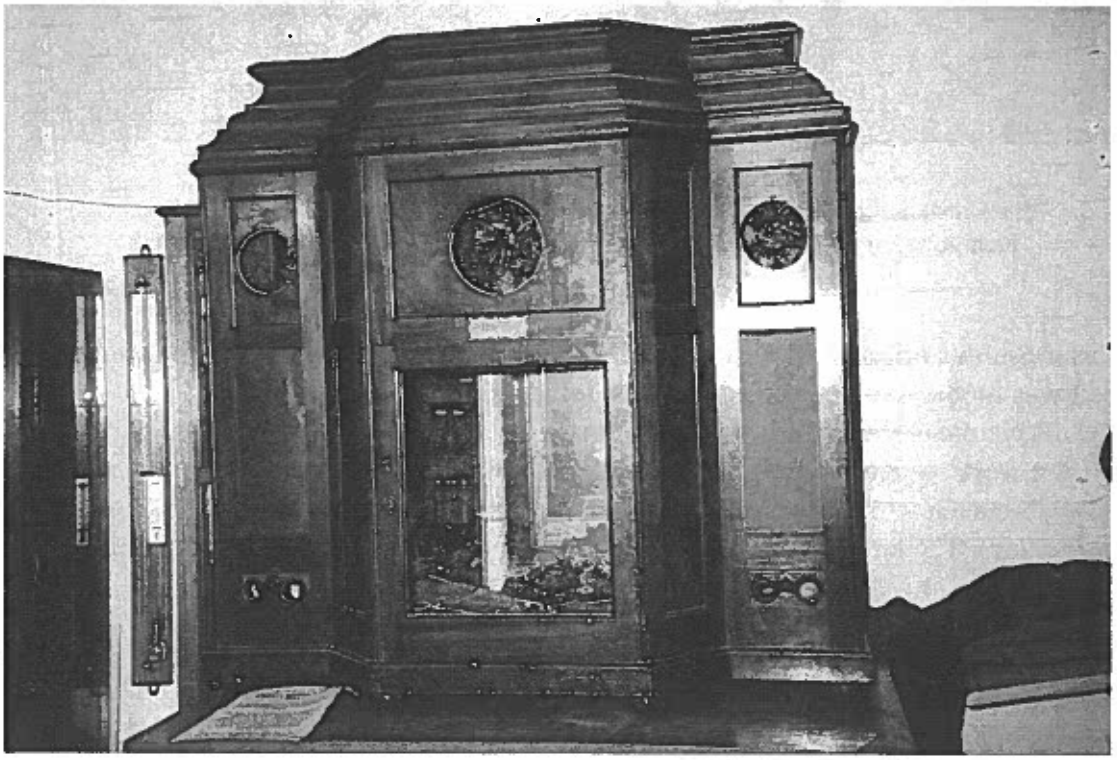
THE · FRIENDS · OF
KILLHOPE

PRESIDENT — *Sir Kingsley Dunham F.R.S.*

Newsletter No. 43 **May 1998**

How many more are there?

Our celebrated Egglestone Spar Box is unique isn't it? A rhetorical question, surely? Well, yes and no, actually. Almost certainly there is nothing **exactly** like it but would you believe there is another box based on the same idea which is apparently older than ours? Hard to accept I agree but the proof sits at Killhope. Go and see it, make your own comparisons, draw your own conclusions, but first read Ian Forbes' story about this fascinating discovery on page 4.



The new spar box standing on a table at Killhope. It measures approximately 3ft 9in high, 3ft 9in wide, and 2ft 4in deep. ***Photograph B Chambers***

A successful launch

In April, Friends and visitors from all over the north gathered at Killhope for the launch of *Out of the Pennines*. A very full upstairs room heard Councillor Bob Pendlebury thank the Friends for their continuing support of Killhope and our Chairman Dick Graham thanked all concerned with the production of the book including our sponsors, Wear Valley District Council, the

Countryside Commission, Workers Education Association and Don Wilcock. The book is dedicated to our President Sir Kingsley Dunham and he remarked on the many distinguished writers who had contributed, a number of whom were present to sign copies.

Some of the contributors to *Out of the Pennines*.
Back row, left to right; Charles Tanner, Brian Short, Bill Heyes and Peter Wilkinson.
Front row, left to right; Tony Johnson, Sir Kingsley Dunham and Jim Foster-Smith.
Photograph B Chambers

Jim Foster-Smith's original oil painting of Cow Green Mine in 1950 on which the cover design is based was on display and the editor was delighted to report that Jim had now generously donated his picture to the Friends. Mrs Kay Foster-Smith had also presented us with an example of her own work — Killhope in the early 1950s painted from much the same viewpoint as L S Lowry's sketch which was featured in our first publication, *Men Mines & Minerals of the North Pennines*. The launch proved to be yet another memorable Killhope occasion.

AGM reminder

Our AGM takes place at 11 a.m. on Saturday 13 June at Killhope. Members are reminded that nominations for all officers of the committee and two committee members should be forwarded to the Secretary, Dorothy Chambers, 18 Cheveley Walk, Belmont, Durham, DH1 2AU, not later than fourteen days before the meeting.

In the afternoon Ian Forbes will lead a walk in the Middlehope valley which has a great variety of industrial archaeology and yet remains one of Weardale's prettiest corners. There is something for everyone here — don't miss it!

If you require lunch after the meeting please return the enclosed form as soon as possible. The meal will be to the usual excellent Killhope standard and the cost is £4.50 per head.

Final reminder

I am afraid that this is the final reminder that subscriptions were due on 1st January. If there is

a pink form enclosed with this newsletter then your subscription is still outstanding.

An Apology...
Luckily, once again I was in the happy position of having more material than I could comfortably use in the last newsletter so some items were held over to this edition. If you were a disappointed contributor or were looking forward to reading a particular item I'm sorry you've had to wait. Any item which did not make the last newsletter is included in this one.

...and a regret
Again I have had to hold back some material until the next newsletter — sorry!

Next Deadline
Material for the autumn newsletter should be in the hands of the Editor by **1st September** please.

Final details
Please see page 25 for the detailed arrangements for the Friends events on July 18th and August 16th and a new event on October 14th.

Committee members

We are increasingly concerned by the lack of new faces on our committee. Any organisation needs new ideas and energies and we are no exception. There is no need for a committee member to be an expert in anything. All that is needed is a willingness to serve and help out with a bit of common sense.

It is not necessary to make a long-term commitment — you could be co-opted for a year to see if membership is for you. We only meet perhaps four times a year so the work-load need not be heavy, though of course there are always extra duties for those that wish it.

Please contact any committee member or the Secretary, 18 Cheveley Walk, Belmont, Durham, DH1 2AU, (0191) 386 8491 to find out more of what is involved.

Contents

Robert Ridley's Spar Box

Ian Forbes

Sometime last autumn I got a phone call from Robert Ridley in Allendale. He told me he had a spar box in his home which he would very much like other people to be able to see. He had been to Killhope with his daughter, and enjoyed his visit.

Close-up of house front & part of the roadway in the Ridley Spar Box for comparison with the Egglestone Version. *Photograph B Chambers*

Would we like to have this spar box on loan? As you can imagine I was excited by the prospect of another spar box, so I arranged to go to Allendale to see it.

I found Robert Ridley's spar box fascinating, because it is based on the same idea as our Egglestone spar box, and yet is utterly different. Instead of being a gaudy riot of fretwork and painted wood, this is a rather well made mahogany case, much to the proportions of a sideboard. This one is a piece of furniture. If you feel fanciful, you might imagine lifting the lid to place a record on your gramophone. But Mr. Ridley's mahogany case doesn't house an old style hi-fi system, but — yes — another street scene of mirrors! Just as in the Egglestone spar box, we see two house fronts reflected in five mirrors to give the illusion of a street. But, unlike the Egglestone spar box, here there is very little mineral in the scene. The house fronts are more like doll's houses, beautifully painted and decorated. There is clear evidence that this box, although now lit by electric light, was originally illuminated by six candles.

Above the glass-fronted street scene are three round holes cut into the cabinet front. Robert Ridley told me these once contained bulls-eye glass, and indeed this would make sense, for if you stand back a little from the cabinet and look through the holes you can see behind each a collection of mineral specimens. Get too close, and you can see the empty inside of the cabinet beyond the specimen collections. There are some fine purple fluorites here, although many of the minerals have been blackened by candle smoke. A final bizarre touch to the cabinet is the inclusion of two stereoscopic viewers in the bottom corners of the case front.

So the Egglestone spar box was not unique! We have another spar box with a street scene in

it. How many more are there? Also, and importantly, we know the history and date of this one. The date is inscribed on an engraved plaque on the front of the case: 'Robert Riddley (*sic*) Allenheads July 15th 1896'. The present owner told me it was made by his great grandfather, who is known to have made other spar boxes. In an echo of the history of the Egglestone box, this one too toured the local shows. Certainly it's easier to manhandle than Joseph Egglestone's fantastic creation, as two stout persons can lift it quite readily.

This spar box is an important new piece in our story of the history and development of that most characteristic and localised craft — the making of spar boxes. It is dated precisely, and I don't know of any other spar box of which you can say that, and its history and maker are known. Would it be fanciful to suggest that this could be the prototype spar box that Egglestone copied and developed to make his street scene?

I am delighted and honoured that we have been offered this new spar box as an important new addition to our displays at Killhope. The box and its contents are in need of restoration, but I hope we can get this done and then proudly put it on show. I'll keep you in touch with developments.

Obituary

In the last newsletter we announced the death of one of our most distinguished members, Ansel Dunham. Those of us who were privileged to be present at the 'Brains Trust' meetings which he graced a few years ago will always remember his cheerful and enthusiastic contributions. I am grateful to Professor Henry Emeleus of the Department of Geological Sciences at the University of Durham for the full obituary which follows. Ed.

Ansel Charles Dunham

(1938- 1998)

Professor Ansel Dunham, who died of cancer on January 18th, was a geologist with interests which ranged well beyond any conventional boundaries to the subject. His earlier researches were concentrated on problems of the igneous rocks, but broadened with time to embrace topics as varied as lunar geology, injuries inflicted by golf balls, and manganese nodules recovered from the oceans. His most significant contributions, however, were on the geology of industrial minerals and rocks where he built up an international reputation with, for example, his detailed studies of the mineralogy and mineralogical transformations of brick making.

Ansel was born at Newcastle upon Tyne, the son of Kingsley and Margaret Dunham. He lived for several years in Weardale but spent his boyhood in Welwyn Garden City, where he attended St Albans School from 1948 to 1956, becoming Head of School House. He read geology at St. John's College, Cambridge and, after graduating in 1959, moved to Oxford where he joined Professor L. R. Wager's group of young postgraduate students who were examining a range of problems connected with the Tertiary igneous activity on either side of the North Atlantic. His D.Phil. research was into the critical northern margin of the Rhum central igneous complex, in the Inner Hebrides of Scotland. There then followed two years at his father's department in Durham University, as assistant on the Rookhope Borehole project and, latterly, as a temporary lecturer. His work was largely on the petrography of the concealed granite but, amongst other

things, he discovered olivine in the Little Whin Sill, the first record of this mineral in the Permo-Carboniferous quartz dolerite intrusions of N. England. From Durham he went to Harvard University, where he was Hoffmann Fellow from 1964 to 1966, assisting Francis Birch with heat-flow measurements in the Sierra Nevada Batholith in California. In 1966 he joined Manchester University as Lecturer, and Senior Lecturer in 1977. At this time, notable advances in petrology were being made through the use of 'big machines' for geochemical analysis and experimental petrology, sometimes at the expense of the still-essential fieldwork or simpler laboratory techniques. Ansel kept his feet firmly in both camps; the construction of apparatus to study rock crystallization at high pressures was paralleled by field work to collect geologically well-constrained samples, often from the Tertiary granites and basalt lavas of the Inner Hebrides. He selected and commissioned the then novel electronprobe-microanalyser used at Manchester for the chemical analysis of individual minerals, and parts of minerals, in polished rock thin sections. He became an authority in this analytical technique, and advised on the instrument in Brazil and China.

When the University of Hull established a new Chair in Industrial Mineralogy (the first in the country), Ansel applied for the post and, against severe competition, was appointed Professor in 1978. His new appointment enabled him to expand his strong interests in economic geology, developing an M.Sc. Course in Industrial Mineralogy which attracted both overseas and home students, and enlarging and strengthening links with industry both at home and abroad. For many, the term 'industrial minerals' will conjure up visions of metallic ores, for example those of the Northern Pennines. Ansel was certainly interested in deposits of galena, fluorspar and barytes but he took the subject much further into areas generally neglected by more academically-minded geologists, examining deposits of sand and gravel, limestone, shale, mudstone and clay. Subsequent experimental studies on the latter, carried out at Leicester University, proved to be of particular significance: he showed that brick clays were generally being heated to unnecessarily high temperatures, indicating possible savings in manufacture. The Department at Hull was a particularly happy one, under the leadership of M. R. House, J. Neale and Ansel, who had two spells as Head of Department. All this came to an end when, following the Earth Sciences Review, the University Grants Committee decreed that the Hull department, along with several others, should close. Ansel took the industrial mineralogy group to Leicester, along with much equipment.

Ansel's ability and outgoing personality ensured that the move to Leicester was a success, and he and his team prospered in the enlarged department. As at Hull, he proved a highly effective leader, undertaking a spell as Head of Department, and taking his share of duties outside of his department. He had been elected FGS in 1959 and served on the Society's Council, he became a Vice-President of the Mineralogical Society, and was President of the Yorkshire Geological Society, a society he had joined when at school. Already a recipient, in 1984, of the Minex Medal, his later work on bricks led to the award of the John Phillips Medal by the Minerals Industry Research Organisation.

Those who met Ansel will always remember his warm and ebullient character, and the hospitality extended by him and his wife Helen at their homes. He was an accomplished pianist and organist. Occasionally, and with some persuasion, he could be prevailed upon to entertain guests with suitable airs played on his Northumbrian pipes. However, it is as an exceptional leader of field excursions that many will remember him, whether enthusiastically discussing the significance of a damp outcrop on a windy hillside in the Hebrides, or the contents of a quarry nearer to home. He is survived by his wife, Helen, their children and grandchildren, and by his parents Sir Kingsley and Lady Dunham.

Shelagh's Dad's Spar Pyramid

Ian Forbes

We just don't seem able to keep discussion of spar boxes out of our newsletters at the moment. A while ago a spar pyramid came into our possession. It had belonged to the Teesdale Lapidary Society, and when that organisation folded, Ron Fawcett (one of its members and father of Shelagh who works at Killhope) made sure it came to us. A spar pyramid is a collection of crystalline mineral specimens fixed onto a pyramid or cone-shaped structure so that the underlying framework is completely covered, and enclosed in a glass case. It is therefore another variant on the spar box tradition. This pyramid — origin unknown, but possibly from Weardale — was rather spoilt by an unflattering white-painted metal-framed case which did nothing to show it to advantage. In the autumn David Hacker offered to make a new and more appropriate case, and took the pyramid away to work on over the winter. The other week he returned it to Killhope — and what a revelation!

By painstakingly removing all the many specks and splashes of white paint from the specimens, by carefully cleaning the whole thing, and by building a new wooden framed case David had wrought a transformation in Shelagh's dad's spar box. Now instead of looking merely interesting, this spar pyramid looks magnificent, and stands proudly in the visitor centre beside the Egglestone spar box. The Friends committee is most grateful to David Hacker for an invaluable piece of work.

The pyramid restored by David Hacker resplendent in its new cabinet at Killhope. *Photograph B Chambers*

What images does Jersey inspire in you I wonder? Cream, early potatoes, summer holidays or a TV detective called Bergerac perhaps? I doubt if you associate the island with mining or mineral deposits but George Pickin came across a report on the 'Jersey Lead Mine' dated 1871. Debbie Reid of the Killhope staff very kindly undertook the translation for the benefit of the newsletter readers. Ed.

REPORT

on the
JERSEY LEAD MINE
at Le Pulec, near L'Etacq
by
Mr. Benjamin Williams
Mining Engineer

Goldsithney, near Marazon,
Cornuailles. 20th December 1871, *

H. Simon, Solicitor,
St. Helier, Jersey.

Dear Sir,

Following your instructions I have visited Le Pulec and examined the mineral veins that have recently been discovered there, and I have the honour of passing on to you, in my capacity as engineer, the various comments which my visit suggested to me.

Le Pulec is a little cove situated in St. Ouen Bay, a ten-minute walk from the the village of L'Etacq, and nine miles north-west of the town and port of St. Helier. The minerals which have been discovered consist of several veins of lead which are visible on the surface in the cove, but only at low tide, as the sea covers them for several hours a day.

These deposits were first discovered a few months ago, and since then constant work has resulted in the tracing and exposure of three veins, apparently very well-defined, with the most favourable indications of rich deposits of both lead and Zinc.

The first of these veins, which we will call vein number one, outcrops to the west of the cove and was only discovered a few days before my visit. It has been traced and exposed to a length of 100 *toises*.[1] Its bearing (as far as I could judge) is about 20° east of south and west of north, which miners would call a north-south vein with a slight hade to the west. During my two-day visit I was able to see and examine this vein at several points, and in some places the mineral deposits were five or six feet wide, with bands of lead and zinc between five inches and a foot in width. The vein is visible for several *toises* at the surface and would yield between 15 and 25 *quintaux* [2] per toise of excellent quality lead [i.e. 1.47–2.45 tons].[3]

The middle vein (number two) is six or eight *toises* east of the first one and on exactly the same bearing. It has been exposed to a length of 40 *toises*. This vein appears to be very regular with, in certain places, fairly well-defined walls, with a slight westward lean like the first one. As far as I could judge, it is two to four feet wide and contains a band of four to nine inches which would yield 15–20 *quintaux* per *toise* of rich galena [i.e. 1.47–1.96 tons] in places.

The third vein is still further to the west and four or five *toises* from the second or middle vein. On a virtually south east bearing, it has got a slight hade to the west like the others. It has been traced for several *toises*, and where it has been exposed, shows very rich deposits of both lead and zinc; in places it is two or three feet wide. I have reason to believe, however, that considering its irregular bearing, this third vein is simply an offshoot of the second, and probably joins it several *toises* further north.

* Goldsithney, near Marazion, Cornwall. The village still exists.

Apart from these main veins, there are several small ones containing lead and blackjack which can be seen crossing the bed of the cove.

You will easily understand, from what I have just said, that the present state of the Pulec works does not allow an inspector to confirm positively that the upper exposures are true mineral veins and not just superficial mineral deposits. I like to believe, however, that considering the regular bearing of the veins, together with their structure and width, that they continue at depth. They consist mainly of lead, zinc, pyrites, iron, feldspar, and a little calcite, mixed with common limestone, which forms the bed of the cove.

To judge the depth of these Pulec veins, I would recommend sinking a shaft in the hill which rises to the west of the cove and is known locally as the Rondi. Situated at a height of 8 or 9 *toises* above sea level at high tide, it could not be more suitable for this plan. The shaft should be sunk vertically from the top of the hill, to a depth of 20 *toises*, or 10 *toises* below sea level at low tide. Then a crosscut should be begun in a virtually easterly direction. This crosscut (if one considers the position of the first vein with its exposed section in the bed of the cove) ought to intersect this first vein after about 14 or 16 *toises*, and when continued eastwards cut the other two veins 10 *toises* further on. Once these veins have been struck, it would be necessary to dig levels to the north and south, and where the profits would justify it, to sink another shaft further forward in the ground, or even on the south side of another hill known as the Big Etacrel, and where this met the vein to construct an adit level from the bay at a depth of 10 or 11 *toises*. By these means, one would establish a complete ventilation system, which would make it possible to explore the mine at any depth. I am of the opinion that if you follow these veins southwards you will find that they join into a sizeable mother-vein. I have no hesitation in declaring that the Pulec discoveries are of a nature to justify this expense, which will be trivial in comparison with the possible results, but necessary to assure you of the value of the veins I have just described, because in all my experience I have never seen such fine outcrops. To sink the shaft, and form the crosscut plus levels etc. would probably cost £2500 to £3000. I would strongly advise you to procure the services of a good practising engineer to direct all the operations.

Before ending I would like to add that I have only dealt with the practical side of the mineral discovery, since a paper dealing with the scientific side of it has already appeared; and to those who, guided by theoretical deductions about the volcanic origins of the Channel Islands, do not want to believe in the existence of such encouraging phenomena on Jersey, and to the professional miner, I would say simply but respectfully, 'Go and see for yourselves'.

It would be a great source of satisfaction to me to learn that your commendable perseverance as a promoter of mineral exploitation on Jersey is rewarded by personal success, and that your services are recognised as they deserve to be.

I am, Sir,

Your obedient servant,

Benjamin Williams,

Mining Engineer.

[1]. *toise* — an old measurement of 6½ feet, hence loosely corresponding to a fathom but referring to distance in any direction, not just depth.

[2]. *quintal* (pl. *quintaux*) — a weight of 100 kg.

[3]. Tonnages in brackets added by translator, who also apologises for some guesswork with the out-dated French of the original letter.

With the help of Brian Young I was able to contact Dr. R F Symes of the Natural History Museum who kindly sent me copies of papers from the Mineralogical Magazine — December 1980 Vol. 43 pp 1025–9 and March 1982 Vol. 46 pp 134-6 on mineralisation at Le Pulec, Jersey, Channel Islands (R A Ixer and C J Stanley). From these it appears that the deposits were worked in the 1870s for silver and lead. Only one of the veins, No. 3 is still exposed: the other two either having been removed by mining or lying beneath a metre of loose shingle. No mention is made of surface remains.

The papers contain much technical detail and will be sent to the FoK archive in due course. Ed.

Blue Hills Tin Streams

George Pickin

While on holiday in Cornwall last year I picked up a brochure, too late to be of use at the time, but which I think may be of interest to some Friends.

The *Blue Hills Tin Streams* is a working tin ore processing plant which is open for guided tours for the public. The plant is situated in a valley from which tin has been produced for centuries. The Wills family, the owners, have been working Blue Hills since 1975.

Processing operations include — crushing ore under iron-shod Cornish stamps to a coarse sand, followed by fine grinding in a ball mill and separation of the tin ore on a shaking table. The tin concentrates are then smelted and metallic tin produced, some of which is used to produce giftware for sale to the public.

Blue Hills is near St Agnes in Cornwall and the following instruction to find the works is given:

From St Agnes take the B3285 towards Perranporth. Turn left to Wheel Kitty after 250yds and right at grass triangle. Follow the road along and down into a steep valley and look for the sign pointing out the works.

Open for guided tours 10.30 a.m.–5 p.m. Mon–Sat, April to October. Tours last approximately 1½ hours.

IF IT IS RAINING PLEASE COME ANOTHER DAY!

Address is Colin and Mark Wills
Blue Hills Tin Streams
Trevellas Combe Telephone (01872) 55334
St Agnes
Cornwall TR5 0YW

PS

In the last newsletter, No. 42, my article on Tolgus Mill referred to the Tolgus Cornish stamps as being the last working in Europe. Mr Wills assures me that Blue Hills have a set working in their production plant. You obviously can't believe everything you read in brochures!

A Christmas Quiz leftover

Who blamed a mine fatality on home cooking?

I am delighted to include the following item especially as Ken Fairless may well be the only person living who actually worked at Barbary Mine at this time. So we have another important first-hand link with the past such as we had with the late Willie Watson's piece on Rotherhope Fell Mine (Newsletters 28 and 30). Again it is a privilege to be able to offer this to our members and indeed the wider public. Ed.

Barbary Spar Washing, Ireshopeburn

Ken Fairless

This is a diagram of the above, drawn from memory when I worked there from 1926 to 1928. I was paid 2s 6d per day but when we came to be 16 we were not required because we had to pay employment stamps and the employer had to pay half which was 1s 6d per week and younger boys were started. I myself started on the picking-off tables, but I finished on the top job, looking after the Marshall steam standing engine. All the fluorspar went away by rail in 1000 ton orders from Wearhead Station and was conveyed there by local farmers' horse and carts. The shed was covered with corrugated zinc sheets on a timber frame and you could hear the noise of the plant at St John's Chapel .

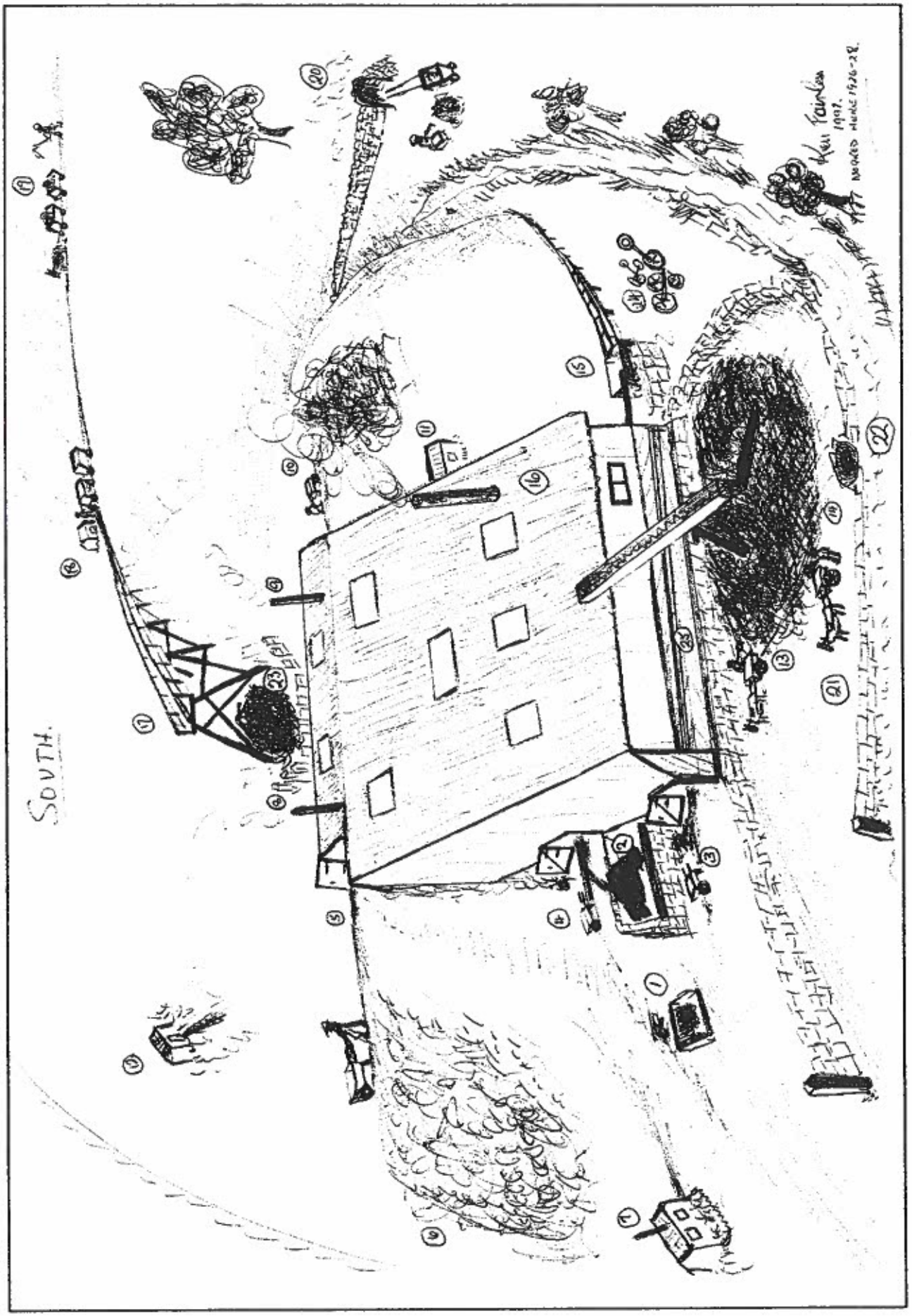
Inside the plant

Staff on the picking-off tables consisted of one man and five boys. They picked all unwanted minerals out then pushed the rest into the crusher. Thence the water took all into the screen and from the small end all went down to the hotching tables the next size went to a small jigger then the next size jigger and finally the rough jigger, three in all. Any rough left in the screen went into the chat mill then back into the screen via elevators. All the minerals were carried in wood troughs with plenty of water behind.

The whole plant had been very well planned out and would be built around 1919 and became redundant about 1933.

Key to sketch

1. Coal storage
2. Lead ore storage
3. Lead ore outlet from tables
4. Lead ore outlet from jiggers
5. Stone outlet from picking tables
6. Stone heap
7. Manager's office (Geo. Blackwell)
8. Stovepipe at picking tablers
9. Stovepipe at picking tables
10. Stone outlet from picking tables
11. Bait cabin
12. Toilet
13. Loading fluorspar for rail
14. Mine shaft comes out at gin bridge
15. Water supply in wood troughs
16. Marshall steam engine (under)
17. Gantry
18. Weigh Cabin
19. Loaded tubs from High Barbary
20. Mine entrance — Low Barbary
21. Fluorspar storage area
22. Ireshope Burn
23. Hopper
24. Spare machinery
25. Trunks


SOUTH.

EARTHWORKS

Brian Young

A new permanent gallery of geological history at the Hancock Museum, Newcastle upon Tyne.

Anyone who knows this important regional museum of Natural History will appreciate the immense reinvigoration given to it when Tyne & Wear Museums took over its management a few years ago. It has become a lively venue for numerous splendid temporary exhibitions which augment its long-established fine permanent displays. Excellent though these are, time and neglect had left some galleries obsolete and dull prior to Tyne & Wear's fresh approach. Prior to their take-over the geological displays were perhaps the most old-fashioned and least inspiring. With the opening of a new permanent exhibition — *Earthworks* — this has now changed.

'*Earthworks*, a new gallery about the geological history of the Earth' achieves its stated objective splendidly, but it does more. In an attractive, well-designed gallery the visitor is introduced gently, but extremely effectively to the concept of the Earth in space, its possible origins, the concept of geological time, evolution both physical and biological, geological processes and the importance of geological science to everyday life. Basic geological principles including plate tectonics, the nature and classification of rocks and the formation of fossils are introduced in a way which at once excites and informs. A careful blend of text, illustrations, models, and, above all, specimens, maintains interest throughout. The use of specimens is, in my view, one of the great strengths of *Earthworks*. How good it is to see a modern museum employing these to the full, rather than subordinating them almost entirely to 'high tech' computer graphics and all that goes with the 'fruit machine' interpretation so often seen elsewhere. The Hancock Museum collections are of international importance particularly for local Carboniferous and Permian fossils. A generous small selection of these treasures is beautifully displayed, in addition to a large number of other fine specimens of fossils, rocks and minerals. Throughout the exhibition there are specimens available for 'hands-on' experience, though obviously firmly glued down for security. A great feature is the provision of several drawers of representative rock and fossil specimens. Visitor participation is encouraged in explaining the uses of rocks and minerals and in the context of the region's natural resources. There is a great deal here to appeal to visitors of all age groups.

Inevitably one may find faults in places. What exhibition is free of these? Oddities in *Earthworks* include the suggestion that hematite was worked in the Cleveland Hills, that gypsum is still worked in the Carlisle area, that the Skiddaw Group rocks were a major source of roofing slate and that diatomite is still an important economic mineral in the Lake District whilst for some inexplicable reason there is no mention of the former great importance of graphite. I spotted few obviously wrong labels though, a fine 'blister copper' is described as pyrite. One may also question the selection of pyrope as a characteristic metamorphic garnet. The inclusion of a chunk of antimony, simply stated to have been collected on Tynemouth Beach, invites an explanation.

These, however, are generally minor niggles. Congratulations to Tyne & Wear Museums for *Earthworks*. It is a splendid addition to the region's museum displays and a valuable, and enjoyable, educational resource. Go and see it soon.

Tynehead Lead Mining Company

Nigel A Chapman

Situated on the North East slope of Tyne Head Fell and at the confluence of the River South Tyne with the Clarhead Burn are the remains of what has been called the Sir John lead mine.

The beginnings of the existing remains commence with a group of local businessmen in 1854–5. They secured a sett in the Manor of Tynehead at a royalty of 1/7th and proposed working the Sir John and Great Sulphur veins. Having located Sir John's vein in the river bed, operations centred on the eastern bank, where a level was driven into the vein. At this point the Directors of the Tynehead Lead Mining Co. requested Evan Hopkins and John Calvert to visit the mine and write comprehensive reports. Both mining engineers suggested the development of the level eastwards to the Great Sulphur vein and expected with perseverance the company would reap large profits.

They both considered the royalty dues too high, advising the company to discuss with the landlord a lower rate. At the next meeting of the shareholders on 22 October 1855 the Secretary was delighted to announce a reduction of the royalty from 1/7th to 1/12th. With two optimistic reports and a cut in the royalty the shareholders were keen to push forward with operations and provided 1*s*. per share to settle existing debts of £79 19*s*. 0½*d*.

Mr Fordyce informed the shareholders that other commitments would prevent him from executing the office of Secretary. Also a letter was received from Mr Woodmass regretting that because of ill-health he would no longer be able to carry out the duties of Agent to the concern.

By 28 February 1857, George Millican the new Agent reported that they had put a rise up 4 fathoms in the end of the level to the Post Limestone and had got ore nearly all the way from the west cheek of the Sir John's Vein at the bottom of the Limestone, they had driven into the vein for 15 feet and were still in the lode. In a rise about 30 fathoms away they had driven south in the vein 4 fathoms 2 feet which had yielded ore that would pay with a crushing mill. But in the end of this drift the vein was very hard. To the east softer and more profitable ground had produced some good ore, but this was now poor again.

On the surface the walls of the mine shop were nearly up and it would be covered in about ten days if the weather continued fine. The wheel pit and the water race would be ready next month.

At the AGM on 24 February with Mr U Vipond in the chair the accounts showed a balance at the last audit of £21 13*s*. 11*d*. Mine costs for the months of October, November, December and January, (including £100 for land and building) £205 5*s*. 8*d*. Sundries were £5 18*s*. 10*d* making a total of £232 18*s*. 5*d*. so a call of 1*s*. 6*d*. was made. Capt. G. Millican presented a report on the present state of the mine and a statement of what had been achieved since November 15th.

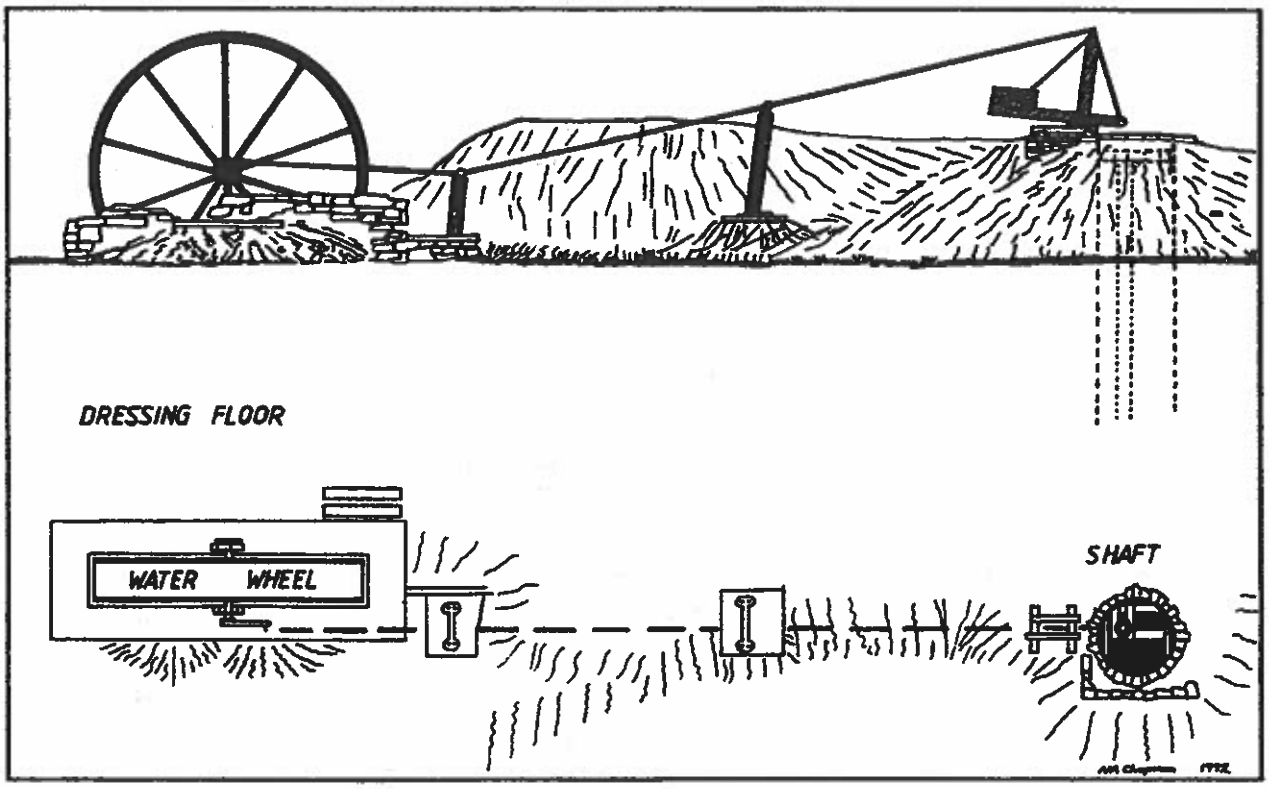
During March the roof timbers were put on the mine shop and the roof slated. The masons were busy at the wheel pit which was then ready for timber. Also the washing tubs for ore dressing were at the mine. A scene of much activity has to be visualised in the valley at Tynehead with items of all kinds necessary for the mine being delivered and the plant erected.

Underground, lead ore was produced from Kindred's Working and a nice string of copper ore had crossed the level about one fathom from the forefield. To prove the vein they had cut across from one cheek to the other and had driven 27 feet without finding the other cheek. The mine shop was now covered and work was continuing on the wheel pit. The actual wheel was reported to have arrived at Alston.

A meeting was held in Newcastle upon Tyne on 6 June 1857 with Mr Fringe in the chair. The accounts showed a balance against the mine of £222 18*s*. 5*d*. with three months mine costs for

machinery, buildings and sundries amounting to £230 6*s*. 3*d*. Cash received from calls totalled £369 2*s*. 6*d*. leaving a balance against the adventurers of £84 2*s*. 2*d*. Unpaid calls by this time amounted to £58 7*s*. 6*d*. A call of 1*s*. per share was made to improve funds.

The Agent reported the construction of the mine lodging house, while the Smithy, was within a few days of completion, the water wheel pit was finished and the wheel was at the mine. A leat to deliver water to the wheel from Tynehead Fell was almost complete. Work was also progressing on the construction of a crusher to be driven by the wheel.



Tynehead Lead Mine. Suggested arrangement of the waterwheel-driven plant — NY 752 378

Underground four men were driving a Low Level probably from the bottom of a recently sunk shaft and two men were driving a drift from rise No. 1 to rise No. 2 in Sir John's vein to provide ventilation and open the ground for stoping. One man and two boys were engaged in grating the ore on the surface. From rise No. 2 the men had driven 27 feet from west to east without finding the other cheek of the vein. The vein contained ore the full width.

By August the Low Level had been driven 96½ fathoms and would soon cut an east-west running vein. The drift in the Sir John's vein was looking well for ore. Two men were putting a rise from the level into this working for ventilation and to develop the stopes. Above ground the stamps were in the course of construction and would be set to work as soon as possible.

The timber to build a hut for the miners was at Alston and the millwrights were erecting the water wheel at the mine. By the end of September the wheel was operating and crushing ore. Rails were laid in the Low Level and hoppers installed to deliver the ore to the wagons. Lead ore continued to be raised from the workings much to the Agent's satisfaction, at 24 cwt to the fathom.

Having constructed the surface works, operations concentrated on the driving of the levels and the development of the stopes. Ventilation was proving a problem so rises were driven to

connect with higher workings and provide fresh air. Enough ore was produced to make dressing possible and to promote sales to the local smelters. During a very dry Summer in 1859 the shortage of water prevented the water wheel from operating.

Underground the driving of the levels proceeded with enough ore cut to pay the costs but little else. Two tons of lead ore concentrate was sold to Locke, Blackett and Co. for £17 12*s*. 6*d*. during the summer. John C. Little of Alston was asked to visit the mine and report on the future prospects. He described the dressing floors as convenient for the level and the water wheel as powerful with stamps attached. He also pointed out that rollers for crushing could be attached. The mine shop with the blacksmith's shop were equipped with every necessary convenience, unfortunately without providing details.

The Low Level was being driven south by four men to the west of the Sir John's Vein in the Tyne Bottom Plate. They had driven 117 fathoms from the level portal and he expected that six cross veins would eventually be cut.

At a General Meeting held on 12 November 1859, the balance to 28 October was £47 10*s*. 11*d*. against the company. To make up the deficit a call of 1*s*. 6*d*. per share was made. It was also declared that talks with the landlords had reduced the dues to ½₂th of the lead ore The reduction in dues led to an expansion of activities underground with six men driving in the level early in the next year.

However, when the General Meeting came round on 23 February a cash balance against the company stood at £19 9*s*.8*d*. and total liabilities were £77 13*s*. 4*d*. To make up the difference a call of 6*d*. per share was made. It was decided after some discussion to continue driving the level with six men. Much was said about the closeness of the Sulphur Vein to the level. It was stated to be within 50 fathoms of the forefield by the middle of the year. By the beginning of May 1861 the level was described as a little easier to drive at £6 10*s*. per fathom.

Nothing further was reported until February of 1862 when a lengthy report was carried. They had driven the Tyne Head Low Level 10 fathoms 3 feet and also opened a top level, it was expected that with a further 7 fathoms driving the Great Sulphur Vein would be cut. In the driving several small strings had produced some ore and sulphur, which was believed to be a good sign for the eventual cutting.

Work continued in the Low level into the year with the intersection of the Sulphur Vein taking place from May onwards. This was accompanied by much water which spouted out 9 feet from the vein.

Later in the year they were cutting on the Sir John's Vein, getting some ore from strings, while the forehead was promising great things. It would seem that the vein intersected had been the Sir John's with the Great Sulphur yet to find. As ore was extracted plus the expectation of more when the second vein was cut, the reports were optimistic. Work on extracting Sir John's vein continued with cross driving to locate the eastern cheek. The vein proved to be 8 fathoms wide with spar intermixed with lead ore. A tender was let to continue the interrupted drive to the Great Sulphur vein. It was said to lie within 10 fathoms of the existing forehead.

Later in the year a vein to the east of the Sir John's vein was cut and described as being 5 feet 6 inches wide and of beautiful material. Little seems to have developed from this discovery, but operations continued in the Sir John's Vein and eventually a discovery of some fine silver lead ore was made. It was stated to be the best seen in the mine.

The drive to the Great Sulphur or Backbone continued until the vein was finally cut later in the year. However, the work proved to be very hard and slow with little ore produced, meanwhile

in the Sir John's Vein, lead was extracted. Early in January of 1864, the AGM was held in Newcastle and the usual reports read. It was revealed that a cash balance of £28 15*s*. 7*d*. existed but a call of one shilling was announced to continue activities. The level was stated to be 7 fathoms into the Great Sulphur Vein with some ore being produced but it was very hard to cut. In the Sir John's Vein some samples of copper ore were extracted.

Operations were soon entirely devoted to the Great Sulphur Vein in the hope of cutting a rich deposit, instead some good stones of copper mixed with sulphur were extracted. The Manager, G. H. Robinson sent some away for analysis which proved them to be 34½ per cent sulphur with 4.9 per cent copper, worth £3 10*s*. per ton at Newcastle. A few tons were quickly collected and sent to market to test the response.

Many mining engineers had expected copper to be found at depth and now with 60 fathoms cover their predictions were coming true. The amounts of copper were increasing as the south cheek of the vein was located. Mr. Robinson was quick to comment on the ten years of perseverance of the shareholders and hoped their rewards were coming. Towards the year's end they were still cutting into the Great Sulphur Vein and had achieved fifteen fathoms driving in a month.

Operations continued during the following year with regular reports being submitted to the management committee and some were published in the Mining Journal. Unfortunately during November water appeared in the level and gradually got the better of the pumps until the workings were flooded. Into 1866 activities centred on the removal of the water until early in April it was reported that the roof was dry. Men were soon driving at a rate of one fathom per week in a vein of spar and sulphur. Ventilation was a problem, so 40 fathoms of air pipes were urgently requested. Later in the month, they were able to locate the source of the water issuing from the east side of the level.

Work appears to have continued over the next couple of years without any mention in the reports. Then for 22 September 1866, George Millican reported that there was no alteration since the directors were at the mine, only a little more sulphur.

Again the silence returns until a report by Messrs. William Vipond and T. Carr of a visit to the mine on 17 January 1869. They examined the workings to study the best method of proving the Sir John's Vein to the south of the Backbone. They had a survey of the mine by a Mr Bell which they were prepared to accept as correct. This indicated that the vein cut recently had a different bearing of 30 degrees East while the Sir John's Vein was at a bearing of 17½ degrees East and the Backbone was to the south east. Also according to the survey the Backbone was 20 to 30 fathoms ahead.

They recommended the driving on the existing cross cut to intersect the Sir John's Vein, then to rise up to prove the position of the ore-bearing sills. If these were productive, then it would be easy to prove the Sir John's Vein as well. They went on to say that the cutting of the Sir John's Vein was one of the most important trials in the country. It was believed that the ground would be unproductive before cutting the vein. Nothing further was reported until the beginning of 1873 when a sale note appeared in the Mining Journal. It is evident that operations at the mine had ceased without cutting the Sir John's Vein and a Mr G. E. Swithinbank had been appointed to liquidate the concern.

He instructed Henry Gilpin to auction the mine and its plant and this was done on 26 February 1873 at his Sales Offices, George Chambers, Pilgrim St. Newcastle. The mine was described as situated on the North East slope of Tyne Head Fell, Alston, Cumberland, in the heart of the

richest lead producing district in England. Bounded on the North East by the River Tyne, on the South by the Clar Head Mine and on the East by valuable mines belonging to the Greenwich Hospital.

The mine extended over 1,000 yards of the Sir John's Vein and from the River Tyne to the Clar Head boundary or Clargill Burn on the Great Sulphur Vein with the usual chords on each side of the veins. It was considered by some of the leading mining experts to be one of the most interesting trials in the country, Many thousands of pounds had been spent in putting in rails, erecting plant and machinery and driving to about 20 fathoms from the intended vein. Unfortunately at present the story finishes here. What happened at the sale is not recorded. The mine was abandoned and equipment removed, however, the water wheel and its crushing plant were left in place to rot. A photograph in *Two Centuries of Industrial Welfare* by A. Raistrick, page 103 depicts the water wheel and much of the crushing plant on site probably in the 1950s, A drawing survey was undertaken in 1971 by a group of pupils from Eston Grammar School and the results appeared in the *Cleveland Industrial Archaeologist*. At the time enough pieces were found to permit a reconstruction of the 30 feet diameter wheel. An interesting detail was the finding of the maker's name 'Deans & Co. No. 27.' During October 1991 a visit to the site by the writer found no ironwork, just the collapsed structure of the Mine Shop and the crumbling water wheel pit. The shaft was about 10 metres deep to water with a number of concrete sleepers covering the top. Nearby water issued from the High Level drift. But the lack of waste heaps about the site suggested that little mining had actually been undertaken.

In the *Mining Journal* for 1881, Volume 51 p.1529. is the following registration of a company.

The Tynehead Sulphur Copper and Lead Co.

To purchase or otherwise acquire mines and mineral properties, lands and hereditaments in Cumberland and elsewhere in England and Wales and the rights and priviliges and in particular to carry out an agreement made between T N Worlton of the first part, and C E Mitchell as trustee of the company to work, explore, develop and maintain the mines, mineral properties and works and to deal in, sell and dispose of ores, metals and minerals generally. Each Director to take one share. They are:

C E Mitchell,	176 Clapham Road.
T H Davies,	13 Grafton Street.
Rustonijee Byronijee,	4 Grafton Street.
D Slater,	Mincing Lane.
T D Roper,	Mold.
A M Byng,	Quendon Hall.
C S Catty,	74 Talbot Road.

What happened to this company, did they work the veins at Tynehead? At present no other information about this company or their activities has come to light.

References.

Mining Journal, 1855–73. Most of this article has been written from the numerous reports in this Journal.

RAISTRICK A. *Two Centuries of Industrial Welfare*, 3rd ed. (Kelsall & Davis. 1988).

BEADLE H L. 'Sir John's Mine, Tynehead, Garrigill' *Cleveland Industrial Archaeologist.*, No. 13, pp 35-41. (1981).

My thanks are due to the staff of the Science and Technology Depart. of the Birmingham Reference Library for providing many of the books consulted for this article and for their friendship over several years.

Brian Young, judge of the Grand Mineralogical Exhibition shares a few of his thoughts with competitors past, present and future.

From the judge's viewpoint

Brian Young

The Grand Mineralogical Exhibition has now become an established part of the Killhope year and, over the years, it has come to become a high spot in my year. As a professional geologist working in northern England with a particular interest in minerals and mineral deposits I get to see a lot of rocks and minerals most working days. Why then do I so enjoy the Killhope Show and what does the judge look for when 'make your mind up time' comes around for him on the first Saturday in September?

At this stage I should perhaps explode the myth that letting the judge keep the best specimens or writing specimen labels on the back of £50 notes helps. I have never been offered either. Both would be nice —but— they would not help!

What then is behind the arcane process of judging? It is perhaps more difficult to answer this question than it often is to chose a winner. I recently asked a friend of mine who exhibits and also judges at plant shows what criteria he and his colleagues adopt. A lengthy airing of views and ideas ensued but, probably not so surprisingly, no firm answers.

To the best of my knowledge no one has ever tried to draw up instructions for what to look for and how to award points in a mineral competition. There are no absolute criteria but you know a winner, or a loser for that matter, when you see one. The idea of the show is as much about having fun and encouraging collectors to show off their choicest specimens as it is about finding winners. All such judging is highly subjective; it cannot really be otherwise. Lest intending exhibitors are depressed and put off by the thought that it all hangs on the brief whim of the judge let me offer some encouragement, and I hope, help.

What appears to be a fine and beautiful specimen to one person may leave the next person quite indifferent. However, the competition is attempting to highlight the best on display. In this sense 'best' encompasses a number of factors. Certainly the initial beauty, the 'wow' factor, might be important, but without seeming too pompous the judge's task is meant to probe a little deeper. In assessing the 'quality' of a specimen the care afforded to that specimen, both in its original collection and in its subsequent care can be seen. The best specimens have as little damage as possible. Even amongst some mineral collectors there is an assumption that minerals and rocks are pretty robust and can more or less look after themselves (I once saw a rare specimen of truly national museum standard collected in the field by a collector who then promptly ruined it by pushing it, unprotected, into his pocket, with several others!!). Careful collectors do not need me to tell them that fine minerals are delicate creatures which need as much tender loving care as any other treasured possession. The care a specimen enjoys for the other 364 days of the year is generally pretty obvious when it makes its outing to Killhope on the 365th day. Care in this sense includes cleanliness. Many specimens when found are more or less filthy. Removal of nature's grime is not just as simple as giving it a scrub with a stiff brush. Skill and care are involved. Left lying around even where they are not being obviously damaged, minerals can acquire copious quantities of dust. The standards of hygiene applied by the collector are clear when the specimen appears on the show bench.

Not only should minerals be kept free of obvious dirt they should not, if they are to be taken seriously as specimens, acquire the additions of other alien substances. The practice of 'improving' specimens such as fluorite by giving them a 'face lift' in the form of a film of

glycerine or oil (WD40 is popular amongst some collectors) is not uncommon. I even heard recently of one complete Philistine who advocated inducing a permanent film of moisture by the use of acid on certain types of specimen! Boot polish (Cherry Blossom was once the preferred brand is popular amongst some collectors of hematite. All these ploys are, of course, bad curatorial practice and would count heavily against them if they appeared on a show bench.

I have on occasions been asked 'Why did that specimen win First Prize — it is much smaller than all the others?'. As in so much of life, size is not that important. Very often a small well-cared for specimen is simply a much better example of its type than a huge slab. There is a moral here. If you have good but small specimens bring them along — they might win a prize.

Another common question prompted by the 'any other mineral' type of class is 'Why did that win — it doesn't look any better than that?' The answer here is often rarity. Good examples of many minerals are not too uncommon and fairly easy to come by. There are, however, some minerals which are much rarer and in some instances easily overlooked. The skill, care and attention to detail in collecting and caring for the more unusual is a mark of a very good, as opposed to just a good, collector. Such specimens can score high marks. I am convinced that there are lots of extremely interesting specimens scattered around houses in the Dale and beyond which would look good at Killhope and could well win prizes.

Whereas most collectors will appreciate the physical needs of their specimens, surprisingly many neglect what is an equally important and, in some cases, even greater aspect of their care. This is the label. However beautiful a mineral specimen might be it is virtually worthless if it is not accompanied by an accurate label. Most important on the label is, not as might be expected the name of the mineral, but the locality from which it was collected. This point cannot be over- emphasized, not just from the point of view of the competition but for any one who collects minerals, rocks or fossils. Just think of it. Given the appropriate technology or expertise it is perfectly possible to identify accurately a mineral specimen today or in 100 years time. The one piece of vital information that the collector is privileged to hold is the place it came from. Once that is lost there is absolutely no way of reliably establishing its provenance. In judging the 'quality' of a specimen at Killhope I have always taken great account of the completeness of the label. At Killhope we are dealing mainly with fairly common minerals which in most instances one might expect to see correctly identified. My previous comments on identity apply particularly to the less well-known species. Given two specimens with equal other merits the highest marks will always go to the one with the most precise locality information: '315 Level West Drive, Greencleugh Vein, Frazer's Hush Mine, Rookhope, Weardale, Co Durham [NY8900 4435]' is obviously much better than 'Weardale'.

In judging I am allowed, indeed encouraged, to add my comments on specimens I find interesting. I hope this helps collectors as much as seeing the wealth of interesting specimens helps me in my work in the area.

These then are just a few of the things the judge is looking for. I have to say that my experience at Killhope is that these are generally there in abundance The final choice of which particular specimen gets First Prize in any class is often extremely difficult (and I mean difficult!). It may come down to a very arbitrary choice in the end. The object of the exhibition is to have fun and to show off some fine minerals. I think it is fun. I know that the Killhope Grand Mineralogical Exhibition is one of the finest displays of northern Pennine minerals to be seen anywhere in the world. Long may it continue.

As a post-script may I be allowed to appeal to all those young collectors who visit Killhope. There is a class for junior collectors. It is just as valued a part of the Exhibition as the other

classes. An interest in minerals, rocks and fossils is a great way of learning about the world. I for one value my time at Killhope many years ago, long before the development of the Lead Mining Centre. It was picking up pieces of 'spar' and galena in the Killhope burn on family picnics which aroused my interest in geology.

NB This years' Grand Mineralogical Exhibition takes place at Killhope on Saturday–Sunday 5–6 September. Ed.

More on Witherite Mining

C C Short

Brian Young's 'Special Minerals in the Northern Pennines' in Out of the Pennines draws valuable attention to Witherite mining in the northern Pennines, although it is mainly about the minerals.

Unlisted in the references however is a very valuable 1942 account of the Settlingstones and Annfield Plain Mines and the Annfield Plain processing plant, found in the rather unlikely source of the *Journal of the Oil and Colour Chemists' Association* (Vol XXV No. 265 July 1942 pp 127–142). For a wartime publication this is a very informative source. (The Annfield Plain Mine was actually at Burnhope; I could see from my Manse bedroom windows in Lanchester the picnic site near the hill top, and below it the area, across the road from the mast, that marked the exit of one of the levels.)

The author of the account was E. W. Muddiman, B.Sc., Fellow of the Institute of Chemistry, an employee of the Holmside and South Moor Collieries Ltd., who was probably manager of their Annfield Plain Washing and Grading Plant. For Settlingstones he relied on information given him by G. W. G. Trestrail, M.I.Min.E., General Manager of Settlingstones Mines (and a Cornish name, this Cornishman notes!). I wonder if this pair might not be the authors of Anon (1940) in Brian's references.

The account is the record of a lecture given to the Association's Newcastle upon Tyne section on 11 May 1942. In it Muddiman describes the situation, vein characteristics and working of the mines, with one underground photograph from Annfield Plain and a small section and plan of Settlingstones. There the vein carried a thin stringer of sphalerite. Mining was by normal metal-mining methods, although it is noted that to avoid shattering the witherite 3oz cartridges of 'explosive of the powder type' were used. If this means black powder, is it one of the last examples of the use of gunpowder? Annfield Plain Mine was an unusual example of a metal mine within a colliery. There, where the vein passed through the coal, a brecchia of coal and witherite was found. Surface water percolation had altered the witherite in the higher levels to barium sulphate (barytes, although only present as a powder; the company never sold any barytes).

The Annfield Plain Washing and Grading Plant is described, although the Settlingstones plant was 'very similar in principle'. The plant was a classic contemporary gravity separation design, with breaker, trommel and jig operation. There were 'five specially designed pulsating jigs of the Hartz type'. Undersized witherite from the final trommel passed through 'five Richards' vortex-type classifiers' and 'on to three Wilfley concentrating tables'. Early in the train a hand-picking stage on a revolving picking table served to remove oversized pieces for Selected Best Witherite, which was further crushed to size. Three photographs show the revolving table, the trommels and jigs, and the tables. Three further photographs illustrate witherite crystal forms.

'The separate sizes of clean witherite from the jigs and the tables are conveyed intermittently to two Broadbent centrifugal dryers' (centrifuges) which reduced the water content to 1–2 percent.

Four qualities were sold:

	size	$BaCO_3$ per cent
Picked lumps	5–2 inches	92–94
Nuts	1½–½ inch	92–94
Peas	⅜–⅛ inch	91–93
Fines	⅛ inch–100 mesh	90–92
Two pulverised grades:		
Normal	81–82 per cent through 300 mesh	93–95
Fine	99.5 per cent through 300 mesh	93–95

The main uses of witherite were:

1. . . as a better source of barium chemicals than barytes, mainly due to being a carbonate, and therefore more easily reacted, but also because high purity barytes was only 65 per cent barium oxide equivalent, compared to witherite's 75 percent.

   Barium chemicals found use in the dying and printing industries, as a mordant, in making highly glazed paper for photographic use, as a barium meal, as a chemical intermediate in making hydrogen peroxide, in crystallising sugar beet molasses, and in soap manufacture.
2. . . as an 'extender' (i.e. to provide bulk and intensify colour) in white paints.
3. . . to eliminate 'scum' on the face of bricks during firing.
4. . . in glass manufacture, for higher refractive index, elasticity and toughness, and in flint and crown glass.

   Since the end of witherite production these uses have been largely superseded by barytes, except that in paint it is titanium dioxide that has taken over.

Other sources of witherite referred to are Nentsbury, Blagill (up to 200 tons per annum) a little from Snailbeach in Shropshire, Pennant Mine near Rhyl (60 tons per annum), Ushaw Moor and Brancepeth Colliery (Pease & Partners; 1500 tons per annum in 1921) and production from Holmeside & South Moor's Craghead Colliery, aggregated with the Annfield Plain production. The mineral has also been noted at Wanlockhead in Scotland, and Postlethwaite (*Mines and Mining in the English Lake District*) lists witherite from the Dufton area.

Some new books

I have received information on a new book which may be of interest to members — *The art of an underground miner* by Robert McManners and Gillian Wales. The artist is Tom McGuinness who worked as a coal miner in the South Durham Coalfield for 40 years. His work gives a powerful impression of the coal miner's lot and the full-colour book can be had from Bishop Auckland Town Hall, DL14 7NP for £9.95 plus post and packing.

J A Buckley at 25 Carn Brea Lane, Pool, Redruth, Cornwall, TR15 3DS offers the following titles for just £10 plus £1 post and packing which represents a discount of about one third to our members: *South Crofty Underground*, *Geevor Mine Underground*, *South Crofty Mine, Geology and Mineralisation*, and *The Cornish Arsenic Industry*. (*South Crofty, the last tin mine in Europe, closed on 6 March 1998. Ed.)*

Readers' Letters

Tolgus Tin

Newsletter No. 42 contained an item on Tolgus Tin in Cornwall. There was a time when this was a working commercial operation, re-treating spoil heaps from around the county. A tour of the site in those pre Cornish Goldsmiths days was a privilege and a fascinating experience. The display is administered today by the Trevithick Trust, who also look after Pendeen Lighthouse, Porthcurno Museum of Submarine Telegraphy, and, on behalf of the Trevithick Society and the National Trust, the Cornish engines at Pool and Levant.

Colin C Short

Tolgus Tin

I visited the site in July 1997, and can confirm that it still exists, but possibly in a worse state than it was in 1991. The buildings housing the plant are in a derelict condition, and there were swallows and pigeons nesting in them. The machinery has not been obviously restored in any way. A working curator is employed who during my visit was installing and restoring standing gas engines in a small display area just inside the entrance. Two 'Friends' were present, one was taking the entrance fees of 50p, the other was attempting to remove half-dry material from the slime pits.

The place comes under the auspices of The Trevithick Trust which has taken over the responsibility of maintaining and restoring much of Cornwall's industrial heritage. From my conversation with the curator, it is the intention of the trust to carry out some restoration work to prevent any further deterioration. Eventually it is hoped to have part of the process working again. As a matter of interest Richard Trevithick was a Cornishman, and an engineer who is credited by some to be the first man to build a steam locomotive or tram wagon specifically to haul trams on an iron railroad. It apparently worked at the Pen-y-Darren Iron Works, Merthyr Tydfil, Wales, in 1804.

B G Collinson

Raff Wheels

With reference to your enquiry about the use of raff wheels in the Northern Pennines there is evidence of raff wheels having been in use at the Derwent Mines during the last century.

It may interest you to note that on the 10th and 11th July, 1884, the fixed and loose plant of the Derwent Lead Mining and Smelting Company's works were sold off by auction. The auctioning was done by a Richard S Benson, on instruction from James Joicey. It is recorded in the sale catalogue of that day that selling would commence at noon on each of the days, in order to give any prospective purchasers ample time to arrive on site. Amongst the many lots on sale at Deborah's Washing Floor are included two lots comprising raff wheels, confirming this device was being employed at the Derwent Mines prior to abandonment

Presented below in table form is the Item No. concerned with its Lot contents, along with the finally accepted bid prices for these items.

Item 263 Raff wheel, waterwheel 6ft diameter, 18" breast with horizontal shaft and pinion wheels and bearings. Sold at 15*s*

Item 274 Crushing mill with raff wheel, 14½ft diameter and cylindrical riddle below two 27" cast iron rollers, with wrought iron shaft, 2 slides complete with double purchase crab and chain. Sold at £4

Since raff wheels were mostly used for elevating measured amounts of sandy material, their

probable location would have been close to the round buddles at Deborah Washing floor.

Amongst the items for sale as a single lot (Item No. 322, Shildon Mine) was a 'snow pipe'. Has anyone out there any idea what this item might have been used for? Hope you find this information of some interest.

Ken Pirt

News from Durham County Council

Patrick Conway

As you may know the County Council works its visitor figures out on a financial year basis, from 1st April to 31st March. This means that all our museum sites 'suffered' in 1997-8 by having a year with no Easter — there having been two Easters in financial year 1996-7. I am pleased to be able to report, however, that 1998-9 has got an Easter in it — which always helps with visitor numbers as Easter tends to be the first weekend of the year on which people feel like getting out and exploring their county and their museums and heritage sites. The weather, this Easter, was somewhat unseasonable and in sharp contrast to the same period last year when walkers in Durham and Northumberland were suffering from sunburn. Despite the snow a good number of visitors made their way to Killhope, particularly on Easter Monday, and some TV filming took place on Easter Sunday which will gain some more very welcome publicity for Killhope.

It was good to see old friends at the launch of the Friends' new publication on 4th April and I am pleased that some of your committee were able to attend both the launch of the Bonny Moor Hen play by Jack Drum Arts and Charivari at Killhope on 2nd April and the private view of Lead Shots on 15th April. For those of you who have not seen the Lead Shots exhibition it consists of photographs by Dermot Blackburn recording life at Killhope and following its debut there will be touring to other venues in the region. It is the second in a series of artists' residencies which we have hosted at Killhope, funded through arts development budgets and supported by Northern Arts and plans are now well advanced for a third residency in 1998 — more details later! As ever thanks to all for your continuing support of and interest in Killhope.

Dates for your diary

Since the last newsletter we have firmed up arrangements for two dates, and added in an extra talk to our programme. Those who went on our first walk of the season, up the Westernhopeburn valley, had a thoroughly good time, so why not join us on our next outings. These are:

Saturday July 18th
Nenthead revealed. A chance to explore the exciting remains uncovered by North Pennine Heritage Trust archaeologist Mick Krupa. Mick will talk to us about what he's found, and guide us round the smelt mill site. Meet at 2 o'clock in the Heritage Trust car park at Nenthead.

Sunday August 16th
Cashwell. A guided walk led by Ian Forbes to some of the North Pennines' most remote (and highest) mining and smelting sites, situated on the flanks of Cross Fell. An invigorating leg stretch (mostly along good tracks) of some 8 miles. Meet at the village green in Garrigill at 11 a.m., with walking boots, waterproofs, and packed lunch. If the weather is bad, we will do a low level alternative walk instead.

Wednesday October 14th
Underground Photography — How To Do It. An illustrated talk by Brian Short in the King's Head, St John's Chapel, starting at 7.30 p.m.

This is a new diary date. Brian Short will share some of his expertise in taking photographs in old mines, and show examples of his work.

NORPEX

In the advertising of the NAMHO Field Meet in the last newsletter, the involvement of NORPEX was omitted. NORPEX members are indeed involved.

Answer to a Christmas Quiz leftover

Thomas Sopwith, giving evidence on mine accidents to the Kinnaird Royal Commission in 1862:

'I believe that a great deal of their want of health arises from their food not being properly cooked, eating very dense pastry for instance. In fact, I think that in one accident which happened, I could almost trace that as tending towards the actual cause of death. It was the case of a man who was killed in a shaft; on my going down to look at the place, I observed that he must have travelled out of his usual road in going down to a place where he had an opportunity of sitting down, and that in going to that place he had to all appearance tumbled over, as I supposed, from a fit of giddiness. Upon making enquiry it was found that he had been subject to fits of giddiness, that he had had an attack on the previous day, also that he had commenced to climb the shaft immediately after his dinner, which in all probability was not very digestible, and the labour in climbing the shaft and in going down again, I have no doubt, had brought on the giddiness which ended in his death....'

Project Officer's report

Ian Forbes

As I write, Killhope is changing from winter woollies to summer costume, and throwing open the doors to visitors again. For Friends this means the end of the archiving season and the start of outdoor activities. Cataloguing of our extensive archive has made massive strides over the winter, and tribute must be paid to the dedicated band of volunteer archivists who worked hard every Friday. Bill Attwood, Shelagh Bridges, Helen Cannam, Pam Forbes, Dick and Margaret Graham, Nan Simmons and Carol Sutton were the core group, and thanks to them the work of archiving is nearly done. Next comes the massive task of amalgamating all their record sheets into a publicly accessible catalogue. I hope this work will start very soon, for we will then have a wide range of interesting material for members to consult.

Meanwhile, although we have pretty well caught up on archiving the backlog of our collection, I am very pleased to say that we are still receiving material from Friends for our archive/library. Mrs Sherwen gave us a number of photographs of Whiteheaps and Blackdene mines when British Steel was working them. The pictures are not all that old, but already of great interest, for the scenes they portray are all now gone. Also on the theme of documentary photographs, I was especially delighted when Willie Drea gave, for our archive, his albums of black and white photographs chronicling the development of Killhope over nearly twenty years. Margaret Manchester gave us a copy of the analysis she has done on the nineteenth century censuses for Killhope, Simon Chapman donated some of his measured drawings of mine sites, Roy Curry gave a winding book from Settlingstones Mine, and both Mr and Mrs Foster-Smith presented us with examples of their artistic talents — the one donating the picture of Cow Green mine used on the front of *Out of the Pennines*, and the other giving a watercolour she did of Killhope long before any restoration work was started. Thanks to all, and keep the material coming in!

On site, Ian Jowett has started the reconstruction of the Brunton Buddles, and I'm sure would welcome extra help. People with woodworking skills (rudimentary ones are OK!) would be particularly welcome on this project. I'm really looking forward to getting this important part of the site working again, although there is a huge amount of work to be done before the little waterwheel (the first thing we restored!) can be set to drive even one buddle.

Our main event since the last newsletter has been the launch of *Out of the Pennines*. Unfortunately, I wasn't able to attend this event, so it is reported on elsewhere in the newsletter. If you haven't yet got a copy of this, our new book, get one when you come to Killhope! I hope to see many of you there over the coming summer.

Staff News

I'm extremely pleased that all the staff team who worked at Killhope last year are back again this season. There has been one significant change though: Di Crampton is now Di Fairlamb. We send our congratulations to Di and Cliff on their recent wedding, and wish them all the best for the future.