The Northern Mine Research Society

Newsletter

May 2004

Society Events — 2004

Please remember to contact the meet leader before attending an event

Saturday May 8th White Coppice/Anglezarke. Leader Ian Williamson (01539 432702) Surface (6 miles) 10.30 am car park NGR SD 618191 **MEET CANCELLED**

Saturday June 26th Reigate, Surrey Sand mines/stone quarries Surface & Underground Leader Alan Mills (01484 861904) Limited numbers booking essential

Sunday July 11th Tan Hill collieries Leader Les Tyson Surface 10.30 am Tan Hill Inn NGR NY897067

Friday/Sunday 23rd/25th July NAMHO Conference Organized by CATMHS Coniston. Details in Newsletter.

Saturday August 14th Booze Wood/Slei Gill Leaders Malcolm Needham (01257 452304) & Alan Mills (01484 861904) Underground & Surface 10.30 am Langthwaite car park NGR NZ 005023

Saturday 18th September Hill Top/Sharneyford colliery area Leader Clive Seal (01434 682803) Surface predominantly 10.30 am Hill Top entrance (off the Todmorden/Bacup Rd) NGR SD 889246 – precise meet details per later Newsletter.

Please remember that if you have any ideas for future meets please contact the Society Secretary who will be pleased to receive them.

Inside this issue:

Society News

RECORDER'S REPORT FOR 2003

The Society's Records has had a busy year and continued to grow rapidly, thanks to donations from Bernard Bond, Mike Gill, Ken Makin, Martin Roe, Ian Spensley and Les Tyson. Coal material predominated, for the first time, suggesting that members' interests are changing. Seven four-post binders have been bought to accommodate this influx. They are expensive, but they keep paper in much better shape than ring binders. To facilitate the use of these files, I have also begun replacing the index/dividing cards between each section.

As Recorder, I offered to catalogue the late Paul Davison's 'Keighley Coal' collection at the Cliffe Castle Museum in Keighley. This comprised of a series of card wallets and box files stuffed full of notes, plans etc, much of it out of any order, relating to coal pits in the Keighley area. To date, I have set aside duplicate material and filed the remainder, in location order, in three, large four-ring binders. This has already made the collection much more accessible and has resulted in a monograph for the Society.

After our discussion about using a Geographical Information System to store, display and interrogate material from the Records, Martin Roe and myself attended a short course on the subject at the University of Portsmouth. It was an invaluable introduction to GIS and the way that geographers use it for treating data similar to that held in the Records. Unfortunately, we have both been too busy since then to take the matter further.

A wide range of requests for help, both from members, the public and even Network Rail, were dealt with over the year. These can be time consuming, but the increasing computerisation of the Records has speeded the process up. I feel that it is an important service.

This year I have given seven illustrated lectures to men's groups (Probus, Men's Fora etc) as well as Naturalist, Local History and Geological Societies. Apart from getting me out of the house, it brings little tangible return, but they are well received and it widens appreciation of the former importance of Britain's mining industry.

I represented the Society at three functions. One, at the Creswell Social Centre, was to mark the work of the Heritage Lottery Fund and Coalfield Heritage. The others, both at the National Coal Mining Museum for England, were for an exhibition of mining models and the opening of Hope Store. The latter is where large pieces of plant, not normally on display, are to be kept.

I have continued to attend meetings of the Yorkshire Dales Archæological Group, hosted by the National Park, and the Nidderdale AONB's Archæology Advisory Panel. These are both very useful because they allow individuals and amateur groups working within those areas to build links with a range of professionals representing local and regional government, DEFRA, English Heritage, archæological contractors and the universities. Far from trying to control what we do, they are supportive of it.

The value of this arrangement was demonstrated only this week. Last year I was advised to approach the Environmental Protection Unit at Richmondshire Council, which covers most of upper Swaledale and Wensleydale, because it was working on a strategy for inspecting contaminated land. This, of course, includes mining, dressing and smelting sites. I was promised a copy of whatever was proposed, when it was ready, and on Monday the 'Draft Revised Strategy for the Inspection of Contaminated Land' arrived. Of itself, the document is fairly innocuous and mainly concerns the gathering and presentation of data. It is noticeable, however, that archæological and historical concerns are a very low priority. A telephone call to the County Council's Heritage Unit revealed that its officers were unaware of the document.

Mike Gill

NMRS LIBRARIAN'S REPORT

Since the 2003 NMRS AGM, one person has used the library. They wanted material on Strontian and

were sent photocopies of several items from NMRS Newsletters and from geological reports.
Sallie Bassham

NMRS NAMHO REPORT

Since the 2003 NMRS AGM, NAMHO has held Council meetings in June 2003 (at Rathdrum during the Irish Conference), in November 2003 (at Oldwood Pit Colliery near Bristol) and in March 2004 (at Donisthorpe in Derbyshire). Much time has been spent discussing insurance: the British Caving Association insurers stopped providing cover at short notice and it was difficult to find alternative cover. Insurance is now available, but at an increased cost. Attempts to obtain funding to digitise copies of *The Mining Journal* from 1835 to 1920 have not yet been successful. NAMHO Council members have volunteered to update the *Heritage Guide* and to produce an advertising-style leaflet and a brochure on the history of NAMHO.

A very successful Seminar on Underground Archaeology was organised by Martin Roe, the NAMHO Conservation Officer, in September 2003. The 2003 NAMHO Conference was held in June, in the Wicklow area of Ireland. In July 2004, the conference is in the Lake District, and in July 2005 the NAMHO Conference will be based in Surrey.
Sallie Bassham

OBITUARY

The society regrets to announce the death of Brian Donnelly, of Ledston near Castleford, who was a long-standing member. We send our condolences to his wife and family.
Mike Gill

VISIT - SATURDAY 26 JUNE 2004 EAST SURREY MINES AND QUARRIES

Paul Sowan of Subterranea Britannica, the Wealden Cave and Mine Society and this society has kindly arranged a visit to the mines and underground quarries of East Surrey. He has set up a very interesting itinerary for the day and arranged for support from his colleagues in the Wealden group. This is a rare opportunity for us to visit these mines and underground quarries.

Paul has also produced detailed maps of the meeting location and comprehensive notes on the three sites we plan to visit. I will send these to members who intend to join the visit.

Meeting date: Saturday 26th June 2004
Meet in Reigate, Surrey at 10.30am; details below; finish around 5pm
Contact Alan Mills alanfmills@lineone.net or 'phone 01484 861904.

In order to whet your appetite I have summarised the notes which Paul has produced for members on the visit. My apologies to Paul if in so doing I misrepresent anything.

We aim to be visiting:
(1) Reigate Tunnel Road East and West silver sand mines
(2) Godstone Hill quarries / mines
(3) Merstham Quarry Field quarry

Leaders:
Paul W. SOWAN - Wealden Cave and Mine Society
Andy BELCHER - Wealden Cave and Mine Society
Peter BURGESS - Wealden Cave and Mine Society
Malcolm TADD (Reigate) - Wealden Cave and Mine Society

***Meeting places and times**: Park in the Reigate Town Hall car park (open to the public Saturdays and Sundays), Castlefield Road, REIGATE. Take the footpath from the SW corner of the Town Hall car park - cross the top of the road tunnel - turn left through the archway by the cottage and down the steps to Reigate High Street - turn left and left again into Tunnel Road and the road tunnel .*

Reigate Tunnel Road (inside the tunnel if raining!) 10.30 - the mines are accessed via doorways either side of the pedestrianised road tunnel, which is a public thoroughfare - see sketch maps which will be sent.
Godstone Hill layby on southbound carriageway on A22 (south of the footbridge over the road / north of the M25 junction - see sketch maps.
Merstham Rockshaw Road east of the railway cuttings / west of the bridge over the M23 - see sketch maps.

NOTES ON THE SITES TO BE VISITED

Reigate Tunnel Road East and West silver sand mines

This is an easy walk-in pair of mines, with electric lighting in most parts, but take your own lamps anyway.

Reigate (east Surrey) has numerous excavations into the Silver Sands member of the Folkestone Sand formation (Lower Greensand Group)(Lower Cretaceous Aptian), in and around the town centre. At least seven of the larger underground systems are recognisably mines. Amongst the other smaller systems are a number of rock-cut cellars / very small mines, as well as the so-called Barons' Cave first noted in Camden's *Britannia* in 1586, assumed to be an integral part of or later addition to the Norman Reigate castle. A large part of the site and earthworks of the Castle constitute the town's central park, and enjoy Scheduled Ancient Monument status, as do those parts of the later sand mines below.

Godstone Hill quarries / mines

This is mostly walking in restricted headroom with some scrambles over roof-falls - helmets and lamps essential - wet / muddy underfoot in places.

Godstone Hill quarry lies below and east of the A22 via the Roman Road entrance, and it is possible to see how the quarry tunnels crossed a small fault with a downthrow of about 1 metre to the north; this fault can be traced through the workings. Early 19th century iron plateways survive, and plateway junctions and continuation rutways. Also traces of later narrow gauge edge railways. Most of the tunnelling had been for building-stone or for slabs of refractory stone for fireplace or furnace beds, but some large open areas are seen where it seems likely that the otherwise voluminous quarry waste had been removed by secondary mining for use as hearthstone (a step-whitening agent.)

On cessation of mining or quarrying, large areas of some of the workings were used as underground mushroom farms. Hearthstone mining and mushroom culture led to radical rearrangement of the underground galleries, which are now archaeologically quite complex. Early 19th century quarrying, and later working, have left iron plate-ways and narrow-gauge railway lines in places. At least some of the iron tramway plates are re-used from the Croydon, Merstham & Godstone Iron Railway of 1805 - 1838 (which never got beyond Merstham!)

Merstham Quarry Field quarry

Access is via a vertical fixed steel ladder c. 10 metres - conditions underground as for Godstone Hill but wetter and muddier.

The quarry was worked for squared blocks of building-stone ('Reigate stone'), a material much used in prestige buildings throughout SE England from the Norman Conquest onwards, and last worked and used locally in the first 20 - 30 years of the 19th C. Entrances to the quarries were sunk to the required beds by way of pits on the Upper Greensand dip slope, and tunnels driven in below a sound bed of roofstone. The pillars (unworked stone to hold the roof up) and stalls (extraction galleries) were driven at right-angles to the approximately NW/SE jointing, so are aligned approximately NE/SW ... 4m wide stalls and 3m wide pillars. 'Eyes' have been cut through the pillars every few metres to give an extraction ratio of about 75%. Quite often joint planes have been used for the sides of these eyes - not good quarrying practice in terms of long-term roof stability! It is possible to visit several parallel 'stalls' (extraction galleries) and intervening roof-support pillars, as well as one or more up-dip working faces, quarry spoil behind dry-stone retaining walls, etc.

Paul W. Sowan (summarised by Alan Mills)

CANCELLATION OF FIELD MEET

The Anglezarke field meeting on 8th May 2004 was cancelled by Ian Williamson, the leader of the meet. He has requested that anyone who still wishes to visit the mine for a surface walk should contact him so that a later date could be arranged for this year/next year.

CHANGE OF DATE

Tan Hill collieries – will members please note that, owing to work commitments, this meet will be held on Sunday July 11th and not Saturday the 10th as advertised. All other details remain the same. Leader: Les Tyson (07919 907953) Surface.

10.30 am Tan Hill Inn, NGR NY897067

NMRS TRESURERS REPORT AND MEMBERSHIP NEWS

At the moment we have 350 members renewed out of a total expected of 400.

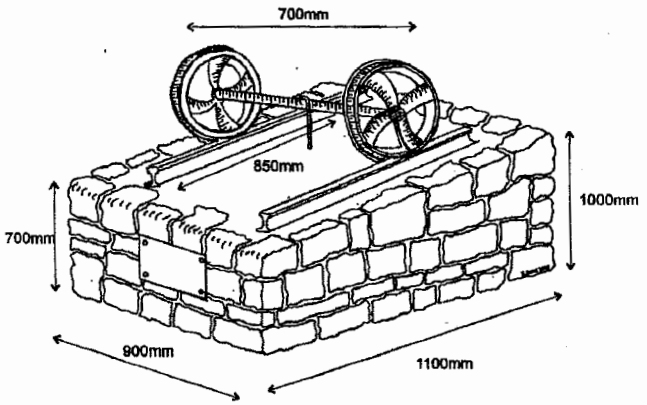
If you have not renewed your 2003 membership then this is the last publication you will receive from the NMRS. To renew please send your renewal form and cheque for £15 (or £15.50 for a family member) to Alan Mills, 1 Grove House Drive, Clayton West, Huddersfield, HD8 9XB; do not use the address off the first green renewal form.

All members who have renewed, other than in the last few days, should have received their membership card for 2004. If you have not then please contact me, preferably by email on alanfmills@lineone.net or as above or 'phone 01484 861904.

A couple of members have enquired about paying by direct debit. I will investigate this with the bank but in the meantime it would be useful to know how many people would be interested in paying in this way; please email me your views

A Coal Mining Memorial

This is to be sited on The Fiddle Case Land, Slew Road, Ingleton (A65). The plinth would be local limestone and a plaque will be mounted onto it with the following suggested wording. Now funding has been secured, the work will begin during suitable weather.
Thanks to Bernard Bond for providing these



detailed illustrations of the memorial to be placed on the outskirts of Ingleton.

Society members at the recent Nenthead meet did wonder if it had already been erected in the wrong place ...

Photograph taken in the Wheel flats, Smallcleugh, Nenthead, 2004.

Other News.....

Closure of La Houve Coal Mine, France

The Times today, 24 April, 2004, reports the closure yesterday of the last coal mine in France — the La Houve mine at Creutzwald in Lorraine. The coal mining industry in France was nationalised in 1946. At its height, in 1957, it employed 358,000 people, and 58,897 million tonnes of coal was raised. In recent decades

the industry suffered as the proportion of electricity fired by coal declined, from 30 per cent in 1960 to 4 per cent in 2000. Nuclear power now supplies 80 per cent of France's energy.

Early Railways Conference III

To be held at the National Railway Museum (Leeman Road, York YO2 4XJ) from Thursday 16th September (pm Lecture), Friday 17th September (All Day), Saturday 18th September (All day and optional evening dinner), Sunday 19th September (am only).

The cost: Lectures including Friday evening supper, all lunches, tea & coffee – **£66.00** per person before 31st July. *(£85.00 after this date).* Saturday evening dinner: Optional & extra to the above – **£33.00** per person *(£40.00 after this date).* Cheques, for the full amount, made payable to: **The National Railway Museum.** For further information on the conference, email: martyn.halman@nmsi.ac.uk

For accommodation, please contact Yorkshire Tourist Information, and state your requirements & price band. **York Tourist Information,**
De Grey Rooms, St Leonards Place, York.
01904-621756

Archæology and the Historic Environment (of the Yorkshire Dales)

This day-school was held at Grassington on April 24th, when at least ten NMRS members were amongst the 180 or so who attended. A display of this Society's activities, by Martin Roe and Anna Davies, attracted much interest and several British Mining publications were sold. A range of speakers, both professional and amateur, covered such topics as bones in caves (the Dales were favoured by bears!); the excavation of a Romano-British settlement site with a unique 17th century limekiln; community archæology; landscape studies; a bronze-age ritual site; archæology along water pipelines; the Swaledale vernacular building survey; and a review of archæology in the Dales over the last 50 years – to mark the 50th anniversary of the Yorkshire Dales National Park, during which the work of the NMRS was acknowledged. A vote of thanks was given to Robert White, the Park's Archæological Conservator, for his work in encouraging archæology within the National Park.
Mike Gill

Exhibition at Pateley Bridge and Guided walks

Material from last years Greenhow Hill Lead Mines Survey is on display at the Nidderdale Museum, Pateley Bridge until September alongside displays from several local groups.

Guided walks will be taking place on the afternoons of 12th of June and 28th of August as part of a series of summer events organised by the Nidderdale AONB. These walks will follow part of the Bewerley Industrial Heritage Trail, which runs from Pateley Bridge to the Greenhow Hill lead mines. Details available from the Nidderdale AONB office at King Street, Pateley Bridge, tel 01423 712950.
Martin Roe

NAMHO Conference 2004 'The extractive industries of Cumbria'

The 2004 NAMHO Conference is being organised by the Cumbria Amenity Trust Mining History Society, and is to be held on 24th to 26th July in the old mining village of Coniston, in the Lake District National Park. The conference will feature a number of talks, plus a full programme of field and underground visits, and a field trip by coach on Monday 26th July to Threlkeld Mining Museum, Haig Pit and Florence Mine.

There is still time to fill in the forms and attend. If you would enjoy a weekend of good food and the good company of like-minded people, not to mention exciting trips to all the best Cumbrian mines and stimulating lectures please contact:

CATMHS Hon. Sec. Sheila Barker, The Rise, Alston, Cumbria, CA9 3DB (sheila.barker@cybermoor.org.uk) for application forms and further information.

Meetings, meetings, meetings!

A progress report on the Baile an Or research project, which received grant-aid from Northern Mine Research Society.

Our project is made up of different activities that come together in a new understanding of the small township, Baile an Or, which evolved in the Strath of Kildonan during the gold rush of 1869. Each of the four project members have panned the gravels of the Kildonan Burn for many years but are now concentrating their interests on the social aspects of the gold rush, with the intention of publishing the results as a monograph.

We are well ahead with arrangements for an archaeological exploration of the ground and have attended countless meetings. The good news is that steady progress is being made, and the bad news is the slow progress. But it has to be slow. We have to satisfy the landowner we will avoid the rare Neolithic structures in the locality, we have to secure approval from all the authorities who administer "the open air", we have had to engage a consultant archaeologist , and develop good relationships with Helmsdale Heritage Society. Between times, we have studied archaeology and completed a practical course run by Chester College.

One half of the ground survey has been completed successfully and many hundreds of field readings have been converted into a very informative and impressive diagram. Now we are hatching plans for the other half. We have also used applied photography in novel ways. No sooner had Ron Callender succeeded in synthesising a three-dimensional view of the township from two different photographs, additional research tracked down three sets of proper stereo-negatives at an archive in Wick.

Newspapers and other desk-top surveys are already producing new information on the men of the gold rush and the town they built for themselves. We know about their way of life and the times they lived in. By the time we produce the next account, we will know even more ... and our meetings will be taking place on site and in the fresh air of the Strath.
Patrick Reeson & Ron Callender

Note: Anyone anxious for more information, or who wishes to participate in the project in practical terms, is encouraged to contact either of the above founder members. Understandably, there is a need for extra hands to assist with the ground survey and to help with the excavation.

Darlington and Stockton Times: Friday March 26th, 2004:

Three calls in four days for rescue team.

A difficult underground rescue from old lead mine workings was the first of three callouts in four days for the Swaledale Fell Rescue team. A man whose leg had been broken by a rock fall in the mine above Gunnerside was airlifted to hospital. The alarm was raised at 10pm on Thursday of last week after five people who had been exploring the workings were making their way out. The last, a Richmond man in his 40's, was trapped by a rock fall. Six members of Swaledale Fell Rescue went underground to splint the broken leg and bring the man out on a stretcher. It took more than an hour to get into the mine because of fallen rocks. The rescue was led by Tony Myers, who described it as very difficult. The man's injuries were treated by Dr William Lumb, a rescue team member, and an RAF helicopter flew him to the James Cook University Hospital, Middlesborough, where he was said to be making a good recovery. Richard White, assistant rescue controller, said: "this is the first underground rescue of a person that the team has undertaken for some time. Our regular training sessions proved very helpful in dealing with what was a very challenging rescue. It also demonstrated the team's excellent parternership with the RAF and other emergency services."

Book Reviews ...

The Iron Makers of Myers Wood

The smelting of local ironstones in the Pennines is a topic which has been neglected for too long. Nevertheless, thanks to a growing number of local archæological surveys, it is becoming clear that from the monastic period, at least, until the 17th century the industry was widespread. After that, iron production was concentrated on fewer, but larger sites.

This booklet tells of a dog-walker's chance discovery of a long forgotten, early mediæval iron making complex in Myers Wood, on what is now the campus of the University of Huddersfield. It also relates how the Huddersfield and District Archæological Society, working with archaeologists from the University of Bradford, made geophysical surveys of the site and then excavated parts of it between 2002 and 2003. A series of trenches and pits discovered ore roasting areas, the remains of a number of furnaces, a smithing hearth, slag dumps, a charcoal platform and a later, water-powered furnace.

Myers Wood was probably associated with the Cistercian grange of Tymberwood, at Thunderbridge. Its ore came from sideritic ironstone bands and nodules immediately above the Black Bed coal of the Lower Coal Measures. The site was probably used over a long period, but C14 dating suggests a predominantly 13th century date for areas associated with the roasting and smelting of ironstone. The charcoal platform was, however, dated to between 1480 and 1680 AD and may relate to a later phase.

This preliminary work has convinced English Heritage of the need for further work, including the detailed surveying of the surrounding landscape to put the site in its proper context. Evidence from another site, near Dacre in Nidderdale, which was also found by a community archaeology project, suggests that there should be evidence of extensive water and woodland management around the Myers Wood.

The booklet was published by the Huddersfield and District Archæological Society and copies can be ordered from Sandra Harling, Secretary HDAS, 72 Moorside Road, Kirkheaton, HUDDERSFIELD, HD5 0LP. Price £4.00 + 60p p+p

Mike Gill

Introduction to the Geology of Alston Moor

The book does as the title implies, it gives a fundamental introduction to the geology of the region, avoiding unnecessary technical terminology. The book is divided into four parts;

1, The Roots of the Northern Pennines, 3 pages, briefly describes the origins of the region , tracing the drift of the British Isles from the Ordovician period to the present day.

2, The Carboniferous Rocks, 17 pages, an introduction to the geological sequence together with a description of the sedimentary rock types to be encountered in the region, together with their origin. The igneous intrusion known as the Whin Sill is included in this section.

3. Origin and Emplacement of the Mineral Deposits, 15 pages, the origin and location of the mineral veins is described, as is the mechanism by which the minerals were deposited and the geographical zoning of the minerals.

4. Post Carboniferous History, 11 pages, covers the period from the Jurassic to the present day, the uplifting of the region, and the effects of glaciations

There are four appendices; the first two describe the minerals to be found in the region, the third the fossils, while the fourth is a glossary of selected terms.
Two walks are described; both give considerable detail and are accompanied by excellent geological maps.

Finally there is a section on further reading and references for those that want to progress beyond the scope of this book.

To summarise, the book has been well researched and is written in a style that is easy to read and should appeal to anyone with even a very minimal knowledge of geology, or to someone with geological knowledge but is new to the region. The diagrams are of the highest quality, as are the photographs, and add greatly to the value of the text. The subject of the book is purely geological and has avoided the history of the mining and associated industry. All in all, the book is a very professionally produced publication, a pleasure to read.

by Russell Bulman, Published by the North Pennines Heritage Trust. Perfect binding, dimensions 240 x 17mm, 92 pages, 22 diagrams/maps, 29 photographs. Price £9.50 plus £1 p&p. Obtainable from The North Pennine Heritage Trust. Nenthead Mines, Nenthead, Alston, Cumbria. CA9 3PN

Raymond A. Fairbairn

ECTON COPPER MINES (under the Dukes of Devonshire 1760 to 1790) by C.L.M. Porter

With the exception of Parys Mountain, Ecton was Britain's richest copper mine in the 18th century, when it was also one of the deepest mines in the World. During a thirty year period, it made a profit amounting to a little over £78,000 for the Duke of Devonshire and had a major effect on the economy of an otherwise poor, rural area. This wealth allowed the mine to be one of the first to adopt the innovations of its day. For example, work on a boat level began in 1762, which was soon after the opening of the Duke of Bridgewater's underground canal at Worsley, and underground railways were in use by 1769.

Lindsey Porter's book is the result of a great deal of detailed research in the Chatsworth archives, especially in analysing the various reckonings and correspondence there. As well as detailing the development and working of the mine, there are interesting chapters on the infrastructure which supported it. Considerable tonnages of ore were sold to private smelters, but lower grade ores were part-smelted on the mine to give them added value, and some high grade ore was smelted in a smelter, built by the Duke, at Whiston. This created a demand for coal which was met, in part, by buying a local colliery, where bricks were also made for Ecton mine. There is also an valuable discussion of the movement of large tonnages of ore, coal and other materials, and the tolls etc paid, on roads surrounding the mine.

Sadly, as in far too many books, this scholarship is undermined by the use of old, superseded sources for discussion of mines elsewhere. For example, statements like "*John Taylor, the famous Cornish mine engineer*" really ought not to appear nowadays. Taylor, who was arguably the father of British mining, was born in Norwich and his parents came from Lancashire, both around 300 miles from Cornwall! Similarly,

it is common knowledge that whatever work was instigated by Cornelius Flint at Grassington, there was no "*reorganisation of the mines under the direction of Cornish Mine captains*". That came in the 1820s under Taylor. Flint's main contribution at Grassington was the Duke's Level, a proposed boat level which Taylor abandoned in favour of using it solely as an adit.

That criticism apart, this is a good book which gives an up-to-date picture of a relatively little known, but very important copper mine. It is part of the Landmark Collector's Library, and is available from Landmark for £19.95 (p&p free) – ISBN 1 84306 125 2

Mike Gill

Pembrokeshire – the Forgotten Coalfield

by M.R. Connop-Price.

Another issue in the Landmark Collector's Library. This reviewer finds it a refreshing change to have a book on coal mining which is not all photographs, strikes or disasters. Martin Connop-Price's book sprang from a doctoral thesis at the University of Wales, Swansea, but this should not deter readers. It is a very readable, yet comprehensively referenced, account of the Pembrokeshire coalfield which spans 700 years to end in 1950.

The coal was mostly high grade anthracite, but major geological disturbances had crushed a high proportion of it into a powder called culm, which was used for lime burning. Despite the coalfield's relative isolation, its coastal location encouraged early development because coal won near the coast could be shipped to Irish sea ports. The use of tramways to develop pits further inland from the mid-18th century is discussed, as is their development into networks serving a number of different mines. The latter took coals either to ports or onto main line railways. The ports serving the mines are also discussed. The book has no less than 13 appendices, covering such topics as weight and measures, colliery outputs, amounts shipped, and the Loveston Accident (an inrush).

For anyone with an interest in coal mining history, especially that of South Wales, I recommend this book. It is available from Landmark for £17.95 (p&p free) – ISBN 1 84306 094 9.

Mike Gill

Did the earliest production of metallic tungsten take place in Cornwall? (from an article by Colin Bristow & Bryan Earl in Materials World, February 2004, pp.12-13

Last year a farmer at Trewhiddle, near St Austell, made a curious discovery on his property when clearing out a ditch - he found a dense, pineapple-sized stone that weighed 19kg (42 lb). Samples taken from the specimen and sent to the Natural History Museum confirmed that the material is almost entirely composed of tungsten metal, with minor traces of tin and iron. Having ruled out an extraterrestrial origin via a meteorite, it appears likely that it is an artefact of local historical tin mining activity. Wheal Virgin, & Polgooth mine both operated a few km from where the ingot was found. In addition, three blowing houses in St Austell operated both blowing-house type smelters and reverberatory furnaces. The last tin smelter in St Austell closed down in 1857.

A local origin for the metal is possible because tungsten mineralisation occurs, together with tin, in the headwaters of the river Vinnick between Carthew and

Stenalees. This drainage flows past Trewhiddle. The mineralisation was worked at the old St Austell Hills mine (Sn), later known as the Bunny mine (Sn & W). Close by were the Beam mine and a caunter lode in South Polgooth, both of which yielded wolframite.

It is difficult to imagine how tungsten, which has the highest melting point of any metal (3410°C), could have been produced by the technology available to 18th and 19th century Cornish tin smelters. However, experiments by Bryan Earl and examination of slags from archaeological sites indicate that when concentrates containing small quantities of wolframite are smelted, the tungsten partitions into the slag, either as an alloy with tin or as tungsten prills. It is known from historical accounts that slags were normally stamped and mixed with fresh concentrates to maximise the recovery of tin. This may possibly result in the progressive increase in the tungsten content of the slag as it is repeatedly recycled, causing the prills to somehow fuse together, with iron acting as a collector, as it is inconceivable that molten tungsten would have obtained at normal tin smelting temperatures.

Tungsten had no apparent value in the 18th century and slag saturated with the metal would presumably have been discarded as waste. Unless, however, the Trewhiddle specimen is the remnant of an early attempt by smelters who deliberately experimented with smelting tin concentrates known to be wolfram-rich and managed to produce an ingot of sorts. Further investigative work will be required to solve this riddle.

It is worth noting that tungsten was first identified as a new element by the Swedish chemist Carl Scheele in 1779, although he did not manage to isolate the metal itself. Metallurgy textbooks generally attribute the first production of tungsten metal to the Spanish Elhujar brothers in 1785. If the Trewhiddle ingot was created by smelters in St Austell prior to that date (the lower blowing house was rebuilt in 1782), it could be speculated that the metal was actually first produced in Cornwall! It may be no coincidence that historical documents record a visit to the area in 1783 by Rudolf Erich Raspe, who is thought to be the author of Baron Munchausen's travels and also of a description the Happy Union alluvial tin workings. He was a capable scientist and had an interest in tungsten, as he wrote to Matthew Boulton from Cornwall in 1786 to suggest that adding this metal to iron would improve its strength and casting properties.

A detailed list of references can be obtained from Colin Bristow, c/o Camborne School of Mines. The authors also state that they would be pleased to hear from anyone who is similarly interested in further investigating the origin of the Trewhiddle ingot.

John Hunter

Swaledale – its Mines and Smelt Mills

by Mike Gill was published in hardback in 2001. It quickly sold out and a paperback reprint has now been issued by Landmark Publishing at £14.95. The book is the authorative history of lead mining and smelting in both Swaledale and Arkengarthdale from mediæval times to its heyday in the 19th century. It is available through bookshops, Matlock Mining Museum, or directly from Landmark at Ashbourne Hall, Cokayne Ave, Ashbourne, Derbyshire, DE6 1EJ and the
ISBN is 1 84306 131 7.

Mike Gill

Thanks to all who contributed to this newsletter. Please continue to send material for the newsletter. Contributions can either be sent by email via the website or direct to me. Alternatively, you can post contributions either as text, or on disc, all are welcome. If you require anything returning, it will be returned with the newsletter unless instructed otherwise. In particular, photo's, plans, and pictures are welcome as long as they can be reproduced well in black and white. Contributions for the August newsletter should be with me by the end of July please to:

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