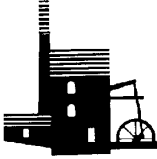


THE TREVITHICK SOCIETY



Trevor Thompson, a member from Bristol, shines the copper funnel, which encloses the safety valve on the Camborne road locomotive. Photograph taken by Phil Hosken at the bicentennial celebrations in Merthyr Tydfil.

CHAIRMAN'S ADDRESS

It was in 1991 that this Society joined Cornish local government bodies to support the formation of an organisation 'to conserve, selectively restore and display to present and future generations one of the most important historic mining landscapes in the world, creating long-term investment and employment in the area'. That became known as the Trevithick Trust.

The trust has now run its course and lost the support of Kerrier District Council. It will close before the end of this year. During its lifetime, its driving forces were its Chief Executive, Stuart Smith and its President, Bill Newby. Both gentlemen have been decorated for their lifetimes' contribution to industrial archaeology.

From an impressive portfolio of managed visitor attractions the trust's responsibilities have dwindled to Cornish Engines at Pool, the Tolgus alluvial tin works at Redruth and the King Edward Mine complex near Camborne. These sites and their contents form a significant part of Cornwall's industrial heritage story.

This Society, along with other responsible bodies, is well aware that the loss of the trust comes at a crucial time when Cornwall is bidding for World Heritage Status for its former mining areas. It is also the loss of a link between many of Cornwall's foremost industrial attractions. Along with Cornwall County Council, Kerrier District Council, the Carn Brea Mining Society and other bodies, this Society is holding meetings to resolve the situation.

It is too early to even outline what maybe the outcome of all these talks but this Society is taking an active role and is anxious to ensure that no opportunity is lost to build Cornwall's economic recovery on the pillars of its past achievements.

P.M.Hosken

EDITORIAL

Next year will be the 70th anniversary of the Trevithick Society and Council are hoping to focus the AGM weekend on Levant Mine because the acquisition of the Levant Whim was the first major venture for the Society (then known as the Cornish Engines and Preservation Society). To help celebrate the 70th anniversary we hope to put together a major display of our work at the St. Agnes Steam Engine Rally in August 2005. The 2005 rally will be something special because it is also the 50th anniversary of the West of England Traction Engine Society and they are extending the rally to five days. In the past both Societies have worked closely together, most recently with the building of the Camborne Road Locomotive.

I would like to take this opportunity to welcome Vernon Baldry back onto the Council. He brings with him a wealth of experience and much enthusiasm for the work of the Society.

The Members Evening in July deserves a mention. Not only were members entertained by an excellent talk by Bill Newby and a fascinating video presentation by Paul Smith, but it was the first opportunity to try out the new lecture facilities. The lecture theatre is certainly very modern, hi-tech and comfortable; so modern in fact, that it does not have a slide projector - lecturers evidently do not use slides anymore. So projecting Paul Smith's video was a doddle, once someone found out which buttons to press, whereas Bill Newby's slides meant rigging up Kingsley Rickard's steam age projector. Needless to say, with a room full of engineers, all technical problems were overcome and all present enjoyed a lovely evening.

Copy date for next issue is November 12th, 2004

Colin French

LETTERS TO THE EDITOR

Dear Editor,

HELP!

Mining research in the second half of the 20th century is greatly assisted by the annual reviews of the Cornish Mining Development Association, which give information of what individually named companies were doing.

Unfortunately I cannot find copies of the editions from 1949 to 1964. Does anyone know where these early editions can be found? Redruth Cornish Studies Library would also appreciate copies (photocopies) of these issues, and the Courtney Library, above Truro Museum, would like the same, up to 1968.

Were you on the mailing list? Does your company have editions filed away in dusty corners?

Geoff Purcell,
102 Chirgwin Road,
Truro. TR1 1TT

Dear Editor,

In the January Newsletter Roger Langley enquired of some old films. The first "Cornish Valley" set in the Coombe Valley on the borders of Kilkhampton and Morwenstow, has recently been rediscovered and has been converted to video for TV. A copy may be acquired from Barry Rose, Stow Barton, Kilkhampton, Bude, EX23 (Tel. 01288 331233).

R.M. Heard,
4 The Squares,
Kilkhampton.

Dear Editor,

The Construction History Society

For Trevithick Society members who may be unaware of the above Society but are interested in the subject we give their details.

The Society seeks to bring together people from a wide range of professional

and academic disciplines who are all enthusiastic about construction history. Benefits include:- a copy of the Society's journal "Construction History", a quarterly newsletter, participation in site visits, seminars, lectures etc. Annual fee is £18, renewable in January.

Address for correspondence - The Construction History Society, c/o Library & Information Services Manager, The Chartered Institute of Building, Englemere, Kings Ride, Ascot, Berks. SL5 7TB
Tel.01344 630741. E-mail - michael.tutton@virgin.net

Dear Editor,

I have just seen the letter in Trevithick Society Newsletter 124 regarding Jack Trounson and his motor-cycles.

Just as his bicycle appears in some of his early photographs, so his motor-cycles also crop up occasionally. In "Historic Cornish Mining Scenes at Surface" [Barton, Truro 1968] his machine appears twice. On page 27 is a quite well known view taken at Taylor's Shaft, East Pool, probably on VE Day, while on Page 33 the same motor-cycle appears in a scene showing a traction engine hauling pitwork from New Cooks Shaft, South Crofty in early 1951. I am not expert enough to identify the make but it bears the registration CV 8842 and is instantly recognisable by the large wooden box over the rear wheel.

The East Pool view also can be found on Page 116 of "Mining in Cornwall Volume 1" by J H Trounson & L J Bullen, [Tempus, Stroud 1999] while in Volume 5 of the same series, a much older motor-cycle, a James V twin photographed at Wheal Friendly in the 1920's, is shown on Page 85.

I am sure there are others.

Graham Thorne

11, Heriot Way,
Great Totham,
MALDON,
Essex. CM9 8BW
thornes@totham22.freemove.co.uk

The Society's expertise is obviously spreading. We have recently received an e-mail from "Power International" in Azerbaijan:-

"Please we need a spare part of Air

FAME AT LAST!

Compressor Holman. 2 No's of pressure relief valve for air compressor Holman 750170S:#K1311 MO1341 EN. It's very urgent"

Needless to say we have passed on the order.

In recent years the Society has increased the public's appreciation of Richard Trevithick's inventive genius.

This work has been seen as a necessary part of the Society's activities. Being

RAILFEST 2004

named after the great inventor, the Society members have inevitably been besieged with enquiries in recent years. Also, Trevithick contributed to Cornwall's industrial archaeology and the progress of the world's Industrial Revolution. While those involved with this work appreciate that we are not the 'Richard Trevithick' Society it does have responsibilities to Capt'n Dick and Cornwall's industrial history to spread the true story of the first successful high-pressure steam engines.

This work began with the Society's foresight to build a replica of Trevithick's first, and arguably most important, steam locomotive.

When the Camborne road locomotive first appeared in 2001 it was of considerable, if not controversial, interest in Cornwall and attracted nervous curiosity elsewhere.

The locomotive was clearly an enigma. For so long the Cornish public appreciation of Trevithick was for a local man who had invented the railway locomotive but had never received his due acknowledgement.

The 'Camborne Hill' song did not fit well with local appreciation of the facts, as trains did not go up hills! However, that was widely dismissed as a part of the untold, complicated story of Trevithick. Many thought the story would inevitably be made public and everything would then become clear. That is where the Society has made its impact for the true history of steam transport.

The railway enthusiasts have almost entirely dominated the steam propulsion story. The steamboat brigade has done its bit but steam is not immediately associated in people's minds with the mass transport of people by water. Apart from the significant part played in the history of transport by the s.s. Great Britain and the devotees who tend the p.s. Waverley there is probably no preservation Society dedicated to an ocean liner.

So strong is the railway preservation movement and so weak is attention to the first motorcars that there was the likelihood that Trevithick would have been commemorated solely as the father of the locomotive. Without the Society's intervention in Cornwall, York, Merthyr and elsewhere, his road transport achievements could have remained in the history books.

In the minds of most people, self-propelled transport started with the Rocket built by George Stephenson. So well has this story been repeatedly told that a major shift in public appreciation was needed to assert Trevithick's rightful place in history. One bemused lady asked for help, "My husband is ill and he's asked me to take a photograph of Trevithick's Rocket. Can you tell me where it is?"

Without the Society's construction and display of the 1801 replica Camborne locomotive it is likely that attention to Trevithick's achievements would have commenced with the Penydarren locomotive.

There was one other proponent for Trevithick's achievements in road transport. That was Tom Brogden, who painstakingly built a fine replica of Trevithick's 1803 London Road Carriage.

The significance of this vehicle has been difficult to communicate to the public. With a capacity for up to eight passengers plus its driver and chauffeur it is not easily pigeonholed as a motorcar or a 'bus. It plied for hire in London but is not mentioned by the London Transport Museum as the first London 'bus. That honour goes to a horse-drawn vehicle some years later.

The 1803 Trevithick carriage was certainly the first self-propelled vehicle to run in the capital, something that might be

of interest to its present mayor.

The bicentenary of the London Road Carriage passed off quietly last year on a sunny Sunday afternoon watched by a small band of its followers, representatives of this Society and members of the London Cornish Association. There should have been more people there.

It was a very different story at the National Railway Museum, York for RailFest 2004. Over 70,000 people passed through the gates to celebrate the 2004th anniversary of self-propelled rail travel.

This was the museum's greatest event ever and in recent months volunteers and contractors had brought derelict land back into use, laid paths and railways, erected fences and signs and swept old sheds clean.

This was to be a tribute to Richard Trevithick's inventive genius and the centenary of the claim by the *City of Truro* to be the first locomotive to travel at 100 mph. Then a consortium led by Sir Richard Branson bought the former LNER *Flying Scotsman* for the nation and it was to be stationed at York. Immediately the attention of railwaymen and women was diverted from the unknown Trevithick to the famous *Flying Scotsman*. The story of the earliest railway looked like being returned to the history books.

However, the day before RailFest, the *Flying Scotsman* broke down. Apart from the reverential queue to stand on the hallowed footplate of the famous locomotive, attention returned to the true purpose of the festivities, the celebration of Trevithick's 1804 Penydarren railway journey.

The replica of the Penydarren locomotive, owned by the Museum of Wales, had been fitted with flanges on its plain wheels in order to run on a length of present day track. While there were daily dramatisations of the life of Trevithick, there was no provision for information about the important nine-and-a-half-mile journey from Penydarren to Abercynon. There was also no mention of Trevithick's venture into the world of road transport before the railway.

There was clearly a job here for the Society!

The Camborne locomotive went to York

on Jamie Allen's truck from God's Little Acre at Scorrier. The final part of the journey involved it being unloaded in the city centre and towed through a tunnel to the museum.

A few days later Kingsley Rickard and Phil Hosken followed it. With accommodation in the city, they commenced nine days of 8 a.m. to 6 p.m. duty alongside the loco and the Society's well-known yellow tent.

The weather was good but the coal was not. Clouds of smoke often blacked out the sun as railwaymen stoked their fires.

The Society's display was well located where most of the visitors had to pass and about 100 yards from the Penydarren loco.

Crowds would gather to hear the story of Trevithick, his life and his many achievements. Although Kingsley and Phil were speaking mainly to railway enthusiasts, it was clear that the audiences knew little or nothing of the early days of high-pressure steam and the first self-propelled locomotives.

The most stunning information was that it was Trevithick and not Stephenson who had built and operated the first railway locomotive. Furthermore, he had built road-going locomotives before that! There was true fascination for a locomotive that bore a number plate, Road Tax and insurance discs at the NRM. Our storytellers believed they were doing a good job.

On Tuesday, the Penydarren replica locomotive shed a driving wheel and was derailed. The axle had sheared where it entered the wheel hub and it was fortunate that no one had been hurt. This had apparently happened before and a spare axle was located at Nantgarw in South Wales. It was despatched with all haste and the replica was soon up and running again.

Those who had heard of Trevithick knew the inevitable story of his locomotive blowing up outside a Camborne pub. This provided the opportunity to explain fusible plugs. It was remarkable how many people in the northwest of England knew about the possible re-opening of South Crofty mine and the problems encountered with officialdom over the failure to allow the steam parade in Camborne's Trevithick

Day celebrations this year.

Several Cornish people made themselves known and they were pleased to see the flag of St Piran flying alongside the Society's pennant. Some Society members including Peter Badger and family, Peter Treloar, Geoff Smith-Grogan and B.D. Powell called in.

Frank Trevithick Okuno, the direct descendant of Capt'n Dick and a great supporter of all the Society's activities, toured the RailFest and was particularly interested to see the *Cornwall* locomotive for the first time. Designed by Richard Trevithick's son Francis and built at Crewe only 40 years after his father's first railway locomotive, the *Cornwall* is a remarkable passenger express engine for its time.

Everything was very warm and convivial but, like all things associated with coal-fired steam, dirty to the extent of being filthy. The loco was wiped down and polished every morning and the tent had to be professionally cleaned on its return to Cornwall. The Cornish flag became almost unrecognisable.

Glyn Bowen of Merthyr Tydfil brought some Penydarren goodies and assisted in the tent for a couple of days. Books on Trevithick and Cornish mining were soon sold out together with the Royal Mint's Trevithick £2.00 coins in presentation cases.

The Society's golden Penydarren model from Japan was on show. Chatter took the form of answering questions about the Trevithick family connections with Japan and explaining how Trevithick successfully achieved sustained motion. Questions included, "Does your engine have an electric blower?"

Before the show ended, our storytellers had the opportunity to ride in the tender of the Penydarren replica. It was interesting to compare the boiler pressure of the Camborne locomotive, which needs some 50 lbs/sq" to propel it on the road with only 15-20 lbs/sq" required by the Penydarren. The reduction in the rolling resistance produced by smooth rails and wheels was remarkable.

Eventually RailFest 2004 rolled to a conclusion. The Camborne replica had completed its 40th outing, the Society had

made many friends and even recruited some new members. Bacon and eggs had sizzled on the shovel and the story of Trevithick had been spread in the heart of Stephenson country.

It had been a good, if tiring, experience and we felt that the educational charity commitment of the Society had been well fulfilled. With the help of the media, the true story of Trevithick's contribution to self-propelled transport and the industrial revolution is being told. It was something that had to be done at York and the Society was best placed to do it. No one else would.

Philip M Hosken

He: "I'm off now to work on the engine."

She: "I believe you love those steam engines more than you love me."

He: "I love diesels more than I love you."

OVERHEARD AT YORK



Beam Engines in North America VIII. The Gifford, Fox and Company Watt Engine

As a result of a fortuitous series of events, I have come to learn that Henry Ford was not the only American industrialist to see fit to bring a British-built beam engine to North America, and that a Watt engine, formerly belonging to the textile firm of Gifford, Fox and Company, Ltd. of Chard, Somerset, has been preserved in working condition at the Chicago headquarters of the DoALL Company at 254 Laurel Avenue, Des Plaines, Illinois, for the past 45 years. The story began when my attention was caught by a set of photographs in the Winter 2003 issue of the Newsletter of the Society for Industrial Archeology (vol. 32, no. 1, p. 18). The photographs, taken in the U.K. over 50 years ago and attributed to the late George Watkins, were those of a James Watt beam engine at the Holyrood Mill in Chard (Fig. 1). The accompanying text proved to be a request for assistance addressed to American IA enthusiasts from Geoffrey

Fitton, secretary of the Somerset Industrial Archaeological Society. In putting together an inventory of early steam engines that had left the county, the Somerset IA group had learned that the Watt engine had been dismantled and shipped to the United States, but they could find no record of who had bought it or where it might have gone.

Because I was unaware that anyone had brought engines to the United States in the 20th century other than Henry Ford, my immediate response was to suggest to Fitton that he contact the Research Center of the Ford Museum in Dearborn, Michigan. Although the only original Boulton and Watt engines on display at the Museum are pumping engines and larger than the rotative engine in question (see Newsletter 93), the International Stationary Steam Engine Society's 1988 inventory of existing steam engines in the United States and Canada listed another engine at the Museum of about the right size (20½-inch cylinder by 4-foot stroke) that was also a possible Boulton and Watt. On enquiry, however, this proved to be one the Museum had returned to Ironbridge Gorge in 1988. But a chance encounter between Fitton and Paul Stephens of the ISSSES, who had seen the Watt engine in America in 1992, led my inquiries to the DoALL Company in Des Plaines, where I found the

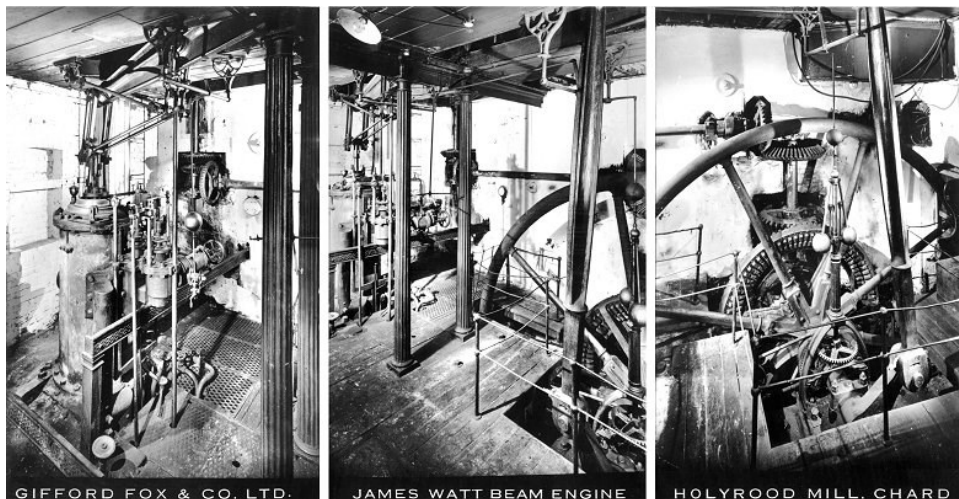


Figure 1: Photographs of Watt engine at Holyrood Mill sent to Leighton Wilkie by Gifford, Fox and Company in 1957, but likely taken between 1936 and 1945.

Wilkie and the DoALL Company



Figure 2: Gifford, Fox and Company's engine at the DoALL Company in 2003.

engine meticulously preserved in August 2003 (Fig. 2).

The following article outlines what is known of the origin and history of this engine, and the fascinating story behind its purchase and transfer from rural southwest England to the suburbs of Chicago. In

completing this task, I am greatly indebted to Rich Hermann, Controller, of the DoALL Company; Susan Pugh of the National Monuments Record (U.K.); Tim Procter of the Birmingham City Archives; and Geoffrey Fitton himself, for providing much of the information on which the following account is based.

That the DoALL Company should be in possession of a British-built beam engine stems from the interests of the company's founder, the late Leighton A. Wilkie. Like Henry Ford, whose museum in Dearborn, Michigan, contains numerous examples of British-built beam engines, Leighton Wilkie was interested in innovation and the role of industrial enterprise in American prosperity. Of particular interest was the area of his own company's expertise, that of metal cutting machine tools. Although Wilkie first made his fortune with the introduction in 1923 of the "Universal Wilkie", a combination piston and connecting rod aligning tool for automobiles such as Ford's Model T, he is best known for having invented the contour band machine. This tool, two of which were installed in each of the Liberty ships of World War II, permits metal to be cut along a narrow unrestricted path and continues to be one of the most versatile machine tools ever developed. Its introduction in 1933 established the DoALL company, which today is a major industrial supply center for machine shops, maintenance installations, and production facilities around the world.

DoALL's Hall of Progress

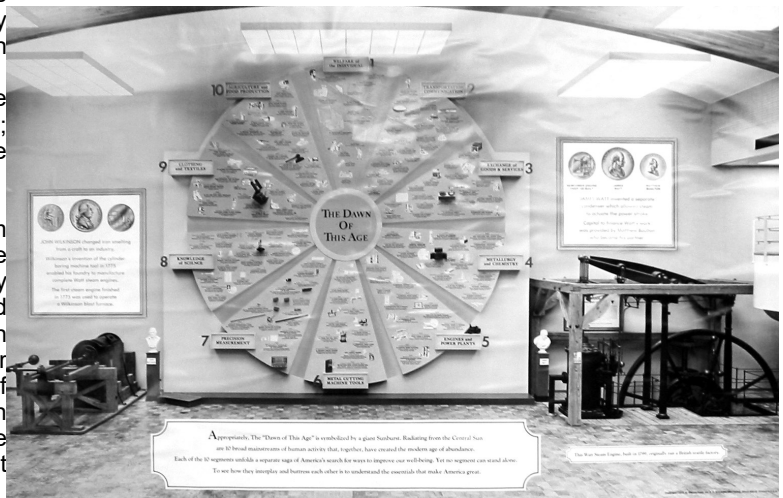


Figure 3: Wilkie's "Hall of Progress" at the DoALL Company's headquarters circa 1958, showing sunburst exhibit flanked by the Watt engine and a replica of Wilkinson's cylinder boring machine of 1775.

Leighton A.

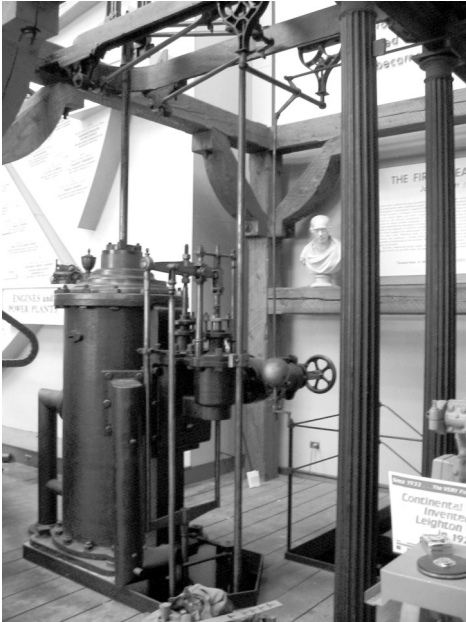


Figure 4: Detail of Watt engine's steam-jacketed cylinder and valves (2003).

In order to illustrate the importance of industrial innovation to American prosperity that his company exemplified, Wilkie established a "Hall of Progress" at the company headquarters in Des Plaines in 1958-59. The centerpiece of this museum (Fig. 3) is a giant sunburst whose rays symbolize "the 10 broad mainstreams of human activity that, together, have created the modern age of abundance". The exhibit's theme, namely that to see how these avenues of enterprise "interplay and buttress each other is to understand the essentials that make America great", was a topic that Wilkie later developed in his book "The Principles of American Prosperity", published in 1975.

To highlight the importance of metal cutting machinery in this scheme, Wilkie chose to flank the Hall's sunburst on the one side with a full-scale replica of John Wilkinson's cylinder boring machine tool of 1775 (only the metal parts of which survive today) and, on the other, with a Watt steam engine, power plant of the Industrial Revolution, the cylinder for which was made possible by Wilkinson's metal-cutting

tool.

In the absence of an available original, Wilkie had the Wilkinson boring tool built in-house by the Contour Saw Division in consultation with the Science Museum in London. For the Watt engine, however, he elected to purchase an original. It is unclear how Wilkie first became aware of the Boulton and Watt engine at Gifford, Fox and Company in Somerset, U.K., or the fact that it was on the market, but the year was 1957. Since 1958, Wilkie's Hall of Progress and the Watt engine he acquired for it have been prominently displayed at the company's headquarters (Fig. 3) along with an extensive collection of machine-cutting tools that charts the entire history of the company's production. But with the upcoming move to new facilities that cannot accommodate this museum, the fate of Wilkie's Hall of Progress is in question and a new home must be found for the Watt engine if its continued preservation is to be ensured.

The Watt Engine in America

Several details of the purchase of the

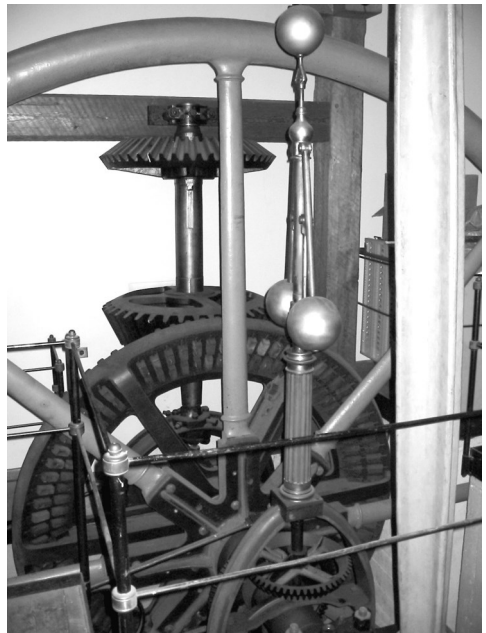


Figure 5: Detail of Watt engine's sweep rod (right), governor, flywheel and driving configuration (2003).



Figure 6: Detail of Watt engine's gearing, cam expansion valve and eccentric rod (2003).

Watt engine are preserved in the library at the DoALL Company headquarters. The transaction was overseen by V.J. (Vince) Sweeney on behalf of the Wilkie Foundation, a philanthropic endowment set up by Leighton Wilkie in support of the history of tools and toolmaking. This topic was of deep interest to Wilkie and, in 1963, led him to support the first six months of Jane Goodall's pioneering research on chimpanzees in what is now Tanzania despite her lack of academic training.

Records show that the engine was bought from Gifford, Fox and Company by the Wilkie Foundation for £800. It was dismantled by the local firm of Messrs. Sibley at a cost of £935, and shipped by E.J. Farr and Company of Yeovil, Somerset, on the 6th November, 1957. A small gear wheel broken in dismantling was repaired before shipment. The shippers and packers charges were £1250 to cover all costs of its collection from Chard, packing, shipping and insurance (for £3000), and its delivery to Chicago. With out-of-pocket expenses, the total bill submitted by E.J. Farr came to £2235. The

shipment, whose total weight (including boxes) was approximately 21 tons, was received at Des Plaines on the 6th December. The only reported damage was to one of the flywheel spokes, which was broken in transit and subsequently (and still visibly) repaired.

Various measurements were taken while the engine was being assembled and, in a letter to Leighton Wilkie from Vince Sweeney dated 12th December, 1957, the inside measurements of the cylinder are given as: diameter 22 3/16 inches, stroke 52 5/8 inches, and cylinder length 59 inches. The total cylinder height and the diameter of its top flange are given as 62 inches and 35 inches, respectively. The outside diameter of the cylinder, which includes a steam jacket, is about 30 inches (Fig. 4). Following its erection at the DoALL headquarters, the engine was reportedly set up to be operated on steam from the boiler used to heat the building and, according to Rich Hermann, is still operational on compressed air.

The Watt Engine at Holyrood Mill

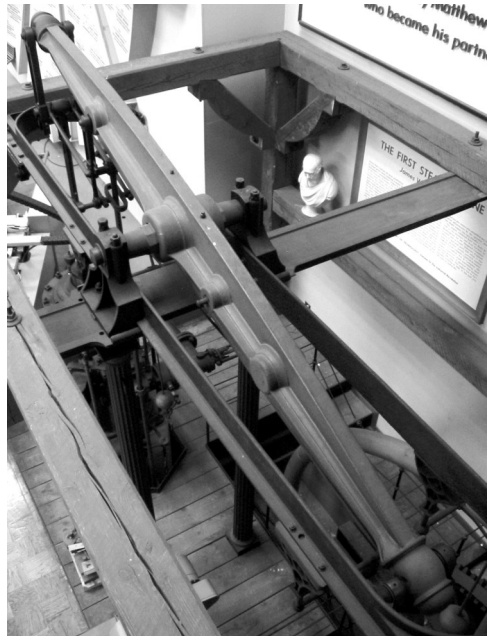


Figure 7: Watt engine beam and entablature from above (2003).

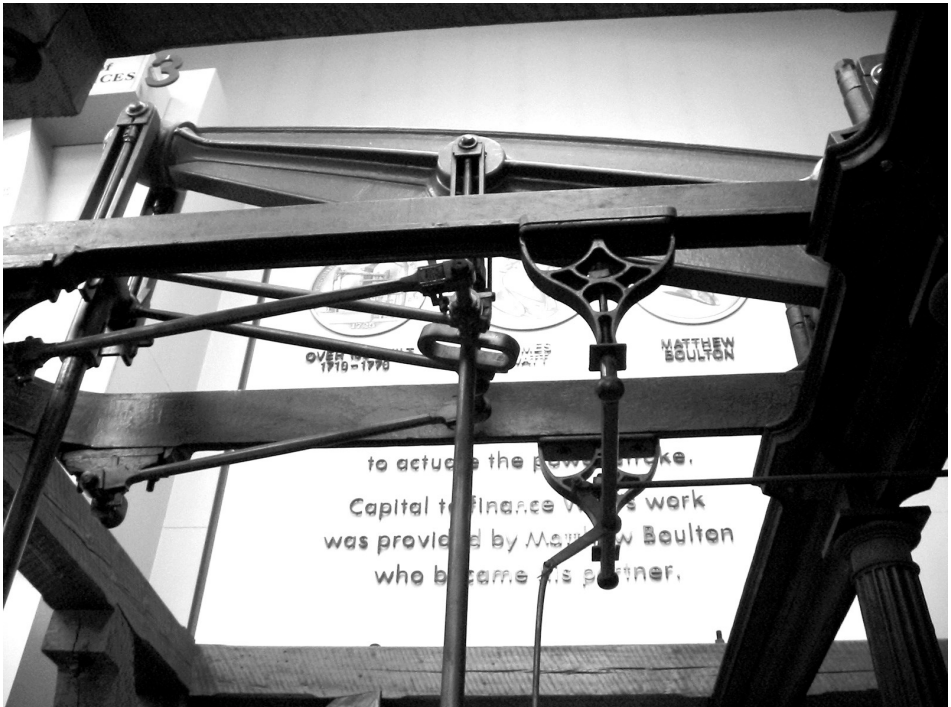


Figure 8: Detail of indoor end of Watt engine's beam, parallel motion and governor linkage brackets (2003).

Information sent to Wilkie by Gifford, Fox and Company at the time of the engine's purchase records that J.B. Gifford was born in 1820 and trained in the making of plain bobbin net at Barnstaple in Devon from 1838 to 1842. In 1852, he bought the Holyrood Mill (where the engine was housed) in Chard, Somerset, where he made cotton and silk bobbin net as well as quillings (wound thread). His partnership with Mr. Fox, a Quaker industrialist from Wellington, Somerset, was set up in 1857, establishing the firm of Gifford, Fox and Co., Ltd. After World War I, the firm extended its products to the making of artificial silk bobbin nets and spot nets.

Accompanying this information were the same three photographs published by Geoffrey Fitton in the SIA Newsletter of Winter 2003 (Fig. 1). The attached text describes the engine as a 60 h.p. steam engine "built between the years 1797 and 1800 at the Boulton and Watt Factory at Birmingham, which is now the Royal Mint" (i.e., the Soho Works). The engine is

further described as having been purchased in Frome, Somerset, and brought to Chard in 1827 where it was assembled in the company's plain net mill. The engine's governor (Fig. 5) is said to have been added in 1857 and one of the valves is said to be stamped 1797. However, the firm points out that "this might have been used in a previous engine and does not necessarily mean that the machine itself was made entirely in that year." The engine is also described as mechanically sound and as having been last worked in 1945. The engine was still in place when it was purchased by the Wilkie Foundation in 1957.

The obvious discrepancy in this information, namely that Gifford is said to have been in Barnstaple until 1842 although the engine is said to have been moved to the company's mill in Chard in 1827, has been resolved by the research of Geoffrey Fitton and the SIA's archivist in Somerset. Their findings also bring forward Gifford's purchase of the mill to 1854.

According to Fitton, the lace industry developed rapidly in Chard following the collapse of the woollen trade since the town could provide both premises and a workforce. John Heathcoat, who invented the bobinet lace-making machine in 1808, moved his factory to Tiverton, Devon, after his factory at Loughborough in Leicestershire was attacked by "luddites" in 1816. The first factory in Chard started in 1821 and, by 1826, a national survey placed 49 of the nation's 2469 lace-making machines in Chard with a further 34 in Barnstaple. Pigot's Directory for 1830 places five lace factories in and around Chard employing 1500 people. However, the main Chard factory burned down in 1825 and two new factories were built, one of which was known as Stembridge's Mill. In 1827, the future Gifford, Fox and Company engine was moved to this mill, which, in 1830, was being run by Sparks and Company. This company is likely to have folded when the bank Sparks was involved in failed, but the factory was operated again under the Holyrood Mill Company. When Gifford moved from Barnstaple to Chard in 1844, he first operated a lace mill known as Blacklands in South Chard. But in 1854 when he bought the Holyrood Mill, Gifford then went into partnership with Fox forming Gifford, Fox and Company, which continued to operate until 1964. Today, the Holyrood Mill is home to the local council.

Close examination of the three photographs of the Watt engine in place (Fig. 1) shows differences in the positions of the piston rod and crank indicating that the engine was working at the time they were taken. Hence, they presumably date from 1945 or before. But according to Susan Pugh of the National Monuments Record Centre, the photographs are not among those of the George Watkins collection held by the NMR in Swindon, U.K., and so are unlikely to have been taken by him. Nevertheless, it is thanks to the late George Watkins, who visited the engine in 1936, that details of its arrangement at the Holyrood Mill are on record.

On the NMR's record card (WAT36) for this engine, it is described as "very lightly

built and undoubtedly one of the oldest mill engines in the West" (of Britain). Powered by two Lancashire boilers, it drove both storied and single-floor lace mills by bevel gears (Fig. 5) and vertical and overhead shafts until 1934, when it was replaced by a Petter oil engine and generators to motors. The company's claim that the engine was last used in 1945 suggests it continued to serve on stand-by and, indeed, both Watkins' photographs and those of Figure 1 (which were taken, later after a stairway and partial middle chamber floor had been removed) show the engine in different positions. The NMR record further notes that "the power needed by a lace mill was slight and the use of alternate mortise and iron toothed gearing was an unusual refinement which must have made the mill very quiet. The complete absence of spur gearing was an interesting feature of a charming layout which was removed in the War."

In his original handwritten notes, Watkins further records "jawed top con rod; thin lattice eccentric rod, round sides; cam expansion valve between flywheel and gear drive, not variable; throttle governed" (Fig. 6). Marginal notes suggest a flywheel diameter of 16 feet 6 inches and a beam of 13 feet 6 inches between end centers. Watkins overestimated the cylinder diameter at 24 inches (doubtless judged from the cylinder's outside diameter of 30 inches) and records slide valves and a stroke of 4 feet 6 inches. The engine is rated at 20 h.p. at 25-30 r.p.m. and an estimated 30 psi, significantly less than that later claimed by Gifford, Fox and Company. However, the NMR record card notes that the fitting of a drop expansion valve suggests a higher boiler pressure was used in later years. Interestingly, Watkins lists the maker and date of the engine as unknown, describing it only as very old ("believed pre-1840") and unaltered.

Watkins expands on these details in his book "The Textile Mill Engine", first published in 1970-71, in which he describes the engine as "a good example of the neat form which the highly developed foundry techniques of the period permitted, and which with steam at 30 psi developed 35-40 h.p. at 35 r.p.m." The engine's beam

is described as “neatly moulded and ribbed, with the early type of collar mounted end gudgeons” (Fig. 7). The flywheel, erroneously given as 13 feet 6 inches in diameter, is described as being “made in eight sections each comprising an arm and a rim sector, with an internal joint in the rim between each arm, all fitting into sockets in the solid hub” (Fig. 5).

Watkins further notes that the connecting rod and governor linkage brackets (Fig. 8) were in keeping with the slight columns and entablature, and that, at some time, the entablature must have shown signs of weakness, since it was held down by timber struts from the floor above. The flywheel arrangement “together with the rounded rim section, the neat fluted columns and governor stand” were considered to be early features, and the main steam and throttle valves were considered original, as was the governor, although Gifford, Fox and Company claimed that this had been added in 1857. Similarly, “the drop cut-off or expansion valve, driven by a cam on the crankshaft, was a type used by Watt for the earliest expansion working”.

Age and Origin of the Watt Engine

Although the DoALL Company's exhibit claims the engine to have been “built in 1799 at the Boulton and Watt factory in Birmingham, England”, little is actually known of the engine's age and manufacture. In a letter dated November 27th, 1957, W.G. Brockett, director of Gifford, Fox and Company certified in writing to Vince Sweeney that the Watt engine dismantled at his factory by E.J. Farr and Company was “certainly over 100 years old”, and that the “first mention we have of the engine are between the years 1797 and 1800 but we have no authenticated records of anything before this”. Similarly, in a letter to Leighton Wilkie dated April 10th, 1959, M.E. Hlava of the DoALL Company who had researched the engine's date of manufacture states: “Frankly, I don't know the origin of the 1799 date we are using. The only source I know of is the material we received from Gifford, Fox and Company, and they said sometime

between 1797 and 1800”.

Believing only that the engine dated from before 1840, Watkins entertained the idea of other manufacturers in his book “The Textile Mill Engine”, suggesting that the engine could have been of local Lancashire or (English) Midlands make since Galloways of Manchester had supplied one of their first engines to Yeovil, Somerset, in the 1830's, while Haden (one of Watt's erectors) had also supplied early engines to southwest Britain and was established at Trowbridge, in neighbouring Wiltshire. However, the engine is now known to predate 1840 by a significant interval since, according to Gifford, Fox and Company, the engine had not been acquired new, but rather had been obtained second hand from the Sheppard Company of Frome, Somerset, in 1827.

According to information provided by Geoffrey Fitton, a group that included ISSES members Paul Stephens and Brian Hillsdon visited the DoALL Company in 1992, and were shown the engine by Ed Nichols. During that visit the name “R. Lee” was found to be just decipherable on the injection cock handle, beneath which an even fainter series of marks was believed to trace the word “FROME”. From his research on the Fox Brothers archives at Coldharbour Mill in Uffculme, Devon, Fitton has learned that, from around 1819 to 1826, Fox was in contact with Lee for building and maintaining waterwheels at Wellington. In a letter of introduction, written by Fox to be used by Lee on visits to examine engine installations, Fox says “The Bearer, Robert Lee, is our engineer. His business consists of the erection of Steam Engines & Water Wheels with the necessary Geer (sic) work.” Pigot's Directory of 1821 and an 1830s edition quote Lee as having an ironworks at “The Butts, Frome”. However, as Fitton points out, the injection cock handle could be just a named part and need not imply that the entire engine was constructed by Lee. According to Gifford, Fox and Company, and substantiated by Fitton, the engine was moved from Sheppard's of Frome to the future Holyrood Mill in Chard in 1827. To do so would likely have involved a local engineering firm that dealt with engines,

which, in this case, would seem to have been Lee.

Following the Sheppard Company lead, further information supplied by Tim Procter, senior project archivist of the Soho collection at the Birmingham City Archives, suggests that the engine is of yet greater antiquity. Although the engine resembles those that the Soho Works rated at 20 h.p. (which had steam jacketed cylinders of 23¾-inch diameter and a five foot stroke), Procter's research suggests that the Sheppard Company was unlikely to be the engine's original purchaser. Their name does not appear in the firm's Engine Order Books between 1797 and 1827 (reference numbers MS3147/4/87-97), nor does it appear in a volume called the "List of Engines made at Soho" (reference number MS3147/4/321). This volume was compiled in the Drawing Office circa 1824 and lists engines both by type and county. But the Sheppard Company's name does not appear in either the list of 20 h.p. engines or the list of engines in Somerset. Nevertheless, the firm's letter book for 1813 to 1815 (reference number MS3147/3/109) contains two letters from Boulton, Watt and Company to Messrs. H. G. & W. Sheppard of Frome, dated November 1814. According to Procter, the original letters from the Sheppards to which Boulton, Watt and Company were replying are now missing, as is almost all of Boulton and Watt's incoming correspondence between 1800 and 1829. But their reply, written by Boulton, Watt and Company on the 7th November, gives general information about their engines and mentions a comparison between their engines and those of another unspecified maker at Meux Reid and Company's brewery in London, which the Sheppards had obviously referred to in their original enquiry. The second letter, dated 14th November, refuses to enter into a tendering process for the Sheppards' order, saying that if Boulton, Watt and Company were to do that, the business would almost certainly not come their way. Instead, they gave their fixed prices for 20 and 24 h.p. engines. The collection contains no further letters to the Sheppards between 1814 and 1827, nor is there any reference to Gifford, Fox and Company in

1827, and there are no drawings of any engines for either concern.

But as Procter points out, from the tenor of Boulton, Watt and Company's letter of the 14th November, price was obviously important to the Sheppards, so it is likely they bought a second-hand engine. They would have had several to choose from since the records show at least three 20 h.p. engines in the neighbouring counties of Wiltshire and Gloucestershire, and several more in London. According to Procter, after Watt's patent expired in 1800, Boulton, Watt and Company took little notice of the second-hand engine trade unless they were specifically asked to supply spares or technical assistance. Hence, the Sheppards' and Gifford, Fox and Company's purchases would not necessarily appear in the firm's correspondence or their main order books. On the basis of this information, however, it would seem that the engine can at least be dated to before 1814.

Hence, the engine could indeed be of the date claimed by Gifford, Fox and Company, and while its manufacture by Boulton and Watt cannot yet be substantiated (engines of this size and date having a rather generic appearance), the engine is of great interest and antiquity, and its continued preservation is of paramount importance. I was therefore concerned to learn from Rich Hermann that impending plans to move the DoALL Company's headquarters to new facilities do not include the beam engine or the museum of which it is part, and that the engine's continued survival will require its removal from the company's headquarters and its re-erection elsewhere. The DoALL Company is presently seeking non-profit parties that might be interested in providing it with a new home, and we can only hope they are successful.

R. Damian Nance

Recently the Society was contacted by Highway Plant of Redruth to ask if it would like to take delivery of a piece of cast iron pipe which had been dug up during excavations. The pipe turned out to be two pipe castings joined together, with a diameter of thirty inches, one straight and

just over six feet long and the second, also just over six feet in length but curved. There were a number of leats which fed their crucial water to the mine engines along the base of Carn Brea. Our pipe was part of the leat to feed East Pool Mine and was used as a culvert under a trackway which crossed the leat. The Society wishes to record its thanks to Highway Plant, both for bringing it to our attention and for delivering it to Cornish Engines.

NEW POSSESSION

Imerys, the china clay producers have in the past kindly stored heavy items in old disused pan kilns for the Society. One such place, Vounder Dry, near St.Austell, disused for some years is now facing the ravages of time and vandalism, so it was decided to move the last piece of kit remaining there. This was the camshaft of the Caudledown rotative beam engine. This engine was built by Tavistock Foundry in 1863, and one of a few engines built with cam and pushrod operated valves. It was broken up sadly, but the camshaft has survived and has now been moved to Cornish Engines, Pool. For those of you used to servicing more modern machinery, it may be of interest to know four of us could just lift it, the four being Kevin Baker, Tony Brooks, Frank Kneebone and the

WORKING PARTY, JUNE 24th 2004

writer.

Kingsley Rickard.

Would members who were on a "fools errand" on the above date please accept apologies for the short notice cancellation of the meeting. Even announcements on Radio Cornwall and in the Western Morning News did not reach all of you. I was on duty at C.S.M. from 6-30pm as is usual and, even then, there were a number of you I was unable to intercept. We had forty eight hours notice that the C.S.M. was holding its

Annual Ball that evening using the adjacent rooms to the lecture theatre for dancing and bars. Knowing this was likely to generate considerable decibels and lively behaviour it was felt, for the comfort of all, to postpone the meeting. Having seen the preparations at C.S.M., I was disappointed that I was (only just) too old to attend! The speaker, Paul Brough, of the Cornwall Record Office

MEETING CANCELLED AT C.S.M. 18th JUNE 2004

has kindly agreed to bring along his Powerpoint presentation at a later date. Thanks to our speaker and to members for their understanding in this matter.

Kingsley Rickard

There will be an exhibition of paintings by H.G. Ordish (1901-1994) at the Royal Cornwall Museum, Truro from 11th. September 2004 - 7th November 2004. Entry to the museum is free.

EXHIBITION OF H.G. ORDISH PAINTINGS

TREVITHICK CELEBRATIONS AT MERTHYR TYDFIL

It was Sunday 4th July and Merthyr Tydfil had pulled out all the stops to celebrate the bicentenary of the invention of the railway engine on the Pen y Darren Tramroad. As reported in newsletter no.124 the Society was represented at the official celebration on the actual day, 21st February but it was decided by Merthyr that a Summer celebration was more likely to enjoy good weather. Sadly a very heavy shower did dampen the spirits, but not for long. There were three main sites, all connected by a free bus service. Firstly, the bus station where there were traction engines, steam cars, a children's fairground and the West of England Steam Engine Society's Merryweather fire engine in the charge of Society member Charlie Daniel and Tom Brogden's replica "Hancock" bus. Members of the public had the opportunity to ride on some vehicles, this proving so popular that some had to be disappointed. Cyfarthfa Castle was the second venue. This was originally the home of the Crawshays, the big ironmasters in Merthyr, and now the home of Merthyr Museum. The third venue was the site of the Pen y Darren Ironworks,



now an industrial estate, where a modern warehouse had been transformed for the occasion and accommodated the Society display, the replica of the Pen y Darren locomotive and many old photographs of the complicated railway system of the Merthyr district as well as much information on local history. Outside in the yard were situated the Society's Trevithick Road Locomotive and Tom Brogden's replica of the London Road Carriage. It was an extremely busy day with the public thronging everywhere and with a surprising number of visitors from Cornwall. All concerned acquitted themselves well and thanks are due to the very warm welcome and generous help given by the staff of Merthyr Council and, in particular, their



volunteers, whose dedication to the cause was remarkable. The engine crew, Colin French, Phil Hosken and the writer were dressed in "1801s" for the day and were ably assisted by visiting members Greg Morcom and Trevor Thompson from Devizes and Bristol respectively, and local member Terry Evans.

Kingsley Rickard

A member of the public was looking at the

YOU CAN'T WIN THEM ALL!

Trevithick Road Locomotive at Merthyr. "Can you tell me what it is?" "Yes. It is a replica of the world's first successful self propelled vehicle." "Oh! I see", indicating the front of the engine, "So the horse was attached here then!"

The annual maintenance programme has been completed and the engine is open to

LEVANT REPORT

the public as usual; in October on Tuesdays and Fridays.

The pre-season meeting of the staff and volunteers was held on 31st March 2004 in the refurbished Mine Drawing Office. The traps, valves and condensate piping of the boiler have been overhauled or replaced. An automatic chemical dosing system for boiler water treatment is now working. A new key for the inland winding drum has been fitted. This seems to have cured the problem with the drum working loose on the shaft. The electrical emergency stop valve has been repositioned nearer to the engine and is working well. The electrical mechanism for turning over the steam engine has been redesigned because of various minor problems. New pneumatic tyres have been fitted, operated by a lever system. A new map for self-guided visitors has been produced. This was necessary because of a shortage of guides.

The 1:12 scale model of the 80" W. H. Mitchell designed pumping engine, which

was started by Mr G. Boulden and completed by volunteers, has been installed in the Electric Winder House. Duncan Nicholson has made the cataract gear, others have made other missing parts and the engine has run on compressed air, but they have not been able to make the engine run continuously.

The National Trust contractors have completed Stage I of the NT/St Just Heritage Area Regeneration Project, which included refurbishing of the derelict Mine Drawing Office building and installing light and power, and the Zawn Brinney cliff retaining wall using traditional construction methods, as the made-up ground was slowly sliding towards the cliff edge. Ground was excavated on each side of the slip and the foundations and the wall were anchored to the rock at each side. The contractors have also rebuilt the east side of the skip tunnel under the road, which used to carry ore up to the stamps, using some of the original stone and timbers.

The staff and volunteers have decorated the Drawing Office building and are using it as a rest room. An old electricity switch room has been repainted and is being used as a workshop and store. The old "Genny Shed" has been refurbished as a Video room where visitors can watch a copy of the Levant Mine video; and buy a copy at the shop.

Temporary lighting has been installed on the floor of the Man Engine Tunnel. Permanent lighting must wait for Stage II of the NT/St Just Regeneration Project to begin, when trenches will be dug for the laying of drainage pipes and cables in the man engine area, and the reinstatement of the reservoir near the Count House.

In the near future, a hot drinks machine will be installed in the Electric Winder House for visitors, near the NT Membership desk. As a longer-term project, a Working Party is looking into the installation of the Carpella Pumping engine (from the Science Museum) in the stabilised Levant Pumping Engine house, as the time scale of the project to install it at Hayle seems to be very long and might not take place.

W. E. H. King

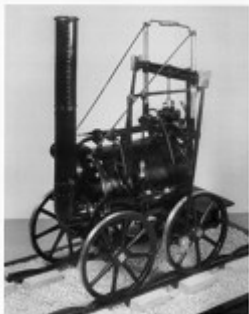
Catch Me Who Can by Christopher Wagner, 2004. 66 pages. £6.00. incl. p.& p.

This A4 booklet is a miscellany of information about Richard Trevithick aimed at generating interest in celebrating the

BOOK REVIEWS

world's first steam passenger railway locomotive - the *Catch Me Who Can*, which ran on a circular track at Torrington Square,

CATCH ME WHO CAN



CHRISTOPHER MAGNER

in London in 1808. With the bicentenary of that locomotive engine fast approaching, Christopher Wagner is pursuing the goal that the town of Bridgnorth, in Shropshire, should fittingly commemorate its place in history, thanks to the pioneering partnership of Richard Trevithick, John Urpeth Rastrick and the Hazledine Foundry. Suggestions include holding a pageant in 2008, and the building of a full size replica.

This informative booklet provides much background information about the work done by the Hazledine Foundry for Trevithick and the importance of Rastrick, who was able to bring Trevithick's ideas to reality. Much of the remaining text deals with modern commemorations, especially the building and operating of the Camborne, Coalbrookdale and Penydarren replicas. This serves both to illustrate the magnitude of Trevithick's achievements and to demonstrate what benefits could accrue to the town of Bridgnorth were it to capitalise on its Trevithick connections.

The author has certainly managed to bring together a lot of interesting snippets about Trevithick, and his coverage of recent memorial events does add to our understanding of the changing public perception of Trevithick's achievements.

Catch Me Who Can is available from:

Christopher Magner

21 Dunval Road,
Bridgnorth
Shropshire
WV16 4NA

The Ball Clays of Devon and Dorset, by the Ball Clay Heritage Society. Cornish Hillside Publications, 2003. 52pp, 61 illus. paperback £3.99. ISBN 1 900147 300.

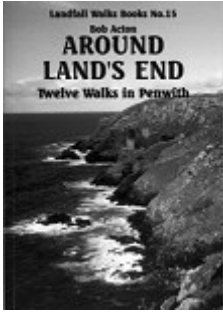
The Ball Clay industry is much less brash on the landscape than the china clay extractive industry of Cornwall and Devon, but is every bit as interesting, in terms of its industrial development and the legion of uses for the clays themselves.



This is a very well written, well illustrated and well produced introduction to the Ball Clay industry of Devon and Dorset. It describes the various quarrying and mining techniques that have been employed from the 1600s to the present day, the processing of those clays, transportation to the market-place, the evolution of the clay companies and present-day environmental considerations. Space is even found for an explanation of the geology and a description of the many uses for these remarkable clays.

The Ball Clay Heritage Society can definitely be commended for the quality of the text and Cornish Hillside Publications for the excellent reproduction. In the latter respect the clarity of the photographs is particularly fine, no doubt enhanced by the high Cornish china clay values of the paper itself.

CNF.



Around Land's End, twelve walks in Penwith, by Bob Acton. Landfall Publications, 2004 ISBN 1 873443 48 X. £5.99.

Around Land's End consists of twelve illustrated walks in Penwith, which, with

the exception of the Madron and Ding Dong walk, are all around the coast, from Lamorna around to St. Ives. Walks 5 - 12 are updated versions of those given in *A View from Carn Galver* in recognition of the changes that have taken place since 1992.

In order to fit twelve walks into the 160 pages, the author has not delved into the history of the mines and other points of interest, in such detail as previous guides, and yet those unfamiliar with the author's previous offerings would find that hard to believe, for it is packed with historical notes and observations.

The format has improved somewhat from the *Exploring Cornish Mines* series, in that the text describing the route to take is emboldened and easier to read. It also differs in that there is a liberal infusion of fine drawings, by the author, of buildings and views.

Overall, *Around Land's End* provides a nice balance between the precise instructions needed to negotiate the route and the informative descriptions of the places that are seen. It is a recommended companion for walkers who are unfamiliar with Penwith and wish to gain an understanding of the pre-historic and industrial imprint of man on that magnificent landscape. Furthermore, the A5 size and modest weight of this book does make it a practical proposition to carry into the field, and so gain the most benefit from the extensive research that the author has undertaken, to help explain the points of interest en route.

CNF

Atrocious weather prior to the rally put off a number of exhibitors while some came,

ST. AGNES STEAM RALLY

saw the mud, and left again. Friday was a windy wet day which certainly dampened public interest, however, the weather began to clear during the afternoon and the Saturday was a sunny day when the site really began to buzz with a good atmosphere and a large crowd. Due to a forecast of heavy rain and strong winds many exhibitors pulled out on Saturday evening. This bad weather failed to materialise and the Sunday remained dry but overcast.

The West of England Steam Engine Society had enlarged the site by some twenty acres creating much needed space.. As far as our Society was concerned the new layout failed to produce a pedestrian flow which badly affected the level of interest shown and certainly affected sales.

We do look forward to next year's rally which will be a five day show to celebrate the W.E.S.E.S. fiftieth and our seventieth when we hope to stage a much bigger display. Due to a lack of volunteers the Road Locomotive was not on show this time, but thanks are due to the following who gave up their time - John Badger, Vernon Baldry, Colin French, Phil Hosken and Eric King.

K.J.T.R.

It is hoped that the parade of steam engines will be re-instated on Trevithick Day in 2005. In anticipation of the Camborne Road Locomotive leading the

CAMBORNE ROAD LOCOMOTIVE

parade, we would like to offer members the chance of a ride on the engine through the streets of Camborne, cheered on by thousands of spectators. If you are interested in taking part please notify the editor. The member chosen at random will need to be kitted out in eighteenth century costume, like the rest of the crew, and must be prepared to get lagged in coal dust, oil, water and grease.

Colin French

TREVITHICK SOCIETY EVENTS AND CONTACTS

SEPTEMBER 17th - C.C.

West Wheal Owles, video by John Potter.

SEPTEMBER 24th - East Cornwall

Cornish Engine Oddities, by Ken Brown.

OCTOBER 22nd - C.C.

Wind Power, by Neil Harris.

OCTOBER 29th - East Cornwall

Mines and the Bedford Estate in the Tamar Valley, by Dr. J. Goodridge.

NOVEMBER 19th - C.C.

Liverpool & Manchester, the first modern, railway, by Bill Newby, MBE.

*Meetings are held in the Lecture Theatre,
Opie Building, Cornwall College 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 2004:-

Single members	£15
Family (husband & wife)	£18
Overseas members	£18
Corporate members	£18
Student members	£5

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