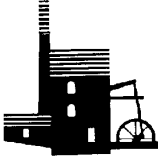


THE TREVITHICK SOCIETY



Preparations are underway for the Penyardren bicentenary in South Wales

CHAIRMAN'S ADDRESS

It has been somewhat unkindly suggested that the Society, once I cease being Chairman, will resemble France after the fall of Robespierre, however as a long time enthusiast of the 'Enlightenment' and the 'Revolution' I find this quite flattering. This is being written only a short while after studying the latest schemes for the Robinson site and very little appears to have changed; on one hand there is the usual pack of highly expensive consultants pushing for acres of 'English Suburbia' disguised as some fourth rate 'Poundbury' with Robinson Shaft maintained in the centre like some bizarre exotic island. In opposition are those who are mesmerised by the vision of the vast Cornish mining heritage centre, where what is left of the industry would be held in some nostalgic aspic, dedicated to the 'Great Days' of the mining industry. So it seems the Robinson Shaft saga is set to continue and we as a Society, despite representations, are still marginalised.

On 21 March a vast collection of personal memorabilia from James Watt is being sold at Sotherby's, books papers, furniture and even his spectacles, all destined to fetch very high prices indeed. There is virtually no Cornish material though one can only wonder why such a collection of national importance is allowed to be disposed of in this way. There are various funds to ensure the preservation of such unique collections and one can only speculate why this one was allowed to escape. Funding of course is now an increasingly bizarre world especially in Cornwall where the ephemeral, pointless and the utterly absurd seem to have no trouble in achieving hefty hand outs; individuals spouting rubbish and pseudo-science about rock crystals and earth energy were immediately handed five grand as a help towards gaining funding from Objective One. Since the establishment of 'Fort Trevithick' is such a noble and worthy cause we might even be able to attract funding from the 100 or more bodies that are evidently empowered to spoon out the goodies from the Objective One pot.

Some members may be aware that for many months I have been working on a model of the Hayle Paddle Packet 'Cornubia' which was sold to become a Confederate Block Runner, in which form she is now being built, 6 foot long, from aluminium and various hardwoods. She will have a formal launch, late Spring or early summer, but can any member add anything to her history, or indeed of that of the Hayle packet service.

Clive Carter

EDITORIAL

After the last Newsletter was published, it was realised that the timing of future Newsletters would have to be adjusted to match that of the new date for the AGM in May. Consequently, it has been decided that the Newsletter will, in future, appear in March, June, September and December.

FIRST WORLD STEAM & TOURIST TRAIN CONGRESS

from Sunday October 5th to Wednesday October 8th 2003, at the Hotel Giessbach in Brienz, Switzerland. This conference focuses on the area of steam railways and tourist trains, discusses current trends and developments in steam operations, railway and financial management, tourist promotion, and rolling stock preservation. It also covers new innovations and technological advance in the field of steam technology and steam locomotive manufacture. For full details contact Mr. Andrew Thompson on email (steamcongress@yahoo.com). Registration by April 30th.

Copy date for next issue is May 12th, 2003

Colin French

LETTERS TO THE EDITOR

Dear Editor,

I have read with interest Russell Webber's article in Newsletter 119 on proposed canals around Hayle. It is good to see somebody giving some attention to these neglected aspects of Cornwall's IA.

However, can I make a couple of small corrections to points made in the introduction. The Liskeard & Looe Union Canal was built following an Act of 1825. The 1777 proposal was never more than that.

The Tamar Manure Navigation was opened in 1800 and only 600 feet long, bypassing the fish weir at Weir Head. A channel was dredged thence to Morwellham in the river itself. The canal fell out of use after the Great War.

I don't know if these small inaccuracies came from Todd & Laws' *Industrial Archaeology of Cornwall* - I will not have a copy on my bookshelves - but members should be wary of using this book. A far better source for Cornish canals is Charles Hadfield's *Canals of South West England*, which was properly researched.

Michael Messenger

Dear Editor,

I am interested in the work of Silvanus William Jenkin (1821-1911) in Cornwall, and elsewhere. He was engineer to a number of railways in Cornwall, including the Liskeard & Caradon and Liskeard & Looe (see my recent book), Lostwithiel & Fowey, Newquay & Cornwall Junction and the Helston branch, and the Teign Valley in Devon. He also engineered a number of harbour and water works and, whilst I am fairly well informed of his railway activities, I am not so knowledgeable of these other works. He was also Steward of the Robartes Estates from 1851 (succeeding his father) and County Surveyor for the Eastern Division from 1856, until his death.

He obviously made quite a mark on the landscape of Cornwall and if any member can add to my knowledge of

Silvanus Jenkin, no matter how small the detail, I would be very glad to hear from them. I am hoping my research will result in an article in the Society Journal. All correspondence will be acknowledged, of course.

Michael Messenger

144 Lake Road, East Roath Park,
Cardiff. CF23 5NQ
mjm@twelveheads.com

Dear Editor,

Can you please help? I am trying to trace any mention of the men who accompanied Richard Trevithick when he visited MERTHYR TYDFILtheir names and the places that they came from and the year of his arrival there.

Bob Simmonds.

bob.simmonds@tiscali.co.uk

Dear Editor,

Last summer I visited the Levant engine and was very impressed. I bought the book of drawings by Courtney Rowe and as an enthusiast of model engineering (I live too far away to get involved with the real thing) I am considering making a model of the whim engine.

Courtney Rowe's book suggests that at least one model was in the making (in New Zealand) at the time of publication of the book. I would like to know whether this ever came to fruition and contact details of the model engineer involved. If there have been any other models made I would likewise like to make contact with the makers. Also, are there any more details published or otherwise that may help in the making of a model?

Is it possible that you could advise me as to how to find out about such models. I am not (as yet) a member of your Society but will be very happy to join, especially if I can contribute to the furthering of interest in this area.

As my surname suggests I am Cornish but I now reside in Sussex.

Mike Trethewey

miketreth@mistral.co.uk

IS THIS THE ANSWER?

When recently reading a Trevithick Society Newsletter (No. 73, May 1991), I was interested in the puzzle corner article on page 13. Miss Rachael John, a great-grand daughter of Jebus Bickle gave the Trevithick Society three small objects. One was described by the editor as having 'a wheel 8.5 cm diameter, made of brass, with a groove in the rim engaging two iron strips'. In brackets, after this description was the question (is it an odontograph?). The answer is no, as an odontograph is used by a pattern maker 'for setting out the forms of teeth on gear wheels, so that any two wheels of a set may work truly together'.

Miss John also deposited a number of documents relating to the Bickle family records,¹ which included Jebus Bickle's (Junior)² notebook of engine specifications 1874, reference notes for engineers; and the design and specification for an odontograph.³ This 'design and specification for an odontograph' is in fact a self-made copy of an odontograph. It is beautifully made from cardboard and is very carefully copied. It is exactly the same as the one in the ownership of the author. The handwriting of the text is superb and the accuracy of the tables and scale divisions on the reverse are excellent.

The odontograph was invented by Professor Willis, of Cambridge, and they were supplied by Holtzapffel and Co. of London. The flat shape was cut from stiff card, copper or brass, and the method of use, tables, and scales were printed on it. The price of an odontograph made of card was 5/-, whilst the metal ones were 30/- each. The author's odontograph is made of card and was given to him over 50 years ago by a patternmaker who was retiring from his labours. It is not known when it was printed.

There are two tooth profiles used for simple rotating gear trains. The involute curve is applied to the modern fast rotating gears used in today's modern complex engineering machinery. The older slow-moving tooth profile (hand capstans, old mine machinery for treating copper and tin

ores, etc.) used cycloidal curves. These gear wheels were hand cut in wood by the patternmaker when making the required patterns, and then cast by the moulders in the foundry.⁴

So there are two basic gear teeth profiles. Involute teeth are gear teeth whose flank profile is part of an involute curve, whilst cycloidal teeth are gear teeth whose flank profile is taken from parts of the epicycloid and hypocycloid curves. A little plane geometry will illustrate these particular curves and show the very small part of these special curves required to give the tooth profiles. It can be seen that it would be an impossible task to construct the curves required for each individual tooth flank of a cycloidal gear wheel, and a gear train with various numbers of teeth and pitch will also complicate the matter. Therefore Professor Willis designed the odontograph to accommodate the variations of any pitch and number of teeth, which gives the designer and patternmaker a simple tool to enable gear teeth to be marked out accurately and in a very short time.

The text and tables printed on Professor Willis' odontograph are given and are both easy to follow and use.

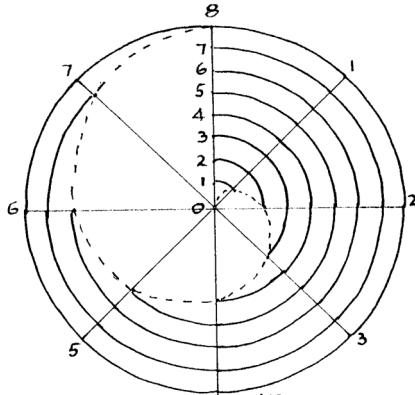
- 1 See Journal of the Trevithick Society No. 5, 1977. The article 'Some lesser known Cornish engineers' by T.R. Harris, contains a section on the Bickle family.
- 2 CRO.H42/55. Jebus Bickle, son of Jebus Bickle, St. Erth, aged 15 commenced an engineering apprenticeship at Harvey's Foundry, Hayle, signed 26th September 1868, for a term of six years.
- 3 CRO AD/825. The Bickle family records deposited by Miss John.
- 4 Examples of patterns for casting gear wheels can be seen at Hayle library and also in the White Hart Hotel, Hayle.

THE ODONTAGRAPH—HOW IT IS USED

For setting out the forms of the teeth, so that any two wheels of a set may work truly

AN ARCHEDEAN SPIRAL FIG.1.

IT IS FORMED BY PLOTTING THE PATH OF A POINT WHICH ROTATES ABOUT A FIXED POINT AT CONSTANT SPEED AND AT THE SAME TIME MOVES AWAY FROM THE FIXED POINT AT CONSTANT SPEED.



AN INVOLUTE CURVE FIG.2.

IT IS THE LOCUS OF A POINT WHICH ROTATES ABOUT A BASE CIRCLE AND ITS DISTANCE FROM THE NORMAL OF THE TANGENT IS ALWAYS PROPORTIONAL TO THE ANGLE MOVED BY THE NORMAL SEE FIG.3.

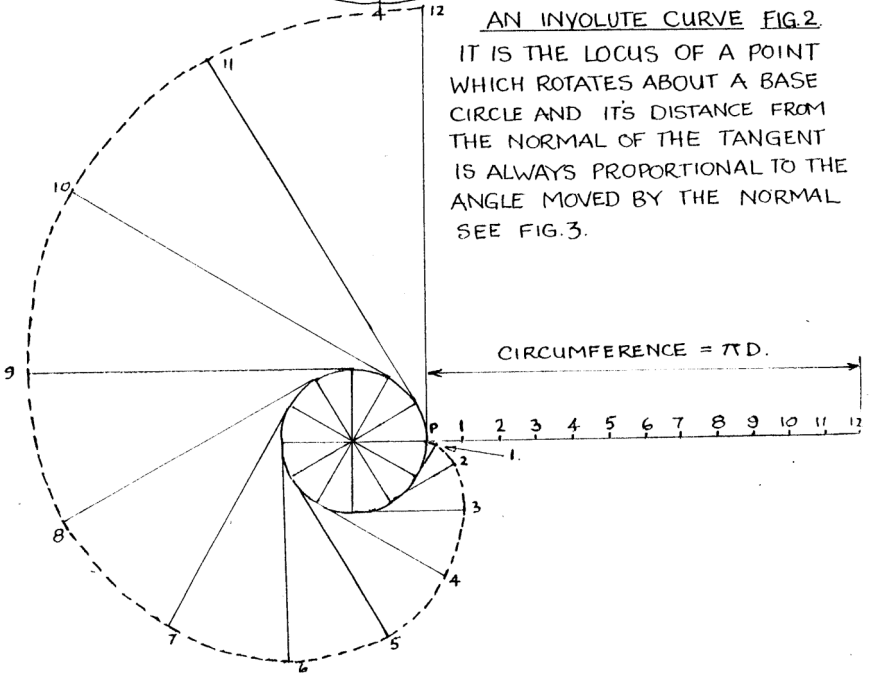
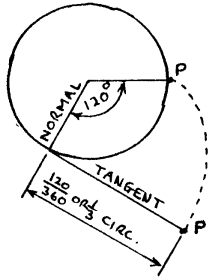


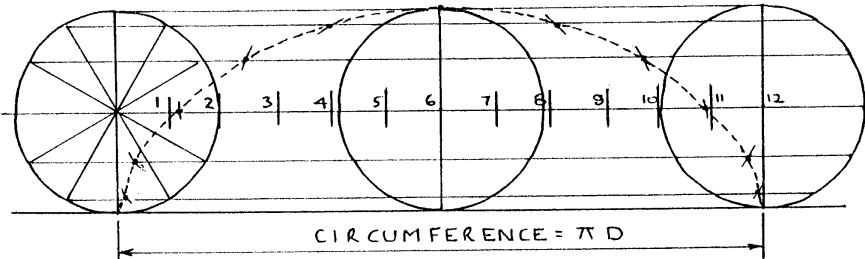
FIG. 3.



THE INVOLUTE CURVE CAN BE EASILY UNDERSTOOD BY WRAPPING A PIECE OF STRING ONCE AROUND A CYLINDER AND FASTENING ONE END TO IT. IF THE STRING IS THEN UNWOUND AND KEPT TAUT THE FREE END OF THE STRING WILL GENERATE AN INVOLUTE.

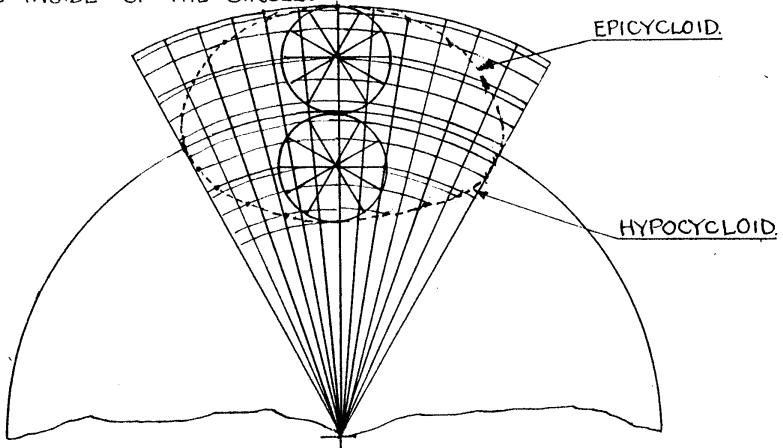
THE CYCLOID CURVE FIG. 4.

THE LOCUS OF A POINT ON THE CIRCUMFERENCE OF A CIRCLE ROLLING ON A STRAIGHT LINE IS CALLED A CYCLOID.



THE EPICYCLOID AND HYPOCYCLOID FIG. 5.

THE LOCUS OF A POINT ON THE CIRCUMFERENCE OF A CIRCLE ROLLING ON ANOTHER CIRCLE IS CALLED AN EPICYCLOID IF ROLLING ON THE OUTSIDE OF THE CIRCLE, AND IS CALLED A HYPOCYCLOID IF ROLLING ON THE INSIDE OF THE CIRCLE.



INVOLUTE GEAR TEETH

FIG. 6.

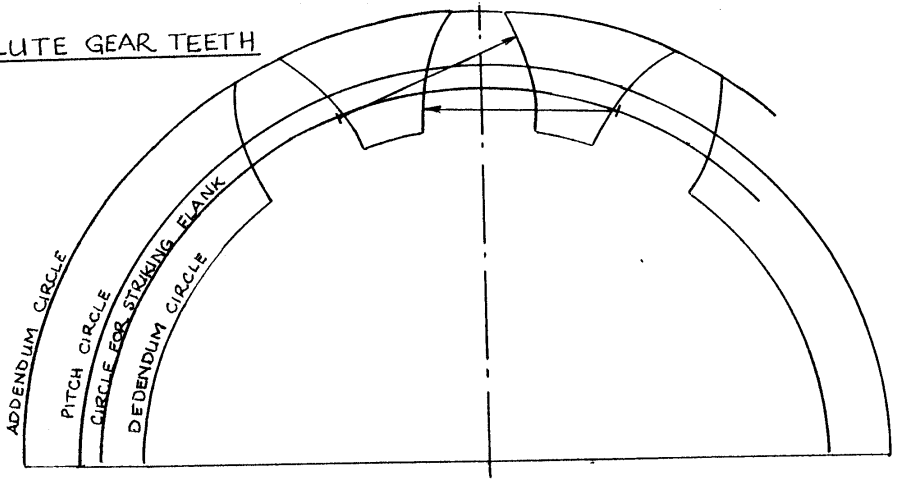


FIG. 7. THE FLANK OF INVOLUTE TEETH IS A SINGLE CURVE.
IT IS THE SMALL FIRST PART OF THE INVOLUTE CURVE.

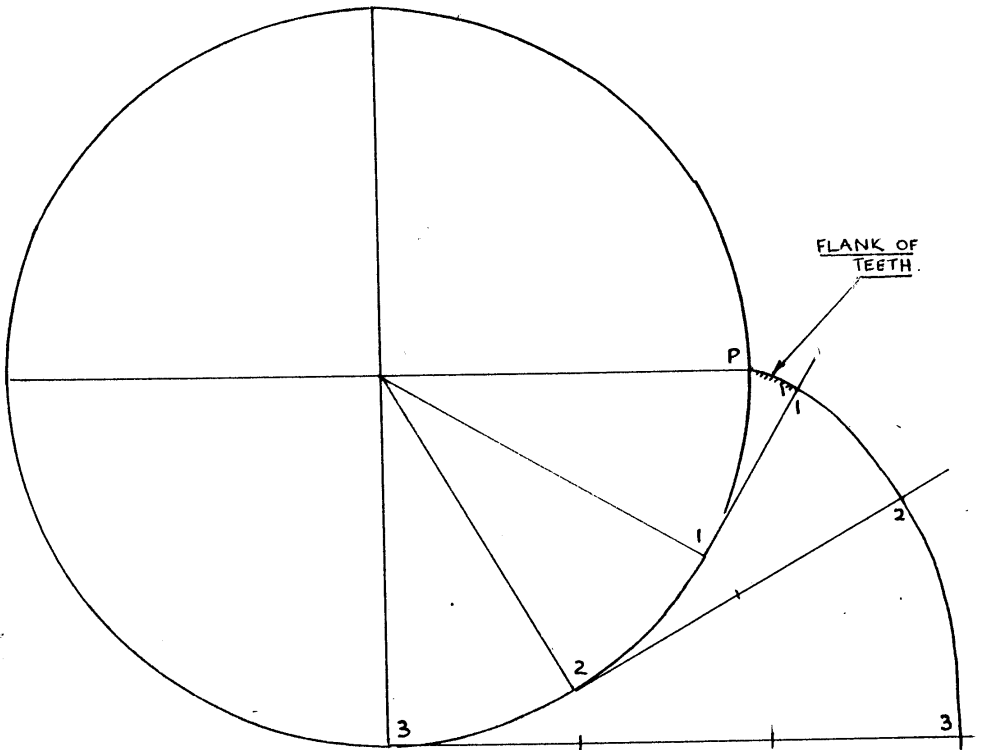
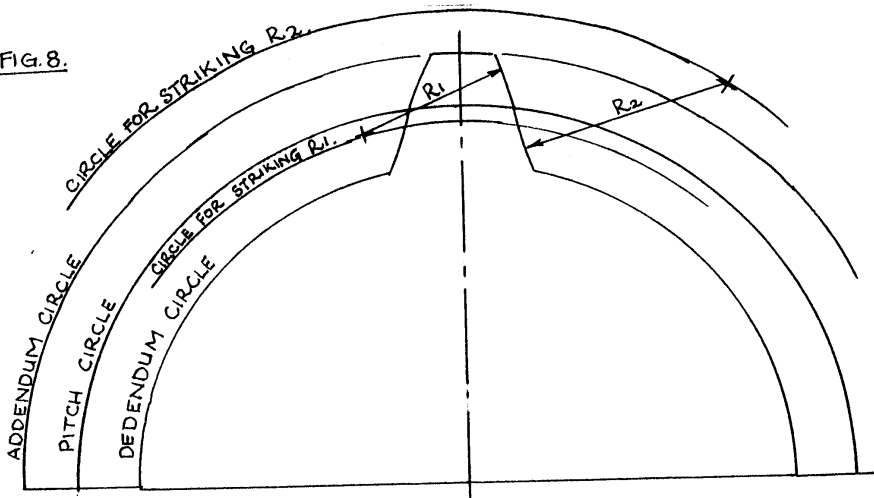
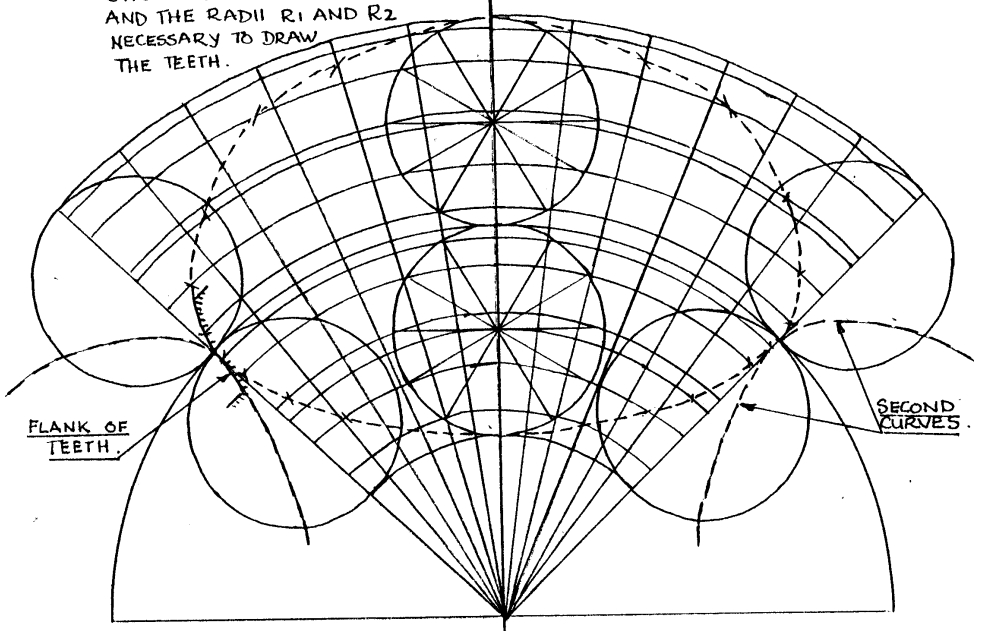


FIG. 8.



THE FLANK OF A CYCLOIDAL TOOTH CONSISTS OF PART OF THE EPICYCLOID AND THE HYPOCYCLOID CURVES.

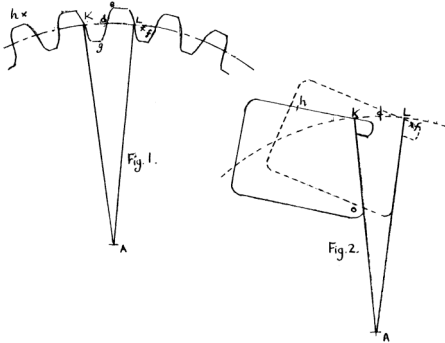
FIG. 9. THIS SHOWS HOW IT WOULD BE AN IMPOSSIBLE TASK TO CONSTRUCT THE TWO CURVES FOR EVERY TOOTH FLANK ON A GEAR WHEEL. THE ODONTOGRAPH QUICKLY GIVES THE DIAMETER OF THE CIRCLES FOR STRIKING THE FLANKS OF THE TEETH ABOVE AND BELOW THE PITCH CIRCLE AND THE RADII R₁ AND R₂ NECESSARY TO DRAW THE TEETH.



together.

EXPLANATION OF THE INSTRUMENT

SIDE 1. Let *A*, fig. 1, be the centre of a



wheel, *KL* a portion of its pitch circle, *gde* the side of one of its teeth or cogs according to the system now proposed, the portion *de* of the tooth which extends beyond the pitch circle is an arc of a circle described from a centre *f*, and the portion *dg* which lies within the pitch circle is an arc of a circle described from centre *h*. The use of the scales and tables is to determine which facility the position of these centres *f* and *h*, and the length of their radii *hd*, *fd*, for a wheel of any required pitch and number of teeth. Teeth formed by these rules possess the property of causing any two wheels of the same pitch to work correctly together. One example will explain the mode of using this instrument. Let it be required to describe the form of a tooth for a wheel of 29 teeth of 3 inches pitch.

Describe an arc of the required pitch circle, and set off upon it *KL*, fig. 2, equal to the pitch, and bisected in *d*; draw radial lines *AK*, *AL*. For the arc within the pitch circle apply the slant edge of the scale to the radial line *AK*, placing its extremity *K* on the pitch circle, as in the figure. In the table, headed 'Centres for teeth within the pitch circle', look down the column of 3 inch pitch, and opposite to 30 teeth, which is the nearest number to that required, will be found the number 49. The point indicated on the drawing board by the position of this number on the scale of equal parts marked, 'scale of centres of teeth within pitch circle', is the centre required, from which the arc

must be drawn with a radius, *hd*.

The centre for the arc *de*, which lies outside the pitch circle, is formed in a manner precisely similar, by applying the slant edge of the scale to the radial line *AL*. The number 21 obtained from the table of 'centres for teeth outside the pitch circle' will indicate the position of this centre upon the scale of centres for teeth outside the pitch circle, namely at *f*.

To facilitate the operation of spacing the teeth, and setting out their lengths, the spare edges of the pasteboard are occupied by two other scales, on one of which is marked the widths of the teeth, etc., of all the pitches of the tables, and on the other the extents of the teeth beyond and within the pitch circle, according to the established proportions by the best millwrights.

The radius of the wheel may be found, by help of the following table and rule. Multiply the number corresponding to the given pitch in this table by the number of

PITCH	FACTORS	PITCH	FACTORS
3½	0.5570	1¼	0.1989
3	0.4774	1	0.1591
2½	0.3979	¾	0.1193
2¼	0.3581	⅝	0.0994
2	0.3183	½	0.0795
1¾	0.2785	⅜	0.0597
1½	0.2387	¼	0.0398

teeth required, the product will be the radius of the pitch circle in inches and decimals. Thus, for a wheel of 29 teeth of 3 inches pitch, multiply 0.4774 by 29, and the radius is 13.84 inches.

The curve *gde*, fig. 1, is also true for an 'annular wheel' of the same number of teeth, *g* becoming, of course, the point of the tooth and *e* its root. For a 'rack', the pitch line *KL*, fig. 2, will be a straight line, and *AK*, *AL*, be drawn perpendicular to it, at a distance from each other equal to the pitch. The numbers for pitches not inserted

in the table, may be obtained from the column of some other pitch, by direct proportion thus for a 4 inch pitch, by doubling the numbers in the column of the 2 inch pitch, for 4½ by doubling 2¼, and so on, or if the difference be small, the column

belonging to the nearest pitch may be employed without a serious error; or more accurately a number may be taken half way between those given in the two nearest columns.

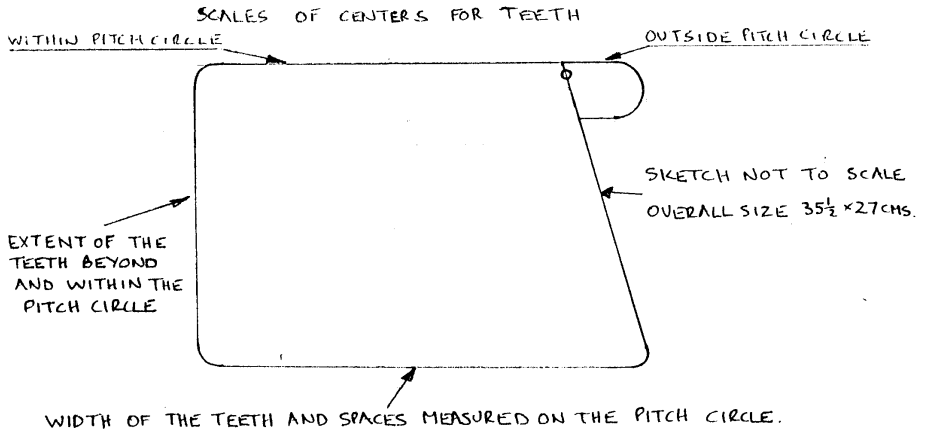
CENTRES FOR TEETH WITHIN THE PITCH CIRCLE

NUMBER OF TEETH	PITCH IN INCHES AND PARTS													
	¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2	2¼	2½	3	3½
13	32	48	64	80	96	129	160	193	225	257	289	321	386	450
14	17	26	35	43	52	69	87	104	121	139	156	173	208	242
15	12	18	25	31	37	49	62	74	86	99	111	123	148	173
16	10	15	20	25	30	40	50	59	69	79	89	99	119	138
17	8	13	17	21	25	34	42	50	59	67	75	84	110	117
18	7	11	15	19	22	30	37	45	52	59	67	74	89	104
19	7	10	13	17	20	27	35	40	47	54	60	67	80	94
20	6	9	12	16	19	25	31	37	43	49	56	62	74	86
22	5	8	11	14	16	22	27	33	39	43	49	54	65	76
24	5	7	10	12	15	20	25	30	35	40	45	49	59	69
26	5	7	9	11	14	18	23	27	32	37	41	46	55	64
28	4	6	9	11	13	18	22	26	30	35	40	43	52	60
30	4	6	8	10	12	17	21	25	29	33	37	41	49	58
35	4	6	8	9	11	16	19	23	26	30	34	38	45	53
40	4	5	7	9	11	15	18	21	25	28	32	35	42	49
60	3	5	6	8	9	13	15	19	22	25	28	31	37	43
80	3	4	6	7	9	12	15	17	20	23	26	29	35	41
100	3	4	6	7	8	11	14	17	20	22	25	28	34	39
150	3	4	5	7	8	11	13	16	19	21	24	27	32	38
RACK	2	4	5	6	7	10	12	15	17	20	22	25	30	34

CENTRES FOR TEETH OUTSIDE THE PITCH CIRCLE

NUMBER OF TEETH	PITCH IN INCHES AND PARTS													
	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	$1\frac{3}{4}$	2	$2\frac{1}{4}$	$2\frac{1}{2}$	3	$3\frac{1}{2}$
12	1	2	2	3	4	5	6	7	9	10	11	12	15	17
15	1	2	3	3	4	5	7	8	10	11	12	14	17	19
20	2	2	3	4	5	6	8	9	11	12	14	15	18	21
30	2	3	4	4	5	7	9	10	12	14	16	18	21	25
40	2	3	4	5	6	8	9	11	13	15	17	19	23	26
60	2	3	4	5	6	8	10	12	14	16	18	20	25	29
80	2	3	4	5	6	9	11	13	15	17	19	21	26	30
100	2	3	4	5	7	9	11	13	15	18	20	22	26	31
150	2	3	5	6	7	9	11	14	16	19	21	23	27	32
RACK	2	4	5	6	7	10	12	15	17	20	22	25	30	34

VARIOUS SCALES ON REAR OF ODONTAGRAPH.



Russ Webber

A SONNET FOR THE ENGINE- HOUSES OF CORNWALL

In evening silhouette they stand out hard
Like hoary soldiers, most in sorry health:
Old sentinels who stand unbroken guard,
Protecting Cornwall's old residual wealth.
They dress in ranks or else deploy in packs;
Some solitary sentries are far flung.
Ah! See, their jutting, heaven-pointing stacks
Are like to arquebuses, shoulder slung.
As self-appointed captain of the watch
I oft inspect some members of this troop:
They suffer much from ivy, lichen blotch
And some display a geriatric stoop.
Hi! You Sir, there, with musket split and bent,
Please know that if you fall I shall lament.

Frank Sutton



Photo: B.Tripp

MESSAGE FROM CURATOR

As many members will be aware, a number of industrial sites have disappeared over the years and many others are under threat. I am therefore making an appeal to all those members who take or have taken photographs of industrial sites, anywhere in the country, do not dispose of them, please. If you have a collection, the Society would be pleased to hold it. If you would prefer that the Society didn't own it please consider allowing the Society to borrow and scan it. The Society has never had a policy of actively collecting images, but with the increased responsibility that comes with our rapidly expanding collections it is time that we also took a more active role in recording our industrial past. If any member has items that he or she wishes to deposit with the Society, or wishes to notify me of any sites which should be recorded, please contact me:
Pete Joseph, 29 Tolver Road, Penzance, TR18 2AQ. 01736 364619
pete@tolver.fsnet.co.uk

POST OFFICE BOX

The Society now has a single address for all mail and is as follows:

**THE TREVITHICK SOCIETY
PO BOX NO 62
CAMBORNE
TR14 7ZN**

Although members may still contact individual officers if their address is known, use of the Box Number means one address will appear on all official correspondence in future.

The picture shows the Vice Chairman, Kingsley Rickard, using a piece of the Post Office's own industrial archaeology. It is a Penfold pattern Victorian post box, believed to be the only one of its kind in Cornwall. It does not carry a founder's mark but is unlikely to have been cast locally.

PUMPING ENGINE MODEL ON LOAN

Back in August 2002, the writer received a telephone call to say that the caller, from High Wycombe, had a model of a Cornish engine, which he wished to put on display in Cornwall, as he felt that would be the most appropriate place. The caller's name meant very little, so Society member David Gresswell, a resident of High Wycombe, kindly volunteered to make contact and view the model. When David reported back the story had quite a twist. It appeared that the model was built in the 1940s by a Mr. R. Jarvis, who ran an engineering company at High Wycombe and that this model had been on display at Holman's museum in Camborne. Its arrival at the museum is recorded in the Society Newsletter No. 1, dated December 1970, where it states it "is at present being checked over and installed by Mr. R. Thomas, who is the museum curator". Upon closure of the museum, the model was destined for what was then Wendron Forge, now Poldark Mine. At this time Cornwall suffered one of its many gales and, with the roof over the model was damaged, the inevitable water caused rusting, so the model was taken away to Jarvis Engineering, and has spent the intervening years in their office.

Built from Michell drawings, the construction of the model, on a scale of 1 inch to 1 foot, was reported in "The Model Engineer", Vol. 104, No. 2593, February 1951. It was awarded the Silver medal at "The Model Engineer" Exhibition and also awarded the New York Society of Model Engineers Prize.

Jarvis Engineering continue in business today as jobbing engineers, one of a diminishing number of such businesses countrywide. Sadly Mr. Jarvis has passed away, but it was his son, Bill, who made the telephone call to say that his family would like to place the model in the care of the Society on permanent loan. Eventually the Council decided that the engine should be displayed at Cornish Engines.

And so it transpired that at 6 am, on the very dark morning of December 3rd, John Badger and the writer departed Camborne

en route for High Wycombe. After an uneventful journey we were pleased to be met by David Gresswell on the Marlow bypass and he piloted us into High Wycombe and on to the Jarvis Engineering Ltd., no doubt saving us considerable time. This was very useful considering we intended to complete the return journey in one day. The model had been made ready for travel having been bolted down to a pallet and plastic wrapped and with the help of a fork lift was soon on board and strapped down. A message was sent down to us to say, when we were ready, would we please call at the office for coffee. This we duly did and were met by Mr. Jarvis' widow, a delightful lady, who admitted she was lost on the engineering, but was so pleased we were taking an interest in the model, and, as she has friends at Carn Marth, she would come and see it. She then produced a photograph album containing pictures of South Crofty and Levant and a folder containing letters in the hands of both J.H. Trounson and W.A. Michell, all of which she has given to the Society. After lunch we said our goodbyes and once again set out for the M4 and Cornwall arriving back in Camborne at 7 pm., very happy and very tired.

The following morning the model was driven to Cornish Engines, where a reception committee of members Arthur Young and Bill Carter, and Graham Harvey and Haydn Thomas, Cornish Engines' staff were on hand to unload the precious cargo. Our thanks also goes to the Cornwall Paper Company in assisting with their forklift truck.

K.J.T.Rickard.

Although the original engine, designed by W. H. Michell, was never built, the Society now has two different models of it. The Jarvis Engineering model and one given to the Society by Mr G. Boulden, which will go to Levant Mine in the near future. Along with the Jarvis engine, the Society also received a small amount of correspondence and some photographs. The following is a transcription of a letter from W. H. Michell to Mr Jarvis, the builder of the model, describing the destruction of

the 90-inch pumping engine at New Cooks Shaft.

Dear Mr Jarvis

Thank you for your card at Xmas. You will have seen in the papers the destruction of the 90" cyl Cornish pumping eng: at So: Crofty Mine. This is the eng: which stood in the concrete eng: house at New Cooks section of the mine.

The eng: was overloaded about 100% (water load 28 lbs per ?" on the piston) & it looks as if one side of the bob took the strain which would be equivalent to 400% overload on that side.

The break (outdoor, over the shaft) was clean, midway between the pin of the air pump bucket & the pin of the feed pole. The[re] were no holes on the line of the break – a clean break from top to bottom. There are loose nose pins & the broken piece fell, & fortunately, jammed across the shaft. There was no loss of life or limb, but the engineman had a narrow escape. He had just wiped over the cover of the cylinder & gone down the stairs when, as he reached the bottom chamber, the engine came indoors & cut into the spring beams. The main cap came down on to the stuffing box and shattered it. The catch wings were bent, the cyl: cover is cracked, as is the cyl: bottom, & I think it is probable the piston is broken.

It is thought the piston rod punched through the piston, & if so, the cotter may have been left out, or the cotter may have sheered through the piston.

There were loose pieces of metal, up to ½ cwt thrown about the house, one of which struck the bottom step of the stair as the engineman stepped on to the floor. The nuts in distance pins flew off like bullets. The main loops disintegrated, & the CI blocks between added to the loose metal flying around.

The broken piece of the bob – say 7 tons – struck the pan of the air pump & cracked it.

Had this happened 2 years hence it would not have mattered, as they had already decided to change over to electrical pumping which will take that time to get delivery & complete the installation. In the

circumstances it is doubtful if it would be advisable to recondition the pumping engine for the short time it will be required, & I understand temporary electric pumps will be installed to cope with the water against the permanent pumps are fixed.

There now remain only 2 Cornish engs at work on our mines, & 4 smaller ones on china clay works.

The strain being thrown on one limb of the bob may have been caused by unequal settlement of the engine on its loading, or by unequal wearing of bearings, or a sum total of these. It is too early yet to know the real reason why, & perhaps we never shall.

With all good wishes for 1951

Yrs sincerely

W. H. Michell

J.W.Barnes et. al. *The Mineral Resources of Uganda*, 1961. Large octavo, 89 pp, card cover £5.00.

Du Bois. *Minerals of Kenya*, 1970. Small quarto, 82 pp, card cover £5.00.

R.M.Pearl, of Colorado. *Cleaning & Preserving Minerals*, 1971. 2nd edn. Octavo, 86pp, card cover £8.00.

BOOKS FOR SALE

Vicenzo de Michele. *Crystals*, 1972. A standard work, in colour, numerous illustration. Translated from Italian. 9¼ x 12 in, 80 pp, dust wrapper. £25.00.

P.Bancroft. *The World's Finest Minerals & Crystals*, 1973. 9¼ x 11½ in, 72 colour plates, 176 pages, dust wrapper. £25.00.

John Sinkias. *Gemstones & Mineral Data Book*, 2nd printing 1974. Contains data, formulas, compounds, tables, properties, etc. Octavo, 352 pages, dust jacket £18.00.

Contact **Justin Brooke**, Chymorvah Veon, Marazion, Cornwall. TR17 0DQ. 01736 710468. Please add £1 for postage.

ANY OLD IRON

The lecture at C.S.M. on November 22nd by Derek Morgan outlined the problems, and their solutions, caused by old shafts and pollution from mining in earlier times. This was a most interesting insight into a problem we are all aware of, but most of us are unsure of the remedial possibilities. One of the sites Derek illustrated was the Maxam site, shortly to be inhabited by B & Q. During the trenching of the site to check for ground disturbance, an indication of a possible shaft, some iron remains were discovered, which were thought to be a Cornish boiler. Some members may have seen this as it was quite visible close to the main road opposite McDonalds, or what most of us prefer to think of as the old Tramway Depot site. The writer examined these remains in the vain hope that the Society might gain another artifact. On initial contact with the site manager, he was pleased we were interested and immediately asked, "are you going to take it away....now?" A few minutes later, when examining the object it was apparent why he was keen for us to remove it. Sadly it was in an extremely poor state, one side being badly rusted and deformed. It probably was a boiler, but had been altered for use as an underground tank. It was of

riveted wrought iron plate construction, the plates being 24in. X 42in., with an external diameter of 5ft 3in. Any original apertures had a metal plate bolted over them sandwiching a wooden seal. Its original length is unknown as it was shortened to 9ft. 3in., with the riveted joint just being forced apart to provide separation leaving a very ragged end. The original end had been replaced to convert it to a tank.

K.J.T. Rickard.

TO ALL MEMBERS

Agreement has been made with the Trevithick Trust that all sites under its management are open free to Society members, upon production of a membership card.

The sites are Cornish Engines at Pool; Porthcurno Museum of Submarine Telegraphy; King Edward Mine at Troon; Tolgus Tin, near Redruth; the Pendeen and Lizard Lighthouses and the Lizard Wireless Station.

In addition, members already enjoy free access to Geevor and Levant.



TREVITHICK MEMORABILIA

Following recent sales of Trevithick-related material I have been working very hard to acquire some of it. I am therefore pleased to report that by April 1st the Society should have in its possession the plans to what was probably the last project that Richard Trevithick worked on, and possibly his most audacious idea: the steam-driven lavatory. This was a simple concept, using currently available technology. A 6-inch steam engine had been coupled to a series of ten lavatories. The indoor-stroke pulled the contents of the bowls back past the clack (non-return) valve, while the outdoor-stroke pushed it along a main to a discharge point in the adjacent river. Described by contemporary engineers as 'breath-taking' when Trevithick showed the idea to a meeting of the Royal Cornwall Polytechnic Society, it was hoped eventually to use an engine of about 60 inches diameter to flush all of the lavatories in Camborne. This work was carried out in co-operation with the Perran Foundry, with the experimental set-up being situated at Flushing. Teething problems occurred in the early days, and one of Trevithick's assistants, William Pellow of Pool, was blown ten yards off his seat when a valve failed.

Following discussions with the road loco engineers, it is hoped to have a working model up and running by the end of the year. This will initially be on show at the Truro museum, but will be moved to Taylor's Shaft at a later date. It is hoped that, should the model work well, that we can then modify the existing facilities to work by steam power. We believe that this will prove to be a very popular installation.

Pete Joseph,
Hon. Curator.

CAMBORNE ROAD LOCOMOTIVE

Arthur Young and Bill Carter have been doing sterling work on the engine during the winter. It has been almost totally dismantled and

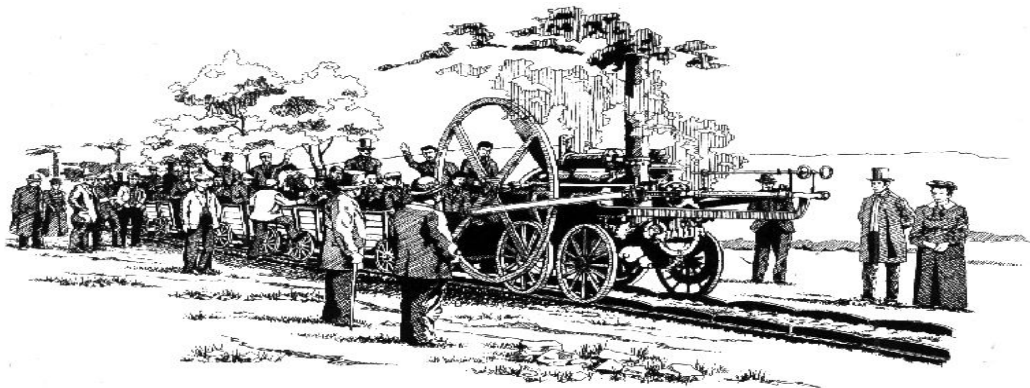


a number of refurbishments completed. The first hurdle to overcome was the boiler inspection, and, we are pleased to report, the inspector went away a happy man, and left even happier men behind! The biggest challenge was the replacement of the main boiler gasket, which is at the firebox end. The new gasket is thinner than the old and so adjustments had to be made to all the holding bolts around the boiler end plate—quite a time consuming process. A filter has now been fitted to the water tank outlet to solve the occasional problem with dirt stopping the boiler water feed pump valves from seating correctly. A number of small items have needed attention—the safety valve has been lapped, the reversing rod was wearing a groove in its support at the driving end and has been corrected and the plug rod tappet leathers have been replaced due to wear. General painting and greasing have now been done ready for the season. A drain is to be fitted to the exhaust between the blast pipe and the heat exchanger to stop the showers of sooty condensate being thrown into the air when starting up. The one large job left to be done is the removal of the rear axle to check bearings and discover why one runs hot. The likely reason is a blocked oilway.

Our thanks must be extended to CompAir UK and Falmouth Docks who have given us considerable assistance during this winter overhaul.

Kingsley Rickard.

TREVITHICK 2004 CELEBRATIONS



An exciting year of events to celebrate the historic 200th Anniversary of the Penryn Locomotive is planned. Built in 1804 by Richard Trevithick, the locomotive was the first steam engine in the world to haul a load on rails.

Events will include:

*Sponsored walk of route
Celebration gala evening
Re-enactment of wager*

Concerts

*Exhibition at Cyfarthfa Castle Museum
Transport theme shows*

Further information can be obtained by visiting www.trevithick2004.co.uk or by contacting the Tourism Department at Merthyr Tydfil County Borough Council on (01685) 725227 / e-mail: rebecca.lewis@merthyr.gov.uk

LOCAL GOVERNMENT LIAISON

LGLC members are shown below:

Caradon & West Devon **C&WDD**
John Badger 01752 786398

Carrick **CDC**
Phil Corbett 01209 890897

Kerrier **KDC**
Kingsley Rickard 01209 716811

North Cornwall **NCDC**
Vernon Baldry 01209 822311

Penwith **PDC**
Peter Joseph 01736 364619

Restormel **RBC**
Charles Thurlow 01726 73882



ENGINEER'S ANSWER TO A COMMON PROBLEM!
Photo: P.M.Hosken

LEVANT REPORT

The annual spring overhaul is underway and the boiler has been stripped down for inspection. It is understood that Fulton, the boiler makers, now are proposing a different design of ignition and combustion systems to that which was installed.

The high pressure steam line from the boiler is being changed to have the electrical HP steam shut off valve before the pressure reducing valve, which it is hoped will improve the starting of the engine. This will entail repositioning the vent line from the safety valve before the engine. The inside of the engine house roof and beams are being scraped, brushed and vacuumed to remove the flaking whitewash.

The sheet metal cover over the out-board bearing of the winding drums has become badly corroded. A new cover has been fabricated, galvanised and is being painted. Concern has been expressed about the several inches of deposits of fine silt (and few rocks) in the cooling pond. The water has now been removed and George Blenkhorn and Eric Mason are clearing the deposits.

The temporary wiring for the electro-pneumatic controls for the operation of the Skip Shaft electric winder has now been completed by Ron Flaxman and is working safely. This allows the weight on the end of the hoisting cable to be lowered from ground level to Adit level using the limit switches. The depth indicator is working now. Permanent wiring and handrails round the winder will now be installed. A desk and filing cabinets have been installed in one corner of the house and a dehumidifier is working to keep the records in good condition. A model of a beam pumping engine made by a member may be kept here also.

It is again being said that money to complete the work on the Man Engine Shaft is available and that this should be completed by May. No work has been seen on site yet.

W. E. H. King

LEVANT ENGINE - 2003

In 2003, the engine will be steaming on: -

- March - Fridays only
- April - Fridays, Tuesday 22nd & 29th, Easter Sunday and Monday
- May - Tuesdays & Fridays, Bank Holiday Sunday and Monday
- June - Every Sunday, Wednesday, Thursday and Friday
- July to September - Sunday to Friday
- October - Tuesdays & Fridays

Eric Mason is the Custodian of the engine. He lives at "Anchor Watch", Rospletha Cliff, Porthcurno, PENZANCE TR19 6JS, Telephone 01736 810717. He is also the organiser of the Drivers and Stewards rota. Please contact him if you wish to help as a Driver or Steward at any time during 2003. Training is provided.

The "Greasy Gang" meets at the Engine House most Fridays to work on the engine or on the site. Members and visitors are most welcome to lend a hand at whatever work is under way.

Thomas Lean. *On the Steam-Engines in Cornwall*, 1969 reprint. Octavo, 152 pages, dust wrapper. £12.00.

MORE BOOKS FOR SALE

J.A.Buckley. *A History of South Crofty Mine*, 1st edn., 1982. Octavo, 224 pp, dust wrapper. £13.00.

A.K.H. Jenkin. *The Cornish Miner*, 2nd edn, 1948. Hardback, original cloth, octavo, 351 pages. The first reprint. £23.00.

A.K.H. Kenkin. *Mines and Miners of Cornwall, Vol. V. Hayle, Gwinear, Gwithian*, 1963. Octavo, 62 pages and map. £8.00.

Rev. John Buller. *A Statistical Account of the Parish of St. Just in Penwith*. 1983 reprint of 1842 edn., including Addenda & Map of Standing Stone. Octavo, £10.00.

Contact **Justin Brooke**, Chymorvah Veon, Marazion, Cornwall. TR17 0DQ. 01736 710468. Please add £1 for postage.



CiSFBR

The Cornwall and Isles of Scilly Federation of Biological Recorders are holding a summer workshop entitled "Wildlife in Cornwall's mining landscape". The workshop will include talks on recording invertebrate species on mine sites (butterflies, dragonflies and spiders), followed by a field meeting in the Bissoe valley. This will take place at Chacewater Village Hall on Sat. 14th June. Contact Ian Bernallick, Lower Polmorla, St. Wenn, Bodmin. PL30 5PE. Tel: 01726 890384.

Email: ian@bernallick.fsnet.co.uk

I have now received confirmation from the

NEW CONSTITUTION

Charity Commission that the new constitution has been accepted and registered (phew!!)

Geoff Smith-Grogan

Can anyone provide details of the Buffelsdoorn Gold Mine Company, Transvaal, S.A. shown in the photograph above. It is believed to have been taken in the early 1900s.

Any information please phone Denys Bryant, whose grandfather is in the photograph, on 01326 572349 or write to the Newsletter Editor.

2003 SUBSCRIPTIONS

All members are reminded that their subscriptions are now overdue. Please check you are paying the correct amount to ensure you receive all your publications and information.

Sue Maunder,
29 Tolver Rd,
Penzance. TR18 2AQ

TREVITHICK SOCIETY EVENTS AND CONTACTS

MAR 21st — C.S.M.

A Steam Miscellany.

An illustrated talk by Bryan Watkins.

APR 25th — C.S.M.

The Story of Falmouth Docks.

by Peter Gilson.

MAY 16th — C.S.M.

MAY 17th — A.G.M. Weekend

Camborne-based programme of events.

MAY 23rd — East Cornwall Branch

Hemerdon Mine, Plympton.

by Robert Waterhouse.

*Meetings are held in the Lecture Theatre,
Camborne School of Mines at 7pm.*

*East Cornwall Branch meetings will be held
at the Public Hall Complex, Liskeard at 7.30pm.*

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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.

Subscriptions 2003:-

Single members £15

Family (husband & wife) £18

Overseas members £18

Corporate members £18

Student members £5

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