AIA Bulletin

The ASSOCIATION for INDUSTRIAL ARCHAEOLOGY

Volume 14 Number 1 Winter 1986

Dedication rewarded

The Surrey Industrial History Group Award for 1986 was made to Tony Harcombe, who over the past twenty years has been acquiring and restoring internal combustion engines at his Westcott Stationary Engine Museum in Dorking. The collection, which has been featured in a television film in an Open University technology series, may be viewed by private arrangement.

Tony is pictured here with a "Jack-of-all-Trades" made in 1909 by Fairbanks Morse & Co of Chicago. The engine is 2 hp, runs on petrol and has low tension magneto ignition. The large drum contains water for cooling. The engine formerly drove machinery for preparing cattle feed on a local farm.

SIHG began presenting annual awards in 1983 for outstanding contributions to industrial archaeology in the country. Previous recipients have restored Cosford Mill, which is a watermill near Thursley, Outwood windmill and Baynards railway station.

The Historical Model Railway Society's *Newletter* Number 147 (March 1986) carried a very useful Note by Paul Bartlet on **Copyright Law.** AIA Council member Bob Carr thought this would form a valuable aide-memoire for Association members and we are grateful to the HMRS for permission to reprint it. There is an 800 page tome on the subject *Copinger and Skone James on Copyright*, but it is not very suitable for casual "dipping into". A very useful alternative is *Copyright law concerning works of art, photographs and the written and spoken word* by C.H. Gibbs-Smith, a Museums Association Information Sheet No. 7 pub. by Museums Association, 87 Charlotte St. London WIP 2BX.

Some comments based on his notes may be of interest to members but, to paraphrase his comments, the laws are very badly drafted and case law has not sorted out all of the ambiguities.

Copyright is a right of property but it is an abstract entity. Copyright is automatically conferred and covers virtually every way that an idea can be recorded, but note ideas and fact cannot be copyrighted; it is the form of words which surround the ideas or facts that can be copyrighted. If facts are tabulated, the way the facts are set out can be copyrighted, but once they are reorganised there is no longer any protection. The copyright in unpublished written work is perpetual until it is first published, then the copyright runs for 50 years, either after the death of the author (or last author for a joint work) or after publication, whichever is longer.

Photographs are more complex because of commissioning of work and also because the law has changed. If a photograph is commissioned (payment for taking a photograph) the copyright belongs

to the commissioner. But the commissioner does not necessarily own the negative, thus the owner of a negative does not necessarily own the copyright. It is common practice for a photographer to keep the negative but he has no right to publish or reproduce prints from it, though he can take one for his own private study (but not for use by another). A photographer can self-commission a photograph and thus owns the copyright.

The duration of copyright in photographs varies. If taken before 1st June 1957 it is 50 years from when it was taken (irrespective of whether it has ever been published or not). If taken after this date the copyright remains perpetual until it is first published, it then runs for a further period of 50 years. (The Act is soon to be revised and it seems likely that this will change again, but, if it does, it cannot change the copyright in retrospect so this perpetual right will remain). Listing the photographs in a catalogue does not constitute publication and I don't believe that neither does letting another have a copy for private use. If someone else takes a photograph with your camera the copyright belongs to you because they are your materials. This is contrary to the spirit of most copyright law because it is the 'art' which is normally being protected. Copy-negatives do not alter copyright and have no copyright status of their own. However it should be noted that any of the foregoing can be changed by written agreements between a commissioner, photographic subject and photographer.

There are many other facets to copyright, some worth noting are:

a) That there is no infringement of copyright by exhibition or by copying for and projecting a slide of a copyrighted work in a talk.

b) Crown copyright is similar to other copyright. 50 years from publication or perpetual until published and then 50 years. Copyright in Bills, Acts and the like, Hansard and other Parliamentary papers is nor normally enforced because it is in the public interest that the information is made available.

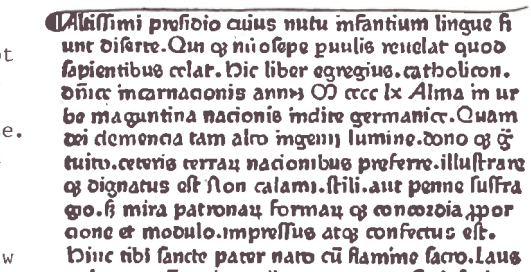
c) The copyright of letters belongs to the author and is perpetual if not written for publication. If published it continues to have 50 years copyright or, if the author is still alive 50 years from the death of the author. Note receiving a letter conveys no right to publish.

d) It is acceptable to make copies of published works for private study. This can be entire 'papers' from Journals in periodicals but only a reasonable amount from a book. Similarly for purposes of criticism, quotations can be published, though there are limitations on how much of this is done.

Copyright law is complex and I hope my brief notes do not mislead anyone, if you are involved in publishing or purchasing collections of documents or photographs I would advise you to read a copy of Gibbs-Smith for yourself.

Paul W Bartlett

Regular readers will have noticed that **this** *Bulletin* is different. Since September 1974 it has been typeset on an IBM Selectric Composer; now we move to a daisy-wheel typewriter having been overtaken by the 'new technology'. The Composer, and the era of 'cold composition' it represented is industrial archaeology. It is perhaps timely to comment on developments in type origination since Johann Gutenberg (1394-1486) produced his *Catholicon* in 1450, the first piece of print produced with moveable type.



Catholicon, printed by Gutenberg in Mainz, 1460

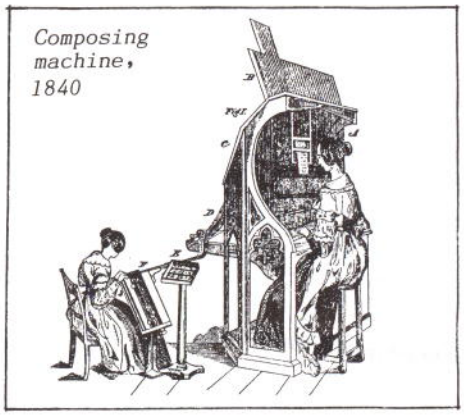
It was four hundred and sixteen years before Robert Hattersley (1866) and Karl Kasterbein (1869) finally produced practical composing machines. This was not for the want of trying for as early as 1682, Johann Joachin Becher had produced an unsuccessful design and by 1900 more than 1,500 composing machine patents had been filed in the USA. The Hattersley/Kasterbein machines were taken up by British printers and almost predictably, the *Times* newspaper was the first London daily to begin mechanical typesetting when it installed a Kasterbein in 1873. There had been some labour difficulties with the London Society of Compositors strenuously opposing the employment of unskilled men and it is not without significance that the *Times* was then the only non-union newspaper in the capital city.

In 1886 the first Linotype machine, developed by Ottmar Mergenthaler and James Clephane, was installed at the New York Tribune and as the names suggests, this cast a 'line of type'. Until recently, nearly every newspaper in the world used Linotype machines, now more sophisticated but basically the same.

In 1889 Tolbert Lanston perfected his Monotype machine, which producing individual letters assisted correction, and these two machines have dominated 'hot-metal' type origination. Both used 'type-metal', an alloy of lead, antimony and tin, with a typical composition being: 74% Pb, 16% Sb and 10% Sn. This combination combines ease and accuracy of casting with a melting point, around 500°C.

Hot metal composition started in the fifteenth century and is used to provide printed impressions by pressing paper on an inked page layout. Made up of 'lead soldiers' forming words, sentences and paragraphs, it is known as 'letter-press printing'.

The other familiar method of printing is known as 'offset-litho' and although developed from Alois Senefelder's eighteenth century invention which used litho stones, did not become popular until well into the twentieth century.



Composing machine, 1840

Introduced from America by such firms as Addressograph-Multigraph and A B Dick in the 1940s and 50s, small offset presses capitalised on the advances made in photography and chemical engineering. Offset-Litho uses a zinc or aluminium plate for its printing method and this is produced photochemically from a facsimile page layout put together, or 'pasted-up', using printed impressions, typed sections, line drawings and suitably treated photographic prints. Thus, it does not need metal type and quite soon it became obvious that ordinary typewriters could 'originate' work for offset litho paste-ups.

It came as no surprise when one or two office and printing equipment manufacturers produced 'super typewriters' capable of using interchangeable type-bars and/or 'golf-balls', and 'cold composition' was developed. Probably the best known examples of this technology are represented by the IBM Selectric Composer and the Addressograph-Multigraph Varityper which were available from the 1950s and 60s. Both 'hot' and 'cold' have disadvantages. Hot metal type casting being a potentially hazardous process involving heavy plant and considerable financial investment. Cold copy produced by, for example an IBM Composer, is restricted to

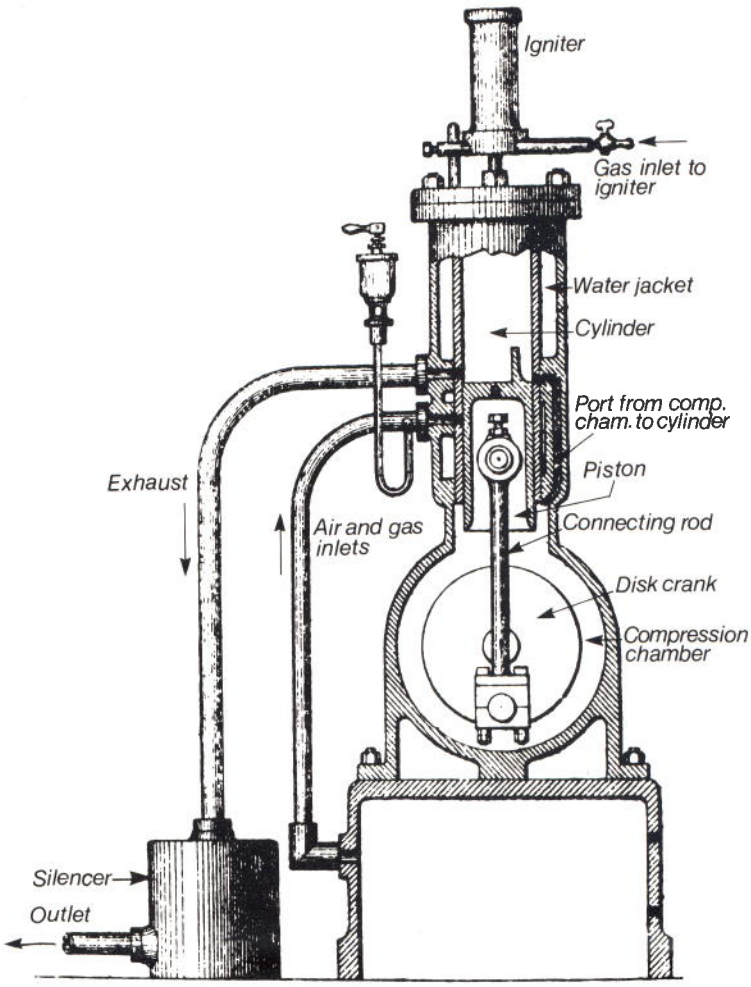
a small number of typefaces and is a 'one-off' production necessitating a re-type should it become inadvertently damaged. Not unknown!

In 1948 a new piece of equipment was introduced to the British print trade, the phototypesetter. Cumbersome and expensive at first, it incorporated an entirely new concept and from the outset looked likely to supercede both existing methods.

Basically, a beam of light is projected through letter forms to a light-sensitive surface which produces a photographic image of a word, sentence or paragraph, the matrix being manipulated to allow letters to appear in the correct sequence. Nowadays the 'matrix' is usually a disc which carries round its circumference a complete fount, with bold, medium, light, italic and various accents or symbols. Using a combination of lenses this image can be enlarged or reduced and, as it is fed to the phototypesetter through a computer, is stored on tape or floppy disk. Once the copy has been 'keyed-in', it is available to make additional copies (with different column widths, typefaces and typesizes) until the master disk or tape is wiped clean.

Since the advent of the micro-chip, phototypesetters have become smaller and relatively cheaper. But the combination of electronic 'keying' and precision electro-mechanical optics, means that capital costs cannot be compared with such machines as the IBN Composer. Certainly, at the moment, phototypesetting is not an economic way of producing the AIA *Bulletin* although the laser-printer may alter the situation.

Readers who maintain continuous runs of the *Bulletin* should note that we have altered the numbering system in order to re-adjust publication to coincide with our financial year. All volume 14 will now be published by the end of June 1987.



The Day valveless two-stroke engine as exhibited to the Institution of civil engineers on 10th January 1893. It was described as a possible prime mover for electricity generation.

Joseph Day (1855–1946) two-stroke engine pioneer. In 1952 staff of the Science Museum appealed - without success - for any information about an English pioneer of the internal combustion engine called Joseph Day. He designed a valveless two-stroke gas engine of considerable significance, which was patented in 1891-2. Examples survive in the Science Museum and the Deutsches Museum in Munich.

He was born in 1855 in Bayswater, and became one of the first engineers to train at the Crystal Palace School of Practical Engineering. After a 3 year pupilage at Stothert and Pitt's engineering works in Bath, he established himself as an engineer in 1878. After various partnerships and the first of a series of patents granted over 1878-1908, he built the Victoria Ironworks in Spring Gardens, Bath in 1883. He was elected AMICE in 1887.

An attempt to raise capital in 1892 to develop his Gas Engine patents failed to attract share-holders and Day and his last partner went bankrupt in 1893. Day then moved to Weston-Super-Mare where he remained active, as an inventor if not as a manufacturer until 1902. By 1904 he was in London and with the help of his father - a noted London lawyer - he recommenced the manufacture of Day "valveless" two-stroke stationary and marine engines by 1906. These were later produced by the Day Motor Co Ltd. of Putney in 1908. The engines had only three moving parts and would run equally well forwards or backwards. They achieved world wide sale, as petrol and paraffin models. Day was also an inspiration behind the two-stroke engined Trojan car of 1912. The First World War interrupted this work as the firm became busy on Government contracts. In 1923 his firm was reformed as the Day Foundry and Engine Co Ltd. in Richmond, Surrey and Day engines had ceased manufacture by 1927. He died, on Christmas Day in 1946 aged 91, near Twickenham, apparently quite forgotten.

He showed that the two-stroke engine could compete, especially in the field of marine engines, with the Otto four-stroke cycle, and he deserves proper recognition. Information on any aspect of Day's life and work is sought for a planned biography, in particular data on the evolution of the marine boat engine. News of the survival of any Day engines or other artifacts would be particularly welcomed.

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Lobby the media. A note from Colin Evans of Pickering in North Yorkshire, comments that in a recent discussion with Anthony Burton over tv coverage of stationary steam engine activities, it was suggested

that a multiple approach to the appropriate broadcasting authorities might result in some improvement. This is obviously a situation where AIA members, either individually or as members of an organised group, could help considerably and Colin has taken some trouble to search out the relevant addresses. A letter emphasising the importance of the stationary steam prime mover in the industrial history of this country would help the corporate cause and should be sent to:
For BBC 1 and 2, Mr A W Wyatt, Head of Documentary Features, BBC Television, Kensington House, Richmond Way, Shepherds Bush, London W14 OAX. **ITV**, Mr R Clarke, Manager of Documentaries and Features, Thames Television, 306/316 Euston Road, London NW1 3BB and **Channel 4**, Mr N Hart-Williams, Commissioning Editor of Documentaries and Features, Channel 4 Television, 60 Charlotte Street, London WIP 2AX.

BIRMINGHAM RAILWAY MUSEUM

On 6th August the **Birmingham Railway Museum** acquired a new working steam locomotive, *Henry* owned by Messrs. Courtaulds and latterly in the care of the City of Coventry.

Originally built in 1901 by Hawthorn Leslie to the order of Websters Brick and Lime Works in Coventry, at a cost of £1,104, this little engine is a representative of one of the all-time classic Tyneside locomotive designs.

It was named *Rosabel* after the daughter of Henry Webster, the Managing Director and was used to haul bricks along Websters Brickworks Railway for despatch over the LNWR Coventry-Nuneaton Line.

During the Great War, it was used on shunting work on the adjacent Ordnance Factory hauling massive 15" naval guns.

After the war the engine passed into the ownership of Courtaulds Ltd and worked for them until 1926 when it was part exchanged for a new shunting engine from Peckett & Sons of Bristol. This was *"Rocket"* now also in the Museum collection.

Rosabel was then overhauled by Peckett and Sons and in 1928 was sold to British Celanese of Spondon, near Derby. Here it was renamed *Henry* after the Swiss chemist Dr. Henri Dreyfus, chairman of British Celanese.

In 1974 *Henry* moved to Courtaulds factory at Foleshill, Coventry, eventually being preserved by them as a static exhibit.

In 1983 restoration of the locomotive was begun by a team working on a Manpower Services Commission Scheme. This very soon expanded in scope to permit restoration of the engine to full working order. The overhaul was carried out at the Edgwick Centre in Coventry.

Henry was inaugurated at the Museum's Autumn Steam Festival on Sunday, 5th October and will form part of the active steam fleet at the Museum.

The Museum has recently acquired BFK No.17018 Mark I coach for use as its locomotive support vehicle on main line steam excursions.

Whilst the existing first class compartment seating has been retained and refurbished, the brake compartment has been modified to contain a small galley, storage facilities and a souvenir sales counter.

The exterior of the coach has been repainted in BR (WR) chocolate and cream colours to match the Museum's existing stock.

The BFK joins GWR Saloons 9001 and 80972 to make three main line certified coaches in the Museum's collection, all of which are available for private hire and which ran recently on the Charter Train *"Mile Post 65"* Birmingham to Stratford for Mr. Derek Mayman's 65th birthday.

English Heritage Grants. The Government has allocated £5.7m. for rescue archaeology in England in the 1986-87b financial year - including £4m. to aid nearly 300 separate projects on sites of all archaeological ages. 200 of these are said to relate to post-excavation study and the preparation of work for publication. A further 26 are sites and monuments records, forming local or regional data banks. Excavations for the year account for only 32 of 292 projects - although there is a reserve fund of £459,000 to deal with unexpected threats to important sites. The Association has recently approached English Heritage's Chairman, Lord Montagu, to enquire how the total available funds are divided amongst sites of different age groups and classes, i.e. prehistory, medieval, industrial etc.

The June 1986 issue of *British Archaeological News* - published by the Council for British Archaeology - gives details of the launch of the code of practise developed to provide a framework for the relationship between developers and archaeologists. It is hoped that implementation of the code will actually prove to be cost-effective for both sides. The British Property Federation took an active interest and conducted negotiations on behalf of the industry. Copies of the code are available (price £1) from the Department of Urban Archaeology, Museum of London, London Wall, London EC2Y 5HN.

London's canals are receiving a boost with the publication of a full-colour promotional leaflet *Explore London's Canals*. Produced by British Waterways Leisure it describes the capital's canals, their history, and the varied and often unexpected opportunities that they offer for leisure.

These 54 miles of waterway provide a green corridor for wildlife, a resource for youth and activity centres, a good selection of fish for anglers, and a wide variety of architectural settings for artists and photographers; all within a central London location. There are regular boat trips, particularly popular being those through Regent's Park to London Zoo, while other boats offer cruising restaurant facilities for Sunday lunch or evening meals.

These and other leisure activities were featured at the annual Inland Waterways Association's National Waterways Festival held at Boston Manor Park, Brentford Middlesex, over the Bank Holiday weekend, 23-25 August 1986.

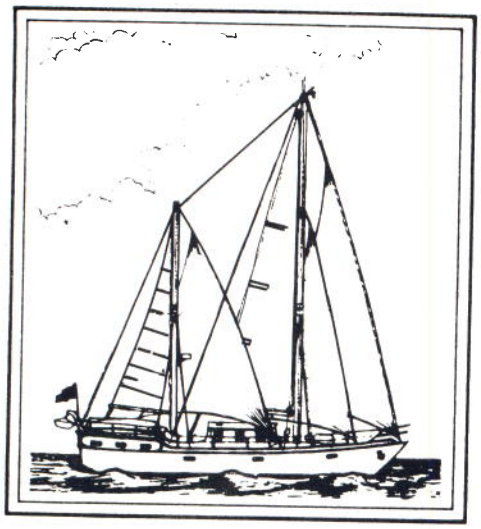
For those interested in the history of Britain's canals, the Festival offered the opportunity to buy a newly available video compilation of three much sought after classic canal films. The video cassette, *Canals - Commercial carrying this century*, captures the last stage of commercial carrying on Britain's canal network.

Both the *Grand Union Canal Carrying Company Film* (1930s, silent) and *Inland Waterways* (1950s) feature narrowboat carrying on the Grand Union Canal between London and Birmingham and, together, provide a fascinating insight into the third title, *There Go The Boats* (1950s), is an affectionate look at the last days of commercial carrying in the 1950s, from the working pairs of traditional narrowboats on the narrow canals to the barges and tankers of the broad waterways. the details of and changes to methods of narrowboat carrying this century. The third title, *There Go The Boats* (1950s), is an affectionate look at the last days of commercial carrying in the 1950s, from the working pairs of traditional narrowboats on the narrow canals to the barges and tankers of the broad waterways.

Copies of the video cassette, and the *Explore London's Canals* leaflet are available from: Information Centre & Canal Shop British Waterways Board, Melbury House, Melbury Terrace, London NW1 6JX. Telephone: 01-262-6711 The video film is available in both VHS and Betamax formats.

The London's Canals Project Officer can provide information on all leisure opportunities on London's canals, including useful contact addresses and leaflets and brochures.

Contact: Wendy Varcoe, British Waterways Board, Canal Office, Delamere Terrace, London W2 6ND Telephone: 01-289-9897.



SPINNING JENNY OF LUNE

If you have a 'few bob' to spare and fancy the holiday of a lifetime, contact Bob Mason of Clwch Mawr, Trefor, Anglesey (telephone 0407 720591) for details of **Industrial Archaeology and the Sea**, which will start from Bristol's City Docks on 29th May 1987 and end on the Lancaster canal some 23 days later. Transport will be by the large ketch *Spinning Jenny of Lune*, a 58'00" boat with a beam of 16'00" and a draft of 8'00". After a guided tour round IA sites in central Bristol the ketch will arrive in Cardiff on 1st June, Portmadoc on 4th June, Port Dinorwic on 8th June, Liverpool on 11th June, Douglas, Isle of Man on 16th June, coming to rest at Glasson Dock, near Lancaster on 20th June.

There will be accommodation for six people only, two doubles and two singles, in private cabins, or alternatively party members could join at Portmadoc or Liverpool for shorter holidays. At each 'shore-base' land transport will be laid on to visit industrial archaeological sites of prime interest, museums etc., thus cruise members will see such places as Big Pit mining museum in South Wales, the Festiniog and Welsh Highland Railways in North Wales, Albert Dock at Liverpool and the Laxey water-wheel in the Isle of Man plus of course many more other memorable sites. All this with haute cuisine, all dock fees, museum and transport costs will be irresistable to many but, alas, only available to a few. Bob Mason, who incidentally is president of the Northern Mill Engine Society, will be skipper on the trip and will respond to all queries.

One of the more impressive industrial archaeological sites to be visited by the *Spinning Jenny of Lune* will be the **Lady Isobella waterwheel** at Laxey, some eight miles north of Douglas in the Isle of Man. This is the visually most outstanding item of an interesting lead/zinc mine complex, active from the early 1700s until 1926, and notable for pioneering work with sulphide of zinc or 'blende' (ZnS), the zinc ore which took over from calamine (ZnO) as the vast supplies in Belgium and Silesia (Poland) ran out.[1]

The Lady Isobella wheel must have made an appreciable difference to output from the Laxey mine for with additional pumping now available, lead ore raised during 1855, twelve months after the 72'-0" diameter wheel began working, rose to 3,573 tons, an increase of 45%.[2]

In a similar manner to lead/zinc mines in Mid-Wales, the pumping machinery was operated remotely from the power source with a crank turned by the waterwheel converting rotary into reciprocating motion by 'flat-rods' which in turn enabled an 'up-on-down' movement to lift the pump-rods, which of course descended under their own weight. Although the 'flat-rod' section was comparatively short compared with Welsh mines (600 feet compared with 2,900 feet at, for example, Esgair Hir in Cardiganshire) it represented a technological advance which is now virtually defunct. At Laxey the mechanism has now been replaced using fifteen 35'-0" long balks of timber carried on bogies. The work is part of a five year programme of renovations and reconstructions planned by the Manx Government to make this major tourist attraction even more popular and was carried out by the Dorothea company.

References

[1]John Percy, *Metallurgy of copper, zinc, brass etc.* London, 1861.
[2]Robert Hunt, *British Mining*, London, 1887.

Sharpness Docks Industrial Development campaign was launched jointly by British Waterways Board and Stroud District Council in September.

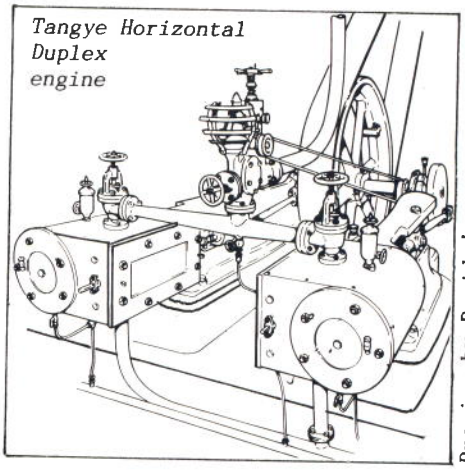
The Chairman of British Waterways Board, Sir Leslie Young CBE DL, explained that Sharpness fulfilled all the criteria necessary for industrial development - suitable land at the right price, good transport links and an available workforce.

He said that in conjunction with Stroud District Council, 66 acres of land in both public and private ownership have been earmarked for development. Several plots of varying acreages are already bounded by quays capable of accommodating ocean going ships of up to 5,000 tonnes. Traffic can move by waterway to Gloucester and Worcester and the dock estate is served by direct road and rail links.

Local authorities shared the Board's confidence in the future of the docks and had taken the initiative by improving road access to the nearby A38 and adjoining motorways.

"Traffic is developing well", he continued, "on new liner shipping services established between Spain and Portugal shortly before the accession of those two countries into the European Economic Community on January 1st of this year. A new £1 million fertiliser plant, on which construction work commenced in May went into production in mid July when the first consignment of raw materials arrived by ship. Other developments are currently in the course of negotiation."

Tangye's may play a part in the Space race. Paul Gibbons of Oakerthorpe, near Derby calls our attention to a recent Company profile in the *New Civil Engineer* which highlights a continuing problem for many old established engineering firms, that of marketing the products for which they have become legendary as designers and manufacturers. Tangye's started life as a partnership in Cornwall in the early 1850s, moved to Birmingham in 1856 and through working with Isambard Kingdom Brunel over the launching of the SS *Great Eastern* the following year their name became synonymous with the use of hydraulic jacks. By 1857 they were employing over 1,000 people and producing over 500 products including steam engines like the one pictured below, which still remains in the Port of Bristol Authority's workshops.



Tangye Horizontal Duplex engine

Drawing by David Jones

A chronology of Tangye's hydraulic jack operations makes impressive reading and includes such items as; 1878 Cleopatra's Needle placed in position in London. 1932 Sydney Harbour Bridge construction. 1956 Dartford Tunnel cutting shields positioned and 1982, Tangye jacks assisted in the raising of the *Mary Rose* from the Solent mud.

In the mid 1970s Tangyes employed 3,000 people but today the workforce is round about 100, and they are thankful to be in existence at all. After a series of serious financial difficulties they were finally saved by Brian Gould, who has an impressive record leading large companies, and the West Midlands Enterprise Board who put

£350,000 into the company. From a £300,000 deficit on a £3¼ million turnover in 1985 Tangye's are now forcasting a significant profit for the current year and have a healthy order book. Aggressive marketing backed by a high quality product has ensured that they remain where they have a right to be, in the vanguard of British mechanical equipment manufacturers, and their products, and particularly hydraulic jacks are used by the Ministry of Defence, police and fire services and are currently under assessment for NASA for the revised and more safety conscious Space Shuttle programme.

Letters to the Editor

Dear Editor

Perhaps the readers of the *Bulletin* might like to know of a project being undertaken in Lincolnshire. I have on my land the remains of a nineteenth century Arch Kiln, a comparatively rare form of Scotch brickmaking kiln. In 1985 I successfully applied for listing and since then have aimed to restore it, rather than just preserve it.

Work has now commenced. Mr. Martin Hammond (author of *Bricks and Brick Making*), has been technical advisor, and the local Council have been encouraging with MSC providing the workforce. They commenced site clearance on 21st July 1986.

Upon completion of restoration I plan to mount a display of information and any equipment available, to provide an insight into the rudimentary techniques involved in the production of bricks in nineteenth century Lincolnshire.

The display and the building would then be available for viewing by appointment. I'd appreciate any offers of help or advice that your members can offer this project. Should anyone wish to view the work in progress, then if they contact me I will be pleased to arrange this for them.

Yours sincerely

Mrs. Anne Fawcett
The Anchorage, Lakeside, Baumber,
Horncastle, Lincs. LN9 5NW
Tel: 065 887-330

P.S. The site is situated on the A158 (6 miles west of Horncastle). Adjoining the kiln site we have an area for touring caravans. If required we can provide self catering accommodation.

Dear Editor

May I add a few comments to the piece in *AIA Bulletin Volume 13 Number 3* on Exeter Power Station.

The Haven Road Power Station was known in Electricity Supply circles as "The Basin" power station and the Chief Engineer had offices at 184 Sidwell Street. Early alternating current supplies in Exeter were provided at 100 cps (Herz) by one Easton Anderson & Goolden direct drive engine/alternator unit and two Brush generators, belt driven by Alley & McLellan and Fowler engines, the change over to 60 cycles supply probably took place when The Basin was built.

In 1924 the station supplied 2 phase electricity at 2000 Volts and 60 cycles and consumers were supplied at 100, 200 & 400 Volts. The station contained 6 Babcock & Wilcox water tube boilers fitted with Greens Economisers and chain grate stokers, supplying steam at 210 psi & 638°F. Generation was by 3 x 400 kW. Bellis engined Westinghouse generators, 1 x 1000 kW. British Thomson-Houston turbo-alternator and a Metropolitan Vickers 1500 kW turbo-alternator. Direct current was supplied by a 200 kW. Bellis/Westinghouse generator and 2 x 200 kW Bruce Peebles motor generators. H D Munroe still reigned as Chief Engineer and A Buchanan was Station Superintendent.

By 1934 A L Keet had taken over as Chief Engineer with an office in Fore Street, the trams and reciprocating engines had gone as also had the motor generators. The station had been "selected" under the 1926 Electricity Act and had been connected to the 132 kV. Grid system; before this connection took place it was necessary to change the frequency to 50 cycles which had been adopted as the national standard. At least one of the original boilers had been removed and there were now 5 Babcock boilers and 2 John Thompson boilers. On the turbine side there were 2 BTH turbo-alternators 1 x 4 MW. and 1 x 4.25 MW. a Daniel Adamson 3.7 MW machine this was an uncommon machine as Adamsons were boiler makers and I assume they were made under licence but have not yet been able to confirm this. There were also 2 x 1.7 MW. turbo-alternators, one by Brush Ljungstrom the other by Metro-Vick, (probably the original machines uprated). The three smallest machines generated a 2 phase supply at 2 200 volts and were connected to the main 6 600 Volt busbars by two Scott connected transformers.

Shortly after Nationalisation, J Dempsey was in charge of the station, the Metro-Vick machine was no longer in regular use and had been down rated to 1.5 MW. and shortly afterwards it was de-commissioned. The two BTH generators were rated at 3.75 MW. and the station output was quoted as 12 MW. until its final demise in 1960.

As a retired power station engineer I am particularly interested in supply industry history and am trying to produce a bibliography of power station histories and would be pleased to receive information from any groups or members who have compiled such histories.

Yours sincerely

Ray Warburton
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After the article in the Summer 1986 *Bulletin* concerning the **Haven Road electricity generating station in Exeter,** members may like to know that a future use for these premises has been assured by the announcement that they are to be the future home of the International Sailingcraft Association, the charity which runs the Exeter Maritime Museum. The buildings will become their headquarters, and will also be used as a boat workshop for the Museum.

The Royal Engineers Museum at Brompton Barracks, Chatham is building up a collection of typical machinery used by the Sappers. The Secretary of the Royal Engineers Historical Society, Graham Hornby is looking for a Caterpillar D4 bulldozer to be exhibited with an Aveling grader already in their collection. This machine was current during World War 2 and its blade was operated by cables rather then hydraulics. Any help in locating a suitable D4 would be appreciated by Mr. Hornby, who can be contacted at The Coach House, Flowers Hill, Pangbourne, Reading RG8 7BD.

Did you think that the **Lancashire cotton industry** was dead? then talk to Peter Reed Textiles of Nelson. This private firm employs 60 people, is the leading weaver and manufacturer of bedlinen and have just opened a new £750,000 factory. It is said to be the first purpose-built weaving shed opened in north-east Lancashire for more than 60 years. The business was established more than 27 years ago, and has export markets in Australia, the Middle East and the United States. The majority of the 44 looms are under 10 years old and four new Belgian flexible rapier looms have just been installed at a cost of £30,000 each and are the first of their kind in Britain.

Council of Europe Forum. The Council of Europe would like to hear from interest groups whose campaigns have had a significant influence on public policy, administrative practice or legislations, and also from any whose actions have come up against insurmountable obstacles and ended in failure. Their accounts are to be used as case studies for a two-day forum in Strasbourg in

November 1988 bringing together members of parliament, local and regional authorities and representatives of interest groups and associations throughout Europe. The theme will be : "Are interest groups a help or a nuisance to parliamentary democracy?"

Interest groups and associations with relevant action of this kind to report may obtain further information from: Public Relations Services - DP1 - Council of Europe - B.P. 431 R6 - F.67006 Strasbourg Cedex, France.

Profit from Industrial Archaeology in Scotland. The world's smallest distillery, the Edradour distillery at Pitlochry has been working since about 1825, and the two stills yield 600 gallons of whisky a week. Now £250,000 has been spent on a museum and visitors' centre - and not a penny is charged to visitors. It is hoped that 75,000 persons a year will visit the distillery and at the end of the visit a generous dram of single malt whisky will be provided. The management relies on the inherent interest of the distillery and the distilling industry to bring visitors to the site, in the expectation that once there they will spend an average of £3-£5 each at the distillery shop. How many other industrial concerns could make IA work for them.

Devon County Council may be ordered by the Department of the Environment to rebuild a 16th century mill in Okehampton demolished by the Council's Property Department (including the Conservation Section) in advance of use of the site in a highways improvement scheme. This was in contravention of the mill's Listed status, and without the County Council having undertaken any repairs to the building since its acquisition. To give them credit, the District Council - West Devon Borough Council - required the County Council to submit an application for demolition even retrospectively. The County Council took ten months to comply with this requirement and then asked the DoE to approve its action. The mill had contained two undershot waterwheels, and it is said that the cost of rebuilding the mill will not be any greater than to have restored the original building. The Association has written to the Secretary of State for the Environment to give its views on the action of Devon County Council, and to suggest that the case illustrated the need to have a national review of the circumstances in which consents to demolish would be given to the owner of a Listed building where it had been purchased with a view to demolition and there had been an absolute failure to carry out any maintenance and repairs. Even if one came to the conclusion that there was little merit in forcing the County Council to create a replica of the mill, then at least the law should be amended to give the Secretary of State a power to require additional expenditure of an equivalent amount on similar purposes over and above the Council's existing budgetary provision. It seems to be an example of Devon County Council ignoring the Secretary of State's requirement by circular for local authorities to behave in a way which demonstrates to the public compliance with the obligations put on the owners of Listed buildings.

The Gunpowder Mills Study Group which was formed in Spring 1985, held a meeting in South Wales on the weekend of 6 - 8 June, based at the Aberdulais Falls National Trust Centre. Twenty-one members and guests attended the meeting, which was a special version of the Centre's standard Industrial Heritage Weekend, arranged to include an extended visit to the Glynneath Gunpowder mills site at Pontneddfechan.

An introductory lecture on the early industrial background of the region was given by Richard Keen of the Welsh Industrial and Maritime Museum. On Saturday morning the group visited Aberdulais Basin at the junction of the Neath and Tennant canals and Aberdulais Falls, which was the site of a copper mill, corn mill and later tinplate works and was a favourite subject of artists in the early nineteenth century. A tour of the gunpowder site was then conducted by Tom Pritchard, a former employee at the works, and Sidney Johnson, who are co-authors with Jack Evans of *The old gunpowder factory at Glynneath* (Merthyr Tydfil and District Naturalists' Society, 1985). Talks on mining and quarrying with reference to black powder were given on the Saturday evening by Rick Pool of the National Trust Centre and Arthur Thomas, a former miner now at the Cefn Coed Mining Museum.

Tom Pritchard (left foreground) a former employee at the Glynneath gunpowder mills, discussing his collection of artefacts with Bryan Earl, author of Cornish Explosives (Trevithick Society, 1978)

Members' contributions occupied Sunday morning and began with a talk by Colin Rynne of University College, Cork on recent archaeological work at the Ballincollig site near Cork city. Kenneth Major then spoke about horse mills and Wesley Harry showed coloured photographic reproductions of 18th century prints of Woolwich Arsenal held by the National Maritime Museum. Peter Clarke showed aerial photographs of Chilworth, Surrey, taken using a novel hydrogen-filled balloon, John Upton reported on recent garden construction work on the site of the House Mills at Battle, Sussex, Sidney Johnson showed slides of the Glynneath site and George Kelleher provided useful information on mills in Ireland, South Wales and Yorkshire. Brenda Buchanan suggested several projects for further research, including the transition from stamp mills to edge runners for incorporating gunpowder, the origin of the saltpetre which was imported into England from the Baltic in the late eighteenth century, and reasons for the apparently late adoption of gunpowder in mining and quarrying. The next meeting of the group will be on the weekend of 11 - 12 October and will be based on the Bedfont and Hounslow sites in west London, Further information may be obtained from Phil Philo, Curator, Gunnersbury Park Museum, London W3 8LQ

Glenys Crocker

Richard Hills given life membership of MRIAS. At a recent social evening organised by the Manchester Region Industrial Archaeology Society, Richard Hills former Director of the North-Western Museum of Science and Industry and founder member, secretary and until recently chairman of the Society was given honorary life membership as a measure of respect for his considerable achievements. We are grateful to A D George of the Manchester Polytechnic for information which forms the basis of this short profile.

Richard Hills was educated at Charterhouse School, Godalming, Surrey and leaving with eight 'O' levels and three 'A' levels he entered the army on National Service and was commissioned in the Royal Artillery. Returning to Queens College Cambridge in 1957 he gained a Certificate in Education with merit for a dissertation on the 'Outward Bound' organisation, with which he was involved. In 1964 he went to Imperial College, University

of London where he gained a Diploma for a thesis on *The Introduction of Steam Drainage to the Fens*, after which he obtained a Research Assistantship at the University of Manchester Institute of Science and Technology.

The move North was to be the beginning of the Greater Manchester Museum of Science and Industry as we now know it. Whilst carrying out research into the History of Textile Technology for which he was awarded a Phd he realised that much of the textile machinery, had either disappeared or was about to do so.

Using whatever storage space he could find within the department, he spent all his spare time collecting engines, looms, spinning frames and other machinery from mills which were due for demolition. His interest began to extend over the whole field of engineering, hence examples of the products of Armstrong Whitworth, Ferranti, Mather & Platt and Beyer Peacock. Aviation became represented by Avro drawings and photographs. Soon storage became an acute problem with many potential exhibits lost during the years up to 1968, when the first move to found a museum was made. In 1968, the City of Manchester, and the University of Manchester contributed to a fund which enabled half of Oddfellows Hall in Grosvenor Street Manchester, to be opened as the Manchester Museum of Science and Technology. The other half of the buildings was occupied by the University Methodist Chaplaincy. In 1971-72, this was rehoused and the additional space taken by the museum to display exhibits which had been stored under railway arches, damp warehouses etc. By this time Richard Hills had gathered a small and dedicated team, Peter Batson, Bob Monders and Syd Barnes and many others with specialised interests. This team continued under his leadership, to rescue and restore examples of the North West's industrial heritage.

In keeping with his original idea, the new museum instituted 'working days' on which schools and other organised parties could actually see the machines and operatives working as they had done many years before. By 1979, the museum was well established, even though much of its collection could still not be shown and Richard Hills became a founder member of the Liverpool Road Station Society which had been formed to prepare for the 150th anniversary celebrations of the Liverpool and Manchester Railway which were due to take place in August/September 1980.

Due to the involvement of the Greater Manchester Council in the planning of these celebrations, the possibility of using the Liverpool Rd Station Site as a new home for the Museum was mooted. The chance of more museum space sent Richard Hills on the trail of a Beyer-Garrett Locomotive which was still working with the South African State Railways. Early in 1984 after five years effort, this magnificent Manchester built engine returned to its home town and is now almost completely restored. In search of his interests Richard Hills has been to the U.S.A, Denmark, Holland, Germany, Iran, Israel and South Africa (the Beyer-Garrett engine) and has lectured in Universities and to Societies in many of those places. In the role of Consultant he has been involved in projects such as the Styal Mill restoration for which he conducted the feasability study on behalf ot the National Trust. In addition he has found time to write four books, thirty-nine articles, seven film scripts and several guides to exhibits in the museum. He is now entering the priesthood.

AIA Society Spot

I may have accidentally given the impression in this column in the last *Bulletin* that I was only expecting comment or reaction from Society Secretaries to the *Special Issue Bulletin*. I would like to make it clear that this is not the case; we would be delighted to receive feedback from any readers, whether already AIA full members or members of affiliated societies. Did you like the idea? Did you read your copy? Even, dare I say, did you get your copy? I was at Loughborough to talk about this and future issues, to anyone who wanted to.

If no-one says a word about it I shall be driven to the conclusion that no-one has read it!

The March weekend next year will not, this time, be combined with a Council working weekend. It is clear that the two do not run easily together, so we have scheduled an extra weekend in November for the Council. Representatives in March will therefore not find that Council members are missing from some of their meetings, and we hope that this will result in more profitable discussion sessions.

Those who attended in March will remember the discussions about BP's *'Youth into Industry'* Scheme, and the ways in which Societies could help. If any Society did follow the suggestions made there and established links with schools, how about letting the rest of us know about it via a Bulletin or Review article? It would be encouraging, especially in view of SUIAG's experience; they offered help to schools directly and via museums, but met with no response; yet theirs is an active group with a high profile locally.

I have received offers to host visits from other societies from the following groups, in response to the section in the last Bulletin:

1) Leicestershire Industrial History Society: contact M Palmer, Fairview, Chapel Street, Measham, Burton-on-Trent.

2) Society for Lincolnshire History and Archaeology: contact A Wright, Yarborough Lodge, 32 Yarborough Road, Lincoln LN1 1AS.

3) Southampton University Industrial Archaeology Group: contact P Moore, 51 Porteous Crescent, Chandlers Ford, Hants SO5 2DG.

4) Surrey Industrial History Group: contacts Mr & Mrs D Taylor, Orchard Cottage, Alfold Crossway, Alfold, Cranleigh, Surrey. GO6 8JE.

For the time being, offers will be listed in this column, but Council are considering the publication of an information pack for Societies, perhaps on an annual basis, and should we do so all hosting Societies will be listed together there. We would be interested to hear from Societies about the type of material they would find useful; we already have a substantial contribution from Pam Moore on arranging such visits both at home and abroad. Contributions and suggestions in the first instance to me, please.

One final request: could you check that we have the correct names and addresses for Society contacts? I'll be at Conference, of course, to collect alterations or new names and addresses, but again changes can be sent to me and I will ensure that they go to the right places. We suspect that we have out-of-date contacts for some groups and that material is not reaching its destination.

Janet Spavold

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