

THE TREVITHICK SOCIETY

NEWSLETTER No. 45

Price to non members 30p

MAY 1984

Harvey's fitting shop in Hayle is no more



Left: Inside Hayle Foundry fitting shop, 80 years derelict and one of the finest industrial buildings in England.

Above: The same building today. (Story in Secretary's Column page 2)

First meeting of the East Cornwall branch is a huge success

Forty members and guests attended the inaugural meeting of the Society's East Cornwall branch at Webb's Hotel, Liskeard, on 2 March. We were particularly pleased to welcome our chairman, Rodney Law, who had travelled to Cornwall for the meeting. The turn-out shows that there is real interest in the south-east of Cornwall and, as we had suspected, there are quite a number of people who just don't find it possible to travel all the way to Camborne to attend our main Society events.

Branch chairman Mrs Mary Smyth opened the proceedings by briefly outlining the aims of the branch and some of our future plans, before introducing John Stengelhofen who is Secretary of the branch as well as being first speaker.

John, who is the National Maritime Museum's Curator in the West country, based at Cotehele Quay, gave an illustrated talk *Industries and shipping of the River Tamar*. The great changes that took place in the last century with the development of mining and quarrying in the valley formed the theme. Large numbers of miners moved from the west of the county and turned Calstock and Gunnislake into boom towns. Copper ore and other minerals together with stone and bricks resulted in a massive increase in shipping on the river which only declined when the mines failed and the railways arrived. To illustrate the more local trade on the River, the story of the Tamar sailing barge *Shamrock* was described. Recently restored at Cotehele Quay, she is now owned jointly by the National Maritime Museum and the National Trust.

The next meeting of the East Cornwall branch will be held at Webb's Hotel, Liskeard at 7 for 7.30 pm on 1 June, when your editor will give an illustrated talk on *The engines of South Caradon*, with Field Trip next day. Members free, visitors 50p. All welcome. (See February newsletter for full Branch programme.)

St Agnes starts museum project

The St Agnes Museum Trust was formed in October 1983 to co-ordinate the restoration and conversion of Thomas' 40-inch enginehouse, the last remaining on the West Kitty mine, into a small parish museum. Despite wide support, the Trust's planning application met with some difficulty and was subsequently held in abeyance.

Since then, a handful of enthusiasts have been studying alternative premises as well as improvements to the original planning application. The Trust hopes soon to become a charitable trust and put forward definite plans to the people of St Agnes, many

of whom have shown tremendous enthusiasm.

To date the Trust has accrued and located many potential exhibits relating to the prehistoric, geological, mining, maritime, agricultural and natural history of the parish. The aim is also to present a large collection of 19th century photographs along with audio visual displays relating to the parish as it is today, and what it has to offer.

The Trust has already begun conservation work on the remains of the Trevaunance whim house near Higher Bal. On 3 March demolition contractors moved in to clear what was considered by the owners to be a dangerous structure. The Trust managed to prevent total clearance of the site and are at present preserving the base of the building in an effort to prevent all historical data being lost. It is hoped that the Trust will soon be involved in the preservation of a centrally sited stack of some significance to the village, as it is possible that this too will soon come under threat.

Editors's note: The fact that Thomas' 40-inch pumping engine, built by Harvey & Co in 1863, is held in store at London's Science Museum, should give the Trust an incentive to keep Thomas' enginehouse free for the engine's re-erection there one day . . .

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Editorial

"If you haven't been to Moonta, you haven't travelled" was a common expression at the time of the great exodus of Cornish miners and their families to South Australia and other foreign lands during the late 19th century. Well, I have now been to Moonta and eaten a local pasty—a good one, too—sitting in the shade of a gum tree on one of the great copper mining fields of the world.

However this editorial is not about pasties, or even Australia, but the Australians. Never before have I enjoyed such friendship, help and hospitality from people who, minutes earlier, were total strangers. One gentleman whom I telephoned at 7.55 am (he hadn't got a KB-proof phone) said he had one foot in the bath—yet 90 minutes later was in the navigator's seat of my car en route to the Wallaroo and Moonta mines, 90 miles away! I am very pleased to welcome Jack Connell into the Society.

It was the same all over. From the sterile peaks of Queenstown in Tasmania, their wildlife ruined by sulphurous fumes from the Mount Lyell smelter, to the rich woodlands of the Blue Mountains in New South Wales, observed from the footplate of a Pacific, the welcome never flagged.

Next year this Society may have the chance of showing how good we are at playing host when a party of mining historians from Adelaide visits Cornwall. They are streets ahead of us when it comes to the recording, documenting and official conservation of enginehouses, stacks and other historical relics, and there is much we can learn from them. But alas, they have very little surviving machinery and no big engines so they find interpretation difficult. This is where we can help.

One example of this problem may be found in the town square of Burra, 100 miles north of Adelaide. Mounted upright on a lawn is a cylinder bedstone with two bolt holes from one of the two Perran Foundry 80-inch engines supplied to the celebrated Burra Burra copper mine in the 1850s. It has a plaque proclaiming it to be a pump counterweight, yet two bolt holes and the characteristic semi-circular rust mark from prolonged contact with the cylinder bottom are plain for all to see. Even more remarkable, the house from which the stone was taken never saw an engine! (The answer to this conundrum will be given in due course.)

Future articles in the Newsletter and Journal will spell out the many exciting finds during my trip. I visited some 20 Cornish engine sites, ranging from complete enginehouses with a few remains of the engine inside to just a bob wall or cylinder bed with its bolts. Discovery that the Union Foundry at Ballarat built engines for the Victoria goldfields that were almost total replicas of those built by Harvey & Co came as rather a shock.

I thank John Wellington and Thomas Murray for writing in support of my suggestion of writing up Field Trips in some detail: I regret there is not enough space to print their letters.

Press date for the August issue is Wednesday, 4 July.

Finally, a serious fire at our printer's works in early May disrupted production of this newsletter: its lateness is regretted.

Kenneth Brown

Hon Secretary's column

Since the last Newsletter your Council has been involved in a number of cases involving important historical sites. The first concerned Tregurtha Downs engine house, the subject of scheduled monument consent for conversion into a dwelling. Following a site visit with HM inspectors we have just heard that the Secretary of State has withheld consent. New activities at Cheesewring Quarry threatened the granite sleepers of the old Liskeard and Caradon Railway. With the co-operation of the Duchy of Cornwall land steward, the line was saved from damage by covering it with gravel.

Developments at Consols Mine, Gwennap involved the partial demolition of the remains of Davey's 80-inch engine house. Representations were made by the Society and it is believed that Taylor's 85-inch house and stack will be preserved with other relics nearby. The whole area is to be surveyed during the coming year by Freeman Fox on behalf of the Department of the Environment and the Society has offered its services in assessing the historic significance of the industrial relics.

The Society has also made representations to the D of E in support of the local council to enhance the statutory protection and recognition of the Luxulyan Valley and the Trefry Viaduct.

On pretexts which are debatable, Penwith DC decided on Monday 19 March to demolish the walls of Harvey's fitting shop at Hayle. I heard the news on the Tuesday and wrote to the planning officer, to the D of E (the building was listed), to Tekoa (Hayle) Ltd, the developer, and to Save Britain's Heritage, in an effort to save at least part of this historic site. On the Wednesday I took photographs and measurements: and by the Friday

the building was down! (My photographs of this tragic destruction appear on page 1.)

The planning officer has replied to my letter giving the council's justification for the demolition: the building had been deteriorating for many years and was dangerous, the outer wall could have been saved but at considerable expense so, in the interests of public safety, permission was given to demolish. The case for demolition might be acceptable but the haste with which this was done caused considerable dismay and consternation, much of which could have been avoided had there been some consultation.

Which brings me to the point of this diatribe: it is a matter of urgency that the Society, as the leading authority on industrial archaeology in the county, prepares a definitive list of industrial relics so that when the next threat comes the evidence and the justification for preservation (or otherwise) is readily available. In 1935 the Cornish Engines Preservation Society had the foresight and initiative to ensure the preservation of five Cornish engines. We need some of that spirit today. The least we can do is to discover what still remains of our industrial heritage and then try to preserve the best of it. Please send me your nominations for the best sites in your area (or indeed anywhere in the county). Now.

All is not gloom and despair, far from it. The go-ahead has been given to the Botallack Appeal for the restoration of the Crowns enginehouses. The National Trust has begun work on the re-roofing of Trevithick's cottage at Penponds and in May is to begin restoration of the pumping enginehouse at Carn Galver; the whim enginehouse was restored last summer. Cape Cornwall stack is to be renovated as part of a Heritage Coast work scheme sponsored by Penwith District Council.

The work of recording is gathering momentum as the weather improves. The first of the updated Register Sheets have been returned to Rescue Archaeology in Truro, thanks to a few stalwart workers in the parishes, and particularly to Falmouth O.C.S. The Duchy of Cornwall has expressed interest in our assessment of industrial relics so the East Cornwall Branch is to begin a recording programme in the Minions area. Last, but not least, by the time this Newsletter is published the Society's possessions should be safely gathered together at Geevor Mining Museum.

Bill Newby

Forthcoming publication

"MICHELL—A FAMILY OF CORNISH ENGINEERS, 1740-1910". The decision to write this book was taken some while ago. It is fortunate that Mr Frank B. Michell has found the time to add a valuable and informative engineering history to the bookshelves of the industrial archaeologist.

The book traces the Michell connection with Cornwall's mechanical & mining engineering history over 170 years and contains a unique glimpse of the scenes as viewed from a family standpoint. Most of the information has been drawn from working notes, personal memoranda and diaries.

Containing some 80 pages and 13 illustrations it is eminently readable and thoroughly recommended. It will become our Occasional Publication No 3 and should be available in June. Members may place their orders NOW by sending the Publications Secretary £3.00 to cover cost—post free to members through 1984.

Cornwall Record Office reopens

Cornwall Record Office reopened its doors on 5 April following reorganisation of the records storage, so as to improve the accessibility of the most heavily used classes of records and bring into use the new strongrooms built in 1983. It is still essential to make an appointment before visiting the office: phone Truro 73698 or 74242. Opening hours are Tuesday to Thursday: 9.30 to 1, 2 to 5, Friday: 9.30 to 1, 2 to 4.30, Saturday: 9 to 12. (Sunday and Monday closed).

The rockdrill in Cornwall

Clive Carter, since last year's feat of transferring Locke stamps to Geevor and re-erecting them, has been known to his friends as 'The Stamps Cap'n up to Geevor'. At the Society's 27 January lecture in Camborne the Cap'n progressed from ancient stamps to a discourse on the development of the rock drill.

Until the last quarter of the 19th century, the hand borer was the only method available in Cornish mines for drilling holes preparatory to blasting. One can only ponder on the prodigious labour which went into the untold thousands of miles of levels, shafts, cross-cuts and winzes. In surface competitions a man with a pasty and a few pints of beer inside him might work won-

ders, spurred on by the acclaim of the crowd. A Cornishman named Tarr set up a record in Arizona in 1904, drilling 28½ inches in 15 minutes. But records set for hand-drilling on surface were one thing; in the sweaty confines of a mine with only a candle for light it was quite another. At one mine it took five years to sink a shaft 100 fathoms.

Cornwall was not very quick off the mark in developing the rock drill powered by compressed air but a number of notable mining personalities pioneered an interest: Warrington-Smythe, Clement Le Neve Foster, Gustavus Basset and Cap'n Teague. The earliest power drills were German and American but Cornishmen Darlington and Hosking were prominent. The latter achieved an inch a minute at Dolcoath in 1875 and a Burrow machine was used for shaft sinking at Tolgus. The best drill was Ullathorne & Co.'s "Champion". The early drills were extremely heavy and much of the energy saved from hand drilling was expended in humping the drills in and out of position. In the far west, Wheal Owles was the first mine to adopt power drills.

By the 1880's when the Holman sons took over control of the Camborne business, the company became well-established in the market and W.C. Stephens & Sons, later 'the Climax Rock Drill Company,' appeared on the scene.

At the end of the century the gold mines of South Africa became the best market for rock drills. In 1896 there were a thousand in use. At first there was an American monopoly and it seemed to take a long time for Holman and Climax to realise the potential in South Africa. Climax proved the better advertiser.

If Cornwall was not in the lead in exporting drills to the Union then it was in exporting its sons, especially in the 1895-1896 tin slump when the Friday night train to catch the Union Castle liner became an institution. Sadly, many of those men returned broken in health or were interred in Randfontein cemetery, where there were often three funerals a day. The drills enable skilled miners to earn big money. They could be sending £120 a month home to Cornwall but the dust from the drills entering their lungs could in the course of six months or a year ensure that they did not live to enjoy their earnings. In the dry South African mines the men looked as if they were covered in flour.

It was left to an American engineer called Laner to perfect the method of feeding water through the middle of the machine and the drill steel, a problem which Holman and Climax had failed to solve. The problem had not been alleviated in South Africa by the fact that where regulations for the use of water did exist, they were ignored by management and men in the pursuit of speed and high earnings. The safety of South African mines had not improved. It was recently reported that there were 800 deaths in a year, compared with 40 in the UK mining industry.

Clive concluded with a showing of a remarkable series of slides of South African mines which had surfaced in St. Just. JC

The port of Newlyn

"Send a gunboat" was a standard injunction in British foreign policy in the great days of Empire. If the natives became restless, a few well-directed shells soon brought them to their senses. But this policy did not apply to Europe, at least not usually. Newlyn was the exception. In May 1896 the Government sent not one but several gunboats, and over 300 Redcoats of the Royal Berkshire Regiment.

Rioting had broken out between Cornish fishermen and some from the East Coast who were based on Newlyn for the mackerel season. The alleged cause was a dispute over Sunday fishing, which was against port custom in Cornwall, Ireland and Scotland. Of themselves the riots were not of great significance, despite the energetic reaction of the authorities. But the trends which led up to them, together with what happened, or rather did not happen, afterwards are a much greater cause for study.

This was theme of John Corin's Newlyn lecture at the Queen's Hotel, Penzance, on 28 February—the Society's first meeting in the town—which drew an attendance of 40. Newlyn's position at the end of the peninsula gives it easy access to both the English and Bristol Channels. In the 19th century Newlyn fishermen operated all around Britain according to the various fishing seasons. But it was not until the through railway connection was established at Saltash in 1859 that Newlyn had proper access to other than a mainly local market. After the link came, fishermen from other parts of the country began to use Newlyn and the port's boats were improved in size, speed and design.

But if Newlyn had become an important fishing station it was not a fishing harbour. The only facility was the little quay of mediaeval origin, enclosing an area about half the size of Mousehole's present harbour. That is until the 1880s when Newlyn set out to build two new piers to enclose the present harbour area. When the project was completed in 1894, it was soon apparent that what was good for Newlyn men, was also good for the East Coast men. The competition in the mackerel season was the most

serious. The Cornish boats, individually or family owned, did not fish on Sundays, nor on Saturdays, because there was no Sunday market. The East Coast boats, larger and company owned, fished seven days a week if they could. A clash was inevitable.

But the protest was ill-conceived, ill-organised, ill-led and ineffective. And considerable influence had been exerted behind the scenes to ensure that Newlyn should have no martyrs. The East Coast men soon turned to yet more competitive steam drifters. Penzance Town Council and the Great Western Railway failed to take the opportunity to develop Penzance Harbour for landing fish direct to rail. Today Newlyn is the fourth fishing port in the British Isles in value of fish landed, a tribute indeed to the people of a century ago. But the clash of attitudes and methods between Cornish fishermen and those from other parts of Britain and Europe still persists.

Cornish engine speed record

For years it has been assumed that the highest speeds recorded as being attained by large engines were when St. Aubyn's 80 inch at Tregurtha Downs (now Robinson's 80, built by Sandys Vivian 1854) was worked up to a speed of 13 strokes a minute, and when Mellanear 76-inch (recylindered from 80 inches) was worked for long periods at 14 strokes.

However your editor recently came across a reference in *Mining Journal* (4 Dec 1875) to an even larger engine, an 85-inch, also having been worked at 14 strokes. This was at Great Frow Fownog (or Fawnog) lead mine near Mold, in Flintshire. I quote:

"Operations were commenced early in 1870, a new shaft being sunk about 120 yards to the south of the old shaft. At the same time a new engine-house was commenced, with a foundation of solid masonry and hydraulic lime. This work was entrusted to Mr. Hugh Hughes, of Mold, and the company have every reason to be perfectly satisfied with the way in which he has completed the work. Above the foundation the walls are 6 ft thick.

"The engine-house being built, the next proceeding was to erect the engine, which had been built by the Williams Perran Foundry Company, Cornwall, and which was of 500-horse power. The cylinder is 85 in diameter, with a 10-ft stroke at the cylinder, and 9 ft at the shaft. The steam is supplied from four immense boilers, which also supply the winding-engine, a very neat piece of machinery in an adjoining shed. A better impression of the magnitude of the engine will, perhaps, be conveyed by the statement that it, with the boilers and structures, swallowed half the capital of the company.

"In the meantime sinking was proceeded with, and it was not long before the engine was required. It was in 1872 that pumping was commenced, and has gone on unceasingly ever since. For months there was no seeming abatement of the water, and it is a proof of the great estimation in which the mine was held by the directors that under such adverse circumstances they increased the capital by 5000l on three separate occasions. Towards last spring the huge engine was going at the rate of 14 strokes a minute, and raising 80,000 gallons of water an hour. At the same time the bottom of the old shaft became dry, and the lead left by the old company came into sight. Still the capital became insufficient, and 3000l more was added to it.

"It was this last addition that made the concern a success. The new shaft is 170 yards deep, and they are through the grit and on the lime foundation, driving a level which is expected to cut into a new lode every day. At the old shaft the lode is a flat one, running from east to west, and of a first-class character, being 1 yard thick. It has already been proved to be 7 yards wide, and a level is being driven through it in a southerly direction, in order to prove its actual width. The manager is now erecting a winding engine at this shaft, also crushing and washing machines at the new shaft, where it is intended to bring all the ore for dressing. . . the shareholders are so well pleased with Capt. Wasley's management during the last six months that they voted him an increase of salary."

Some members may recognise the 85-inch engine concerned as the one that later moved to Gwernymynydd lead mine nearby and finally to Hawke's Shaft, Killifreth in 1914. She was cut up in 1944 but her house with its tall stack still survives.

No quarry visit

Saturday 7 July is in the Programme Card as a field trip, with a note 'See May Newsletter for details'. In fact there will NOT be a field trip on 7 July. After two attempts the Programme sub-committee failed to arrange a quarry field trip, for various reasons. We will try to do better next year! Instead members are recommended to accept the invitation from the East Cornwall Branch and join their 'Railways of Caradon' field trip, led by M. Messinger, on 14 July. Meet at Cheesewring Hotel, Minions, at 1.30pm. JC

Great Western Deep Coal's 85-inch engines—real and imaginary

Kenneth Brown writes:

I found Laurence Ince's article in Journal No 10 "The Stationary Steam Engines of the Neath Abbey Iron Company" quite fascinating, but I am afraid he has joined the ranks of those who quote the disposal of engines from Barton's book without consulting more recent research.

On page 51 he declares that in 1867 the Neath Abbey-built 85-inch engine from Poldice Mine was sold for £700 to the Great Western Deep Coal Company in the Forest of Dean. This seems very unlikely because the company only had one colliery in the Forest at the time, called New Bowson.

In his booklet "The Perran Foundry and Its Story", the late Mr Tregoning Hooper refers to an 85-inch double-acting pumping engine which was built at the Foundry in 1868-9 for New Bowson Colliery in the Forest of Dean. Drawings of this remarkable engine, which pumped from two shafts by having the bob extended beyond the piston end, may be found in the Society's collection at the County Record Office, Truro, reference DDX 232/82. The designers were Hocking & Loam.

New Bowson was a fairly small operation which struggled on for several years against increasing water problems by using baling skips attached to the horizontal winding engine. This is well documented under the heading 'Reports from the Forest of Dean' in *Mining Journal* prior to 1869 in which the writer makes pungent observations about the management's failure to put in a powerful pumping engine. This surely proves that they had not purchased the Poldice 85, or any other engine for that matter, though they may have considered it.

In *MJ* July 18, 1868, is reference to the fact that the company had acquired £40,000 in fresh capital and were sinking a "New Staple Shaft to receive pumps", which was down 60 yards. On 2 January 1869 we learn that "the enginehouse for the pumping engine is up and covered in" and on July 17 "The Great Western or Bowson Company are now getting on much better; they have their Cornish pumping engine in working condition . . ." Our member David Bick once showed me a snap of the enginehouse which was still standing in the 1930s. This clearly showed that in addition to the normal headgear over the shaft, there was another set of shears which passed right through the house behind the cylinder. No doubt these shears serviced Staple Shaft which was inside the enginehouse and served by the extension of the indoor end of the beam.

Anybody interested in unusual Cornish engines is recommended to refer to the drawings, which are dated March-August 1868. The outdoor part of the bob was dimensioned conventionally and gave a stroke of 10ft in the shaft. The piston stroke was also 10ft but because the pump rod to staple shaft was attached to the bob beyond the cylinder, the stroke in this shaft was 13ft! Thus the set up represented a mixture of Cornish and North-country practice; it being common in the colliery districts to employ an engine which drew water from the bottom to the mid-levels in the main shaft, and from there to the surface in a "staple" shaft. (The Hartley Colliery engine which caused that fearful disaster in 1862 by breaking one of its beams and causing the loss of 202 lives underground, worked on this principle, according to a drawing in the Northumberland Records Office—it was a two-beam engine.)

The New Bowson engine had four valves in the top nozzle and two in the bottom. The gearwork had four arbors. When starting, the driver would have had to guard against possible overstroking in both directions so there was provision on the two steam arbors for closing them prematurely, like the 90 and 100-inch engines at Kew. The engine had two 42-inch air pumps outdoors, one each side of the beam.

A recent inspection of the site in the company of our Chairman was very revealing. The base of the winding engine is still visible as is the brick setting for an egg-ended boiler. Since there is such a boiler up on stilts acting as a header tank for a factory not far away, it doesn't require much imagination to guess where this may have come from! The main pumping shaft is fenced, but not Staple Shaft which appears to be filled with masonry from the pumping engine house. Excavation would undoubtedly expose the foundations of the house, which must have been much longer than normal. The site is on Forestry Commission land and will probably soon disappear among young trees. It is about a mile NW of Cinderford, Grid ref. 644152 (OS 162).

I am always pleased to assist authors, where I can, in Cornish engines researches. The splendid enginehouse of the Lightmoor Colliery Neath Abbey 78-inch engine referred to by Mr Ince, incidentally, still stands: its roof has recently been removed.

In reply, Laurence Ince writes:

Kenneth Brown certainly demonstrates that an 85-inch pumping engine was supplied by Perran Foundry to the New

Bowson Colliery of the Great Western Deep Coal Company in 1868-9. He has written off Barton's reference to the sale of the Poldice Mine engine because from *Mining Journal* reports, the Great Western Deep Coal Company had only one colliery and was a fairly small operation.

Forest of Dean historians have led me to believe that this was not the case. The Great Western Deep Coal Company was formed in 1853 and certainly operated more than one colliery in the Forest of Dean. One of these was known successively as the Rose in Hand Colliery, the Great Western Colliery and Speech House Hill Colliery. A picture of this colliery is shown on the dust jacket of *The Old Industries of Dean*, by David Bick. The picture shows the colliery with a very large beam engine.

There is also a possibility of the company operating the Venus Colliery near Parkend. As late as 1873 the company were also trying to acquire the Royal Forester and Cannop Level Collieries. I am not sure about the working lives of these collieries, perhaps members with an interest in the Forest of Dean could help us here.

Kenneth Brown's reply:

The deeper one goes into the question of the disposal of the Poldice 85, the more puzzling it all becomes. David Bick, in his book mentioned above, says of New Bowson " . . . as a result of . . . adverse criticism in the *Mining Journal*, a secondhand engine was bought from Poldice copper mine in Cornwall. It had (been) recylindered (from 90 inch) to 85-inch in 1845, afterwards becoming the biggest ever erected in the Forest. Unfortunately the enginehouse cracked, it is reported, on the first stroke . . ."

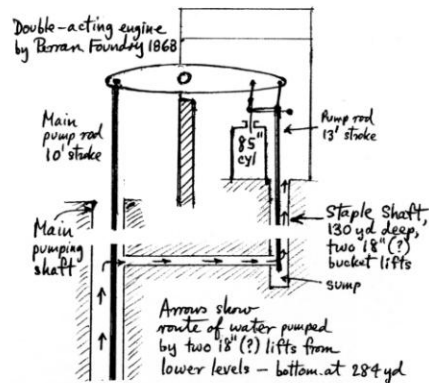
David Bick comments:

I have spoken to Alec Pope re the cracked enginehouse. This was vouched for by his grandfather and definitely refers to the Bowson Pit, not the one on the front cover of my book. According to Insole & Bunning, writing in 1881, the engine (85 inch) was still at Bowson then, though they say it had not worked for several years. So were there two 85-inch engines in Dean . . . ?

Kenneth Brown concludes:

The Insole & Bunning write-up referred to was a paper published in the *British Society of Mining Students Journal* Dec 1881 and Jan 1882, a copy of which Mr Bick has furnished me. It lists all the mine pumping plant in the Forest in 1881, whether working or not, and makes most interesting reading. The biggest was the New Bowson Cornish beam condensing engine which is given as 85-inch with 10 ft stroke in the pit with one 60 yard bucket lift and one 100 yard forcing lift. Two other pumps attached to the engine had a 13ft stroke (obviously in Staple Shaft) and were both 65-yard bucket lifts: four pumps in total but their size unspecified. This evidence is, in my view, incontrovertible: no other 85 is mentioned.

The only other large Cornish engines in the list were two 78-inch engines, both believed built by Neath Abbey, at Lightmoor and Castle Main pits. Rose-in-Hand colliery, the one with a large Cornish engine illustrated on the dust jacket of Mr Bick's book, is not mentioned under any of its alternative names. Moreover the dust jacket photograph, which dates from 1887,



Sketch showing pumping arrangements at New Bowson

clearly shows the last stages of erection of an engine in a new house: much later than the period in question.

If, as Mr Ince says, the Great Western Deep Coal Company owned more than one pit in the Forest, then why do none of the *Mining Journal* reports of 1867-8 condemning the company's mismanagement of New Bowson mention them? The *Insol* and *Bunning* list does not mention the ex-Poldice 85 either, which suggests that if the company did have other pits, they were outside the area. There was, of course, the Great Western Colliery company which owned pits in the Rhondda Valley in South Wales, it is possible that the Poldice 85 went there. Perhaps Welsh Trevithick members could shed some light on this.

Finally, I include a postscript quoting the same Forest of Dean correspondent, which appeared in *Mining Journal* on 2 April 1870, after the double-acting New Bowson 85-inch had started. His vitriolic attitude to the company had in no way subsided:

"Report from the Forest of Dean March 30 . . . The Bowson Colliery is considered . . . to be a partial failure . . . depth of their shafts is about 284 yd. . . porous strata from which the water filled the shafts . . . The company decided to erect an engine and pumps . . . too small for the purpose . . . although their manager asserted that they had the 'largest engine in the Forest' . . . they could not keep it out, the engine going about 8 strokes (i.e. a little over 1000 gallons) per minute.

" . . . We were always of the opinion that pumps at least from 27 to 30 inches should have been put down. The company . . . should have been prepared with machinery capable of drawing as much water as was originally pumped from Mr Crawshaw's Haywood pit, the New Bridge Engine pit, East Slade pit, and the water due to the measures in the intervening area. This would doubtless have given a pump much larger than 18 inches. We do not consider that the machinery erected at the Bowson is anything enormous for its size (sic!). The Lightmoor Cornish engine is a much finer specimen, and quite as large, if not larger, . . . not even more than 2 miles down the valley, a much smaller engine is set to work at an iron mine, working 27in pumps, and accordingly pumping quite 200 gallons of water per minute. It is thoroughly astounding how men can go about such an undertaking as the Bowson Colliery with their eyes shut."

Proof, surely, that there was only the one engine at New Bowson. (The iron mine (Fairplay) had a 72-inch Bull by Neath Abbey.)

Correspondence

Dear Editor,

The Firefly project

Unfortunately there was a line missing from my letter about the Fire Fly, probably as the result of a printer's error, and the point that I particularly wished to make was lost.

It is that early railway locomotives were designed around a boiler diameter which was generally about four feet, and even when Broad Gauge locomotives were built, the boiler diameter was not increased, as might be expected, with the larger gauge. It was therefore possible to adapt a given boiler and motion arrangement to suit any gauge, and there were quite a number of gauges in use during the 1840s.

The North Star, for example, was a variation of Stephenson's Patentee locomotive, was designed for the New Orleans Railway at 5ft 6in gauge, and adapted whilst building to the 7ft 0¼ gauge. Similarly, the Great Western 69 Class of Locomotive was a variation of the Fire Fly design, built for the 4ft 8½in gauge of the Shrewsbury line, and it had interchangeability of parts with the Fire Fly class, independent of the gauge.

There is therefore historical precedent for the proposal to vary the gauge.

Yours sincerely
John Mosse

"Applethatch", Foxcote, near Radstock, Bath BA3 5YD

★ ★ ★ ★ ★

Dear Editor,

Cornish engine sizes

Regarding your division of engine sizes (see page 6 of last newsletter) I feel 86 inches is too high a limit for medium. Perhaps a better way is to stick to what Roy Simmonds quotes but to add an extra large category. Then we get:

- small — up to 40 in
- medium — 40-60 in
- large — 60-100 in
- extra large— over 100 in

This would put the Crofton engines with their 42 inch cylinders into the medium class.

Yours sincerely
David Bick

Pound House, Newent, Glos GL18 1PS

Book reviews

Old Reliable—an illustrated history of the Quincy Mining Company, by Dr Larry Lankton and Dr Charles Hyde, The Quincy Mine Hoist Association, Box 265, Hancock, Michigan 49930, USA. \$27.50 (post paid).

The history of a famous mine or group of mines is a popular subject for book publishers these days, so it makes a refreshing change to see what a US-produced version is like. Apart from the inconvenience of a 'landscape' format, there is little to criticise—the text, though repetitive, is also informative and the copious illustrations, both drawings and photographs, lavishly produced. There are extensive and very detailed annotations. In short, the hardback book's 160 glossy pages provide good value.

The Quincy Mine was the most famous of a run of copper mines which became established in the mid-19th century along the Keweenaw Peninsula on the southern shore of Lake Superior. For a continuous period from 1867 to 1920 it produced uninterrupted dividends for its shareholders, hence the nickname "Old Reliable".

The name stuck throughout violent ups and downs in the mine's fortunes between 1920 and 1945 when underground mining appears to have ceased. The smelter, however, continued to make a living from dredged material and waste tips until 1967.

How much is now left on site apart from a preserved steam winding engine is unclear. But it is pertinent to note that the book might never have been written had it not been for a recording project undertaken in 1978 by HAER (Historic American Engineering Record, National Park Service, US Department of the Interior). The co-authors headed a field team of six historians and five architects, and they succeeded in producing reports, drawings and photographs on which the book has drawn heavily.

Some of the mine's features look strange to British eyes—others are familiar. Instead of the headframes over the shafts being open, they were boxed in by a series of wooden sheds built on top of one other in cascade form. Inside were housed the crushers through which rock drawn up by the skips gravitated automatically. Unfortunately the mine's last shaft rockhouse, as they were called, burnt down in 1959.

Cornish readers will feel at home with the description of the double rod man-engine installed in 1866—the third in the district—and with the names of some of the personalities. Other sections will grate. The preserved Nordberg twin opposed diagonal compound winding engine preserved on the site, for example, is described as the world's largest mine hoist though, having some experience in these matters, the reviewer questions the grounds for such a claim.

KB

★ ★ ★ ★ ★

Handlist No 5, 1983: Turnpikes canals and ferries, Cornwall Record Office, County Hall, Truro TR1 3AY. £1.80 (incl. p&p).

This publication lists the records of Cornish Turnpike Trusts which are held by CRO, also records of canals and ferries in Cornwall with the relevant document numbers. It will be indispensable to people researching these subjects. A few Xerox copies of documents held are also included by way of illustration.

New Vice Chairman appointed

Mr L.J. ("Joff") Bullen has resigned from Council due to other commitments. His service extends back to the time of the Cornish Engines Preservation Society. Council wishes to record its grateful thanks for the work he has done over many years.

At the Council Meeting on 14 April, Mr Dennis Jenkin, a former Hon. Secretary, was elected as the new Vice Chairman.

RJL

Help!

Register sheets for seven parishes have recently been issued. Would members please contact the Hon Secretary if they wish to participate in the up-dating of the Register for their Parish? This is important work; if we wish to preserve the best of our industrial heritage then we must have an up-to-date register of all the sites throughout the County. If this is not done during the next eighteen months then it will be inevitable that yet more significant relics will be destroyed. Act NOW.

Any member (or member's wife, daughter or secretary) having access to an electric typewriter and who would be willing to help produce "camera ready" typescript for the occasional adjunct to the Newsletter, is asked to contact Bill Newby or the Newsletter Editor.

Two variations on a Bull engine theme



Bull Cornish enginehouses on mining sites are exceedingly rare. The cylinder was suspended over one side of the shaft, with the enginehouse curtailed to prevent total obstruction of the shaft for hoisting pitwork etc. Above: The complete house of a 48-in Bull erected 1861 at North Rhine copper mine, S. Australia in 1861. This rear view shows remains of the timber auxiliary-cum-balance beam, which was beneath the cylinder, lying half in the house. Above right: Front view of Harvey-built 45-in Bull enginehouse at Farler's Pit, Nailsea, Somerset. It worked 1848-61 and the cylinder stood half in and half out of the open-fronted house. The auxiliary beam was overhead.



Your Council Members

As part of a policy to encourage dialogue between ordinary and Council members of the Society, it is planned to publish biographical notes about each member of Council in the Newsletter. Your Hon Secretary and Newsletter Editor have started:

Bill Newby: A native of South Westmorland (Cumbria). Became interested in industrial archaeology in the late 1940s after a dissertation on water power led to a wider investigation of mines and mining in the Lake District. Currently interested in local history and early population and occupation trends as well as recording the industrial remains of the Parish. A member, and one-time Hon Treasurer, of the North-West Society for Industrial Archaeology and History, and founding secretary of the Edge Hill Railway Trust. A lecturer in Educational Technology at the City of Liverpool College of Higher Education, took early retirement in 1979 and moved to Cornwall. Married with a grown-up family. Other interests, the National Trust, gardening, photography.

Kenneth Brown: Became interested in railways when a schoolboy at Exeter and Bruton (Somerset). Spent two years as engineering student at Dolcoath Technical School (now Cornwall Technical College) in mid-1940's. Developed lifelong interest in Cornish mining and engineering. After service with Royal Engineers, was employed in mechanical design office on power station boiler plants. Transferred to journalism with *Engineering* in 1961. Broadened interest in steam engines, civil and structural engineering and industrial archaeology. Currently Editor with Construction News' family of publications with International Thomson Publishing. Steam experience includes ownership of 1921 Averling & Porter steamroller (since 1968); eight years as steam driver/instructor on preserved narrow-gauge railway; since 1975 editor and senior engine driver with Kew Bridge Engines Trust. Other interests include travel, photography and wildlife. Co-author of *The Pictorial History of Steam Power* (Octopus 1980).

Early days at Tolgus Tin

One of the favourite walks of the late Dr A.K. Hamilton Jenkin was down the two valleys crossed by the new bypass to Tolgus Tin and beyond. Among his papers were some notes on a walk made in 1969 and talks with people at Tolgus Tin during 1969-71. His notes slightly abridged, provide an insight into the little-publicised tin side of the enterprise.

12th April 1969 "From Sparnon Gate walked down to the Western valley by the old (Portreath) road, passing the burrows of Great North Tolgus on the right. Managed to walk the length of the valley down to Laity farm where I crossed a river on a conveniently fallen tree.

"Close to Laity on the right or eastern bank found a good wide wheel . . . near site of stream works as shown on the 1880 Edition of the O.S. map.

"In conversation with Lionel Phillips, son of the farmer of Laity, he told me that the wheel had been brought there by two men who talked of working the tin slimes there. He said the spot in question was known locally either as Withy Grove or 'Uncle Sam's Gold Mine.'

"An old dry leat may be seen adjoining which drove the wheel of one of the two Laity Mills. The other leat is still flowing; they keep it clear from its course at the tail of an adit adjoining the new Portreath Road. It no longer serves the other mill, but they use the water for washing the yard. He said the Rayle Mill was still intact with wheel and everything complete until a short time ago.

"There is still a little wheel near the river which pumped water to Rayle. This wheel is no longer used. A few years ago in a field on the high ground to south of Laity they ploughed into the sollar of an adit shaft, about 60 feet deep into the water. The burrow of another shaft to the west was presumably sunk on the same adit. This burrow I had noticed when walking down the valley."

6 October 1969 "Had an hour's talk with Mr Welch at Tolgus Tin streams. His partners being Messrs. Kinch and Venables. They are getting a concentrate of from 30% to 50%. Can concentrate to 60% to 70%. Have reserves of tin stuff 'enough to last a lifetime (!)' But seeking other areas for sampling. Transport would be costly. I suggested valley under Peavor. More than breaking even on tin recovery.

"About 8,000 visitors (at Tolgus Tin) between 1 July and 30 September 1969. Welch himself is selling his farm in order to devote full time at Tolgus. Proposes ploughing back profits. Seeking planning permission for a restaurant to serve buffet

meals. Even wants to smelt tin by the 'old methods', presumably meaning a blowing house!"

6 Feb 1970 "Met Welch and his partner Kinch on Gwithian Beach. They are now getting beach sand from under cliff between Wheal Emily and Peter's Point. This is in Duchy rights. The sand, after once putting over a shaking table gives a concentrate of 30% to 36% (crop). This they are selling to Capper Pass. "Welch confirmed that one of the two great arsenic stacks at Tolvadden now belongs to Tolgus Tin (the other to Tehidy Minerals). Welch is confident that neither will be affected by the by pass.

8 October 1970 "Talked with Mr Penna, until recently working at South Crofty but now decided to emigrate to Australia in three weeks' time. For two winters, before going to S Crofty, he worked the tin sand coming in on Porthowan beach, and on Gwithian beach; said that the sand was black but richest if it showed brown, the latter, of course, being free tin. He used a dumb buddle, dug out of the stiffish (clay) of the old river bed, taking off a small stream of water from the river. He had a Land-rover and I gather would skim off the tin which lay just at about high-water mark, and carry same to buddle. He sold to Capper Pass.

"When I told him Portherras streamers cleaned 60 lb tin to the ton (approx. 3%) he thought Porthowan was quite as good as that. (Nonsense I think. AKHJ). He obtained leave to remove the stuff from the Duchy . . . Also got planning permission on condition of no erection of permanent plant. Said that the tin sand was best after a good storm or two. He thought Tolgus would do well if they could do some primary dressing on the beach.

"J.C. Bendle told me tin sand at Amey's side, Portreath, under the most favourable conditions, runs as high as 8%, and occurs to a depth of 4ft when found right under the cliff."

15 October 1970 "Telfer Mitchell told me today that Tolgus Tin is pulling tin sand from Gwithian going 1 1/2%."

7 December 1970 "Tin streams directly under S Crofty. Hydraulic Tin ex. Stewarts: Feed from Crofty Mill concentrated up to about 4% by round-framing four times. Then fed on to two Mosely vanners. These are controlled by 'cyclones'. The vanners resemble Frue vanners, the chief difference being that they shake from side to side. Appear also to be driven rather faster than the conventional Frue vanner and are shorter than the latter (too short in the opinion of the foreman). The vanners concentrate to about 16%, and at this percentage is sold without further treatment (as I understand) to Capper Pass.

"Tolvaddon streams, using Red River water only, producing 5 tons of 12 per cent concentrate per 4 months, so the youth in charge told me. Only two employed. Entirely round frames."

5 August 1971 "Lawler told me they (Tolgus Tin) are now getting a concentrate of from 18% to 22%. Welch told me (same day) that with an output of 16 tons a month this would produce a sales revenue of £10,000 a year. They have an option on Capper Pass sand for 14 years. Lawler said that at the moment they have no means of drying their concentrate which contains about 12% moisture as sold. I understand that about 12 men are employed. Lawler further told me that the beach sand averages only 1/2% tin (metal).

"Under their contract with Capper Pass they receive £100 less than the lowest price quoted on the London Metal Exchange on the day of delivery, with a further deduction of £56 per ton of concentrate for returning charges (which he calls treatment charges). There is also a penalty on a sliding scale in respect of arsenic present in the concentrate. Total number of visitors in 1970 was 30,000."

1 June to 7 August "During this period in 1970 the number of paying visitors was 12,000 and the takings £2,200. During the same period in 1971 the number of paying visitors was 18,500 and the takings £6,700. About 6 or 7 staff employed in the visitor department in 1971. (These figures are entirely separate from those of Tin side of the business)."

(no date) "Tolgus Tin Streams. 10% concentrate (Cyril Stewart). Tolvadden reserves should last 25 years. Plenty of stuff for stamping around the Tolvadden calciners. In 1969 Tolgus made a small profit, £1,000 (Venables). In 3rd week of August 1970, 1,149 visitors in one day, 900 visitors following day. During the summer of 1970 over 27,000 visited the Tolgus Stream (exclusive of school parties). This is confirmed per Mr Welch. In the season of 1971 some 32,000 paid to go round the works."

Cornish Industry in 1877

Extracted from *The Royal Cornwall Gazette* for 1877 by Paul Stephens.

This continues the series under the heading 'Cornish industry 100 years ago', the previous instalment of which appeared in Newsletter No. 21 (May 1978).

5 Jan Scawwater Sawmills & Turnery Works — Report of death of Managing Partner (Mr T.P. Bullen) with announcement that the business would be carried on by his son Mr John R. Bullen "who has considerable experience with his late father".

Report on mining in Cornwall in 1876—Wheal Eliza Consols and West Poldice had given dividends for the first time as public companies in 1876, whilst Wheal Jane, Wheal Prussia, Penstruthal, Penhalls and Balmynhere ceased to pay dividends.

Suggestion for the formation of a *Miners' Permanent Club and Relief Society* for Cornwall and Devon.

12 Jan Announcement of sale as result of the action of St Day Firebrick & China Clay Co Ltd-v-Corfield, West Roskear Mine. Including rotary engine of 24" cylinder, 6' stroke with flywheel and boiler of 11 tons, steam capstan (not erected), balance bob, 66 fm ladders, 22 fm railroad, tram wagons, wire rope, 2 kibbles, 5' diameter waterwheel, etc.

Launch at Devoran at the shipbuilding yard of Mr Hugh Stephens a fine schooner of 260 tons burden named **Mary and Julia**. Length of keel 90'; depth of hull 12'6"; beam 23'4"; Class A1, 10 years at Lloyds. Mr T. Woolcock of Devoran was part owner. To be commanded by Captain Thomas Kemp of Point, principal owner. Intended for the home and foreign trade.

Report of failure of the **Helston Banking Company**. Mr Edwards—one of the shareholders—stated that he came before the meeting "with trembling hand, quivering lip, and heartfelt sorrow and sadness, to lay before them a statement of the financial position of the unhappy Helston Banking Company, of which he had been victimised as sleeping partner, for he had never taken any part in the management of the Bank."

The total amount due to traders, depositors, London bankers, and holders of notes was £41,259. Mr Edwards was "sorry indeed to be forced to announce that the late cashier, Mr James Ellis, a man who had stood in their estimation upon a pinnacle of rectitude, had a deficit in his cash account amounting to no less than £9,219."

West Chiverton — Report of a dividend of 10s per share. New dressing plant had cost £3,300. A profit of £1,976 was shown on four months working.

19 Jan New Consols Silver & Arsenic Works — A report by Mr Clement Latterthwaite reported that on 11 months of working by treating 1,500 tons of the lode stuff per month, 28 tons of precipitate copper had been produced at £50 per ton (£1,400); 15% of arsenic equivalent to 225 tons at £8 per ton (£1,800); £5 of tin to the ton of stuff would yield £40 = £200; making a total of £3,400. After deducting the cost of workings, a net profit of £900 per month was expected. "It may be said such figures appear very well on paper, and we have seen such statistics scores of times; but never knew them to have been borne out in actual experience; and if they are genuine here, why ask for additional capital to carry on the works?"

Penstruthal — 14 tributers were working on copper, 10 of them at low tributers, and it was hoped to sell about 56 tons for the month.

Old Treburgetts — The water had increased greatly and the engine was going double her usual rate.

Wheal Jane — "Captain Southey has brought his practical mind to work here, and has already effected wonderful results by the energetic and intelligent application of economical principles. We are much mistaken if there is not an agreeable surprise in store for the shareholders here at the next meeting."

26 Jan Report of **Clayworkers' Lockout** and its end after 9 weeks' duration. "The employers . . . began systematically . . . to 'scotch' the serpent Union whilst it was still

Cornish Industry in 1877 (cont.)

26 Jan cont: young and weak. Members of the Union were to be weeded out from the Works as fast as their places could be supplied with other men . . . We cannot dismiss this subject without once more expressing our admiration of the remarkably good conduct of the men throughout this painful contest. Whatever privations and sufferings they may have had to undergo they have borne them manfully, conducting themselves in a peaceable and orderly manner, which is highly creditable to them, and is indeed, creditable to our County."

West Godolphin — 20 tons of tin being sent away monthly, flooding had been kept down by driving the engine 10 strokes a minute. Application had been made for the Western ground, at Trescow Moor, owned by the West Great Work adventurers.

Dolcoath — The proposition of Mr Rule about smelting their own tin was being talked over and discussed freely.

Wheal Peevor — A call of 7/6d per share was made, a loss of £512 being shown on 4 months working. At the death of Captain Charles Carkeek of Camborne, Captain Abraham James was appointed manager. He displeased merchants by refusing to take into the mine goods which he never ordered or were of inferior quality.

Wheal Basset — A call of £2 per share was made after accounts showed a loss of £1,337 on three months working.

Wheal Grenville — "The mine is being drained by the defective engine and pitwork satisfactorily and most of the men have resumed work . . . the mine cannot give permanent dividends unless additional or more powerful machinery is erected, and the floors, about the size of a kitchen garden, enlarged, but . . . Captain Hodge has often recommended more machinery."

2 Feb For Sale — The lease of **Burra Burra Mine**, Kenwyn, together with plant and machinery, including a 45" cylinder pumping engine.

Wheal Grenville — Invitation for tenders for the supply of an 80" pumping engine for delivery at the north (Goold's) shaft.

South Condurrow — Four months working showed a profit of £1,554 and a dividend of 4s was declared — leaving £740 in hand. 171 tons of tin had been raised and had been sold for £7,796. The mine was again in fork and tributers were "earning very fair wages".

Great Wheal Vor — All parties had been discharged save one pare who were driving the 100 cross cut a few fm south to ascertain if any lode is still in that direction.

West Seton — Four months working showed a profit of £63, thus reducing the debit balance to £4,411. Mr Rule had stood by the mine when others were deserting it and prevented the mine from being abandoned. His co-adventurers honoured him by calling the new engine Rule's Engine.

9 Feb Medlyn Moor — "is the future mine of Wendron, judging from appearances, as between two and three tons of tin are being sold monthly, from stuff which 30 men on tutwork break in the driving of five ends; and when a communication is effected between the 17 and the 27 fm levels — the deepest point of the mine — increased returns will be shown . . . surface drainage was well attended to so that no water during the late disastrous and unprecedented floods found its way to the mine."

Balmyneath — Under Captain Burgan's management a dividend of 2s per 1/15,000th share was declared in November 1875. The mine had been worked for years successfully by the Messrs Fox of Falmouth as a private concern.

A splendid side or quarter lode had been discovered at **Goole Pellas**, late Rosewall Hill. Mr Brown of Buckfastleigh was working the mine on his own responsibility, and a new engine was to be erected at once.

Wheal Alice Mine — The sale had been postponed. The engine house had been built and completed, but the mine abandoned before the engine was brought on the ground.

Wheal Jane — The shares were said to be largely held in Truro. Captain Southey had taken over from Captain Giles. A profit on the four months working was reported of £488. 63 tons of tin had been sold which realised £2,748. The tributers had been increased from 6 to 11 pares, and an extra plunger pole had enabled the mine to work an additional number of heads of stamps working day and night. Captain Southey reported that he did not propose to use the dingey pulveriser . . .

New Chiverton — Proposal to increase the capital from £18,000 to £36,000 by the issue of 3,000 new £6 shares.

16 Feb Sale as a result of the Chancery Division case under the title of *Johns-v-Browne* of **The Bell Inn** at Meneage Street, Helston, together with the stables and piggeries in the yard behind as were then in the occupation of Mr Henry Guest, and also the brewery and stables in the yard aforesaid . . .

Prospectus for the **Prince Royal Mining Co Ltd** which was formed to acquire and work the Prince Royal tin, copper and lead mine in the parish of St Agnes. The sett was three-quarters of a mile in length and a mile in width and was traversed by 5 known and well defined lodes of tin and 3 of copper. . . Two other important lodes running north and south had recently been discovered — a copper lode and a very promising silver lead lode. The company was to acquire the mine (including plant and loose stock) for £6,000. The capital was to be £20,000 in 10,000 shares of £2 each. . .

Levant — Four months working showed a profit of £165, as a result of a sale of 91 tons of tin and 114 tons of copper ore.

Breathless tales

In his lecture on the Thomas family of Camborne, Professor Charles Thomas told the story of C.V. Thomas, who was walking back into Camborne one day from the back of Carn Brea. He was overtaken by one 'Scat' Thomas (no relation) driving a pony and trap, who gave him a lift. Searching for conversation Scat volunteered, "Here we are two sinners foaching along on a fine day". Observing that this comment was coldly received, he floundered on, "Well, I suppose we must be sinners if we are called Thomas". C.V. fixed him with his eye, "Any more of that sort of talk and you can get down and walk!"

Two Cousin Jacks were stoping in an American mine when the staging under them gave way. One fell immediately to the ground, the other hung on grimly to the drill. Eventually he had to let go and hit the bottom. "Damme", said his pardner, "I knaw' he was some slaw, but I ded n think it would take 'e five minots to fall twenty five feet!"

"Think of the invention that rounded out the Industrial Revolution as the canals had begun it: the railways. They were made possibly by Richard Trevithick, who was a Cornish blacksmith and a wrestler and a strong man. He turned the steam engine into a mobile power pack by changing Watt's beam engine into a high pressure engine. It was a life-giving act, which opened a blood-stream of communication for the world, and made England the heart of it."

The Ascent of Man—J. Bronowski

Cyril Noall

Members will be saddened to hear of the death of Cyril Noall of St Ives which occurred at the end of April. Mr Noall will be best remembered for his books on the mines of the Land's End Peninsula the latest of which, *Geevor*, we reviewed in the Society's November 1983 newsletter.

New date for Carn Galver

The additional field visit to Carn Galver on 31 March was rained off. A second attempt will be made to explore this interesting area on Saturday 23 June: 2.0 pm at Carn Galver on the B3306 Morvah-Zennor road. Grid SW 421364. (Further details: Bill Newby, Tel Penzance 740337).