

INDUSTRIAL ARCHAEOLOGY NEWS

97
SUMMER
1996

THE BULLETIN OF THE ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY

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The Thames Tunnel saga

Malcolm Tucker

Monuments that one thinks of as safe and inviolable sometimes come unexpectedly under threat. Such has been the case of Sir Marc Brunel's Thames Tunnel, which for 125 years happily carried the East London Railway between Rotherhithe and Wapping in East London. Some members of the AIA have fond memories of conducted walks under the river, after the traction current had been switched off at one o'clock in the morning. Since March 1995, however, the tunnel has been closed for 'repairs', the true nature of which has caused considerable misgivings in engineering and IA circles. The battle between preservation and 'repair' has been something of a saga ever since and is still not quite over.

The heroic struggle to construct the world's first river-crossing tunnel is graphically described in Tom Rolt's biography of Isambard Kingdom Brunel,¹ while two recent papers have delved more deeply into the geological and technical circumstances.² In summary, Marc Brunel developed his tunnelling shield to construct this first large-bore underwater tunnel, through the soft ground of the Woolwich and Reading Beds. A thick protective clay layer was expected from borings, but a band of silt and sand was found within this which ran and caused the overlying clay to settle and fracture, so letting in large quantities of foul river water and poisonous methane and hydrogen sulphide from the polluted river bed. There were five major inundations, staunching by dumping thousands of tons of clay in bags. In one irruption, six men were drowned and Brunel's son, Isambard, who was then the resident engineer, narrowly escaped with his life. The shield was changed for a stronger one near mid-river, a remarkable operation during which the soil was partly supported by long iron pins driven into the face as anchors, a technique only recently re-invented.

After 18 years of exceptional perseverance, including a seven-year break for lack of funds, the Tunnel was opened for pedestrian traffic in March 1843. Intended spiral ramps for vehicles were never constructed, and the proprietors eventually sold out to the East London Railway Company, which opened its line from New Cross Gate to Wapping in 1869.

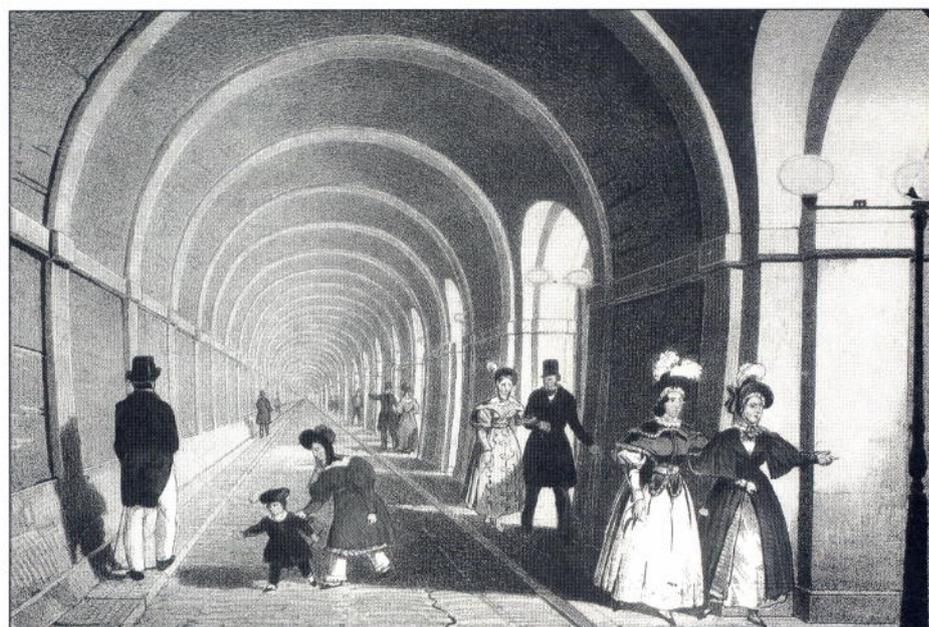
The tunnel comprises two horseshoe-arched passageways within a rectangular mass of brickwork

38 ft wide and 22 ft high overall, its crown up to 50 ft below Trinity High Water. The interior is lined with tiles and stucco, classically modelled, with Doric half-columns in arched cross-passages. These have been considerably hacked about later, and the architecture obscured by soot from steam trains. There is a concealed drainage system of circumferential channels within the lining, so hardly a drip appears on the surface – the surrounding strata are in any case relatively impermeable.

In the autumn of 1994 the present owners, London Underground Ltd, announced that the East London Line would be closed for seven months in 1995 for the construction of an interchange station with the Jubilee Line Extension and to cure some leaks. We thought little of this, for we knew that the approach cuttings built by Sir John Hawkshaw through alluvial gravels were extremely wet, in contrast to the under-river tunnel. In December 1994, however, the magazine *New Civil Engineer* discovered that LUL intended to line Sir

Marc Brunel's Thames Tunnel with shotcrete and a waterproof membrane. The original lining would be removed and the cross-arches blocked up (indeed, they had already been cutting into the lining for exploratory purposes, and blocking up the arches). LUL claimed the tunnel was deteriorating and leaking badly, that a rising water table was a problem and that the brickwork was on the point of failure according to calculations. All these points were doubted by experts, and later shown to be totally false. Various 'exceptional circumstances' were in due course invoked, for instance that the well-buried tunnel might become damaged by a ship's anchor. A process of elimination led some of us to the real cause of concern, a sensitive one which was not publicly admitted for many months.

English Heritage was embarrassed to find that, although the Wapping portal was listed Grade II, and the pumping engine house at Rotherhithe was a scheduled ancient monument, the Tunnel itself had no statutory protection. EH promptly applied for listing but



The remarkable Thames Tunnel, as seen by sightseeing visitors in the 1830s, before completion

Courtesy: Julia Elton

Thames Tunnel • IA on the beach • Great Northern Railway Warehouse
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the Secretary of State for National Heritage at first indicated that the Tunnel did not meet the necessary criteria. However, after concerted lobbying by informed and influential persons, including letters to *The Times* from home and abroad, the listing of the Tunnel in Grade II* was announced late on Friday 24th March 1995 (many consider that Grade I would be more appropriate). This was a few hours before the works were due to commence. Thereupon, LUL had to apply for listed building consent, while English Heritage was able to appoint a small panel of eminent engineers to advise it and enter into dialogue with LUL and its consultants.

It is understood that the panel had the utmost difficulty in obtaining essential information since LUL were under direction from the Home Office not to discuss the heart of the matter, and there was little meeting of minds. The two sides were able to agree that a short length beneath the land at Rotherhithe need not be lined in any event, and this was incorporated in the otherwise unmodified scheme which the Planning Committee of the London Docklands Development Corporation approved conditionally at the end of May 1995. Crucially, English Heritage had advised the committee and the national amenity societies that it was the panel's conclusion that defects and risks warranted major intervention and that there was no practical alternative to the proposals. This was not the panel's conclusion and later EH retracted this advice.

After much technical work, the panel's full report was released on 24th July. It found the Tunnel in good condition and expressed considerable doubt on the need for a lining of concrete against terrorist attack, while regretting the lack of time for definitive tests. It was also seriously concerned that an impermeable,

undrained lining would induce erosion of the brickwork by the peristaltic pumping action of passing trains. Paradoxically the Secretary of State for the Environment announced he would not 'call in' the scheme that same day, without having seen the report.

In October, LUL came up with a costly 'compromise' scheme, still lined but with smooth-finished, reinforced concrete simulating the pilasters and cross-arches of the original lining and with internal drainage. This was sufficient for the chairman of the panel to withdraw his objections in principle, and the new scheme passed the planning committee on 28th November, subject to the approval of details, there being considerable pressures to get the Tunnel open again.

This is not the end of the matter. It is now acknowledged that the historic lining will have to be stripped, if only because the tunnel was listed so late in the day that time was no longer available for investigations needed to justify alternatives. But there have been strong technical misgivings about LUL's scheme as submitted. For instance it would in places cut into and weaken the existing brickwork, and an impervious lining could produce dangerous water pressures if its built-in drainage system failed to function. There was no provision for inspection, and LUL seem to have regarded their new lining as taking over from the old structure, making the latter dispensable.

As the submission fell far short of the level of detail expected for listed building consents, the Victorian Society and the Georgian Group have been keeping in close contact with English Heritage to try to ensure that the details are not approved until the experts are satisfied that further long-term damage will not be caused by the works. It is understood that LUL have

now addressed the issues more positively so that agreement may be reached.

The case raises broader issues, and the Victorian Society, the Newcomen Society, the Institution of Civil Engineers and the Science Museum are pursuing with English Heritage the statutory protection of other great tunnels, as at Harecastle, Standedge, Kilsby and Box. It is hoped that an advance-warning consultative system may be established with the owners of historical engineering works.

On the recording front, the Royal Commission on the Historical Monuments of England has powers to record listed buildings before they are altered. Until the listing, its photographer was only allowed through the Tunnel in the company of a large group of fairwell visitors. RCHME has since been back, and will be granted access to the works as the lining is stripped and features of the original brickwork are revealed. Resources are lacking for full archaeological recording since the planners consider the Tunnel falls outside the guidance of PPG 16, but by negotiation various survey work should now be deposited in the National Monuments Record. The salvage of representative samples of the lining and brickwork for the Science Museum or a similar repository has yet to be arranged.

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1. Rolt, L.T.C., *Isambard Kingdom Brunel*, Longmans Green, 1957, Chapter 2.
2. Skempton, A.W. & Chrimes, M.M., 'Thames Tunnel: geology, site investigation and geotechnical problems', *Geotechnique* Vol 44 (June 1994), 191-216; Muir Wood, A.M., 'The Thames Tunnel 1825-43: where shield tunnelling began', *Proc. Instn. Civ. Engrs, Civil Engineering*, Vol 102 (Aug 1994), 130-139.

The Dale Street waterwheel

Steve Stockley

A project by the Manchester Region IA Society was to record the remains of the Rochdale Canal Company's waterwheel, associated machinery and structures surviving at Dale Street in Manchester, and to trace the development of the site using documentary sources. This work won M.R.I.A.S. a highly commended prize in the AIA Fieldwork and Recording Awards last year.

The Rochdale Canal was officially opened on 21 December 1804, and was the first trans-Pennine canal to be completed. The Piccadilly section was opened in late 1799, where it had connections with the rest of the inland waterway network via the Bridgewater Canal, the Ashton-under-Lyne Canal and the Manchester & Salford Junction Canal.

In 1804, the canal company decided to build wharves and a basin at Dale Street. Two warehouses were built in 1806-8 and 1817, and in 1821 the company identified the requirement for a hoisting system to improve goods handling. They approached a Mr Hughes (later spelt Hewes in company minute books) of Manchester to carry out a survey for a waterwheel-powered hoisting system, and to install it for a cost not to exceed £180. We suggest this was T.C. Hewes, the eminent Millwright and Engineer associated with the development of waterwheel technology in the early nineteenth century.

Additional warehousing was built in 1822 alongside the 1817 warehouse. In the same year the company added a stone entrance arch between the new warehouse and their office.

In 1824, the water-powered hoisting system was sited in an underground chamber at the side of the

1806 warehouse. Six years later, the system was extended at a cost of £593 into the 1822 warehouse by means of a 70-foot (21.3 metre) drive shaft in a tunnel below the warehouse yard. The waterwheel would have been used up to the late 1890s, when it was replaced by two hydraulic jiggers which received high pressure water at 1,120 p.s.i. from the Manchester Corporation public hydraulic power distribution system that operated from 1894.



East elevation of the 1806 warehouse, showing former canal entrance

Photo: M.R.I.A.S.



Perched in a hole: Steve Stockley (left) and Gordon Browne of MRIAS inspecting the underground waterwheel
Photo: M.R.I.A.S.



The author measuring the waterwheel, a view showing the difficult conditions encountered by the survey team
Photo: M.R.I.A.S.

That the waterwheel and its associated machinery has survived is down to its location and surroundings, being shrouded within a subterranean environment. This has meant that it was not economical to scrap it, and it is out of sight of vandals. The wheel is also protected from the weather, which has contributed to its remarkable state of preservation.

In 1983, the Ashton Canal Society were working in the Dale Street area, and they can take credit for the re-discovery of this waterwheel and the removal of silt which partly buried it. The author started the survey for the A.C.S. in 1985 but sadly, work stopped two years later when the society ceased to exist. After joining M.R.I.A.S., the project was re-started in May 1990 and all the fieldwork completed in December 1992. Most of the recording work was carried out by M.R.I.A.S., with specialists brought in when necessary.

It was found that the waterwheel was supplied with water taken from a canal arm that once entered the 1806 warehouse. The water was directed to the wheel via a cast-iron launder and discharged into the wheel's buckets through a large rectangular orifice measuring 6 feet (1.83 m) wide and 10 inches (254 mm) high.

The high breast waterwheel has an outside diameter of 15 feet 10½ inches (4.84 m) and a width of 6 feet 11 inches (2.11 m), and once had 56 buckets. It is of composite construction, using both cast iron and timber to give a reasonably long life without the full expense of an all-iron wheel. The head of water acting on the wheel was 13 feet 4 inches (4.064 m). The theoretical shaft power was calculated at 16.8 horse power (12.53 kW), and to supply this the wheel would have rotated at 8 RPM with a flow rate of 6,385 gallons per minute (483 litres per second).

The wheel transmitted its motion to the hoists in the 1806 and 1822 warehouses via gears and line shafts, in which the horizontal components remain in two tunnels. The length of the 1806 horizontal shaft is 7 feet 8¼ inches (2.34 m) while the 1822 shaft is 69 feet 5 inches (21.15 m), made up from seven sections joined with box (muff) couplings. It was found that this shaft could have been isolated from the wheel through the use of a claw coupling or dog clutch. An interpretation of part of the shaft system in the 1806 warehouse was possible. Slight traces of evidence are discernable, suggesting a vertical shaft ran from the main shaft driven by the wheel up to the fourth floor;

and for a horizontal shaft that ran along that floor. At the end of this shaft our investigations suggest that the motion was finally transferred to the warehouse attic via a flat belt pulley.

The completion of the survey, drawings, documentary research and writing of the report did not mark the end of our interest in the Dale Street waterwheel. Although the 1806 warehouse (waterwheel, associated equipment) has a Grade II* listing, this does not necessarily guarantee continual survival. The next stage was to ensure that all relevant details were included on the Sites & Monuments Records held with the Greater Manchester Archaeology Unit. The ideal opportunity came about through the Index Record for Industrial Sites (IRIS) initiative as proposed by the AIA. Most of the significant features associated with the Rochdale Canal in the city centre and at Dale Street were surveyed by M.R.I.A.S. in 1994.

A close watch has to be kept on Dale Street Basin, as it is to become the site of the athletes' village for the 2002 Commonwealth Games. We can only hope that the wheel, the 1806 warehouse and the tunnel system will be restored as part of this multi-million pound development.

Call for Papers

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Dedication at Saltwick

Chris Hall

As reported in IA News 95, the winner of the AIA Fieldwork and Recording Award for 1995 was the Scarborough Archaeological and Historical Society for their work at the Saltwick Alum Works. The Yorkshire alum industry as a whole is described by Gary Marshall in the latest Industrial Archaeology Review (November 1995), but here Chris Hall records some of the problems encountered by volunteer fieldworkers at this fast-eroding coastal site.

The North Yorkshire alum industry was widely distributed along the coast and the Cleveland Hills. Unfortunately, erosion due to tide, wave action, cliff slumping and to some extent, human interference is affecting all the coastal alum sites, but none more so than Saltwick, where important industrial archaeological evidence is located in a marginal coastal environment.

Much of the Saltwick Alum House is now located at beach level and other structures, such as the breakwaters for the harbour, are also prone to damage. This important industrial site, which commenced production in 1649, is threatened with total destruction by tide, wave action and wind. It is no longer possible to preserve the evidence in situ. The Saltwick site is of outstanding importance because of its reliance upon coastal shipping as a means of transport. Sufficient evidence survives to illustrate this close dependence and to suggest that its unusual arrangement is closely determined by the prevailing landscape form.

The fieldwork group of the Scarborough Archaeological and Historical Society thought it important to make a comprehensive survey and record the remains to allow at least for their preservation by record. And so a small but dedicated team of volunteer project members from the Society and the Whitby Research Group carried out the recording of this site, often under difficult conditions of wind and tide. Various techniques were used.

Semi-rectified black-and-white photography of upstanding remains was carried out prior to the first extreme high tide, along with colour slide photography

in order to provide as comprehensive a record as possible. The site was further examined and photographed after subsequent high tides, particularly during the period September/October 1993 when severe conditions exposed and tore away structures.

Excavation work was not proposed beyond the confines of the alum house, ie. it was restricted to those areas physically threatened. In order to place the structures in the context of landscape setting, a Total Station survey was carried out which recorded the size and position of features such as the breakwaters around Black Nab, the harbour around the alum house, the slipway below Saltwick Nab, the quarries on the two Nabs, and also the outline of the suspected quarry behind the alum house.

Following this initial work, comprehensive excavation was undertaken on an area basis at weekends over a period of 18 months, commencing

in February 1993. Because of the difficulties of excavating in sand and the need to backfill daily, only small trenches could be opened up. Additionally, because of the popularity of the beach, excavations had to be confined to the winter period. Saltwick Bay in February, with a brisk north-easterly blowing, must be any excavator's nightmare. All excavated results were planned, surveyed, photographed and precisely located so that a picture could be put together of the alum works, rather like a jig-saw puzzle. Features such as cisterns, tanks and walls which are now at beach level, under sand and severely threatened, were planned in detail at 1:20 scale.

Resources were not available for professional excavation and recording, and so this project illustrates the valuable contribution which can still be made to archaeology by volunteers. The Society is gratified that this has been recognised through its winning the Fieldwork and Recording Award of the AIA. The Research Report was published by the Society in November 1994.



On the beach: excavations in progress at the Saltwick alum works

Photo: C. Hall

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1995 – Another vintage year for Industrial Recording in the RCHME

Keith Falconer

Over the last three years the RCHME has returned vintage crops of achievements in industrial recording. The publication of three major volumes on northern textile mills and a special issue of *Industrial Archaeology Review* on mills recorded through the threatened buildings programme, provided a sure foundation for the study of the buildings of the textile industry and is informing English Heritage's thematic listing of mills. The completed survey of the coal industry comprised an air photography programme that had covered all deep coal mining sites and a rapid survey of collieries and threatened communities. It culminated in the publication of a coal volume in the Images of Industry series and the air photographs formed the basis of a book commissioned by English Heritage. Our endeavours to locate and ensure the survival of the British Coal records, that Janet Atterbury calls the Great Paper Chase, still continues.

Those years also saw our increasing involvement in the recording of redundant military sites and the formalisation of our links to the Defence of Britain project. Our work on the military explosives industry was highlighted by our very detailed survey of the Royal Gunpowder works at Waltham Abbey. Close liaison with English Heritage ensured that this formed the basis of the statutory protection of the site. This recording continues, directed by Wayne Cocroft and Paul Everson of the Keele office and will lead to a major publication in due course.

This last year has been equally satisfying, despite the Commission being very much concerned with internal reorganisation – necessary to ensure our continued operation. The relocation of offices and staff to our headquarters in Swindon is now complete. The Salisbury office moved in November 1994 and Alexander House emergency recording staff in July 1995. As well as being responsible for the field activities of Mike Williams, Barry Jones and Alan Stoyel, all of whom are experts in industrial recording, I now find myself in the welcome situation of being in the same building as several other industrial archaeologists including Neil Lang and two AIA council members – Neil Beagrie and Janet Atterbury.

The move to Swindon, surprisingly, has scarcely disrupted our programme. We have published the long awaited *Survey of London* volume on the parish of Poplar which of course covers the Isle of Dogs with its extensive dock systems and huge variety of industries. The publication comprises two massive volumes and it commands a place in any reference library. Such is the interest in the later period of redevelopment in Docklands that a separate somewhat slighter book covering the Isle of Dogs in 1981-1995 was published later in the year.

We have also published articles on a maltings in Gainsborough and on the Oare gunpowder works at Faversham, in addition to the survey reports on the gunpowder works at Waltham Abbey, the Royal Arsenal at Woolwich, Sheerness and on the lower Thames. Indeed, the Thames Gateway, as the East Thames Corridor is now being called, has attracted so much attention that the Commission convened a symposium to highlight the architectural and archaeological work we are doing in that area. The RCHME was also a partner, with English Heritage, in the successful

conference on Managing the Industrial Heritage, organised by Marilyn Palmer, our industrial Royal Commissioner, on behalf of the AIA in July 1994. It co-sponsored, and contributed several papers to the well received conference Transactions.

Our field survey programmes have covered the usual wide range of sites. The archaeological survey project on the landscape of the Cumbrian iron industry will tie in the relationships between the well known charcoal blast furnaces, such as Backbarrow, and their sources of raw materials and ancillary forges etc. We have recorded further military production sites at Holton Heath in Dorset, at Hayle and Perranporth in Cornwall, at Basildon in Essex, at Orford Ness in Suffolk and at Cliffe in Kent.

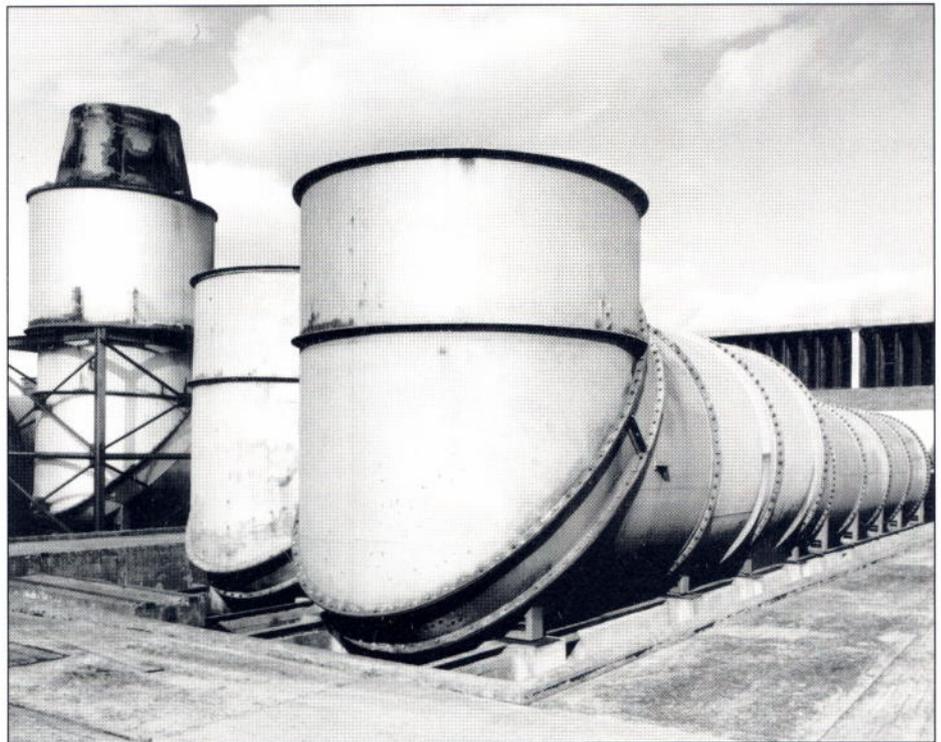
Our emergency recording teams have recorded several maltings under the expert eye of Amber Patrick, half a dozen textile mills in the West of England including the impressive Tonedale Mill and Tone Works, further work on the Derwent cotton mills, the Gloster aircraft factory, the ICI Coal-Oil plant at Billingham, railway engineering works at York and Derby, the death throes of the Cornish mining industry at South Crofty and Geevor mines and the Cornish Place Britannia wares works in Sheffield. Our photographers were also involved in the Brunel Thames Tunnel saga. The photographs we took at 2a.m. on the Sunday morning informed the decision to list the tunnel Grade II*.

As a somewhat unusual departure for the Commission, we have made video records of the last traditional shuttle making workshop near Heywood in Lancashire and a brush factory at Milnsbridge, West Yorkshire. We are now about to embark on a small project on the buildings of the Sheffield steel industry,

in association with researchers (including Victoria Beauchamp) at Sheffield University. Even our national project on prisons is flinging up numerous, small, highly labour intensive workshops such as the brush making establishment at Wandsworth.

The National Monuments Record has put in place a new management structure which fully integrates its component parts – the former NAR and NBR. It continues to build up its industrial component and has now officially acquired, through the kind intercession of Colin Bowden, the George Cooper collection of steam engine photographs. This complements our Watkins Collection which, in addition to the topographical index, has now been comprehensively catalogued by engine maker. This work of the Steam Engine Research Group has unlocked the treasures of what is now being recognised as the foremost national record of stationary steam engines. Our computerisation of the Historic Buildings Lists, which contain some half a million entries, is now drawing to completion on schedule. When it is allied to MONARCH our national database will be very much enhanced.

Finally, *Swindon: the Legacy of a Railway Town* was published in October. We anticipated with some trepidation the public reaction to a volume that is quite different in content and appearance from any Commission book so far. Fortunately, initial reaction was very favourable – some of the reviews were embarrassingly flattering and it attracted several television features and even a book-signing session in the local Waterstones bookshop. We now hope that the IA fraternity will be equally satisfied with both the book and our continuing efforts to record the industrial heritage.



Ready for take-off: silencers and detuners at the jet engine site built c.1953 by Armstrong Siddeley for testing Sapphire jet engines, Gloster Aircraft Factory, Brockworth, near Gloucester

Photo: RCHME © Crown Copyright

IMPORTANT NEWS FOR ALL MEMBERS

Changes to the Financial Year

AIA Council has agreed that we should change our financial year, and hence our membership year, with effect from 1997.

Members will have noted that the accounts have had to be presented unaudited to recent AGMs. With a financial year finishing on 30 June, it is now impossible to get the accounts finalised, audited, printed and circulated to members for an AGM just nine or ten weeks later, even with the help of computers. With the increasing complexity of the AIA's affairs and of auditing requirements, the days when the Treasurer could finalise the accounts with a couple of evenings' work in the first few days of July have gone.

Accordingly, it has been agreed that from 1997 the financial year will run from January to December and a resolution to that effect will be presented to the AGM this coming September. To bridge the gap between 30 June and 1 January 1997, six months subscriptions, i.e. half the present rate, will be asked for on 1 July. Members paying by direct debit need take no further action as payments will be adjusted automatically. Other members will receive the usual reminders.

Council, and many members, have been concerned for some time at the increasing proportion of members' subscriptions that is spent on our publications. We are concerned not to diminish either the quantity or the quality that members receive, but at the same time need to take action to mitigate escalating printing and paper costs. The changes discussed below will involve savings to the Association in the region of 15 to 20% annually and, apart from releasing some of the pressure on the finances, may well help keep subscriptions down for longer than otherwise.

Michael Messenger
Hon. Treasurer

Changes to *Industrial Archaeology Review* and *IA News*

The Editors of the *Review* have taken advantage of the current financial situation to enlarge the journal both with more pages and a larger format page size, but to produce it in one annual volume rather than two a year. This will enable us to deal more successfully with the increasingly large numbers of drawings we are receiving now that more material is coming in from archaeological units and other professional bodies undertaking large-scale survey work. The journal will be produced in a near-A4 size, with a two and a half column format which will enable large drawings to be included in the correct orientation rather than sideways; the smaller column will be used for captions etc. This is a format already used successfully by some journals, and the Editors feel that, despite the reduction to one annual volume, members will receive just as much for their subscription.

The final design is still under discussion with the **Editorial Board**, a body created last year to assist the Editors both to make this change and to ensure the continuing high standard of the journal. The Board comprises:

Professor R A Buchanan,
University of Bath
Dr David Crossley,
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Keith Falconer,
RCHME England
Stephen Hughes,
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RCAHM Scotland
Dr Barrie Trinder,
Nene College, Northamptonshire
Dr Peter Wakelin,
Cadw

The first meeting of the Board was held in September 1995, and was also attended by Sir Neil Cossons, who takes considerable interest in the future of the *Review*. The Board will be meeting again just before the Bangor Conference, when final decisions about the new format *Review* will be taken. Members will therefore receive the final volume in the old format in May/June 1996, and will then have to wait a year for the next volume – but they will then have plenty to read for the following year!

To ensure that topical items do not have to wait a year for publication, *IA*

LETTERS

Readers are encouraged to write to the Editor with their views on matters raised in *IA News*, the *Comment* feature or other current issues.

Michigan's Cornish buddles

I read with considerable interest David Landon's article on buddles used for copper dressing in Michigan (*IA News* 96). I am sure that the many Cornish

experts among our readers will send him information on the personnel involved, but I have a few comments on the ore dressing apparatus he uncovered. By the mid-nineteenth century in Britain, copper ore, like lead, was usually crushed using Cornish Rolls which did not produce such large quantities of slimes in the dressing process as did stamps. The latter, however, continued to be used where the matrix of the ore was particularly hard, as was the case

at some of the Lake District mines, and perhaps this is the case at the Ohio Trap Rock mine? The use of stamps would make the circular buddle very appropriate in the dressing process as a means of extracting the ore from finely crushed material.

In 1976-8, I excavated the site of the Esgair Hir and Esgair Fraith mines in Cardiganshire, Wales: the former was mainly a lead mine, while the latter was worked for copper in the second half of the nineteenth century. Like Dr Landon, I found sections of working floor, drainage and supply trenches, a classifying or jigging area, but only one circular buddle and that a later addition since it was made of concrete. Cornish influence on this site was only indirect, in that John Taylor was working several Cardiganshire mines at the time and introducing the circular buddle to them. I have also excavated several circular buddles in Cornwall which were used for tin dressing, but have never found one as large as the one at Ohio Trap Mine: my buddles have rarely measured more than 5.5 metres in diameter, never 9 metres! The vertical planking in the centre is interesting, and I wonder if it is the remains of a centre head buddle (see photograph)? The worn top edges of the

vertical planking could well have had horizontal planking attached, but I have to confess that I have never seen this in practice. The wooden buddles I have excavated have all been convex with no centre head, the latter (in Cornwall) all being made of concrete. Centre head buddles, in my experience, were used for tin dressing as a reasonably efficient way of treating slimes: it was reckoned that a single convex centre head buddle of about 5.5 metres diameter could treat up to 20 tons of pulp in a 10 hour shift. Since the copper ore on Dr Landon's site was being crushed by stamps like tin ore in Cornwall, it is therefore likely that large amounts of slime were produced which needed treatment in this kind of buddle. I would be interested in other reader's views on the subject.

May I hope that we can include more material from Michigan in *AIA* publications. Those who attended the Conference in Sheffield last year will have met Patrick Martin, who now edits *The Journal of the Society for Industrial Archaeology* from the Department of Social Sciences in Michigan Technological University, to which Dr Landon also belongs.

Marilyn Palmer
Leicester University



Centre head buddle, 5.5m diameter, West Basset stamps, Cornwall, 1986

Photo: M. Palmer

AIA members have all received the comprehensive and well illustrated policy statement by English Heritage on *Industrial Archaeology*, which is a welcome indication of the extent of their interests in this field. May I, however, take slight issue with their definition of industrial archaeology as characterised by 'the classic constituents of the Industrial Revolution – capital investment, organised labour, technological development and the factory scale of production' and put in a plea for a wider definition which does not exclude the physical evidence for the users of small water mills who continued to grind corn, process flax or make spades etc. for local consumption, or the army of outworkers who continued to cling on to their domestic mode of production? While recognising that many of the latter were part of an organised labour force, working on materials supplied by a manufacturer often through a middleman and returning finished goods to a central warehouse, the outworkers nevertheless clung on to their cherished, if illusory, independence of working 'without the factory bell', to quote a Leicester framework knitter in 1833.

There is perhaps a difference between a definition of industrial archaeology which has the objective of conservation at its heart and one that is concerned with industrial archaeology as the study and interpretation, rather than the physical preservation, of the material culture of past industrial society. The former must take into account what is practically conservable in terms of aesthetic or economic value, while the latter recognises that much of what survives is part of an ephemeral landscape and lays more emphasis on study and recording than on actual preservation. There is no real dichotomy between the two: the research agenda of industrial archaeology, much of it highlighted by English Heritage's own Industrial Monuments Protection Programme, is already helping to inform recommendations for statutory protection and the effective management of industrial sites and landscapes. We have to be careful, though, that we do not bequeath to our successors the misleading impression that the built heritage was composed of the monumental or the aesthetically pleasing: the model textile communities,

COMMENT

such as that in Cromford financed by Richard Arkwright and cited in the policy statement as an example of a

Conservation Area Partnership, are but the showpieces which mask the reality of life for the many thousands who continued to work in domestic premises as boot and shoe makers, stocking knitters, nail and chain makers and so on. Ancoats Mills, also cited in the policy statement, spun cotton yarn by power but much of the yarn was then woven by local handloom weavers in their cellars and ground floor workshops, earth-floored to maintain a damp atmosphere. The surviving monument considered worthy of conservation is often but one link in a complex network which made up the industrial process. English Heritage has recognised this in its recent treatment of the important site of the Royal Ordnance Factory in Waltham Abbey in Essex, where a combination of scheduling and listing has been used to protect both the buildings in which gunpowder was manufactured and the landscape of purpose-built canals which linked them together. This is a welcome advance.

We are all, perhaps, becoming more aware of the contribution of small-scale manufacture to the process of industrialisation. English Heritage itself is responsible for Stott Park Bobbin Mill, the last survivor of the important woodland industries of the Lake District. The National Trust protects the Wellbrook Beetling Mill in Northern Ireland and has recently also taken on Patterson's Spade Mill, both examples, like Stott Park, of the continuing importance of water power long after steam power had become a possibility. The Trust's acquisition of Mr Straw's House in Worksop is also a step in the direction of recognising the importance to future generations of the mundane as well as the spectacular. The field of industrial archaeology is characterised by continuity as well as change, by the survival of long-tried and tested methods alongside the new and innovative, and any definition of the subject needs to recognise that the two co-existed at least until the end of the nineteenth century and, in some cases, into times within the span of our own memories.

Marilyn Palmer

News will have four extra pages and will take over from the *Review* such items as are more news related. These will include reports from statutory bodies such as the Royal Commissions, lists of new books (many of which will later be reviewed in *Industrial Archaeology Review*), notices of journals received etc., which now appear in Shorter Notices in the *Review*. Articles in these journals will still, however, be abstracted for the *Review* and should continue to be sent to Peter Neaverson: the Editors of both AIA publications maintain continuous contact! The first enlarged version of *IA News* will be published in August 1996, so you will receive three of these before you get the new *Review*.

But the continuation of the four extra pages depends on you, the

membership – the Editor cannot write it all himself, and depends on contributions coming in. The same applies to the new *Review*. Please do not feel that it will become a journal to which only 'professionals' can contribute – all we are looking for is 'professional' standards in the articles submitted. All the latter are put through the refereeing process normal for academic journals, but the Editors will continue to offer assistance to members to bring any contributions accepted up to the required standard. So, please continue to send material to all three of us!

Peter Stanier,
Industrial Archaeology News
Marilyn Palmer and Peter Neaverson,
Industrial Archaeology Review

New members

The Association welcomes the following new members:

Christine Ball, Sheffield
Rodger Burchell, Ebbw Vale
Brian Burton, South Ockenden
Jason Doherty, Ampthill
M H Edgeworth, Southampton
P W Flook, Sutton
M C Gill, Keighley
Steph Gillett, Bristol
Michael Herbert, London
John B Horne, Southampton
Melvyn Jones, Rotherham
Michael Leach, Ongar
T C H Lyon, Stansted
CT & L A Norman, Harpenden
Miss A E Parrish, London
Adrian Pearce, Telford
T G Powell, Ashford
Timothy J Stevens, Leicester

The following institutions have also become subscribers:

Bridport Museum Service, Bridport
Upper Silesia Cultural Heritage,
Katowice, Poland

Have you noticed?

Readers of *IA News 96* may have noticed the change of colour on the front page. If this is not to your taste (the Editor has received no protests either way), don't worry, it is intended to change annually. Eagle-eyed readers will have noticed too that typesetting is now by TBC Electronic Publishing of Shaftesbury, a local arrangement of

great convenience to the Editor and editorial process.

In the years since the Winter 1987 issue of *AIA Bulletin*, Vol 15 No 1, typesetting and design has been in the very capable hands of John Stengelhofen. During this time he restyled the bulletin, which became, with issue 88 in Spring 1994, the excellent *Industrial Archaeology News* we have today. For all John's hard work, I would like to put on record the AIAs thanks for this often unsung task.

Editor

Fees for Problems

Fees for the AIA's Conference on Problems of Identification and Protection of Urban Industrial Sites, to be held at the University of Leicester on 15-17 December 1996 are:

Residential Attendance	£92.00
Non-residential Attendance Options:	
Sunday	£20.00
Monday without dinner	£17.00
Monday with dinner	£28.00
Tuesday	£17.00
Full seminar without dinner	£35.50
Full seminar with dinner	£59.50

Please Note: a 10% non-returnable deposit is required by 1 September 1996.

Contact: Victoria Beauchamp, Division of Adult Continuing Education, University of Sheffield, 196-198 West Street, Sheffield S1 4ET, (☎ 0114 2762484, Fax 0114 2768653.

BILL THOMPSON

Members will be saddened to learn that Bill Thompson died on 10 April. Well known as an active Council member and past President of the AIA, an appreciation will appear in the next *IA News*.

Back in the swing

Newport Transporter Bridge, one of the great landmarks of South Wales, swung back into action just before Christmas after ten years of stillness and disuse. Gwent County Council, as highways authority, has spent the last three years and £3 million on its rehabilitation (instead of £1 million on demolition), with grants from Cadw and the European Community.

The Transporter Bridge was built in 1906 to cross the estuary of the Usk without obstructing shipping, linking the residential district of Pillgwenlly (or 'Pill') on the west with industrial land being developed on the east. It is in essence an 'aerial ferry', whereby passengers and vehicles are carried in a gondola suspended by wires. Steel pylons on either bank support a high-level girder, with ample clearance for shipping, along which a trolley travels back and forth, dangling the gondola beneath it at road level.

The principle of the transporter bridge, or 'transbordeur', was established by Charles Smith of Hartlepool in 1873, though the first was built in 1893 at Portugalete near Bilbao by a Spanish architect, Alberto Palacio Eilsague and the French bridge engineer Ferdinand-Joseph Arnodin. The idea was specially appropriate for navigable estuaries or harbours, where there must be clearance for shipping but the surrounding land is low-lying. Such bridges allowed much wider unobstructed spans than lift or swing bridges, and were cheap to construct compared with tunnels or high-level crossings with long approaches. They were also much faster than conventional ferries, and far less liable to interruption from weather and tides. Arnodin went on to patent the idea in 1900 and to build several other examples. Seventeen transporters were built around the world, of which five survive in working order. Two of these are in Britain, at Newport and Middlesbrough. Another listed but disused example carried a works railway

over the Mersey at Warrington.

Arnodin was responsible for the Newport bridge, in association with the Borough Engineer, R.H. Haynes. The towers stand to 72 m (242 ft), with a clearance above high water of 50 m (177 ft). The clear span is 197 m (572 ft). The gondola takes about one minute to cross and can carry up to six cars. It is powered by two 35BHP electric motors in a raised winding house at the eastern approach. The bridge is beautifully recorded in a new book by Falcon Hildred (see the advert in this issue), whose marvellous drawings made in 1991 helped galvanise opinion in favour of its retention.

Crossing on the gondola is a strange experience, hovering silently above the mudflats of the Usk. The cat's cradle of cables appears to hold it steady even in stiff winds. A footway up the stairs and over the top of the girder gives exceptional views and may be opened for visitors during summer months. The whole structure has a subtle art nouveau flavour, betraying its French influences, visible in the curly pyramidal roof of the driver's cabin, the pedestrian shelters on the gondola, and the sweeping lines of the pylons.

The bridge has been flood-lit, and is once again perceived as a symbol of Newport and a focus of civic pride. At present, remarkably, visitors can cross free of charge. Current opening hours are from 8am to 6pm daily (from 2pm on Sundays), but these may change with the transfer of the bridge from Gwent County Council to the new Newport unitary authority.

Peter Wakelin

Spice grinders

At Butler's Spice Grinders in the Shad Thames area of Southwark, near St Saviour's Dock, the grinding of spices has recently come to an end and activities have been relocated outside London. The photograph shows a mill using edge runners at ground floor level in use until quite recently. The stones



French flavour: the gondola before restoration

Photo: Peter Stanier

were 80 ins (2 m) in diameter. A number of pairs of similar stones had also been in recent use, giving the locality a delicious characteristic aroma. Part of the site is listed and should survive intended redevelopment. Members of the GLIAS Recording Group have had

Arabic, Tragacanth and Karaya were ground, kibled and blended. As a service to clients HM Customs papers and bills of lading for export and import were dealt with. No doubt you will have eaten or drunk some of the products which passed through here.

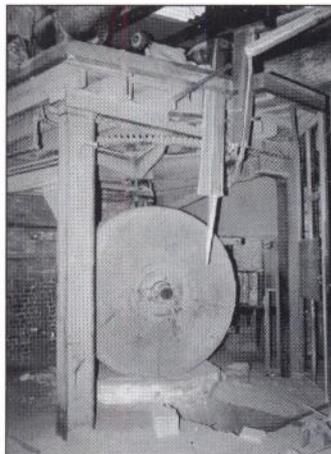
Robert Carr

Landmark warehouse under threat

A £100 million development proposal is threatening the integrity of Manchester's Great Northern Railway Warehouse of 1895-9. It is thought the warehouse and its associated infrastructure was designed by W.T. Foxlee of the Great Northern Railway, and that it was built by Robert Neil & Sons, who were famous Manchester builders. What makes this site so important is that it was designed to effect the interchange of goods between rail, road and canal, and it is the only one of its kind in the country to remain largely intact.

The Great Northern Railway Warehouse stands on a site bounded by Peter Street, Deansgate, Great Bridgewater Street and Watson Street, close to the city centre. It is a Grade II listed, together with its first-floor carriage ramp to the north and its railway viaduct to the south. Also, 252-292 Deansgate is reputed to be the longest Victorian facade in the country and has a Grade II listing. As a complex of railway warehouse buildings in a city centre it is unique. The five-storey warehouse is steel-framed with an external cladding of red brick with a blue brick band. It is of 'fire proof' construction, with steel beams carrying brick vaulting to support concrete floors. 'GREAT NORTHERN RAILWAY COMPANY'S GOODS WAREHOUSE' is displayed in prominent white glazed lettering on all four elevations.

The warehouse was served by water by utilising the largely subterranean Salford Junction Canal (1839) that once provided a through route



Edge runner mill at Butler's Spice Grinders, August 1995

Photo: R. J. M. Carr

access and investigated evidence of a former steam engine installation. Some parts of the buildings date back to the mid to late nineteenth century.

Among the many spices and other commodities ground here were Aniseed, Cloves, Coriander, Cummin, Cardomons, Cinnamon, Ginger, Orris Root, Licorice, Mace, Mustard Seeds, Nutmegs, Pepper, Pea Flour and Turmeric. Herbs such as Bay Leaves, Oregano, Thyme, Rosemary and Marjoram were ground and seasoning bulked to produce apple pie spice, celery salt, garlic salt, poultry seasoning, curry powder and the like. Indian flours such as Channa, Moong and Urid were ground, and cleaning and packaging were an integral part of the business together with blending, repacking, storing, fumigation and transportation. Tea and Coffee were blended. There was an important separate part of the business which dealt in edible gums and

NEWPORT TRANSPORTER BRIDGE

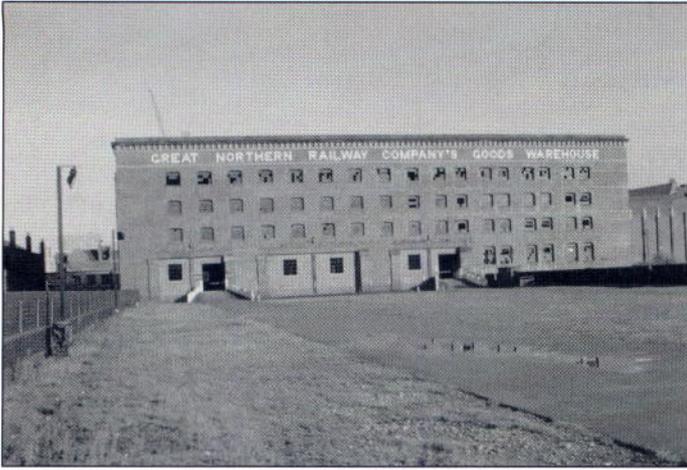
Definitive Guide to its History, Construction and Operation

This high quality book, designed to be understood and enjoyed equally by the lay-person and expert, describes why such an unusual bridge was built, then takes the reader on a tour of the structure, explaining its features and workings by means of a concise text and sequence of exquisite drawings by Falcon Hildred. Archive photographs show the bridge under construction, and the story is brought right up to date with the bridge's £3m refurbishment and re-opening.

Size A4 landscape, 26 pages fully illustrated in colour, hardback.

Available June 1996

Details from: The Shop Manager, Newport Museum & Art Gallery, John Frost Square, NEWPORT, Gwent NP9 1PA.
Telephone: 01633 840064 ext 31



The Great Northern Railway Warehouse viewed from its railway viaduct

Photo: S. Stockley

between the Rochdale Canal to the east and the River Mersey (Manchester Ship Canal) to the west. The canal is about 7.6 m below ground level, and it was connected to the warehouse by two shafts. Goods were hoisted by equipment powered by Manchester's public hydraulic distribution system of 1894. It is though several jiggers have survived on the upper storeys.

The developments affecting this historic site have been prepared by a partnership of the Central Manchester Development Corporation, English Partnerships, Manchester City Council, GMEX and the owners Merlin Great Northern Ltd. The proposals include:

- demolish Grade II listed carriage ramp
- demolish most of Grade II listed railway viaduct
- demolish part of Grade II listed block of 235-292 Deansgate
- demolish 8-36 Peter Street in Conservation Area
- construct bridge over Watson Street
- use Great Northern Warehouse for shops, restaurants and car parking
- build a 13-storey office block opposite Great Northern Warehouse

As an attempt to ensure the integrity of the site is not lost to future generations, a campaign has been mounted by the 'Friends of the Great Northern Warehouse', a pressure group comprising societies (including the Victorian Society), individuals and experts nationally. The 'Friends' are not opposed to the regeneration of the area, but the current proposals do not conserve the site, and this is a site of a mostly complete and unique piece of industrial archaeology. The demolition of the carriage ramp, railway viaduct, part of Deansgate and part of Peter Street lacks imagination and will totally change the character of the area.

The developments were approved by the planners in March, having been delayed since December mainly due to

the 'Friends' generating public support through television, radio and the press. The 'Friends' now hope to lobby to get the scheme called in for a public enquiry. If you would like further information, please contact Sue Dawson, (☎0161 448 9205).

Steve Stockley

The Royal Commission on Historical Manuscripts

The recent purchase from private hands of further papers of James Watt (1736-1819), now completes the collection in the Birmingham City Archives. This purchase by the Royal Commission on Historical Manuscripts is of international significance and includes journals relating to the steam engine, Watt's laboratory notebook, patent and other legal papers charting the struggle against pirate manufacturers and also instructions for the erection of steam engines. The archive also contains significant groups of papers concerning James Watt's father, also James (1698-1782), his brother John and his two sons James (1769-1848) and Gregory (1777-1804).

This news, recorded in the Royal Commission's *Annual Review 1994-1995*, is just one of several items of interest to industrial archaeological researchers. Among the 1,222 new reports added to the National Register of Archives relating to collections held in other repositories are those on Blyth and Blyth, civil engineers of Edinburgh; the A.G. Dunbar Scottish railway collection; the Holywell-Halkyn Mining and Tunnel Co; Stanton PLC, iron and steel manufacturers of Nottinghamshire; the Williams-Wynn family of Wynnstay; Croesor slate quarries; Votty and Bowydd slate quarries of Blaenau Ffestiniog; Wadworth & Co., brewers of Devises; John Crossley & Sons Ltd., carpet manufacturers of Halifax; The Wallsend Slipway & Engineering Co;

Glenlivet Distillers of Elgin; John Player & Sons Ltd., tobacco and cigarette manufacturers of Nottingham; J. Shipstones & Sons Ltd., brewers of Nottingham; and the North East Railway Co. All the reports in the Register, which can be consulted at the National Register of Archives at Quality Court, Chancery Lane, London WC2A 1HP, provide a valuable summary of archives held throughout the country.

Peter Neaverson

English Heritage Grants 1994-95

In their report on the allocation of 750 repair grants totalling over £32 million offered during the year, English Heritage record the following listed buildings and scheduled ancient monuments which have received offers of grants:

Avon: Underfall Yard Patent Slip, Bristol.
Cambridgeshire: Shade windmill, Soham, and windmills at West Wrating and Wicken.

Cumbria: The Howk bobbin mill at Caldbeck.

Devon: Powdermills, on Dartmoor.

Greater Manchester: Albion Warehouse, Ashton under Lyne.

Hampshire: Southwick brewhouse.

Humberside: Old Lighthouse at Flamborough and Hibaldstow windmill.

Kent: Royal Military Canal at Shepway.

Lancashire: Queen Street Mill, Burnley.

London: House Mill, Newham, Bankside Power Station, Southwark, and Kempton Park Pumping Station.

Norfolk: St Benet's Level windpump at Ludham and Old Buckenham windmill.

Northumberland: Lambley railway viaduct.

North Yorkshire: Grassington Moor lead smelt mill, Yarnbury ore dressing floor and the Hoffman limekiln at Langcliffe.

Nottinghamshire: engine houses at Misterton Soss.

Somerset: Gants watermill, Bruton, Rowlands mill, Ilminster, and the Charterhouse leadworks, Priddy.

South Yorkshire: Hickleton Hall

brewhouse and the Newcomen engine at Elsecar.

Staffordshire: White Barn Farm, Shugborough, Hatton pumping station, Swynnerton, and Chatterley Whitfield Colliery.

Suffolk: the Long Shop at Leiston.

Surrey: Outwood post mill and Chilworth Gunpowder Works.

Tyne and Wear: bridge at Swalwell and former Bowes Railway granary at Gateshead.

West Sussex: Ebernoe brick kiln and Woolbeding bridge.

West Yorkshire: Marshall's mill, Temple Works and White Cloth Hall, Leeds.

Cefn Cribwr ironworks

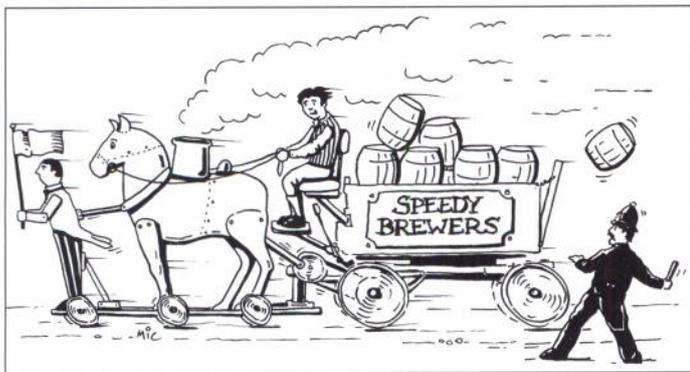
The remains of the Cefn Cribwr Ironworks in Bedford Park, north-west of Bridgend (SS 85108345) were declared open by the Mayor of Ogwr on 25 March. The site, a scheduled ancient monument, had been the subject of several years' conservation, archaeological research and landscaping by the, now extinct, Ogwr Borough Council. The purpose of the project was to present what is arguably the best preserved complex of ironworking buildings in the country for public appreciation and education. Although begun in the 1770s, the main surviving structures show how an ironworks of the 1830s might have looked.

The site is now open to visitors during daylight hours. A report on the archaeological work is now in preparation. The project has been resourced from Europe, Cadw and the Welsh Office and Ogwr Borough Council. Many people, besides archaeologists, historians, conservation masons and local government officers, have participated and should be acknowledged, but all credit is due to Robert Hathaway of Ogwr Borough Council whose enthusiasm has ensured that this important monument receives the repair, recording, care and, in the future, fame it deserves.

Mike Ponsford



Scheduled ancient monastic ruins? No, the Cefn Cribwr ironworks, viewed from the north-east showing the engine house and furnace
Photo: M. W. Ponsford



Eustace Frodinshaw's little-reported rival steam dray gives a new meaning to horse power during its only outing on London's streets in 1898

Thornycroft celebrated

Among the centenary celebrations of the British motor industry during 1996, one famous pioneer will receive deserved recognition by a special event: John Isaac Thornycroft. In 1864, he formed the Steam Wagon & Carriage Co to produce steam-driven commercial vehicles in Chiswick, West London. Unfortunately, the Highways and Locomotives Act of 1865 imposed restrictions making their operation uneconomic; all such vehicles had to be escorted by a person carrying a red flag to warn other road users. Instead, Thornycroft concentrated on building marine craft, but 30 years later, with the possibility of the 'Red Flag Act' being repealed, he constructed a steam-driven van he had designed in 1864.

After exhaustive tests, the 1-ton capacity vehicle made a first public appearance at the Crystal Palace Show in June 1896. Although steam traction engines had been used to haul trailers, and other mechanical devices were produced to replace horses in drawing carts, it is believed that the Thornycroft Steam Van was the first load bearing commercial vehicle in the world. Naturally, it aroused considerable interest and Thornycroft decided to build others, but alongside his successful marine production.

Two steam-driven tippers for the Chiswick Vestry appeared in 1897, and a 3-ton steam wagon and a 5-ton articulated outfit in 1898 for development and promotional purposes. One early customer was local brewers Fuller, Smith & Turner Ltd, who purchased a steam-driven dray in December 1898, with additional orders being received from other brewers as well as municipal operators. In 1899, the Thornycroft Steam Waggon Co Ltd began production at a new site in Basingstoke. Steam was soon dropped in favour of internal combustion engines. Motor cars were made in 1903-11, but commercial and military vehicles were manufactured here for 70 years.

Sadly, Thornycroft's firm merged with the Associated Commercial Vehicles Group in 1961, and was soon

acquired by Leyland Motors Ltd. Basingstoke was closed in 1972 and production transferred to Scammell Motors Ltd at Watford, where the final Thornycroft vehicle was made in 1979. Although the total production of just over 60,000 vehicles is not high, it must be remembered that all were hand-built and of the highest quality.

To mark this success, and the century since the first Thornycroft vehicle, Hampshire County Council Museums Service are organising a road run with the first steam van and subsequent vehicles from Fuller's Brewery, Chiswick, to Basingstoke and Winchester on Sunday 30 June 1996. For information, contact Gary Wragg, Senior Conservator, Hampshire County Council Museums Service, Chilcomb Lane, Winchester, Hampshire SO23 8RD. ☎01962 846318.

Gary Wragg

The House Mill

Restoration of the building is well underway at this well known Grade I listed tide mill at Three Mills, London E3. When completed in 1997, it is hoped to restore machinery to working order and create a museum of local industries. The mill will be open on Sundays, 2-4pm, from mid-May to the end of September, when visitors can view some of the machinery and progress in the restoration. Visits by societies and groups can be arranged at other times. For information, contact Patrick Graham ☎0181 348 3212.

Netting the RCHME

The Royal Commission on the Historical Monuments of England has launched a news and information service on the Internet. Access it at: <http://www.rchme.gov.uk> for news of activities and publications, or to order photographs, printouts and books. The Commission is happy to carry information, news items and reports for other heritage organisations. For further information, contact Robin Taylor at RCHME Publications ☎01793 414619; e-mail: pubs@rchme.gov.uk.

Year of the Pier

The National Piers Society and the British Association of Leisure Parks, Piers and Attractions hope to renew interest in Britain's rotting seaside piers by designating 1996 as the Year of the Pier. Watch out for National Pier Day on 30 June.

Parys Mountain heritage

Delegates to this year's AIA Bangor Conference may be interested that the new Anglesey County Council wishes the Parys Mountain copper mine to be given World Heritage Site status. There is evidence for Bronze Age mining here, but the major excavations were made in the late eighteenth century when the mine cornered the copper market. There are also plans to make Parys Mountain the focus of an industrial heritage trail which would include the copper port of Amlwch.

Tooley's Boatyard

Plans for Tooley's Boatyard on the Oxford Canal and the new Banbury Museum took a step closer to realisation in February when the submission from Energy Conscious Design Architects was chosen as the winning design.

Tooley's, which remains a working boatyard, is where Tom Rolt had his boat converted by Herbert Tooley before setting off in 1939 on the epic canal journey he recounted in his classic book *Narrow Boat*. ECD's submission demonstrates how the smithy and dry dock will continue to be an integral part of the living working boatyard, and the museum's new waterways galleries will be close to the canal and boatyard. The panel of judges included Sonia Rolt, Tom's widow, and representatives from British Waterways, Cherwell District Council and Oxfordshire County Council.

British Archaeological Awards 1996

Entries are invited for these 13 prestigious biennial awards, which encompass every aspect of archaeology, including industrial archaeological projects. If you have seen a project you admire or wish to encourage, you can help by sending for details of the awards from Juliet Mather, British Archaeological Awards, Council for British Archaeology, Bowes Morrell House, 111 Walmgate, York YO1 2UA. But hurry, the closing date for entries is 30 June 1996.

Lost Cornish light

A familiar landmark to locals and holidaymakers alike, the old lighthouse on Smeaton's Pier at St Ives was gutted by a fire in February, leaving only a granite shell. The low 'Smeaton's Lighthouse' with its octagonal gallery and domed roof was not the work of John Smeaton, who designed the pier in 1766-70, but was built later, in 1831. It became a store when it was made redundant by a new iron lighthouse (by Stothert & Pitt of Bath) when the pier was extended in 1890.



After the night before: the shell of the well known lighthouse on Smeaton's Pier, St Ives
Photo: St Ives Times & Echo

Scotland

As industrial Scotland adapts to economic and technical change, the older more traditional industries continue to wither away. The demolition of Michael Colliery and the part-demolition of the now closed Frances Colliery signalled the loss of the oldest surviving colliery complexes in Scotland, and the scheduled closure in September 1997 of Tate & Lyle's Greenock Refinery will mark the end of the once hugely important Scottish sugar refining industry. Other industries continuing the shrinking process include jute, the Manhattan and Queen Victoria Works facing closure and reducing the number of operating jute mills in Dundee to only one. The whisky distilling industry is also re-structuring, significant recent closures being Glengarioch at Old Meldrum in Aberdeenshire and Bruichladdich on Islay. Meanwhile, Sheffield Forgemasters have further reduced Scottish roll-making output with the closure of R. & B. Tennent's Whifflet Foundry in Coatbridge. Further sad losses are likely later this year with the planned closures of the Cummins diesel-engine factory at Shotts in Lanarkshire, and the loss of Kelco's extraordinary alginate (seaweed) works at Barcaldine near Oban.

On a positive note, Historic Scotland have recently announced a grant to the Scottish Mining Museum of £292,000 to help with essential repairs to Lady Victoria Colliery. They have also purchased Stanley Mills near Perth, and plan to begin work on restoring Arkwright's Bell Mill in the near future.

Perhaps the biggest single project destined to affect industrial heritage remains the M74 extension in Glasgow. Early drafts of the project suggested that many important industrial buildings would be lost if it went ahead. It has now been approved by Glasgow District Council, but the damage appears to be less, the major casualties being St Andrews Power Station (which will be cut in two by the new carriageway), part of the Fairfield Cotton Mill, and Parks Motor Works. Inevitably, a number of other unlisted but interesting industrial buildings will also disappear.

Several issues common to other parts of the United Kingdom continue to cause concern. These include the re-organisation of local government, and the potential changes that this will cause to planning policy affecting industrial archaeology. At a practical level, several services, such as Archives, Museums and Archaeology, have until recently been organised and funded on a regional basis, and the loss of the Regional tier of government, combined with serious funding shortfalls, poses many potential problems. The situation in Glasgow appears to be typical, with a 12% cut in funding leading to real cuts



Whifflet Foundry, Coatbridge. The turning shop, showing rolls being finished and 80-ton overhead crane, one month before closure in December 1995

Photo: RCAHMS Crown Copyright

in services, and the loss of up to 80 jobs.

Other recent changes include the privatisation of former public utilities and industries, one of the most recent of which has been the takeover of British Coal Records (formerly Centris) by the haulage and business services company, Hays. There is, inevitably, anxiety associated with the planned privatisation of Railtrack. The privatisation and further division of the nuclear power industry to create 'Magnox Electric' heralds the beginning of the decommissioning of the early British Magnox stations. In Scotland, Hunterston 'A' was one of the most efficient nuclear power stations in the world, but its controversial early closure means it is one of the first to undergo the decommissioning process.

Further south in Ayrshire (near Kilmarnock), the restoration of the Ligh Milton Viaduct is progressing well, with over £350,000 of work now completed. Back in the east, after a campaign involving Edinburgh's *Evening News* and the Institution of Civil Engineers, Railtrack have undertaken to increase the rate of maintenance on the Forth Bridge. Meanwhile, other structures attributed to Sir William Arrol & Co. received welcome publicity through a lunchtime public lecture on giant cantilever cranes given by Brian Newman in the Glasgow Concert Hall. The event was a sell-out and extremely well received by a very enthusiastic audience, proving the potential popular appeal of industrial heritage.

Miles Oglethorpe

Home Counties

Home Counties – only two words, but a huge area! My first regional round-up includes news from Oxfordshire and Berkshire, but to give greater coverage I would like to receive readers' news

items over the next 12 months from Bedfordshire, Buckinghamshire and Hertfordshire too.

Oxfordshire is still largely rural, with few towns but many villages. No county industrial archaeology group exists at present, but there is a very efficient County Leisure and Arts Department, which in conjunction with a nationally known publishing house is recording industrial topics, most recently *Morrells of Oxford, 1743-1993*, by Brigid Allen. This story of a brewing family and its work-place could serve as a model for recording a medium-sized industrial enterprise.

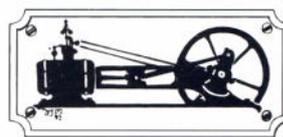
Not a small site is Cowley Motor Works. Morris Motors moved here to a disused military college in 1912, Pressed Steel Fisher arrived in 1926, and like 'Topsy' the works grew. The 1960s factory, after several mergers (BMC; British Leyland) covered 222 acres (90 ha) and employed 10,000 staff – the biggest single factor in Oxford's twentieth-century expansion. Motorists using the city's eastern bypass knew

Cowley's two tall chimneys and its 25-metre covered conveyor linking the body works to the North and South sites, but over the last 18 months Britain's largest demolition exercise removed chimneys, conveyors and everything west of the bypass, producing a slimmed down Rover facility of just 112 acres (45 ha). Thousands of tons of steel, brick and concrete were removed or crushed for recycling. Some concrete dust was incorporated in the obelisk bearing a huge moulded Morris Motors bonnet badge on the site where another conveyor once crossed the road at the centre of what is now Oxford's new business park. Extensive recording was done whilst the site was being cleared and the photographs now augment the extensive collection in the Oxfordshire Local Studies Centre (Westgate, Oxford), part of the Leisure and Arts Department.

The Vale of White Horse IA Group has continued its restoration of Charney Bassett Water Mill on the River Ock north of Wantage. Last year's task was fitting the replacement waterwheel. The mill can be seen by contacting Bruce Hedge (☎ 01235 766752). It has been announced that the Vale and Downland Centre (Wantage Museum) will receive £300,000 from the National Lottery, to extend its gallery space and restructure its displays, including material on Nalder & Nalder (East Challow ironworks and agricultural engineers).

Berkshire IA Group's latest restoration project has been the refurbishment of a petrol-driven land drain trench digger (c.1930). A new fuel tank was made, gearwork restored and the ironwork cleaned and painted. Efforts were rewarded when the machine sprang to life and dug a small trench. BIAG is currently combining with Berkshire County Council on a publication dealing with the industrial archaeology of Berkshire.

Phil Morris



Heritage Engineering (UK) Ltd.

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TEL: 01555 666066 FAX: 01555 665738

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CONSULTANTS AND CONTRACTORS IN THE RESTORATION OF HISTORIC MACHINERY

We can undertake a range of approaches covering rescue, restoration, replication and display of anything from a simple set of blacksmith's bellows to a water-wheel or a steam engine.

15 June 1996

EERIAC

the 6th East of England Regional IA Conference, at Great Yarmouth. Lectures and visits on maritime and tourist industries. Send SAE for full details and booking form to Mrs B. Taylor, Crown House, Horsham St Faiths, Norwich NR10 3JJ.

5-7 July 1996

24TH HISTORY OF ELECTRICAL ENGINEERING WEEKEND

at York University. Contact: Elizabeth Hartree, Science, Education & Technology Division, IEE, Savoy Place, London WC2R 0BL ☎ 0171 344 5439, Fax 0171 497 3633.

13-20 July 1996

ROAD RIVER AND RAIL - SLATE TRANSPORT IN SNOWDONIA

a course exploring simpler and earlier forms of transport, at Plas Tan y Bwlch Snowdonia National Park Study Centre. Details from The Director, Plas Tan y Bwlch, Maentwrog, Blaenau Ffestiniog, Gwynedd LL41 3YU ☎ 01766 590324.

14-26 July 1996

AIA VISIT TO POLAND

Some spaces may be still available. For details, send SAE immediately to David Alderton, 48 Quay Street, Halesworth, Suffolk IP19 8EY.

10-17 August 1996

PRACTICAL INDUSTRIAL ARCHAEOLOGY

a week in the field, for old hands and novices alike, recording a slate quarry in Snowdonia. Details from The Director, Plas Tan y Bwlch, Maentwrog, Blaenau

Ffestiniog, Gwynedd LL41 3YU ☎ 01766 590324.

**16-18 August 1996
RUSSIA AND WEST EUROPE: INTERACTION OF INDUSTRIAL CULTURES, 1700-1950**

International Scientific Conference at Nizhny Tagil in the Urals, with pre- and post-conference tours. For details contact Dr Eugene V. Logunov, Institute of History of Material Culture, PO Box 65, Ekaterinburg B-109, Russia 620109, ☎ 007 3432 297874, Fax 007 3432 297731.

6-12 September 1996

AIA ANNUAL CONFERENCE 1996

in Bangor, hosted by the Gwynedd Industrial History Society. Details of full programme from David Alderton, 48 Quay Street, Halesworth, Suffolk IP19 8EY.

**7-8 September 1996
THE FAMILIAR PAST? ARCHAEOLOGIES OF BRITAIN 1550-1995**

at University of East Anglia, Norwich. Conference on new archaeological approaches to the period after 1550. Details, or to submit a paper, contact Dr Sarah Tarlow, Department of Archaeology, University of Wales, Lampeter, Dyfed SA48 7ED ☎ 01570 422351, ext 345, Fax 01570 423669.

**13-15 September 1996
PURBECK MARBLE SYMPOSIUM**

at Bournemouth University. Department of Conservation Sciences in collaboration with the Church

Monuments Society, to give renewed impetus to the study of this fascinating material. Details from Mrs Moira Gittos, 4 Linden Road, Yeovil, Somerset BA20 2BH ☎ 01935 20112.

**18-20 September 1996
HISTORICAL INDUSTRIAL REGIONS IN TIME OF DEINDUSTRIALISATION**

international conference at Walbrzych in Poland. For details, contact Institute of History of Architecture, Art and Technology, Technical University of Wroclaw, Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland, or Piotr Gerber, ☎ 0048 71 728134 (after 6pm).

**20-22 September 1996
HISTORIC FARM BUILDINGS GROUP CONFERENCE**

at the Cheshire Constabulary Training and Conference Centre, Crewe. Details from Davina Turner, RCHME, Shelley House, Acomb Road, York YO2 4HB, ☎ 01904 784411, Fax 01904 795348.

**28 September 1996
NORTH WEST REGIONAL IA CONFERENCE**

at Saddleworth Museum, Oldham. Day school on Saddleworth; its transport, railways and canal, mills and mill engines, with papers and guided site visits. Details from John Buckley, 4 The Shaws, Uppermill, Oldham, OL3 6JX.

**29 September - 2 October 1996
ENGINEERING HERITAGE SHAPING OUR FUTURE**

the First International and Eighth Australian Engineering Heritage Conference, at Newcastle, NSW, with

papers and visits to local engineering heritage sites. Further information from Prof Raymond L. Whitmore, 297 Indooroopilly Road, Brisbane, Q4068, Australia.

**15-17 December 1996
PROBLEMS OF IDENTIFICATION AND PROTECTION OF INDUSTRIAL SITES IN URBAN AREAS**

organised by AIA, at Leicester University. Details from Mrs V. A. Beauchamp, Division of Adult Continuing Education, 196-198 West Street, Sheffield S1 4ET.

Information for the diary should be sent directly to the Editor as soon as it is available. Dates of mailing and last dates for receipt of copy are given below. Items will normally appear in successive issues up to the date of the event. Please ensure details are sent in if you wish your event to be advised.



INDUSTRIAL ARCHAEOLOGY NEWS

(formerly AIA Bulletin ISSN 0309-0051)
ISSN 1354-1455

Editor: Dr Peter Stanier

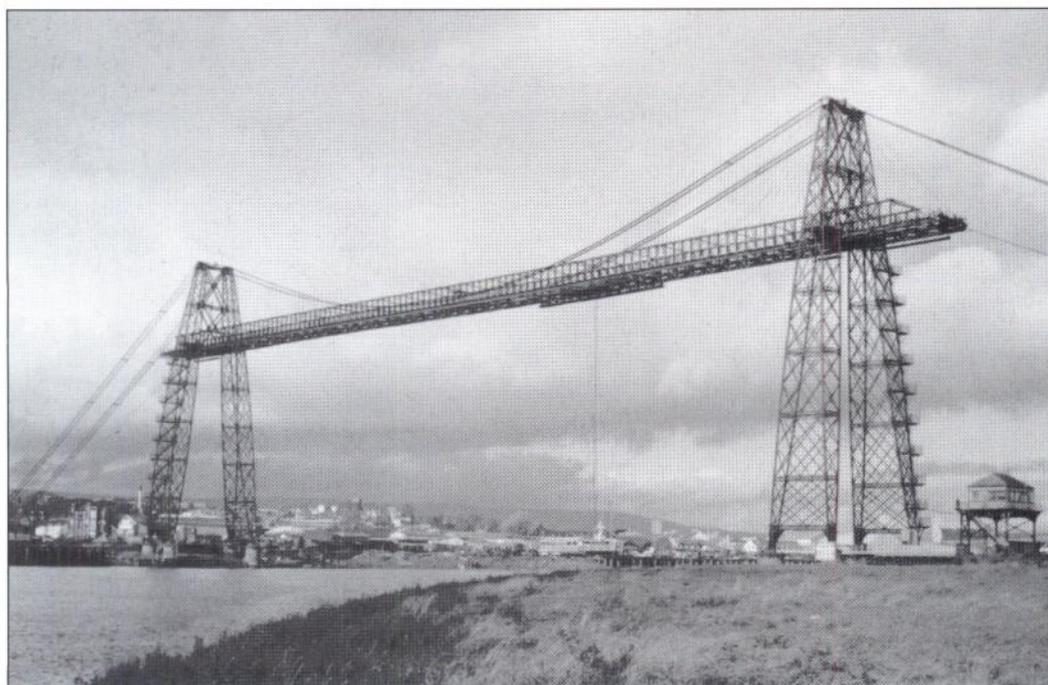
Published by the Association for Industrial Archaeology. Contributions should be sent to the Editor, Dr Peter Stanier, 49 Breach Lane, Shaftesbury, Dorset SP7 8LF. News and press releases may be sent to the Editor or the appropriate AIA Regional Correspondents, names and addresses of whom are published regularly. The Editor may be telephoned on 01747 854707.

Final copy dates are as follows:

- 30 March for May mailing
- 30 June for August mailing
- 30 September for November mailing
- 30 December for February mailing

The AIA was established in 1973 to promote the study of Industrial Archaeology and encourage improved standards of recording, research, conservation and publication. It aims to assist and support regional and specialist survey groups and bodies involved in the preservation of industrial monuments, to represent the interests of Industrial Archaeology at national level, to hold conferences and seminars and to publish the results of research. Further details may be obtained from the Membership Secretary, Association for Industrial Archaeology, The Wharfage, Ironbridge, Telford, Shropshire TF8 7AW, England. ☎ 01952 433522.

The views expressed in this bulletin are not necessarily those of the Association for Industrial Archaeology.



The Newport Transporter Bridge is a landmark span across the River Usk (see page 8)

Photo: Peter Wakelin