THE TREVITHICK SOCIETY

NEWSLETTER No. 36 Price to non members **30p** FEBRUARY 1982

Can you recognise them?

This photograph, taken by the Shell Photographic Unit, depicts the Cornish Engines Preservation Society's visit to the Cornish engines at Kew on 25 May, 1946. Members are seen taking lunch at a table set out between the East and West Cornish engines. W. Tregoning Hooper, then secretary, is at the head of the table with his back to the camera. Members able to recognise other people in the photograph are asked to get in touch with the Editor so their names can be placed on record.

Membership

The Membership Secretary sends his thanks to all those who sent their increased subscriptions on time and he was particularly pleased with all the pleasant letters enclosed by so many.

Will those who have not yet paid the full amount for 1982 please remember that they will only receive the first two Newsletters for the year and **nothing further** while they are underpaid. A reminder that the new rates from 1 January 1982 are:

Single member	£5.50
Family (man and wife)	£7.50
Overseas	£7.50
Corporate	£7.50

Subscriptions, applications for membership and queries on these matters should be addressed to the Membership Secretary whose address is on this page.

IN THIS ISSUE

The Trevithick Society for the study of the history of Industry + Technology in Cornwall
incorporating The Cornish Engines Preservation Society and The Cornish Waterwheel Preservation Society

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Editorial

This editorial is being written in most un-Cornish weather — frost, snow and freezing fog — but at least there are glimpses of sunshine in this newsletter, particularly in the Coming Events list. In this connection, it is regretted that the money for the Morwhellam — Tamar cruise on 5 June is wanted so long in advance, this is because of strictly limited accommodation on the steamer. The date of this visit has had to be postponed from 15 May due to the awkward tides.

I should have recorded in the last *Newsletter* that our member Gordon Richards, who recently retired from his engineering business in Redbrooke Road, Camborne, has been elected an Honorary Life Member of the Society. Gordon's services to Cornish engineering and in recent years, to Cornish steam preservation, are too well known to most members to need comment.

Our membership secretary reports a continuing rise in membership of the Society which is encouraging in view of the recent subscription increase. It also means that a gradual expansion of the Society's activities now looks more feasible than it did this time last year. This expansion policy is reflected in the activities of the special subcommittee under the chairmanship of Justin Brooke which now looks after the on-going meetings and visits programme.

Belatedly, I would like to wish all members a Prosperous New Year, and I look forward to meeting many of you during the forthcoming season.

Kenneth Brown

The state of mining in Cornwall in 1783

Mr R. J. Law referred to his short article in the Trevithick Society Journal No 4, 1976 entitled: "A glimpse of the Cornish mineral industry in 1783", which was a translation of an article in German thought to have been written by R. E. Raspe (1737-1794). Mr J. S. Buckland had since drawn his attention to a much fuller version of the same article, which ran to 120 pages of printed text illustrated by 7 plates. It is now clear that it is not the work of Raspe, but of a German traveller well versed in mining. This traveller relates that he met Raspe, who was then at the zenith of his fortunes in Cornwall having just been appointed Assay Master by the copper mining interest.

The article covers Cornish geology, ore-dressing and the smelting of copper and tin ores. Of particular interest are accounts of visits to the Consolidated, Poldice and Dolcoath mines; of the method of working the Happy Union streamworks; of a balance bob with varying leverage; of an air cataract on a Boulton and Watt pumping engine and detailed descriptions of John Budge's spiral whim, and of the mineral collection formed by the Quaker Phillips of Redruth. The illustrations include the best representation found to date of a Cornish tin smelting furnace or 'Castle'. Altogether the article forms a valuable supplement to Pryce and should be published in translation in extenso.

Mr. J. Hodge proposed a vote of thanks.

The above is a report of the lecture given by the Chairman at a meeting of the Society in the Ambulance Hall, Redruth on Friday 25 September, 1981.

The Flat Lode area

Mr Trounson commenced his lecture on November 20 by explaining that this part of Cornwall consists of a narrow strip of "killas", or slate rock, about 3¼ miles long, which separates the main Carnmenellis granite mass from the outlying ridge of that rock which forms the Carn Brea and Carn Entral line of hills. However mining has proved that the killas does not extend to any great depth and occupies what is merely a shallow trough between the two granite outcrops.

Originally, there were 15 small mines in this area, mostly working a number of steeply inclined lodes or mineral veins that were predominantly copper producers. In 1869, however, the great discovery was made that a large flat south-dipping tin lode underlay all the copper lodes. This provided to be so productive that before long all the mines in the area were concentrating on it, somewhat to the neglect of the other lodes. Two of the important points about the 'Great Flat Lode', as it came to be know, is that its dip is unusually flat, only 30 to 33 degrees from the horizontal, and where the steep lodes junctioned with it, or passed through it in depth, it was usually enriched.

Mr Trounson then showed a number of slides which illustrated these points and two other important facts. The first is that the rich part of the Flat Lode, which miners term the "ore-shoots", are relatively short lengthwise but often extend far downwards in the direction of dip, akin to the fingers of a hand held in an inclined position. The second point is that in at least one part of its length the Flat Lode split into two branches, one part dipping much more steeply than the other.

In recent years two prospecting companies have done a considerable amount of fairly deep diamond drilling in the Flat Lode area but without gaining much encouragement from the intersections of the Flat Lode itself. However, in the Grenville part of the area the drilling resulted in an entirely unexpected discovery which may later prove to be a major new lode. This is a very wide formation to the north of the Flat Lode which dips to the south almost parallel to the latter. It was intersected in seven boreholes and in each case contained some tin but of too low a grade to be economic. However, the area over which it was delineated is less than 10% of that extensively mined on the Flat Lode, and it is to be hoped that at a later date much further exploration will be done on this potentially very important formation which may underlie the Basset as well as the Grenville group of Flat Lode workings.

Mr Trounson showed another slide which illustrated the position of this discovery which exists between the Flat Lode and the great and rich lodes of the old Dolcoath Mine, still further to the north. A number of other slides of the workings on the Flat Lode, and scenes at surface when the mines were working were also shown. The speaker concluded by emphasising the importance of further drilling being done to confirm the important discoveries which were made at the bottom of Wheal Uny shortly before that mine was abandoned in the great slump of tin fell to £88 per ton. Today's price (with the devalued £) is £8,400 per ton!

The Chairman proposed a vote of thanks to Mr Trounson.

The above is a digest of our President's talk given to members at the meeting of the Society in the Ambulance Hall, Redruth, on Friday 20 November, 1981.

Members' research

CORIN, John, 35 Church Road, Mylor, Falmouth, TR11 5NL. The rise of Newlyn as a fishing port in the nineteenth century, culminating in the Riots of 1896.

EARL, Bryan. "Heathercliffe", Sennen, Penzance, Cornwall TR19 7AX. Lifesaving rockets and associated pyrotechnic devices. Earliest to present; including aircraft ejection and spacecraft re-use.

Members' sales

MINING BOOKS: Dozens of books on British and foreign mining for sale, many out of print; back runs of PDMHS/NMRS Journals etc. Send sae for complete list, to: C. J. Schmitz, Dept. of Modern History, University of St. Andrews, Fife, KY16 9AL, Scotland.

Help!

Would the member who kindly wrote to me concerning old mining prints kindly get in touch with me again as his original letter (which was to be published in this newsletter) went astray during production.

Also, would the member who made a tape recording of Mr. Trounson's talk in Redruth on 20 November kindly get in touch with the Secretary, as the Society would appreciate having a copy made for the record.

Mineral collecting in the 18th century

The originals of these two letters from an eminent 18th century mineralogist to Phillip Rashleigh at Menabilly are among correspondence held at County Record Office relating to the Rashleigh mineral collection. The first, sent from Truro in July 1795, is filed under DDR 5757/1/80; the second, written from Naples in November 1796, under DDR 5304/29. They are of interest in having been written during the Napoleonic Wars, as well as revealing the habits of mineral collectors at this time. (The Rashleigh collection of minerals is held by RIC at Truro.)

Truro, July 1795

Sir,

A person as you who abounds in Minerals of his own County, should not have objection to grant some specimens to a Mineralogist, who travels these ten years, in the Mines of Europe, and from whom a reciprocation of many other foreign specimens may be expected.

I want two specimens of Crystallized Antimony from Wheal Boys: two specimens of Tin from Glastinnin 4 Specimens of green Copper: one specimen of transparent green Copper, and perhaps four or six other specimens of which you have a great quantity.

You shall certainly receive in next Winter a good specimens of Apatites, Topases, in their Matrix of Saxony, and perhaps two Specimens of Tungstein. But if you will wait 18 months more, namely, until my arrival home, you shall receive the largest Specimen of Tungstein, that has been seen in Germany, for I have two Specimens in my own Collection of an uncommon Size, and I must observe to you that this fossil, has always been found of the size of a small nut. In short I intend to Act with you in a manner of which you will be satisfied; but I want a little time. I shall moreover not fail to send you something uncommon of this Kingdom, and of Norway, if in my Journey I shall meet with it.

I shall leave this Town next Friday. If you intend to grant me the above mentioned specimens and accept Mr. Daniell or Mr. Fox for my Warranter I have no objection to bring with me a Security of a Hundred Pounds, and leave it you, in order you may receive this money, if I do not send you the Specimens, for the value of yours. I expect then a line from you before Friday that I may have again the pleasure of seeing you next Saturday in Menabilly, and receive at same time the Specimens in question.

I am sir
Your Obedient Sr
Lippi in the service of the
King of Naples

Recd at Menabilly
21st July 1795

—o—

Naples, 12 November, 1796

Sir,

You will be surprised without doubt of my not having sent you some fossils of Germany. I had my great Collection in Trieste and passed that way on my Coming to Naples, only to open two Boxes, and forward you some specimens but this town being in a very great alarm occasioned by the coursed french who threatened at that time to entor the Friuti I was obliged to ship the whole Collection for Naples without having an hour time of opening and searching into the Boxes. I am now very uneasy since have no news of the ship so much the more that being a Venitian one am afraid of her being captured by the Algerians who have entered a war with Venice at the very same time of her sailing from Trieste. Should I have the pleasure of receiving my Collection you will be not forgotten, on the Contrary you will be contented with me. When I left England my intention was to make an expeditious tour through the mines of Hungary and Transilvania, and in this occasion I had surely gotten several specimens which are wanted in your famous Collection but on my passage from Yarmouth to Hambro' having been taking by a french frigate and having lost money and everything I had with was thus disappointed. Nevertheless I hope next year to pass in Hungary for the second time and will then absolutely sent you some fine Minerals.

Baron Trebra has resigned his service of the Mines of Hartz, and lives in his Estate, about 10 miles from Clausthal. I hope you have received an answer to the letter you was pleased to commit to my care, for I put it into the hands of the director of the Mint of Hambro', an intimate friend of Mr. Trebra, to whom you may direct your letters, should you want to write to the Baron.

The weather is still too hot as to permit me to pay a visit to the Vesuvius, and begin a Collection of Vulcanic productions. I will be very glad to collect for you the finest specimens would you have them. I beg you will exercise me with your commands should you find me capable of doing it, and with greatest esteem have the honor of being

Sir
Your most obedient and humble Servant
C. Lippi

Ann Rowe Pring, or Mrs John Taylor

by Roy Shambrook

Ann Rowe Pring, who married the celebrated mining engineer and entrepreneur John Taylor in 1805, came from an illustrious and well-established East Devon family — the Prings of Ivedon, in the parish of Awliscombe, near Honiton, who could trace their ancestry as far back as the Crusades.

The daughter of Daniel Pring and Honor Rowe who were married on 5 August 1771, Ann was one of 14 children, 8 of whom died in infancy. Three of Ann's brothers had distinguished career: General Simcoe[1] onetime Governor General of Canada, was a close friend of the Pring family and through his influence, John Pring the eldest son was placed in the army where he obtained the rank of Captain. He later died of wounds received at the battle of Talavera in the Peninsula War under Wellington. The other two brothers were placed in the navy. William Pring died of yellow fever whilst a midshipman, the other brother became a captain and also died of yellow fever at the age of 59 whilst acting as Commodore of the West Indies Station.

Daniel Pring, Ann's father, lived life to the full. Having inherited the family estate and a considerable fortune with it, he kept his own pack of hounds and several racehorses.[2] It was as a result of his death at the early age of 47, and to ease the burden of bringing up the remaining 8 children, that Ann Pring was adopted by the Burnaford family of Tavistock. It was there that Ann first met and later married John Taylor in 1805.

Various members of the Burnaford family had been surgeons. In 1758 a Thomas Burnaford had been surgeon to many local mines, being succeeded by his son James who later adopted Ann Pring. One can assume that Ann in the course of time acquired a knowledge of mining terms — knowledge she was able to put to good use after her marriage to John Taylor.

Ann was by all accounts vivacious and intelligent, an ideal partner for her husband and a valuable helpmate in his mining career. Up to 1808 the couple lived at Holwell House, Whitchurch, Tavistock, and it is more than likely that the plans of the Tavistock Canal and its tunnel were first prepared in the drawing room.

Ann's mother, Honor Rowe was descended from the Rowe family of Tavistock. A son of the family, the Rev John Rowe was presented with the living of Awliscombe in 1763, whilst another member of the family — Nicholas Rowe — was Poet Laureate in the reign of George I and George II. Moreover, an ancestor of the family distinguished himself in the Crusades, being awarded a coat-of-arms for his services.[3]

John and Ann Taylor entertained a considerable number of interesting and famous people during their married life, including Felix Mendelsohn Bartholdy, Isambard Kingdom Brunel and Alexander von Humbolt, the explorer. In the late 1830s whilst serving on the council of University College, London, John Taylor was instrumental in securing C. B. Vignoles to the council's first chair of civil engineering. C. B. Vignoles became a founder of the company Evershed & Vignoles, a company still actively trading, and whose registered office is situated in Acton Lane, Chiswick, West London.

(1) A memorial to General Simcoe may be seen in Dunkeswell parish church, East Devon.
(2) Traces of the race track may still be seen on St. Cyres Hill, Nr. Honiton.
(3) This coat-of-arms containing three holy lambs, is to be seen in a stained glass window in Awliscombe parish church, together with three memorial tablets dedicated to the three sons of David and Honor Pring.

More on the rotative Cornish engines at Fresnillo

The item on page 3 of the November 1981 newsletter has attracted two contributions from members — the first from Mr. F. H. Blamey of The Wirral with two photographs taken in 1922, and the second from our Chairman who has studied more of the photographs in the Society's archive, taken by Mr. Alan Probert in 1950. The question 'do the engines still survive?' is, however, still unanswered.

From F. H. Blamey, 'Pachucha', 26 Border Road, Heswall, Wirral L60 2TY.

I was particularly interested in the two photos and short article in Newsletter No. 35 dealing with the rotative Cornish beam engine at Fresnillo in Zacatecas, Mexico. The two photos across the top of pages 4 and 5 will add a little more to the information, not only on the engine but also about its twin.

The two photos were taken in 1922 when my father was working in the mill at Fresnillo and we were living in a part of what had once been the boiler house for this engine. This is clearly seen in the photo top right which was taken inside the 'Hacienda' (or enclosed property). The entrance to our home was the last door on the right of the building. The upper floor contained rooms for single men on the staff and access to these was by internal stairs.

Two features in both the newsletter photo and mine would seem to confirm that these are of the same engine. The angle of the bob and sweep rod is the same in both. Even more important perhaps is the remnant of a roof frame that not only dominates the newsletter picture but also can be seen over the top of the building to the right of the engine house in mine. It would seem that in the 28 or so years between the two photos the only change, externally at least, in the engine house was that the main bob plat disappeared. It will be noted that there had also been an auxiliary bob on this engine at some time in its history, but it was not there when we were. Only a remnant of its plat remained. There was a magnificent view across the country towards Santa Cruz from the hole in the wall that remained.

Access to the engine was via a flight of stone steps leading to a door in the side of the house, obscured in the picture by the end of the building on the right. This door led to the control platform where the usual three arbors and handles were located. Even at that time the valve gear was as Mr. Carswell later described it "somewhat disconnected". This engine was in fact part of my playground and when I played at driving the engine it was always disappointing to find that moving the levers merely moved short rods that went nowhere and did nothing.

There are two more items of interest in the small photo. There are two short circular columns of masonry at the back of the engine house roof which I understood were smoke stacks, one for each boiler with the flues forming an integral part of the wall. The corner of the second engine house can be seen at the extreme right of the picture and the more ornate building to the left of it was, at that time, the mine manager's house.

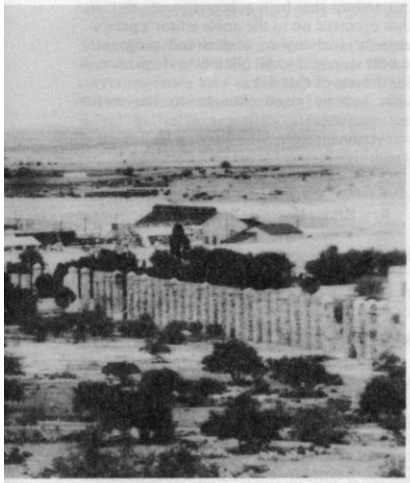
The large photo is a panoramic view of the Hacienda at Fresnillo taken from the hill in which some of the mine workings were located. The second engine house can clearly be seen with its buttressed boiler house, slightly nearer the camera. When we were there the two Cornish boilers were still in the house. It is also clear that both bobs were still in place but, as we never had access to this house, I cannot say anything about the engine. The manager's house was on one side and the roof of the staff club house can be seen on the other.

In front of the two enginehouses, the building with the three tall chimneys was the mine power station. Inside there were three turbine driven generators fed by three oil fired boilers. To the left of the station and not visible in the photo there was a condensate cooling pond with sprayers and we children were sometimes allowed to bathe in the warm water. It is difficult to imagine such a practice being allowed in any cooling water pond in this country, even as far back in time as the early twenties.

Railway line

The oil came in by rail tankers collected from the main railway line away out on the prairie by a small saddle tank locomotive. Sometimes instead of tankers there were enclosed wagons loaded with boxes of dynamite for the mine. We always welcomed the latter because we knew that there would soon be a fresh supply of the beautiful dovetailed boxes, useful for many purposes not least of which as improvised furniture. Beyond the far wall there is a white area which was a large sand tailings dump which had accumulated when the extraction of silver had been carried out inside the hacienda. This was probably by the patio process. In support of this assumption I remember some old flues inside the hacienda by the near wall in which there were collectable quantities of mercury, an essential material in this process.

The workings on the hill from which the picture was taken took the form of an open work at the top. Every day when blasting took place at four o'clock the cloud of dust rising from them gave the hill the appearance of a volcano erupting. The mill in operation when we lived there was beyond the right



hand edge of the picture while the town of Fresnillo was over to the left. Some of the outskirts can just be seen beyond the far hacienda wall.

If you were to draw a line across this picture about one eighth of an inch below the horizon it would give you a rough indication of the route of the main railway line. At a point about an inch from the edge Fresnillo station was to be found. It consisted of a shunting siding, a water tower and a few nondescript buildings. One of these was a resting place and waiting room for passengers. Trains were very infrequent and they usually seemed to pass through in the middle of the night.

There were beds in the waiting room and after the night watchman was posted, one coiled up in a blanket till he called. This he did when the powerful headlamp on the locomotive came into view away out in the country. There was time to dress and have a cup of coffee (essential in the cold of the night at 8,000 ft altitude) before the train came puffing in. Outward bound one stepped into the warmth of a Pullman coach where the curtains barely dampened the snores of the sleepers and the cold fresh air of the prairie was exchanged for the smell of feet. Inward bound one went to the waiting room, and at daybreak luggage and passenger were loaded on to a mule-drawn tram and proceeded to the sound of jingling harness and to breathe the cold air now and again tinged with the aroma of hot mules.

It would be true to say that the early contact I had with beam engines in Fresnillo was one of the reasons for my joining the CEPS many years later. These few notes may now add a little to the accumulated information collected by this Society and its successor. There are many more memories that the appearance of the photos in the newsletter awakened but this is not the place to recount them. When we left Fresnillo we moved to El Bote, nearer to Zacatecas, where an old horse whim served as a makeshift roundabout. Shortly after that we moved Veta Grande, some 10,000 feet up in the mountains above Zacatecas where life was very much wilder, but where abandoned whims and bits of old boilers made it very clear that like Kilroy, Cousin Jack had been there.

From R. J. Law, The Science Museum, London SW7 2DD

Mr. Probert's photographs, two of which appeared in the last newsletter, show two similar engines with their cranks in different positions. The third photograph on this page, also taken by Mr. Probert in 1950, shows the 'other' engine with its crank down so both engines must still have been standing then. In my opinion, the beam of one of the engines, depicted in the last newsletter cannot be that of a 60-inch pumping engine. It is far too shallow and has no pin for the air pump rod. Other photographs taken by Mr. Probert at the same time show that only the feed pump was driven by an auxiliary beam at the back of the house, which presumably was provided for drawing dressing water. Mr. Carswell saw the date 1850 on the beam. The 34½ inch cylinder would have required a smaller air pump, which may have been driven from the plug rod, so the engine can hardly have incorporated any parts of the discarded 60-inch pumping engine except possibly the nozzles and working gear.

In his very interesting contribution above, Mr. Blamey mentions that the gear had three arbors, which confirms that the engine was single-acting of the type introduced for stamping by Sims at Charlestown United Mines in 1835, and still represented in Cornwall by the Rostowrack engine. A number of engines of this type were constructed for stamping ores during the following twenty years and were capable of a high duty, which would have been of paramount importance at Fresnillo.

The joint in the middle of the sweep rod would appear to be the only concession to ease of transport. Near the lower end it has been repaired. The built-up construction of flywheel was very common in Cornwall, in fact universal for the larger wheels such as that of the preserved North Whim at East Pool. Mr. Carswell was in error in describing the rims of the flywheels at Fresnillo as being put together with "shrunk keys". The photograph clearly shows the usual circumferential links set in pockets cast in the ends of the rim sections and secured by cross keys. It would be interesting to learn how such wheels were erected, especially when, as here, the ends of the arms enter radial mortices in the rim.

Deadline for the receipt of copy for the May newsletter is **April 10.**

Correspondence

Dear Editor,

Pen-y-Darren locomotive

My comments on Mike Satow's letter in the November *Newsletter* are as follows: In my account of the inauguration of the replica Penydarren locomotive constructed by the National Museum of Wales, I purposely omitted reference to the drawings prepared by Locomotion Enterprises for two reasons:-

(i) Brevity.
I also omitted mention of the drawings prepared at the Science Museum by two Holman apprentices, copies of which were supplied to Dr. Owen-Jones. I do not know what use, if any, was made of them.

(ii) Tact.
On page 26 of his booklet, Dr. Owen-Jones speaks of "extensive redesign of the locomotive" which was necessary and was undertaken by the National Coal Board.

Whichever party was responsible for the design of the valve gear, it departs very far from the drawings of the Gateshead locomotive. Had those drawings been followed more closely, the valve gear would not have broken on a previous trial run. Moreover the locomotive could have been controlled by the driver without the help of a bystander with a broom handle.

I only saw the locomotive make one trip and reported what I saw. I waited for an hour in the hope of seeing another, until everyone else had departed for the refreshments and I was the only one left. I may have been distracted by talking to Michael Messenger who was present on this occasion.

Yours sincerely
R. J. Law
The Science Museum, South Kensington, London SW7 2DD

* * *

Dear Editor,

'No 1 Atlas' explosive

I refer to the letter in the November *Newsletter* from Mr Bryan Earl.

I believe that one of the early mixing machines for gelatinous type explosives was the 'Atlas Mixer' and therefore would suggest that this was the origin of the term.

Yours sincerely,
J. P. Higgins
Kabul House, Ferrybank, Arklow, Co. Wicklow

* * *

Dear Editor

Diesel engine development in Cornwall

Following the appearance of my article in the Society's Journal No. 8 (1981), a friend produced another article on Freeman-Sanders and the work he did on diesel cars (entitled 'Progressing the Diesel).

This was in *The Autocar* 28 April 1950 pp 2-3 and adds a bit to my article as well as having some good pictures. There was another article in *The Autocar* 5 May 1950 entitled 'Aspects of Belerion — Round the Land's End peninsula by Diesel car' written by John Hewish. I have a copy of the first article but not the second.

Members might like to know that these articles exist and add something to what I wrote.

Yours sincerely
James Hodge
Trannack House, Penzance, Cornwall

* * *

Dear Editor

Milster timing

May I be allowed a few words in your defence?

I was shocked to read the foul Yankee calumnies emmanating from the 'Cat and Whistle' (November *Newsletter)* and can unreservedly state that the honourable editor's account of all that befell us on our trip to Ironbridge is true in all respects.

Doubtless a certain steamed-up gentleman is so overcome with remorse for his actions that he is subconsciously shifting the blame for all that occurred on to the noble editor's person. The same 'gentleman's' inability to understand geography caused us to miss a beer stop at the 'All Nations', which caused me great distress for the rest of that day.

To conclude, has anyone given thought to the awful possibility that our transatlantic colleague is acting for a certain American government agency and trying to foment a revolution in the Trevithick society for his own dark ends?

Yours suspiciously
Peter Turvey
Kew Bridge Engines, Brentford, Middlesex

Gentlemen, please! This correspondence is now closed. — Ed.

* * *

Dear Editor,

Trevithick's Coalbrokdale locomotive

I believe that no trustworthy explanation has yet been offered for the abandonment of Trevithick's attempt to make a railway locomotive at Coalbrookdale in 1803. Was the failure due to some constructional hitch, or was the original decision reversed and the commission cancelled?

The project's chief backer appears to have been William Reynolds, son of John Reynolds, a Coalbrookdale director. The partners were enterprising men, but this idea may well have been more revolutionary than even they could readily bring themselves to accept. It would be no surprise if William had had to fight hard to carry it through.

In the year 1803, before the engine was completed, William Reynolds died. This would have been the moment for his opponents on the Board to hit back and block Trevithick's hare-brained project before more money could be squandered on it.

It is easy to imagine steam locomotion becoming a lively focus of argument among the industrialists of those days, with the majority declaring opposition to an idea as revolutionary as this. For centuries self-propelled transport had been dreamed of in legendary terms — winged horses, flying carpets, witches' broomsticks and the like — but fairy tales were not the province of practical men, and no doubt some feared the odium of blasphemy.

The great contemporary masters of steam-driven machinery, Boulton and Watt, let it be known that Richard Trevithick, the man who experimented with steam at high pressure, was a public danger and deserved to be hanged. They did not foresee that his pioneer work would not only open the way to powered locomotion, but make a greater contribution to the development of mechanical power in general than even the improvements of James Watt himself.

On an issue of such magnitude discussion was unlikely to be restrained. To the conservative majority such a foray across the permissible bounds of rational thought must have seemed little short of outrage. When Samuel Homfray, master of the Pen-y-darren Ironworks in Wales, had the temerity to offer his backing to Trevithick with a new commission for a locomotive engine, the battle blazed up again. A neighbouring ironmaster, Richard Crawshay was prepared to lay a bet with Homfray against a successful outcome. The strength of Crawshay's feelings was evident enough — he backed his conviction for no less than five hundred guineas, in those days a very great deal of money.

He lost the bet, though we are told he tried to dispute it. How much the world gained from his loss is of course incalculable. Credit, fame and reward have all been gathered in by the Stephensons who took their ideas in the first place from Trevithick. The inventor ended his days in debt and a pauper's grave. History has never yet righted that wrong.

I was interested to read Mr Belk's recent article on Francis Trevithick, to whose veneration for his father's genius we owe the only reliable record of Richard's life. Francis writes of the Crewe-type loco, but is too modest to claim the design for his own, which has no doubt made it easier for others less scrupulous to step in front of him.

Francis notes that the Crewe-type was evolved in response to Locke's unfavourable report of 1839. The drawing of the loco included in his book is dated 1856, by which year he

considered it had reached its full development. It had a 7-foot driving wheel by then, and also what I think the author must mean by a castellated chimney.

I like to think that the inclusion of this drawing was the nearest this modest man would come to claiming authorship.

Yours sincerely,
Miles Tomalin,
61 Gloucester Avenue, London NW1 7BA

Len Belk, author of the article 'Francis Trevithick at Crewe' published in Newsletter 32, writes: Regarding Francis' remark on "full development": it is true that the Crewe Type was superseded by further advances in design but in the early years of rapid development it achieved a durable, robust reliability hitherto unknown. Railways had thus become so reliable that the 'Railway Mania' of the 1840's resulted. In a way the locomotive was now fully developed — not in detail or size but to proven efficiency. I wonder if that is what Francis implied!

In later years economic steel production in quantity, advance in production methods, and some space limits imposed by the double-framing fostered successful use of single-plate frames. Nevertheless some railways built Crewe Types for many more years (Caledonian Railway 1867, for example) and some of Francis' locomotives gave service until this century.

* * *

Dear Editor

Mining periodicals

I have a complete set of Mining Journals and Magazines from late 1969 to date and need the room they occupy. If the Society or other educational organisation wants them they can have them if they arrange their removal. If anyone else wants them a contribution towards my annual subscription to Mining Journal would be appreciated.

Yours sincerely,
Iain J. Wright
96 Norwich Road, Chichester, W. Sussex PO19 4DF.

Medlyn Moor Enginehouse

The enginehouse at Medlyn Moor mine, close to the Helston-Falmouth main road near Wendron, is the subject of a bold preservation venture by local landowner Geoffrey Williams. He would be pleased to hear from any member who might be able to offer practical help and advice. The house contained a 40-inch pumping engine which was used during the mine's last working in 1870-9.

Last year Mr. Williams decided last year to 'go it alone' because of the growingly dangerous condition of the house, after two years of abortive correspondence with various authorities, trying to enlist their support. Now, with the aid of Falmouth builder David Wheeler, the most urgent repairs have been carried out though there is still much to be done to secure the building for the foreseeable future.

Work done so far includes repairing the back of the house by the stack, replacing the wooden lintels with 'tanalised' timber, and cleaning out the cockpit. Some 25-30 tons of masonry were replaced in three weeks. Work still needed includes repairing the brick top of the stack and fitting a lightning conductor; repointing the whole building with a suitable lime mortar, and making the tops of the walls weathertight. In the long term, Mr. Williams is considering replacing the floors and roof, providing some use can be found for the building consistent with its past and the Dept. of the Environment stipulation that the original design is not materially altered.

Council is anxious that this Society gives Mr. Williams every encouragement in his deserving effort. Members having constructive comments or suggestions to make are asked to contact him direct at Medlyn Moor Farm, Porkellis, Helston, Cornwall TR13 0LG.

Coming events

16 March: Joint Meeting with the Carn Brea Mining Society. Mr Percy Bonds on "Child Employment in Cornish Mining", Illogan County Primary School at 7.00 p.m.

16 April: A. K. Hamilton Jenkin Memorial Lecture
By Dr Basil Greenhill CB, CMG, Director of the National Maritime Museum — "The Maritime Industrial History of the Port of Bideford" — an introductory study. Royal Institution of Cornwall, River Street,Truro, 7.30 p.m. There will be a number of the late Dr Hamilton Jenkin's documents on display. Admission 50p, to include coffee and biscuits after the lecture. Car Parking: Cattle Market Car Park — 5 minutes walk from R.I.C. Leading from River Street, go up Edward Street (Fletcher's Hotel on corner) or up Castle Street (which is parallel) car parking area immediately facing. Limited parking in street alongside the Royal Institution.

5 June: Visit to the Tamar Valley and river trip
This visit will give members a full afternoon at the Morwellham Museum and a river trip to Plymouth in the evening. A coach will leave Cambourne at approximately 10 a.m., picking up at Redruth, Truro and Liskeard where a stop will be made for coffee, with a call at the railway station.

It is planned to be a Morwellham in time for a picnic lunch. departure from Morwellham Quay by steamer will be at 5.45 p.m. and the trip to Phoenix Wharf, Plymouth, takes about 2½ hours. The coach will meet the steamer and return to Camborne via Plymouth Station for the convenience of members travelling by train.

Full confirmation with all times and pick-up points will be given in the May newsletter. In the meantime, because accommodation on the steamer is strictly limited, would members wishing to attend please fill in the pro-forma below and send it to the Programme Secretary NOT LATER THAN 31 March, with full remittance appropriate to their wishes. The **£7.50** cost includes coach fare £3.50; admission to the Museum £2; and the river trip £2. *(Note: this trip was previously announced for 15 May.)*

If there is insufficient support for a coach from Camborne, a coach will run from Phoenix Wharf, Plymouth, to Morwellham after the river trip and a refund made on the coach fare.

7 August: Field Trip to St. Ives Consols

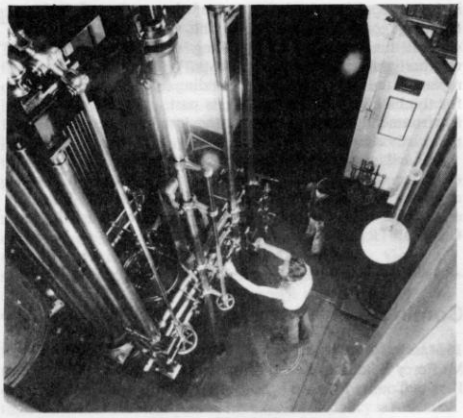
25 September: AGM and visit to Perran Iron lode

To: Miss E. M. Rule, 3 Treswithian Downs, Camborne, Cornwall TR14 0BX

Name .....
Address .....
.....
.....

I enclose Cheque/P.O. for ..... in respect of ..... seat(s) on the coach, visit to Morwellham, and river trip on Saturday, 5th June, 1982.

Signed .....
Closing date for receipt of applications, 31 March 1982.



KEW PRODUCES NEW BROCHURE

This photograph showing the 1846 Copperhouse Foundry 90-inch engine being put to work is taken from a new brochure on the Kew engine collection, which now includes five large working exhibits. Copies may be obtained from the Kew Bridge Engines Trust by sending 85 pence (to include postage) to the General Manager, Kew Bridge Engines, Kew Bridge Road, Brentford, Middlesex.

Cornwall's 'hot rocks' experiment

In the course of the Society's field trip to the Basset Mines and Wheal Grenville on 26 September, the top of the huge drilling rig at Rosemanowes Quarry near the Helston-Penryn road was observed from the coach. The Camborne School of Mines 'hot rocks' research project is being carried out on an EEC-aided budget in excess of £7 million.

The object of the experiment is to learn more about the problems of deriving goethermal energy: that is exploiting and utilising the heat present in the Earth's crust. The 160ft high drilling rig, of a type more associated with offshore oil development, has now left the site after drilling two 12-inch diameter boreholes more than 7,000 feet into the granite. The idea is to circulate cooling water down one borehole and up the other, the problem being how to join the bottoms of the boreholes, which are 1,000ft. apart, with a network of fissures to permit circulation. The water will then pick up heat rather in the way that a finned radiator gives off heat to the atmosphere.

The technique being used to create the fissures is a combination of explosive stimulation — firing a charge in the base of one of the boreholes — followed by hydrofracturing or the cyclical application of hydraulic pressure. This is the stage the project has now reached.

To heat the water to a temperature sufficient for generating power would entail drilling to at least three times the depth. At present there are very few drilling rigs in the world with this capability and to produce meaningful quantities of electricity would mean drilling several pairs of holes. Cornish granite is, however, particularly suitable geothermally because it contains minor radioactivity and is a better conductor of heat than most other rocks. For these reasons Dr. Tony Batchelor, who is in charge of the project, hopes that funds will be made available to extend the Cornish experimental work.

KB

South Crofty flattens site

Work in connection with the new mill at Cook's Shaft has obliterated the site of the 40-inch stamps engine, which your editor photographed only last year. Another engine landmark which has recently disappeared is the foundation of Dolcoath's cross-compound Holman compressor of 1902 close to Dolcoath Avenue, and it is rumoured that the boilerhouse is also to be demolished. Local members are asked to watch this situation.

Book Reviews

The Power of Steam: An illustrated history of the world's Steam Age by Asa Briggs
Michael Joseph, £10.50

In this most enjoyable book by a well-known historian, the history of steam power is examined less from a technical than from a social point of view. The titles of the chapters tell their own story: Making steam work; James Watt and the industrial revolution; The gospel of steam; Locomotion; Power for the world; Vintage technology. There is in fact a full and clear account of the development of the steam engine and of its multifarious uses, and on the economic and social changes which these inventions engendered.

Though Britain is naturally at the centre, the story is told on a world-wide canvas, and France, Belgium and Germany, America, India, China and Russia, with many other countries, all have their parts in the picture. Perhaps the most welcome parts of the book are the many quotations from contemporary writers in the 18th and 19th centuries, and the reproductions of contemporary drawings, photographs, prints and cartoons which illustrate uses of steam which were projected or dreamed of as well as those which were actually realised.

The enthusiasm which steam still arouses was present, we see, at its beginning; it can be compared only with the romantic love of nature, to which it is perhaps akin; the triumphs of steam were sung in popular songs and hymned by poets in England, France, Belgium and America. Given the wealth of illustrations and the beautiful production of this book, its price must be considered very reasonable.

RA

The Rio Tinto Company by James Harvey
Alison Hodge, 5 Chapel Street, Penzance £25.00

At first stage it might appear strange that the lavishly-produced history of the mines of Rio Tinto, "Not on Queen Victoria's birthday" by David Avery, should be joined by another much more expensive book a few years later. Make no mistake, though, there is enough 'meat' in the subject for industrial and economic historians to get their teeth into for a long time yet! The great bonanza of Rio Tinto which took its name from the 'river of wine red colour' will stand for all time as an example of British courage and enterprise in a foreign land.

The story of the Rio Tinto Company is one of the most fascinating in the history of international business. Formed in 1873 to work the ancient 'minas de Riotinto' in southern Spain, it rapidly emerged as a leading world supplier of two vital industrial raw materials — sulphur and copper. At Rio Tinto a handful of British expatriates supervised the creation of a mining and metallurgical complex whose scale, technological sophistication and high profitability became legend in mining circles throughout the world. By the time the Spanish mines were sold to local interests in 1954, the process of transforming the Rio Tinto Company into a genuinely multi-national enterprise was well under way.

This is an independent in-depth study. In its treatment of issues such as corporate organization and growth and the consequences of direct foreign investment for recipient economies, this book forms a valuable addition to the sparse empirical literature on international business. It also makes an important contribution to our knowledge of modern Spanish history, on subjects ranging from the foreign-sponsored mining boom of the late 19th century to the economics of Francoism.

In explaining and analysing technological change at Rio Tinto and at the firm's South Wales copper smelter, the book gives an insight into the general factors influencing the rate and timing of improvements in mining and metallurgical practice. The quantitative dimensions of the Rio Tinto story are thoroughly charted and many previously unpublished data are contained in a comprehensive statistical appendix. Technically, Rio Tinto is important as representing an early example of opencast mining, which for a time was conducted in parallel with deep mining enabling an accurate comparison of costs. There is plenty of scope for a study of Rio Tinto's techniques, methods and machinery (which included a Harvey 70-inch engine) from an engineering standpoint, and the reviewer hopes that this will be undertaken before too much information is lost.

KB