

Counting the cost of the 'free' bridge

AIA Bulletin 13/2 (the last one) carried a short piece on the testing-to-destruction of an 18th century masonry canal bridge near Shrewsbury and how it refused to concede defeat until a load of 215 tons had been applied. Coincidentally, and rather ironically in view of its close proximity to AIA headquarters at Ironbridge, the Jackfield 'free-bridge' only a few hundred yards from its distinguished neighbour, **the Iron bridge**, is beginning to show its age and a recently applied weight restriction is causing minor chaos, particularly to the administration of Ironbridge Gorge Museum coach excursions. **John Powell writes:**

The ability of the Iron Bridge to outlive its neighbours and rivals — something that it has been doing successfully since the Great Flood on the River Severn in 1795 — now seems certain to continue well into the next century.

The only real challenger for road traffic in the immediate vicinity was the bridge built about three-quarters of a mile downstream at Jackfield, which was opened in 1909 and allowed the Iron Bridge to be closed to road vehicles when it was found to be unsafe in the 1930s. Since it was the first bridge in the Ironbridge Gorge without a toll, this 1909 bridge was, and has been ever since, known as the Free Bridge. It was built by the Liverpool Hennebique Ferro-Concrete Contracting Company Limited, of Bootle, and is an early example of the use of concrete for bridge building. Deterioration in the structure is nothing new: indeed, it began when the bridge was less than thirty years old, but recent tests have resulted in an immediate reduction in the (frequently abused) weight limit of 10 tons down to 3 tons, plus an announcement that the bridge will be replaced (though listed) at an early date. Suggestions that a temporary Bailey Bridge be placed alongside, have been supplanted by a later announcement that this will go 'on top' of the 1909 bridge. The weight restriction has obvious implications for coach parties touring the various sites of the Ironbridge Gorge Museum, and any organisers of such trips should take this into account until the new bridge materialises.

Two miles upstream of the Iron Bridge is the steel girder road bridge at Buildwas. This was built in the first decade of this century (girders marked E C Keay of Birmingham 1905) and replaced the Thomas Telford iron bridge of 1796, itself built as a result of the Great Flood already referred to having destroyed the medieval bridge. Telford's bridge was replaced as a result of land movement, and it appears that this problem may have occurred again (the bridge is not far from the site of the huge landslip of the 1770s, known as the 'Madeley Earthquake'). Unconfirmed rumours suggest that the bridge will be replaced when the recently-approved Ironbridge By-pass is completed, since the by-pass will terminate on the north side of the bridge, and the route is an important outlet for lorries carrying limestone from quarries on Wenlock Edge.

Editorial comment: Obviously Jackfield bridge was not designed to be the strongest bridge in the world for on 19th June 1909, after it had been commissioned, the Wellington Journal reported that the official test load had consisted of a 14 ton steam roller which was in fact 2 tons heavier than had been calculated for. Nevertheless: this relatively early failure seems unusual in view of its ancestry for it was a Mouchel-Hennebique reinforced concrete structure built in an era when this named

combination virtually guaranteed it a long and prosperous existence.

Francois Hennebique, one of the more notable of the French ferro-concrete pioneers, always disapproved of extensive advertising of his system, preferring to rely upon completed works and satisfied customers. Early in his commercial life he established a chain of selected contractors who were chosen from among 'the most competent and confident in the country'¹ and he succeeded in creating an international network of contractors who were licenced to construct to his system and often trained in the parent organisation. Contract supervision was close and attentive and particularly during the first few years of his operation in Britain (1897 - 1909) workmanship was of the very highest quality.

Half a century later the **Building Research Station** and the **Cement and Concrete Association** investigated the durability of early reinforced concrete, which made it inevitable that they examined many Mouchel-Hennebique structures. Just one example was a factory built in Hull in 1900 and said to have 'stood normal and at time rough, usage with negligible maintenance for over 50 years . . . and was in remarkably good condition'.² Associated with this building was a reinforced concrete girder bridge of about 40 ft span over



Jackfield 'free bridge' today

a canal erected in 1902. In 1954 it was 'still carrying heavy industrial traffic without showing any signs of distress'.³

Of course there were failures and the study of defects, resulted in repair methods being evolved. Possibly the Jackfield bridge came in this category and maybe the repairs carried out did not completely rectify the faults which have since become more serious.

References: 1 *Francois Hennebique: The specialist organisation and the success of Ferro-concrete.* A paper read to the Newcomen Society by Dr Patricia Cusack on December 12th 1984. 2 *National Building Studies Special Report number 24* by Dr S B Hamilton, HMSO 1956. 3 *Ibid.*

Appointment of New Chief Executive for British Waterways Board which announces the appointment of Mr B C Dice, as Chief Executive with effect from 1st April 1986.

Mr Dice was formerly a Main Board Director of Cadbury Schweppes plc, having served in various senior capacities with that company since 1960.

South Eastern Region IA Conference. On Saturday 12 April, the fourth SERIAC was held, in Southampton, hosted by Southampton University Industrial Archaeology Group. The theme chosen was 'Sea and Ship', and about 140 delegates attended the meeting, from all over Southern England. The Chairman for the Conference was Maldwin Drummond, a notable

Hampshire figure, and seven papers were delivered — Southampton Docks . . . a History (Edwin Course), Shipbuilding in Victorian Southampton (Adrian Rance), IA of London's Dockland (Bob Carr), Historic Architecture of Portsmouth Dockyard, (Ray Riley), HMS Warrior (John Wells), The Art of Building Ships Down the Ages (James Paffett), The Development of Seaside Resorts (Pam Moore).

A programme of visits was organised for the following day, and the group toured Southampton Docks, Twyford Pumping Station, Portsmouth Dockyard, Southsea and Southwick Brewhouse Museum.

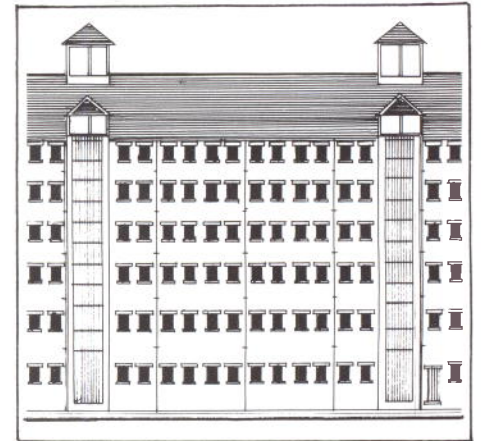
Next year's meeting, to be hosted by GLIAS, is on **Saturday 11 April** and will be taking the theme of Twentieth Century Industrial Archaeology. Further details from Dave Perrett, 33 St Margarets Road, Brockley, London SE4 1YL.

Pam Moore



Buildwas iron-bridge, c1905

Telford's Buildwas iron-bridge of 1796



Approval to convert **Llanthony Warehouse**, one of **Gloucester Docks'** historic warehouses, into the National Waterways Museum and offices has been given by the Secretary of State for the Environment. The opportunity to start work on this imaginative £3.5 million project marks another step forward in British Waterways Board's plans to redevelop Gloucester Dock.

The Museum will be extensive. It will occupy the lower three floors of the warehouse as well as traditional buildings recovered from canalside sites around the country and rebuilt on open space in front of the warehouse. These will house a 'living museum' where craftsmen can demonstrate typical skills, such as blacksmith, rope fender maker and canal art painter found around the waterways in former times. The Museum site is bounded on two sides by water where floating exhibits will be moored. Ample car and coach parking space will be provided for visitors.

The upper floors of the warehouse will be converted to offices, two of which will accommodate the Board's staff based in Gloucester and the further floor will be available for lease on the open market.

The Board have formed the National Waterways Museum Trust to establish and run the Museum with the aim of providing visitors with an accurate record of the development of waterways and their part in Britain's heritage. The Trust will enable all interested parties to support and fund the Museum and associated archives. In the early years the operation and marketing of the Museum will be organised by the Board under the direction of the Trust but it is planned that the Trust should become fully independent of the Board in later years.

Cob and Pise de Terre. To those who live in Devon or visit the county, cob is a familiar material for it has been used down the centuries for the construction of very many domestic and agricultural buildings over a wide area.

Cob houses of the Elizabethan period are not uncommon and walls of this material remain in good condition for long periods provided they have dry foundations and a good protecting roof. Hence the old Devon saying 'Giv' un a gude hat and pair of butes an' er'l last for ever'. Early examples which support this statement include, among many others, Lewishill at Dunsford dating from the latter part of the sixteenth century and Hayes Barton at East Budleigh, where Sir Walter Raleigh was born.

The slightly wavy surfaces of rough rendered cob walls and the soft contours at angles and changes of direction are characteristic of most domestic and agricultural buildings in this material but it has been used also for more formal buildings and there are large 'Georgian' and 'Victorian' houses in both the rural areas of the county and the smaller towns where a thicker ruled and trowelled rendering with precise angles hides walls constructed of cob.

Historically, there have been few brickworks in Devon and stone suitable for building occurs in only a few areas. The soil of Devon, however, as in many parts of Wessex and in Wales, is well suited to the formation of cob and this allowed the old Devonian countryman in need of a house to build it himself from materials readily to hand.

Cob is a mixture of shale and clay, straw and water, though the relative proportions of the first two ingredients varies depending on their individual peculiarities and heather was sometimes used in place of straw. As with so many country crafts, the variations of local custom arose from sound practical experience in the use of the available materials. Shale, or shillet, is a stratified formation of a slaty nature which is common throughout the area and most types of clay soil found in Devon are suitable for cob making. Some years ago a sample of typical old cob walling was analysed and found to contain:

Stones (residue on 7x7 mesh sieve)	24.40 per cent
Coarse sand (residue on 50x50 mesh sieve)	19.70 per cent
Fine sand (through a 50x50 mesh sieve)	32.50 per cent
Clay	20.60 per cent
Straw	1.25 per cent
Water etc	1.55 per cent
	<hr/>
	100.00 per cent

It is significant that, when placed in water, this sample quickly fell to pieces.

The old method of mixing was to place the shale and clay in a heap about 6 ft in diameter, four men usually working together. Two men, each with a 'cob pick' (a tool like a small iron fork with a wooden handle about 4 ft long) turned over the material, standing on and treading it all the time, whilst the remaining pair sprinkled on water and barley straw. The material was then turned over again in the other direction, treading continuing until all the ingredients were well combined. 'Twice turning' was usually considered sufficient. There is some evidence to suggest that in early times the mixture was trodden together by oxen.

The depth of foundation required for a cob wall naturally depended on the character of the site as also did the spread of the footings, if any.

The bottom of a cob wall is its most vulnerable part, exposed as it is to driven rain, back splash and casual impact and it is there that deterioration often begins. A base wall of brick or stone is very desirable and this should be carried up about 2 ft above the surrounding ground level and finished with a damp course, preferably of slates in cement, off which the cob construction is started, though damp courses were not used in many buildings. In fact the base of many old walls is of cob and not masonry and the traditional method is to provide a deep skirting of pitch or tar, or a mixture of both, applied to the rendering that should completely cover the exterior of all cob work.

The thickness of cob walls can be anything from 18 in, which might be found in single-storey buildings, up to 3 ft, though an average width for a two-storey cottage would be about 2 ft. The first floor walls are generally the same thickness as those below because if they were reduced in width the extra weight thrown to one side of the ground floor walls would tend to make them bulge unless quite dry and thoroughly set.

In building, a man would stand on the low base wall and lay the material handed up to him on the cob pick, thoroughly treading it into position and using his heels to ensure compaction. The courses were often about 2 ft high and the cob was laid and trodden in diagonal layers to achieve proper bonding. The construction period was usually from March to September and each course took two or three weeks to dry. Internal plastering and fitting could be done in the winter but a year, or even two years, had to be allowed before the walls were dry enough for external rendering and so building in cob was a lengthy business. The material was rarely laid between any form of shuttering as the boards would have delayed the drying-out process. The usual method was to allow the material to project beyond the base wall an inch or two on each side. At the completion of each course the corners were plumbed up from the base wall, a line was stretched through and the wall was then pared down plumb with the 'paring iron' (a flat iron blade about 8½ in wide attached to a straight wooden handle about 6 ft long) by a man standing on the wall.

The external rendering was usually composed of lime and hair mortar, either 'rough rendered' or of 'slap dash' and was finished with lime whitening. A better mix for modern repairs is cement, lime and sand in the proportions 1:1:6 and the finish given in these days is often of emulsion paint.

'Pise de terre' is merely the French for rammed earth. Pise is the very simple manual operation of compressing earth in moulds or cases and was introduced into France by the Romans and used for centuries in the construction of walls, mainly in the province of Lyons.

Pise is essentially different from cob in that one ingredient only, earth, is used dry, always between moulds or shutters, and adhesion is achieved by ramming to unite the particles together and thus encourage the natural attraction which is also a characteristic of the particle formation of stones. Cob, on the other hand, might be regarded as a kind of mud or clay concrete reinforced with straw. One is dry and the other a wet construction.

Traditionally, walls of pise de terre were built off masonry base walls rising about 2 ft above ground and 18 in thick. Open-ended timber box shutters about 10 ft long and 2 ft 9 in high were placed thereon and were

filled with soil in layers three to four inches deep spread by the men's feet and then well beaten and compressed with the rammer before further soil was added. When the shuttering was filled a section of wall about 9 ft long and 2 ft 6 in high had been completed and the shutter box was then taken to pieces and reassembled to form the next length until the first course was completed. The next course then proceeded in the opposite direction, vertical joints of alternate courses being staggered or bonded. The rammer or 'pisoir' was generally of hardwood, square in section where adjoining the long wooden handle but with curved sides tapering to a point. Repeated strokes of this tool forced out the superfluous water and consolidated the earth, which was a loamy or gravelly soil from which all vegetable material had been removed.

On completion walls were indented with a hammer or an axe to form a key and rough-cast rendered externally with a lime and sand mortar, a new coating being added perhaps every 12 or 15 years.

Both cob and pise de terre are perfectly practicable forms of walling today and no doubt could easily achieve the thermal insulation levels required by current building regulations. Though the cost of the materials would be minimal, present labour rates would almost certainly make these forms of construction uneconomic, however, even if 'building operatives' prepared to use such unsophisticated substances could be found.

James Rowe

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Boulton & Watt Rotative Steam Engine in Australia. The engine is reputed to be the oldest surviving rotative engine in the world. Its creation marked a turning point in the industrial revolution because it allowed the application of steam power to all kinds of machinery, thereby making power available on a scale previously unknown.

It was designed by James Watt and built by Boulton & Watt in 1785 and initially installed in Samuel Whitbread's brewery in London to drive the malt crushing mill.

It quickly became one of the sights of the capital, and its fame reached even the Court. On May 14, 1797, King George III with Queen Charlotte and their four children visited the brewery and inspected the 'wondrous works to be seen there' — this engine foremost amongst them.

The Whitbread engine itself was of special significance as a prototype of rotative steam power. Once installed it was so successful that shortly after, other London brewers were eager to follow suit. Boulton & Watt were deluged with orders for 'an engine like Mr Whitbread's and by 1796 eleven others were at work.

This engine features all the main inventions in steam engine technology for which James Watt is famous, including the separate condenser, sun and planet gear and double acting engine, parallel motion and the centrifugal governor.

How the Engine Came to Sydney. In 1887, the engine was dismantled to make room for a more powerful one. The engineer in charge of the work at Whitbread's happened to be a friend of Archibald Liveridge, a Trustee of the Museum of Applied Arts and Sciences who in turn happened to be in London at the time.

It appears that Samuel Whitbread was simply asked to give the engine to the Museum and it was *duly arranged, arriving in Sydney by ship in June 1888.*

Its massive size and weight created a few problems for the rather small Museum at the time and the engine languished on the wharf for several years. It was eventually installed in a special building behind the Museum in Harris Street, Ultimo where, in 1930 an electric motor was installed to put the engine in motion.

Two years ago, the engine was removed to the Museum's Castle Hill site where it has been extensively conserved and restored by Museum staff with contracted outside help. The steaming of this engine is significant as it is almost one hundred years since it operated under steam and 200 years since it first started work.

The Boulton & Watt rotative steam engine, by its sheer size and presence, will dominate the exciting technological displays in Stage II of the Power House Museum when completed in 1988. Surrounded by some of the oldest and newest examples of science and technology, the Boulton & Watt will take pride of place as a mighty symbol of humanity's inventiveness and achievement.

Information Required. French Burrstones — a Quest. Any member who can contribute towards this enquiry should contact **Owen Ward** at 77 Hansford Square, Combe Down, Bath BA2 5LJ. Telephone: 0225 832529.

Between 1877 and 1900 the French recorded a vast export trade in ready-built burrstones for corn milling. Of the thirteen thousand or more stones which left the borders of France, something like a thousand came to England, every year for twenty-three years. Of these, it is at present possible to identify just one. It lies in Stone Cross Windmill, Sussex and declares its own origin by means of the maker's plate set in the cement backing. There were many French manufacturers who exported stones from the middle of the 18th century onwards, but nearly all were based at La Ferte-sous-Jouarre. On such stones as bear any indication at all, the name of this small township is usually indicated.

As an alternative to a plate, a casting round the eye of the stone may carry a manufacturer's name; it is possible to find a name on one of bands round the stone, or simply stencilled onto the backing. Sometimes the covers on the balance pots carry the name of the millstone maker rather than that of the patentee or supplier of the pots themselves.

But where are these thousands of French French Burrstones? Were they all re-exported to contemporary British colonies? Were they all re-labelled by the English importers? Have they all been broken up and either thrown away or re-used?

Any clue to a French French Burrstone, anywhere in Britain, or even a piece of one, would be gratefully acknowledged, and will be cheerfully followed up, as circumstances permit.

Those individual members and societies who are engaged on adapting water-wheels, other parts of millwork or perhaps metallurgical machinery originally designed for quite a different location, might usefully employ a fellow enthusiast who just happens to be a qualified engineer. David Bick, not unknown amongst industrial and/or mining historians is such a person who has recently decided to take early retirement after 35 years in mechanical engineering design. David a chartered mechanical engineer and recently elected a Fellow of the Society of Antiquaries is setting up business as a design consultant whilst, of course, continuing writing and lecturing on industrial archaeology and local history. In 1980 he received the Institution of Mechanical Engineer's Bramah Medal for his invention of the Dowty Wagon Control System, now in world-wide use and can be contacted at The Pound House, Newent, Gloucestershire.

David Bick has also sent us the following note on Frongoch lead mine, near Aberystwyth.

Frongoch Lead Mine. This celebrated lead mine near Aberystwyth is well known for its wealth of industrial remains, including three Cornish engine-houses, crusher-houses and dressing-floors. It has recently come on the market at a relatively low figure, and it is hoped that the local authority will acquire the freehold with a view to promoting a leisure

area and general amenity.

The buildings, though in a ruinous state, are still by far the best collection of metal-mine structures surviving in Wales, but very regrettably, within the past few weeks one of the enginehouses has been badly and irresponsibly damaged.

A monograph on the history and industrial archaeology of Frongoch is in preparation, to be published later in the year by the Northern Mines Research Society. The authors are David Bick on behalf of the Welsh Mines Society, and the Royal Commission on Ancient and Historical Monuments in Wales, from whom financial assistance towards publication has been promised.

Albert Dock. Another step in the re-vitalisation of Liverpool's Albert Dock complex occurred on March 8th with the opening of new displays by the Merseyside Maritime Museum in the warehouse adjacent to Canning Half Tide Dock.


The displays, which appear to have had an extremely generous budget, tell the story of emigration from Liverpool to the United States and Canada in the 19th and early 20th centuries. Computer terminals, giving information on tracing ancestors, plus multi-image video monitors take their place alongside more conventional display panels, artifacts, etc.

The 'latest technique' in the museum world is also employed, namely the use of actors attempting to bring life to exhibits and involve visitors in a two-way dialogue and role-playing session (whether they want to or not!) In a dimly-lit mock-up of a Victorian street, visitors are accosted by costumed people who in turn offer to find 'good accommodation' and then 'a cheap passage'. Having been led on board a mock-up ship, they are given vivid descriptions of conditions at sea in a quite convincing below decks area. On emerging in the 'New World' swindlers offer various bargains to the gullible emigrants.

With work progressing rapidly on the Tate Gallery and living accommodation in other warehouses, and many shops and eating establishments already operating, Albert Dock is well worth a visit this summer by AIA members who have not been at all, or who have not been since the dereliction shown in the pages of the AIA Bulletin some years ago.

Passing By. Some of the industrial monuments for which we feel most affection are those that we pass regularly on journeys along major routes, regardless of whether or not we know anything about them. Two fine examples in the Midlands are currently in the news.


Travellers who persist in using the A38 through Worcester, rather than going past on the motorway, cannot have failed to notice the fine red brick building alongside the ring road which has been sadly decaying for a number of years. This was **Fownes Glove Factory** (see illustration), and according to Worcester City Museum's booklet 'The leather glove industry of Worcester in the nineteenth century' by D C Lyes, it was built in 1884, with the third storey being added some years later. It once had a special counter for the reception and examination of work from outworkers, and had separate staircases inside for male and female workers. Together with its outbuildings, it has been suffering from vandalism and dilapidation for at least ten years, but has fortunately been reprieved. Now swathed in scaffolding, hoardings outside



MEULES A MOULINS ET CARREAUX
• BAILLY ET CIE •
PROPRIETAIRES DE CARRIERES
FOURNISSEURS DU GOUVERNEMENT
A LA FERTES JOUARRE (S. ET M) FRANCE

GRANDE SOCIÉTÉ MEULIÈRE
DUPETY, ORSEL & cie
 LA FERTÉ
 SOUS JOUARRE

The only recorded French Burrstone with a maker's plate in England? Reproduced from 'A Guide to Stone Cross Windmill' by J Roberts and R Hall (Sussex)



Drawn from a French Burrstone in Cassel windmill (Nord) France. This ring is round the 10" eye

Drawn from a French Burrstone in Meulebeke windmill. The plate measures 9" by 7"



reveal that it is undergoing conversion to become the Fownes Hotel.

Similarly, no-one passing the Oxfordshire town of Chipping Norton can have failed to glance across at **Bliss Mill**, nestling in the valley, and despite its impressive appearance, seeming somewhat incongruous in this part of the country. An article in 'Country Life' has given the history of the building (see AIA Review Abstracts, Spring 1986) which dates from 1872. Now a Lancashire firm has been commissioned to make a study of future uses for the mill, which has been disused since 1980. They have produced a feasibility study for circulation to interested parties (copy in the AIA Library at Ironbridge) and welcome public comment: those interested contact Derrick Wade & Waters, Old Mill House, 60 School Lane, Bamber Bridge, Preston, Lancs PR5 6QE.

John Powell

Within a stone's throw of the Exeter Maritime Museum, the **Exeter Haven Road electricity generating station** now stands quiescent and like so many pioneering buildings of earlier technological development, awaits a new owner, and a new use. But before it is forgotten completely we are able, thanks to the enterprise of James Rowe of the Exeter Industrial Archaeology Group, to give a short account of its history. We are also indebted to Peter Lamb of SWEB and Avonbank archives.

Exeter was the fifth private company to establish a public power supply in the South West in 1889.

Mr Henry Massingham, a well known boot and shoe merchant, had already set up the first public supply in Taunton five years earlier.

And it was he who persuaded five local businessmen to become directors of the Exeter Electric Light Company.

Seven years later, however, Exeter Corporation purchased the company and set about an elaborate expansion programme.

In 1903, they built the Haven Road station under the glamorous design and guidance of Exeter surveyor and architect Mr Donald Cameron.

The building was constructed of brick and it had an attractively designed front facade.

Inside the engine room was tiled throughout with cream glazed bricks and fancy balustrading on the overhead walkways.

The station's electrical design and specification was carried out by Exeter Corporation electrical engineer Mr H D Munro, although the tenders were approved in conjunction with a well known electrical engineer of the time Mr Robert Hammond, of Brighton.

The major plant consisted of four triple expansion Bellis and Morcom engines supplying three 400kW and a 100kW alternators. All generated 2,200 volts at 60 cycles per second.

Coal was brought to the site by rail and by barge and water was obtained for cooling purposes from the dock's basin.

High pressure cables were laid from the new station across the river to the city centre and consisted of paper insulated lead covered cables laid in ducts.

The first such cables had been impregnated cotton, lead covered and armoured with galvanised wires. The low pressure cables were even better protected in rubber sheathing drawn through iron pipes.

Over the next 50 years the power station was extended and the small engines and alternators were replaced with larger turbine sets increasing the capacity to 15 MW.



Following the station's closure by its new owners the CEBG in 1960 it stayed empty for two years until SWEB took it on and converted it into a main depot for Exeter district.

The old boiler houses were demolished and new workshops and offices were constructed in their place. The main turbine hall was re-roofed and turned into a major plant store.

Now it stands as a monument to the early days of the Electricity Supply Industry.

The AIA Conferences for '86, '87 and '88 are all underway with a considerable variety in locations (even if they are all in the bottom half of the country) which should provide those who go every year with a considerable addition to their personal store of IA experiences.

1986 is at **Loughborough University** and as the Conference booklet indicates puts on display the vast industrial plethora of the East Midlands. It is booking well and anyone who is thinking of going but has not actually sent off an application should hurry. A refusal often offends . . . as they say.

1987 will be based on the **University of Bath** above the Georgian city and introduces delegates to the traditional industries of the area, stone-mining and dressing, Port of Bristol operations, and chocolate and tobacco processing. Dates 10th to 12th September 1987 with extra events **before**.

1988 will see the AIA Conference move across the Bristol Channel to the **University of Wales at Swansea** with its associations with coal, iron and steel (more specifically tinplate) non-ferrous metal production and, again, port facilities. Dates 9th to 11th September 1988 with extra events **afterwards**. Probably up to Thursday 15th September 1988.

Details of these last two conferences will be available later and they will, as ever, be under the overall control of the AIA Conference Secretary who has recently changed his address. **David Alderton** can now be contacted at: **48 Quay Street, Halesworth, Suffolk IP19 8EY. Telephone number 09867 2343.**

Have you noticed how it always seems to be the busiest people who get involved in new projects? Glenys Crocker is deeply involved in the Surrey Industrial History Group and the Gunpowder Mills Study Group, both thriving enterprises issuing a regular stream of very readable publications.

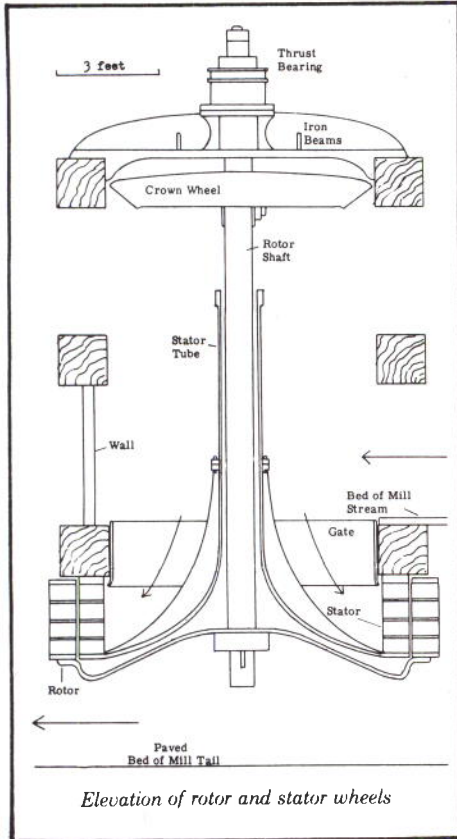
Now Glenys has written on notepaper bearing the legend **The Godalming Water Turbine Trust** to give details of a new restoration project and a fascinating booklet entitled **The Godalming Water Turbine**, written by . . . who else? Glenys Crocker.

Writing the Foreword, Neil Cossons comments that although the conventional waterwheel and its associated millwork has been widely studied, recorded and preserved, the water turbine, largely because of visibility problems, has to a great extent been neglected.

The Godalming turbine was installed at Cateshall paper mill, Godalming, by the firm of Spicers in 1869 and was manufactured by McAdam's of Belfast. It has survived and

in 1980 was scheduled as an Ancient Monument. In the following year it was removed from Cateshall (which was being partially demolished) and removed to Westbrook Mill, also in Godalming, for conservation and re-erection as an historical engineering exhibit.

Naturally money is needed and the booklet, which tells the story of water turbines in general and the Godalming turbine in particular, is aimed at contributing cash to the Trust funds. It contains six diagrams and eleven pictures describing the theory and practice of water turbines and showing the Godalming turbine in situ and during the process of removal.



A joint effort by the **RFD Group**, the **Surrey Archaeological Society**, **Rutland Group Holdings** and **Spicers Limited**, this publication stands on merit whichever way one looks at it. It is a contribution to technological history. It is a record of dedicated work on the part of those determined to save the hardware and if you send £1.50 plus 25p postage and packing to Glenys Crocker at 6 Burwood Close, Merrow, Guildford, Surrey GU1 2SB it has succeeded in making contribution to the cash-flow problems which tend to beset people undertaking the conservation of water-flow equipment.

Another AIA member who is seemingly inexhaustible when it comes to dealing with a vast multitude of industrial archaeological enterprises is Pam Moore of Hampshire.

Her latest batch of contributions include notes on **Education Group** activities, **IA in New Zealand**, the **Hampshire Mills Group conference** and a conservation appeal on behalf of the **Whitchurch Silk Mill**.

Education Group. In order to assist in planning possible future activities of the Education Group, it would be helpful to know how many teachers are AIA members. I would be most grateful if

such members could send me the following information: Name and address, age taught (or in the case of those involved in Adult Education, type of institution), subject taught (if applicable), and if a member of a local IA society, name of that Society. This information will, of course, be treated in confidence, but will be of considerable use to the Group. Mrs Pam Moore, 51 Porteous Crescent, Chandlers Ford, Eastleigh, Hants SO5 2DG.

Antipodean Visitor. In May, Southampton University Industrial Archaeology Group were fortunate in being able to hold a special lecture, in addition to their published programme. **Geoffrey Thornton**, Deputy Chairman of the **New Zealand Historic Places Trust**, spoke on *IA in New Zealand*. This lecture provided a fascinating insight into IA 'down under', illustrated with excellent slides.

Mr Thornton pointed out that New Zealand is a young country, and industrial development therefore came later than that of Europe. Agriculture has always been important to the country's economy, with sheep rearing for wool production initially of primary importance. With the advent of refrigerated ships, much larger herds of sheep were kept, for the export of meat. Many interesting farm buildings survive in NZ, and examples of these were illustrated.

An old established industry is shipbuilding, but little remains of early shipyards. Of the goldmining industry, much more may be seen. Gold was first discovered in NZ in 1852, and the 'rushes' of the next two decades led to a considerable increase in population, albeit some of it transitory.

The engineering industry developed to serve farmers and millers. Agricultural implement manufacture was important, and from 1882, the production of steel rollers for the new flour mills in the larger towns and ports provided a fillip for the engineering industry.

Mr Thornton mentioned other industries, such as coal mining, limeburning and cement production, and also described developments in transport in NZ. His lecture left us much better informed about IA in New Zealand, but keen to learn more. We hope we may have that opportunity at some time through Geoffrey Thornton's books on various IA topics, or perhaps a future visit to England.

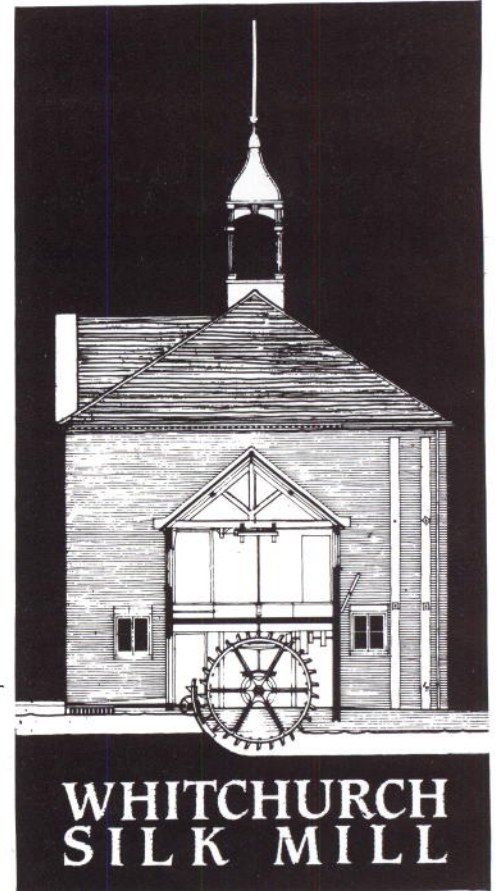
The Hampshire Mills Group Conference held on 7 and 8 June, attracted 40 participants from all over the country — from Canterbury to Crewe! The first day was dedicated to lectures, and Sunday was spent visiting mills in the county.

On Saturday morning the Conference began in the best possible way, with a beautifully illustrated lecture by John Reynolds on *The Architecture of Wind and Watermills*. After coffee, the Group's Chairman, John Silman talked on *Some Aspects of the History of Corn Milling*, and the morning session closed with a lecture in which Bruce Tappenden outlined the history of the Edney family of Wickham, and described in detail the story of Chesapeake Mill.

After lunch, John Ellis gave a fascinating talk entitled *Practical Milling, with special reference to stone dressing*, a craft at which he has had many years experience. Finally, Derek Moore explained how documentary evidence may be used in mills research — his work on Hampshire windmill sites has enabled

him to gather a vast amount of information on this subject.

The following day, a coach tour of Hampshire mills, enabled delegates to visit **Eling Tide Mill** — working at the time, **Bursledon Windmill** — in course of restoration, **Chesapeake Mill** — where besides the mill machinery, the enormous timbers from the USS Chesapeake can be seen. Then, on to **Headley Mill**, where John Ellis gave a demonstration of stone, dressing, and finally to **Whitchurch Silk Mill**, arguably one of the county's finest industrial buildings, recently saved from closure.



Whitchurch Silk Mill standing on the banks of the River Test, is one of Hampshire's most important industrial buildings. A fine structure, of chalk blocks, with a brick skin cover, the three storey mill dates from around 1800. Last autumn it was threatened with closure, in which case its future would have become very uncertain. Many groups and individuals campaigned to save the mill, and were delighted when, with the help of Hampshire County Council, it was purchased by the **Hampshire Buildings Preservation Trust**.

It is intended that the mill will continue to function commercially, producing silk products, but that public access will be increased. It is also hoped that the water wheel, restored in 1982, will be used to operate one of the winding frames and one or two looms, for demonstration purposes. Several of the looms date from the end of the 19th century, and the Victorian winding and warping equipment survives, together with a part of one of the original handlooms.

An Appeal has now been launched to finance the restoration work needed on the building, and to repay money borrowed from the Architectural Heritage Fund. If any individual or group would care to make a

donation, this should be sent to the Treasurer, Hampshire Buildings Preservation Trust, The Castle, Winchester SO23 8UJ.

Pam Moore

Dorothea Restorations Limited, perhaps better known for their mill-work and wrought/cast iron projects, have recently rebuilt an 1886 Robert Heath (Stoke-on-Trent) 0-4-0 locomotive. It had been in store at the Chatterley Whitfield Mining Museum for some years and was needed, in an immaculate condition for duty at the Stoke Garden Festival..



After reconditioning it had to be re-erected and tested within Dorothea's Whaley Bridge works and a special 'rolling-road' was constructed using former pit-tub wheels and axles. After the Festival is over it will return for, presumably, active service at the Mining Museum.

Mention of **Dorothea** brings to mind the **AIA/Dorothea Award**. This is sponsored by Dorothea, administered by the Association and given annually to encourage restoration projects. The **Background and Rules** pamphlet has recently been up-dated and together with entry forms, can be obtained from John Crompton, 112 Milton Road, Fallings Park, Wolverhampton WV10 0ND.

The second major AIA award scheme is for **The recording of industrial sites**. Details of this project were circulated in the early summer 1985 together with guidelines for potential entrants.

These too have been revised and tidied up, in the light of twelve months administrative experience and as this **Bulletin** goes to the printers, are being retyped to be made available by Stuart Smith's **AIA Office at Ironbridge**. They can be obtained from Anita Fletcher on request (telephone number 095 245 3522).

In order to give practical guidance on the procedures and skills required to produce an exemplary recording, arrangements have been made for AIA members to attend a one day course to be based on the Long Warehouse at Coalbrookdale on Friday 7th November 1986.

This course entitled **Recording industrial sites: Aims, methods and results**, is being organised by the Institution of Industrial Archaeology, which is an organisation jointly administered by the University of Birmingham and the Ironbridge Gorge Museum Trust.

The official prospectus says:

The Association and the Institute are collaborating to hold a course which will assess the value of work being done in the recording of industrial sites and to consider

the ways in which bodies, groups and individuals involved can work most effectively. Since a seminar on this subject organised by the Council for British Archaeology in the autumn of 1981 there has been a series of major initiatives in recording particular areas or building types, but many groups and individuals still feel that they do not have easy access to information or that research is not adequately promoting conservation. Furthermore amateurs undertaking free-lance recording have often felt the need for guidance as to how to produce records of permanent value and where these should be deposited.

The contributors to this course range from the representatives of the Royal Commission in England and Wales and of work in Scotland, research fellows undertaking the first systematic inventory on a plot by plot basis of an industrial area, and a council member of the AIA involved in extensive recording work with amateurs.

and the programme includes contributions from Stephen Hughes (RCAM Wales), John Hume (Scottish Development Department), Marilyn Palmer (University of Loughborough), Judith Alfrey (Institute of Industrial Archaeology), Colum Giles (RCHM England) and Hilary Malaws (RCAM Wales).

Copies of the prospectus and application forms can be obtained from the Ironbridge Gorge Museum Trust or AIA members can enrol direct to: Janet Markland, Institute of Industrial Archaeology, Ironbridge, Telford, Shropshire TF8 7AW. Telephone 095 245 2751 extension 32. The cost to AIA members is £15.00 including lunch and light refreshments. It is £28.00 for members of the public.

Although the AIA Bulletin is fairly ephemeral in content, there have been requests from time to time for an index. Thanks to Mrs Audrey Morton of Broseley there is now in existence a short index . . . some 24 A5 pages . . . which lists **Bulletin** items from issue one/number one (March 1974) up to the end of volume eight number three (November 1981). This can be obtained from Paul Stephens, Prospect Villa, Greenbank Road, Devoran, Truro, Cornwall at a cost of 75p per copy including postage.

Book Notes. Most books mentioned in the AIA Bulletin are held in the AIA Library at Ironbridge, where they may be consulted by prior arrangement with John Powell, the Association's Honorary Librarian. Additional bibliographical information can be obtained by telephone (Ironbridge 2751 ex 27) if required.

The Moira Furnace: A Napoleonic Blast Furnace in Leicestershire, edited by David Cranstone (North West Leicestershire District Council, v + 164 pp, illus, 1985), £5.00 from the publisher, Council Offices, Coalville, Leicestershire LE6 3FJ. This is a thorough report on excavations and survey work carried out in recent years on one of the best surviving blast furnaces of the Industrial Revolution period. The Moira Furnace operated for only a few years in the early nineteenth century, and archaeological evidence is effectively used to suggest reasons for its commercial failure, the most convincing being that faulty channelling led to the channelling of the blast, and consequently to excessively high temperatures at the throat of the furnace. The book is a

vivid demonstration that archaeological techniques in general, and excavation in particular, can contribute substantially to our understanding of industrial history. Moira furnace was a failure, and it was not necessarily typical of the practice of the time, although intelligent discussion links it with other surviving structures, and hints at the possibility of distinct regional patterns in furnace design. It is an interesting reflection on changing priorities in conservation that such extensive excavations have taken place in the 1980s on a site where some of the most important buildings, the engine house and the terraced cottages, were demolished in the 1960s and 70s.

Coalfaces. This is the title of the new bulletin of the Scottish Mining Museum which was visited as part of the AIA Conference and which is situated at Prestongrange, East Lothian, and Lady Victoria Colliery, Mid Lothian. It is a bright attractive publication with articles on the Michael Colliery Disaster, the BO' Ness Heritage Area, and the self rescuer. The new style magazine intends to look at issues of Scottish Mining History in greater depth than has been possible previously and also keep us informed of developments in Scottish Industrial Museums.

The Severn Tunnel and Official History of the building and operation of Britain's longest main line railway tunnel, Geoffrey Body, Avon Anglia Publications, Annesley House, 21 South Side, Weston-super-Mare, Avon BS23 2QU, £2.75. Published in 1986, this 48page volume describes the construction of the four and a quarter mile long railway tunnel under the River Severn which carries the Paddington to South Wales main line. As the tunnel was opened in 1886, this is by way of a centenary history and is available post free to AIA members.

Four new titles have just been produced by Shire Publications all with a strong industrial archaeological interest. **Quarries and Quarrying** is by Peter Stanier, a member of the AIA and describes the various types of quarrying in this country and places to see quarrying activities. **Textile Printing** by Hazel Clark covers the technology of textile printing both old and new and places where the history of textiles may be observed. R L Atkinson has produced **Shire Album No 139** on Tin and Tinmining and as she is the Curator of the Geological Museum at the Camborne School of Mines is well qualified to cover this important topic.

The final volume in this series of new additions is the **Shire County Guide to Shropshire** by Lawrence Garner. Industrial archaeology receives a complete chapter and there are also mentions of famous engineers, museums and other places with an industrial historical interest. All these publications are available from most booksellers or from Shire Publications, Cromwell House, Church Street, Princes Risborough, Aylesbury, Bucks

John Graham: **Seaport to Seaside**. Pub Countryrise, £4.25. Covers the electrified lines out of Liverpool to Southport and Ormskirk, 136 pp.

John Vine: **Power Before Steam**. John Murray, £8.95.

Adrian Jones: **Hydraulic Machines**. Shire, £1.25.

Ian Dean: **Industrial Narrow Gauge Railways.** Shire, £1.25.

Nat Maritime Museum: **The Ship.** A series of 10 books describing military and merchant vessels. HMSO, £2.95 each.

Ron Huxley: **The Rise and Fall of the Severn Railway Bridge 1872-1970.** £4.95.

W H Norman: **Tales of Watchet Harbour.** £3.95, Somerset C.C.

H Clevee & D Crossby: **The Iron Industry of the Weald.** Leicester U.P. 1985 - £47.50.

B H Herbert: **Fieldwalkers' Guide to the Iron Industries of the Weald.** From the author, 1 Stirling Way, East Grinstead, 1985, 66 pp, £2.85 post free.



Local Societies Spot. We were fortunate with this year's theme for the working weekend in March; our discussions on the re-use of old buildings allowed us to invite two excellent and stimulating speakers, Dr Nicholas Falk and Mr Francis Daly. Dr Falk described the work of his company, URBED, which is a non-profit making firm of development consultants who specialise in the regeneration of run-down areas. In his talk Dr Falk emphasised the importance of restoring whole areas rather than specific buildings, and he noted too the importance of using existing resources in an area during the restoration process. With his first project, in 1974, the restoration of the Thames tunnel engine house, he did not initially convince the local authority of the necessity of a total approach, but its success led to acceptance of the idea. From that start, he described subsequent schemes: the creation of craft workshops in a warehouse, the conversion of a second warehouse to flats, the re-use and preservation of Kirkaldy's works in co-operation with GLIAS. These early projects in London depended on sound financing and investment, as well as on the visual impact they made, leading to a restoration of pride in the area.

Dr Falk then described the major work undertaken at Sowerby Bridge and Stroud, where different problems were met. At Sowerby Bridge, a largely derelict area in the town centre needed revival. In order to succeed, the whole area needed to be available, and the involvement of local people was essential. West Yorkshire CC acquired the whole site but complications arose over financing with its abolition. Locals did become involved, and a quick result, essential to maintain momentum, was produced when an international canoe slalom was held within 4 months. The scheme is now viable. Stroud presented different problems, with its 30 mills close together in an area with a long industrial past. The impetus here came in part from the suggestion that the Council, instead of building new offices, should convert the largest of the empty mills and thus participate in the maintenance of its own history.

The current work is concerned with the creation of an attractive focal point in Exeter.

Throughout, Dr Falk urged that resources should be concentrated where the effect would be greatest.

If Dr Falk is a catalyst to preservation, Mr Daly is the entrepreneur par excellence; pragmatic and practical, he is involved at all levels with the work he undertakes. His best-known scheme is the Waterfront Hotel in Hull, though AIA members may well be more interested in his conversion of the paddle steamer, the Lincoln Castle, to a successful floating club. Mr Daly took us on a vivid and entertaining tour of the conversion and preservation trail, explaining how he undertook the Warehouse conversion, with all the attendant difficulties of dealing with planning officers, local politicians and the licensing laws. He oversaw the whole scheme — planning, finance and investment, building conversions, fitting out — himself often being involved in the construction work directly. He then outlined for us his attempts to convert a second warehouse to hotel use in Hull, and the reasons for the failure of the scheme; and his negotiations to preserve a country house near Leeds. Though these accounts are presented in an entertaining manner, and with a rather dry self-depreciation which added to this, they were nevertheless salutary warnings of the difficulties to be encountered and the sheer perseverance needed to produce viable results.

In the discussions which followed other examples of preservation came under consideration and Dr Falk made the point that he would appreciate contacts with local IA Groups for details of historical background for the areas they work in, currently Stroud and Exeter. Perhaps a local member could contact him over this? The address is: URBED, 99 Southwark Street, London SE1 0JF. It was felt that the AIAs identification of threatened sites of importance was valuable, and the help offered to local societies to make a case for a site. It was suggested that we did not maintain a high enough profile, and ideas would be welcome to rectify this; it was also suggested that it was well worthwhile for a local society to cultivate its planning officers regularly, thus establishing good relations rather than confrontation.

We had an excellent meal at the New Inn on Saturday evening, and an interesting selection of slides showing the work undertaken by societies. Prior to that, our Treasurer, Mike Messenger, gave a talk on the Data Protection Act, and its application to the AIA and to local societies; it was a session of direct practical assistance to Secretaries and Treasurers. On Sunday morning, a number of points were raised; some, following up previous discussions, were brief but others raised new points. The question of the submission of evidence for the identification of buildings and monuments was raised, noting that the Civic Trust was collecting such evidence by the end of March, and that comments had to be sent to the Clerk to the Select Committee of the House of Commons by April 8th. Many Societies, and the AIA, had responded.

Discussion next centred on the best way to organise a photographic archive, bearing in mind aspects such as long-term damage from the method of preservation. Practical advice was offered from many present — including the reminder to dispose of your collections safely in your will — and we were reminded that the

Museum Association issues a free leaflet which provides advice on how to deal with this.

As a result of discussion on hosting visits from other societies, Pam Moore has written a set of comprehensive guidelines, which will be distributed in due course.

A question of revenue support for small sites was raised, especially in the initial stages of a project. Experience generally suggested that while capital support could be found, revenue support was almost impossible, a situation made worse by the changes in MSC rules.

Advice was offered on Industry Year, on the lecturers' list and on attempts to locate pre-1960 machinery which was still in use.

Next year's working weekend will be held on 20/21/22 March, at Ironbridge, and the main topics will be the organisation of visits for groups, and public relations. We were very pleased to see this year's representatives, and hope that they found it worthwhile; but numbers are still low by comparison with the numbers of affiliated societies and we would welcome new representatives. Next year's working weekend will not be combined with Council meetings, so your Council will be available at all times to be lobbied on your favourite topic.

The Special Issue Bulletin has been distributed, and we hope you found it lively, interesting and more directly relevant to your members. We have had comments from some Societies who did not receive copies; but I must point out that we did not get a full response from Secretaries when we asked how many each Society would need.

I have already had both requests from Societies to arrange short or long visits to other areas, and offers from Societies to host such visits. I will act as clearing house if you don't have an address in the part of the country you'd like to visit, and when I have a little more information I'll include details in the Bulletin. Particularly if you could offer to host visits, or help others to arrange them, write to me with details.

Once again, we have no Society profile, yet we still have members who have let this opportunity for free publicity slip by. Persuade one of your members to write something about your Society — or even do it yourself!

J Spavold

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