in and pull the cloths up to and over the top rollers.

The next area to be addressed was, I think, the slurry mixer and feed arrangements. The timber used was at least partly Killhope stock in hand and therefore somewhat heavier than I would have preferred. Due to my failure to recognize that the DCC drawings were somewhat idealised representing a more notional set-up than one actually tying in with what had been done by the preceding Manpower Services Commission (MSC) people, meant that I found myself doing a bit of bodging in order to get some parts to function.

The mild steel shafting (marked 'S' in the sketch) was meanwhile being machined to suit the cast iron bearings by Jon Watson of Wolsingham; both that needed to turn the slurry mixer and that to drive the top, drive rollers, plus the shafts on which the lower, idler rollers rotated. Collars to connect the four lengths of drive shafting were fabricated and machined, together with matching machining to the drive shaft ends, which was also done by Jon Watson.

Orthographic view of main moving parts of Brunton buddle

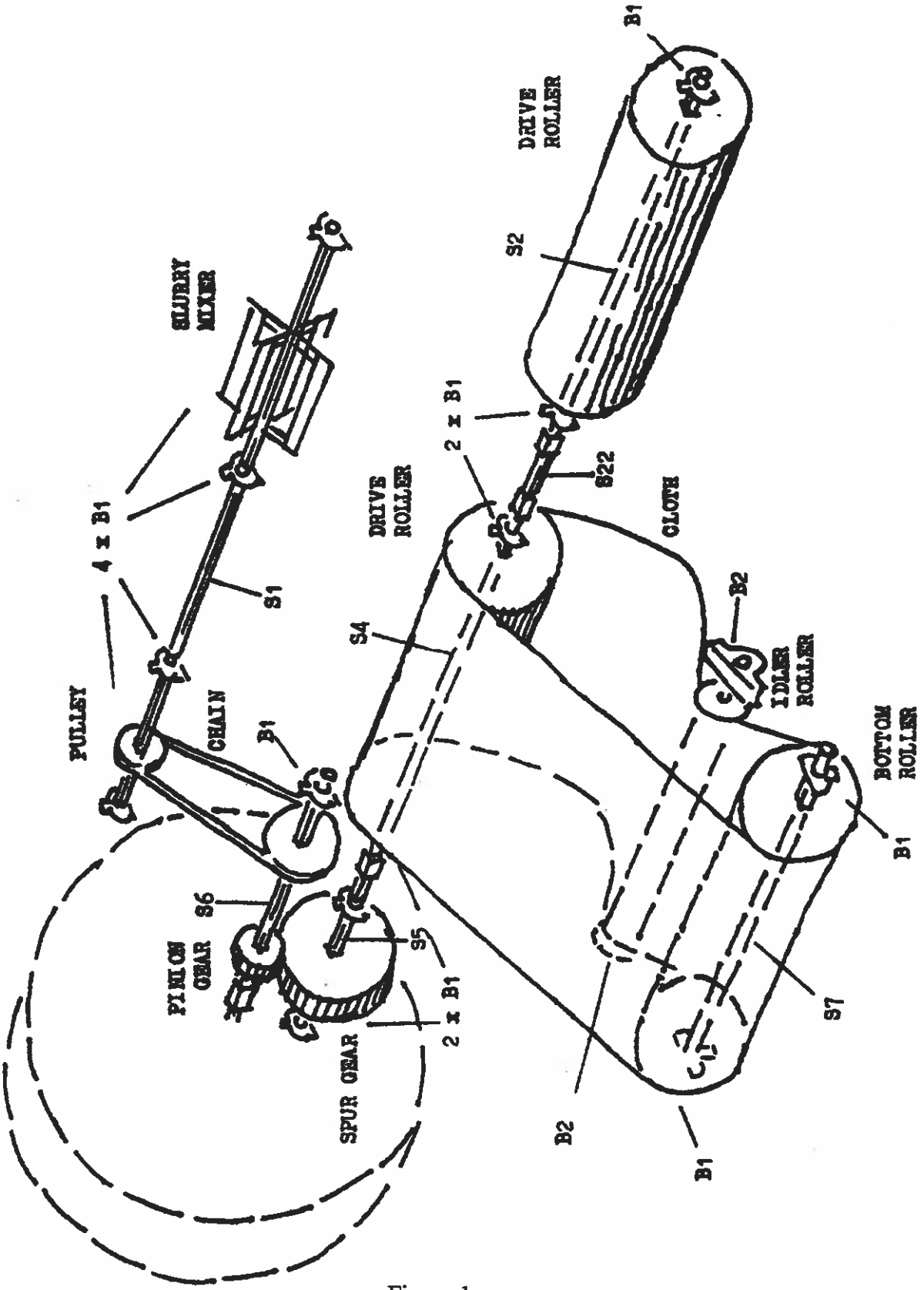


Figure 1

The shaft bearings (marked 'B' on the sketch), after a bit of fettling and the fitting of grease cups, performed satisfactorily when mounted. Here again, the DCC drawings were not adhered to and mounting was achieved by some judicious carpentry of the supporting timberwork. The water supply to both the slurry mixer and distributor plus the two troughs which have the dual role of supporting the slurry distributor chutes and putting water on the cloths in order to wash off the gangue, is fed by some genuine 1870s ABS Solvent Pipework. This taps off the equally authentic main underground water supply down to the buddle water wheel. In this connection, having now run the machine, it has become apparent that some regulating of the water is needed, as almost no water is going up the riser to the slurry mixer, whereas, more than sufficient is being fed into the two troughs and thence onto the cloths. This, I hope, will soon be sorted.

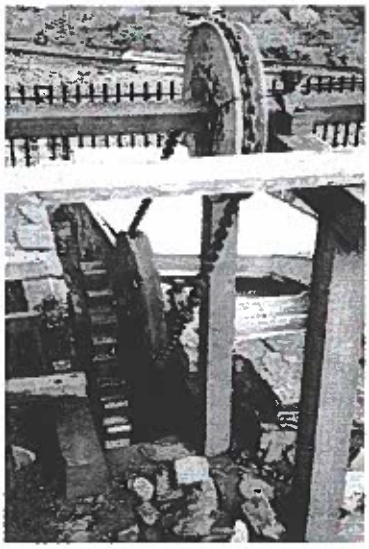
Wooden paddles were fastened onto the mild steel slurry mixer arms, fabricated by John Gardiner of Frosterley, before mounting on the upper drive shaft so that they rotated within the mixer box.

At some point in 1998, Ian arranged for us to look at various parts from an old buddle which were in store at Bowes Museum, of all places. It was extremely useful to have sight of these, as included were parts whose dimensions I would have otherwise had to guess. On the basis of what we saw, we had the wooden idlers turned and John Gardiner fabricated the mild steel dished end discs. We settled for beech, sourced from a timber yard somewhere Slaley way, as suitable material for the four idler bearings which were profiled by an outside contractor. The Bowes visit also gave us a clue as to the cloth material and also the cross section of the transverse cloth support slats.

Brunton buddles under trials. A closer view showing the chain drive from the wheel.
Photo Russ Parkin

Preparatory to sorting out the two main frames, the associated mild steel supports, height adjusters, cap plates, pins, etc, were made, yet again by John Gardiner. The two main frames were then re-hung from the existing support arms which project from the back wall and also the height adjusters sitting on the flagged apron. The diagonal support rails, upon which the cloth

slats slide were then fastened to the topsides of the main frames – or was it the other way round? In recognition of modern health and safety standards, the four height adjuster posts were rawlbolted down to the apron to get rid of their instability.



Close up of the chain drive and gearing
Photo Russ Parkin

Having been given the optimum cloth speed as being 15 feet per minute and a theoretical water wheel speed of 10 rpm, the detailing of the spur and pinion gears went ahead. After initial set-backs in seeking a founder who would cast them at an affordable price, it was finally agreed to have them made by George Robinson at Liverton Mines in East Cleveland. He really did us proud in conjunction with a self-employed pattern maker who by some miracle managed to interpret my drawings accurately. Consequently, when they were erected, they needed only a little fettling with an angle grinder to get them to run smoothly. However, in deference to the founder's preference, not to attempt to cast the gears complete with square holes in the centre to accommodate the mild steel shafting, the centres were cast solid. This meant, once again, enlisting the help of Jon Watson, who took on a rather messy job, producing a good solid shaft connection.

The next difficulty was that, in order to make sufficient room for the 34.5" diameter spur gear a recess had to be cut in the water wheel plinth, a small requirement apparently overlooked by the DCC and hence the MSC people who I believe rebuilt it. Thank goodness for the inventiveness of Mr (or is it Herr) Stihl!! *(maker of saws capable of cutting stone etc. Ed)*

Close up of gear-wheel and top roller
Photo Russ Parkin

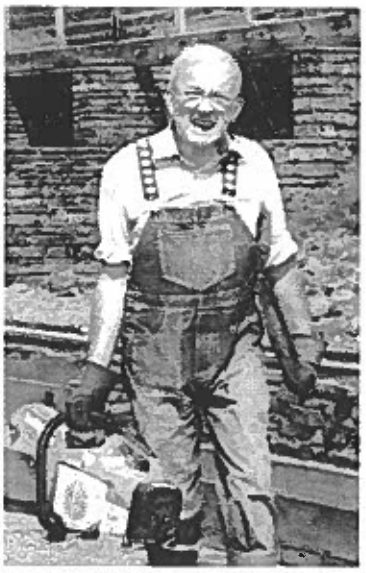
Meanwhile, the make-up of the two cloths was begun. To attempt to maintain a reasonably constant support lath pitch of 90 mm, as well as a uniform cloth width, the material being wider than required, which allowed the selve-edges to be double turned in, a wooden template was constructed. First the support laths, having been cut to length, were secured on the template with wedges, the cloth and laths drilled along the doubled edges to accept the copper, bifurcated rivets and the cloth marked-off to enable ⅜" copper tacks to be inserted across the breadth of the cloth into each slat in a reasonably regular and neat fashion. This operation was carried out in bites of approximately five foot sections, being limited by the length of the template frame. To avoid paying that crafty old Brunton his exorbitant charge for his patented cloths, our equally sly Project Office bought in non-rotting polypropylene(?) but canvas-looking material and I challenge anyone to spot the fraud – sorry, substitution!

In order to carry the drive from the water wheel to the slurry mixer two wooden pulleys were called for. During the visit to Bowes Museum, we also saw a fragment of what was believed to be a driving pulley from which I calculated their respective diameters, necessary to gear up the rotation of the mixer at a ratio of 1:1.5. These were turned out of two pieces of glued and mortised ash by Walter Gundrey of Alston and mounted onto their respective square shafts with mild steel reinforcement plates on either face. After some debate among the experts (count me

out!) as to the relative authenticity of drive between the two, mild steel chain was eventually chosen and seems to do – and look – very well.

The last task was to introduce a control valve into the main 160 mm diameter water feed pipe which leads from a sump near the 'Big' Wheel, some 2' 6" under the boarded area to the buddle water wheel riser. The purpose is to cut out the demonstrator having the chore of removing the grating, scrabbling in the water to take the bung out of the pipe end, walking back down to the buddle and waiting for the water pressure to build up, not to mention reversing the process on completion. To this end a hatch was cut out of the boarding nearest to the Buddle and, after exposing the pipe, an ABS plastic ball valve dropped into place. The ever-resourceful Jon Watson cannibalized the original valve key so that a stub is left permanently in place on the valve and visible so that the demonstrator can lean over the guard fence, slot on a long key and open the valve, getting instant water pressure. As anyone who came to the launch will have seen, some minor adjusting and tweaking is needed, as perhaps the original millwrights also found.

After having acknowledged, at various points in this saga, the valuable input of those friends of Killhope, with a deliberate small 'f', I must in all justice, end by pointing out that the restoration of the Brunton buddle is due in no small measure to all those sub-paying FoKs who work behind the scenes supporting and finding the funding.



Ian Jowett - the man who built the buddles (carrying his Stihl saw)
Photo Russ Parkin

In his Historical Notes on page 25 of the last newsletter Ian Forbes referred to Colin Short's important piece on the Brunton buddles in newsletter number 7. Colin revised and updated his work in our publication Friends on the Northern Lead Dales which is still available at Killhope and elsewhere. *Editor*

First an apology to Ian for imposing the additional burden of writing an account of several years hard labour on top of such a mammoth task. Unfortunately because it was such a single handed effort no one else could begin to record the work. Nor do I think it was possible for Ian to give measure to his efforts in a relatively short piece. In addition, jobs which took weeks to plan, organise and execute, fade into insignificance or are forgotten at a distance of a few years - especially as Ian claims his memory isn't what it used to be! So for example rivetting and tacking the lathes to the belts which had to be accurately done and must have taken ages is dismissed in a sentence or so. (I think primary school children should be made to count them - that would teach them their tables!) Then if you factor in the Killhope weather which Ian generously describes as 'Scandinavian', designing and sourcing (on the cheap) one off parts, coping with existing work which isn't quite in the right place, generally having limited funding and tools, not to mention no real working drawings then you are faced with a big job. This is a wholly inadequate attempt to do some sort of justice to what Ian has achieved. I hope you will all come and see his work and perhaps ponder what hidden hours lay unseen in our Brunton buddles. Ed.

The Brunton buddles - in the beginning there was ... the wheel

Bryan Chambers

If Ian Jowett's memory is correct (!) he started work on the buddles in 1997 but those with a long memory will know that work actually started much earlier than that. In fact this was one of the first development projects attempted by the Friends. We had made the long wooden handles for the original iron hotching tub I think in Alan Blackburn's workshop at Rookhope and around the same time we made the side frames with the rounded ends for the Brunton buddles upstairs in what is now the company office in the mine shop. Later the upright height adjusting posts at the lower end of the frames and other bits and pieces were made in the buddle-house over a period of perhaps a year or two. Conditions were a bit primitive and tools limited or less than ideal and work eventually ground to a halt when we tried to make the rollers - in spite of ingenious efforts by Russ Parkin which included making a crude lathe on which to do the turning! There was no question of buying such items in those days and when the Eric Ryan wheel project came up all efforts were concentrated on that - another epic tale which might be told another time.

The Brunton buddle wheel as it arrived from Allendale summer 1985.
These were the days of big hair! *Photo Bryan Chambers*

So when did all this happen? Well our inaugural lecture by Sir Kingsley Dunham in Stanhope Town Hall was in March 1985 and an information sheet dated May of that year reported that a waterwheel which had driven the Brunton buddles at Killhope had been brought from Allendale, where it had been used for generating electricity, back to Killhope by the Friends. This was a major capture so we really must have hit the ground running!

The wheel was in a very fragile state and rested upon straw bales in front of the mine shop. It was however largely complete and eventually we were able to use original items such as the oak spokes as patterns to make new parts. The cast ironwork was in a bad state with repairs on repairs and lots of cracks and this restoration was carried out by specialists in Ponteland. I think the welding rods cost £120 so with transport and labour this was a big undertaking at the time.

Over the following winter parts such as buckets and spokes were made with hand tools and when the ironwork was returned and painted segments of the wheel were built up, I think in the stable of the mine shop. The following summer under the guidance and inspiration of Russ Parkin the wheel was built up *in situ* just as Dorothea Restorations did with the big wheel years later, ie rim sections were added diametrically opposite each other until the circle was complete - except that it didn't meet up. In situations like this however Russ excels and the thing was eventually persuaded into line and reasonably true without breaking anything - no mean feat considering the age of the ironwork.

To give some idea of the difficulties of working on site at the time, any holes to be 'drilled' in wood were made by means of a poker heated in a brazier! We were aware of the dangers of working with even such a small wheel and care was taken to chock up completed sections while work was going on elsewhere, but I remember one incident where one swung down and bent a ⅝" mild steel bolt like a stick of candy rock - a sharp reminder of what we were dealing with.

Anyway thanks largely to the efforts of Russ Parkin the wheel was eventually complete - but lacking a water supply. So in keeping with the spirit of the 'age' and completely in keeping with Russ' ingenuity he collected enough water from the burn in a plastic chemical sack and proved that these things could be made to work by dumping the contents into the top buckets. The wheel then dutifully did a half turn which satisfied us until a proper water supply could be arranged. This was achieved by late summer 1986 and a small group of us including the late Eric Ryan, who was the early Durham County Council driving force behind the whole Killhope project took great delight in witnessing the first turning of the Brunton buddle wheel. Happy days - though I doubt any of us would have guessed how long it would take to complete the project.

Roman Bucket Pump

Bryan Chambers

Roger Bade has attended the lecture given by the engineers in charge of the reconstruction and sent me more information on the project. Some of you may have seen the two recent Time Team TV programmes which illustrated a number of practical problems which arose during initial trials. The phenomenon of 'creep' - the chain gradually getting out of synchronisation with the drive wheel for example - demonstrated that even specialist engineers sometimes have to resort to 'suck it and see' followed in this case by a bit of hand-saw relieving of leading edges of the buckets. This last rough work was in sharp contrast to the beautifully finished and jointed frame work - much of it done with hand tools.

The engineers calculated that power must have come from a capstan which could be turned by humans or animals. 0.3 horsepower being required to raise the chain which would have weighed up to 500 kg. The horizontal motion of the capstan is translated into the vertical motion of the chain through gears. I don't think the cost of this project was mentioned but I'll bet it was more than we spent on the Brunton buddles.

buddles. The pump is now erected in the garden of the Museum of London where it will remain until May. I'm sure its worth a look if you happen to be passing.

The information sent by Roger will be deposited in our archive in due course.

Pollution of the Wear

John Leland, antiquary to King Henry VIII visited Weardale in the 16th century during his travels round the country collecting information for the king. He noted, 'Ther is both yren and lede awre and also cols in weredale. The water of Were is always of a trobeylid color as cumming throughe morish and owrish soyles. Little or no fyshe taken but eles in the upper parte of Were, for fyshe can not there well lyve in it.'

The piece goes on adding that William Henderson, a noted 19th century angler often fished in the dale but lamented that hushing killed the fish and so ruined the sport.

In case you're wondering according to the OED 2nd edition electronic version 3 trobeylid means troubled, in the sense of disturbed, stirred up, muddy. So as Doug Tyreman suggests the sentence seems to convey the meaning that the Wear was a muddy-coloured river since it soaked through moorland (making it dark-coloured) and ore-laden soils (making it turbid).

I wonder if this really would account for a lack of fish or would there be sufficient hushing in the 16th century to kill them?

(From the Friends of the Weardale Museum Newsletter 2003).

My thanks to June Crosby and Doug Tyerman for help with this piece. *Editor*

Medieval charcoal making and iron smelting 2003

Ros Nichol

Readers may remember the medieval charcoal-making experiment in June 2002, when some participants, having carefully guarded against fire, narrowly escaped drowning and hypothermia in the worst storm for years. However, the experiment was successful and produced 85 kilos of charcoal. We have decided to repeat the charcoal making from May 24th to 26th, 2003, and then to use all our charcoal in an attempt to produce iron by medieval smelting methods, on 5th July 2003. We need at least 150 kilos of charcoal and 30 kilos of iron ore to attempt the iron smelt.

Both these events will take place at Killhope, in the clearing in the woods near the replica stables. The charcoal will be made in the pit which members of the group dug last year, and the iron smelt will take place in a small furnace which we will build of stone and clay (under a shelter - we are learning). We will replicate medieval iron smelting techniques as far as they are understood, attempt to produce a 'bloom' of iron and see if any resulting slags resemble those found on medieval bloomery irons melting sites.

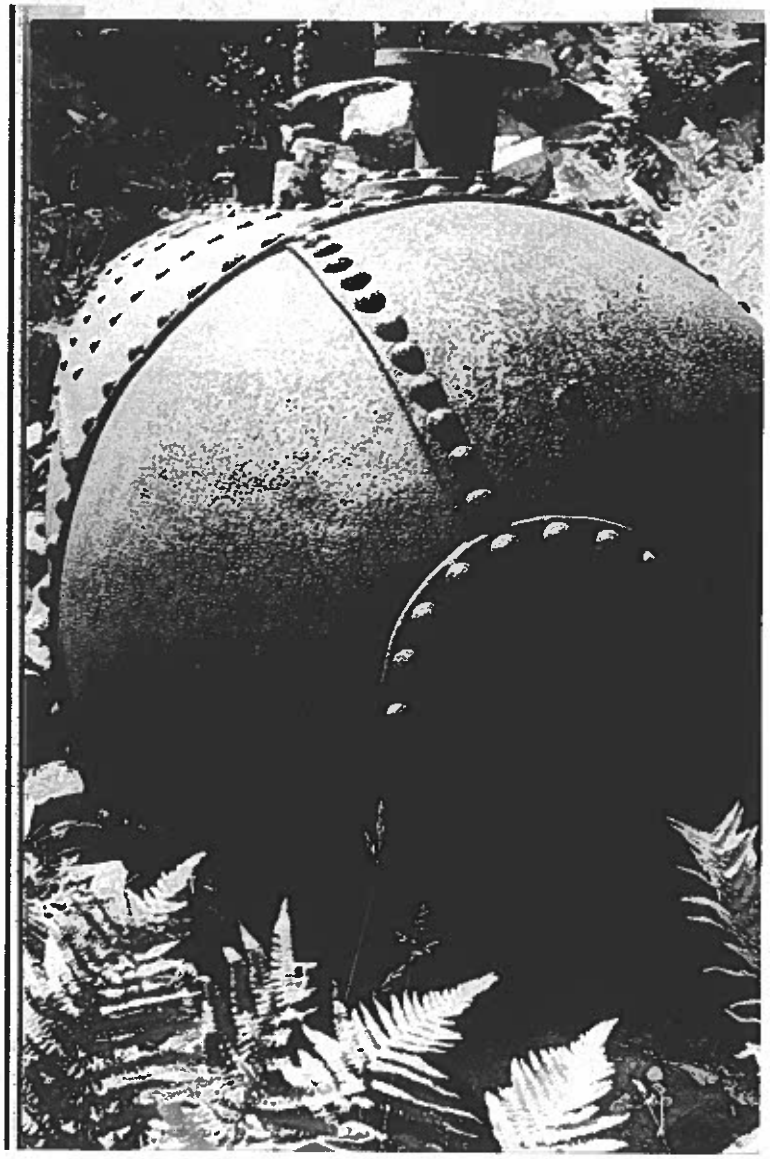
If anyone has any spare hardwood, we would be grateful for it; please deliver it to Killhope or contact Ros and Tom on 01388 517573. If anyone is interested in helping in any way, please contact us. We also require leather to make the bellows - any old leather coats in the attic?

The main period when help is required is from 1st to 26th May when drain digging is needed and furnace platform, furnace shelter and bellows and their support structure will be constructed. Bellow operators are required on 5th July - training given, no previous experience necessary. Can you help to bring iron smelting back to the dale (lapsed since the closure of the Stanhope Blast Furnace) - ring 01388 517573.

The compressed air receiving tank at the Sir Francis mine, Gunnerside, North Yorkshire

John Burgess

After reading John Morrison's 'Lead Mining in the Yorkshire Dales' published by Dalesman Press, I was interested to see the large remnant of the compressed air drilling technology introduced at the Sir Francis Mine in the late 1860's by Sir George Denys. John Morrison's book has a photograph of the mine from a distant view point but I thought readers might be interested to see my photographs of the receiver for the compressed air which apparently required twelve horses to move it to its final resting place. The Sir Francis level (GR SD 939000 Landranger Sheet 98) is just to the north of the ruined mine building and according to Morrison had only advanced 500 metres between 1864 and 1869, after which period the introduction of dynamite and compressed air-powered drills speeded up progress enormously. Power for the compressor came from a 12 metre waterwheel, the pit of which is adjacent to the cast iron air receiver.



The compressed-air receiver end-on

Photo John Burgess

Mine building from distance. (The compressed air receiver is in the shade under the second tree right of the mine building, as is the entrance to the Sir Francis Level.)

Photo John Burgess

The compressed air receiver seen close-up

Photo John Burgess

A Quiz

We didn't have the usual harrowing examination of our knowledge of the leadmining industry at this year's Christmas Social settling instead for a relaxed viewing of slides of some of our archive material. However just to ensure your grey cells don't wither and die completely we invite you to try the following extracted from a quiz intended for upper Weardale folk. Les Blackett, one of our members, devised it as part of the Wearhead Playground Appeal which is now successfully completed, so the material is now declassified and Les has kindly allowed its use for your amusement and edification.

1. Vedra is the Roman name for which upper Weardale Village?
2. What is the name of the mine at Killhope?
3. What have Gnat, Midge and Edith in common?
4. Which family owned the Whinstone quarry at Cowshill during the 1920's?
5. "The Devil's Chair" is the local name for which elevated place?
6. When was the official re-opening of the Park Level Mine at Killhope and by whom?
7. Near which rivers or streams would you find the following 18th century lead mines? (a) Drysike (b) Claypath (c) Todstones
8. High on the fells above Burnhope there is a boundary stone with the following on it: GH, EC, DC and 1880. 1880 was the date that it was erected but what do the 3 sets of letters stand for?
9. When did the Weardale Lead Company take over the mining leases from the Blackett Beaumont Company in Weardale?
10. Accordingly to William Morley Egglestone's poem "The Lost Children", where were the children eventually found?
11. Who wrote a booklet entitled "Times Past in Upper Weardale" approximately 50 years ago and where did he live?
12. What is the name of the highest point in Weardale?
13. High on the moors of Killhope during the summer of 1921, what did a Shepherd called Titus Harrison find in a "peat brock"?
14. What or whom were Clayton and Silver? *(Surprisingly nothing to do with the Lone Ranger, Ed's hint)*
15. Joseph Fairless's body lies in Copthill Cemetery. He died on Monday 13th August 1855. How did he meet his death?
16. Killhope Lead Mining Museum has been used as a set for which two Catherine Cookson films?

The Bollihope Hoard

Bryan Chambers

If this title conjures up visions of Heathery Burn or Sutton Hoo then I have to admit it is a shade tongue in cheek. The 'finds' in this case consisted of a house brick and one other object which was from our point of view, much more intriguing. These were recovered when a party of the excellent Durham County Volunteer rangers were replacing a wicket gate at the east end of Bollihope lead smelter site. The Rangers carry out all manner of conservation work and steward the comprehensive County guided walks programme. They knew of my Killhope connections and rang me with a description of the mystery piece - 'grey in colour with some lettering on the back'. Not much to go on perhaps but especially since I have known the site since I was a lad I thought it worth investigation.

The site today. Photograph taken from approximately the same viewpoint as in 'Raistrick & Roberts' photo 130. Wheel pit roughly at gorse buses mid right.

Photo B Chambers

The Bollihope valley lies just south of Frosterley in Weardale with the Bollihope Burn joining the main river just east of the village. This quiet little backwater on the south eastern fringe of the North Pennine orefield contained all the elements of what geographers like A E Smailes call a 'lead dale' - mines, quarries, dual-economy small holdings, crushers, hushes, open cuts, water-balances, various railways and inclines, lime-kilns as well as the smelter. This lies about half a mile south of Hill End at GR 016353 and is accessible via public footpath though the site is private land. While the area has not been totally cleared it is difficult to detect original features except the water race which was renovated and diverted after the war to run water over a small waterwheel to generate electricity in the remaining building on the site. Mill Cottage is now a holiday home and always seems to have been a dwelling. Adjacent was another stone slated building which I remember seemed to have last been used as a workshop, perhaps a blacksmith's. This disappeared in the 1950's. The flue seems to have zig-zagged up the site to the stack in the northerly corner. Again this was felled in the middle of the last century. A steeply sloping lead

smelter site may not strike you as an obvious place for a holiday home but soon after the war assorted old buses and huts appeared on the actual site and now more modern accommodation is available mostly on the flatter land above where there was a small reservoir. Half a mile east of the smelter the famous Slitt vein crosses the valley at a spectacular gorge where the Bollihope branch railway extension has cut its own gap through the altered limestone.

Relatively little seems to have been written about the smelter itself though I understand one Christopher Wall built it about 1667 under licence from the Bishop of Durham. While both the London Lead Company and the Blackett Beaumonts had mines in the valley a preliminary search of directories shows no evidence of their owning or leasing the smelter. The last owners were Jacob Walton & Co and there are no entries after 1896. Closure could have been around 1890 and a photograph taken in the early years of the 20th century shows the place in a state of dereliction. Local ores were relatively silver rich and Surtees, I believe, recorded that the first consignment of that metal left the mill on 19th November 1786. Although the smelter eventually had the Pattinson process ('an improved method of separating silver from lead' British Patent No 6487 October 28th 1833 H L Pattinson) it never had the more efficient reverberatory furnaces. However it does seem to have been able to handle more 'difficult' ores. All of which may or may not have a bearing on the investigations which were to follow.

The house brick found in the dig was marked 'EH' in an old style lettering and devoid of any 'frog' or holes found in modern bricks. Beamish Museum quickly identified the long gone makers as either East Harle colliery near Ferryhill or East Hetton colliery, Kelloe. The story of the second object was to be more difficult to unravel.

It was a fragment of a circular base of something like a heavy duty plant pot. The material was about 1" thick, dark grey, had a greasy feel and left a grey deposit on your hands - the first clue!

I guessed it contained plumbago[1] (graphite) the lead used in pencils or for those of us of a certain age, black lead as used on fire grates - not the stuff mined at Killhope. On the underside was sufficient lettering to guess the maker's name might be Morgan (or Morganite)[2] - a company I associated with the steel industry so why not lead smelting?

Really that was about the limit of my knowledge so it was time to call in experts with specialised knowledge. All quickly agreed we had a piece of clay/graphite crucible. (A crucible apart from being the name of a theatre where snooker is played, is simply a container, often shaped roughly

---

[1] Graphite or plumbago; or black lead Mineral allotrope of carbon. It is dark gray to black, opaque, and very soft. Its layered structure, with rings of six atoms arranged in widely spaced horizontal sheets, gives it its slippery quality. It occurs in nature and is used (mixed with clay) and the "lead" in pencils as well as in lubricants, crucibles, polishes, arc lamps, batteries, brushes for electric motors, and nuclear-reactor cores.

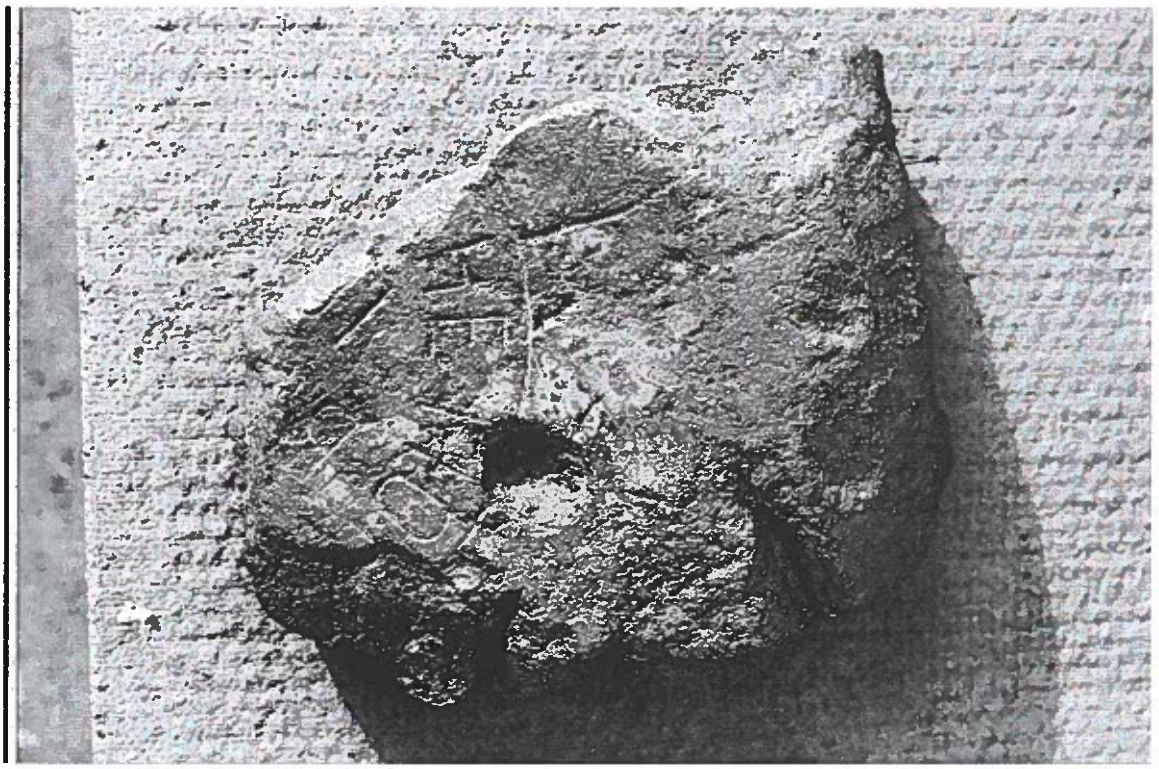
[2] In 1855, William Vaughan Morgan acquired the merchant and druggist business of Halse & Sons in the City of London. Trading for a period under the name of Morgan & Rees, the brothers Thomas, Walter, Octavius, Septimus, and Edward joined forces with William and in 1856 obtained a technical licence from an American company for the manufacture of crucibles.

The purchase of a factory in Battersea, London followed. By 1857, the works were busy enough for the Patent Plumbago Crucible Company - as it was then known - to display a range of crucibles at the Crystal Palace Exhibition.

The Company's reputation won it a Gold Medal at the Paris Exhibition in 1868 and international trade developed throughout Africa, South East Asia, the Americas and Europe. In the late 1870's the Company changed its name to The Morgan Crucible Company and eventually became a public limited company in 1890.

Since then the Group has expanded its base to include insulating wool and a wide range of new thermally efficient refractories in the companies throughout the world which now constitute the Thermal Ceramics™ business in Morgan's Ceramics Division.

Morgan cut its first electrical brush from graphite early in 1903. Over 100 different grades are now used to meet worldwide needs. As its expertise developed further, Morgan established carbon brush manufacturing plants throughout the world. Today Morgan's Carbon Division includes the world's major electrical carbon business.



Fragment of underside of crucible base *Photo B Chambers*

like a plant pot, in which metals can be melted perhaps to make special (crucible) steels or for assay work[3]. Ours probably had a base of at least 10" and extrapolating from tables in Morganite's current catalogue could have been about 2' high. This catalogue incidentally, shows clay/graphite crucibles glowing red when filled with molten metal which was not something I had appreciated would happen.

The other vessels used to hold molten metal in the lead industry can be eliminated. Pattinson pans survive and are cast iron and their shape - a large diameter in relation to their depth make them unlike our specimen. Similarly lead slag pots whose shape is similar to that of our crucible have to be in cast iron to take the stress of emptying when cool. Lead ingot moulds are of course completely the wrong shape.

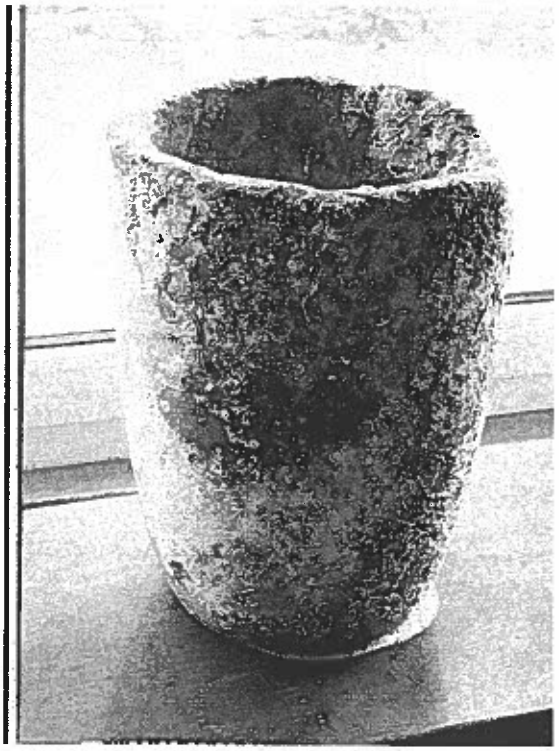
So at this point we know what the mystery object was, we know who made it, what it was used for and that versions of it would have been used in the lead industry. Therefore mystery solved? Well not quite! As our experts soon pointed out as lead melts at around 373°C iron crucibles are quite adequate and there would be no need for the more fragile and ultimately, at least, more expensive clay/graphite ones used for steel which has a melting point of around 1550°C. In short it would seem that our piece doesn't 'belong' at Bollihope after all.

So in the best Time Team tradition it was back to the drawing board or clutching at straws time if you prefer. This resulted in some possible explanations:

[3]The crucible process was invented in Britain c1740 by Benjamin Huntsman, who heated small pieces of carbon steel in a closed fireclay crucible placed in a coke fire. This was the first process used in Europe in which the temperature (2,900°F, or 1,600°C) was high enough to melt the steel, producing a homogeneous metal of uniform composition. After 1870 the Siemens regenerative gas furnace replaced the coke-fired furnace. Capable of producing even higher temperatures, the Siemens furnace had a number of combustion holes, each holding several crucibles, and heated as many as 100 crucibles at a time. All high-quality tool steel and high-speed steel was long made by the crucible process. In the 20th century the electric furnace has replaced it in countries with inexpensive electric power.

1. Bollihope would have had an assay house where ore samples were analysed and there was ironstone hereabouts[4] so just maybe they ran some trials on that mineral which would require plumbago crucibles. Similarly there was some copper (melting point 1083°C) in veins a little to the west at Whitfield Brow. As it happens our sample, while by no means pristine, shows no sign of being used in anger.

2. In its later years the smelter was connected to the outside world by a standard gauge railway via the Bollihope branch of the Wear Valley Railway so perhaps our piece came in with a load of waste from a local iron works such as Wolsingham or Tow Law (to make a road or repair the track bed). The new gate erected by the Rangers stands on this old track-bed at the east end of the site with Bollihope Burn threatening only a few feet away which makes it a likely spot for repairs.



Ceramic Crucible
Photo Peter Bowes

So far that is the best we can come up with - though investigations continue and as ever we welcome further suggestions or comment.

As I mentioned this article was only made possible with the help of a number of specialists and one of them actually has a crucible which now serves as a plant pot holder. It is 16" high and 12" diameter. This one is ceramic, made by Royal Doulton and is covered in sea shells because it was recovered from the sea bed off the Cornish coast! Sadly enquiries with the company have revealed no significant information on this particular specimen.

My thanks (in no particular order) to Russell Parkin, Peter Bowes, Dick Graham, George Pickin, Jake Almond and Peter Wilkinson and others who generously gave much time and information to enable me to write this article.

References

RAISTRICK A AND ROBERTS H, *Life and Work of the Northern Lead Miner*, 1984 NMRS
Directory of Co Durham, 1851, Hagar & Co
Post Office of Co Durham, 1858, Kelly
History, Topography & Directory of the County Palatinate of Durham, 1855and 1894, Whellan

[4] Ironstone was mined near White Kirkley about one mile east of the smelter and sent by rail to the Bolckow and Vaughan works for a few years around 1850. Some maps also show bog ores present a little to the north of the smelter.

Recently, Ray Thompson one of our members loaned me a book called Wanderings in the Pennines, Palmer WT, Sheffington & Sons Ltd, 1951. In this the author ranges over many aspects of the Pennines as he observed them on long walks in the first half of the last century. There are some mining references including the following. As usual I welcome any comments or further information. *Ed.*

"WARDALE HEAD" TOAST

St. John's Chapel, seven miles from Stanhope, is the last considerable place on the road to Alston before it crosses the border of Durham. Lead-mining brought it fame, and once it had a market. In days of prosperity the toast in Upper Weardale would go:

> Up wi' leede (lead), and down wi' breede (bread),
> Is what we drink at Wardale Heede (head).

Great fortunes were made in Weardale lead. At Black Dean, the Dick Whittington of the North—Roger Thornton, of Newcastle-on-Tyne—mined silver and lead when Henry IV was king. The city on the coaly northern river sings:

> At the Westgate came Thornton in,
> With a bap, and a halfpenny, and a lamb's skin.

But Roger's Weardale lead mines, from 1401 onward, contributed much to his wealth, so that he became one of the most opulent merchants of his time. On the banks of Harthope Burn, too, a wealthy fellow-citizen of Thornton's—Robert Rhodes, a great founder of churches—endowed in 1465 the chapel of St. John's, under the shadow of which sprang up the little settlement of St. John's Chapel. The mountain to the south of the village is known as Chapel Fell, 2294 ft. There was a market and annual fairs; and there is still, on the green of the place, a tiny Town Hall devoted to cinema shows several times a week. There were few inhabitants until the end of the 18th century; now there are between 800 and 900.

From St. John's Chapel there is a road in six miles to Langdon Beck; there is another along Ireshope Burn, crossing the hill to Green Hurth lead mines. Pretty waterfalls are very numerous among the folds of the hills from St. John's Chapel to the head of the dale. They do not occur on Wear itself.

Outside the High House Wesleyan Chapel, John Wesley delivered one of his famous exhortations during the first Methodist mission to Weardale about 1749. He was partial to scenery and people. Wesley often crossed to the dale from High Force in Teesdale, and in his journal described the view as "a lovely prospect; the green, gently rising meadows and fields, on both sides of the little river as clear as crystal".

Durham Miner Project

The Durham Miner Project will be operating throughout County Durham and part of Sunderland. It will involve Groups of local people researching their local mining history, including coal, lead iron and fluorspar mining. People involved in the research will also be introduced to a self-guided local history course, which will result in a recognised, accredited qualification. There will be no charge to do this course. There are three different courses. The courses will take place out in the communities on a variety of days and times.

The first course is a basic introduction to researching Local Mining History and explores the different methods of research available and shows how evidence can be used and presented. Upon completion of the course a Level One certificate will be awarded. As a follow up a Local Mining History – Advanced course is available. This explores Local mining history research in more detail. Upon completion a Level Two certificate will be awarded. The third course that is available is the Local Mining Oral History. This is an introduction to Oral History, and explores the value of oral history and introduces the learner to conducting an interview. It is an independent course to the other two courses and will lead to a Level Three certificate.

As the project progresses, research collected will be added to an exciting multimedia website in an effort to preserve our local heritage for generations to come. The research will be accessible to millions of people.

If you are a former miner willing to take part in an oral interview, or maybe interested in participating in one of the courses please contact Sharon Amesbury, Community Local History Co-ordinator, on 0191 3834478.

Quiz Answers

1. Wearhead
2. Park Level
3. Three of the narrow gauge steam engines used to construct Burnhope Reservoir
4. Monkhouse
5. Clivison's Currock
6. Friday 14th June 1996 by Tony Blair
7. (a) Scraith Burn (b) Heatheryburn (c) River Wear
8. (a) Greenwich Hospital (b) Ecclesiastical Commissioners (c) Duke of Cleveland
9. 1883
10. Francis Cleugh
11. John Harvey Walton, Corn Riggs
12. Burnhope Seat
13. The coffin of a Jacobite Soldier
14. Mine ponies used in Blackdene Mine
15. Shooting accident on Wellhope Moor
16. The Girl and A Dinner of Herbs

William Deans - A Forgotten Innovator?

Ian Forbes

Over the past few years I have had occasional conversations with fellow mining historians about someone called William Deans, and an iron foundry called Deans of Hexham who made mine machinery. Information about the business seems sketchy, but they were reputed to have supplied at least one hydraulic engine to the lead mines at Wanlockhead in Dumfriesshire, and a waterwheel at Tynehead mine was made by the same company (Friends of Killhope Newsletter no 43). The recently published "Lead Mining in the Derwent Valley" (Pirt and Dodds, Northern Mine Research Society Monograph No 70, 2002) identifies, from a parish directory, William Deans as a resident of Shildon near Blanchland in the 1820's, and lists him as an "engineer".

An item in the latest collection of papers from Jim Foster-Smith caught my eye, and sheds more light on this gentleman. The quotation in question was abstracted from a letter to the Mining Journal in November 1837. The letter was entitled "Water Power".

"...I have been connected with very extensive lead mines in the north of England for more than thirty years, and have known the same application of water power in some of them, for pumping and other purposes, during all that time. The first engine of that description used in England was at a lead mine belonging to T.W.Beaumont Esq., called Coal Cleugh, in Northumberland, and was erected about fifty years since by Mr Westgarth...The next engine, of the same description, of which I have any knowledge, was used at a lead mine called Crash Purse, near Chesterfield. A plan of this engine was taken by Mr W. Deans, an engineer employed at the Derwent mines, in the County of Durham, in 1810, and one was erected by him at these mines, which has continued working up to this time.

The engines I have named were of single power, taking in water on the top of the piston only. About 14 years since, another engine was required at the Derwent mines, and Mr Deans was directed to make it of greater power; he therefore applied himself to improve upon his former plan and put up a very powerful engine at the Jeffries Rake Lead Mine, on the same principle as the double-powered steam engine - this was the first application of the pressure to both sides of the piston, and it was found to be a great improvement.

In 1831 the Marquis of Bute, requiring some additional pumping power in his lead mines at Wanlockhead, and having learned that a great improvement had been made in the application of water power engines, at the Derwent Lead Mines, sent an agent there to inspect them, and on his report determined to employ Mr Deans to erect one, which was done in the early part of 1832, and which superseded the use of two very expensive steam engines.

Last year he put up another for the same nobleman, in the same mines, and as the space for the cylinder, if placed in an upright position, required to be cut out of very hard rock underground, at a great expense, he devised the method of placing it horizontally, and in so doing discovered he could also simplify the machinery attached for pumping...Mr Deans...is also preparing one of greatly improved construction, intending to give it a rotative motion, for the purpose of applying it as a drawing engine".

This letter to the Mining Journal was written by John Dolphin, who was associated with the Derwent mines, and would therefore have been familiar with Deans' work. Deans' first engine will have been the one listed by Westgarth Forster in 1821 as working at Whiteheaps mine. It seems very likely that the second, more powerful, engine erected by Deans was the water pressure engine which gave its name to "Presser" shaft on Jeffries Rake. If this account is correct, then William Deans invented the double-acting hydraulic engine, in which water pressure was applied to both sides of the piston alternately. This places him as a link between the

work of William Westgarth and the much later work of W.G. Armstrong in developing the hydraulic engine for mining in the Pennines. Yet his innovation seems to be un-noticed and unacknowledged.

Can anyone shed any more light on the man and his work?

John Gall of Beamish Museum has unearthed some more poems with a leadmining connection and has kindly sent the following from 'Bonny Blanchland' by George Carr of Crook. John tells me that all he knows of the writer is that he seems to have been born in Blanchland but probably wrote the poem when living in Crook around 1890-1900. As ever we'd like to know more. My thanks to John for this item. *Ed.*

Bonny Blanchland

From here, the Old Park runs away
Right up to Deborah Wood,
And, where we see stone heaps today,
There Deborah Washing stood.

A busy place it used to be
With mills, and noisy jiggers,
Here tronking, hotching, you might see
Small boys who worked like niggers.

The water used to run down here,
It used to run down there,
But still or running, foul or clear,
"Twas working everywhere.

It drew the work from out the mine,
It washed it at the grate,
It carried off the small and fine,
The ore to separate.

It turned the many water-wheels,
It settled in the races,
To slecky pits the fine stuff deals,
The rest to other places.

But all is changed, the boys are gone,
The place is dull and drear
Where all was lively, now "tis lone,
No living soul is near.

The water still runs on I see,
The water-wheels are gone,
Where tubs and buddles used to be,
We look, and see there's none.

The jiggers mill, and tronking box,
Are not now to be seen,
Events, now held in memory's locks,
Are as they had not been.

And so it is, through all the dale,
From Deborah to White Heaps
From whence Boltburn its way doth wale
Through shallows and through deeps.

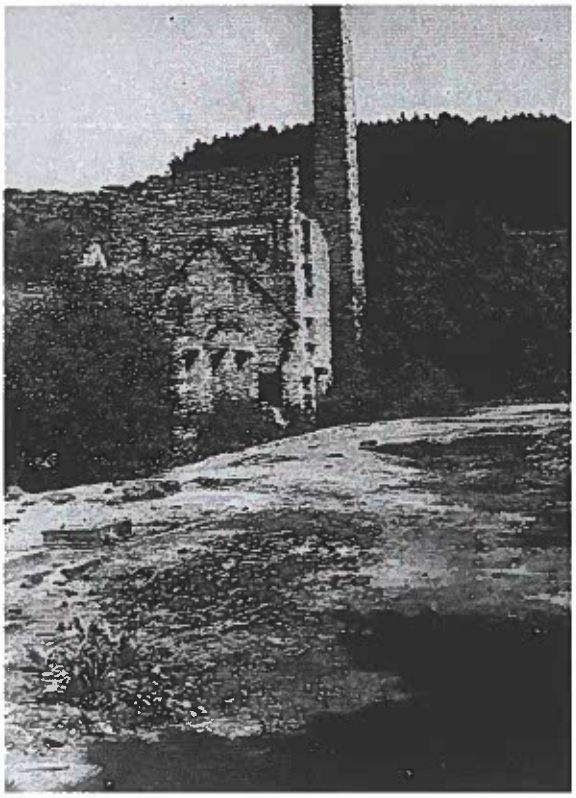
The houses are no longer homes,
They stand all tenantless;
Those gardens, where grew flowery blooms
Are now a wilderness.

The deep and darksome mine is full
Of water to the brim;
Of all that used, there's not a soul
To face its terrors grim.

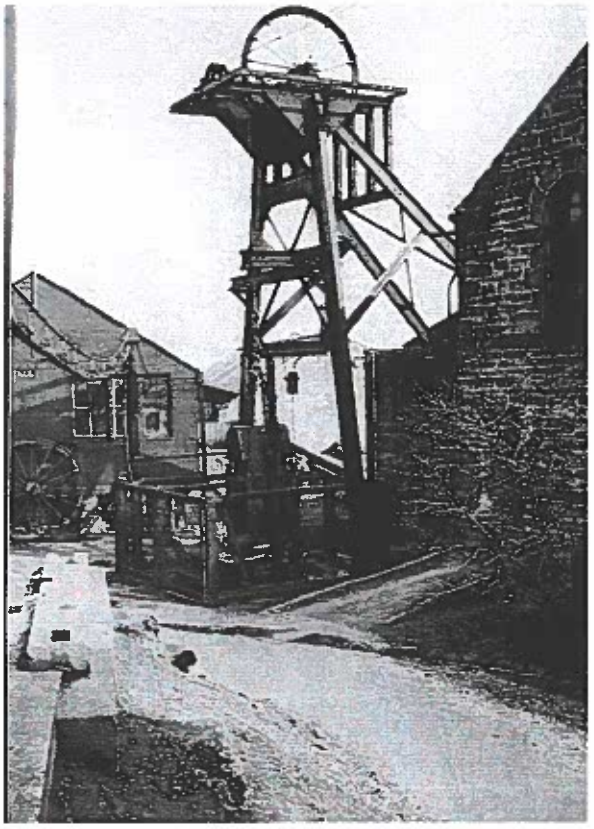
Rookhope reminiscences

David Scott

Mr David Scott hails from Northumberland and spent time at Stotsfieldburn mine, Rookhope as a teenager before attending Camborne School of Mines and moving to Canada where he now lives. He recently revisited the North Pennines and has kindly allowed us to share some of his early experiences of the area. I have compiled the following from letters received over the last six months or so and I think you will find this a fascinating insight of recent mining history. In addition he has sent copies of photographs of mine sites taken half a century ago which hopefully we will be able to reproduce below. These will be stored in the Friends' archive in due course. My thanks to Mr Scott for all this material. *Editor*



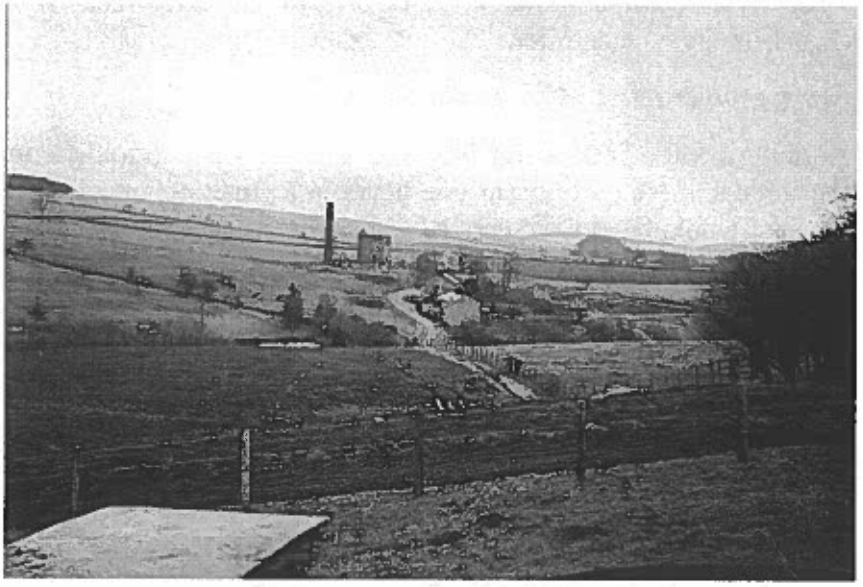
Langley Barony by Honeycrook Burn
4th August 1950
Photo David Scott



Settlingstones, Ellen Shaft
4th August 1950
Photo David Scott

I didn't know Tom (Wall), possibly by sight but not by name though if I had lived in Rookhope that would have been put right soon enough. I was one of the 'Weardale crew' living at what was then the Ireshopeburn Guest House (later Rancho del Rio and now the Weardale Inn - we think. Ed.), a long, low single storey lodge about a half-mile east of the village itself. Miners and mill people boarded there at the time. Four full-timers when I first went there including two drift miners from Stanhopeburn, (one had worked during the war years at Carricks iron mine - a Scotsman from Wanlockhead and a fanatic fly-fisherman) and two more later when Cambokeels reopened. It was a thriving establishment and when tourists started to arrive it was crowded. That was the time I would find my bed moved to a cubbyhole underneath the stairs and when that was in use, it was back to the turn-of-the-century - three to a bed. As you might guess our landlady/owner had a frugal nature, she knew how to economise but she did us well most other times.

William Wardrop was WLCo's general manager while I was at Stots and lucky for me he was. Most of the managers of the time were a crusty lot and hiring a 17-year old (i) who wouldn't be with them very long, and (ii) who they knew wouldn't work anywhere near hard enough to earn his pay, wasn't good business at all. But Wardrop was different, he helped many young and many not so young people, it was part of his make-up.



Stonecroft engine house 4th August 1950 *Photo D Scott*

He was an extremely busy man. At that time, a new shaft was being completed and equipped at Stots, Copt Cleugh and Wolf Cleugh were being reopened and Boltsburn Mill was being refitted with a flotation circuit and it's long unused jig plant refurbished. It was actually too much for one man to handle. He hired a freshly graduated engineer as assistant manager while I was there but I don't think it worked out and when I visited the mine four years later Wardrop was no longer there. Harry Green had taken over and was the company's new manager.

Years later when I came to think over those times I came to the conclusion that Wardrop may have had to pay the price for promoting too ambitious a programme that didn't live up to it's billing. With only a limited supply of cash, too much of WLCo's money was going out and too little was coming in and when Copt Cleugh and Wolf Cleugh didn't give immediate returns someone's head had to go. If the dice don't come up sixes the manager pays the price - if the project turns up roses he's a visionary, a hero. Not only in mining of course but by the nature of the industry cause-and-effect is much more obvious than in others.

Even at the time of reopening, Copt Cleugh seemed to be a long shot for the conditions of the late 1940s, it was known to be a narrow vein, lead wasn't fetching much of a price and it wasn't until long after that some of the logic supporting its development became evident. The crews were there for weeks on end clearing falls in the adit, retimbering and making the workings safe and when the vein was cut in September 1949, it looked a scrappy excuse for a vein compared to what they had at Stots. Ah! What profound distillations from a whole seven months mining experience! When all was said and done the vein at Stots was 10-12 ft wide, sometimes more and this poor relation was barely 2 ft wide carrying only a few knots of galena.

Perhaps it improved as it was drifted on, perhaps and more likely, it wasn't given the chance but whatever the situation, it was no more than a lean stretch and a common enough feature in a typical lead vein of the same type that had kept the LLCo and the Beaumonts in business for 150 plus years - and a dale's population in work for as long.

According to my reading, there was more hinging on the successful reopening of Copt Cleugh than finding new ore bodies though that was obviously the primary objective. Colouring the picture was the fact that as soon as Boltburn mill was brought into operation Sedling mill would close, (it treated Stots ore) and two or three dozen men would have to move house and find work elsewhere. There would be hardship. But, if a worthwhile mine could be brought in, even if it

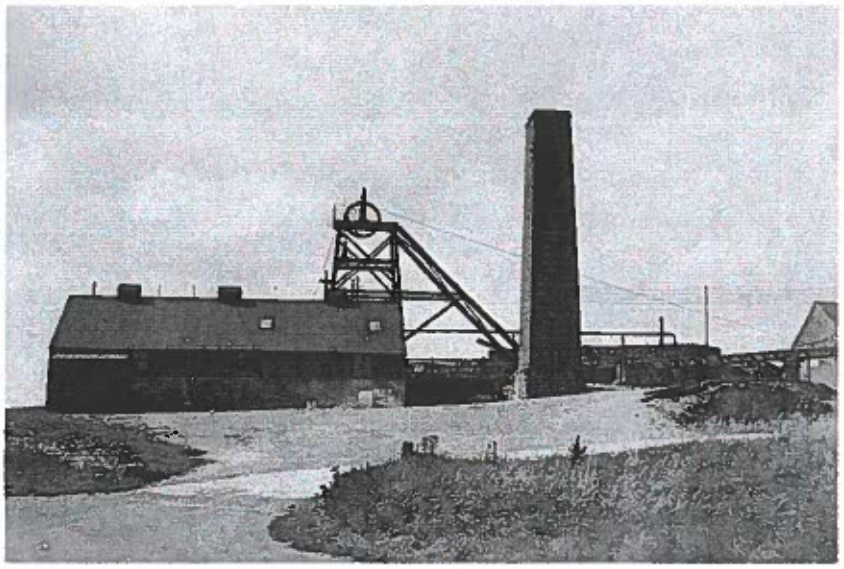
only paid its way, those men might continue at Sedling mill for many more years. Such considerations would weigh with Wardrop, he was that kind of man.

Sedling Mill

I recollect seeing a buddle at work on one particular visit. It was being used to sweep out the fines from jig concentrates. Hard to believe! But they had been doing that for years.

From another letter Mr Scott continues:

Actually I knew little about Wardrop excepting my sporadic contacts with him at Rookhope and the odds and ends of gossip one hears in a small community and if anyone is able to fill in any details I would be most interested to hear more of him. I did hear he was an active lay preacher.



Settlingstone, Frederick Shaft by side of Newborough
Grindon Hill, 4th August 1950 *Photo D Scott*

He made two verbal contributions to an Institute of Mining and Metallurgy (IMM) discussion on North Pennine ore deposits (a discussion of Dunham's seminal paper) and these would date in late 1944. In one of these, he says, "... I have been mining in Allendale and Weardale since the beginning of 1940 ..." I suspect, but it is **no more than guesswork**, he returned to the UK from Canada to join the forces and was probably told he would be of more value to the war effort mining lead and fluorspar, obviously essentials at the time.

I expect there was a certain amount of tension between Dunham and Wardrop but this is a given in the industry, it is par for the course. For the geologist, discovery is the ultimate prize. For the mine manager getting it out of the ground at a profit is his job and those objectives do not always mesh - it might be truer to say they do not mesh very often!

I also suspect Wardrop wouldn't have had an easy time of it with his peers elsewhere in the UK. He had come from a vigorous, Caucasian, mining culture in N America and was insinuated into an industrial environment that looked back to traditional Victorian and Edwardian values that had been leavened, to the extent they had been leavened, by the new wave of managers and engineers coming overwhelmingly from the colonies of Africa and Asia. (I sure could get into trouble saying things like that, but since I'm no longer hostage to 8.00 am - 5.00 pm employment I'll let it stand.)

Concerning dates: I started at Stots mid-January 1949, a few days before my 17th birthday, finishing October the same year. That's a little shy of nine months and seemingly not very long yet many of the sights and experiences of that time are as clear and crisp as yesterday. Ideally, I would have like to have stayed longer but there was conscription at the time and Prof Poole, Mining Dept, King's College, Newcastle, suggested that since I would be going into the army in short order, 22-months as it happened, it would be most useful for me to work underground at

three different types of mine until I was called-up. So, Stots was first, then Cornwall and finally a colliery which I have to say I most heartedly loathed, but that's another story. In fact the experience at Wallsend's Rising Sun colliery put me off any interest in coal mining for a long, long time though I discovered years later that something could be learned from it. One insight the experience did give me was that it was never any wonder why British coal miner's unions were so bitterly aggressive, I was given a glimmer of understanding.

Mrs Rowell was manager and owner of the Ireshopeburn Guest House at the time - eggs and chips on Thursdays, the rest of the menu I forget but everyone looked forward to that day, real chips too - none of the frozen abominations that pass for chips today. There was a long, driveway in front and parallel to the building and my later thoughts speculated it may have been a director's lodge but school it surely was.

When I look back I'm really appalled at what I didn't find out when the opportunity offered, there was so much I could have asked, or visited or otherwise looked into but didn't. It's quite shocking and there's no remedying it now. Twice I walked right by Nenthead smelt mill and didn't look in and it seemed reasonably intact, at least as reasonably intact as you could expect for a group of derelict buildings. What I would give to do that now! I did look around Killhope mine-site, the whaterwheel being the obvious inducement. There were no trees then and I see a brief note that I picked up a piece of amber fluorspar from one of the dumps!

I happened to comment to one of the women helpers in Killhope Gift Shop last year that there had been no trees when last I passed that way many years ago. "Oh," she said, "I can tell you exactly when they were planted, they started planting trees the same year I was born, and that was 1958." No coyness there! Altogether a most agreeable and helpful staff they are.

Mr Scott would like to know about zinc prices say from 1825 - 1910. Can anyone help? Ed.

Readers' Letters

Roger Bade has found some of the answers to his own queries in the last newsletter in Ken Pirt and John Dodds new book Lead Mining in the Derwent Valley (details elsewhere). His letter continues:

One of my questions concerning the re-use of winding machines and buildings is answered on page 115. Here one reads that the Whiteheaps winding house and its engine were transferred to Frazer's Hush sometime before the final closure of Whiteheaps in July 1989. It goes on to add that during 1986 Weardale Mining and Processing donated to Killhope a wooden wheelbarrow found in the Whiteheaps workings in excellent condition, and a modern wooden mine tub from the processing plant.

So in relation to my question as to why the Redburn gantry was not moved to Frazer's, I think what may have happened is that the winding down of SAMUK in 1982/83 intervened, and delayed the development of Frazer's. As Redburn still had to be reclaimed there was no longer anywhere for the winder to go. Therefore it was sold off and the loading gantry scrapped. When Weardale Mining and Processing took over all the operations of SAMUK and British Steel, they returned to the development of Frazer's in 1984/85, and found they had a disused winder and winding house at Whiteheaps, which they could utilize. There is however an outstanding question as to why Redburn had to be reclaimed, whereas Whiteheaps which closed at the same time didn't. Different ownership, different tenure, and different planning permissions perhaps.

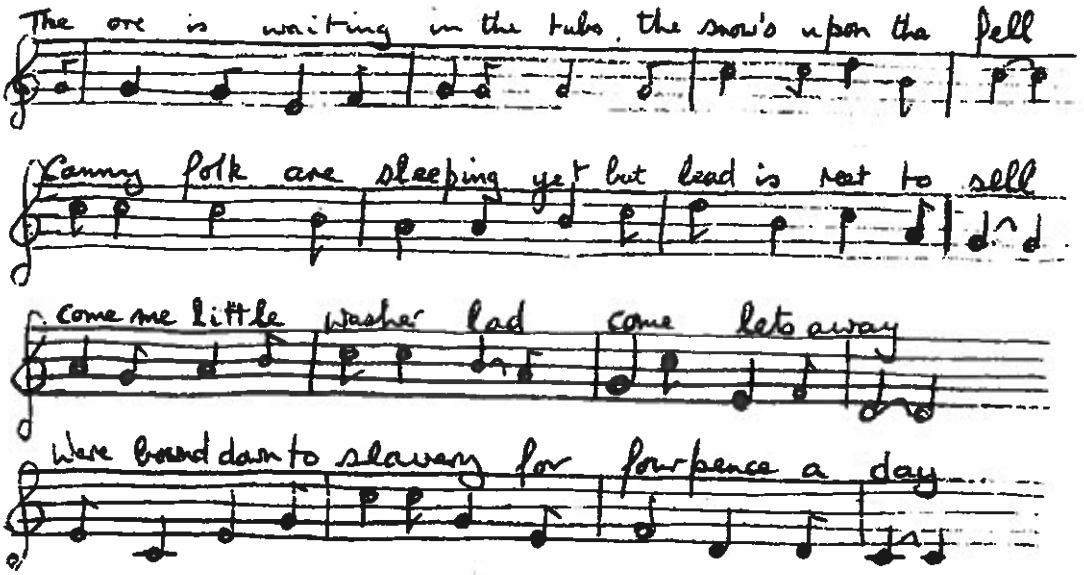
Roger Bade

Fourpence A Day

With reference to Prof Younger's "Readers Letter" in Newsletter No 57, concerning "Fourpence a Day" might I add that this is indeed a song. I first picked up on it from A L Lloyd's book of English Folk Songs (can't remember the exact title of the book, dated around 1968?) Which not only gives the words, but also the music for this tune. During the 1970's when I was an ardent follower of the folk club scene, I took the liberty of copying out this tune for my own reference.

A re-appearance of the words in the recent Newsletters subsequently spurred me on to dig this out again from my ancient notes (it is surprising what people don't throw away!).

On finding them still intact I have duly enclosed a copy for the interest of any of our members, in the event of any that might be musically inclined wishing to have a go at rekindling the tune for their own pleasure. I might add that the song should go particularly well when accompanied by a "squeeze box".



Ken Pirt

Derek Newby recently gave an interesting talk on North Pennine poems and folk songs to the Weardale Field Study Society and has kindly sent me copies of those with a mining connection. These will appear in future editions of the newsletter. Below are his comments on 4d a day which was featured in a recent newsletter. He also offers an additional verse.

Editor

I have not included the song Four Pence A Day, as it is quite familiar other than to say that the song is thought to relate to the Washer Lads strike that started at Greenlaws Mine (Daddry Shield in 1895). The washer lads dissatisfied with the amount of their Christmas holiday had placed a spanner in the works in the shape of a large mallet in the crushing machinery. Everyone was thrown out of work for months, but it was an act that largely benefited the mine owners, who owing to the poor price of lead at the time, did not have to pay any wages, while the mines stood empty. There is also an added verse from Swaledale, which is as follows:

Four pence a day me lads and its very hard to do
Working on the crusher all whole day through
Filling up the Jigger board to wash the spoil away
Ah work and slave for all me youth for fourpence a day

Derek Newby

Early Use of Dynamite

While looking through the Mining Journals, for family history reasons, I came across the following note in the Journal for January 28, 1871:

"DYNAMITE

Sir,

Some of your readers may like to have a practical opinion on the use of Dynamite for underground mine workings. I have recently had this explosive tried at two mines and have just received from one of the mine captains the following report:-

> 'We have found it to be of great advantage in wet ground. It is much more powerful than powder and water does not seem to affect it. In a mine so well ventilated as ours is, the noxious gas will do no injury. The men tell me that if they go in too quickly after blasting, they get a headache, so that I do not think it would answer well in a close mine.'

This report seems to establish the superiority of Dynamite over gunpowder for mining purposes in those mines where the ventilation can be made sufficiently effective.

London, Jan. 25th. J.G.B."

In the following Journal (February 4, 1871) a 'W.O.' pointed out that dynamite was much safer in that if it was caught up in a fire it 'just burned harmlessly away unlike the recent disasters of Morfu Colliery and Swannington Colliery where exploding gunpowder had caused much loss of life'.

History has proved the worth of JGB's findings and dynamite rapidly took over from black powder. Gunpowder first started to be used in mining around 1670, so it held sway for about 200 hundred years. One point in the report that I found interesting was that the miners rapidly found out about the problems of headaches when handling or using highly nitrated organic explosives like nitro-glycerine or TNT. These explosives can give you appalling headaches both by breathing in fumes after blasting or by absorption through the skin when touching the explosive itself.

Trevor Bridges

Visit to Florence Mine, Cumbria

John Backhouse

On 3rd April fourteen persons, mainly from Tom Gledhill's archaeology classes, assembled at the Florence Mine near Egremont. The mine once produced thousands of tons of high-grade iron ore a year, but output last year was only 500 tons, and further reductions are probable in the future as demand falls.

Our guide was Mr Finlinson, the owner and apparently also half the workforce. We were given a masterly account of the geology of the mine, illustrated with a 3-D model of the area. Then, equipped with hard hats, headlamps and batteries we were taken to see the now-redundant winding gear, and the crushing and grading plant.

The mine is now entered by a long fairly steep tunnel, up which the ore tubs are hauled by cable and winch. We were in the midst of the geology, descending first through a layer of red sandstone, then through a layer of conglomerate, and finally entering the ore-bearing limestone. In places fault lines were clearly seen, and we had some discussion of the processes which had resulted in ore formation.

Away from the entry ramp the going was more level, with red mud underfoot. Those who had the stomach for it were allowed to peer into the shafts which once gave access to deeper workings, now largely flooded. Only continuous pumping keeps the present relatively shallow mine unwatered. The walls and roof seemed largely composed of iron ore, and in places there were magnificent beds of 'kidney ore' with quartz crystals. The ore is mechanically dug and loaded, and a small locomotive takes the tubs to the foot of the ramp. There is no flammable gas, and the mine is now very well ventilated by natural convection, though we were shown an enormous fan, once belt driven by an electric motor, a relic of the days when the workings extended several miles underground. Great care is now taken to suppress dust, and castor oil is used in drilling operations. No dust was visible in the beams of our headlights.

One object of the visit was to see if we could obtain a supply of iron ore for an exercise in experimental archaeology, the making of iron in a bloomery. This was a new concept to Mr Finlinson, who nevertheless readily agreed, and Brian, the other half of the workforce, went off with a barrow to collect some suitable lumps (the usual output of the mine is crushed too small for our purpose).

Oddly, walking back up the ramp seemed much easier than the descent, and we emerged into rather unseasonable warm sunshine full of admiration for those who once spent their working lives in such conditions. By the time we had washed our wellies our barrowful of high-quality iron ore had reached the surface and was transferred to the boot of Tom's car. Will it end up as a lump of 'mediaeval' iron? Watch this space or come and see on the 5th July.

This visit was arranged at very short notice and there was no time to advertise it in the newsletter. *Ed.*

An unusual flue and chimney

Bryan Chambers

Mr David Scott whose reminiscences of Rookhope appear elsewhere in this edition also sent me an interesting item from a Canadian newspaper dated May 1972 which although it has nothing to do with mining did remind me of Alan Blackburn's article on the Rookhope mill chimney in an early newsletter. The line of this can still be seen today running away along the fell from the Rookhope arch at the west end of the village. This flue was unusual in that it terminated in a wooden stack rather than the usual stone structure.

The Canadian flue and chimney was built to take the gases from a wood pulp mill at Kamloops, British Columbia, above the inversion layer above the valley floor site. It runs up the mountain-side for half a mile and is made of wood with a 200 feet high fibre-glass vertical stack. Two 3445 horse-power fans drive the gases (12 to 20 tons in the system at any one time) through the 16 feet diameter flue at 60 mph.

Local conditions were unsuitable for a simple vertical stack or an underground flue. The article makes no mention of retrieval of any deposits from the flue so presumably its function is only to disperse the gases and their sulphurous smell. Expected life was a minimum of 15 years so unlike some of our lead smelt mill flues it probably won't be there in 150 years time!

Computer Processing

Sketches, maps, and other graphics are usually computer-processed to ensure that an author's work is shown to the best advantage when printed.

Project Officer's Report

Ian Forbes

As Killhope moves from winter into summer mode and the archiving group put away their pencils and laptop for another season, it's time to thank them once again for their important work on the Friends archive. Our archive cupboards are bursting at the seams with a great deal of interesting and useful information, so the job of sorting, accessioning and cataloguing everything is vital to making the material accessible to researchers. It's the archiving group who are doing all the meticulous work necessary to achieve this goal, so a big "thank you" to all of you, and in particular the regulars - Sheila Barker, Shelagh Bridges, Pam Forbes, Margaret Graham, Dick Graham, Russ Parkin and Carol Sutton. I enjoy seeing you all at Killhope on those winter Fridays, and look forward to your return in the autumn.

There is a significant new collection awaiting your attention as well. Jim Foster-Smith, a long time supporter of Killhope and the Friends, has just given us the last of his personal archive. It's a wonderful gift, for Jim played an important role in the boom period of barytes and fluorspar mining in the Pennines, and we are honoured to receive documents relating to his working life here and elsewhere.

On site, Frank Unsworth has been busy restoring the shelter over the shallow shafts in the wood, and has also begun weeding out the trees in Hazely Hush. The hush has become very overgrown with spruce trees, and by judicious thinning Frank is exposing the limestone rock faces once again. The work is making great improvements to this part of the woodland walk.

It was very gratifying to see a good number of Friends at Killhope on the first Saturday in April to participate in the "launch" of the first two Brunton buddles. I got a great thrill out of seeing the water pour onto the little waterwheel (and through it, because it leaks somewhat!) and the machinery of the buddles creak into action. Wonderful stuff, and, as always, when we try to explain ore-processing to the public, the immediacy of something actually working is a very powerful teaching tool. Staff at Killhope intend to run the buddles for demonstrations on a regular basis. I've said it many times on these pages before, but Ian Jowett deserves enormous credit for seeing this project through, both doggedly and skilfully, from start to finish.

For the first time Killhope took part in "Science Week" in March. The museum opened for the weekend only, rather than for the whole week, but the event - which is aimed primarily at children - went very well. We couldn't have done it without the help of Trevor Bridges, an enthusiastic advocate for science, who set up displays on minerals and their uses, and spent the whole of Saturday at Killhope explaining and talking about minerals to the public.

I hope you'll come to some of our events over the summer. The AGM is advertised elsewhere, and will be followed by a walk round Allenheads. Also of great interest is the charcoal making and iron smelting project of Tom Gledhill and Ros Nichol. And of course there is the usual quoits match in June, and the mineral exhibition in September. Please note that this year this event will once again be in the Institute at Ireshopeburn. Unfortunately the room at Killhope is no longer big enough for our needs. For details of any of these events, ring Killhope on 01388 537505, or contact me on 01388 517365.

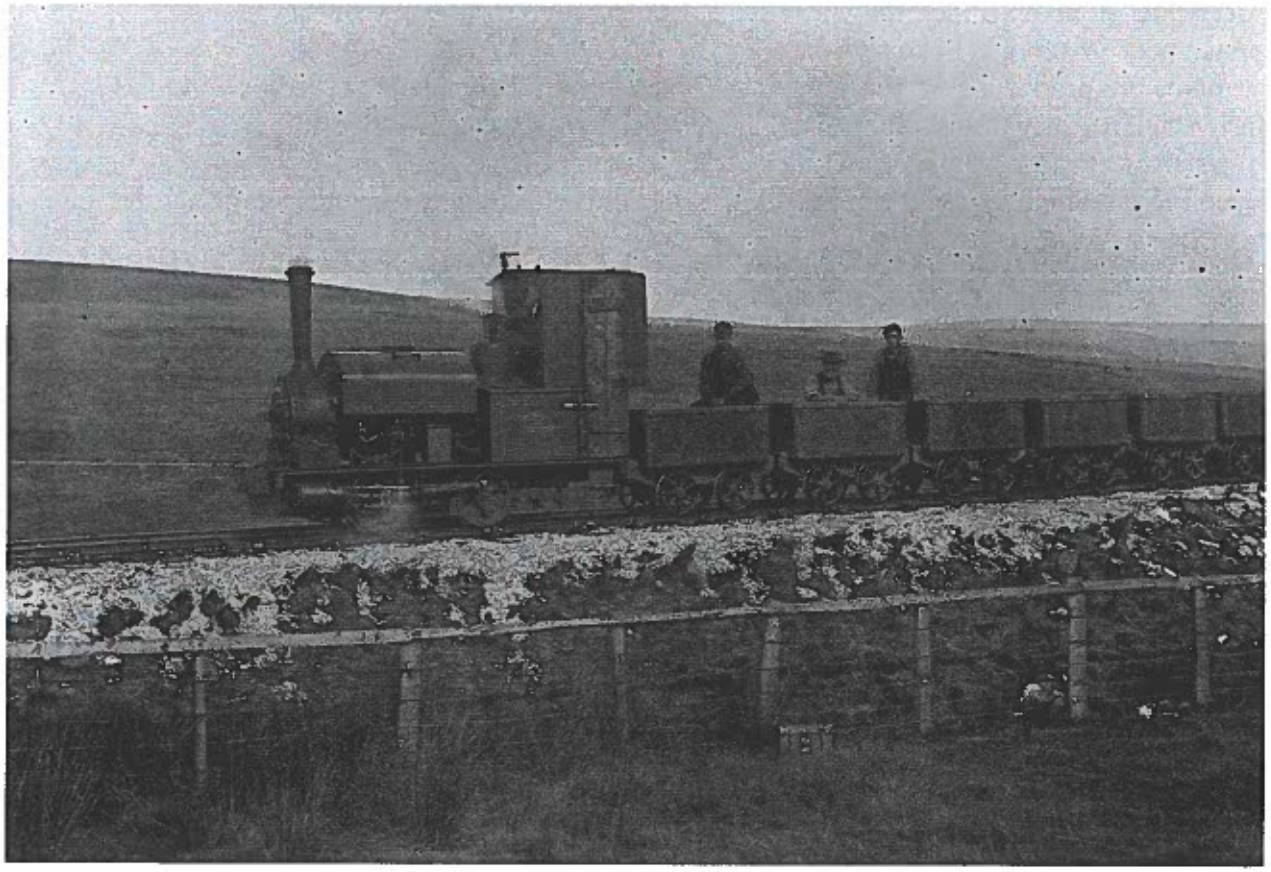
Killhope Staff

Your editor has asked me to provide a brief update on the staff at Killhope, which I'm very happy to do, because the friendly relationship between staff and Friends is one of the key features of Killhope. This year we welcome Alison Brown and Pauline James into the "core group" of

Information Assistants (both were already working at Killhope) and we also welcome some brand new faces - Jan Curtis, Tasha Lay and Teresa Thompson. The "upstairs" staffing has also now become properly established, with Annie Macdonald and Alison Scott dealing with admin, Tina Raynor working on the commercial side of the operation (sales, market research and promotion) and Shelagh Connor and Maureen Murray managing the staff and day-to-day operations. Half our maintenance team, Norman Emerson, has just gone into hospital for a back operation, so for a good part of the season Scott Bissett will carry most of the maintenance load, with help from Alex Sawyer.

Weardale Lead Company archive photographs

In the last newsletter we published a wonderful archive photo of Sedling mine, probably dating from the 1890's. This edition's photo is from the same collection, and it is this picture which enables us to narrow the range of dates between which these pictures were taken. The little loco is the Weardale Lead Company's first locomotive, their (logically named) Number One. It operated between Groverake mine and Rispey dressing mill in the Rookhope valley, on a private line built by the company at 2 foot 6 inch gauge. This view is of a section of the line near Wolfcleugh. The embankment can still be seen in today's landscape. The excellent "Railways of Weardale" by Rounthwaite tells us that the Weardale Lead Company bought the locomotive new in 1889, as number BH 981, and ran it on this line until 1909, when it was transferred to Stanhope. We have scanned the photo, and on a digital enlargement you can clearly read the maker's plate on the loco. It is indeed BH 981. Thus the picture must have been taken after 1889, and before 1909. Note how the cab of the loco was designed for less harsh climates - here it is securely boarded up against the weather!



Ian Forbes

Forthcoming Events

Friends of Killhope

Tuesday, 13th May	10.00 am	Visit to Calder Lead Works, Elswick
Saturday 17th May	11.00 am	AGM followed after lunch by guided walk around Allenheads with Ian Forbes
Sunday 15th June	2.00 pm	Friends Annual Open Quoits Competition. Come and do better than the Projects Officer - it's not hard!
Sunday 29th June	2.00 pm	Talk by Brian Young at Killhope about the minerals in the Sir Kingsley Dunham mineral exhibition. This promises to be an entertaining and informative talk, as Brian has an immense knowledge of, and enthusiasm for, the minerals of the North Pennines.
Saturday/Sunday 6th and 7th September		Friends of Killhope Grand Mineral Exhibition and geological weekend. More details later, but put the date in the diary now. As ever, this is the premier show of North Pennine minerals to be held in the region at the Ireshopeburn Institute.
Sunday 5th October	1.00 pm	Guided walk up Slitt Wood at Westgate, led by Brian Young and Ian Forbes. Slitt wood has everything - scenery, industrial archaeology, geology... a fascinating valley.

Killhope, the North of England Lead Mining Centre

May

Bank Holiday Weekend Sun 4th and Mon 5th ~ Dream Catcher Workshop £2
Sunday 11th Killhope Treasures a wonder to behold and **Bishop Auckland Radio Club**
Bank Holiday Weekend 25th and 26th ~ Kids at Killhope
A fun filled Bank Holiday Weekend
Look out for **Medieval Charcoal Burning** on the 24th - 26th May

June

NEW Costume Exhibition ~What Weardale Wore" in 1853
To celebrate the 150 years of Park Level Mine
Sunday 15th Friends of Killhope Quoits Competition
A friendly contest, open to all, have a go, have some fun

July

Sunday 20th Lets go Fly a Kite
Make and fly your own kite, high in the windy Pennine hills
Saturday and Sunday 26th and 27th All that Glitters
Spar Box Workshop £5.00
Look out for **Medieval Iron Smelting** on the 5th July

August

Saturday and Sunday 9th and 10th Rockwatch Event
Explore the fascinating world of fossils. Make your own plaster cast of rare fossils and clay dinosaurs
Sunday and Monday 24th and 25th Woodland Festival
Coracle making demo, woodland crafts, bird/bat boxes, workshops galore

September

Saturday and Sunday 6th and 7th Friends of Killhope Grand Mineralogical Exhibition and Geology Event
Saturday and Sunday 13th and 14th Spar Box Workshop £5

October

Open Weekends and Half Term Daily
Saturday and Sunday 25th and 26th Spooky Mine Trips
Friday 31st Spooky Mine Trips
Halloween Workshops 20th Oct - 31st Oct

December

Saturday and Sunday 6th and 7th and 13th and 14th Santa Down the Mine
Plus Christmas workshops.

North Pennine Heritage Trust Events Programme 2003

18th May Sunday. Follow the course of the **Nent Force Level**, through the delightful meadows of the Nent Valley. A reasonably level walk of 5/6 miles, with lots of interest along the way, leader Peter Wilkinson. Meet at the Nenthead Mines Heritage Centre car park at **11am**, bring lunch, waterproofs and wear suitable shoes or boots. Non members welcome.

20th July Sunday. Look at the London Lead Company buildings in **Middleton in Teesdale.** Followed by an afternoon walk up the Hudeshope Valley. Leader Dave Redfearn. Meet in Middleton in Teesdale square by the drinking water fountain at **11am**. Bring lunch, waterproofs and wear suitable shoes or boots. Non members welcome.

Contact Sheila Barker on 01434 381903 or the Trust office for further details.

Alston Moor Historical Society Archives

Will be open to the public from 10.00 am to 1.00 pm and 2.00 pm to 5.00 pm on each of the following days:

Saturday 26th April
Saturday 24th May
Saturday 28th June
Saturday 26th July
Saturday 30th August
Saturday 27th September

For further information, telephone 01434 381769, or write to The Archivist, c/o The Town Hall, Alston, Cumbria.

NB Alastair Robertson has a microfiche of the transcripts of church and chapel records for the period c1700 to c1830 which could be available for research on application.

Weardale Field Study Society

19th May	'Old Iron - cast it, beat it or join it'	Mr Dick Graham
8th September	'19th Century Weardale Highlights (continued)'	Mr Peter Bowes
13th October	'Medieval Iron in the Durham Dales'	Dr Tom Gledhill
17th November	'The Walton Leadmining Dynasty of Alston Moor and Weardale'	Mr Alistair Robertson
8th December	'Honeybees'	Mr Ian Copinger

NAMHO 2003, 7th/8th June, Ireland

Full information about the NAMHO Conference, including field visits and, accommodation details can be obtained from Nigel Monaghan (telephone number below).

Booking and Payment Form

NOTE - Please complete <u>one</u> form for <u>each</u> person attending.
Please keep a copy of your booking forms for your own information.

Name:

Address:

Tel No: E-mail:
Your group/society:
Does that group have BCRA, or similar insurance? No/Yes

Registration fee		euro 30/stg £20
Insurance fee		euro 4/stg £2.50

[This is mandatory is not covered by a BCRA group scheme or proof of acceptable alternative cover is provided]

Friday evening reception - attending? Yes/No

Avondale House B&B accommodation (see notes)	Friday night	euro 25/stg £16
	Saturday night	euro 25/stg £16
	Sunday night	euro 25/stg £16
	Monday night	euro 25/stg £16

Have you any special accommodation requirements, eg disabled access?

Dinner and entertainment, Saturday night euro 25/stg £16
Do you have any special dietary requirements, eg Vegetarian?

Tara Mine field trip, Monday 9th June (includes transport) euro 20/stg £13

Late booking fee - forms arriving on or after 21st May 2003 euro 7/stg £5

TOTAL - please make cheques payable to MHTI euro /stg £
If paying in sterling please add £2.50 to cover bank charges

Please return this form, with your cheque to the conference secretary -

Nigel Monaghan, Mining Heritage Trust of Ireland, c/o Natural History Museum, Merrion Street, Dublin 2, Ireland. Tel +353-1-6777444