

INDUSTRIAL ARCHAEOLOGY NEWS

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THE BULLETIN OF THE ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY

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Cyfarthfa culverts ● Ironbridge weekend ● Churn stands ● St Pancras gasholders
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AIA

INDUSTRIAL ARCHAEOLOGY NEWS 98 Autumn 1996

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Culverts at Cyfarthfa

Richard Hayman

A system of culverts built to feed waterwheels at the Cyfarthfa Ironworks at Merthyr Tydfil was revealed and explored in 1995 in advance of a planned road. The evidence reinforces the importance of water power at the site two centuries ago.

'The triumph of fact over probability' was how Benjamin Malkin described Merthyr Tydfil in 1803, a town that in under 40 years had grown from an isolated village to become the largest town in Wales and the nation's leader in iron manufacture. In a place scoured by historians and archaeologists in search of industrial heritage, Malkin's epithet perfectly describes the chance discovery of a system of culverts linking the former Cyfarthfa Ironworks with the Glamorganshire Canal.

Attention was drawn to the culverts in 1995 by Mid Glamorgan County Council who proposed a new relief road in Merthyr, and found that the route passed over a stone-lined chamber, close to the River Taff, which has two culvert entrances within it. MGCC asked the Ironbridge Gorge Museum Trust Archaeology Unit to investigate the extent and historical context of these culverts, and to evaluate the archaeological implications of the new road.

The culverts are solidly-built with pennant sandstone on a bedrock foundation, and are barrel vaulted. Fortunately most of the system is about 2m high and walkable. From the sluice chamber a main culvert continues for over 450m, ending at Cyfarthfa's lower works, now redeveloped for light industrial use. The culvert's variable dimensions show that it was built piecemeal using a cut-and-cover technique. Its end branches into five subsidiary culverts, of which one is brick-built, and clearly a later addition. The whole system is remarkably well preserved - only a short section has been rebuilt in brick, probably in the late nineteenth century when a road was built over the top.

The second main culvert extends from the sluice chamber for only 14m, where it has collapsed, probably caused by the building of a housing estate above in the 1980s. However, there is good evidence that it continued at least as far as a lock on the canal, where it fed the canal with water.

In 1849 it was reported that water from the River Taff 'is conveyed into the iron works ... at Cyfarthfa; passes through the works, being made use of in all the different processes for making iron, and then into the Glamorganshire Canal.' The five subsidiary culverts therefore appear to represent the tail races of the waterwheels at the lower works. Water was conveyed along the main culvert to the open chamber where, by means of sluice gates, it could be directed to the canal or the river.

The precise date of the system is less easy to pin down, although it must have been built in the 1790s. The Glamorganshire Canal was built in 1790-2. The culvert system appears to have linked up with the original head of the canal, which was subsequently extended into the Cyfarthfa Works at the behest of Richard Crawshay, owner of the works and the dominant faction on the Canal Committee.

Since the system is evidently integral with the lower works, the date of this works is crucial. Cyfarthfa had been founded in 1765, but did not achieve any prominence in the trade until after 1786, when Richard Crawshay gained control. A year later he was only the second manufacturer to obtain a licence to produce wrought iron using Henry Cort's puddling process, patented in 1783 and 1784. Crawshay spent the next five years modifying the process to make it commercially viable, and by 1793 claimed to have invested £50,000 in developing the works. The investment paid off. By 1800 Merthyr Tydfil had become a nationally recognised phenomenon, Richard Crawshay was the undisputed 'king of the iron trade', and Cyfarthfa remained the world's largest ironworks until it was overtaken by neighbouring Dowlais in the 1830s.

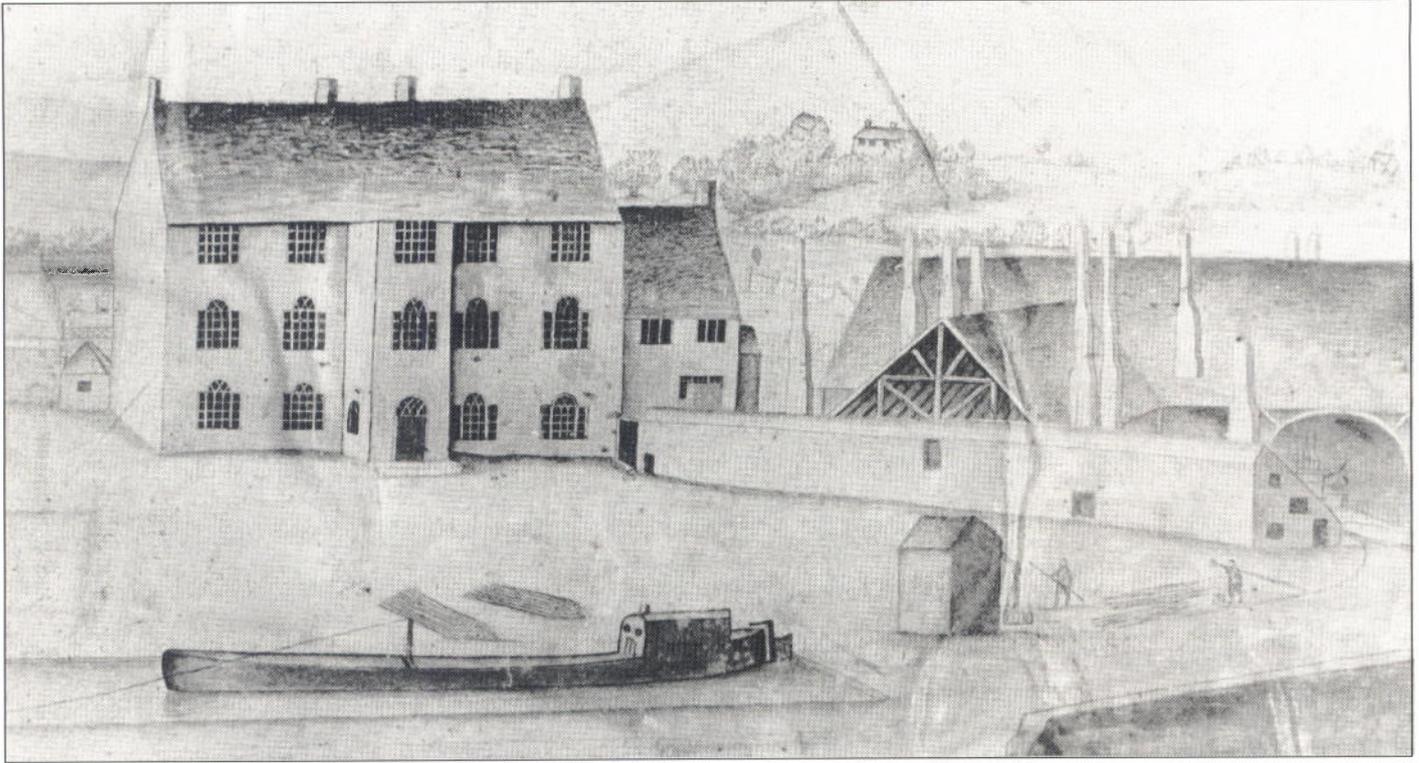


Tail races meeting to form the main culvert

Photo: IGMTAU

COVER PICTURE

Fox Brothers' Tonedale Mills, Wellington, Somerset (see Photo Feature) Photo: RCHME © Crown Copyright



The lower works at Cyfarthfa, drawn by William Pamplin c1801. In the foreground is the extended head of the canal, and on the left is Cyfarthfa House, home of Richard Crawshay
 Drawing: Cyfarthfa Castle Museum & Art Gallery, Merthyr Tydfil

A list of ironworks drawn up in 1794 held in the Boulton and Watt Collection, Birmingham Reference Library, records puddling and balling furnaces, and a rolling mill driven by a 20ft diameter waterwheel. Four years later James Watt junior made the first specific reference to Cyfarthfa's lower works. At that time it contained three 20ft waterwheels, for rolling, shingling and planishing (a finishing process whereby hammers were used to produce a flat, smooth surface to the bar iron). Given that the survey revealed four integral watercourses these probably represent three tail races and a bypass channel. The corresponding description of Cyfarthfa's upper works in 1798 suggests that the 20ft wheel mentioned in 1794 could only have been at the lower works. Therefore it is likely that the lower works with its tail races and culverts system had been built by 1794, and the culvert system was probably integral with the building of the canal.

The culvert system is not the only surviving archaeology at Cyfarthfa. Six of its seven blast furnaces still stand, as do the four blast furnaces and

a restored engine house of its subsidiary works at Ynysfach, now HQ of the Merthyr Tydfil Heritage Trust. In addition to a tramroad from the limestone quarries which passes over Pont-y-Cafnau, one of the world's first iron bridges, are two leats that carried water to the works. Cyfarthfa was built near the confluence of the Taf Fawr and Taf Fechan, and stone-lined watercourses can still be seen alongside each of these rivers. Later, an additional water supply was provided by the large pond in the grounds of the Crawshay mansion, Cyfarthfa Castle, although its ornamental appearance belies its more prosaic function.

In 1849 it was noted that 'the waterwheels could not be replaced by steam engines without remodelling the whole of that part of the works.' This reliance on water has a twofold significance. In the 1840s Merthyr suffered an ecological disaster when the rain-drenched Welsh hills failed to provide its population with adequate clean water. Part of the problem was blamed on the ironmasters whose demand for water was prodigious, and whose power was more or less absolute. The culvert linking the works to the canal

may have been an ingenious engineering solution, but it is also a symbol of the squalid consequences which ensued for the town's population, for which the ironmasters were more responsible than they cared to admit.

The Industrial Revolution is usually seen in terms of technological progress, but the archaeology at Cyfarthfa challenges such an oversimplification. In the 1790s, when an average blast furnace in Shropshire blown from an engine produced nearly 30 tons of pig iron a week, a single waterwheel at Cyfarthfa blew three furnaces which could produce up to 60 tons a week each. Of course, steam engines were slowly introduced at Cyfarthfa, but the notion of 'obsolete' technology is at odds with the commercial success of a works which did not become antiquated until the second half of the nineteenth century.

The historical significance of the culvert system is sufficient argument for its preservation. At the time of writing no decision has been taken on how this is to be achieved, although the proposed new road affects only a small part of it.

Conference

Problems of Identification and Protection of Industrial Sites in Urban Areas
 A Conference to be held at the University of Leicester December 15th–17th 1996

Organised by the Association for Industrial Archaeology

Sessions will look at new legislation relating to industrial monuments and archaeology in towns; urban landscapes; the problems an urban landscape poses for the archaeologist; the interaction between the developer and the industrial archaeologist.

Act now if you wish to attend – send for details and enrolment by 1 September 1996

It may not be too late to submit a short paper. Please contact:
 Mrs. V. A. Beauchamp, Division of Adult Continuing Education, 196–198 West Street, Sheffield S1 4ET

The Churn Stand

Pamela and Laurence Draper

A rapidly vanishing piece of country road furniture is the churn stand, a widespread, unloved and almost unnoticed item of everyday use which had a short but important purpose for 50 years or so.

Dairying was a cottage industry throughout historical times until the middle of the nineteenth century; country people kept perhaps a cow per family, and in built-up areas cows were kept at the back of shops to supply the urban population. Standards of hygiene must have been varied and, in many cases, abysmal.

The rapid development of railways provided the facility of carrying milk from the country to the town and specialist companies grew up to buy farmers' milk, transport it to the cities and distribute it to their customers. Other companies began to apply industrial methods to the old farmhouse crafts of butter and cheese making, buying milk to supply their new factories, or creameries as they preferred to call them.

By the 1920s, the dairy trade was well established and included companies of considerable size and influence. The farmers, however, were independent, disunited and had little or no control over their destinies. Often, they could not find a customer for their milk, and big companies could dictate the price paid for it. In May 1933, for example, a company serving London offered a West Country farmer 4d (old pence) per gallon (0.37p/litre) for milk which he had supplied in April, and told him that the price in May would drop to 3½d per gallon (0.32p/litre). The situation was becoming desperate for the farmers who were totally at the mercy of the big companies.

The Agricultural Marketing Acts of the early thirties gave farmers the power to form their own marketing organisations, and in the autumn of 1933, with the support of 96% of all dairy farmers in England



Churns and a stand advertising a caravan site at Lartington, Teesdale. Concrete block and concrete.

Photo: P. & L. Draper

and Wales, the democratically-elected Milk Marketing Board (MMB) was born. This organisation guaranteed a market for all the farmers' milk, was big enough to negotiate fair prices with the dairy trade and paid the farmers every month. The scheme required that all dairy farmers had to register. The farmer was relieved of all responsibilities and worry in finding a buyer for his milk, negotiating a price and arranging for its transport. The Board also took over all responsibility for allocating milk supplies to the various dairies and creameries, and it levelled out the different prices obtained for different uses by pooling the total income and sharing it out amongst all its farmers.

Transport of milk became even bigger business; this was achieved by a regular service which collected milk churns from each farm and delivered them to the creamery. Fleets of fast railway trains then whisked insulated tanker wagons of fresh, clean milk to the cities overnight. To achieve this there had to be a

complete infrastructure to move the milk quickly from cow to creamery. It had to be standardised in many respects, such as the size of churn and time of collection (one late farmer would jeopardise the livelihoods of all the others on his route), even to specifying the locations from which churns would be collected.

Churns full of milk are heavy items, so to load them onto a lorry they had to be standing at the height of the lorry decking, and at a position where the lorry could get alongside. They also needed shade and the platform should be large enough to allow the driver to unload as many empty churns onto the platform as he had to collect, to save him playing draughts with them, and to get away quickly. The loading point could be at the farm, if access was reasonable, or at the public road if not. Farmers without a churn stand, as the loading platforms were called, were obliged to provide a man to assist in loading the lorry.

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Stepped churn stand in stone and concrete, built into a bank, Llanddona, Anglesey

Photo: P. & L. Draper

Even the building of churn stands was fraught with problems, because they also had to satisfy the local authority as to positioning and construction. Nevertheless, in spite of the controls, this is where individuality came in. Sizes, shapes, access and materials were largely at the preference of the farmer, and for a time they became common-place in many parts of the country. They were built of a wide range and combination of materials; wood, including railway sleepers, brick, concrete, sheet steel, or local stone. They could be built with or without backs or end walls; sometimes they had steps or a ramp. Where local topography permitted, churns could be trundled easily from a field directly onto the top of the stand alongside a sunken lane. At Yatesbury House Farm, Calne, Wiltshire, churns were hand-winchd in a cradle along an overhead track direct from the milking parlour to the churn stand, a system which all other dairymen would have envied. The requirement for shade seems to have been met largely from trees or hedges; some even had a roof, and perhaps the most picturesque was one which had been thatched.

Humping churns about, even empty ones, was labour-intensive, and as labour costs rose so did the relative costs of milk and its products. There were also the problems of transporting milk in extremes of hot or cold. The obvious solution was to collect and transport milk in bulk by insulated tanker, so in the 1950s the MMB experimented, found it successful and progressively expanded this facility. By 1978 its entire collection was by tanker, with cooled milk stored on the farm in hygienic conditions to await collection. Scotland, with fewer but larger farms, turned to bulk handling a few years before England and Wales, where the bigger farms in the South East and Midlands were the first to change. Wales and the West Country were the last to convert to bulk collection.

The result was hundreds of thousands of redundant milk churns and perhaps 162,000 unwanted churn stands in England and Wales, and 196,000 in the UK as a whole, assuming one per dairy farm. Many churns were sold abroad, scrapped or put into museums, and a few met happier ends as eye-catching signs at the entrances to tourist facilities.

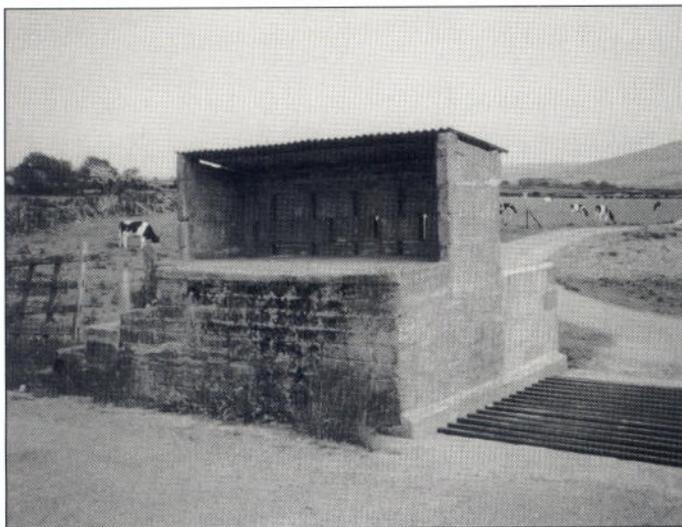
Many churn stands are still to be seen alongside our country lanes. Slowly they fall into disrepair, are removed when roads are widened, or become victims of traffic accidents; just a few have been renovated and taken on a new lease of life as horse-mounting blocks or supports for farm names, even with engraved stone plaques; these will probably be the only ones to survive for posterity, puzzling future generations as to why it was necessary to build such substantial structures for so humble a purpose.

In the early days, churn sizes were whatever the farmer felt he could handle, a common one holding 17 gallons (77.4 litres). Initially, churns were of tinned or galvanised steel, but lighter aluminium ones became available later. Eventually the specification was standardised by the MMB to facilitate mechanical handling and cleaning at the dairy: 13 inches (33 cm) diameter at the base and 28 inches (71 cm) in height. The churn held 10 gallons (45.5 litres), and an aluminium one weighed 54 kg when full.

The shape of the stands was largely at the whim of the farmers, provided they met the basic MMB requirements; many are rectangular but some can only be described as curvilinear polygon, often to fit in with the local topography. They are now relics of a once busy component in a modern industry, used every day of the year and a common sight in many parts of the country. Who knows, maybe there will be a Society for the Preservation of Churn Stands, but until then perhaps this note will survive to help future historians or archaeologists work out the reason for one or two odd-looking items of apparently useless roadside furniture around the country.

It has proven impossible to classify churn stands into any sensible form of grouping; as there was no standard plan, there are nearly as many classes as there are stands. A final warning: a candidate for the most northerly 'churn stand' in Britain turned out to be a temporary parking place for oil drums for the Dunnet Head Lighthouse! They were brought in by sea and hauled up from the beach prior to loading on a horse-drawn cart for delivery.

The authors are grateful to Tom Arnett of the MMB for providing background history; Pam Moore and Tony Yoward have provided many of the 80 photographs which we now hold.



Ventilated and shaded: concrete block and corrugated iron at Pant-y-Garn, near Cardigan
Photo: P. & L. Draper



Not all what it seems – the oil drum stand for the Dunnet Head Lighthouse

Photo: P. & L. Draper

The Ironbridge weekend

Steph Gillett

It was the first time at the AIA's Ironbridge weekend for this writer, although as a part-time student at the Ironbridge Institute, the surroundings were not unfamiliar! The theme this year was 'twentieth-century industry, obsolescence and change'. In his keynote address, Dr Barrie Trinder expressed alarm at the loss of twentieth-century buildings which were unlikely to be protected through listing, due to a lack of understanding of their significance regionally or nationally. He reminded us that buildings and sites are only a part of the archaeology of recent industry, with good collections of advertising material and many twentieth-century products, some in abundance.

Buildings associated with manufacturing processes pose particular problems for preservation or re-use. An alternative is to record sites, but only some industries have been covered by national surveys. For some significant industries little work has been done to establish the characteristic components or buildings or explain the national context for individual factories. Examples are the photographic and aluminium industries; the former nevertheless having good collections of cameras, the latter underpinning the development of the aircraft industry.

These and other industries, eg. breakfast cereals, need surveying in the same way that the car industry has, and the aircraft industry currently is. Barrie suggested that the influence, through Westinghouse, Kellogg, Truscon, etc, of the USA on British industry needs exploring, although many associated buildings have already gone. The difficulty of understanding anything beyond the basic processes of many industries (oil, coffee, etc), needs to be recognised; how can we appreciate the detail differences, especially when structures have been successfully re-used and adapted? Barrie proposed that we need to develop a sensible vocabulary for describing factories of the twentieth century, an understanding of the national development and regional context of key industries, and a sound scholarly base, if we are to win arguments for conservation or recording of sites.

Dr Frank Kirk, of ICI Chemicals and Polymers Ltd, described an industry where only a few can appreciate the detail of the processes involved. The Coal to Oil Plant at Billingham, opened in 1935, was developed during a period of severe depression when the Government needed to get the economy going again. The plant was producing 200,000 tons of petrol per annum by 1939; petrol production ceased in 1956.

Dr Kirk highlighted the engineering problems created by processes involving solids, liquids, gases and pastes at enormous pressures and high temperatures; equipment was at the upper limits of size and weight for the period. Modifications to the plant, producing a range of hydrocarbon chemicals, gave example to the difficulties of interpretation by anyone outside the industry. Aerial photographs were especially effective in showing the recent contraction of the site. Demolition of the entire plant is due to be completed in 1997, and industrial archaeology is

indeed fortunate in having someone within the industry to ensure a proper record is made and artefacts rescued. Many documents are held by the ICI Records Management Centre at Wilton; a large archive of photographs from construction to demolition is supplemented by video film of operations and photographs taken by RCHME. A range of valves, demonstrating plant control before the age of electronics, are to be held by the Science Museum, whilst other items will be found at other museums. The size of many items has created problems of transportation, storage and display.

As with the coal and chemical industries, the challenge of conserving representative structures of the electricity industry are enormous. David Allan, Production Manager at National Power's Ironbridge 'B' station, explored the IA of electricity generation in the twentieth century. He noted we are returning to a situation of many power generation companies, but without the confusing range of voltages, AC cycles or DC supply of the first decades of this century. Social changes, people moving to new communities, and the push for a standard supply system made many household electrical items obsolete. As the National Grid developed so the demand for power rose, making many of the smaller, older power stations also obsolete. Mr Allan compared the 200MW Ironbridge 'A' station, developed on a 'greenfield site' in 1932, with the 1,000 MW 'B' of 1969, or the Drax station with its six 660MW turbine generators.

The 'cathedrals of power' of the 1920s and 1930s - generating halls, turbines, chaingrate boilers, wood panelled control rooms - present huge challenges to those who would conserve or re-use them. At Ironbridge only the pump house of the first station remains; would planning permission be granted nowadays on such a site? The present cooling towers were coloured to match the local sandstone - the pink goes all the way through - and might be worthy of listing (a new icon for the Ironbridge Gorge?)

Power in another form was in Dr Denis Griffith's mind during his presentation on British crosshead marine diesel engines in which he illustrated the development of marine heavy oil engines in the UK.

The early engine designers were shipbuilders, providing power units for their own vessels only. Later, licences were issued to other manufacturers. Vickers, early into internal combustion engines for submarines, began developing diesels during World War I. Other manufacturers of crosshead engines included the North British Diesel Engine Co, but by far the most successful was Doxfords, whose last engine was built in 1982.

An afternoon visit to a local manufacturer proved impossible, so instead we had a tour of the locomotive shed and repair shops of the Severn Valley Railway at Bridgnorth. This was popular with most members, although there was some lively debate as to whether products of anywhere but Swindon were worth inspecting! There were many examples of adaptive re-use of 'obsolescent' equipment from a declining industry to draw lessons from, not only the motive power and rolling stock but also the buildings and machine tools.

Dinner at Blists Hill is clearly something that many look forward to with enthusiasm, providing an opportunity to get to know people a bit better. After the excellent meal, Tony Yoward, aided by Mary, gave a highly entertaining talk 'Pills and Potions'. He lamented changes in the pharmaceutical industry, resulting in the demise of many chemist's skills, and explained the technical difference between pills and tablets.

David George began the Sunday by tracing the development of aircraft factories, with particular reference to the Manchester area. He proposed a typology of aircraft factories: the 'Pioneer Phase', 1907-14, included A.V.Roe's use of the former Brownfields Mill, and other examples were the use of railway arches, stables, tram sheds and clothing factories. The second group comprised purpose-built factories of the Great War period, often funded by the Ministry of Munitions. In the 1920s and '30s changes in technology and the growth of larger firms resulted in a third phase. Firms such as De Havilland, Armstrong Whitworth and A.V. Roe relocated to new sites with metal-working facilities. A final phase was the building of government-funded 'Shadow Factories' during 1936-41 to re-arm the RAF.



Ironbridge Weekend delegates inspect the Severn Valley Railway workshops at Bridgnorth

Photo: Gordon Knowles

Constructed alongside the existing aircraft or motor car industry, these very large factories greatly increased aero engine and airframe production capacity. Handsome administrative blocks were often built, many of architectural importance and the only remains of some factories.

Wayne Cocroft highlighted an aspect of the armaments industry, where the need to update weapons creates much obsolescence. In illustrating redundant sites of rocket development, he posed some questions that industrial archaeologists need to address. What should we be recording of twentieth-century industry? And what do we mean when we say 'we are going to record the rocket industry'? In post-war Britain, 400 companies were involved in missile work. Few of the factories are distinctive, and if we relied on surviving monuments we would only be able to provide partial histories or descriptions. Wayne demonstrated the geographical spread of these hitherto unexplored establishments, and crude health and safety devices of the 1950s were also noted. He concluded by wondering why the public is apparently less willing to accept the

preservation of post-war monuments than examples of the technology in museums.

Members' contributions echoed many of the themes of previous speakers. David Cranston reported on progress with the Monuments Protection Programme, noting the usual problems associated with twentieth-century sites - cost, safety, scale and determining what is really important to protect. Keith Falconer highlighted recent recording by the RCHME of industries and the subsequent cataloguing, documentation and publication of records. My own contribution on the Bristol aircraft industry reflected David George's presentation, and included almost subliminal images of the recently demolished West Works which developed from the 1920s. IA Videos demonstrated recording of actual processes in a way that enabled viewers to understand the techniques involved. Despite a century of moving images, film and video seems not to have been taken as seriously as books and more needs to be done to develop these recording methods. David Brown alerted us to the phenomenon of 'ductile/brittle transition temperature', below which wrought iron tends to

develop fatigue cracks or if cold enough shatter like glass. Paul Sowan, describing himself as a collector of 'odds and ends', urged us to seek out the obscure and esoteric, and welcomed contributions to his own research.

The general discussion which followed identified many threats and some opportunities for recording and preserving twentieth-century industrial archaeology. In summing up, Hilary Malaws noted the problems caused by the scale not only of buildings and sites, but of records themselves; who would store them, who would use them, and what would happen to records that were not being accessed? Members highlighted both strengths and weaknesses in the Planning Policy Guidelines; the ability to protect and/or record sites depended more on financial and political decisions than on legislation. So ended a very full weekend with much food for thought.

For a full copy of this edited report, send SAE with a 50p stamp to the weekend organiser, Gordon Knowles, 7 Squirrels Green, Great Bookham, Leatherhead, Surrey KT23 3LE.

PUBLICATIONS

As readers have been notified, *Industrial Archaeology Review* is to be published in a new format once, instead of twice, a year. For this reason, lists of books received for review and shorter notices will appear in *Industrial Archaeology News*.

Short Notices

Norfolk Industrial Archaeology Society, 1970-1995, (Norfolk Industrial Archaeology Society, 1995) 29 pp, ills £3.50. (ISBN 0 9526815 0 1) and *Journal of the Norfolk Industrial Archaeology Society*, Volume 5, No.5, 1995.

To celebrate its Silver Jubilee the society has produced a souvenir booklet to illustrate a selection of 25 sites from its recording activities over the years. This is a minute fraction of around 1000 records which have been made and deposited at the Bridewell Museum in Norwich. In their latest *Journal*, the articles include a gazetteer of 250 defence sites in the county, a survey of a water turbine-powered estate saw mill and the sixth of a series of articles on milestones in the county. Both publications are available from the Society, c/o The Bridewell Museum, Norwich NR2 1AQ, the book for £4.00 and the journal for £4.50, both prices including postage.

Southampton University Industrial Archaeology Group Journal, No.4, 1995, 30pp, ills, (ISSN 0967 3474). This issue includes articles on the history of the sewing machine and some notes on the route of the Southampton & Salisbury Canal. With the impending closure of much of the site a description of the development and buildings of the Royal Aircraft Establishment at Farnborough is provided. Other contributions outline the provision of gas in Odiham and review the work done on the Hampshire Farms Survey.

Wind and Water Mills, No. 15, 1996, 52pp ills, £2.95, (ISSN 0260 504X). Produced by the Midland Wind

and Water Mills Group, this journal includes five articles. Three of them deal with specific mill sites, Carmountside Farm in Staffordshire, Washford Mill at Buglawton in Cheshire and Little Aston in West Midlands. Another contribution describes the various sites that have been used for mills on the River Penk in Staffordshire. Postcards can be a source of information for the study of mills and their value is examined by Michael Yates in this issue. Obtainable from Barry Job, Meadowside, Clayton Road, Newcastle-under-Lyme, Staffordshire ST5 3ET.

Proceedings of the Twelfth Mills Research Conference, ed. Duncan Breckels, (Manningtree, 1995) 82 pp, ills, £3.50 plus 65p postage and packing. (ISBN 0 9509758 7 7).

This issue includes seven papers. Three are on windmills - those of the Isle of Man (Nick Kelly), Fenland drainage windmills of Cambridgeshire and Huntingdonshire (Peter Filby) and Bloxham Grove post mill, Oxfordshire (Stephen Buckland). Millstones form the subject of three others - millstones at the Paris Exhibition in 1878 (Owen Ward), test programmes for determining their grinding characteristics (Paul Jarvis and David Jones) and those included in garden creations by Lutyens and Jekyll (Niall Roberts). The other article describes a system of recording for mills in England, also by Niall Roberts. Well produced and illustrated, the book can be obtained from The Mills Research Group, 1 High Street, Mistley, Manningtree, Essex CO11 1HA.

Salt and the Domesday Salinae at Droitwich, A.D.674-1690, by Beatrice Hopkinson, £10.00. This is a quantitative analysis of the production of salt from the brine springs at Droitwich in Worcestershire. Their unique nature was due to the high yields of salt which made them extremely economic to exploit using fuel from local woodlands and the fine-grained pure salt brought a high price in the market place. The

proceeds from this publication will support the Brines Springs and Archaeological Trust whose charter is to preserve the ancient and unique salt mine at Upwich. The book may be obtained from Blackwell's at 50 Broad Street, Oxford OX1 3BQ.

The Watermills of Sussex: Vol. 1 East Sussex, by Derek Stidder and Colin Smith, £18.95. This book describes 95 mills and their use for the production of gunpowder, paper and flour, the people who worked them and the surviving machinery. The book is fully illustrated with maps, diagrams and photographs. Enquiries to the publisher Quotes Ltd., The Book Barn, Whittlebury NN12 8XS.

Ship Models, their purpose and development from 1650 to the present, by Brian Lavery and Simon Stephens, (Press of Sail Publications, 1995), 256pp, 238ills, £45.00, (ISBN 0-948864-33-8). Ship models of exquisite craftsmanship have been made in Europe since the sixteenth century, when shipbuilding reached a new level of sophistication, and models reflect almost the entire range of shipping since then. The National Maritime Museum at Greenwich houses one of the most celebrated collections of ship models in the world, and its riches are presented in this volume. The book starts with a discussion of the various types of models and their uses; other chapters cover the techniques of their production, the craftsmen who made them, the history of their collection and display, and their conservation. The book concludes with the first comprehensive catalogue of ship models in the collection at Greenwich.

Purbeck underground, by David Pushman, (Author, n.d. 2nd edition) 77pp, ills, (ISBN 0 9517621 1 7). A brief survey of underground extraction of stone in Purbeck. Obtainable from the Author, Downsway, The Hyde, Langton Matravers, Dorset.

W.J. (Bill) Thompson

The untimely death of Bill Thompson, at the age of 62, has robbed the AIA of a figure who, for over a quarter of a century, was at the centre of its activities. A founder-member in 1973, he served the Association as Conference Secretary until 1981, he was President in 1984-87, and was a long-serving member of Council. His passion for Industrial Archaeology was second to none.

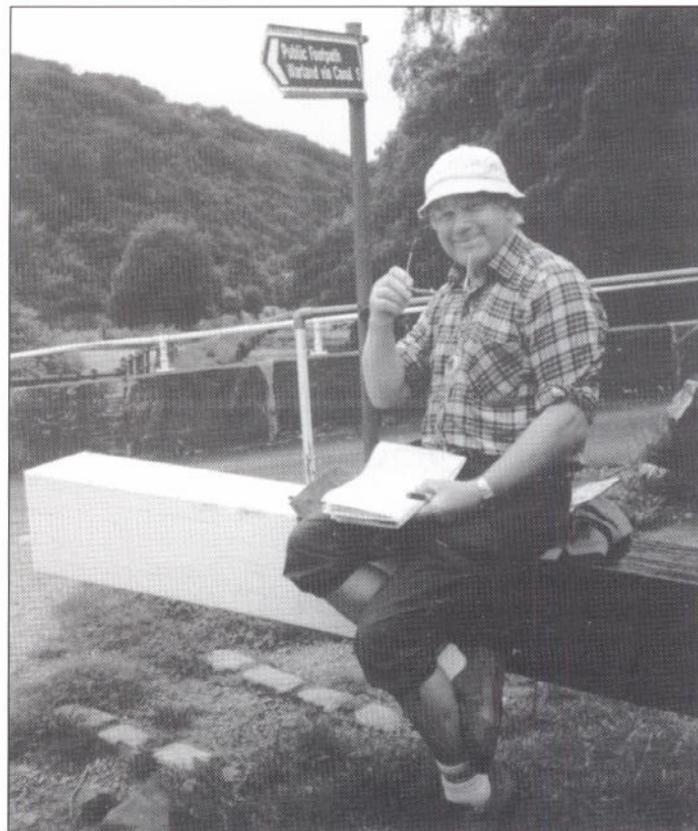
It was my privilege to introduce Bill as one of the speakers at the AIA's first Conference at Keele University in 1974. We had organised the Conference together. I said that his pedigree for Industrial Archaeology was impeccable. His father was a coal miner, and his grandfather had been an ironstone miner. He was born in Halmer End, one of several small mining villages on the west side of the Staffordshire Potteries. He was educated at elementary school in Miles Green and Burslem Technical School, after which he trained and worked as a mechanical engineer, including time at Rolls Royce in Crewe. And with such a training it would be no surprise to learn that he was never known to put his car into a garage, save for petrol. National Service was in the Royal Air Force, and then it was back to work and to night school for further qualifications. Eventually Bill got bitten by the teaching bug and decided to train for work in technical colleges. He trained in Bolton where he met Margaret, his future wife.

I met Bill in Stafford, when he came to join the teaching staff in the Mechanical Engineering Department of North Staffordshire Polytechnic, now the University of Staffordshire. By this time he was a Chartered Engineer, and

had acquired a Master's degree from UMIST. I saw him reading a notice about adult classes in Industrial Archaeology and invited him to attend. The rest, as they say, is history. From these classes Staffordshire Industrial Archaeology Society was formed in 1969. Bill became chairman in 1972 and in 1982 became Honorary President following Michael Rix. To the Staffordshire Society Bill was an inspiration; a regular contributor to its Journal, an organiser of field visits and excursions, and a witty and informative speaker in its programme of winter lectures.

Bill's first National IA Conference was at Bradford. He missed the ones at Bath, but missed only one after that. He was in the Isle of Man in 1973 when the decision to start the Association was taken, and was greatly disappointed that he could not take his motor bike across. He said it was the only way to travel on the Isle of Man, but whilst he could get a boat from Liverpool out there, he could not get a Sunday sailing back to be at work the next day. So he flew from Blackpool, the nearest airport to his home in Bolton to where he had returned to take a senior post in teacher training at the Institute of Higher Education. His commitment to technical education, to day release and night school needs to be put on record. Many of the things which he advocated for young people are now high on the political agenda.

From the earliest days of the Association, Bill Thompson was one of its staunchest supporters and loyal servants, playing many roles on Council, most recently as Sites and Monuments Officer. He was a great activist in local societies, firmly



Bill Thompson, 1933-96

convinced of their worth, and of the contribution they made to the advancement of industrial archaeology. In the Manchester Regional Industrial Archaeology Society (MRIAS) he was field secretary, treasurer, and in the mid-80s, chairman. Together with Anita George he organised the first North West Regional Conference in 1978 at Bolton, an annual peripatetic event. Later, he was instrumental in promoting the first Cumbria IA Conference, now held annually at Ambleside. He was a member of the Industrial History section of Yorkshire Archaeology Society, enjoying his frequent visits to Leeds, and he served on the North West IA panel of the CBA.

Following early retirement he continued to teach two long standing WEA classes in industrial history at Urmston and Rochdale. He found time to study for and to gain a Doctorate from the University of Nottingham, and he went to work in Turkey for the British Council, advising on technical education and teacher training. He also continued to be prominent in the Methodist Church, not least as a regular preacher. He remained steadfast in his faith.

He will be sadly missed. His circle of friends was huge, embracing church, the AIA, many local societies, the WEA, the allotment club in Bolton (he was a formidable gardener), his former

colleagues from work, and his fellow caravanning enthusiasts, for the Thompson family did not so much as go on holidays as on expeditions. His definitive book on his native heath, *The Industrial Archaeology of North Staffordshire*, will continue to be used by all who wish to know that region better. Bill Thompson was one of the finest teachers and interpreters of our industrial heritage.

To his wife Margaret and children Andrew and Jane go the affection and respect of this Association.

Fred Brook

David George adds:

Bill's publications also included the *Industrial Heritage of West Yorkshire*, for the AIA Conference at Huddersfield in 1988. He was active in IA circles up to the end. Last year he was commissioned by the Greater Manchester Archaeological Unit to record the Bright Steel Shops at Park Bridge Ironworks, and only a matter of a few weeks ago we travelled together to the bi-annual meeting of the NWIA Panel at Barrow-in-Furness where Bill gave a presentation on Docklands Developments.

I will remember him particularly for his generosity in pushing the claims of others including myself, and his modesty about his own achievements.

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.

Thames Tunnel

Following the approval of details for the works to strengthen the Thames Tunnel (see *IA News 97*), the stripping of the lining started in April and will continue through the summer. The new concrete invert slab was nearing completion at the end of June and reinforcing of the cross-arches was about to commence, while the whole of the structural work

is to be completed by the end of 1996. The new concrete lining will be of slightly lesser bore than the original, to avoid cutting into the brickwork where it is thinnest. I have been recording features of the original lining and the structural brickwork as they have been revealed and I hope to report on this at a future time.

Malcolm Tucker
London N4 4EU

AGM time is upon us again and if it runs true to form the meeting will elect or re-elect a number of more or less familiar but ageing faces. On past performance it is unlikely there will be an election for any post; indeed, in most years Council Officers spend quite a lot of time inveigling people into standing. The two longest serving members were first elected in 1979 and will soon be eligible for long service medals - although of course we are enormously grateful to them and for all Council members for the amount of time and money they put into the Association. Expenses for attending Council meetings are only paid in exceptional cases so it is not a route to riches, or indeed, to glory - much of the work verges on the mundane - but everyone on Council is committed to the promotion of industrial archaeology and some even find the work rewarding!

COMMENT

There must be ways in which our role in industrial archaeology or our services to members can be enhanced.

What we need now are people with new ideas and a little spare time to carry them through to fruition. New blood (not necessarily young blood) combined with energy and commitment, is eagerly sought - surely, as you read this, you can think of things that you feel the Association ought to be doing or perhaps things you would rather it was not doing. Seize this opportunity to improve things by standing for Council - your Association needs you ... or someone like you!

(a nomination form is enclosed with this issue of *IA News*)

Hilary Malaws

Industrial Heritage Association of Ireland

The inaugural meeting of this new pan-Irish association took place on 8 June in Dublin. It was stated:

'The Association would aim to foster and promote an awareness and appreciation of our industrial heritage and this could be done in a variety of ways, including promoting an inventory, databases, archives and surveys of industrial sites. Liaison could be developed between local societies, groups and individuals. Publicity and educational initiatives could be undertaken and, where appropriate, government action could be sought to foster the development of the industrial archaeology of Ireland.'

It is envisaged that this association would be a means of liaison between the organisers of the various industrial heritage projects around the country as well as being open to the interested individual.'

Both the title of the new Association and the actual meeting suggested that IHA would perhaps be more concerned with restoration projects than is AIA. There are few (if any) county IA societies in Ireland; little inventory work has been undertaken, at either government or voluntary level, but there are many restoration schemes in progress on water mills, inland waterways, mining sites, textile factories etc. I was invited as the principal guest speaker to talk about the genesis of IA in the United Kingdom and the role played by AIA. The meeting expressed interest in our publications and the IRIS scheme, and voted to affiliate to AIA.

Officers elected to the IHA Council included:

Chairman: Fred Hammond, a freelance industrial archaeologist. He has written *The I.A. of the Antrim Coast and Glens*, but is also involved in the restoration, for example, of the windmill

within the Guinness complex in Dublin. Vice-Chairman: Norman Campion, Vice-Chairman of An Taisce, the National Trust for Ireland. Secretary: Mary McMahon, an archaeologist working in Dublin.

On behalf of AIA, I wished the new organisation every success and hoped for continued liaison between our two organisations, perhaps beginning with a visit by AIA to Northern Ireland next year.

Marilyn Palmer

AIA Abstracts

Industrial Archaeology Review will now be published annually and the next issue, Volume XIX, will appear in Spring 1997. Members are requested to continue to send in Abstracts for inclusion and the deadline for the next issue will be the end of January 1997. It would, however, help the Editors if material could be sent in throughout the year in order to facilitate the compilation of AIA Abstracts.

Abstracts should continue to be sent to Peter Neaverson, *Industrial Archaeology Review*, Department of History, The University, Leicester, LE1 7RH, Fax 01162 523986.

Conference Reminder

The AIA annual conference at Bangor on September 6-8, with the additional programme to September 11, promises to be an interesting event and should be high on your agenda. If you've forgotten, lost the details and still haven't booked a place, it's not quite too late. Write immediately to the Conference Secretary (see Diary page).

IRIS update

The IRIS Initiative is continuing to progress well throughout England, and to date the project has identified over 3200 industrial archaeological sites.

Most of these have been entered into the relevant sites and monuments record (SMR) databases, and will receive the appropriate planning consideration as required. Two-thirds of the English counties have undertaken some IRIS recording. Compilers in Lincolnshire and Cumbria have completed IRIS forms for over 200 sites in each county, and over 100 sites have been recorded in West Yorkshire, Shropshire, Greater London and Surrey. However, coverage is patchy and certain areas still require further volunteers; notably the East Midlands, East Anglia, Lancashire and Merseyside.

I continue to speak to local groups around the country, and find that ever-increasing numbers want to become involved in IRIS. Initially, I targeted the AIA affiliated societies, but now a wider body of groups and individuals are undertaking IRIS recording. Recent meetings have included talks with the Macclesfield Canal Society and Huddersfield Local History Society, and a presentation at the 'Oxfordshire Past' Forum for independent archaeologists and local historians.

Thank you to everyone who has given information to IRIS. Keep up the

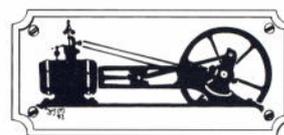
good work. Remember, until a site is identified on the SMR it cannot be offered any protection in the planning process. IRIS is simple to use and could help save your local heritage.

If you require further information about the IRIS Initiative, please contact me at Lancaster University Archaeological Unit, Storey Institute, Meeting House Lane, Lancaster LA1 1TH.

Jane Robson

Fame at last - calling all photographers!

This could be for *you* ... The new 16-page *IA News* allows space for an illustration on the cover page. This first issue has a photograph supplied by RCHME and is of their usual high standard. Can you beat the Royal Commission at their own game? The Editor would welcome contributions from readers for the cover and Photo Feature page - topical photographs or just a good striking view which you consider deserves wider publicity. The reward? The AIA cannot run to prizes, but just think of the fame ... Keep them coming in, or if you need more details, please contact the Editor.



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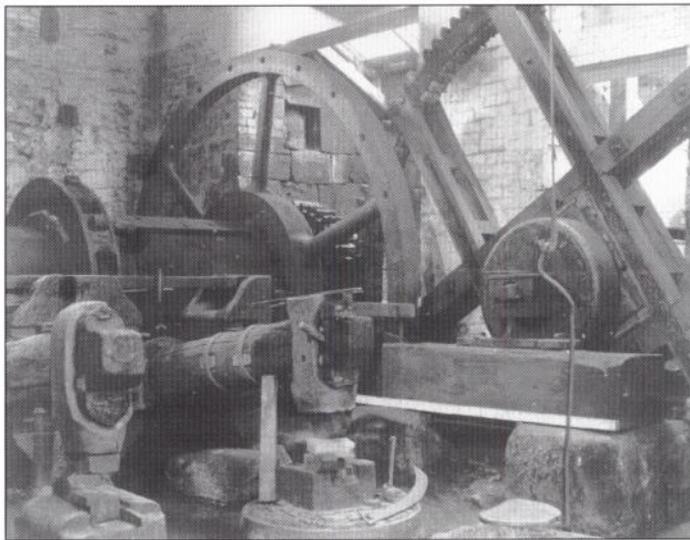
More industrial buildings listed in Sheffield

A revised list of Listed Buildings in Sheffield was published in December 1995 following a full review by English Heritage. Local amenity societies were involved in the review, such as the Victorian Society and the Hallamshire Historic Buildings Group; the South Yorkshire Industrial History Society (SYIHS) argued the case for more historic industrial buildings to be listed, as did Sheffield City Council's conservation staff. Generally speaking, English Heritage listened very sympathetically, although some important industrial buildings remain unlisted.

The previous list of 1973 included only a few industrial buildings: the outstandingly important ones such as Abbeydale Industrial Hamlet and Shepherd Wheel, or those of marked architectural interest such as the classical 1820s front blocks of Globe Works and Sheaf Works. During the early 1980s listing was refused for important steelworks buildings of the 1850s and early 1860s, including Bessemer's works offices which were demolished. There was a more sympathetic approach in the late 1980s and a good number of industrial buildings were added to the list, by spot listing and in a review of 'Little Mesters' Workshops' which gave protection to some representative cutlery and edge tool works such as the remarkable Butcher's Wheel.

The most significant and welcome feature of the new list is the decision to upgrade the listing of some major sites. The outstanding quality of Abbeydale Industrial Hamlet (E7, H1, Z1 in the AIA Guide) is recognised by a Grade I listing, while the water-powered cutlery grinding works at Shepherd Wheel, Sharrow Snuff Mills, James Dixon's Cornish Place silver and plate works, and the crucible steelworks at 35 Well Meadow, become Grade II*. The last two are currently empty, though there is a proposal for Cornish Place to be converted to housing association accommodation. Hopefully the upgrading will encourage suitable plans for them, and emphasise the importance of Abbeydale and Shepherd Wheel when local authority funds are scarce.

The crucible steel industry is well represented among the Grade II listings, with the Baltic Works of Joseph Beardshaw & Son and four good examples of smaller works, as well as



Till hammers at the Abbeydale Industrial Hamlet

Photo: Sheffield City Council

the memorial at Hill Top Chapel, Attercliffe, to Benjamin Huntsman who invented the process. The last complete cementation furnace in Sheffield, Doncasters Furnace, already scheduled as an ancient monument, is also listed.

Cutlery works newly listed include Ceylon Works in Thomas Street at the side of Taylor's Eye-Witness Works, Sylvester Works front block, Kutrite scissor works, and Portland Works, Randall Street. A silver and plate works, Stagg Works in John Street, and a stovegrate foundry, Wharnciffe Works, join the list, as do three nineteenth-century edge tool works, Spital Hill Works, Meersbrook Works, and the small rural Pear Tree Works in Greenhill.

Further parts of Sharrow Snuff Mills are listed, as are two weirs on the Don. Other industries are represented by the bakery in Thirlwell Road and the Wharnciffe Fireclay showroom.

Railway structures include the Herries Road viaduct and the bridge at Bardwell Road, both on the Sheffield, Ashton under Lyne and Manchester Railway of 1845, the road ramp to the former Victoria Station, the stables and horses' sick bay at the LNWR Nunnery goods station and a Midland boundary marker at Bridgehouses. Packhorse bridges and early road bridges are listed, as are the toll bar gate pillars at Hunters Bar.

The new list includes memorials, street furniture and other small items. The charcoal burner's memorial stone of 1786 in Eccleshall Woods is an important example for industrial historians. All 18 preserved Webb sewer gas lamps, and all three British Electric Transformer Co electricity distribution pillars have been listed, as have the 1910 Standard Measures of

Length in the wall of St Pauls Parade, two village pumps and a K6 telephone box.

A welcome innovation is the production by the City Council, with English Heritage, of a booklet giving the addresses and grades of Sheffield's listed buildings, and a very handsome and well illustrated matching booklet, *Historic Buildings in Sheffield: understanding listing* which reviews the city's historic buildings in their context, with due attention to industrial history, and explains the listing process.

These major additions to the ranks of historic industrial buildings are very welcome. Inevitably, we were disappointed that some of SYIHS's recommendations were not accepted. Nothing has been added to the handful of industrial buildings, mostly office blocks, from Sheffield's bulk steel and heavy engineering industry. A lot of the industry's buildings have gone, but there are still production buildings of the late nineteenth and early twentieth centuries which could be listed. We are particularly surprised at the omission of the 1908 Brown Firth Research Laboratories in Princess Street where Harry Brearley discovered stainless steel. Among other industries, it seems odd that none of the good surviving brewery buildings are listed.

The review excluded Sheffield's northern suburbs where the list dates from 1985. Several industrial buildings in that area, from small domestic cutlery workshops to the oldest buildings of Stocksbridge Steelworks, are not listed and probably would be today. The same is true of the rest of South Yorkshire, reviewed in 1988. We understand that no full list reviews are planned after the present programme; any further listings will depend on the

Monuments Protection Programme, other thematic reviews and spot listing where there is an immediate threat.

The new Sheffield list appeared a few weeks too late to be taken into account in the AIA's *Guide to the Industrial History of South Yorkshire*. A number of newly listed and upgraded buildings are in the guide, but inevitably we have lost some buildings - please note that Silverwood Colliery (B21), Carcroft Smithy (D42) and Victoria Works, Millhouses (F7) 'are clene gone' as Leland used to write, and the Blackburn Meadows cooling towers by the M1 (L8) are likely to be brought down at any moment. The steam engine at the White Path Moss peat works (C3) has long gone.

Derek Bayliss

Gasholder issues at St Pancras

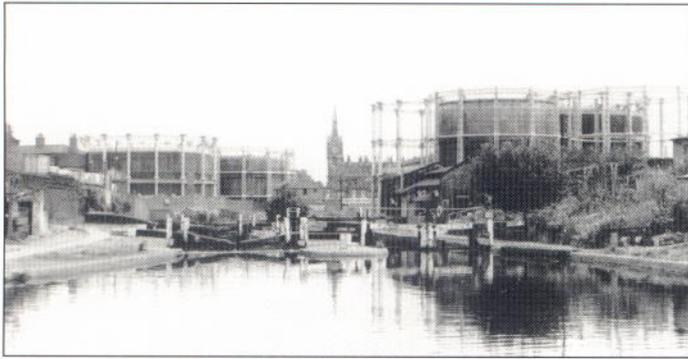
The Bill for the Channel Tunnel Rail link (CTRL), terminating at St Pancras Station, is now being considered by a committee of the House of Lords. The Royal Assent is expected early in 1997. The Commons committee called for various modifications to alleviate noise and intrusion, but it did not address in depth the listed building and conservation area issues, which particularly affect the St Pancras end of the line, and various petitions on this by the Victorian Society, English Heritage and others have been reserved for the Lords.

Charles Norrie commented in *IA News 94* on the Bill's replacement of normal listed building consent procedures so as to give powers of demolition and alteration within the broad guidelines of a contentious 'Heritage Agreement', with local authority approval of the detail of



'Siamese triplet' gasholder frames, 1995

Photo: M. T. Tucker



The renowned forest of gasholders, seen from St Pancras Locks in 1973

Photo: M. T. Tucker

alterations to be granted by negotiation within strict time limits. The extension at a lower level of the St Pancras trainshed roof, possible over-commercialisation of the Grade I listed station interior and securing a suitable use for the former Midland Grand Hotel are major concerns. Worse, from our point of view, will be the effect on the townscape in the King's Cross Conservation Area - devastating the enclave of vigorously industrial side streets around the former German Gymnasium and Stanley Buildings and the magnificent forest of gasholders to the north.

Many consider that the high speed Kent commuter service, which will help to finance the CTRL, should be syphoned off at Stratford into Crossrail rather than add to the intense congestion at King's Cross-St Pancras, but there is no procedure whereby such a diversion can be achieved in the present bill. The proposed commuter platforms are to be sited between the German Gymnasium and the gasholders, with road traffic to the stations diverted along Cheney Road (presently narrow and paved with setts). Even without commuter platforms, however, the continental platforms (to be twice as long as the present trainshed) would clip the gasholders because it is Railway Inspectorate safety policy that new platforms should be straight. The human propensity to accidents must have deteriorated since Waterloo International was approved!

The promoters' environmental assessment of the visual landscape is a weak document, antipathetic to the substance of industrial landscape, and it fails to identify as 'visual receptors' the many users of the Regent's Canal and its towpath for whom the gasholder frames are such a memorable feature, or the cinema world to whom this is a prime filming location.

Three listed and two unlisted gasholders are proposed to be demolished to leave just two (one listed) out of the present seven holders. In two designs, they are a remarkable landscape feature, because of the number of view points from which their irregular grouping can be seen. Because of site constrictions, their scale is uniform and modest for their period (c1880 and c1890), while the decorative and functional details are to a high standard. The guide frames of the three listed gasholders are united in a unique 'Siamese triplet'. These cast- and wrought-iron frames and the two-lift telescopic bells were constructed in 1880-81 reusing the tanks (the parts below ground) of three single-lift holders of 1860-67. These tanks were notable for their exceptional depth of excavation (55 feet).

A report by Dorothea Restorations Ltd has demonstrated the practicality of dismantling, restoring and re-erecting the three holders on another site for under £3 million, but excluding land costs, substructure and overheads. The tanks would not be recreated. Omitting the bells would reduce the cost to about £1.2 million - tiny compared with the cost of the railway. Although the promoters, Union Railways, said they would 'consider' the re-erection of these gasholders, there is no provision in the Bill or associated documents, and the concessionaires appointed in February, London & Continental Railways, have no such obligation. One of the difficulties is land. Re-erection on unused land at the top of King's Cross Goods Yard has been suggested, but this misses the landscape impact and historical context. The only satisfactory visual location (other than *in situ*) is next to the remaining listed holder, on the site of the original gasworks. English Heritage is pursuing this scheme in earnest, with new buildings inside the frames to justify the land cost and to

provide an incentive for their long-term maintenance. The Lords' committee has some concentrated business before it.

Malcolm Tucker

Pleasley Pit

Since its closure, Pleasley Pit has been the subject of many deliberations concerning its preservation. In January 1996, The Friends of Pleasley Pit was formed with the object of ensuring the preservation and interpretation of this important site whose engine houses were listed when site demolition was in progress.

The pit was sunk by the Stanton Ironworks Company in 1871-75 on the concealed coalfield in East Derbyshire, just off the A617 Mansfield to Chesterfield Road (SK 499643). It was then the deepest pit in the area at 1600 feet and was further deepened to 2800 feet around 1920. The mine was phased out of production in the 1980s, much of its workforce going to the neighbouring Shirebrook Pit, which itself closed in 1993. The original pair of horizontal steam winders were replaced by similar new engines, one made by the Lilleshall Company and the other by Markhams (of Chesterfield), and both engines remain *in situ*. Although the shafts were capped, the headstocks remain and are of interest being the first made of rolled steel girders when erected about 1900; they were partially encased in concrete in 1976.

For more details of this ambitious project to create a Trust to preserve these engines and also rejuvenate the surrounding area, readers should contact the Secretary of the Friends: Mrs M. Holt, 40 Royston Drive, Belper, Derbyshire DE56 0EL.

Glass furnace moved

In April, the remains of a medieval type 'forest glasshouse' was lifted onto a transporter and taken to the glass museum at Kingswinford in Dudley. A special steel raft supported the 20-ton structure, and technical support was received from Western Aggregates, the quarry operators. It is believed this was the first time one of these fragile structures, common to medieval Europe, has been retrieved in one piece after archaeological excavation. The site in a large gravel quarry in Cannock Chase, near Rugeley, Staffordshire, was excavated in 1991-2 and has been dated to around 1540.

Although a number of medieval glass house sites are known, mainly in

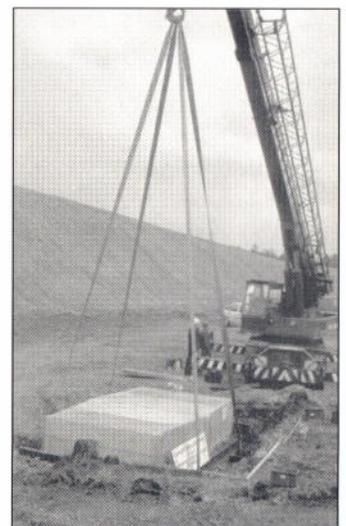
the Surrey/Sussex Weald and in Staffordshire, many have scanty remains. The Rugeley furnace is one of the better preserved. Such furnaces used wood for fuel and were closed down after 1615 because of the demand for timber. This stimulated the design and use of coal-fired structures and the industry moved to areas such as the Black Country.

John Price of Farnham-based Conservation Services (☎ 01252 721455) has pioneered the use of simple technology to remove fragile remains in one piece and believes that British know-how could be used worldwide to rescue threatened archaeological structures. He has a policy of continual improvement in recovery techniques and is always interested in solving problems or providing advice. A major problem, however, is where to site and maintain removed fragile structures, and perhaps the growing popularity of open-air museums is one answer.

Challenge Funding

The Council for British Archaeology and English Heritage have announced a new grants scheme to support and encourage voluntary contributions to the study and care of Britain's historic environment.

Groups, societies and individual independent archaeologists are invited to put forward proposals for innovative projects of research which will say something new about the history of local surroundings, and thus inform their future care. Proposals will be judged on their intrinsic merits, and evidence of capacity to see them through successfully.



Big lift for the glass furnace in the gravel pit at Rugeley, Staffs

Photo: John Price

Awards of up to £500 (sometimes more) are aimed exclusively at British archaeology's voluntary sector, and can be used for most purposes that are directly related to archaeological research, apart from salary costs. Examples would be equipment, drawing and photographic materials, scientific dating, or environmental analysis. If you have questions about what might or might not qualify, the Challenge Funding Panel will be glad to advise.

For more information about the scheme or advice on how to apply, please write to 'Challenge Funding', CBA, Bowes Morrell House, 111 Walmgate, York YO1 2UA. Enclosure of a SAE (to contain four A4 sheets) would be appreciated.

TICCIH news

John Crompton has taken on the role of UK Representative, following the resignation of Stephen Hughes. Stephen was an assiduous and enthusiastic representative for several years, and we all thank him for the sterling work done on many fronts. The 10th International Conference on Maritime Technologies is to be held in Greece on 22-29 June 1997. In addition a session on the industrial landscapes of former mining areas is planned. Papers have been called for, but any late entries should contact the Conference Secretariat (see Diary page for address).

Lottery money for Kew

Kew Bridge Steam Museum, Brentford, has obtained £400,000 from the Heritage Lottery Fund towards its planned 'Water for Life' gallery which will illustrate the history of public water supply in London from Roman times to the recently completed Ring Main. The intention of the new gallery is to

educate in an interesting and memorable way the crucial importance of a clean drinkable water supply for the maintenance of health. A good water supply is the very essence of civilisation.

The estimated total cost for the project is £755,000 and now a final £151,000 has to be raised. It is hoped that the 'Water for Life' gallery will be ready for opening by March 1997 in time for the Museum's 21st anniversary.

The Museum is open daily from 11am to 5pm and engines are in steam at weekends. It is intended to remain open during the construction of the new gallery and there is a programme of special events. Further information is available from the Museum at Green Dragon Lane, Brentford, Middlesex TW8 0EN. ☎ 0181 568 4757.

Robert Carr

Papers called on industrial collections

Papers are invited on the themes of ethics, management and conservation of industrial collections, for a conference to be held in Cardiff on 9-11 April 1997. The conference will include trips to industrial museums and the keynote speech will be delivered by Sir Neil Cossons. See Diary page for organisers' contact address.

Civic Trust rewards Saltaire

Described as 'a remarkable example of conservation-led economic regeneration which has revitalised an entire area,' the rescue and renovation of Sir Titus Salt's huge Saltaire Mill and model village near Bradford has received a top award from the Civic Trust. The mill has been transformed into art galleries and workplaces for over 1,500 people, and the model village conservation area renovated.

Forth Railway Bridge

The threat to the long term future of the Forth Railway Bridge (*IA News 95*), arising from lack of adequate maintenance, has been lifted for the present as a result of a critical report made by the Health & Safety Executive.

Strong representations were made by professional engineers, historians, and members of the public, all deeply concerned at its progressive deterioration, as well as questions in Parliament, led to the Minister of Transport, Mr Stephen Norris, commissioning a detailed study of the bridge structure. The report criticises maintenance procedures by British Rail over many years, and the lack of maintenance records. As a result, Railtrack has been ordered to carry out certain urgent works under the threat of legal proceedings, as well as to take steps to carry out other vital but less urgent repairs. The maintenance budget for 1995/96 was about £500,000, half the 1989 figure. For 1996/97, the budget was doubled, and £3 million is to be set aside for the coming year.

It is to be hoped that the bridge's new private owners will treat this, the greatest of our engineering monuments, with more respect.

John Rapley

Landmark bridge design

A successful outcome is reported for a recent request for English Heritage to sponsor a regrading of the Torkesey Viaduct near Lincoln from Grade II to Grade II* in view of its importance in the history of bridge building.

The viaduct of 1849 was designed by (Sir) John Fowler, the greatest of the later Victorian engineers, and senior partner in the Forth Bridge. Henry Bridgeman was resident engineer. The ironwork contractors were William Fairbairn & Co of Manchester. The bridge was assembled on site, and rolled into place. The two main spans of 130 feet each, carried on stone piers, were strengthened in 1897. The viaduct has been disused since 1959 but is still in sound condition.

The collapse of Robert Stephenson's trussed cast iron girder bridge at Chester in 1847 forced a radical reappraisal of girder bridge design. In the course of experiments in 1845-6, Fairbairn had shown that a rectangular box girder, made up of plates and angles rivetted together, was the most effective shape for a tubular girder, and he patented the principle. This was the forerunner of the modern plate girder. Torkesey is now the oldest

Fairbairn-type girder bridge.

In order that the two spans be rolled across, Fowler designed his girders to form a continuous beam, having tested the principle successfully at Gainsborough. The added strength was not understood by Capt Simmons, RE, Inspector of Railways, who was unwilling to pass the bridge for service at the end of 1849. The matter dragged on into the early part of 1850, with neither Fowler nor Simmons giving way. Eventually, after several meetings of the Institution of Civil Engineers, William Pole proved mathematically the benefits of continuity, and faced with heavy pressure from the engineers and the railway company, the Railway Commissioners allowed the bridge to be opened in April 1850. Had Simmons been successful, the design of the Britannia Bridge might have been questioned.

It is hoped that in due course the viaduct can be restored by its 150th anniversary at the millenium. It can then become part of a cycleway from the Wash to join the Millenium cycleway project for which Sustrans has already been promised a grant of £42.5 million by the Millenium Commission.

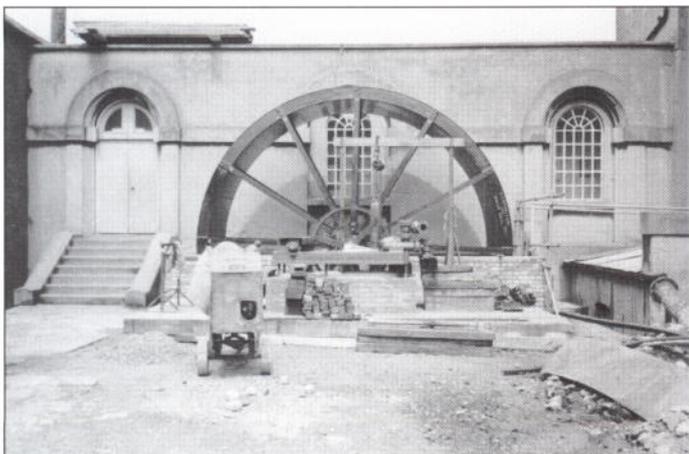
John Rapley

Shell of concrete

A listed warehouse beside the Trent at Newark is believed to be the first mass concrete industrial building in the country (c.1857). It was badly damaged by fire in 1992 and now, instead of demolition, British Waterways plans to build new offices, etc within the old shell.

Short termism prevails

The Transport Minister, John Watts, has declared that a navigable culvert will not be provided beneath the A419 Latton By-pass, construction of which has now started north of Swindon, Wiltshire. The road will cross and thereby block the line of the Thames & Severn Canal which has been under restoration by the Cotswold Canal Trust for 20 years. In a fine display of governmental madness, another department, the Department of the Environment, has been supporting the canal scheme. As usual, short-termism prevails, and the fact that similar efforts to reopen the Kennet & Avon and the Rochdale Canals have been crowned with success after many years of effort counts for nothing with a Minister, unsympathetic to such efforts. One of the great cross-country canals is now officially extinct!

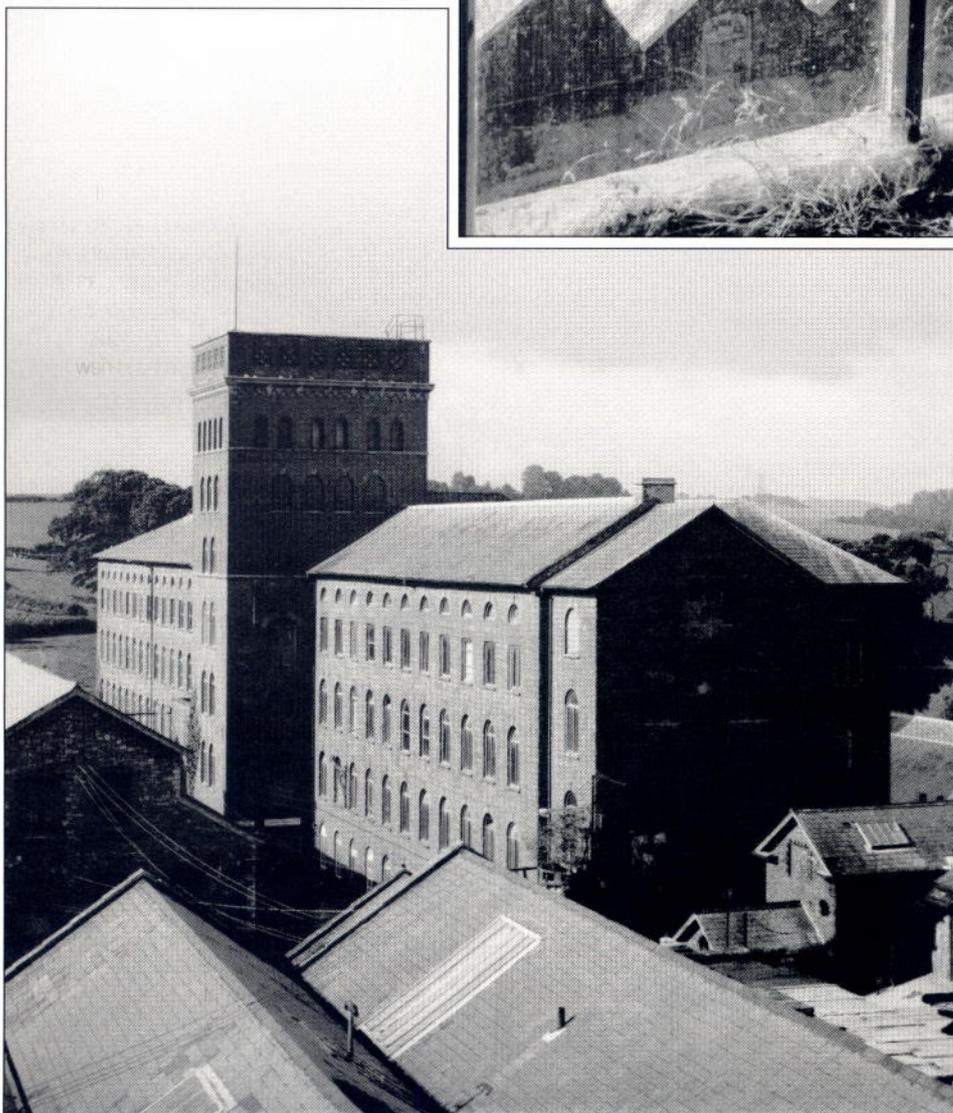


Installing the water wheel at Kew Bridge Steam Museum, May 1993 Photo: R.J.M. Carr

TONEDALE MILLS

Fox Brothers' Tonedale Mills, at Wellington in Somerset, was the subject of photography by RCHME staff last year. This was a large integrated woollen mill, begun in 1790 by the Fox family and expanded in the nineteenth century. The firm was an important employer in the westcountry textile industry, but only weaving has survived at Tonedale since 1981. The chimney (see cover photograph) has since been demolished.

An evocative glimpse of the mills through a window of the wool store.



No. 2 and No. 3 Mills, from the south east. The stone built No.2 spinning mill (1863) in the foreground was more than doubled in size when No. 3 Mill and the central stair tower with its large engine house were added in 1873. The tower was heightened in brick in the 1880s for the sprinkler system water tank.

Photographs: RCHME © Crown Copyright

North West England

Good news from Liverpool, where two famous buildings have been converted and brought back into everyday use. The former Midland Railway Goods Offices in Whitechapel, an impressive Grade II listed Victorian warehouse of 1874, has been refurbished to house The Conservation Centre for National Museums and Galleries on Merseyside. The Centre will provide studios, workshops and laboratories for the care and conservation of the 1.2 million objects in the NMGM's collections. Some areas of the Centre will be open to the public for videos, demonstrations, hands-on workshops and weekly behind-the-scenes tours. The Centre is a world first.

Lime Street's great North Western Hotel, once the symbol of Liverpool's Victorian prosperity, closed its doors in 1933. Designed by Liverpool-born architect Alfred Waterhouse and built in Renaissance style, the hotel has been transformed into student accommodation for the John Moores University at a cost of some £1.5 million. Opened in 1871, and once used by the rich and famous, the building had fallen into serious disrepair; in 1969 there were even plans to demolish it altogether and build a new office block. Now, however, the front elevation will remain unchanged and the sweeping central staircase will be retained, although being too low to comply with today's safety regulations, it will be raised on a plinth. JMU are hoping to write a history of the building and would like to hear from anyone who has any facts, artefacts or indeed memories.

The Liverpool Development Corporation is due to wind up in 1998

after completing the envelope restoration of the Albert Dock. Work on the upper floors of 'B' and 'E' blocks is now proceeding.

From Manchester comes news that Havelock Mills, a group of cotton and silk mills in Great Bridgewater Street, is after all being demolished, despite a letter to the National Heritage Secretary last year from the Manchester Region IA Society. The site is opposite the new Bridgewater Concert Hall and will be sold for commercial development. Dr R.L. Hills has presented MRIAS archives with a set of colour prints including internal features of the mills. Development plans involving demolition at the Great Northern Railway Warehouse, Deansgate, are reported elsewhere in this issue of *IA News*.

Following their successful launch of the report on the Dale Street warehouse and waterwheel (also in this *IA News*), the MRIAS project group, led by Steve Stockley, is proposing to tackle the larger 1838 structure of the Tariff Street Warehouse of the Rochdale Canal Co. It is brick-built with a composite frame of cast-iron columns and wooden beams/trusses in which the hoists and driving mechanisms are believed to survive. An attempt will be made to assess whether water power was involved and features of the warehouse will be recorded.

Restoration is at last underway of possibly the oldest surviving canal warehouse at the Bridgewater Canal Basin in Manchester: the Merchants Warehouse, Castlefield, which was damaged by fire some years ago. It has four storeys, two shipping holes, internal brick walls, wooden beams and posts, small round-headed windows, and loading slots with wooden lucams



Former symbol of prosperity, Liverpool's North Western Hotel now provides student accommodation
Photo: National Museums and Galleries on Merseyside

on the carriers' side. Together with new footbridges, a new basin at the Slate Wharf, and the renovation of Castle Street for access, these developments go a long way towards completing the programme of works at the basin.

Edwina Alcock

West of England

The four IA societies in the West of England report a number of developments - in and out of the field. Of particular interest is the compilation of a gazetteer for Somerset by the Somerset IA Society. A successful example of self-help comes from the Gloucestershire Society for IA, which presented six winter lectures on Stroud's industrial history to fund the purchase of a new laser printer. Bristol IA Society has now received the first entry for its 'Brunel' prize, mentioned in previous issues of *IA News*.

Reports of sites in the region include concern over the future of Longfords Mill, Minchinhampton, where demolition and conversion of buildings and changes to watercourses are proposed on a site that spans the eighteenth and twentieth centuries. The mill last produced woollen cloth in 1990. From Dorset, comes the good news that an appeal to local people has brought forth fresh volunteers to continue preservation work on the great waterwheel (26 ft/7.92 m diameter) at Castleton water works in Sherborne. Its future was looking bleak when a number of the original team retired.

SIAS, together with the Exmoor Mines Research Group, continue with a programme of excavation on the Brendon Hills at Chargot Wood furnace site and Langham Hill engine house. It is hoped that the former will prove to

be the site of Sir Thomas Lethbridge's iron mill and forge. The engine house was erected in 1866 for an engine to drain and to wind ore from workings in Chargot Wood and at Smokey Bottom.

Excavation and recording work by Bath Archaeological Trust prior to restoration work in the city-centre Empire Hotel (opened 1901) has uncovered some remains of a mineral water manufactory in cellars of houses that were displaced when the hotel was built. The Avon Industrial Buildings Trust continues to take an active interest in the conservation of the Midford aqueduct and the associated remains of the defunct Somerset Coal Canal.

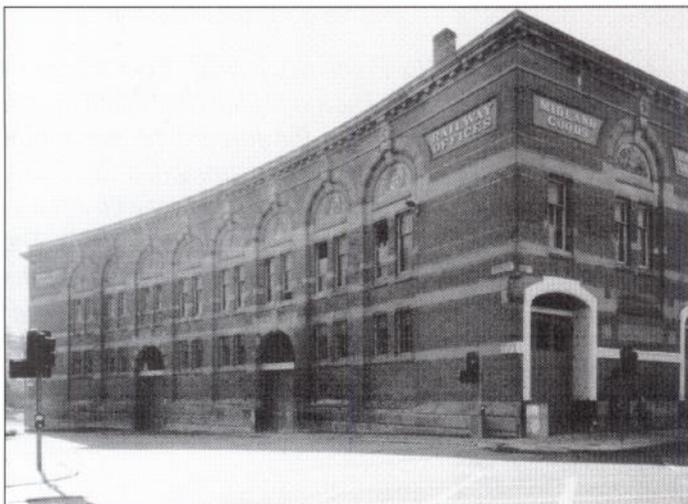
Finally, and to return from the field, the demise of Avon County has caused BIAS to review its conservation strategies to build links with the four unitary authorities that came into existence on 1 April.

Mike Bone

South East England

In Hampshire the big news is the proposed museum in Basingstoke to honour the once-strong local transport industry, especially Thornycroft who produced 60,000 vehicles here. The core will be the collection of preserved and restored vehicles held by the county museum service and currently generally only seen at rallies.

Southampton University IA Group has been involved at Preshaw House near Winchester in the restoration of an Otis lift which has not worked for many years. Of 1903 vintage, this was one of three lifts sent from Yonkers, New York (the others went to Cliveden and Windsor Castle). They were delivered complete, not as kits, and it must have been interesting to witness the transport of the lift by carrier's cart



The impressively curved Midland Railway Goods Offices, Liverpool, has become a Merseyside museums conservation centre
Photo: National Museums and Galleries on Merseyside



Lowfield Heath windmill stands ready to accept a second pair of sweeps and working millstones so that milling can commence, thanks to a National Lottery grant

Photo: C. Shephard

along the 10 miles of country lanes from the nearest railway station. The volunteers would be interested to hear from anyone who has experience of a similar restoration task.

In Surrey, the Lowfield Heath Windmill Trust has been awarded £35,000 by the National Heritage Memorial Fund, allowing them to complete restoration of the mill to full working order. The post mill originally stood at Lowfield Heath, near Gatwick Airport, but had fallen into disrepair by the 1980s. In 1987 the mill was dismantled and moved to Charlwood village on the other side of the airport where re-erection commenced the following year largely with voluntary effort. Nearby at Outwood, stands the oldest working post mill in Britain. The surviving Thomas brother who had worked alone since his brother's death, also recently passed away and the long term future of this important mill is now in some doubt.

The Surrey Industrial History Group has been busily engaged in the survey of two lime kiln complexes. One is at Oxted, a limeworks still partly in use for the production of specialist mortars. The county council, who own the listed kilns at Brockham near Dorking, commissioned the second survey to assess the remedial works necessary to put the kilns in good and safe order in what is a large public open space. Currently there has been little movements towards a more detailed

structural survey by the council and in the meantime these important structures are continuing to decay.

The Sussex IA Society is continuing with its computerised database of sites and now has 6,000 recorded. These include a number of hospitals dating from the nineteenth and early twentieth centuries. These seem to have been closing down rapidly of late and the Society has recorded 11 sites fully over the past 18 months, each with 30 to 40 individual buildings.

Another derelict but substantially complete site which has been recorded is the radar installation at Friar's Bay, Peacehaven. This probably started life as a Battery Observation Point before becoming a Chain Home Low Coast defence radar station in late 1940 or early 1941.

Like Hampshire, Sussex too has an unusual lift. Between 1875 and 1899 the Hastings carriage builders, Rock & Son, built new premises right up against the cliff face with vehicle access at front and rear despite four storeys' difference in height. The premises, now a furniture showroom, were recently discovered to contain the remains of the hand-powered carriage hoist which served the original showrooms with workshops behind. This would surely make an interesting and unusual restoration project.

Chris Shephard

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ADVERTISE IN IA NEWS

IA News now takes advertising. The publication reaches a wide readership through direct subscriptions, circulation to affiliated organisations and use in libraries.

The market reached will be attractive to publishers, tour operators, heritage consultants and visitor attractions.

Advertising rates range from as little as £45 to £200 for a full page.

All proceeds contribute to the costs of the Newsletter and the work of the Association which is a Registered Charity. Inserts may be mailed with IA News at a charge of £25.

For further details, contact the Editor.

1996

**6-12 September
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
THE FAMILIAR PAST?
ARCHAEOLOGIES OF
BRITAIN 1550-1995**

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

**13-15 September
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
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
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
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
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
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.

**9-11 April
INDUSTRIAL
COLLECTIONS: CARE AND
CONSERVATION**

at Cardiff, organised by the United Kingdom Institute for Conservation and the Council for Museums in Wales. Papers are invited on the themes of ethics, management and conservation; contact Diane Dollyer, Department of Archaeology, National Museum of Wales, Cathays Park, Cardiff, CF1 3NP.

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.

1997

**4-6 April
AIA AFFILIATED
SOCIETIES' WEEKEND**

at Ironbridge, on 'Preservation Problems of Major Structures'. Details will be sent with a future mailing.

AIA

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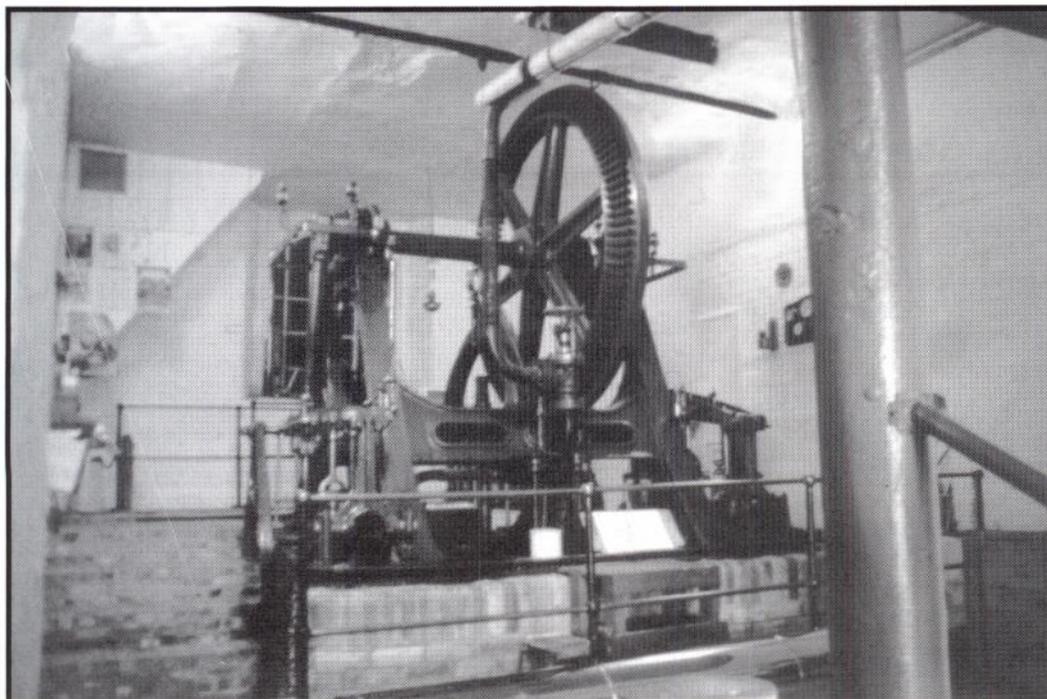
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Final copy dates are as follows:

- 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. The AIA publishes an annual Review and quarterly News bulletin. 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.



New Somerset Gazetteer

The Easton & Amos engine of 1861 which drained part of the Somerset Levels and has been restored to steam by the Westonzoiland Engine Trust, is one of the many sites listed and described in *Somerset's Industrial Heritage: a Guide and Gazetteer*, edited by Derrick Warren and just published by the Somerset Industrial Archaeology Society. This welcome new county gazetteer follows the format established by the AIA conference guides.

Photo: Peter Stanier