

CAT

**The Newsletter of the Cumbria Amenity Trust
Mining History Society**



No.66

January 2002

**Cumbria AmenityTrust Mining History Society
Newsletter No 65, October 2001.**

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Society Officers and Committee members.		Back cover.
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Cover picture

A 16th Century “Knappe” at work in the mines of the South Tyrol,
as depicted in bronze in the mining museum of Sterzing (Vipiteno).
Contributed by Dave Bridge.

Chairman's Report - Dec 2001

As with most outdoor societies our activities this year suffered from the foot and mouth restrictions. Thankfully all was not lost as Nenthead continued to provide an outlet during the spring and summer and restrictions were lifted by the time of the Welsh weekend in September. Early in the year a meet had taken us into previously uncharted ground at the Wad Mines - just one example of the less publicised work carried out by certain members - and this was followed by an unscheduled sailing trip organized by Ian Matheson when a party of four called at such varied sites as granite quarries on the Isle of Mull, a marble quarry on Iona, and the Loch Ailne Silica Sand Mine. An even more exotic trip took five members of CAT to Patagonia where on Tierra del Fuego a visit to what must be the most southerly copper trial in the world was followed by a spot of gold panning.

By the end of July our old stamping ground at Coniston was once more open to business and a flurry of activity resulted in more rope antics in South Vein and the (brief) opening of a new way out to Grey Crag Level, as well as more surveying. But the most important development at Coniston has been the dig through the blockage beyond Paddy End Shaft by John Brown and his team who against what seemed to be insurmountable odds have forced a way through the collapse of massive boulders which had piled up at the bottom of the through trip. This has been a magnificent effort and should eventually provide a walk-through into the extensive part of Grey Crag Level that has been cut off since 1996.

Another highlight was "Lakeland's Mining Heritage" being highly commended in the Landscape and Traditions class of the Lakeland Book of the Year Awards.

So the year has not been without interest, and with the steady income from the books and the CD-ROM we should be in healthy state for the launching of CAT Journal No 5 hopefully before next summer. On behalf of the Society I would like thank the committee and others for their hard work and dedication throughout the year and in particular John Aird for taking over the responsibility of treasurer in mid-stream.

Dave Bridge

AGM and Dinner

The AGM and Dinner took place at the Yewdale Hotel in Coniston on Saturday 8th December.

Before the proceedings began a small group led by Peter Fleming scrambled up Mealy Gill in search of the 17thC Coniston Wad Mine, mentioned by Alistair Cameron in the last Newsletter. Peter said that he knew where it was, so Alistair, Dave Bridge, John Aird, Mark Simpson and Ian Matheson followed him up the gill to see it. It turned out to be a small adit about 15 feet long high up in the side of the gill, with a fault running through the wall filled with a black clayey substance which at first sight resembled wad, but there hardly seemed enough to support a blacking mill which is said to have operated at the foot of St Martins Beck.

At the AGM Dave Bridge stood down as Chairman, and Mark Simpson was elected in his place. Dave has probably had the longest tenure of all the Society's Chairmen, and has done a tremendous job on our behalf. He has rarely missed a committee meeting, and presided over our 21st birthday celebration last year. Dave has been very active on all fronts, producing the interactive CD of the Coniston Copper Mines, contributing to Lakeland's

Mining Heritage, and writing numerous articles for the Newsletter and Journal. He is currently researching the mines of the Picos de Europa following our meet there last year, the Gold mines of Tierra del Fuego, further to the visit there by 5 of our members this year. He has led many meets in a variety of mines, led the exploration of Frog Shaft at Nenthead, carried out a lot of exploration at Coniston with Angela Wilson and others, and with Mark Simpson, has spent the last 6 years systematically surveying the Coniston Mine. Thanks Dave! Dave will continue to serve the Society as an ordinary committee member. There is an account of an interview with Dave by Jeff Wilkinson in this Newsletter.

Mark Simpson will always step in when a job needs doing. He rebuilt the members accommodation of the BMSC hut because it needed doing, and he stepped in as CATMHS Treasurer at a moments notice. He has his own ideas as to how our society should progress. Mark is well known as a prolific digger and fearless explorer (those words are understatements), and with Dave has spent years surveying the Coniston Coppermine, getting into new ground in the process, but probable his greatest achievement to date has been to produce plans from all the data and to tackle the task of transferring it all to computer. He has updated the software for the CATMHS Library and Archive so that the index can be accessed by anyone from the web site or floppy disk. It was Mark who invited John Hodgson, the LDNPA Archaeologist to our last committee meeting, a liason from which a number of mutual advantages should arise. Watch this space.

The dinner was excellent, with a superb buffet provided by the Yewdale. Everyone was in party mood, enlivened by large quantities of balloons and

party poppers provided by Angela Wilson, and the event was very enjoyable. When things had quietened down a bit Peter Fleming entertained us with an account of the recent trip to Patagonia, illustrated by some superb slides.

Thoughts from your new Chairman

Another AGM another year and Dave Bridge has bowed out after 9 years in the office – yes 9 years. A hard act to follow and it does not seem 5 minutes since Mike Mitchell was Chairman. I am fortunate in the other committee members who have agreed to be re-elected from last year, and doubly fortunate in our secretary Sheila Barker.

To come – as usual it will depend chiefly on yourselves - but here are some items: Dave Bridge and I will be publishing our efforts in the Coniston Survey. Ian Matheson intends to bring out Journal No 5 as well as the Newsletters, plus being Membership Secretary, for which he was awarded the Golden Miner at the Dinner. Society meets, arranged by Jon Knowles, will be many and various, and there is the prospect of working with the National Park as indicated by John Hodgson, the LDNP Archaeologist, in various surveys and other projects, for which grant aid may be available. Such projects, the Coniston Slate surface survey to think of one, should be well within the Society's ability to carry out. I know from the membership forms that such expertise exists, so do not be surprised if you received a communication. A good standard of work is a very definite must, as one of the conditions of such a partnership is that publication must take place.

Other projects are ongoing; Grey Crag Level, The Furness Relict Survey,

Newlands Furnace, and Hudgill.. There are probably others. So if you have some spare time, there are many people that will be pleased to see you.

However – To quote the Mitchell – “Wanted active forty years olds”, one can smile but the problem of encouraging new active members, reiterated at the AGM by Jon Knowles, is constantly on the mind of your committee. So all being well the Trust can look forward to an interesting year.

Mark Simpson – Chairman.

Membership renewal:

From the annual accounts appears that the operating costs of our society exceeded income from subscriptions by nearly £300 last year. The cost of the Newsletter and postage was almost £880. Subscriptions were due on November 1st, and at the time of printing about two thirds had renewed. Those who have not done so will receive a final reminder with this issue, and will not receive the next one unless they pay their subs!

Donations

Thanks to Trevor Cotton and John Brown, who sent donations with their subscriptions.

Members email addresses:

Included with this issue of the Newsletter is a membership list, which includes email addresses. These change frequently and quickly become out of date. I suggest that for someone who is not a regular contact it might be advisable to telephone first to check that the address is still valid. I do maintain a database which includes email addresses, updated as new information comes to hand. Copies are available on receipt of an S.A.E.

Members Interests

Some time ago I asked for information regarding members interests and expertise, with the idea of publishing it to draw attention to the rich diversity of our Society, and so that members needing help or advice or support would know who to ask. The response was patchy, and I felt the list was unsuitable for general publication, say in the Newsletter. I do however have the information on the data base. Copies are available on receipt of an S.A.E.

Change of address:

Mark Simpson has moved! His email address and telephone number has not changed. His temporary address is:
Moughton Cottage
The Green
Austwick, N Yorks.

Newsletter.

The Newsletter is published in the first week of January, April, July and October. Most of it is printed at home on my PC. This is the cheapest, and for me the most convenient method, and enables me to deal with photographs and to include a limited amount of colour. This is expensive and takes a long time to print, so small pictures such as the one in Jeff Wilkinson's article are the most cost and time effective. Mark Simpson's article, 3D Modelling of Mines represents technical limit at the moment. To be able to reproduce the small detail each page took just over 2 minutes to print. All the information in both articles were transmitted by e-mail.

There have been fewer meets to report this year due to Foot & Mouth Disease, but I am grateful for the quantity and quality of material which members send in. Please keep it coming, and if you haven't yet put pen to paper then why not give it a try. I'll accept material in any form, but the preferred

method is in MS Word. Send hard copies of pictures or diagrams as I may have to scan them in separately. Both John Helme and Mike Mitchell have complete sets of past Newsletters for disposal if any one wants them.

The Mine Adventurer, Journal no 5

This should be published in Summer 2002, all being well. My thanks to Alastair Cameron, and especially to Dave Sewart, who is going to make the whole thing print ready. 12 articles have been promised, and I have already received three, but more would be welcome, and it is not too late!

CATMHS Library & Archive

The library has recently been updated and some new purchases made. An index is now available on the CATMHS web site, www.catmhs.co.uk, and also on a floppy disc, which includes the software necessary to use it. If you want a copy please send a blank formatted floppy and a S.A.E. to Anton. You can download the whole thing onto your own PC if you want to.

The lost German Mines at Caldbeck

Thanks to John Helme for drawing my attention to the full publication in the Transactions of the CWAAS of the events leading to the investigation of 'German mines at Caldbeck' as described to us by Warren Allison at last years AGM at Rydal Hall. The article is detailed, - 15 pages – maps, plans, photos etc., and is:

ARTICLE 1X – The Lost German Mines at Caldbeck – Richard Smith, Samuel Murphey and Warren Allison. Transactions of the C&WA&AS, Third Series, Volume, 1 2001.

Accounts of Daniel le Fleming

Alastair Cameron Reports that the CWAAS have recently published a special volume recording the complete

accounts of Daniel le Fleming which are in the Kendal Archive.

Greenburn Copper Mine,

Greenburn Copper Mine in Little Landale is on land now owned by the National Trust, who hope for funding from the Heritage Lottery fund for conservation and interpretation of the remains. With this in mind the Archaeological Field Investigation Section of English Heritage undertook a survey of the site during November 2000. Together with new documentary searches the survey was able to identify new features and to date some of them, including the location two 17th C timber buildings mentioned in a document dated 28th Feb 1690. Following the survey conservation work was due to begin during 2001, but was deferred due to foot & mouth disease restrictions. Agreement is being sought for the HLF to carry over funding for the project until 2002.

News from NAMHO

NAMHO now has 78 member organizations. The publication of the Proceedings of the NAMHO 2000 conference is underway. Sheila Barker attended the 2001 conference, which was held at short notice at the Bradford Novotel on 15th September, following the cancellation of the planned meet in Ireland due to Foot and Mouth Disease restrictions. The 2002 Conference will be based at Aberystwyth.

Will SRT become TRT? (Two rope Technique)

Part of the European Directive, 'Temporary Work at Height' refers to rope access techniques, which must comprise at least *two* separately anchored ropes, one a work rope, the other a back up rope. In exceptional circumstances, where the use of a second rope would make the work

more dangerous, the use of a single rope may be permitted provided that appropriate measures have been taken to ensure safety in accordance with national legislation or practice. The NCA Training Committee intend to raise concerns that this may affect recreational caving with the HSE, whilst the British Mountaineering Council believe that, as there is a clear distinction between working at a height and recreation, it will not affect recreational activity. But would it be applied to Mountain or Cave Rescue situations, which in some cases may include personnel who are in fact at work?

HSE report on PPE

The HSE Research Report, Industrial Rope Access – Investigation of items of Personal Protective Equipment (Contract Research Report No 364/2001) prepared by Lyon Equipment Ltd, is available on the HSE website or from HSE Books. Tests are made of ropes, knots, ascenders, descenders and backup devices, and energy absorption in cowstails.

A new Book from Ian Tyler

Cumbrian Mining

In his seventh book of mining history Ian Tyler gives us an overview of the industry from ancient times to the present day. Using photographs, sketches, old adverts and mining ephemera he illustrates the many aspects of the extractive industries of Cumbria, dealing with some aspects which have not been covered elsewhere. The book is A4, hard back, 232 pp, over 300 photographs and illustrations, and costs £22.50 from Threlkeld Mining Museum or J Tyler, telephone 01228 561883.

Industrial disease blamed for man's death.

A 72 year old man from Baycliff, near Ulverston, died as a result of working in dusty conditions for more than 30 years, a Furness inquest heard.

Frank Steel, of Myerscroft, Baycliff, worked as a slate river at Burlington Slate, Kirby-in-Furness, from leaving school in the early 1940's until he retired at the age of 65 after becoming the Head Quarryman.

Mr Steel's brother, George Steel, of Holly Bank, Croftlands, Ulverston, told the inquest that he had suffered from severe breathing and mobility problems for the last six or seven years before he died, at his home on August 24th.

He said "Everything was just covered in dust where he worked, and even the lighting was dim as they were always covered in dust".

A post mortem carried out by the pathologist at Furness General Hospital, Dr Wendy Blundell, revealed that Mr Steel died of lung cancer brought on by silicosis, a disease caused by inhaling dust.

Furness Coroner Ian Smith said that the evidence showed that Mr Steel died as a result of working in dusty conditions for more than 50 years, and he recorded a verdict of death by industrial disease at an inquest held at Barrow Town hall on Monday.

The Westmorland Gazette,
October 5th 2001.

Meets and Activities:

The Coniston Survey and Dig.

After many months, when the fells were closed by to Foot and Mouth disease restrictions, access was finally restored to the Coniston Fells, and early in October activities resumed on the Coniston Dig. Peter Blezzard, John Brown. Colin & Andrew Woolard and Peter Sedgewicke carried in enough

steel for 6 head frames. They re-aligned original structure, fitting an extended top frame to carry the roof, and began clearing forward. Since then the



The first four frames in place. All of this space was completely filled with rubble.

digging team, led by John Brown and supported from time to time by Ian Matheson, Mark Simpson, Peter Fleming and Mike Mitchell, have been at work nearly every week. Progress has been slow as the material consists of long timbers and large and small boulders all mixed together in a matrix of wet gravel. The largest boulder was jacked up to rest on the steel roof; some of the lesser ones were brought down and broken up. Early in December it was possible to see space through the boulders, but it was not safe to attempt to get through without further work.

On December 16th John Brown, with reflexes like a grasshopper, courageously brought down the last of the boulders, and with Ian Matheson, clambered through into the continuation of Grey Crag Level. There is a connection between Grey Crag Level and the stopes beneath the Twin Tunnels of Middle Level, which we

searched for in vain years ago. Some time ago, after abseiling down from Levers Water to inspect the blockage from the inside, Peter Fleming reported that the collapse must have disturbed something, for the tunnel could now be seen. John and Ian found that this was indeed the case, and the floor of a level



Detail showing one of the large boulders which was jacked up to rest on top of the steel work.

could be seen behind a huge flake of rock. It was not safe to enter, and work will have to be done to support the hanging death above the entrance, but this is an exciting prospect. It will eventually provide access to a view of the spectacular malachite deposits below the Twin Tunnels, and yet another way down from the Back Strings beside Levers Water.

Stop Press

On Saturday December 29th John Brown, together with Andrew and Colin Woolard, broke up the boulder blocking the end of the passage and cleared a large quantity of material beyond it, tipping the debris down Waterfall Shaft.

Peter Fleming, Mark Simpson and Ian Matheson cleared some dangerous rocks overhanging the entrance to the newly discovered level, and dug a way in. This meet was not without incident – a full report of the meet and a description of the findings will appear in the next Newsletter.

Meet Report, Carrock Mine, 18th November 2001

Present: Dave Bridge (ML), Julian Davey, Peter Fleming, Chris Hargreaves, Mark Pickthall, Dave Robson, Paul Timewell.

Foot and mouth restrictions for much of the Caldbeck Fells were lifted on 1st November, opening up Grainsgill Beck to the public, and so this long delayed meet at the tungsten mine could at last take place. Ten CAT members turned up for the meet but three chose to walk the fells. The troglodytes, mostly from Furness, entered the complex north of the river by the main adit crosscut or No 1 Level driven by Canadian Servicemen in 1942 which is still accessible under a disguise of timber and rocks.

Inside we found far more silting up than on our previous visit in January 1995. This is partly due to the slurry which was pumped into workings south of Grainsgill Beck washing along the adit which passes under the beck, despite a heavy timber barrier preventing access to that part of the mine. The adit intersects four veins, from west to east - Smith, Harding, Waterfall and Emerson, and we explored each of these in turn. The workings on Smith vein which apparently was found to carry more arsenic than tungsten can be inspected throughout their length from a heading south of Grainsgill Beck to a heading 250m north of the cross-cut. Visible mineralization included patches of scheelite in a cavity above the level.

With some difficulty we managed to get on to a ladderway which finished at a small trial. From this point a line of iron rings used by the miners was seen to continue upwards through further workings towards an old adit level which is still open to surface about 40m above No 1 Level. Nobody was inclined to try out that escape route!

Harding was the vein most intensely worked for tungsten, the ores being wolframite and scheelite, and here No 1 Level is open for its full length north of the barrier, ie about 450m. All the workings are above adit and can be inspected via two ladderways, which lead to No 2 Level about 30m above. This

level runs parallel to the stopes but is intersected throughout its length by ore chutes that pass through the level and have to be crossed on timbers. The round trip through the upper workings is becoming more problematical. We found the structures and in places the state of the stopes had deteriorated since our last visit and we could no longer find a safe way through from No 2 Level into the workings to the south which open out to surface. Most of the ladders have tubular steel rungs which in places are rusting badly and we had a minor incident when a short section of wooden ladder collapsed as Peter and myself were about to descend. I had taken a short length of rope up into the stopes which we put to good use but Julian waiting below was less than happy when a piece of the timberwork headed in his direction - another reminder of the care needed when exploring old mine workings.

A crosscut to Emerson Vein first intersects Waterfall Vein that was tried for some 100 metres with little ore found and then passes under Brandy Gill. Further on the crosscut passes through a fault zone of soft ground where the roof has collapsed and beyond that there is deep water which deters most people. Not so Julian who valiantly carried on to explore the full extent of the Emerson trial level (about 200m) and discovered a substantial flow of water into the workings. Workable ore was never proved in this trial and no link was ever made with the upper workings on Emerson.

After that little remained but to put in place the last of the radon detectors as part of an exercise to gather data for a research project being carried out by the Medical Physics Department of Northampton General Hospital. More of this in a future Newsletter. Carrock Mine is of particular interest in this respect being driven through volcanic rocks, ie gabbro and greisen, the latter being uranium-bearing.

We were out of the mine by 4pm after an interesting and (for some) eventful trip and no one felt the need to prolong the meet with a surface walk. Apologies to those who would have liked some SRT - watch this space for next time.

Dave Bridge.

Mines in the Dolomite area of Italy.

The “Valle del Fersina”, which lies in the southeast corner of the Italian Dolomites, has been known since the end of prehistory for its copper and lead ore deposits and for the smelting activity associated with them. Furnace sites dating from between 1100 and 1300 BC have been identified in several places and the first written document granting permission to search for and exploit the minerals appeared in AD 1300.

The mining activity reached a peak between the years 1500 and 1600 and the elegant streets of Pergine, a town at the foot of the valley where in 1504 a judge was appointed to control the mines and felling of timber, bears testimony to the mineral wealth of the valley. As many as 20 separate copper mines and 10 lead/silver mines have been identified as well as workings for fluorite and one for antimony. Today many of the



Handwrought stopes in the Grua va Hardombl mine, Valle die Mocheni, near Trento, Italy.

workings are hidden away on the thickly wooded slopes, but one copper mine, the “Grua va Harsombl” near the village of Palu at the head of the valley, has been



16th Century miner in the Grua va Hardombl copper mine.

officially opened for visitors. This made an interesting venue for a wet day during a recent Barrow Mountaineering Club climbing holiday in the Dolomites.

The enterprise bears a close resemblance to our own Elizabethan copper industry. The miners, known as “Knappen” (or by the Italian “canopi”), were chiefly of German origin, while local peasants provided the labour and transport. The German speaking inhabitants were collectively known as “dei Mocheni”, a name by which the valley is also known, and built their own villages of characteristic houses high up in the valley. The history and life of this isolated community spanning almost 700 years has been the subject of much study.

Our own visit entailed a guided tour of hand chiselled workings very reminiscent of Goldscope mine. An upper level led to a museum area echoing pages from De Re Metallica with its display of early tools as well as tallow and oil lamps which had been found in the mines. There was even a "rowle wagon bounde withe iron" as listed in the 1586 Mines Royal Inventory for Goldscope. We then descended the 45 degree footwall of a stoped-out vein with its timberwork still in place (claimed to be the original) and where the familiar leaching of copper minerals belied the presence of chalcopyrite which was the principal ore worked in the Hardombl mine. We left the mine at this point as the lower and major part of the working was flooded, returning to the reception building where it was possible to stamp ones own miner's token from a copper disk.

In South Tyrol to the northwest of the Dolomites and close to the Brenner Pass is another extensive area of early mining activity which has been opened up for visitors at several places. Sterzing (Italian Vipiteno) is a medieval company town that belonged to the Fuggers, a famous banking dynasty attracted by the silver mines there (in 1561 Queen Elizabeth had tried to interest the Fuggers in copper mining in this country but nothing came of it) and the town now has a mining museum. Further to the west Schneeberg (Monteneve) mine, the highest in Europe, offers extensive workings for the visitor to explore and there is a mining museum at nearby Maiern in the Ridnaun valley. East of the Brenner there is another mining museum at Steinhaus (Cadipetra) and also the copper mines at Prettau (Predoi) which date from the Bronze Age and which were worked in the 15th and 16th century. Sites north of the Italian border include the mining town of Schwaz where some of the first Keswick

miners came from. Does this mean a future CAT meet in the Tyrol?

Dave Bridge.

Hodge Close Slate Quarries Meet, 4th November.

The Hodge Close trip was arranged to allow members to be shown round a working slate operation by the proprietor, Billy Gibson who comes from Coniston. Billy was going to discuss his business and market prospects with us and then take us round the Peat Field workings to explain exactly how he was operating the site, the lie of the slate bedding plane and how he planned to develop the quarry.

Billy has recently had to cease production at Peat Field for personal reasons. This is a real tragedy for the village and the industry. Peat Field was one of the very few small operations which are still going and which gave the village employment other than tourism. Burlington Slate have bought his stock and equipment and Billy is now on their Elterwater payroll.

I was hoping that he would still be able to take us round, but the site is currently a bit of a mess and he would rather not do so. I can understand this so won't twist his arm. Consequently I am afraid the trip is 'Off'.

At least there are plans for a new slate enterprise to start above Coniston, this time working the flag-vein. Also George Tarr will welcome anyone who wants to take over the operation of Horse Crag Mine, which is currently not being worked - ideal as weekend work for early-retired, fit, young at heart individuals who like getting their hands dirty!

Alistair Cameron.

The Question of Graphite at Coniston

By Jeff Wilkinson

Graphite: C (Carbon) A native element, that is, a compound that cannot be broken down into a simpler form, the pure thing, very rare, as valuable in the past as silver. Formed at much lower pressures than its illustrious relative, the diamond. Also known as Wad, Plumbago, Black Cawke and Black Lead.

The fact that we have a graphite mine at Seathwaite, Borrowdale should not allow one to forget that that deposit is an extremely rare anomaly. There is still debate by the experts as to where the source carbon came from, how it was mobilised, why it formed in veins and pipes and why it is not widespread throughout the Lake District. Because of the above any inference of graphite being mined at Coniston in the past is worthy of investigation.

Alistair set the ball rolling in the last newsletter and then on the day of the C.A.T. dinner popped in to the museum to say he was having a walk up Mealy Gill to have a look. The fact that at that point I did not have a clue where Mealy Gill was probably gave me the impetus I needed to investigate further (reference to this working is in Coniston Copper by E Holland page 46).

Climbing over slippery rocks and fallen trees was a tale in itself just to get to the short tunnels by the waterfall. I had hoped that there was going to be an impressive waterfall crying out for a first ascent come the next ice age but sadly there was not, Oh well it was worth the dream.

The two tunnels are quite short. I could not see any fault lines in the roof but the one on the right has a low angled fault running along the right wall. It is along this fault that the rock looks most like graphite, it has been well smashed and seems to be mixed

with clay, which is often the case on faults. The rocks in the gorge and around the waterfall are the same formation and although they are quite black when wet they do not look like graphite, just blackish rock.

The first thing to say is that the formation outcrops along a thrust fault that starts below Holywath, continues up the gorge and later follows the line of the Walna Scar track. Its thickness varies between 20 and 40 metres.

SO WHAT ARE THESE ROCKS? Well they are sedimentary shales of the Windermere Supergroup. They were laid down in a deep, marine shelf environment in an anaerobic zone. The fine-grained sediment is predominantly a mudstone, pyritic, with fine silt. This laminated black mudstone contains on average about 3% free carbon. Although I have yet to get my eye in to spot them they are supposed to be rich in graptolites. These tiny, extinct colonial animals are preserved as pyrite casts or flattened chloritic films. The upper part of the formation consists of graptolitic black mudstone less calcareous and with more pyrite.

Conclusion: It does seem hard to see how anyone could think that these mudstones were graphite even after only a short investigation. As the miners were very knowledgeable they cannot have been fooled. Could it be that they came, did the short trials, then left? Often as the years go by the tale remembered is of "mining graphite at Coniston" and the bit about there not being any gets long forgotten. Certainly a number of locals have said to me that graphite was mined at Coniston. Also there is not much excavation to warrant a mill. So was it just a quick look and away, or did they perhaps use the black stuff for something else? I really don't know the true answer to that question. I wonder if anyone does.

Jeff Wilkinson Dec 2001

Some Notes on the workings associated with the Capelcleugh and Scaleburn Veins.

In Jon Knowles' meet report of May 2001 he described the workings associated with the Capelcleugh and Scaleburn Veins. The comments below are pertinent to that report.

Capelcleugh Horse Level.

This was driven by the L.L.C. (London Lead Company) to exploit the ore deposits on Browngill Vein. It appears to have been driven in association with the Dowgang Mining Company, since this mine was not worked by the L.L.C. and their major access **must** have been Capelcleugh horse Level. It is possible that the ore from the two operations was deposited in separate places.

Dowgang vein in fact becomes Scaleburn Vein when it crosses the river Nent. After leaving this vein there is an incline and a cross cut (The Black Ashgill) to reach the vein of the same name. The horse level then follows this vein until it meets Browngill Vein. (This is known in exploration terms as lavatory box junction.) At this point the Horse Level turns right and left on the West and East branches of the vein respectively. The Horse Level also continues straight on the Black Ashgill Vein, heading for Ashgill Vein itself, and the Adit entrance on the Vein.

Continuing on the right branch (going in-by) leads to the double passageway mentioned in Jon's report. (This was probably made during the war years as production of ore was at premium and received a Government subsidy; having the two passages ensured production from the stopes above and production and development of the stopes further in-by.)

The Horse Level then continues in-by until it meets Capelcleugh Shaft. Sumps in this area go down to Whitesyke Horse

Level and not to Smallcleugh as mentioned in the report. This is a large shaft and may have had a hydraulic engine in it. Certainly pipework can be seen in the roof above, but so far attempts to scale this shaft have been unsuccessful. (The L.L.C. plans would suggest that the top of this shaft connects to the surface via the upper Little Limestone Level and along to Longholehead Whimsey.)

The Horse Level then continues through some rather disturbed ground, and on the first occasion we went through here, had to be dug to the V.M. forehead (dated 19.1.16 on the abandonment plan (1).)

The Great Limestone is dipping below the Horse Level in this area of the mine, and it was V.M.'s intention to refurbish the Whitesyke Horse level and obtain the ore using it. All the water going down Capelcleugh Shaft ends up in this level.

Scaleburn Horse Level

There are two distinct levels mentioned in this report. The Horse Gin is situated in a flat off the Scaleburn Horse Level at the Great Limestone random.

The upper level, accessed by the steps, is a ventilation cum exploration level, and is driven in the Platey Shale above the Great Limestone, the idea being to sink sumps from it, both to prove the vein and also to ventilate the workings. Hence it is incorrect to state that they were all blind – they are all partially collapsed or run in, and in fact it was by clearing one of them (Tim Reid's) we were able to reach the Horse Gin (2).

J. Lawson

References:

1. The abandonment plan of Capelcleugh & Middlecleugh. W. Holby, 1.10.1918.
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An interview with Dave Bridge
by
Jeff Wilkinson

Who was it that said, "those who can, do,
those who can't write about it"?
As usual I'm writing about it!



Dave Bridge on the other hand is most definitely still doing it, big time! I can not think of anyone more deserving to be my interviewee.

A nicer, more humble person and all round good egg would be hard to find. I always found Dave a very safe mine explorer, someone you know will make the right decisions, there is no posing, no bravado, no "I'm an expert" attitude. But there again when I think about it that is how the "real" experts are. His knowledge of both the mines and mining literature is second to none. He's also rather good at producing a CD-ROM on the Coniston Coppermines.

So without further ado, let's find out more about him.

JW. Hi Dave, could you first tell us a bit about your background?

DB. I suppose I was privileged to be brought up in a musical family and taught to play the piano from the age of four. This early musical training secured me a Pianoforte Performer's Diploma at the Royal Academy of Music before the pressures of university took over and I left home to read physics at Bristol. But being a keen walker I was forever drawn to the wilder parts of the Scottish Highlands and it was this love of the "great outdoors" which eventually brought me to the Lake District. Coming from an East Midland boot and shoe town to a job with the UKAEA at Windscale during that wonderful autumn of 1959 with clear blue skies for weeks on end and the fells on the doorstep seemed like paradise. Of course reality soon set in, but nevertheless it

was a good place to be with unlimited walking and rock climbing and an open book as far as amateur music making was concerned with opportunities to conduct local orchestras, perform piano concertos, write songs and musicals, and many other things, activities which still take up much of my spare time (I had considered a career in music but decided that would be too precarious). But enough of my background. Let it be said that I readily took to the area, got married here, and am still living on the West Coast of Cumbria.

JW. How did you first get interested in mining history?

DB. I joined the Cumberland Geological Society in 1960 and my appetite was wetted by speakers such as Bill Shaw and Geoff Greenough talking about metalliferous mining. The numerous workings scattered about the fells had always aroused my curiosity and I started to venture into levels armed with a torch and an urge to discover more about them. I was soon spending hours in the local books library laboriously copying out references to local mines and then typing them out on foolscap sheets. This was the beginning of a personal library of mining books, notes and plans that I have built up over the years and is now a valuable reference source.

JW. Can you remember the first mine that you went underground in?

DB. I think it was Old Brandley after reading Postlethwaite. Before long I was systematically scouring the fells for workings and making copious field notes, at first without any real understanding of the industry or its history. I would sometimes get up at 4am, drive to Coniston or Tilberthwaite, and be on my way down by 10am to avoid the tourists who I was sure would think me mad if they caught me emerging from some dark recess with a torch, often soaked to the waist! Shafts were of course out of bounds until one day I spotted rope marks at the top of Triddle and realized that there were people around with the same interest who took the business seriously. My first descent was by electron down the Goldscope shaft - that cost me a night's sleep. Then I discovered CAT.

JW. When did you join C.A.T.?

DB. I remember gate-crashing the Dalehead Mine CAT meet in May 1983. The first group of likely bearded scruffians which I approached at the Honister car park assured me they were Dogs not Cats! Then I chanced upon a smart looking Peter Fleming and was welcomed to join the dig which resulted in opening up a new level. I realised then that this was the group for me.

JW. What was the society like then?

DB. In those days there was still plenty of new ground to be explored and despite the smaller membership in the early 80's meets were very well attended. Electrons had been abandoned for ropes and newcomers such as myself had plenty of opportunity to master SRT techniques under Mike's confidence-building guidance for which I shall always be grateful. Digs played an important part in the club's activities then as now, though, perhaps with the exception of Ding Dong, not to the same intensity as in recent years. Probably the most significant change over the years has been the increasing emphasis on research, surveying, conservation and publication, signs - dare I say it - of a maturing membership.

JW. Do you consider yourself a "natural" at mine exploring or do you have to work at it?

DB. A good question. I certainly need to be in the right frame of mind to enjoy the more serious trips - hyped up you might say - but I can generally cope quite happily with most underground situations. I think having underground experience rather than being a "natural" is the best way of describing it.

JW. Although I felt in control when in mines I always thought about what could go wrong before and after trips. Do you suffer from these "voices"?

DB. I'm afraid I don't believe in premonitions and so they don't bother me but it stands to reason that one should consider the possible hazards before entering any mine and as far as possible be prepared for them. Afterwards surely most people enjoy discussing "what might have happened if..." behind a jar - it's a

good way of winding down in the comfortable surroundings of the local inn!

JW. However respectable an organisation like C.A.T. is you can never get away from the fact that going into old mine workings is a high-risk activity not understood by the general public. Do you ever worry about the consequences of an incident and how it will be reported in the media?

DB. It **can** be a high risk activity and I agree that public perception based on a lack of understanding can detract from groups such as ours (I'm hardened to that sort of thing having spent my working life at Sellafield!). OK we have had a broken leg when a novice wandered off from the main party as well as a buried Mike Mitchell and a concussed yours truly who once had to be Z-rigged to the surface, plus several other minor incidents and near misses (ask PF about his nine lives sometime), but when you consider the many thousands of hours that CAT members have spent underground over the last 20 or so years I'm sure you will agree that statistically mine exploration is no more dangerous than any other sport if carried out with due precaution and judgement based on experience. My last concern is worrying about the media!

JW. If your home was not in Cumbria, which has a rich diversity of mines, where would you like to be based?

DB. At this stage probably Cornwall where the mining heritage is still so much in evidence and I've had some memorable times.

JW. If you could only visit 3 mines which ones would you choose?

DB. Being a romantic at heart the thrill of entering a hand-hewn coffin level is just as important to me as the buzz one gets exploring the vast stopes of Greenside or Coniston. For that reason the inner workings of Goldscope still rank highly for me, chiselled out by miners who had travelled a thousand miles from their native land to this remote part of Britain at a time when heads rolled if you fell out of favour with the Queen and when after a serious accident in St George's shaft Crown Commissioners saw fit to continue their inspection of the mines

despite injuries and the death of one of their party. Life was hard and lives were cheap in those days.

JW. Which mines or parts of mines would you love to visit if they were not blocked by collapse or flood.

DB. I've always been fascinated by Lainton's Engine Shaft and the deeper workings on the Great South Lode and its connections with other veins in the area, partly from geological and mineralogical interest and partly because this was allegedly the site of the only Cornish pumping engine to be installed in the Central Lakes.

JW. The coppermines CD-ROM you produced has been well received in the Ruskin Museum and by mine explores nationwide. You must be very proud of it? Roughly how many hours did you spend on it? Any helpful advice for anyone thinking of doing a similar project?

DB. I should stress that (as you well know) the CD-ROM grew out of a request from the Ruskin Museum for a series of underground images of the Coniston Copper Mine for computer display. I felt this would be a chance to produce something which would be of benefit to both the Museum and CAT knowing the vast amount of photographic material that members had accumulated over the years which rarely got a public airing (in colour at least) except at local talks and slide shows. It could also pave the way for further versions covering related topics. Credit for the present version must go to those who contributed the many excellent slides and pointed me in the right direction with the software. Naturally I'm delighted that there has been so much interest which is in no small part due to the permanent display in the Museum. It took me about 4 months of spare time from buying a slide scanner to producing a draft. Another 3 months saw the final product ready for the museum opening. Striking while the iron was hot was the key aim. For anyone considering a similar project be prepared for a hard grind and a great deal of repetitive work!

JW. You have been involved in many explorations and discoveries at Coniston Coppermines. Which one has given you the most satisfaction?

DB. A great deal of exploration had been carried out at Coniston before I was ever promoted to the A team. On my part finding new ground in South Vein, in particular the unexpected discovery of Balcony Stope at the end of a hard day exploring the deep working below Twin Tunnels was probably the most rewarding experience as it opened up a new connection with Paddy End Shaft and an alternative through route. And somehow the two of us still found the energy to de-rig on the way back! They were good times.

JW. Final question Dave. What other events over the years stick out as important either to yourself or C.A.T.?

DB. There have been so many landmarks that this question is difficult to answer. The tragic and sudden death of Dave Blundell at Hudgill Burn in the summer of 1994 will always be engraved in the memory. He was a leading member and a great loss to us all. On a brighter note two of the society's highlights in recent years have of course been the joint opening of Lucy Tongue Level in November 1996 after an enormous amount of hard work followed a year or so later by the breakthrough into Hudgill Burn Mine and its legendary cavern. Also of significance was the opening up of Frog Shaft in September 1993 which provided a link from the surface to the Barron's Sump area of Smallcleugh and a varied and demanding through route. Earlier important events included the discovery of Levers Water Mine, opening up Top Level Extension and de-watering Logan Beck Mine. And of course last year's successful conference weekend at Rydal Hall, the first of its kind to be organized by CAT, not to mention our recent success with the new book. The list is endless.

Cheers Dave.

Long may you continue.

Jeff Wilkinson

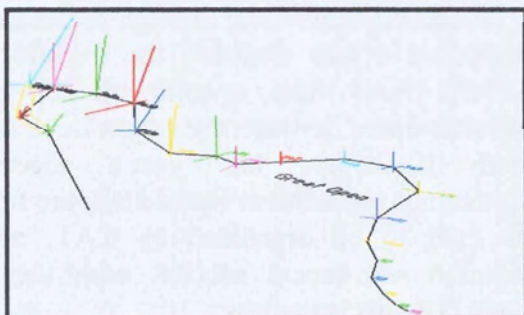
3D Modelling of Mines – The final Part

I have been writing about this subject for some time now and finally I have achieved the desired object of producing a 3D image of a level or stope. The example which I am about to describe is the Great Open on Grey Crag Level in the Paddy End workings at Coniston. This area was surveyed by myself, Ian Matheson and Dave Bridge in October and November of 2001, and the survey method was geared to the way the data was going to be used in the software (Autocad and 3D Studio).

Plan 1 shows all the survey points at which left right, up, down bearing and inclination measurements were taken.

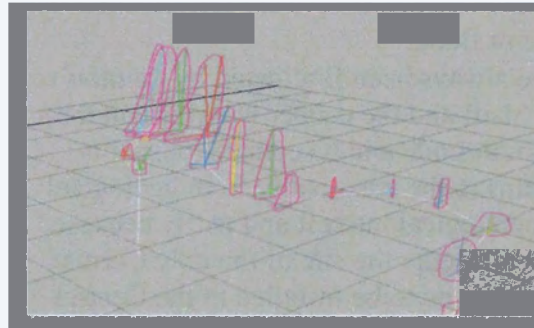


Also distance and bearing were taken on the hade up the stope. (Cave survey software can only handle up, down, left, right profile data, which does not give an accurate stope/level profile). So, on **Plan 2** you have at least 4 to 5 dimensions from each survey point, all in the same plane.

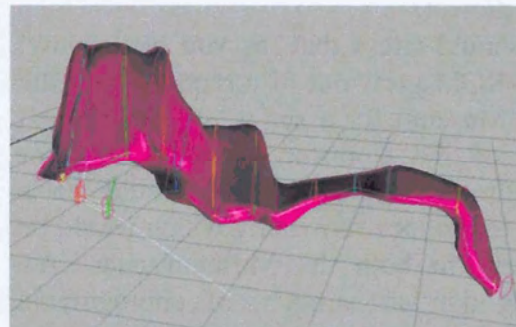


(The ucs was moved each time so that Z was the direction of travel). This will give you certain key dimensions to be used in conjunction with a sketch profile taken at the time of survey. This is saved as a dxf and transferred to 3D

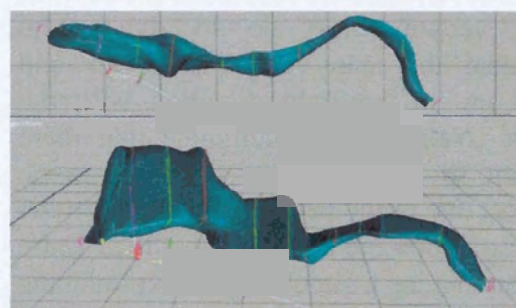
Studio where the profiles are drawn in using nurbs curves. This had to be done from one view so that the nurbs curves stayed in the same plane. Also all the curves/profiles for each survey station are copies of the first profile. See **plan 3**



(If you don't, when the sections are lofted twisting can happen). This is not easy as you end up with a forest of profiles. Anyhow all being well, and you have saved regularly, you can U-loft all the curves and, lo, a 3d image of the stope looking in from the outside appears. See **plans 4 and 5**.



This is an odd looking beast, and seen from other angles than the one shown looks even stranger. I hope you like it;



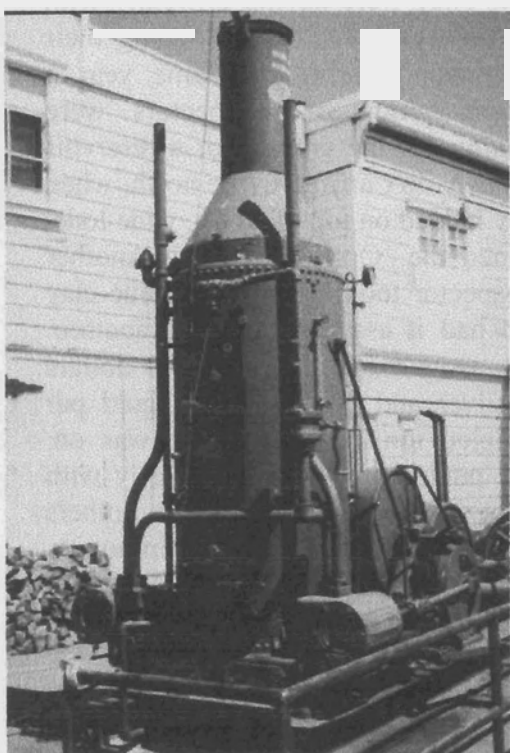
I do not think somehow that I will be making 3d models of the rest of Paddy End! My thanks to all of you out there who have assisted with this project.

Mark Simpson. December 2001.

A Trip to the Mines of California and Death Valley.

Originally planned as a holiday, but with a little devious reorganisation on my part, our trip managed to encompass the gold mining regions of the Sierra Nevada Mountains, Death Valley, Mammoth and Virginia City. The tricky part was convincing Eileen we were only there for the scenery! We had glorious weather, scenery, quiet roads and a convertible. With petrol at 30p/litre in Nevada and 45p/litre in California, distance was irrelevant. We covered 2,800 miles in 15 days in temperatures ranging from 60 to 125 degrees Fahrenheit.

Our starting point was San Francisco, where thousands of adventurers and miners commenced their trek to the interior. Many of the early settlers were Cornish and their expertise was eagerly sort after by the mine operators. Our first day was spent browsing on Fishermans Wharf and at the Maritime Museum. A richly painted 'Donkey' engine stood sentinel just inside the gateway, closely



resembling the engines used in the smaller mines of the Lake District (Knockmurton Mine). This particular engine was used on the quayside.

The second day was spent driving eastwards from San Francisco to Lake Tahoe by way of Sacramento, deviating at Auburn (the site of intensive hydraulic mining, releasing gold from the shallow placer deposits; a number of monitors can still be found with a little searching). We continued up the I49 highway to Grass Valley. Having read so much about the Cornish miners in this area, I was somewhat disappointed to find that the mine sites were well hidden by heavy forest growth. The Empire Mine was signposted, but apart from the mine compound (now the museum) and Rows Shaft across the road, little else could be seen. A steel fence surrounded Rows Shaft (I did try to enter, as my torn trousers testified).



The cross braces holding the headgear and sheaf wheels had given way to one side although the rest of the frame looked sound. I could just make out the mouth of the shaft descending 11,000 feet on the main vein at an angle of 27

degrees (5,000 feet vertical depth). There was a staircase running down the centre of the shaft into darkness. Empire Mine recovered over 2 million dollars in gold before closing down in 1954.

The journey from Grass Valley to our next destination, Lake Tahoe, became a nightmare as sun cream and sweat ran into our eyes causing a major reaction and we had to divert to the nearest pharmacy. No more exploring that day! Lake Tahoe is an American substitute for Lake Windermere; only bigger, much bigger! I was eager to explore the region to the east, mainly Silver City, Gold Hill and Virginia City. At first light we headed south to Carson City, turning east on the I50 following part of the Pony Express route. Prior to reaching Dayton we turned north driving up into the shallow sandy hills and soon encountered numerous trial drifts and shafts. As we rounded the flank of Basalt Hill the whole of the mining region came into view. Green scrubland covered the rolling hills and shallow valleys. To our left stood the rusting sheds and mill complex of Main No 1 Mine. A pickup growled down to the gate, the occupant watched me taking photographs before driving back to the mill. Numerous shaft brattice work dotted the landscape, yet, surprisingly the tips were quite small as a result of the mines working directly on the backs of the lodes. Silver City had all but disappeared, although a number of workings looked as though prospecting carries on, in a quiet sort of way! All that remains in Gold Hill are a few wooden structures, hoppers, headgear and some residential property. It's hard to believe this barren canyon was once a bustling town and industrial complex complete with an elevated railway running through the town on a trestle. Driving up through the tight canyon, we finally

emerged along the southern the flank of the Comstock Lode. Virginia City shimmered in the distance. The huge, open cast working of the Comstock Lode ran along the flank Davidson Peak and Ophir Hill, skimming the back of Virginia City. Nearby, yellow/green spoil heaps indicated the site of major mine shafts.

A little early history before we continue.

Dayton (sited on the I50 highway) was an early resting stop for travellers and home to a number of Chinese immigrants who panned the Carson River and eventually found gold. The discovery came to the attention of prospectors, who, by working their way north in 1849 discovered gold at the mouth of Gold Canyon. It took a further 10 years of prospecting the placer lodes (mainly by the Gorsh brothers) before the Comstock Lode was discovered. In 1859 two prospectors James Fenmore and Henry Comstock were working the placer deposits in the upper part of the canyon unaware of the bonanza beneath their feet. They were having difficulty with the blue clay that kept clogging their equipment. During the same year a second group of prospectors were digging out the ground for a reservoir in Six Mile Canyon, to the north, when they landed on top of a rich, wide lode, named the 'Ophir Bonanza'. Another prospector took a ton of the blue clay and had it assayed in San Francisco. The assay result showed 3,000 dollars in silver and 800 dollars in gold per sampled ton! The gold rush was on. The population rose dramatically with those seeking sudden riches and others offering their skills to the community, including ladies of the night! As a rule, those who staked their claims first, were rewarded with considerable profits which were sensibly invested in San Francisco real estate. By 1863

Virginia City population had risen to over 15,000 and continued to grow to 25,000 in 1878 before a steady decline set in.

A retired miner suggested an excellent analogy for the lode. He likened the vein to a piece of poorly sliced current loaf, wide at the top and narrow at the base. Dotted throughout the slice were large and small currents, these were the rich pockets of gold. The Comstock Lode was an exceptional fault zone, it ran roughly 3 miles north-south dipping at 50 degrees and splitting into branches at the southern and northern end. The vein *width* varied from approximately 200 to 1,000 feet at the surface and pinching to a *width* of 100 feet at a depth of 500 feet. The fault zone was very difficult to mine. The ground was unstable and under pressure, the levels and shafts consumed forests of timber. Where the ground was removed, the exposed clay and soft material expanded on exposure to the circulating air, levels were constantly being repaired. The stopes required substantial supports to prevent the standing and hanging walls from falling inwards. Timber was expensive and load bearing stone was not available locally. The problem was solved by Philipp Deidesheimer who produced a system of support called 'Square Set Timbering'. By pre-fabricating sets of timber into a box frame, with the timber joints interlocking each frame to the adjacent box, Deidesheimer provided a very strong and safe method of support. The timber and joints were manufactured in the joiners shop and taken into the mine in pieces. The assembled box cubes bridged the voids and where required were filled with rubble to increase stability. All the underground work was conducted in a very hot environment. In the deepest workings temperatures could reach 170 degrees F. (4,500 feet deep), but

normally varied between 100 and 130 degrees F. Iced water was lowered to the miners and shifts were rotated (One hour working at the ore face and then moved to a cooler area before returning to the face). A twelve hour shift paid \$4.25. The heat was stifling and springs issuing from the ground were hot and heavily mineralised. Several drainage tunnels were started to connect with the Comstock Lode but ran into financial difficulties. Eventually a tunnel promoted by a Mr. Sutro was started to relieve the mines from pumping, provide a ventilation flow through the different workings and offer an escape route for the miners in the event of fires (of which there were many) or collapsed workings. Sutro obtained some funding from the mines and the rest by issuing shares. The income would be charged as a royalty of two dollars per ton of ore when the tunnel reached each mine and 25 cents per mile per ton of ore removed through the tunnel or hauling goods to the mines. The tunnel would reach 600 feet below the mines. After many delays the tunnel was completed only to arrive at the mines when they were well below that depth, it was an expensive failure, however, it did drain the mines and saved the extra 600 feet of vertical lift. The mines re-negotiated the rates, they even flooded part of the tunnel to reinforce their requests and the rates were reduced! When completed the tunnel was 20,498 feet long and took 8 $\frac{3}{4}$ years to complete. Sutro wisely sold his shares during the construction and invested heavily in real estate. Today the tunnel though collapsed in many places, still issues a stream of hot water. The rest of the water is dammed back by the heavy falls. The most successful mines were, (at Gold Hill) Belcher Mine, Yellow Jacket, Imperial, Alpha Exchequer, Potosi, Chollar. Bullion Ward sank their main shaft to 2,500 feet in virgin ground and found the whole of their

claim totally barren! (At Virginia City) Chollar, Hale & Norcross, Savage, Gould & Curry, Best & Belcher, Consolidated Virginia, California, Ophir. These mines produced over 500 million dollars in gold and silver over a period of 75 years from workings that were connected by 190 miles of tunnels. An extensive rail network was constructed to feed the mines with timber and supplies and initially Donkey engines were used for hoisting and pumping.

We visited the Chollar Potosi mine, now accessible only by one of the upper adits. The level wandered for about 400 feet until we met the Comstock Lode. The level was very heavily timbered with sets erected every foot to fifteen inches apart, the sides were well packed. In places ground expansion had squeezed the level sides to a third of it's constructed width. Deidesheimer's box timbering structures filled the void left by mineral extraction. We could see about five examples of the connecting box sets. The sides and roof were heavily planked under a mountain of deads. To one side a three foot string of gold bearing blue clay and quartz could be seen. An old winch, rope and kibble stood sentry over a small winze dropping some twenty feet into the flooded workings. The main level continued forward into the Comstock Lode where the ground had totally collapsed. Virginia City, although touristy, was worth a visit. The train ride was the best value for money, a running commentary described the history of each mine we passed on the way to Gold Hill and repeated as we came back! We drove down Six Mile Canyon on our way out, visiting ten mill sites. Don't pan the fast flowing stream by the roadside for this is the outflow from the sewerage works!! The road led back to the I50 where by returning towards Dayton the huge

spoil heap and tunnel entrance of the Sutro tunnel could be seen in the distance.

From Lake Tahoe we moved west to Placerville (originally called Hangtown), where we joined the I49. The highway is very reminiscent of the Yorkshire dales, however, lack of spoil heaps belies the existence of the mines. Sutters Creek started the real gold rush. Sutter emigrated from Switzerland and staked out a large area for agriculture, business was improving when gold was found in the tailrace of *his* saw mill. All hopes for farming were dashed when the surrounding land was ripped apart by the miners. Just before Sutters Creek we visited Sutters Gold Mine. The mine was set up in the late 1980s to explore and develop the Comet Vein with an estimated reserve of 220,000 ounces of recoverable ore above the 600 foot level.

The mine operators had complied with all the regulations, for example the mine water had to be filtered if it was brought to surface. Waste rock had to be deposited in the old workings or used for the benefit of the community (the company found the waste was suitable for brick making and for acting as an impermeable barrier). By 1991 the mine was to start production when the price of gold plummeted below the economic recovery level and all work stopped. The company decided to retain it's lease and open the safe accessible workings to the tourist, with the proviso they could revert to mining operations when the price of gold rose. The mine was allowed to flood to the 600 foot vertical level. A flat back 'Boss Buggy' took eight of us into the adjacent valley to the drift entrance where we descended 1,280 feet down the 64 degree incline to the No 40 vein. The drift was about 15 feet wide and 12 feet high, driven through greenstone. The No 40 vein cut

diagonally through the drift with a varying width from 2 to 4 feet wide. It consisted of quartz, iron pyrites and gold. In places the gold spread spasmodically along the edge of the vein and sometimes into the greenstone, the gold could be seen by the naked eye. Nearby, the company had cut an emergency retreat shelter in the greenstone. It was complete with emergency first aid equipment, oxygen supplies, food, water and a telephone link to surface. We climbed 150 feet up the vein into the old stopes.



Sutter Creek gold mine. Stope on the No 40 vein. A slusher lies abandoned on the floor.

Although a show vein, if restarted, this vein would be the first to be blocked out. A large mine plan showed the extent of the workings by the Mother Lode Mines. The area produced in total 7,851,000 ounces of gold. We ended our trip panning for gold in a 'salted' trough of gravels, as usual Eileen and I dug deep and recovered those flakes other visitors had lost, no wonder we left smiling and hot (it was 105 degrees!).

We moved on to Yosemite Park, the weather broke and the temperature plummeted to the low 80's. Even worse, upon entering Sequoia National Park, the rains came and it felt cold. We had entered 'high' bear activity country, which meant that every item of food, paper, clothes etc had to be

brought into the lodge. Upon seeing anything that glitters or smells (empty Coke tins) the bears just tear their way into the vehicle; and we had a soft top. There were 40 bears rampaging around a 10 square mile area and we didn't see a single one! We did see the huge sequoia trees. It was time to move on to Death Valley.

We left the mountains and the rain behind us as we travelled on highway I198 into the eastern side of the Jan Joaquin Valley, then turning onto highway I165 brought us in contact with the vast groves of oranges, nectarines, plums, apples and cherries. Fresh fruit, wonderful! The fruit groves eventually gave way to the nodding 'Donkey' pumps of the Premier and Kern Front oil fields prior to arriving in Bakersfield. I ruffled the petrol attendant's feathers here, by driving round the wrong side of the pump and helping myself to another motorist's pre paid petrol, (sorry, gas). After calming down and driving through the city we turned north east onto the I178 swinging around the southern end of the Sierra Nevada Mountains and climbing through the pass of the Greenhorn Mountains to Lake Isabella. I hoped to visit the Lady May and Keys Mines but missed the turning, time was marching on and we still had a long way to travel. After making a long descent we turned onto the I14 and continued north to the I395. To our right a huge storm was developing, it was about three miles wide, rotating with lightening flickering in every direction. We reached Olancia where we left the main interstate highway and joined the I190, apparently we must have angered the gods because that storm changed direction and headed straight for us! Raindrops the size of saucepans slammed horizontally into our vehicle. The wind whipped up the desert sand and gravel, shot blasting us. The side

of the road turned into churning quicksand. Visibility was nil. The storm lasted for fifteen minutes before departing as suddenly as it had arrived. The road now had reverted to a riverbed and driving was tricky. After a short time we met the I136, the new road improved and we were back in business. The Talc mines to our left looked uninviting straddling Talc City Hill. The dull grey tips not offering much either. However, the view from just below the summit of Panamint Valley was awesome, miles of white – cream desert sands, a shimmering road running for miles across the valley to the mountains and Death Valley. The volcanic rocks on either side of the road displayed a full range of colours. Panamint Springs was sizzling at 115 degrees F. We were now travelling on that distant road we viewed near the summit, dead straight for eight miles before ascending the Panamint Range and through Towne Pass at 4,963 feet then descending into a scorching Death Valley (120 degrees F). It was getting late as we drove through Stovepipe Wells (Named after a stovepipe was driven five feet into the ground to locate water. The pipe then served as a marker for all the passing wagon trains). Finally Furnace Creek came into view, our base for the next few days. We had covered 420 miles in one day.

Furnace Creek has been operating as a ranch since 1881 when 40 acres of land was laid out to accommodate the workers from the nearby Harmony Borax Works. Upon the discovery of gold in the mountains the ranch became a trading centre, continuing through the years to welcome visitors and now prospering with the increase in tourism. The next morning (8am. 107 degrees in the shade) we headed to the park information centre where we were assured that all the roads were open. Zabrinski Point provided a good

panoramic view of the valley, so under the pretext of more wonderful views, I drove up towards Dantes Peak, passing on the way, Billie Mine (shaft working and appeared to be moth-balled, vehicles in the compound), New and Old Ryan Mine (mined by adits, shaft and open cast) These were all borax mines workings. Ryan was a company town, it had tennis courts, a cinema and social hall. A narrow gauge railway ran to its other operations. When the mine closed, the workers buildings continued to function as a hotel until about 1950. The mine buildings are still intact and preserved in their green and white livery. Access is not encouraged. Unfortunately as a result of the storm the branch and main road were completely washed away, Dantes Peak eluded us. Our next target was Badwater sited at -282 feet below sea level. A long, flat road led us passed the Devils Golf Course where huge balls of salt mounted on mud tees could grow up to fifteen inches in diameter. Good examples of these may be found out towards the edge of the shallow salt lake. Badwater, is bad, it smells! A half hour walk on to the salt flats is enough, but you've got to do it. Directly opposite, shimmering across the lake surface stands Eagle Borax Works, a monument to Isadore Daunet, a hard working Frenchman who discovered borax and worked the deposits for several years. Foundations and raw heaps of cottonball still remain on site. 6 miles south of Furnace Creek are the substantial remains of Keane Wonder Gold Mine. It stands 2,500 feet above the valley floor. Claims were staked in 1903 but it wasn't until 1908 when work started on developing the ore bodies. The workings continued for 8 years, producing approximately \$250,000 of gold per year. The mine was revived in the 1930s with a little success. Once again access to the mine was denied

due to road wash out. With temperatures rising above 127 degrees F., walking was not an alternative option. Having visited a couple of mill sites (flat slabs of concrete and little else) we decided to head north east to Rhyolite and Bullfrog Mine, an early twentieth century development. The road had been washed out in several places but with a little care and off road driving we made it. A prominent quartz outcrop attracted Frank Harris and Eddie Cross who sampled the green coloured vein. Prospectors rushed to the area staking claims covering the mineralised ground. The tented towns of Beatty, Armargosa City and Rhyolite quickly changed to prosperous stone and brick built towns associated with wealth. The most successful mines were the original Bullfrog, Denver, Montgomery Shoshone, Tramp, National Bank and Steinway. The richest ore was carried to Goldfield to be milled. By 1907 the mines were at the height of production, a railway network entered the region bringing supplied and removing the gold rich ore. One can still walk on these lines to the adjacent mines. Feverish mining activity continued until the financial panic of late 1907. The smaller mines ceased working. Porter Brother's store who had a monthly turnover of \$150,000, saw their business slump. Mining ceased in 1911. In total the mines produced \$3.1 million in gold. Population filtered away and by 1922 only one person was left. The substantial buildings were abandoned. The railway station (changed to a casino, now abandoned) remains as well as the house built of bottles. Only the foundations and frontage remain of the shops, like skeletons in the hot sun and sand. Bull Frog appears to be active again. Most of the hill side has been removed by bench extraction.



Modern step workings at Rhyolite.

Two hundred yards from our hotel were the preserved remains of Harmony Borax works. The steam boiler and large vats were still in situ. Originally Chinese labourers were sent foraging for borax cotton balls in the wide valley. The balls grew in the white marshland from a pinhead to over one foot in diameter. These were collected in heaps and transported to the works. The cottonballs were tipped into tanks containing water and carbonated soda. The solution was heated and then drawn off into tanks containing suspended wires and rods. As the solution cooled the borax



*Harmony Borax works, Death Valley.
Boiler upper left, vats to the right.*

collected as crystals on the rods. When the rods were tapped the crystals dropped off and sacked ready for shipment. If the outside temperature reach 115 degrees F. the operation had to stop due to the heat affecting the

process of separation and crystallization. The sacks of borax were hauled to market by teams of 8 to 12 mules, sometimes as many as twenty. The team consisted of two high sided borax wagons and a water tank at the rear. 'Dinah', a steam engine was built to replace the mule train, it work well for a period but when the boiler blew up, it was abandoned. It now stands by the side of the road. Harmony Borax works closed in 1888. Heaps of borax cottonballs can still be found far out in the marsh, left by the Chinese prior to closing down. It was time to leave Death Valley.

We returned to Stovepipe Wells and travelled south to Emigrant where we followed the road through Emigrant Canyon on a 30 mile detour to view the charcoal kilns built in 1877 by the Madock Consolidated Mining Co. These 10 brick built kilns at Wildrose Canyon stand 30 feet high and are in pristine condition. Each kiln has two entrances, one low at the front and the other high at the rear. The kilns were filled with Pinyon Pine logs and the openings sealed. After driving 27 miles, the road degraded into a wide gravel track consequently turning into a deep river bed, once again we were thwarted. We returned 15 miles back down the road to a track that appeared to lead to a trestle in the distance. After slowly negotiating along a deeply rutted track we arrived at a column of rocks (my trestle). This mine site turned out to be Harrisburg and Eureka Mine. A quick look through my books revealed that the column of rocks was the hanging wall of a quartz reef. Two prospectors named Harris and Aguerberry discovered gold on the flank of the hill. They worked the vein and then Harris sold his share. 300 miners arrived and smothered the area with diggings until 1906 when gold at

Skidoo was discovered and they moved away, leaving Aguerberry to continue working the outcrop until he died in 1945. The location being remote has helped to preserve the site. A workshop, living accommodation and dressing plant remain, as well as a bed, fridge, freezer, cooker and lounge on the deck. The adit just behind his home has fallen in but the vein is still there.

Returning to Panamint Springs we moved onto the I136 to look at the Owens Lake Silver Lead Smelter at Swansea, at least a foundation and clinker tip! The I395 led us through Bishop to Mammoth, One of the most active volcanic areas in the states. The ground during the last ten years has risen by one foot. The views from Mammoth Mountain were stunning, the sun casting bands of light into the valley. By nightfall the summit was under 3 inches of snow! The first snow of 2001. Mammoth Gold Mill had little to offer apart from part of the 21 foot diameter fly wheel. Mammoth City had disappeared too. Between 1887 and 1889 over 1,000 people lived and worked along the flank of the mountain. Initially there were rich pickings on the veins and from the several adits piercing the mountain side but these soon began to deteriorate, the final blow came when a huge storm wrecked the workings, surface buildings and flooded the mines. The miners left. The high open cuts remain as do the foundations of several log cabins. On the positive side, the miners created several reservoirs to feed the mill. These have been retained serving as fishing and boating lakes. At Horseshoe Lake, volcanic activity has released enormous quantities of carbon dioxide through the ground killing trees and vegetation. Some visitors have

collapsed from inhaling the gas whilst picnicking. Mammoth Consolidated Mines near Lake Mary has been preserved by the parks authority. A number of mining machinery remain on site. The adit is gated but in good condition and buildings retain some of the furniture from the 1920s.



*Mammoth Consolidated Mine.
Other buildings survive worth a visit.*

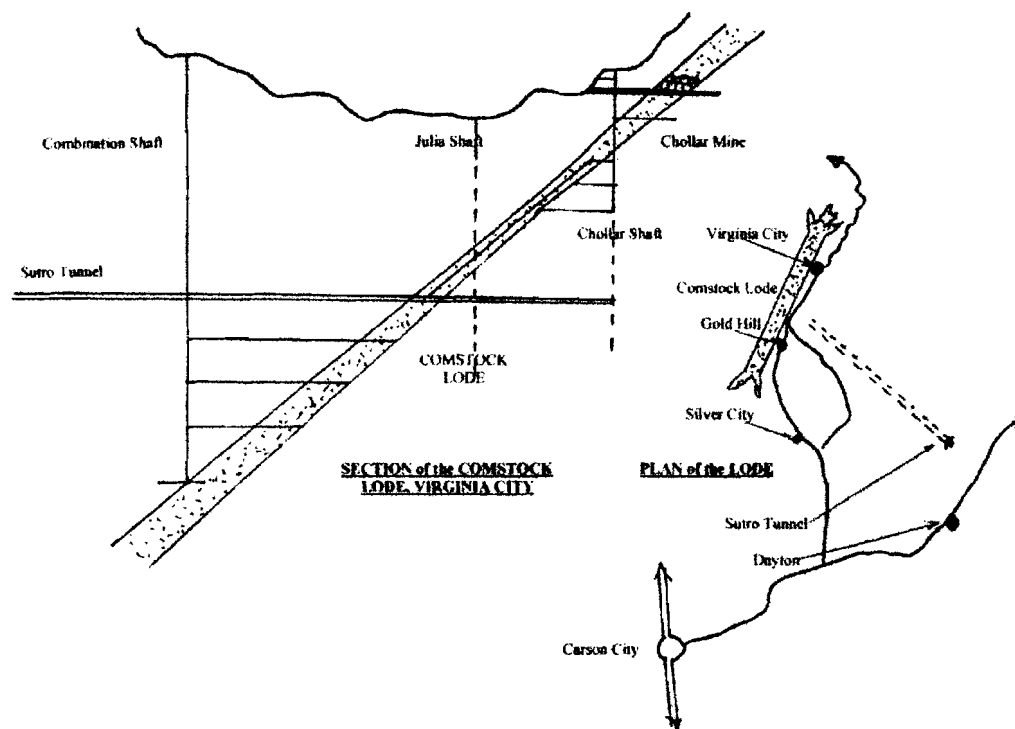
Moving on, we turned off the I395 at Dogtown onto the I270 (part gravel road) driving for 12 miles to Bodie, the wildest mining camp in the west! Arriving at Bodie the road opens out revealing a valley gently sloping up to a large number of mines, headgear and tips (out of bounds). It is a ghost town, many buildings still retaining their contents from the 1930s. The site is now preserved by a charitable society, Friends of Bodie, and the 'Parks'. Many of the cabins are complete with home furnishings, the school with it's desks and books. The assay house complete with chemicals and testing equipment. The mill still retains all the processing machinery (Guided tours are available). Although the site was vandalised in the 1970's, a great deal of it survived. As a town only a small proportion remains.

Gold was first discovered at Dogtown in 1857, during 1859 a German by the name of William Bodey discovered

gold at the foot of the sloping hill (Bodie Bluff). Bodey died shortly afterwards in a blizzard. The mines at Bodie (a clerk mis-spelt Bodey) were only small compared with Aurora, 12 miles up the valley. Most miners passed through Bodie to Aurora. However, a large cave in at Bunker Hill revealed an extremely rich chamber of gold. Attention turned to the mines of Bodie. By 1879 the population had risen to 8,000. Population influx also brought the undesirables into town. Gunfights and murder was common place. A large number of Chinese lived on the edge of town, they were employed as woodcutters providing fuel for the furnaces and home fires. A number of major fires also spread through the town as in 1892, 1899, 1932 and 1947. The price of gold was high and a number of mines had discovered rich deposits, naturally the demand for timber was great and supplies were having to be harvested from further afield. A light railway was constructed to supply the requirements needed. By



The preserved abandoned town of Bodie. Only 10% remains of one of the wildest towns in the west. A must to visit. The mill is open to visitors and the town is being renovated.



MOTHER LODE MINES, AMADOR COUNTY, CALIFORNIA

1881 the boom time was over, the population dropped to 3,000. In 1887 only 1,500 remained. The smaller mines closed and by 1921 only 30 people occupied Bodie. To that date the mines had produced 30 million dollars worth of gold. At least, now, the town is preserved and in the process of repair.

With the memory of Bodie engraved in our minds we made our way back to San Francisco and home. Having dug a little into the history of what we saw I know it won't be too long before we return for more.

For those readers wish to know more about the mines and areas we visited, I have listed some references below:

Death Valley to Deadwood; Kennecott to Cripple Creek. Proceedings of the 1989 Historic Mining Conference,

*Death Valley National Monument.
National Parks Service.*

*The Cornish Miner in America.
A.C.Todd.*

The American Institute of Mining Engineers. International Meetings of 1890. 'Amalgamation at the Comstock Lode'. pp 195-231.

'Death Valley'. National Parks Map and Information Pack.

'Death Valley Ghost Towns'. Vol 1 & 2. S.W.Paher

'Death Valley. A scenic wonderland' S.L.Walker & D.K.Hilburn.

'Bodie'. The Friends of Bodie.

'Bodie'. D. McDonald.

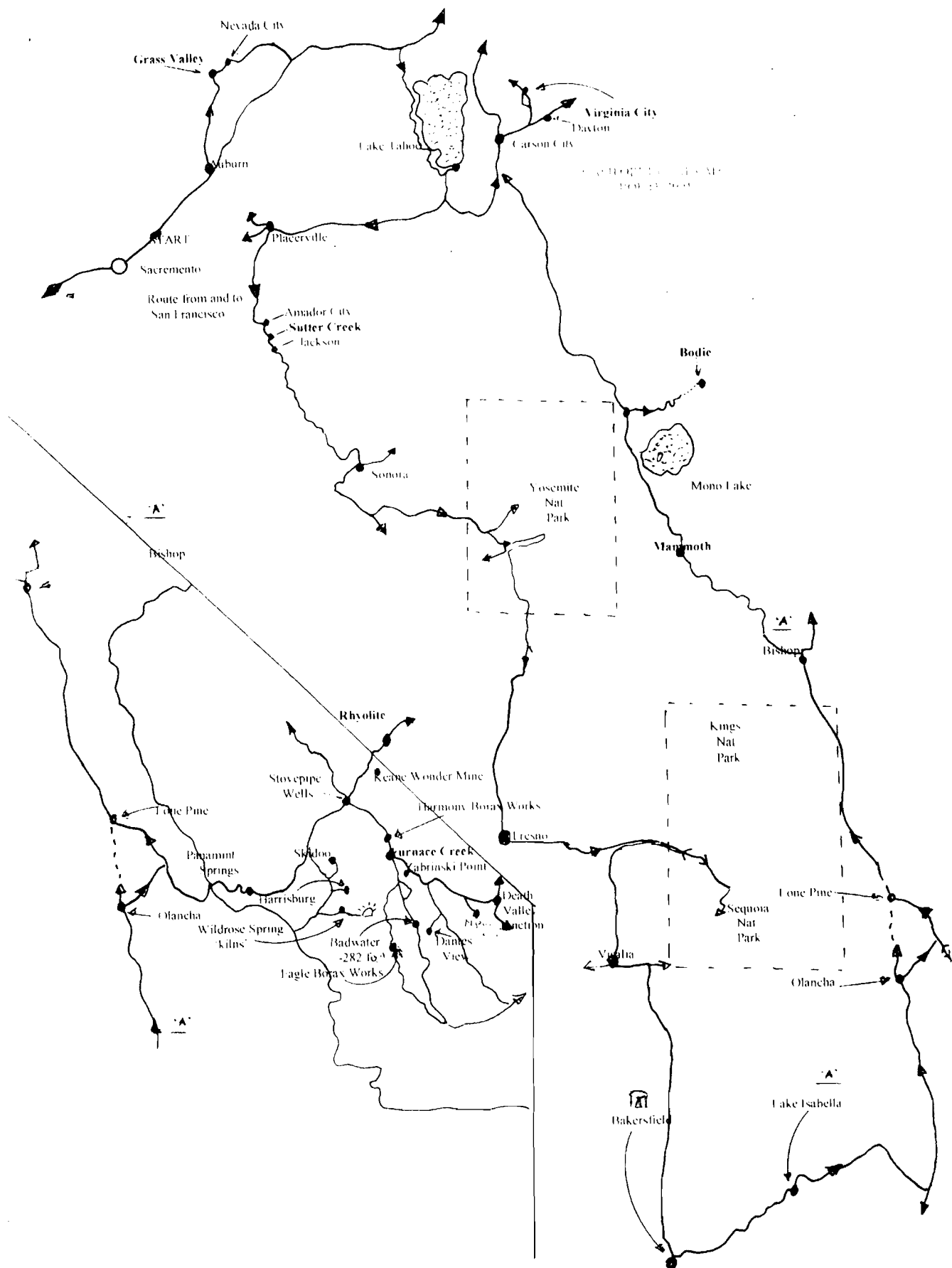
'The Ghost Town of Bodie'. Sierra Media.

'Virginia City'. L.J.Ettinger.

'This Was Mining'. D.W.Pearson.

'Mammoth Lakes'. Mammoth Lakes Visitor Bureau.

_November 2001. R.E. Hewer



California – Nevada Route 2001

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 10th September 2001 at the BMSC Hut, Coniston.

Agenda.

- | | | | |
|----|--|----|-------------------------------|
| 1 | Apologies for absence | 2 | Minutes of the last meeting |
| 3 | Matters arising | 4 | Secretary's Report |
| 5 | Treasurer's Report | 6 | Membership Secretary's Report |
| 7 | Meets Secretary's Report | 8 | Hudgillburn Mine |
| 9 | Coniston Coppermines | 10 | Lakelands Mining Heritage |
| 11 | Publications | 12 | Library |
| 13 | Date and venue of next committee meeting | 14 | Any other business |

Present D. Bridge (DB), S. Barker (SB), I. Matheson (IM),
P. Fleming (PF), & A. Wilson (AW).
5 members in total.

The meeting commenced at 7.30 p.m.

1 Apologies for absence

Apologies were received from J. Aird (JA), M. Mitchell (MM), M. Scott (MSc) and M. Simpson (MS).

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 9th July had been previously circulated to members. It was PROPOSED by DB and SECONDED by AW that the minutes be signed by the chairman as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

- 3.1 Item 13.1 IM reported that the Armadale Hotel would not be suitable for our AGM.
3.2 Item 13.42 PF had contacted J Roskell, who was willing to proceed.

4 Secretary's Report

The secretary had received:

- 4.1 The CIHS newsletter.
4.2 LDNPA Annual Report for 2001/2002.
4.3 NCA Speleoscene.
4.4 Report from J. Helme regarding Newland Furnace.

The voluntary work is ongoing, a recent trip to the quarry resulted in a large increase to our slate stock. Our next big job is to get the last 'tap hole' girder cut (14' 7") sandblasted, painted and lifted into the prepared socket holes. We have also started on replacing the fire brick lining at the top of the furnace.

We had an 'inspection' by an English Heritage engineer, and we are due for a visit from another EH person on the 21st September to discuss the scheduling of the site, at present it is only a listed site. We are in touch with the LUAU with a view to them doing a Management Plan for the furnace. Hopefully this will open up the way to the release of further funds from a number of sources.

On the advice of the EH engineer we have supported the loading barn gable end, this should ensure that it does not fall down before professional contract work can be carried out on the walls and roof.

5 Treasurer's Report

JA had sent his report and apologies as he was unable to attend to SB, he reported that:

- A) The current a/c on the 17th August stood at £3042.30 and the building society a/c stood at £1099.86.
B) £2331.46 the final payment for the printing of LMH had been paid to Black Bear Press.
C) £1000 had been paid in (book sales).

Thanks were expressed by the committee to the Treasurer.

6 Membership Secretary's Report

IM reported that there had been no new membership now stood since the last meeting. The Gift Aid forms, subs re-newal forms and the AGM minutes would be sent out in October with the next newsletter.

7 Meets Secretary's Report

Work had been completed on the Gully Back cross cut dig on the 26th August. The hopper had been sealed and more material cleared from the level.

Another meet to be arranged to get the ropes out of Paddy End. There had been a serious rock fall in the Balcony Stope area, this now appeared to be a no go area.

8 Hudgillburn Mine

Nothing to report. FMDR still apply.

9 Coniston Coppermines

Major Hext had agreed to PF and IM looking at old mining documents in his possession.

PF had been unable to get in touch with Mr Lampton land agent for Rydal Estates, regarding the metal tube which contained documents.

One of the Radon detectors had been lost in the recent major collapse which had effected the Pudding Stone level dig.

MS suggested a meet to decide the way forward at Levers Water Mine. He would also like CATMHS to do a survey of the Power House below Low Water, All thought this was a good idea.

10 Lakeland's Mining Heritage, the last 500 years.

JH had sent £1434.19 to Black Bear Press, this was the final payment. They had credited us for the 340 damaged copies (at the run-on price). Sales had slowed but it was hoped these would improve for Christmas.

11 Publications

The leaflets were selling well, other sales continue.

IM suggested that contributions to Journal No 5 should be in by March 1st 2002, Dave Sewart would be willing to make it camera ready for the printer.

12 Library

Members to report any new books suitable for the CATMHS library, for decision to purchase.

Date and venue of next Committee Meeting

The next committee meeting will be held on the **12th November 2001** at the BMSC Hut, Coniston.

13 Any other business

13.1 The AGM and Dinner, will be held at the Yewdale Hotel, Coniston on 8th December. The meal will be in the form of a buffet. PF will give a slide show on the recent trip to Patagonia.

13.2 MS had been inspecting the CAT ropes in Mandal's, there were one 100m and one 60m (new) plus a 23m and a 35m. He suggested we bought one 40m and one 60m ropes. the rope coming out of Paddy End to be used as hand line. All agreed. DB to consult the Treasurer.

13.3 It was suggested that a discharge/charge apparatus for the drill batteries should be obtained. MS to consult Clive Barrow who had made one for COMRU. AW to get a price.

13.4 MM had purchased two compasses, the Silva Sight Master to be changed as it was unsuitable for underground survey.

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

Committee Meeting held on the Monday 12th November 2001 at the BMSC Hut, Coniston.

Agenda.

- | | | | |
|----|--|----|-------------------------------|
| 1 | Apologies for absence | 2 | Minutes of the last meeting |
| 3 | Matters arising | 4 | Secretary's Report |
| 5 | Treasurer's Report | 6 | Membership Secretary's Report |
| 7 | Meets Secretary's Report | 8 | Hudgillburn Mine |
| 9 | Coniston Coppermines | 10 | Lakelands Mining Heritage |
| 11 | Publications | 12 | Library |
| 13 | Date and venue of next committee meeting | 14 | Any other business |

Present D. Bridge (DB), S. Barker (SB), J. Aird (JA), I. Matheson (IM),
M. Scott(MSc) P. Fleming (PF), M. Mitchell (MM), A.D. Cameron(ADC),
M. Simpson(MS) & A. Wilson (AW). J. Hodgson (LDNPA Archaeologist) also attended at
the invitation of the Chairman. 10 members in total. The meeting commenced at 7.30 p.m.

1 Apologies for absence-none

2 Minutes of the last meeting

The minutes of the committee meeting held on Monday 10th September had been previously circulated to members. It was PROPOSED by DB and SECONDED by IM that the minutes be signed by the chairman as a true and correct record of the proceedings. This was carried unanimously.

3 Matters arising

- 3.1 Item 13.3 C. Barrow had given IM the drill battery charger, after adjustment it now runs for one and a half hours.
- 3.2 Item 13.4 The Silva compass had been replaced and another compass and tape bought for £95. MS asked about the HGB survey kit, SB thought it was with N. Wilkes, she would find out.

4 Secretary's Report

The secretary had received:

- 4.1 NAMHO Minutes of Council meeting held at the 'Mining History and Beyond' Conference, at the Bradford Novotel on 15th September. SB had attended, the conference was a great success, good speakers and great food and accommodation.
- 4.2 NCA minutes of 2001 AGM & SpeleoScene 48.
- 4.3a) LDNPA letter regarding repairs to the Miners Bridge, Coniston (see item 10)
- 4.3b) LDNPA Letter regarding a planning application for extracting slate from Low Brandy Crag Quarry, Coniston (see item 10).
- 4.4 Letter from R. Baker of the CIHS regarding them developing a Cumbrian Industrial Archaeology web-site. He is asking if we would agree to allow information in our publications to be put on the site. The committee agreed to pass on any information they required but would like to check details before they are entered on to the web.
- 4.5 Letter from Barrow Borough Council, they have granted us the 20% top up rate relief in addition to the 80% Mandatory relief already granted to us, for our Store at Roan Head.

At this point DB welcomed John Hodgson (JH) who wished to tell us of his concept of the proposed conservation of some of the best of Lakeland's Mining and Quarry sites. The scheme would be carried out over a period of 4 to 5 years and would include, research, conservation and interpretation of chosen sites. English Heritage were to fund a second archaeologist for the LDNPA which would mean John would be able to concentrate more on project work. He illustrated his ideas for the project by referring to the Cornwall Archaeological Unit's 1992 'An Archaeological Survey of the Mining District of St Just'. The first step would be form a partnership to take the project forward and to make applications to HLF and other funding bodies. JH would be contacting us soon with further details.

MS explained his hand drawn plan of CATMHS's underground survey of the Coniston Coppermines. The way forward was discussed, to record the plan on CD was an option. JH

offered to do a digital copy of the plan, this offer was excepted. The geological features still have to be added.

5 Treasurer's Report

JA presented a balance sheet for the period 24th Aug. to 31st Oct. he reported that:

- a) At the end of October The current a/c stood at £4160.19 and the building society a/c stood at £1099.86.
- b) The BCRA insurance had been paid at the end of Sept.
- c) Sales of LMH were going well
- d) A claim for £141.31 had been made to the IR for the 2000 gift aid.

Thanks were expressed by the committee to the Treasurer.

6 Membership Secretary's Report

IM reported that the Gift Aid forms, subs re-newel forms and the AGM minutes were sent out in October with the newsletter. The GA forms had been well received, 47 members had renewed their subs. IM had decided not to publish e-mail addresses, as they were always changing but would keep a record for members information.

7 Meets Secretary's Report

Jon Knowles had sent a report which included:

- a) The Welsh meet had gone well, good weather and an interesting trip to the Dorothea Quarry Cornish Engine.
- b) The Cornish trip had been cancelled due to lack of interest, which was disappointing.
- c) He thought we should discuss attracting younger members at the AGM.
- d) He offered himself for re-election at the AGM.

8 Hudgillburn Mine -Nothing to report. FMDR still apply.

9 Coniston Coppermines

PF and IM had looked at old mining documents in the possession of Major Hext. A tut work and bargain book were examined and the No 2 account book which proved very interesting. They concentrated on ground above the water table. There was also a book of John Taylor-John Barratt letters-1824/50. These would need transcribing and cataloguing, there was a call for volunteers.

Greycrag Level dig- there had been 5 work meets since the FMDR had been lifted. The team had reached the half way mark and were under the apex of the fall, they could see up into the stope. All the steel required has been taken into the mine.

PF had received notification from LDNPA regarding proposed repairs to the Miner's Bridge, Coniston, he had made suggestions but had not got a reply to date. A copy of a planning proposal for an extension to workings at Low Brandy Crag Quarry was also received.

10 Lakeland's Mining Heritage, the last 500 years.

Still selling well, P&R Books had not paid but wanted more copies-action IM or MM.

11 Publications

IM had written to prospective authors for contributions to Journal No 5 with good response. Dave Sewart had obtained one quote of £1878 for 1000 copies and a run-on price of £337 for the next 500 copies. He has 2 more quotes to come.

12 Library

DB had received a letter from A. Thomas who had completed the updating of the contents of the CATMHS library files. Thanks go to MS for sorting this problem out. Any member wanting a copy, please send a floppy disc (windows) to the Librarian. He was given the go ahead to buy 2 books for the library.

Date and venue of next Committee Meeting-21st January 2002 at the BMSC Hut, Coniston.

13 Any other business

13.1 Arrangements for the AGM and Dinner were discussed.

Extract from THE TIMES
Nov 17 2001

One man was so taken with England's last slate mine that he has brought it back to life.

For Mark Weir it could have been just another helicopter flight. But it changed the course of his life. Seven years ago Weir was running a helicopter charter business. One slack afternoon he flew his grandfather over the Lake District, and the old man spotted the Honister slate mine, where he had spent most of his working life. "It's closed" he said sadly, "why is it closed?"

Weir contacted the mine's owners. They said it had been closed down for ten years, because it had become uneconomic to run. On an impulse he finds it hard to explain he made them an offer for it, and they accepted.

He re-mortgaged his home to raise the money, taught himself slate mining, and re-opened Honister, which is England's last working slate mine. All other English slate is quarried.

It employs 18 people and has become his mission. He has turned it into a visitor attraction, with underground tours around a warren of tunnels to vast seams of slate soaring diagonally into the darkness. The tour includes Cathedral Cavern, a great vault of rock with the worlds largest unsupported cavern roof.

With almost fanatical focus and enthusiasm Weir is also exploring new ways of selling slate. They range from £10 'fill your car boot loads' for paving paths and rockeries, to £10,000 work surfaces for designer kitchens.

Honister slate mine is up a high steep road which winds through Borrowdale between Keswick and Cockermouth. It dates back 350 years, and its distinctive green tinged Westmorland slate is judged amongst the worlds best.

It has roofed many of the worlds most familiar buildings, including, in London alone, Buckingham Palace, St James Palace, the Ritz Hotel, New

Scotland Yard, and much of Regent Street.

"The thing about our slate is that it's double the weight of normal " says Weir "See that roof over there? It weighs 16 tons. And it's got durability. My house is dated 1725 and it has a Honister slate roof. When I re-roofed it 15 years ago I discovered that two thirds of the slates were original".

He can now quote chapter, verse, and footnote on slate. Seven years ago, however, he knew next to nothing about it, despite a strong family connection. Three of his uncles worked in the industry, and his Grandfather, who died the year after his helicopter flight, was a river, splitting slabs to make roofing slates.

He didn't talk about the mine at all. He was too tired after working so hard all day and he didn't retire till he was 77.

Weir himself, now 35, grew up on a farm a few miles down the road from the mine. He remembers loud explosions as the slate was detonated, but, from childhood, his main interest was flying. To make it possible he became a precocious entrepreneur. "I started my own little business when I was twelve" he says. "I did rubbish removing, digging graves, mowing grass".

By the age of 21 he had his own building business, employing 70 people. He ran a restaurant, two fish and chip shops and a mini market, and then set up his helicopter company in Leeds. All that was abandoned when he bought the mine. It needed every minute of his attention.

"It was in a very poor state. There wasn't one generator working, and it had all been vandalised. If you rated ten as good and one as bad, it was about minus one. All my money has gone into it, it has been like a funnel. But my philosophy is that you should always risk everything. Don't have time for mediocrity. You

either sink or swim. And I like swimming."

Within weeks of becoming Honister's owner Weir put himself through an intensive slate mining course. But first he had to find people to teach him. "You had to locate the men who used to work there and ask how they did it. You had to frequent the local pubs and buy a few drinks. Some of the old-timers wouldn't talk to me. They thought "What does he know about it?"

For the first two years I was working seven days a week, from six in the morning until ten at night. He has restored the mines derelict machinery, including the 1930's winding gear that plunges 600 feet underground. He has taught himself riving and slate carving, and he has trained others how to do it.

And now? "I think I'm winning. I take 80,000 leaflets around all the guest houses every year, and that brings in about 8,000 visitors. They like coming here because it's a real working place. They can see us using the old craft skills.

The good thing is that this is a local person employing local people, and not just relying on tourism. Two thirds of our business is what I call 'proper work', and one third is tourism.

I feel very happy that my vision for the place means it won't end up as a plastic sign saying 'Honister Slate Mine was here' But I feel a bit guilty that I never asked my grandfather about what he did. Because, I" say after these past few years that mining is the hardest job you could do. Easily the hardest."

Honister slate mine, opens daily 8.00 to 5.00. Free access to Visitor Centre, but mine tours, which must be booked in winter cost £7.

Phone 01768 777239,
www.honister-slate-mine.co.uk

Thanks to Jon Knowles and Alistair Cameron for the press cutting.

St Bees beats in heart of New York

BEAUTIFUL St Bees sandstone is finally being put in place in a massive building project across the Atlantic in New York.

When architects were searching for stone for the ten year, multi-million pound transformation of the exterior of the Cathedral of the Immaculate Conception, in Albany, New York, their world-wide quest came to an end in St Bees.

It was there, that the experts found just what they had been looking for, and after months of preparation the sandstone is now being used on this massive building project.

David Williams of Egrement Road, St Bees read about the American company's decision to use St Bees red sandstone in The Whitehaven News in July and he sent off a cutting from the paper to his old friend living in Troy, New York.

"We have an old friend, Al Davis, living in Troy, close to Albany and who stayed with us here in St Bees for several weeks many years ago and we sent your article to him as we knew it would be of interest," said David.

Within a few weeks Al sent a letter back to David, enclosing newspaper cuttings from the Albany Times-Union newspaper which reported on the work in progress, along with photographs.

Architects knew they had a massive job on their hands when rusted iron clamps on the exterior of the cathedral were exposed by the falling flakes of stone and were of great concern to the German master stonemason, Ludwig Pauli, employed to oversee the job.

"I never saw deterioration like that," said Ludwig, in the newspaper story. "There was no way to restore that stone. We had to start from new again."

Pauli has more than 25 years of experience in his craft and was looking for the best sandstone available. By the time the first phase of the cathedral is done, Pauli estimates that 3,000 stones — 1,200 tons — will have been



STONE'S DESTINATION: The Cathedral of the Immaculate Conception, in Albany, New York.

laid on the upper north and south walls of the church and on the northeast tower that stretches nearly 200 feet into the air.

Choosing this stone was part of an intense, thorough, tested process that began more than five years ago. Architects were brought in from England and other parts of Europe for consultation. This St Bees is one of the top stones in the world," said rector of the cathedral Rev William Page.

The church is the nation's third-oldest cathedral still in use and is listed in national, state and local historic registers.

Quarrying the massive amount of stone needed was Moorhouse & Sons, of Bigrigg, who have Grange Quarry, at Wilton. They are supplying the stone to Chesterfield-based company Realstone Ltd, who have cut the stone and shipped it to New York. Tony Moorhouse, owner of the Bigrigg firm, said the American stone which had been originally

used to clad the cathedral, over 100 years ago, had had to be removed after it eroded.

"They have been looking all over the world for a brown stone to re-face it and they have picked this stone because it can stand the frost and the heat," he said. "It will take them about 10 years to re-clad it. There are a lot of buildings for the windows and surrounds and it will take a lot of work."

Three articulated lorries a week with 25 tonnes of stone on each were sent out. Mr Moorhouse, who runs the firm which employs 13 staff, said the architects visited the quarry at Wilton around a year ago and decided the



HOLY SATISFACTORY: The story as told to the locals

stone was perfect for the job. ing a large quantity of St Bees. He said he expected they had red sandstone to clad a televi- got their original information and radio station is from Hastings about his cousin, Karel, who was in the National Stone Directory. As a result of this, The cathedral, on the corner of Eagle Street and Madge Avenue, is a gothic revival style, was built in 1852 and is the third oldest still in use in America.

The company has also supplied many other international orders in the past, including use in America.

The Whitehaven News, 3rd January 2002. Thanks to Dave Bridge for the cutting

Focus on mining

A major partner-ship may be set up involving the National Park and the National Trust to reflect the importance of the Lake District's historic mining and quarrying sites that are in urgent need of conservation.

A range of other organisations are also involved in a bid for cash in a major project of recording, conservation and interpretation of historic sites under the

Lakeland Mining Heritage banner.

The national park planning policy committee will be asked to set up a formal partnership with the National Trust and other groups to seek funds and start work.

Archaeologist John Hodgson said the Lake District had a long and significant history of mining and quarrying

because of its unique and complex geology.

The earliest large-scale extraction dates from the Neolithic period, between 4,000 and 2,000 BC, when stone axes were produced from the volcanic rock of the Central Fells around Great Langdale. Mining for lead and copper was under way in Medieval times, and a major increase took

place in the 16th century when the Mines Royal Company was set up by the Crown to exploit the mineral wealth of the Lake District.

Evening Mail, 17.11.01

Thanks to Peter Fleming for the cutting

High insurance hits new quarry

THE hefty cost of insurance premiums is threatening ambitious plans to revive small-scale quarrying in the Lake District.

Coniston man Dave Weir was on the brink of re-opening Guards Wood - a flag slate quarry near Coniston that was last worked in the 1920s and sits on National Trust land.

But at the 11th hour, after three years preparatory work and having secured permission from the national park authority, he found out insurers were asking for crippling £10,000 a year premiums.

Brokers have insisted on public liability insurance of £5 million because of the dangerous nature of quarrying and the use of explosives.

Alongside the trust, Mr Weir is still hoping to find an insurer but the struggle puts a question mark over plans to promote small quarries.

The National Trust is trying to attract grants to promote small-scale quarrying in a desperate bid to revive supplies of local building stone for maintaining historic buildings.

"It's filling a need not only for the trust, but locally. The availability of building stone is drying up. Most quarries are doing ornamental, polished stuff because that's where the big money is," said trust land agent Rachel Brock, who is supporting Mr Weir's efforts to open Guards Wood.

There is also considerable local enthusiasm to see quarrying revived as an alternative industry to farming and tourism.

Alistair Cameron, slate expert and author of *Slate* from Coniston, is sure there is a viable and necessary future for small-scale quarrying.

"There's plenty of money in stone round here," he said.

"Tourism is fickle. When you get a bad season, tourism centres suffer terribly or you get the foot-and-mouth situation and it's pretty terminal. It's important to keep other industries going."

Meanwhile, the Lake District National Park Authority is hoping to attract European and National Lottery funding for its Lakeland Mining Heritage Project. This scheme is aiming to conserve historic quarry sites but also to provide training for traditional skills such as small-scale quarrying.

But these grand plans are undermined if cottage-industry quarries cannot get affordable insurance cover.

"From our point of view it completely throws a spanner in the works," said Ms Brock. "If new-comers can't find insurance cover, it leaves the big boys which is not what the trust wants."

Even though he is an experienced contract quarryman with Burlington Slate, Mr Weir is considered a new-comer because he has not run his own quarry before.

Mr Weir, whose great-grandfather built many houses in Coniston from local flag slate, is still hoping for a last-minute reprieve but to date no insurer has offered more favourable terms.

Extension proposed at Low Brandy Crag Quarry, Coppermines Valley

Permission has been granted for the extraction of 20,000 tonnes of distinctive silver grey slate from a quarry at Coniston.

Burlington Slate Ltd applied to the Lake District National Park Authority for the ten-year programme of extraction and restoration work at Low Brandy Quarry, Coppermines Valley.

The proposal will involve lowering the quarry floor by 15 metres, with six lorry loads of slate clog transported every week to the production site at Kirkby-in-Furness, and as much waste rock as possible disposed of at the quarry.

Juniper, gorse and bracken will be planted to help landscape the site.

Authority members, who visited the quarry in September, followed officer advice to approve the plan, subject to a number of conditions on hours of work, access traffic, control of blasting and noise, and surface water management.

The Westmorland Gazette

Bids for project

A LONG-awaited project to shore up Greenside Mines, at Glenridding, is set to begin in March after the Lake District National Park Authority agreed to put the £1.4 million scheme out to tender.

The Greenside Mines plan, which was delayed by foot-and-mouth restrictions, will involve extensive reshaping of Tailings Dam and work on retaining walls and watercourses at the site. But the work is so specialised that the LDNPA's administration and finance committee agreed to waive the government rules on competitive tendering and invite bids from just six firms approved by the county council or Environment Agency rather than place a notice in the Press as usual.

Committee member Maureen Colquhoun objected to the variation of the tendering arrangements saying that the authority had had plenty of time to invite tenders in the usual way. "This is not the way to proceed in a properly run authority," she said.

50 Years Ago

September 29, 1951

Experimental blast

A SHORT, sharp explosion which sounded not much louder than the report from a rifle to the assembled spectators, 100ft below, yesterday signalled a new method of winning rock slate quarrying on the fells between Broughton and Broughton.

With the explosion - the detonation of 100lb of gunpowder driven into the face of the rock for 30ft - came about 3,000 tons of rock and another 2,000 tons were loosened.

This experiment, unique in the annals of a quarry producing roofing slates, was undertaken on behalf of the Broughton Moor Green Slate Quarries Ltd, by explosive experts of Imperial Chemical Industries and was designed to speed up the old method of winning rock.

An interesting feature of yesterday's explosion was that the whole of the terrific yield of rock fell exactly as the experts had planned. No sooner had Mr Claude A. Cann, general manager and joint owner of the quarries, operated the plunger to detonate the charge than a mass of rock lifted slightly and bulged and then came careering down to the ready-made platform. Not a fragment of rock flew into the air, a point which in itself presented a fine piece of explosive technique.

Broughton Moor rock is famous, not only for the production of Westmorland green roofing slates, but in its extensive use for facing the exterior and interior of important buildings in all parts of the country.

CUMBRIA AMENITY TRUST MINING HISTORY SOCIETY

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