NEWSLETTER 137 OCTOBER 2007

# THE TREVITHICK SOCIETY


A scanned slide from the Holman photographic collection. Scanning the slides: the first stage in conserving and managing this massive, hugely important archive, is underway, but help is needed in identifying personnel. Can you name this engineer?

## CHAIRMAN'S ADDRESS

We are sure that interest in the Society's performance has increased during the past few years. This has been due in part to the activities connected to the various celebrations of Richard Trevithick's achievements. Much of the work related to Trevithick and early steam power has been in the form of lectures delivered by members of the Society.

Many of the hundred or so lectures during the past seven years have, of course, been associated with Trevithick and the construction of the replica 1801 road locomotive. These have enabled the Society to promote the inventiveness associated with mining in Cornwall during the eighteenth and nineteenth centuries. Cornish engineering had a profound effect on the development of industry and transport throughout the world.

Through their lectures, exhibitions and participation in media activities, the volunteers of this Society believe their willingness to explain the history of Cornish ingenuity and sheer hard work has widened the understanding of people of all ages and backgrounds.

In addition to lectures being delivered to societies and communities in schools, village halls and universities throughout the United Kingdom, this Society has addressed similar audiences in the United States, South Africa and Australia.

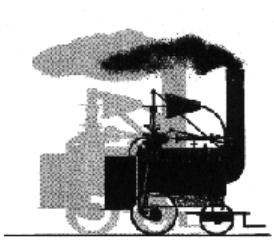
As well as the Trevithick links, there have been talks on many other subjects connected to industrial archaeology. The Society is very grateful to the numerous lecturers who have given their time and expertise to deliver so much that is of interest to those who seek this information. It is hoped that these activities have made an adjustment to the previous mindset that placed much important invention, mining and industrial development elsewhere in the UK.

During these years the lectures have progressed from the disaster of scattered 35mm slides to the latest in PowerPoint presentations, memory sticks and electronic projection. The Society is proud of its place in the forefront of industrial archaeology and now has the equipment that will enable it to continue this work. This note cannot end without a call for more volunteers to help in this very worthwhile side of the Society's work. This does not mean that you have to be an orator; audiences prefer a talk that comes from a true interest in his or her subject by the speaker.

**Philip M Hosken**

## EDITORIAL

This is, I believe, the forty-sixth newsletter edited by me. In all of those newsletters I have broadly followed the format started by my predecessor, Martin Beckett. This is despite a number of technological changes, the greatest of which happened with my first issue, when a desk top publishing program was used for the first time. The DTP program dispensed with the need to get the whole newsletter typeset by the printer followed by the editing of proofs, and in consequence the whole process was speeded up. In future newsletters it is hoped to bring about some modest changes and to experiment with colour. This will entail the use of new Desk Top Publishing software and so there will be much to learn, and no doubt, many teething troubles to overcome. So please bear with me!



**Copy date for next issue is November 25th, 2007**

**Colin French**

## LETTERS TO THE EDITOR

Dear Editor,

Do any Society members have information or photographs please regarding Richard 'Dick' Curnow of Helston and the lorries produced by him there under the name *Cornish Motor Transport* in 1957-1959? Only three of these rare vehicles were built. If so, please contact Graham Thorne on 01621 892896 or thornes@totham22.freeserve.co.uk

**Graham Thorne**

## DON DIXON 1924-2007

The Society is sad to record the loss of member Don. Dixon. Born at Launceston in 1924 and schooled at a strict catholic school (though C. of E.) apparently giving the nuns a hard time. His boast was that he always remembered them as he smoked Three Nuns in later years. When aged eleven his family moved to St.Austell where he was a boy scout and eventually meeting his wife Jean through both belonging to the same cycling group. During the war Don was a Lieutenant Navigation Officer in the Royal Naval Volunteer Reserve and was involved at Dunkirk. After the cessation of hostilities he worked at Fowey Radio then the Post Office Bodmin Radio Station before becoming Senior Lecturer in Electrical, Electronics and Telecommunications Engineering at Camborne Technical College. His interests were fly-fishing, mineralogy and fossils and he also had a passion for VW camper vans having owned several over the years. In retirement Don became the secretary of the Cornish Institute of Engineers, a position in which he worked tirelessly until his death and he also seized every chance to promote the Camborne School of Mines, the Combined University of Cornwall and the Trevithick Society.

## HOLVER AN GOF AWARD 2007

The Cornish Gorseth organises the Publishers' Award for the Holyer an Gof Award Trophy each year awarding prizes and commendations for the publishers of new Cornish books. The latest round was for books published in 2006 and the Society publication "Cornish Explosives" by Bryan Earl was given a commendation in the "non fiction over £12-00" category. The judges were very complimentary on the content, layout and cover design and commented that, although the book was originally published in 1978 it was not normal to award a commendation to a reprint. Their view was, however, that as so much work had gone into the updating it was considered as a new volume. The award ceremony was held at Waterstones at Truro on July 12th. and in the absence of Vernon Baldry, Society Publications Officer due to indisposition, Kingsley Rickard represented the Society as the publisher and was accompanied by Bryan Earl, the author, and Pete Joseph who typeset the book.

## HOLMAN EXHIBITION

The Society Holman Exhibition at the Cornwall Centre, Redruth has proved a great success with well over seven hundred visitors giving the Society much valuable publicity, but, sad to report Trevithick Society members were a very scarce commodity. The Holman Group included Climax Rock Drill & Engineering Ltd., Maxam Power Ltd., Goodyear Pumps Ltd., Dustuctor Co. Ltd. and Saxton Drilling. Co. Ltd. and were known across the world in the mining and quarrying industries. Sadly after being in business for two hundred and three years manufacturing ceased in 2003 after a takeover. Needless to say many visitors were Holman Group retirees, a number of which came armed with books, leaflets, pictures and other pieces of memorabilia which they donated to our collection. We have also learnt much more about the company, some of which we cannot repeat! One story which appealed was that concerning one employee who lived adjacent to the works and was an

ardent flower grower regularly producing a fine show. On one occasion the night shift could think of nothing better to do than to go around the exterior of the works, each with a bucket to collect as many snails as they could. The snails were then deposited over the garden wall of the unfortunate employee. Another story was of a senior employee whose speech regularly included malapropisms and similar expressions and at a management meeting said "I understand the situation but much water has gone under the bed since then". Jan Luke, the works' busiest employee naturally featured regularly in conversations. For the uninitiated Jan Luke was the title given to a job "on the side" either for oneself or on the direction of one of the directors.

We had on display a large number of photographs of various departments and personnel, staff newspapers, catalogues, rock drills, road breakers and many other pieces of hardware including a full size demonstration cutaway compressor. This would only go through the doors of the Cornwall Centre once we had removed the mudguards. We offered a reproduction service for photographs of which many visitors took advantage. The three most requested pictures were the aerial picture of Number One Works (where Camborne Tesco is today), the view of the railway level crossing where the railway crossed the main road and continued to Number Two Works (Boiler Works) and, for some unknown reason, the third was of a group picture of the works' electricians. Presumably they must have been a right set of bright sparks!

The Society wishes to express its thanks to Kim Cooper and the staff at the Cornwall Centre for their help and encouragement and the Cornwall Record Office, Truro for the loan of display cases. Thanks also go to Society members Colin French, Phil Hosken, Roy Kelynack, Rod Thompson and George Wilson who helped with assembly, removal, transport and the daily staffing of the exhibition and equipment. Special mention must be made of the prodigious amount of work that our curator, Pete Joseph achieved, both in the preparation and during the event.

K.J.T.R.

## EVENING MEETINGS

Members will have received the letter informing of the change of meeting evenings from Fridays to Thursdays from September due to a change of situation at Cornwall College, notice of which was very short. No alternative accommodation is available in the area so in the change of evening we had little choice. The Friday evening has historically been used as it was useful to upcountry members visiting over the weekend and was also useful in conjunction with field trips. It is the intention to return to Friday meetings at some time in the future as soon as circumstances permit.

K.J.T.R.

## KING EDWARD MINE

The mine museum has had a very successful season so far in spite of poor summer weather and is where being an undercover operation is to our advantage. The number of group activities and visits continues to rise with one very busy day in particular when we were host to scores of Scouts for "The Mining Challenge". This was a walk of seven and a half miles, complete with challenges to answer, along the Great Flat Lode as a celebration of the centenary of Scouting. Another interesting episode was with a group of fifty Bretons in Cornwall on a twinning exercise with Falmouth. We are now expert in "le mill avec le Frue vanner!"

Two items on the down side to report are that thieves removed some of the lead flashing on the roof in May and in August the intruder alarm alerted us to an attempted break-in early one evening but the alarm noise frightened the miscreants into doing the disappearing act.

Work continues well in the building of the Frue vanner which we believe will be the only working example in the world once finished and Mike Holland-Smith has done a super job in re-furbishing the man-engine model and which is now on display in the

museum. The pneumatic drills, including cutaway models displayed in the mill are currently being cleaned and painted by Huw Rowe. These are the examples we use to mount displays at shows, museums etc. and are certainly looking much better for the time spent on them.

The gardeners have done well and a fine show of colour by the gate provides a warm welcome to visitors. We are, once again, getting a problem with invasive gorse and the team would like help with clearance. A small group with a bow saw and a little banter can soon make light work of gorse. So, come along, all you budding (or disbudding in this case!) gardeners. Help us keep the site tidy. Booking unnecessary! For information ring the chatline 01209 716811. Although Sunday mornings is the normal maintenance time we can always organise a mid-week bramble bash or furze frenzy!

K.J.T.R.

## BRIDGNORTH CELEBRATIONS

2008 sees the bicentenary of "Catch Me Who Can", the railway locomotive Richard Trevithick exhibited in 1808 in London inviting the public to ride fairground style in a circle for the cost of one shilling – that is five pence today for the small number or members who do not recall pre-decimal currency! A replica is being constructed at Bridgnorth and the Society is loaning some of the foundry patterns used for the construction of the "Puffing Devil" to help speed the process and to reduce costs. These were collected in early September by David Reynolds, the project engineer, who fortunately has family in Newquay so he did not find it too much of a chore. Bridgnorth are planning a celebration next July at which there will be a Society presence.

K.J.T.R.

## NATIONAL EXPLOSIVES WORKS

In June the Society held a very successful field trip to the National Explosives Works at Hayle led by Bob Cleave and Bryan Earl. Bob has now produced both a CD and a DVD of the site. The CD contains historical stills of the site and the DVD contains moving image of interviews with local characters. These are available at £5-00 each, post free. Applications through PO Box 62, Camborne, TR14 7ZN or they will be available at meetings. Cheques payable to "Trevithick Society".

## SOCIETY APPAREL

Previously we announced the arrival of Society sweatshirts, black adorned with the Society logo in gold. We have now had delivery of polo shirts also black with gold logo. Sweatshirts £12-00 each or posted £14-00 and polo shirts £9-00 each or posted £10-00. Orders to the PO Box and cheques payable to "Trevithick Society". Both items will be available at meetings or contact Kingsley Rickard, chatline or e-mail. k.rickard@tesco.net

## EXTRACTIVE INDUSTRIES EXHIBITION

The Society mounted a pictorial exhibition during August covering mining and quarrying at the Cornwall Centre, Redruth in conjunction with Cornwall County Council's Mineral Tramways Festival. The China Clay History Society also provided pictures covering the china clay and china stone industries. The exhibition was not manned but public have shown considerable interest including many complimentary comments in the visitor's book. Particular thanks to curator, Pete Joseph, for the considerable time spent in planning, printing and laminating the exhibits. The Society would also like to acknowledge the help and encouragement of the Cornwall Centre staff.

Levant was one of the major Cornish tin/ copper mines, and it closed in 1930 after more than 110 years existence. It was about two miles from St. Just on the west coast of Cornwall, roughly east of Penzance. It was right on the edge of hills

that drop precipitously to the sea, some 200 ft. below the mine buildings and engine houses. Annual production averaged some 290 tons of 'black tin', which is tin mineral ready for smelting; and 887 tons of copper ore prepared for smelting. The mine employed from 300 to 600 people,

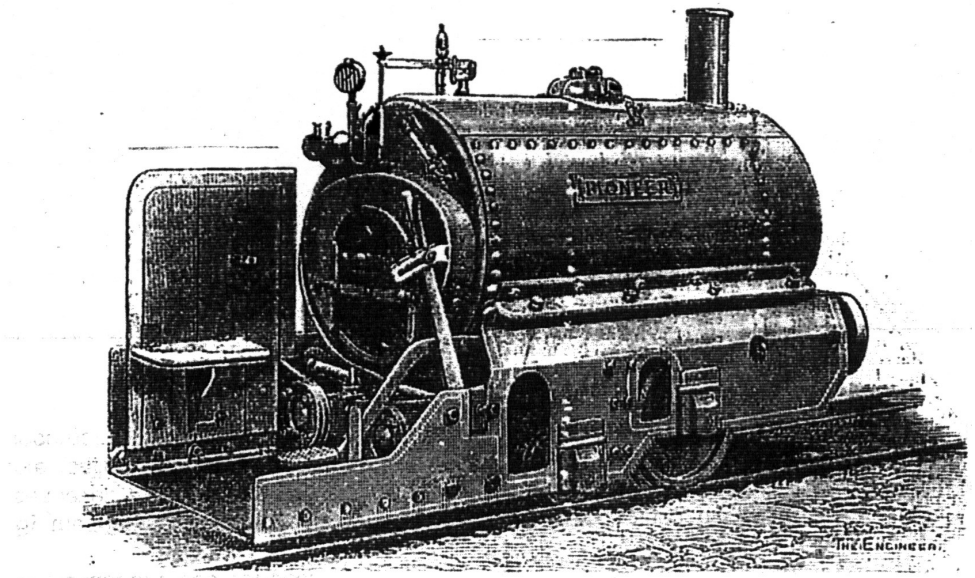
## THE LEVANT MINE STEAM LOCO

depending on how the mineral market was going at the time. An attempt in the 1960s and 1970s to revive the mine, made by the neighbouring Geevor company, was unsuccessful.

The Cornish miner is ingenious and resourceful when it comes to getting things done, but Levant rather suffered from slow thinking by its management over the years. Partly because of this, and a failure to invest and modernise, there was a major disaster in 1919 when the man-engine broke and 31 men were killed. The man-engine, at one time widely used in Cornwall, was an arrangement of a vertical or near-vertical wooden rod with platforms at 12 ft. intervals. This went up and down four times a minute, and you stepped on and off the platforms at the end of each 12 ft. stroke of the engine, thereby being carried into or out of the mine. Levant had one of the last of these devices.

By the 1880s, the workings extended nearly a mile out to sea, and were nearly 2000 ft. below sea level. This meant a long haul for the mineral, by men pushing half-ton trucks loaded with ore (called 'tramming') over considerable distances. In 1892, they decided to try a steam locomotive. This was designed by their resident engineering consultant, Mr George Eustace. He did not seem to have paid much attention to what other people had done with the design of 2 ft. gauge steam locos, and came up with a 0-2-2, which had to be within the 5 ft. x 5 ft. tunnel size.

Tenders were sought from N. Holman & Co. of St. Just and Bickle & Co. of Plymouth. Holman quoted £140 and Bickle £137.5.0, so the contract was given to Bickle, with eight mine-cars suitable for it to haul. Bickle did iron foundry work, ship-building, boiler-making and other general engineering jobs, and survived until taken over by Willoughbys in 1958, who closed it in 1969. The 'Engineer' reported on the loco on June 10, 1892, saying that the boiler was steel with 33-inch by 2-inch gun-




*Levant's unsuccessful underground steam loco. (The Engineer)*

metal tubes, working pressure 100 lb/sq. inch, and designed with a large steam space to minimise the need for stoking while passing through the smaller levels.

Cylinders were 4-inch diameter by 7-inch stroke, and appear to have been placed under the firebox. There was a toggle joint foot brake and a reverse lever, with a seat for the driver. It is not clear from the drawing where the coal was carried, and there does not appear to be any coupling at the driver's end of the loco for attaching a train.

It was tested at Bickle's site, and again on the surface at the mine. They then took it to pieces and down to the 278-fathom level (1668 ft. below sea level) and re-assembled it. It managed to get most of the way along its intended route before it was found there was not enough clearance for it to continue. Some of the route was steep - a rise of 4,5-inch in a fathom, which is 1 in 16 - and this rather defeated the tiny loco with its single pair of driving wheels. Mr. Eustace said the track was not properly to gauge, and the wheels became jammed, but he was sure it would work.

To try and improve the adhesion, they apparently removed the second set of wheels, and put a trolley in front of the engine to allow the whole weight to come onto the driving wheels. There are no pictures to show how this was done, and it didn't help anyway! There is no record of how the people coped with the smoke and fumes from the loco while underground, and in any case the company management did not go underground very much, so they were OK!

By the end of June, 1982 they had taken a pony underground (poor beast—trussed up to be lowered down a not very convenient shaft) to haul the trucks, and thereafter they built up a fleet of ponies working underground. In September 1892, the company settled with Bickle for £100 and then the loco back, delivering it to Penzance railway station on a trailer hauled by their own traction engine. Presumably Bickle was happy with this: they had given a guarantee of performance for the loco. A rather sad story of an enterprise in the land that had given us Trevithick and his pioneer steam locos in the first place.

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**Acknowledgements**

The help and advice of Mr E Edmonds, Mr V Baldry, Mr W E H King and Mr J Bullen is most gratefully acknowledged. The Local Studies Librarian of Plymouth Library kindly provided information about Bickle & Co.

**A.L. Minter**

The above article appeared in the Narrow Gauge Railway Society's quarterly magazine: *The Narrow Gauge* (No. 199), and has been reproduced here by kind permission of that Society and the author. The NGRS can be contacted at:

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## LEVANT REPORT

The engine has been running very well during the summer season, but the winding drum situation is still unresolved due to the engine running five days a week. Very limited maintenance can be carried out during that time, and various repair options are still being considered. Cost may be a major factor in what can be done, and we are in the hands of the National Trust. Delivery is awaited of a new screw compressor for powering the model beam engine and electric winder, and it is also hoped to purchase some air tools to assist the volunteers in their work.

Attendance figures so far this year are slightly down from last year, but only about 3%. This is not considered too bad as the early and mid-summer weather was rather inclement. The David Langsworthy extended guided walks around the Levant dressing floors have proved to be very popular, and we are fortunate in having some fresh volunteers for driving, stewarding and guiding duties.

The reproduced Whim level indicator is now in position and work is now progressing on the driving mechanism. Many people have remarked how good it is looking.

By the time this goes to print we hope that we will have two new publications. Both are reprints and the first is of John Corin's book 'Levant – A Champion Cornish Mine' and will contain two additional chapters, telling the happenings at Levant since we opened to the public in 1993, plus the Millenium refurbishment when the engine was out of commission for a whole season. Both chapters are supported by new photographs, and we are indebted to Pete Joseph and Vernon Baldry for their assistance in getting this into print.

The second reprint is 'The Mine Under the Sea' by Jack Penhale (Raymond Harry). First published in 1962, this tale of Levant chronicles the life of a young boy starting work at the mine in 1917, through the fateful day of the Man-Engine disaster on the 20th of October 1919. Many visitors are entranced by the short extract of the book on display at Levant, and Lynne Gulliford volunteered to get the book reprinted. Raymond Harry's son and daughter hold the copyright, and have very kindly given their permission for it to be reproduced, with the proceeds going straight to Levant. Our sincere thanks go to them for making this possible. The book will be available from Levant and Geevor Mines, and the News Centre at St.Just priced at £4.99.

**Ron Flaxman**

## RETAINING CORNWALL'S INDUSTRIAL DISTINCTIVENESS

The Society is concerned that Cornwall's visual distinctiveness, seen in its mining landscape, cottages, mine buildings and the names of mines and localities is being lost in the headlong rush to build more houses. The meaning embodied in the suggested names for the developments bears little or no resemblance to the original meaning. For instance, Wheal Maiden on the former Holman factory site is being Anglicised to Maiden Green. The society recently wrote the following letter to Midas, one of the major developers in the Camborne - Redruth area, with copies to the district and county councils. So far there has been no acknowledgement.

*Maintaining Cornish distinctiveness in regeneration programmes*

This is a long-standing learned society concerned with the preservation of Cornwall's industrial archaeology. This takes many forms in a county where a diverse mining and engineering past has contributed to world industrialisation, the local culture and Cornish heritage. Particular concern was raised at a recent meeting of the Society's council into the possible loss of important identity in new developments on previous industrial sites.

We make this observation against a background of all the bodies associated with the regeneration of Cornwall who have pledged to maintain and develop Cornwall's distinctiveness as an important part of its regeneration.

Many of the names, both personal and of a locality are often in Cornish and descriptive of previous activities on the site, some having been established for hundreds of years. As such, they are an important, educational and emotional link with Cornwall's past. Architects without an understanding of Cornwall's deep seated culture, its World Heritage Site status and other links that bind communities, cannot be expected to enhance the written word in a similar manner to the way in which they develop brownfield sites.

It must be left to the developers, along with the regeneration teams and local planning authorities, to ensure that every opportunity is taken to maintain and develop the distinctive Cornish culture upon which much of our regeneration must depend.

This Society seeks your assurance that, wherever your company is involved with the naming of sites, streets, roads and localities it will bear in mind the indigenous, established names associated with their history and culture. Also, it seeks a naming procedure that will provide distinctive, pertinent local names for projects and developments. In this, the Society can often provide site histories and the Cornish Language Partnership can be contacted at www.magakernow.org.uk

Obviously, the Society had a number of recent instances in mind when discussing the matter. Some incongruous names have already found their way into regeneration parlance and there are several names presently on street plans that are both abhorrent to the local communities and misleading for visitors and intending business partners. We would be pleased to develop discussions about these.

Looking forward to your response.

Yours sincerely

**P.M.Hosken**

Australian Engineer, Inventor, Hartnett Award winner, RMIT Lecturer in Thermodynamics, Obsessed with creation of modern compact steam engines

B. Caulfield 26.8.1930 Died Caritas Christi, Kew 16.8.2007

The builder of the worlds first 'modern' steam car, Ted Pritchard was a stubborn,

## EDWARD (TED) PRITCHARD 1930-2007

some might say obsessive man. His passing, after a long illness occurred just months before the completion of the latest version of the Pritchard Steam Engines, the design and development of which had dominated his life for more than 50 years.

Ted grew up in his father's Caulfield engineering workshop where, during the 1950s, he restored a 1923 Stanley Steam. He drove that vehicle around the streets of Melbourne for many years, racing the locally made Holdens, while devising a new generation of steam engine, an engine he felt convinced was capable of competing with the internal combustion engine.

To test his concepts Ted and his father built a 74kW engine fitted to a 5 ton Bedford truck. Test drives of the torquey kerosene fuelled truck caused the editor of 'Truck and Bus' magazine at the time to declare it was the best fun he had had for years. The truck is now part of the National Museum's collection of Australian inventions.

In 1964 Ted formed Pritchard Steam


Ted Pritchard with his steam propelled Ford Falcon

Power Pty Ltd and began work on the design and construction of an auto engine. The resulting 33.5kW engine fitted to a 1963 Ford Falcon which, by 1968, was a daily sight around the inner city.

In 1972 this vehicle, which became known as "the most photographed Falcon in Australia," was air freighted to California where it was used for demonstrations to major car companies and investors. This trip resulted in a significant option payment from US investors and Ted being invited to testify in front of a US Senate committee into alternative fuels.

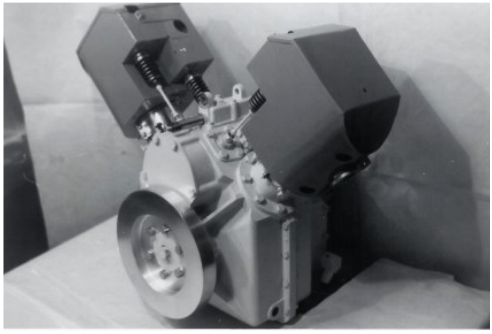
In 1974 Ted drove the Falcon from Melbourne to Canberra and back, taking Lance Barnard and other Labour Ministers of the day for a joyride around old Parliament House while he was there. That engine was tested at the Ford factory in Geelong and recorded tail pipe emissions that were not equaled until the Euro 2 low emissions standards were introduced in 1998.

Having demonstrated that a steam driven automobile not only worked, but had real operating advantages over internal combustion engines, Ted moved on to design a production model of the power unit. It took longer, and cost more than expected, however finally an advanced Pritchard steam engine was manufactured at the Bendigo Ordnance Factory with backing from both the Federal and the Victorian governments in 1978.

Technically referred to as an external combustion, advanced uniflow steam engine, the 'V-Twin' as it was known, was set up on a dynamometer and started first time by Sir Rupert Hamer without ever being test fired prior to Rupert turning the key.

Despite years of overtures from major car companies Ted was never able to attract a major backer. He proceeded to design his own car from the rubber to the chrome, built a prototype and exhibited it in 1981 before finally being forced to pull the plug on Pritchard Steam Power due to lack of funding.

The loss of his business and the shelving of his dream was a heavy blow for Ted, his wife Marion and their young family. After that Ted worked for many years as a



Pritchard Power, the Uniflow V-twin engine

lecturer at RMIT teaching, among other things, principles of mechanical engineering and the finer points of the immutable laws of thermodynamics.

In the early years of the new century, while already in his 70s, Ted declared that he would "draw one last engine before I die." He sat down at his drawing board, where, in an estimated 6,000 hours over five years, without any of the computer aided design systems of modern engineers, he formulated, designed and drew in ink with a fine hand, every last nut, bolt and screw of a new Pritchard Engine. Shortly after he finished these drawings his health began to fail.

This engine, known as the S5000 (steam 5kW) is an engine designed to burn low grade fuel, like coconut husks, straw or waste paper, and produce electricity. Ted believed that a small, simple engine that could cleanly burn woody wastes to produce electricity would free many communities from the effort of earning cash to buy diesel to make electricity, and simultaneously create a local economy in making the fuel. In theory the S5000 will also be able to provide steam, heat, distill water, or drive anything you can drive with a belt.

When he finished the drawings for the S5000 Ted declared that he had finally done for steam engines what IBM did for computers, reduce them in scale and increase their power to weight ratio to the point where they would be able to become commonly available and useful technology.

Ted passed away while the first prototype of the S5000 is being manufactured by a Gillon Group subsidiary, MTN Tooling in

Bentleigh. Marion Pritchard is still involved in that venture, Pritchard Power Systems Pty Ltd, and the company hopes to be marketing a Pritchard engine by mid 2008.

I have always thought of Cornwall as being divided. There are the bits the tourists know, the St. Ives', the Padstow's, the Newquay's and the Bude's. Then there are the places with which local folk are familiar, the City of Truro, Penzance, Carn Brea, Gwithian, Tehidy Country Park, Bodmin Moor and The Lizard. There is the south eastern part that is east of Looe & south of Liskeard. It is unfamiliar to both tourists and locals, unless you live there. As a Redruth resident, this part was alien to me until I went on an outing to those

## THE TREGANTLE MILITARY RAILWAY

glorious ex-smuggling twin villages of Kingsand & Cawsand a couple of years ago. I have been in love with Cornwall's 'forgotten corner' ever since.

The fort at Tregantle is not easy to miss if you are exploring Whitsand Bay or enjoying its fabulous surf, yet many pass by without wondering why such an impressive structure was ever built there. I was doing some research on this very topic and, with OS map in hand, found that this part of Cornwall is dotted with many such structures: Scraesdon, Cremyll Battery, Picklecombe Fort and Maker Battery to name but a few. I was struck by the sheer size of Scraesdon on the map and searched the Internet finding the odd fuzzy photo and one single reference to a former military railway.

I thought I knew a fair bit about Cornish railways & tramways but I had never heard of this military railway or seen it mentioned in any book. I decided to plunge deeper and carry out some field work with further research.

Scraesdon Fort was one of 'Palmerston Follies'. Lord Palmerston was the British Foreign Secretary from 1855 to 1858 and British Prime Minister from 1859-1869. He was aware of the impending threat from the French. A Royal Commission in 1857 approved plans to fortify the Naval Docks and Plymouth was regarded as the second greatest naval arsenal in the United Kingdom. Plans were made to put a ring of defences around Plymouth Sound. Tregantle & Scraesdon were given the specific task of sealing off the whole of the Rame Peninsula in the event of attack. This was to prevent the enemy launching a rearguard action from the direction of the River Lynher. In the event, none of Palmerston's forts ever saw military action but they remain impressive remnants of our military history.

The imposing front entrance to Scraesdon Fort.

Why should this be significant to us enthusiasts of Industrial Archaeology? The railway that connected Scraesdon with the quayside at Wacker on the River Lynher used a standard gauge (?) three rail system, very similar to the Inclined Plane at Calstock on the East Cornwall Railway and the former Hayle railway at Angarrack. The gradient was 1:7 and a stationery steam engine was sited in the 'moat' at the top of the slope.

The Railway's History

Scraesdon Fort lies approximately half a mile east of the village of Antony, which is about two miles east of Torpoint and lies just of the main A374 road from Trerulefoot. The railway was brought in lock, stock and barrel by the Royal Engineers from the Sudan in 1892 to the quayside at Wacker on the River Lynher. After the battle of Khartoum and fall of the capital, the British abandoned the Sudan. The British had constructed a rail ink from Suakim to Berber in the heart of the Sudan. This was to keep the troops supplied from the ports on the coast. The contract went to a company called Lucas & Aird who used locomotives from the Birmingham manufacturer, Manning Wardle.

As the railway was no longer required in the Sudan, they were moved back to the UK and put into storage.

Scraesdon Fort was built between 1859 and 1860. Due to the poor roads, granite blocks and ordnance installations were moved by rail to Wacker Quay, and then up an incline to the fort. However, the fort was increasingly being used as a training centre and the difficulty of getting supplies remained. It was not until 1892 that plans for a railway to connect the river with Scraesdon and Tregantle were to come to fruition. The railway was completed in 1893 and two of the Manning Wardle locomotives that had been previously seen action in Sudan were used. These were D&E Class 0-4-OST number 941 and K Class 0-6-0ST number 967. One of the locos were stationed on Wacker Quay to move goods from the railway pier to the base of the incline and the other loco was used to shunt in the yard at Scraesdon moving goods to Tregantle Fort.

The line was not used to its full extent and, as none of the forts in the area was used for their original purposes; the line's life was short lived and closed in 1903. However, the track remained in situ until 1914 when it was ripped up by the Royal Engineers.

Description of the Line

Manning Wardle 0-6-0, similar to one of the locomotives as used on the Tregantle Military Railway.

There were originally two piers at Wacker Quay, though only one still exists today. However, close examination of the foreshore will reveal a line of bulkier and darker stones which highlight the other's foundations. It was from this pier that the line started. It then followed the high tide shoreline of the River Lynher for approximately a third of a mile before going underneath the present A374 road. Shortly on the other side you can see where the incline commenced. The rails here had a passing loop half-way up so that goods could ascend and descend simultaneously. This also meant

that the incline operated at maximum efficiency and that it effectively was self-braked. However, Philip Payton speculated in his book that one of the Manning Wardle engines could have negotiated the incline as well but as little documentary evidence survives, we do not know if this occurred, or if it did, whether it was just to move the locos themselves or with goods.

At the top of the incline is Scraesdon Fort. Here, the resident locomotive separated goods for Scraesdon or onwards to Tregantle Fort. The line went past the farm at Scraesdon with a spur for a loco shed. This marked the summit. The line continued on a slight downhill gradient towards the Antony to Crafthole road and crossed two minor roads via level crossings. There was a slight climb before the line started in a loop, crossing over both the main road and the main path to Tregantle Fort. The line finished just outside of Tregantle Down battery and its four nine foot naval guns.

A single remnant, one of the rails on Wacker Quay's shoreline.

## The Remains of the Line Today

### Wacker Quay

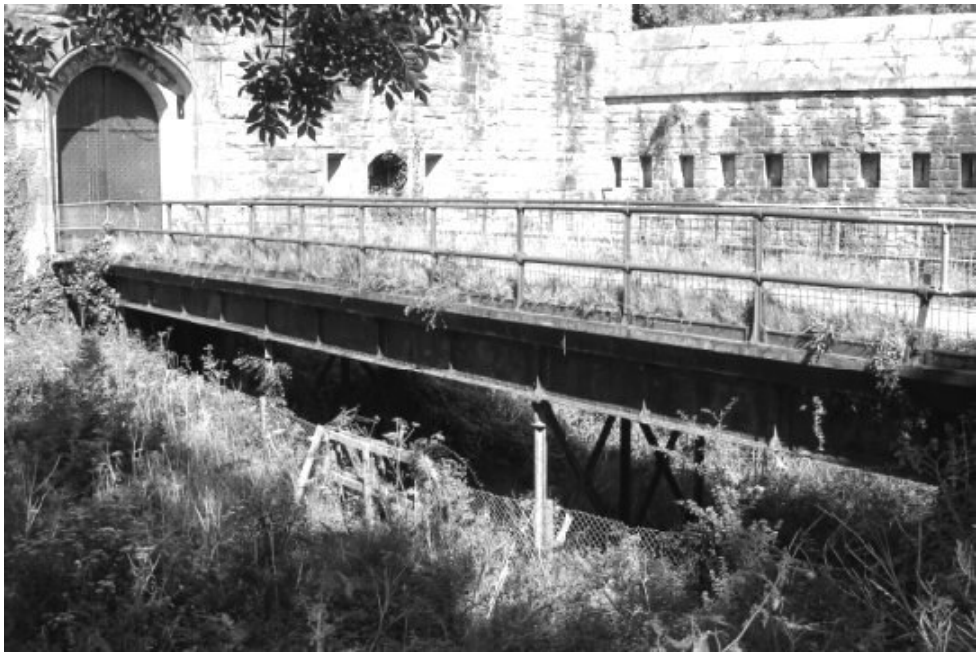
Wacker Quay is signposted as a picnic site just off the A374 road about a mile before the village of Antony. After turning off, take the immediate left hand fork and the road turns down steeply under a nine foot metal height barrier (to prevent unwanted persons setting up camp). The picnic site has been landscaped by Cornwall County Council and Caradon District Council. You will notice a large corrugated metal shack behind you as you look across the river. As incredulous as it may seem, this is the actual locomotive shed that housed one of the Manning Wardle engines! Local legend has it that one of these locomotives lay derelict inside this shed until the 1930s – some 30 years after the line closed. However, the route of the line cannot be traced beyond this point as it is now private property but the line went into the current undergrowth. Cormac (the Highways Division of CCC) used it for a number of years and kindly did some repair work on the roof before vacating it.

Wacker Quay was originally the site of a mill, a lime kiln and at least two piers. The mill pond is still in evidence, as are the remains of the lime kiln.

If you scrabble about on the foreshore, you will see little hints of its history. A bolt here, a bit of fishplate there and a couple of exposed rails. The pier that is still intact has it mooring points where barges were tied up, still clearly visible. You can walk along the foreshore and just see where the incline went under the road but you can get a better view if you walk back up to the main road and turn right towards Antony. About a third of a mile by the side of the road you will see a parapet, marking the point where the railway went underneath the road. The incline itself is very overgrown, so it is only for the brave!

### Scraesdon Fort

To get to the fort, drive into Antony, head up the hill towards the church and take the



The iron bridge over the ‘moat’, which housed the stationery engine, loco storage, and connections to Tregantle Fort.

The wide area next to the imposing East wall of the fort, which was used as a railway marshalling area.

first right, signposted Scraesdon Farm, when you get to the right hand bend. Follow the road for half a mile, go past the turning to the farm and park on the left just before the gates. The fort is owned by the MOD, but, despite the scary signs, the gate is not locked and you will not be trespassing as long as you keep to the paths. Do not, however, attempt to enter the fort unless you have permission from the MOD.

It still comes as quite a shock in the 21st Century to see an intact, fully formed fortress in front of you in modern day Cornwall. Unlike Tregantle, the fort is now rarely used by the MOD and it is expected that they will sell it off in the not too distant future. One hopes that it is not sold to property developers, like Fort Picklecombe was in the 1970s. It is an important asset of Cornwall's history and must be protected. Fortunately, it has been put on English Heritage's protection register.

Remains of the railway are scant but the iron bridge across the moat looks railway-like in appearance and it may have replaced an embankment or other bridge prior to the railway being constructed in 1892/3. At the farm end of the iron bridge, other metal supports can be seen but I could not ascertain what their purpose was. On the right hand side of the bridge it is possible to peer through the undergrowth and look at the top of the incline. Moving to the right you can see the large (still gravelled/ballasted) area that was used as the marshalling area. If you walk around the side by the gate, you can look across to Tregantle Fort and imagine the outline and route of the track which departed from here over a hundred years ago.

**Paul Anthony Statham**

Further Reading


- Tregantle & Scraesdon - Their Forts & Railway – Philip Payton – Truran Press ISBN: 1850220387
- Charles Thomas, Archaeology of the Rame Peninsula – Cornish Studies Centre - Redruth
- The Story of a Cornish Railway – R C Sambourne – Western Morning News 4th April 1967
- The Magic of Tregantle's Military Railway - S J Crispin– Cornish Times – 19th September 1975


# Stephenson Locomotive Society Meetings

For additional meetings see: http://www.stephensonloco.org.uk/

| Date | Day | Location | Contact | Time | Subject | Speaker |
|---|---|---|---|---|---|---|
| 7 Nov. | Wed. | Hayes Village Hall<br>Hayes Street<br>Hayes<br>Bromley | 0208<br>2899935 | 19.30 | *The Ffestiniog Railway* | Ron Walker |
| 8 Nov. | Thur. | The St John<br>Ambulance Centre<br>Sandes Avenue<br>Kendal | 01539<br>729659 | 19.00 | *45 Years Along the Fylde Coast* | Peter Fitton |
| 12 Nov. | Mon. | New Trinity Parish Hall<br>Saltcoats, Ayrshire | 01294<br>822303 | 19.30 | *Man Trams and Trains* | Ian Duncan |
| 14 Nov. | Wed. | YMCA<br>Bridge Street<br>Guildford | 01372<br>379216 | 19.30 | *The Changing Southern* | Bruce Natham |

# Stephenson Locomotive Society Meetings

For additional meetings see: http://www.stephensonloco.org.uk/

| Date | Day | Location | Contact | Time | Subject | Speaker |
|---|---|---|---|---|---|---|
| 15 Nov. | Thur. | United Reform Church Hall, Mowbray Road New Barnet, Herts. | 0208 3686200 | 19.30 | *American Railroads* | Leslie Drake |
| 16 Nov. | Fri. | The Mining Institute Neville Hall Westgate Road Newcastle Upon Tyne | 01434 688946 | 19.00 | *Coal Trains—From Garretts To Sheds* | David Stewart-David |
| 17 Nov. | Sat. | Kidderminster Railway Museum | 01242 582152 | 14.15 | *'Daffodil Line', Gloucester-Ledbury* | David Postle |
| 20 Nov. | Tues | Fox Covert Inn High Leven Near Yam, Teeside | 01642 321205 | 19.30 | *Twiglets of the North Eastern Railway in Cleveland* | Michael Ellison |
| 30 Nov. | Fri. | The Mining Institute Neville Hall Westgate Road Newcastle Upon Tyne | 01434 688946 | 19.00 | *The History of Lambton Engine Works and its Loco Sheds, 1835-2007* | Colin Mountford & Malcolm Young |
| 1 Dec. | Sat. | The Friends Meeting House, Mount Street, Manchester | 0161 9282461 | 14.00 | *60 Years of Transport Enthusiasm* | Dr A. McDougall |
| 5 Dec. | Wed. | Hayes Village Hall Hayes, Bromley | 0208 2899935 | 19.30 | *tba* | |
| 6 Dec. | Thur. | St John Ambulance Centre, Sandes Avenue, Kendal | 01539 729659 | 19.15 | *The Furness Railway Outer Circle Tour* | Geoff Holme |
| 7 Dec. | Fri. | Settlement Centre Union Street Middlesbrough | 01642 321205 | 19.00 | *North American Steam 1940-1994* | Ian McInnes |
| 8 Dec. | Sat. | Kidderminster Railway Museum | 01242 582152 | 16.00 | *Midlands Christmas Event* | |
| 10 Dec. | Mon. | New Trinity Parish Hall Saltcoats, Ayrshire | 01294 822303 | 19.30 | *Railway Photography, a Different Perspective* | Max Fowler |
| 12 Dec. | Wed. | YMCA Bridge Street Guildford | 01372 379216 | 19.30 | *Swindon and the Great Western Railway* | Bernie Holland |
| 13 Dec. | Thur. | United Reform Church Hall, Mowbray Road New Barnet, Herts. | 0208 3686200 | 19.30 | *On and Off the Footplate. Part 4* | Bill Davis |
| 14 Dec. | Fri. | The Mining Institute Neville Hall Westgate Road Newcastle Upon Tyne | 01434 688946 | 19.00 | *Yuletide Festivities A social evening of contributions from members and friends* | |

## A CD-ROM ON GREENHILL ARSENIC WORKS

In April 2006 I visited the Greenhill Works with my son Erik. Armed with a pocket camera, a small geological hammer, plastic gloves and a small bag we explored this site without knowing much of its history but collected some very eye-catching red realgar material that was inspected later at home. Under the microscope a whole suite of minerals were discovered.

In June 2006 the NAMHO (The National Association of Mining History Organisations) posted an inquiry for papers on the arsenic industry in the Tamar Valley, which would be used for their conference days the next year at Morwellham (border Devon/Cornwall). I felt it as a duty to cooperate and to share the information I had. Nothing is complete if one doesn't know anything about the history and the origin of the slag. Searching around and around, it didn't bring me any further. Apparently this wasn't that easy…

It soon was very obvious that the production of arsenic was widely spread in Cornwall and Devon during the past centuries, ore containing arsenic being very common. Often the mines had their own arsenic works on site. The Tamar region produced half of the world's needs of this very poisonous metal. All of this might be very true, but specific information on the chemical works of Greenhill was hard to find.

It was John Manley who brought light into the darkness in June 2006, and put me on the right track. After more extensive research I came in contact with Peter Richardson and Steve Roberts (The Plymouth Mineral and Mining Club) who kindly gave me permission to use their notes on Greenhill. Thanks to the diary of Peter Richardson and the additions of Steve Roberts, I was able to reconstruct the history of Greenhill and a draft of the paper was brought to the attention of the NAMHO.

The more I dug into the history, the more I learned and the more data came to light. It would be regrettable if all this valuable information would be forgotten… Links with other mines, how the ore was mined and how the arsenic was refined and marketed…. It contained too much information for a conference paper and presentation during the NAMHO 2007.

Publishing a book in such a short time with many high resolution colour photos is too difficult and too expensive being an amateur. Why not a CDROM? I've done it before and the basic software did exist….

In April 2007, I visited the place again, this time with some advance knowledge and I had the possibility to visit the actual Greenhill Works and to speak with the manager. More information came to light when I spoke to the owner of the 'Greenhill House'. Armed with this information, and with the photos I have taken plus the experiences of my visits for that period, more questions arose and solutions were found. Often with very surprising results…

Due to the passing of time much information is lost and I am fully aware of the risks of incompleteness and errors. Without this CDROM, more might be lost and forgotten.

With this work I hope to have brought something to industrial heritage and enthused interest in ongoing research and hoping that new information will come to light.

I have produced a CDROM and the reader will get the knowledge of:

- How arsenic was produced in early days.
- How the ore was mined in the 'good' and 'bad' days.
- The history of one of the most important chemical sites of the time.
- The uses and dangers of arsenic.
- A comprehensive pictorial guide of the actual site.
- Descriptive data for all the known minerals found at the locality, fully documented with high-resolution colour images.

**Compatibility**

- Windows Operating Systems. Emulated 32-bit Windows Systems.
- No software installation required, works

completely from the CD-ROM

**System Requirement (recommended)**

- PC 486 – 133 MHz processor or better.
- 17" Monitor, 24-bit graphics colour card.
- Mouse and CD-ROM Drive
- Windows ME, 2000, XP or Vista.

**Features**

- Interactive and well documented.
- More than 150 high-resolution images.
- An equivalent of more than 120 pages of A4 text.

For the members of the Trevithick Society, I am pleased to offer this interactive CD on the same basis as it was offered to attendees at NAMHO's conference in June. It is the result of over a year's intensive work and research.

The price for one CD is £10.00 (17.00€) plus £2.50 (4.00€) for shipping costs. For larger quantities the shipping costs can be reduced. Payments are only accepted by using an international bank transfer. Postage of the CD can only take place after receipt of the money. When you order, please don't forget to include your complete name and address.

More info on this CD: http:// www.denul.net/cdrom/GREENHILL.HTM

To obtain your copy please send your international bank transfer to:

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E-mail: richard@denul.net
Website: http://www.denul.net

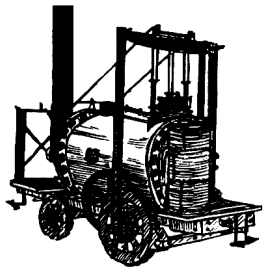
Richard de Nul presented his remarkable pictures at the NAHMO Conference at Morwellham in June coupled with "Arsenic, Its production and Use" by Kingsley Rickard.

This second ***European Industrial and Technical Heritage Weekend*** will take place on the 16–18 November in the former electrical power station of Zwevegem, Belgium (protected by law and now being transformed into a multifunctional cultural, music, meetings and business centre) and

## E-FAITH 2007

in the National Flax Museum in Kortrijk. The power station of Zwevegem holds turbo generators and other machinery of Belgian, French, Swiss, Swedish, Hungarian, etc. origin and offers a real 'European' story of electricity production. There will also be opportunities to research flax heritage (e.g. retting and scutching) in the last flax scutching windmill in Europe. Other windmills offer oil and grain processing and there will be steam engines.

The first E-FAITH heritage weekend was held last October and the society attended. Members who are interested to see how other countries handle their industrial archaeology are welcome to attend these interesting and well-organised conferences. Full programme details are available at www.e-faith.org/WE200701/ WE0701index.htm



## HOLMAN SLIDES

Volunteer Denys Bryant has been quietly scanning slides from the Holman collection over the past year and has now processed over 2000 photographs. He has found it fascinating to view the photographs of mining equipment at mines and quarries all over the world and the huge variety of equipment that Holmans made. Despite knowing many former Holman employees, as yet he has not seen anyone in the photographs he recognises.

Slides deteriorate over time by gradually losing pigmentation and through the action of fungal attack. Consequently, getting the Holman slides scanned is the critical first stage in the conservation of those images. The next stage will to find out as much as possible about the content of each photograph and to enter that information into a database. Such things need to be recorded as date of photograph, where it was taken, names of any people present, what equipment is shown and what it is doing, etc. It will take many years of painstaking research to get the full benefits out of the Holman photographic collection and it is intended that various events will be held, such as the recent Holman exhibition, that will assist in this quest.

There are several tens of thousands of slides yet to be scanned, so Denys will be kept busy for a while yet!

## PUFFING DEVIL 2007

Following its winter maintenance and re-paint, the first public appearance of the 'Puffing Devil' was in April this year at Camborne's annual Trevithick Day. Apart from running out of steam outside of Camborne Police Station this event went very smoothly. The large crowds really appreciated seeing her as she, once again, climbed Camborne Hill.

The following day, saw the engine at King Edward Mine where she was steamed on the trailer as with all the rest of her appearances this year. The Royal Cornwall Show at Wadebridge was its next stop in early June and two weeks later she was once more in action at Troon's Mid Summer Festival. During July the replica visited Trevarno Estate Steam Fete and South Crofty Open Day. We finished the summer with the West of England Steam Rally at St Agnes which, unfortunately, was not blessed with the best of weather.

Mechanically, only two problems arose. The first, a ¼" thick mild steel plate, inside the fire door casting, buckled and kicked up the fire bars in the middle, fusing one pair together. Fortunately, this was temporarily rectified with an angle grinder and a big hammer. The second problem occurred at St Agnes when the water pump started to leak. John Sawle (the engine's designer) is of the view that it probably just needs re-packing.

The annual boiler test is scheduled during October and over the winter, subject to the Trevithick Society's approval, we plan to carry out the improvements to both the engine and the trailer. It has been suggested a revised drain layout on the exhaust steam pipe would reduce the quantity of black watery soot fired out of the chimney when we start up.

On behalf of us all, I would like to thank Richard Olds for storing the engine at his Roseworthy farm throughout the summer and the forthcoming winter lay up.

The crew this year consisted of Sean Oliver & Mel Burn, Colin French, Tom Rowan, Mark Rivron, John & Angela Woodward and their 3½ year old son James.

**John Woodward**
Custodian

Tom Rowan oils the crosshead guides at the South Crofty Open Day

## WHEAL PEEVOR

Wheal Peevor has been given a much-needed make-over by Kerrier District Council, and at a preview event of the nearly completed works, Allen Buckley led a group local visitors around the site, giving a highly informative and entertaining historical overview of the site, suffused with many anecdotes from his days as a South Crofty miner.

Wheal Peevor is one of the flagship sites of Cornwall's World Heritage status, because it has the three main types of engine house; whim, pumping and stamps, and because this compact site has so many recognisable mine building remains. These are laid out in a natural progression down the slope and serve to explain the processes that took place from bringing the ore to grass to calcining the concentrated ore.

The work done at Wheal Peevor by Kerrier District Council is a huge improvement on the disastrous days when Kerrier Groundwork Trust ransacked large areas along the Great Flat Lode. The three engine houses have been cleaned, re-pointed and made structurally sound, various shafts have been capped and

made safe, and some of the smaller mineral processing features have been carefully uncovered and conserved, such as the buddles (see overleaf).

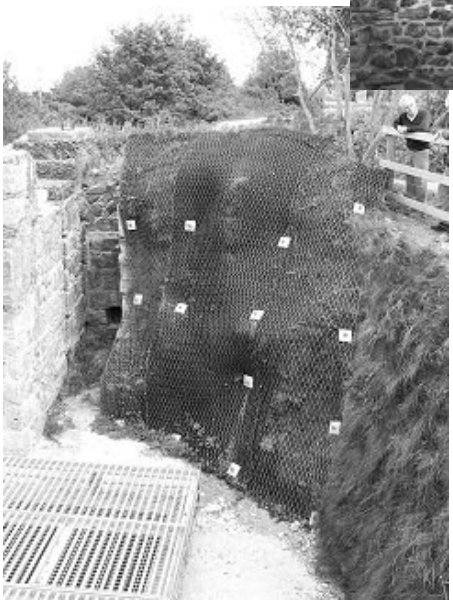
These are all welcome changes, however, there is still considerable room for improvement in the way they treat Cornish mine sites. The main problem is insufficient care has been taken to retain the ambience of a Cornish mine site. The work done has been over-engineered with a lack of sympathy for the sites mining heritage. For example, Wheal Peevor is now criss-crossed by truly horrendous pathways that are a wholly excessive, obtrusive intrusion to the site, not to mention a gross waste of money. These wonderfully crafted pathways will no doubt be welcomed by motorbike scramblers and will make an excellent go-cart circuit with plenty of width for racing, however, they are fundamentally wrong for Wheal Peevor.

At least, Kerrier have not planted trees, nor bulldozed away large areas of heathland and the often hidden, smaller archaeological features, and do not appear

to have imported much soil onto the site.

Overall, Kerrier have improved their own track record for conserving mine sites, but much more thought and consultation, with the likes of the Trevithick Society, is needed in the design and implementation phases of future schemes to prevent such well-intentioned scarring.

**CNF**.

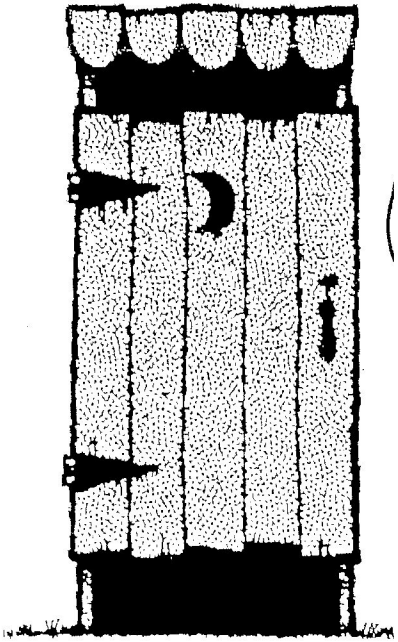


Insensitive over-engineered solutions

The sensitively conserved buddles

## Famous People On The Toilet

SIR HUMPHRY DAVY



**"WHAT A PLACE TO BE WITHOUT A LAMP"**

# TREVITHICK SOCIETY EVENTS AND CONTACTS

**Oct. 25th**
*Mining in the Northern Pennines,* by Colin Short.

**Nov. 22nd**
*The Metalliferous Mines of the St Austell China Clay Area,* by Prof. Colin Bristow.

**Jan. 24th 2008**
*Trevithick's Australian Legacy,* by Philip Hosken.

**Feb. 28th**
*Railways versus the Secretary!,* by G. Smith-Grogan.

*Meetings are held in the Lecture Theatre, Opie Building, Cornwall College at 7pm.*

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*The Trevithick Society, a registered charity, is a recognised body of the study of industrial archaeology in Cornwall. Membership is open to all who are interested in the region's great industrial past, whether or not they live in Cornwall. The Society takes its name from one of Britain's foremost inventors and pioneers of the Industrial Revolution, Richard Trevithick, a Cornishman whose name is inseparable from the development of steam power.*

*This Newsletter is published quarterly and, together with the annual Journal, is distributed free to members. Letters and contributions are always welcome and should be sent direct to the editor.*

*The views expressed in this Newsletter are those of the authors and not necessarily those of the Trevithick Society.*

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