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ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY AIA

INDUSTRIAL ARCHAEOLOGY NEWS 103 Winter 1997

COVER PICTURE

Blaenavon Ironworks by Sir Richard Colt Hoare, from Cox's Tour in Monmouthshire, *1799 (see Cordell Obituary, page 12)*

The King's Cross gasholders

Chris Miele

King's Cross and St. Pancras Stations together with the former goods yards to the north constitute one of the most important sites for industrial archaeology in London. This paper outlines the history and significance of the renowned gasholders on the site.

More than a decade ago an inventory of historic structures was compiled, resulting in over a dozen listings. There followed masterplans and protracted discussions involving the owners, local residents, the London Borough of Camden, English Heritage, and others. Then, upsetting it all, came the decision to bring the Channel Rail Link into St. Pancras, and the subsequent Channel Tunnel Rail Bill (given Royal Assent earlier this year), which empowered London and Continental Railways to construct new track to the north of the St. Pancras shed, necessitating the demolition of several nineteenth-century gasholders, three of them, nos.10, 11 and 12, listed grade II. English Heritage petitioned against certain clauses in the Bill. In the meantime Philip Davies, Head of the North and East London Team at English Heritage, negotiated an alternative to their demolition. London and Continental Railways agreed to pay for the dismantling of the gasholders and their storage, pending re-erection and re-use nearby.

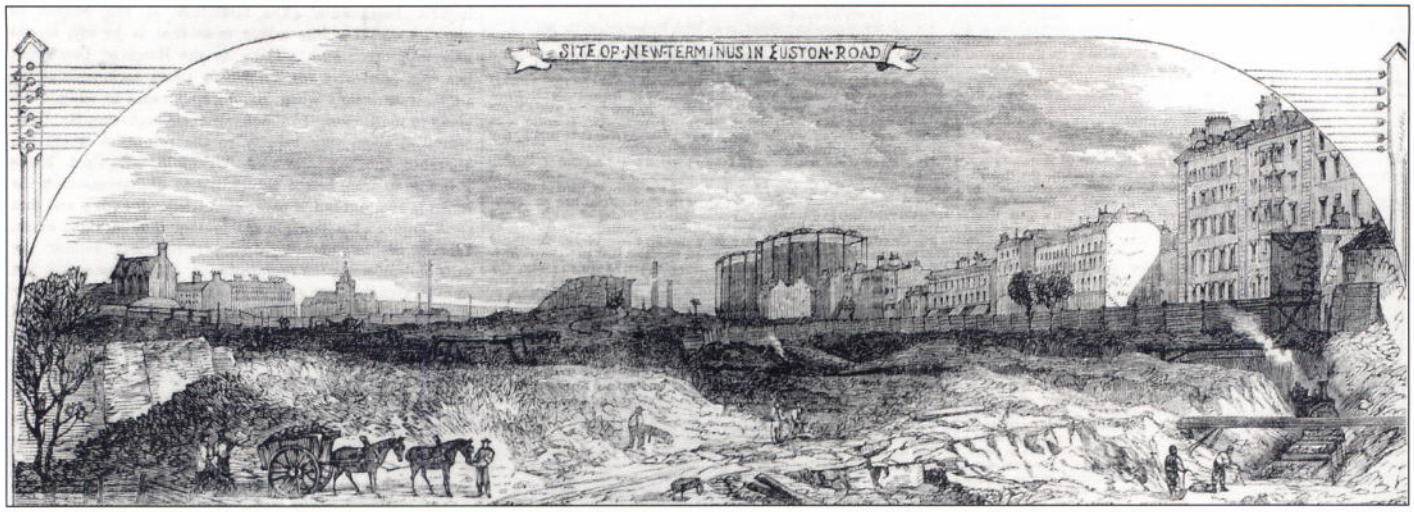
In order to inform these negotiations English Heritage staff carried out original research into the trio of listed gasholders abutting the former Midland Railway viaduct. Their so-called linked triplet configuration - 'linked' because they share structural members and are tied together by short spur girders - is unique in this country, the result, it turns out, of the peculiar history of the site and the particular needs of the company which first put holders here, the Imperial Gas Light and Coke Co. The roughly triangular piece of land was leased by the freeholder, the Ecclesiastical Commission, in the 1830s, when short runs of terraced housing and semi-detached villas were constructed. A few years earlier, in 1825, the newly founded Imperial had opened a grand, state-of-the-art gasworks immediately to the south and east of the Commissioners' land. The architect Francis Edwards fitted the offices and retort house into a grand neo-classical shell for the industrial complex, with massive chimneys treated as columns (thus anticipating those at Giles Gilbert Scott's Battersea Power Station). The western half of the site was planned to receive 12 identical gasholders, each roughly 40 feet in diameter.

The 1840s was a time of cut-throat competition in the gas industry and at the end the Imperial was one of the most powerful in London, having a virtual monopoly over the northern suburbs from Shoreditch to Paddington. But there was one problem. The suburban street lighting schemes which had made the Imperial a fortune were now hemming in each of the company's three generating sites, at St. Pancras, Shoreditch and Fulham, all planned in the early 1820s when land was relatively cheap. The company's records (held at the London Metropolitan Archives, formerly the Greater London Record Office) show just how much pressure it was under. Gradual improvements were constantly being made: larger, more efficient retorts, better purification processes and mains, and more intensive gas storage machinery (gasholders were listed in company accounts as 'machinery').

The prospects for the Imperial's Shoreditch and Fulham stations were not dire but no amount of

The famous linked triplet of gasholders, nos. 10, 11 and 12, as rebuilt by John Clark, 1879–80. All listed grade II, they are to be re-erected to make way for the Channel Tunnel Rail Link

Photo: English Heritage



Gasholders no. 10 and 11, designed by David Methven and built in 1861 and 1864 respectively, feature in this illustration of the Midland Railway extension works, from the Illustrated London News, *March 1865*
Source: C. Miele

tinkering would be enough to relieve the Pancras works. One solution on all three sites was to make better use of existing land, by building bigger gasholders, increasing diameters as well as the height by 'telescoping', a method tried on several inner London sites as early as the 1840s. The directors swallowed hard. New capital was required and in 1854 the Imperial obtained an Act authorising a stock issue of £650,000. Plans for the first of a new generation of giant gasholders were put in hand and in 1857 three were pressurised; the first was at Fulham, with a mammoth capacity of 2,000,000 cu ft. It was designed by the station engineer Joseph Clark. Soon after came Shoreditch, built to the designs of Thomas Kirkham and having roughly the same capacity. Then, just before the winter peak, Clark did Kirkham one better, again at Fulham, presiding over the completion of a gasholder of more than 200 ft diameter. It had a sophisticated telescoping system and two lifts, each approximately 40 ft high, which in turn required a tank with a depth of 41 ft, itself no small feat of engineering and quite expensive. To give some sense of scale it helps to know that in 1852 a 770,000 cu ft holder at Fulham was greeted with amazement as one of the largest of the day.

In April 1854, after a series of informal approaches, the Imperial's solicitors secured the freehold to a small parcel of land on the other side of a road (now Goods Way) bounding the Pancras site to the north. Being built over with short runs of terraces and semis, it was not ideal. Some directors feared that the closure of streets laid out 20 years before would be opposed by the vestry and, furthermore, whether all of the sitting tenants could be appropriated in short order. Still, on the strength of this acquisition, the station engineer, David Methven (obit.1867), was asked to consider how best to use this new parcel. Methven, who would have been well aware of the giant gasholders being projected for the Imperial's other sites, duly proposed his own, of more than 220 ft diameter with a tank of unprecedented depth, 50 ft, but of only one lift. He did not trust the new-fashion telescoping, believing that the inner (or top) segments were difficult to operate in frost and that the rollers needed constant adjustment. So, although the diameter and depth were greater than Clark's at Shoreditch, Methven's had a capacity of just under 2,000,000 cu ft; however, in another regard it was structurally innovative, since the design dispensed with an internal truss girder and relied on a 'strong tubular girder to form the top of the [holder bell's] curb'. The principal had been accepted on smaller holders but never on this colossal scale. To convince the Committee of Works, Methven had on hand Thomas Westwood, the ironworker of Dudley who was more or less on retainer to the Imperial at this time, to attest to the soundness of his proposal.

The plans were approved early in 1860, but before excavations on the tank began the whole proposal had to be rethought. Estimates of the demand over the 1861-62 winter showed there would be a crisis at the Pancras station unless an extra 500,000 cu ft could be assured as quickly as possible. The chances of finishing the new giant holder by then were slim, especially if any of the sitting tenants or vestry turned out to be unco-operative. After a few weeks Methven had another plan, a trio of smaller, single lift holders, each with a 50 ft tank; the group would have a total capacity of 1,786,000 cu ft. This scheme's advantage was that it could be carried out in stages, with the first, no.10, built on land already secured. Although no construction drawings have yet been located, photographs in the National Railway Museum and a woodcut in the *Illustrated London News*, show the holders to have had one tier tied at the top by a bow girder. There were no shared columns at ground level (according to contemporary plans and maps) but there may have been some links at the upper level. No.10 (the southmost holder) came on line in May 1861, no.11 in 1864, and no.12 in 1867.

In 1876, however, the Imperial was acquired by its principal rival, the Gas Light and Coke Co. (sometimes called the 'Chartered' and one of the earliest in London). All the Imperial's inner London works were kept going, but storage was still a problem, particularly now that gas was preferred for domestic lighting. The engineer at the Pancras site, John Clark (son of the former Shoreditch engineer) drew up plans to increase the storage capacity still further. His plans were presented to the Works Committee in May 1879 and though he was hoping to do 'simultaneous telescoping', in fact this amounted to the complete rebuilding of the entire cast- and wrought-iron superstructure of Methven's triplet, including the holder bells. The old materials were sold to the iron manufacturer, Westwood and Wright of Derby. The tanks were drained and repaired by the firm which had constructed them, John Aird and Son. This point is worth making because the wording of plaques fixed to the holders is slighting ambiguous, saying that they were 'erected' and then 'telescoped'. All that remain of Methven's holders are the underground brick tanks and the stone curbing at the top. It was Clark's idea for the three holder frames to share columns and to be tied at the upper level by short spur girders (although the latter were probably not part of his original plans). The work was completed in under 12 months from July 1879. The triplet could be withdrawn in winter because the 'Chartered' could supply the Pancras station's area with gas from its massive new works at Beckenham.

Clark's gasholders have bells of two lifts and a column cage of three tiers. The uprights are cast-iron, bolted together in short sections and treated as Tuscan, Doric and Corinthian columns. They are tied together at the level of the impost block by wrought-iron lattice girders which, according to Malcom Tucker, represent an advance on girders traditionally made of cast-iron such as those at the Imperial Co.'s Bromley-by-Bow works, designed by Thomas Kirkham in the early 1870s. The guide frames are stabilised against wind loads by the rigid connections between the girders and column towers, not by Paddon ties as in other gasholders of the period, nor are there any diagonal tension rods, a feature which would become common during the 1880s. The sides of the holders themselves are formed from close rivetted, wrought-iron plates with vertical stiffening ribs applied internally. The holder crowns are formed from tapered sheets, double rivetted and caulked, and restraining radial collars are bolted through to internal trusses, which support the holder crown when it is deflated.

Scale, Complexity and Viability: The future of England's major industrial structures

Anthony D. F. Streeten

Dr Streeten is Secretary, English Heritage Industrial Archaeology Advisory Panel, and this paper gives a fuller account of his keynote speech presented at the Ironbridge Weekend in April this year.

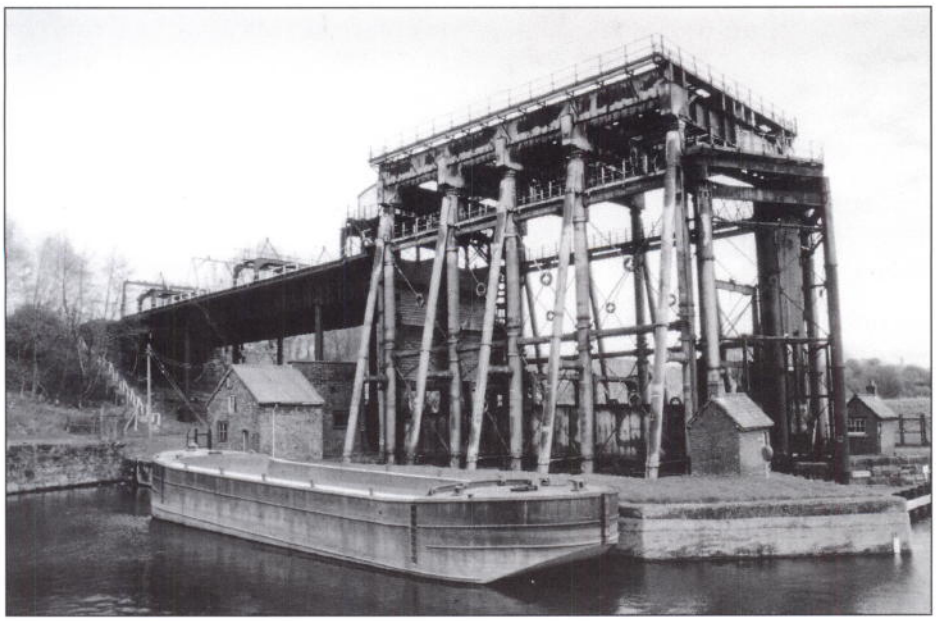
One of the lasting impressions from the Tenth International Conference on Conservation of the Industrial Heritage held in Greece at the end of June was the sheer scale and complexity of industrial structures now valued in many countries for their contribution to conservation of the maritime and mining heritage. The timely AIA seminar in April this year, which tackled the 'Problems Presented by the Preservation of Major Structures' was thus an opportunity to reflect upon issues which are of concern to industrial archaeologists around the world who face the challenge of defining priorities and finding viable means of safeguarding redundant buildings, structures and plant on a scale seldom encountered in other fields of heritage conservation. In Britain, the scale and pace of change to industrial infrastructure is matched only perhaps by the demanding task of finding new uses for redundant hospitals and buildings which are now surplus to the requirements of national defence.

Assessing importance and managing change

Thematic studies of hospitals and agricultural buildings are filling some significant gaps in the protection of important building types, but the architecture of industry and transport in England has long been represented on the statutory lists - ranging from mileposts to textile mills, and from small workshops to viaducts and railway termini. The Lovell telescope at Jodrell Bank is an unusual example, listed grade I for its technological and scientific importance. Continuing research has rightly also led to the revision of the list entries for some buildings which have been included for their significance as historic feats of engineering. The Devonshire Royal Hospital at Buxton, for example, has recently been re-listed grade II*, not only for the historical importance of the former eighteenth-century stables serving the nearby Crescent by the architect John Carr of York, but also because the massive dome added by R. Ripon Duke was the largest ever built in the world at the time of its construction in 1879-81.

Developing appreciation of the industrial heritage is therefore leading inevitably towards the inclusion of larger, and often complex structures on the statutory list. During the last 30 years or so other major engineering structures such as the Anderton Boat Lift have also been designated where appropriate as scheduled ancient monuments. The preferred regime of statutory protection by either listing or scheduling depends to a large extent upon the suitability of relevant controls and the management objectives for adaptive re-use or long-term preservation. Significantly, however, the Secretary of State (for Culture, Media and Sport) has a duty under the Planning (Listed Buildings and Conservation Areas) Act 1990 to list buildings and structures which fulfil the criteria of special architectural or historic interest, while the powers of scheduling under the Ancient Monuments and Archaeological Areas Act 1979 are discretionary.

These principles can be applied to large structures associated with extraction, processing and manufacturing. Chatterley Whitfield Colliery in Staffordshire was *scheduled* in 1993 as the best surviving colliery in England typical of 20th century deep-mining technology, whereas the recent review of textile mills in the Manchester area has extended statutory *listing* to represent more fully both the form and function of different mills and the overall development of the region's industrial architecture. Neither size nor condition are material factors in decisions regarding the listing of historic structures, hence inclusion on the statutory list of buildings such as the massive Bays Maltings at Sleaford. Dating from c.1900, this was one of the largest maltings ever built in England, but it is now a 'building at risk', largely disused and partly roofless, having been damaged by fire.



Anderton Boat Lift, Cheshire, completed in 1875, strengthened and modified for electrical operation in 1908 and closed for safety reasons in 1983. It was scheduled in 1975 and proposals are now being developed for its repair and restoration
Photo: English Heritage

Problems of scale and complexity

Managing the conservation of major industrial structures within the wider historic environment demands critical appreciation of issues such as importance, scale and complexity, as well as the viability of conservation. In the case of the Royal Gunpowder Works at Waltham Abbey, the scale and importance of the complex revealed through extensive survey and research has led to a combination of listing and scheduling accompanied by a wide-ranging strategy for long-term management and public access. In terms of scale and importance, the site might be compared say with historic naval dockyards, but the buildings and buried remains are of unique complexity, involving difficult issues of technical, organisational and financial viability.

Examples of successful initiatives where investment in repairs has been commensurate with the scale of historic structures such as the Ribblehead Viaduct (for which English Heritage provided grant of £1 million during the 1980s) underline the relevance of both technical and financial viability. In the case of the Settle-Carlisle line, investment in the repair of Ribblehead Viaduct was justified not only for its own sake, but also as a catalyst for conservation-led regeneration within local economies which depended greatly upon the continued flow of railway passengers. At the same time, however, technical viability was assured through cost-effective methods of repair devised with the benefit of specialist expertise in conservation engineering.

Analysing the factors relating to importance, scale, complexity and viability thus provides a framework for the conservation and management of major industrial structures. The future use of Battersea Power Station, for example, hinges on issues of scale and viability, while at the Pilkington Glassworks in St Helens, the approach to conservation and amenity development recognises the importance and complexity of what is probably the oldest surviving example of Siemens regenerative technology for cylinder glass manufacture. Importance can be gauged in terms of technological innovation, historical context and survival, while complexity encompasses both technologies and materials of construction, as well as evidence of former processes.

The scale of surviving industrial structures measured in terms of area or volume is also a significant reminder of former processes and output.

At the time of construction in 1851-53, Titus Salt's integrated mill at Saltaire contained on the upper floor what was then the largest room in the world. The enormous scale of operation involved 1200 looms powered through two miles of line shafting and producing 30,000 yards of cloth a day. Although the changing market for textiles has long since undermined the viability of the original enterprise, the scale of the buildings remains both a challenge and an opportunity in terms of adaptive re-use. The availability of space for expansion has been a significant factor in securing the viability of new uses which include the manufacture of satellite communications equipment in this former textile mill.

Technical, organisational and financial viability

The feasibility of conserving major industrial structures therefore depends ultimately upon the viability of continued or new uses. Robert Stephenson's high-level bridge at Newcastle has been repaired and adapted successfully to accommodate - without an unacceptable degree of visual intrusion - the overhead lines required for electrification. In the case of the early reinforced concrete Free Bridge which formally spanned the Ironbridge Gorge, however, it was not possible to alleviate structural distress in a manner capable of withstanding modern traffic loadings. The decision to demolish rather than retain the bridge as a pedestrian thoroughfare was reached after prolonged consideration of wider issues such as the visual impact of a new road bridge on a different alignment.

Where bridges or viaducts no longer form part of the transport network, commitment to repair and continued maintenance depends upon financial and organisational viability. Since large structures can be expensive to demolish there is a welcome convergence of conservation objectives with the financial benefits of continued care and maintenance, providing that organisational viability can be assured. Advice from the English and Welsh Viaducts Committee for the British Rail Property Board and its successor organisations has played an important part in encouraging the repair and local management of disused viaducts. Notable achievements have included the recent completion of major repairs to Lambley Viaduct built in 1852 for the Alston branch of the Newcastle and Carlisle Railway, now managed by the North Pennines Heritage Trust. Bennerley Viaduct spanning the Derbyshire-Nottinghamshire border, however, is an instructive reminder of the complex and time-consuming negotiations involved in averting the threat of demolition; latterly efforts have been directed towards securing a new lease of life for this grade II* listed structure as part of an emerging network of cycleways.

Built in 1876-7 to carry the Great Northern Railway over the valley of the River Erewash, Bennerley Viaduct is one of just two metal viaducts remaining in England. It was listed in 1974 and re-listed, grade II in 1986. Its future lies in re-use for sustainable transport as part of the cycleway network*

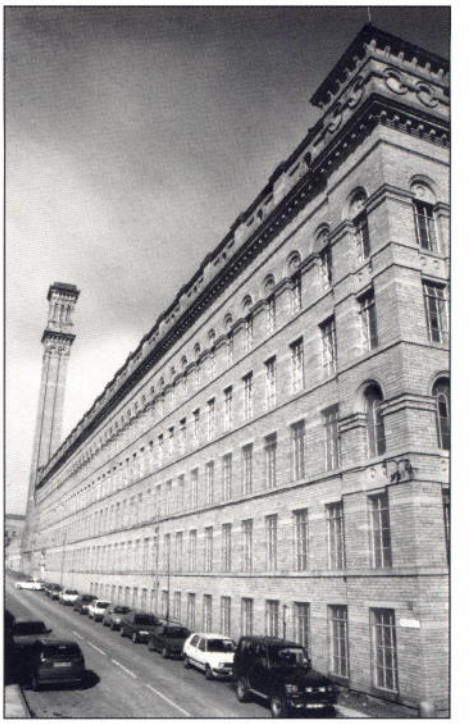
Photo: English Heritage

Retrospect and Prospect

Judging by past achievements, the problems of preserving major structures are by no means insurmountable. Questions of technical, organisational and financial viability, however, lie at the heart of decision-making. There have been, and doubtless will continue to be, regrettable losses, but the objective must be to reach informed decisions which can be justified in the eyes of future generations. Demolition of the Grangetown No. 4 Furnace in Cleveland, dating from 1911, has severed a unique technological link between cold blast stack furnaces and modern hot blast structures, but in the hurried circumstances of derelict land reclamation the management options were not viable and the case for securing long-term preservation could not be sustained.

One of the greatest difficulties is thus to reconcile the often rapid pace of change with the much slower progress towards viable conservation strategies. In the context of subsequent work on the listing of textile mills in Manchester, for example, the case might well have been argued now for the retention of the Ellenroad Ring Mill at Rochdale, recognised at the time when it ceased production as the last of the massive spinning mills to be powered by steam. In the economic circumstances of the mid-1980s, however, the argument for demolition and redevelopment was irresistible and all that remains is the (scheduled) engine, with its engine house and chimney, severed at the rope-race from the now vanished mill which it once powered.

Looking to the future, the agenda for conservation of the industrial heritage is already dominated by issues of economic regeneration and tourism capacity. Listers Mill at Manningham in Bradford is a good example where demolition continues to be resisted even though successive proposals for shops, offices and hotel use have failed to materialise. The way ahead lies in continued dialogue to find viable solutions on the assumption that sustainable development can best be achieved by thoughtful recycling of the industrial building stock, rather than the short-term expediency of wholesale redevelopment.



Listers Mill, Manningham, Bradford. This steam-powered mill was built in 1873, principally for the innovative manufacture of velvet from silk waste. It stands vacant in a deprived area, the future of which will be bound intimately to the emergence of viable proposals for re-use of this prominent landmark on Bradford's skyline

Photo: English Heritage

Among the complex issues involved in conservation of the industrial heritage, the principal ingredients of success include:

- informed identification and understanding
- public appreciation and political commitment
- effective land-use planning in accordance with the principles of sustainability
- demonstrable technical viability
- assurances of organisational and financial viability

Major industrial structures make important contributions to local and regional distinctiveness, but priorities for costly preservation and research must inevitably turn towards an international perspective. The long-term future of even the most important sites such as Chatterley Whitfield colliery still hangs in the balance owing to the scale and complexity of the conservation issues and the problems of financial viability. What is certain, though, is that expectations for conservation of the industrial heritage now stretch increasingly beyond preserving examples of the traditional industries such as milling, brewing or even brick-making, and now encompass Britain's legacy of mass-production and heavy industry.

Public attitudes to the heritage and the political context of conservation may be deciding factors in the choice between recording and preservation, but the industrial archaeologist has an important role to play in shaping appreciation of the historic environment as a whole.

NEWCASTLE CONFERENCE 1997

The 1997 AIA Conference was held at Newcastle-upon-Tyne, in the area which cradled the development of railways by introducing very early wooden waggonways and later giving opportunities to George Stephenson and his contemporaries to develop the steam locomotive. The weekend's activities attracted over 150 delegates, with many arriving early for the Friday seminar and staying a full week for an extensive range of lectures and visits. Accommodation and lectures were in the University of Northumbria at the Coach Lane campus, where we enjoyed good catering and lecture facilities.

A range of interesting and thought-provoking papers was given at Friday's pre-conference seminar on 'Current Research and Thinking in IA', to be reported in the next issue of *IA News*. That evening we went to the Newcastle Discovery Centre and saw the famous *Turbinia* amongst many other exhibits relating to Newcastle's industrial history. Here we received a welcome to the city from the Lord Mayor and shared a buffet supper with the civic dignitaries. This was followed by a lecture on the 'IA of Tyne & Wear' given by Dr Stafford Linsley, before we returned to the campus by coach.

Saturday started with lectures by Jim Rees ('Working Representations: Replication in Museums') and Brian Newman ('The IA of Marine Engine Building at Tyne & Wear'). Following coffee, we enjoyed our usual Members' Contributions period which demonstrated the fascinating variety of our fellow-members' interests. Before lunch, Ian Ayris (one of the local organisers) gave a lecture on the excavations which led to the recent discovery of the remains of an early wooden waggonway at Lambton. After lunch, there were three excursions. One group went to the Bowes Railway to see a demonstration of rope-haulage systems in operation, while another group travelled to the Stephenson Railway Museum before viewing excavations at Wallsend where archaeologists looking for foundations of the Roman Wall revealed instead the buildings, engine houses and shaft at Wallsend B Pit, dating from the 1780s. The third group saw Woodhouse Colliery Museum, a model farm and Blyth A power station, the oldest coal-burning main generating station in Britain. We rounded off the day with the formal Conference Dinner and drank a Loyal Toast to HM the Queen.

The AGM of the AIA was held on Sunday morning, after which Victoria Beauchamp announced the AIA Recording Awards (see reports, page 8). The two winners each gave a lecture on their respective submissions. The Rolt Memorial lecture followed, in which Dr Michael Stratton gave a well-illustrated presentation entitled 'New Materials for a New Age: Steel and Concrete Construction in the North of England, 1860-1939'. Here ended the main conference. After lunch we split into three groups; one looked at IA sites and the Tyne bridges on the Gateshead side, one covered a similar tour on the Newcastle side, whilst the remaining group looked at the Newcastle Quay area. Dinner was followed by Frank Manders' lecture 'Cinemas of Newcastle and Gateshead', an interesting but often ignored IA topic from the entertainment industry.

Monday was spent on visits in the Newcastle area. A guided walk along the Ouseburn enabled us to interpret the industrial remains along the lower riverside and a fascinating aspect was the journey by foot into the Victoria Tunnel, a two-mile underground waggonway running under the city. A coach tour with stops took us to soap works, coal staithes, Armstrong's Elswick Works, a glass cone, bridges and many others. Following lunch at a quayside pub (a timber-framed former warehouse), we sailed down the Tyne and back, with a commentary about the sites on the river bank. The evening provided two lectures from Ian Forbes and David Cranstone on 'The North Pennines Lead Mining Industry'.

Another day out on Tuesday took us to the North Pennines area. On the way we examined Derwentcote steel furnace, a blister-steel producing plant now in the care of English Heritage and carefully conserved with a good interpretative centre. We then visited in turn the Killhope Lead Mining Centre and the Nenthead Mines Heritage Centre. The underground tour at Killhope, which necessitated wading through foot-deep water, was fascinating and instructive, with first-class well-informed guides. After dinner, John Clayson (the other local organiser) presented an evening lecture on the 1796 cast-iron bridge at Wearmouth.

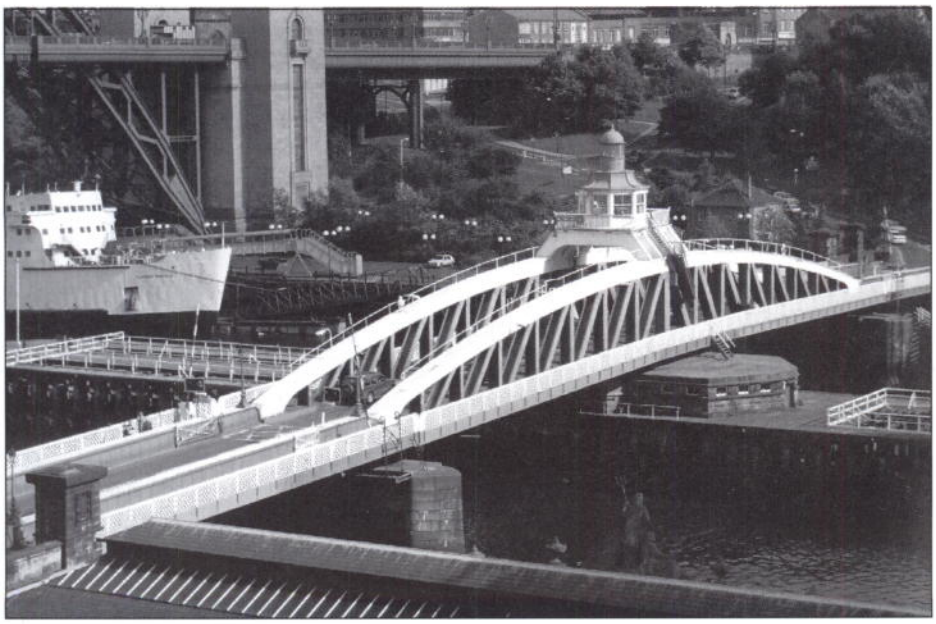
Wednesday took us to the Sunderland area where we saw glassworks, a windmill, a ropery, Ryhope Pumping station (with its massive beam engines operating in steam!), a tour of the Pyrex glass works with press-moulding machines, and then we saw coloured glass sheets produced by the traditional method of blowing cylindrical shapes, slitting and then opening up to make flat sheets. A walk along the River Wear footpath enabled us to see the remnants of the former riverside industries. We then toured the railway relics museum at Monkwearmouth Station. Dr Bob Rennison, a well-known figure from the Newcomen Society, gave a well-illustrated evening lecture on 'The Development of the Ports of the Durham Coalfield'.

After breakfast on the Thursday we had a full day out, not returning until 9.30pm! Our first 'visit' was a walk through the Tyne pedestrian and cyclist tunnels, completed in 1951. Souter Lighthouse was our next venue, claimed to be the first British Lighthouse designed specifically for electrical illumination. The huge Marsden limekilns were just across the main road and so we examined these too. Adjacent to this area was the Whitburn Colliery but all traces have now gone, including the miners' housing, the railways and the waste heaps. At South Shields, we viewed various nautical sites including a lifeboat station, piers and groynes, and a range of guiding lights. On our journey to Seaham Harbour we saw the piers, lighthouses, bridges and docks at Sunderland which we had heard about in the recent lectures. At Seaham Harbour itself, we were treated to a guided tour which explained the origins and development of this coal-exporting port, a project pursued by Lord Londonderry from the 1820s onwards.

Friday took us to the Tanfield Railway workshops, storage sidings (with a plethora of tank engines, coaches, trucks and other railway equipment in various stages of decay and dereliction) and the station, followed by a journey along the line. We then viewed the celebrated Causey Arch (a waggonway bridge of 1727, being the oldest 'railway' bridge in the world) and enjoyed our final conference meal in the Causey Arch Inn.

It was a splendid conference, full of diversity and interest, with fascinating visits and instructive information, and enjoyable amenable company. Our thanks must be expressed to the local organisers, especially Ian Ayris and John Clayson, for arranging such a good programme; to David Alderton as conference secretary for overseeing the arrangements and sorting out such good accommodation; and to Tony and Mary Yoward for their impeccable administration of the booking arrangements and looking after the complexities of so many delegates, mostly booking for varying periods of attendance. It was certainly yet another AIA success.

Alan Birt



W. G. Armstrong & Co.'s Tyne swing road bridge of 1868-76 *Photo: Michael Harrison*

Waiting for the boat, below Stephenson's High Level Bridge at Newcastle
Photo: Michael Harrison

A quiet moment at the Killhope lead mining site
Photo: Michael Harrison

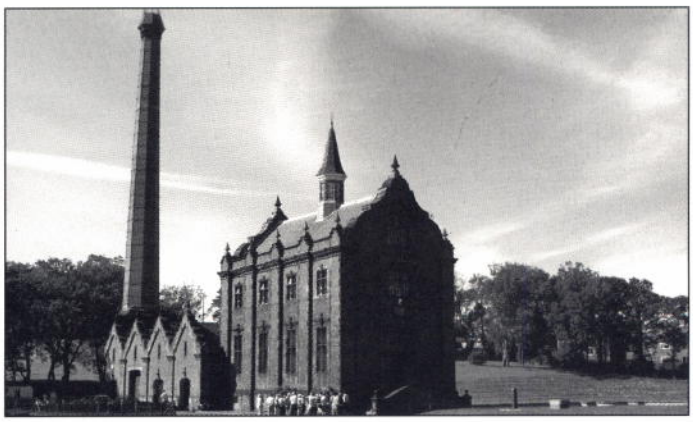
Group viewing the Baltic Flour Mill, Gateshead
Photo: Michael Harrison

Derwentcote cementation furnace
Photo: Michael Harrison

Recent archaeological excavations of the engine house of Wallsend Colliery B Shaft
Photo: Michael Harrison

Fulwell Windmill, Sunderland, built in 1821 and in use until 1949 by which time it was powered by a gas engine. Restored
Photo: Michael Harrison

An explanation of ore dressing at Killhope
Photo: Michael Harrison



Ryhope water pumping station, a scheduled ancient monument under steam
Photo: Michael Harrison

President's Award goes to Snowdonia National Park

The Association's *President's Award* for 1996 was awarded to the Snowdonia National Park at a presentation at the Park's study centre at Plas Tanybwlch, Maentwrog, in August. The award is made to an industrial site, visited by the Association at the time of the annual conference, which is open to the public and judged to show a high standard of conservation, interpretation and display.

Hilary Malaws, President, made the award to Peter Crew, National Park Archaeologist, in the presence of Llew Evans, Director of Plas Tanybwlch, and the two builders associated with much of the work, in recognition of the sensitive conservation and display of industrial archaeology remains within the Park area. This is the first time the Award has gone to a group of sites and is due to the high standards achieved overall by the National Park.

The Award plaque will be displayed at Plas Tanybwlch which hosts many industrial archaeology courses and tours during the year as part of its extensive study programme.

Hilary Malaws presents the 1996 AIA President's Award to Peter Crew of the Snowdonia National Park

1997 AGM

The 1997 AGM was held on 7 September at the University of Northumbria at Newcastle. In his Treasurer's report, Michael Messenger pointed out that the accounts were for six months only; also, that tax reclamation in respect of covenants was being pursued. The elections included that of Michael Harrison to Vice President. The other officers all stood and were re-elected. Unusually, the vacancies for ordinary Council members were contested, those elected being John Crompton, formerly Vice President, Janet Graham and Carol Whittaker.

Marilyn Palmer reported on the new-look *Industrial Archaeology Review*. Some delays had been experienced as a result of the new design, but it has been generally well-received. In future, there will be more articles in each issue. There was some discussion on the fact that by the time the *Review* comes out, book reviews can be rather old. At present there is no likelihood of returning to two issues per year for technical reasons. Marilyn Palmer and Peter Neaverson were thanked for their work.

John Crompton reported on TICCIH, the recent meeting in Greece and that due to be held in Britain in the year 2000.

Next year's AIA Conference will be in Devon, and the year after in Kent, but so far there are no definite venues after Lancashire in 2000. There is the likelihood of a joint trip with the Newcomen Society to India in January/February 1999.

It was agreed that the AIA would investigate the cost and extent of cataloguing Owen Ashmore's papers which his widow had given to the Manchester Museum of Science, by way of a tribute to him.

AIA Fieldwork and Recording Awards 1997

The entries this year were again diverse in the subjects covered and were of the high standard that we have come to expect.

It should also be reported that there were several enquiries from abroad this year, notably from Sweden and Germany. Hopefully, entries will be received from these sources in the future.

The fact that people are interested shows that the AIA has international recognition as a promoter of excellent industrial recording. Keep up the good work!

Returning to this year's entries, the main award went to G.R. Jones for his work on the Hafodlas Slate Quarry - an example to us all of excellent fieldwork and documentary recording work. The claim of 7,500 man-hours over a period of four years with five other dedicated volunteers is easily believable. The quarry stands on Gwydr Forest land and was chosen largely because of the mill complex on Floor Four where all the reduction and machining of slate for slab production, including slate vats for breweries, was carried out. The ruins of Mills 1 and 2 proved to be unique in terms of architectural merit but one of the most fascinating finds was of two sub-floor furnaces for the slate enamelling process.

Overall, the report impressively covers the history of the site from 1855-1932 with an analysis of the production and men employed. Part Two assesses the site remains and is supported by over 34 detailed drawings and 30 pages of photographs.

Paul Vigor won both the Student and Initiative Awards for his radical reinterpretation of the Bedlam furnaces entitled 'The Breaking of the Bedlam Enigma'. Vigor's work proposes that the Bedlam furnace consists on not one but two self contained blast furnace installations, the original furnaces he suggests were located at Lake Head about 100 metres west of the present site and the ruins represent the third and fourth furnaces. By critically comparing contemporary artwork with the modern landscape he claims to have been able to identify the 1757-58 steam engine house with 1780 extension to the house and blowing cylinder and blast regulator, and also the 1757-8 ironworks smithy and later extension. Fieldwork and nineteenth-century photographs have allowed for possible sites to be identified for a blast furnace, a Dundonald coke oven and five possible beehive coke ovens. He has also been able to suggest an apparent link between the Bedlam furnaces and the casting of the components for the Iron Bridge. The report contains the artwork examined and detailed photographic record of the sites he examined.

Other entries included P.M. Hughes' work on the Pen-yr-Orsedd Slate Quarry De Winton planing machine. This was housed in an outbuilding and took its drive from the main mill shafting. Hughes' report looks at the structural material used in the foundations and gives details of the support frame, vertical and cross slides, table, rack and drive methods. The planing machine appears to be extremely rare and therefore worthy of the detailed recording carried out.

The entry by Shane Gould consisted of a number of reports introduced by a paper on the current practice undertaken by Essex County Council planning authority to recording industrial buildings. The other reports look at the lime industry and malt kilns of Essex and two smaller reports assess the nitro-glycerine wash house at Waltham Abbey and Gardener's Brewery. These are exemplary pieces of work which if carried out across the country would make the work of the statutory bodies much easier.

C. Currie's entry on the Wey and Godalming Navigations amounted to a massive five volumes, the first assessing the history of the navigations and putting forward recommendations to the National Trust who commissioned the work as to its future management. Volumes 2 and 3 comprised an archaeological inventory of sites found along the navigations and the last volumes contained maps both historical and 1:10000 maps lodged with the SMR of the sites mentioned. The entry contains information about the industrial period as well as information from prehistoric times through to the present day. In sum, it is a massive extensive survey of all archaeological sites along a linear strip of countryside.

The final entry was submitted by A. Coulls on the Leamington and Warwick Tramways. This was a student entry which detailed the history of the tramway built in 1881, its fight for recognition, disputes with local authorities, experimentation with road trains and finally its electrification and abandonment. Some assessment was made of what remains today such as the traction poles, the frontage of the main office and tram depot. It also records how two tram carriages survived as part of a cottage at Yarningale Common, one of which is now at the National Tramway Museum in Crick.

As usual, all entries for the Fieldwork and Recording Awards will be lodged with the relevant NMR.

I would like to thank my fellow judges, Keith Falconer (RCHME) and Amber Patrick for their comments on this year's awards. Please note that all enquires and entries for next year's award should be addressed to V.A. Beauchamp, c/o Hawley Building, Division of Adult Continuing Education, University of Sheffield, 196-198 West Street, Sheffield S1 4ET.

Victoria Beauchamp

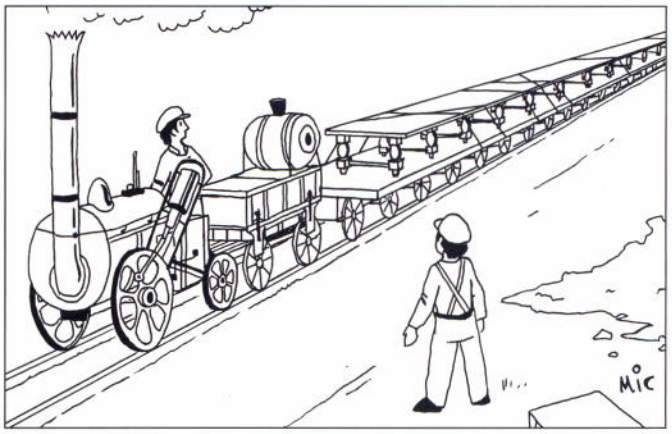
A COLD COLLATION IN DECEMBER

The ceremony of opening the Middlesbrough branch of the Stockton & Darlington Railway and also the chain bridge across the Tees a little above Stockton took Place on December 27th 1830. The bridge was built by Capt Brown RN. It was 274 ft long, 25 broad and 60 in height and calculated to sustain a weight of 150 tons. On the arrival at the suspension bridge of the coaches with the company from Darlington, they were joined by their Stockton friends and proceeded to Middlesbrough, where they were received with the firing of guns and demonstrations of joy.

Several wagons laden with coal accompanied the train and an immense entire coal was sent down from Black Boy Colliery for the London market, which, when broken, was calculated to make 2 London chaldrons. The staithes were of great dimensions - 6 vessels could be loaded at the same time. The banks of the river being low, the wagons were placed on a cradle, on which they were hoisted by steam on to the staithe, from whence the coals were lowered on to the ship.

Railway proprietors, their officers and friends sat down to a cold collation. A table, 134 yards long, was set out in part of the principal gallery of the staithes, which was covered in and secured from the severity of the frost. Nearly 600 persons partook of the good cheer; and as the gallery was well lighted with portable gas, the effect produced was equally agreeable and brilliant. On the approach of the evening, the chief part of the company set out on their return home.

Extracted from *The Local Records of Stockton & Neighbourhood* by T. Richmond, 1868 - with thanks to the Cleveland Family History Society Journal, 1997.



A LITTLE-KNOWN EARLY RAILWAY TRIUMPH AND CAUSE FOR DEMONSTRATIONS OF JOY: MIDDLESBROUGH TAKES DELIVERY OF ITS 134 YARDS LONG COLLATION TABLE

LETTERS

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

Breaking the Bedlam enigma

I would like to take this opportunity to thank the officers and fellow members of the AIA for recognising my recent, revisionist work on the Bedlam Furnace at Ironbridge. I would also like to acknowledge the generous encouragement received from many new friends and colleagues met during the Newcastle Conference.

I would especially like to thank Dr Barrie Trinder, who introduced me to the techniques of critical landscape, Dr Paul Collins, for having faith in my abilities and encouraging me to follow my intuitions, Jeff Earl and Penny Knight, who patiently listened to, and commented on, invariably unorthodox hypotheses, John Powell, Dr Victoria Beauchamp and finally my wife Becky.

As a recent Industrial Archaeology graduate of the Ironbridge Institute, I have often felt privileged to have learnt my 'trade' in Coalbrookdale; furthermore, there is nothing quite like a whiff of authentic foundry smoke to start one's day on a cold, damp winter's morning! Although the academic study of IA is no longer singular to Ironbridge, it is my sincere belief that both Institute staff and students alike share a peculiarly unique, and almost tangible link with Shropshire's industrial past. It might even be suggested that there exists a line of innovative continuity; the Institute being effectively *at one* with the industrial heritage it investigates. Such a line may link the earliest Coalbrookdale ironmaster to the most recent intake of students; motivated individuals who, like their historical and contemporary predecessors, rapidly become familiar with the industries, techniques and technologies pioneered in the shadow of Lincoln Hill.

As I have suggested above, the successful completion of the Bedlam project required a fusion of both people and place. The Ironbridge Institute provided people, information and expertise; and the landscape and monuments of the Ironbridge Gorge the inspiration. I feel privileged to have had the opportunity to study in such a beautiful place, and more especially the chance to add something to the ongoing debate with regard to the origins and understanding of a renowned World Heritage Site.

Paul H. Vigor, c/o 59 Carrington Lane,
Milford-on-Sea, Lymington SO41 0RA.

Orange on the Tyne

Many who took the trip down the Tyne during the annual conference were intrigued by a bright orange coloured vessel, the *Maersk Curlew*, being worked upon at the AMEC shipyard. Some hazarded a guess that it was a floating oil refinery. They were correct in recognising it as relating to the oil industry. For the record, it is a Floating Production Storage and Offtake (FPSO) facility that will service the Curlew field in the central North Sea, 210 km east of Aberdeen.

When we saw it, it was undergoing final commissioning and with the gas export pipeline, oil production lines and mooring system already in place at the field it was due to sail in September with a production start-up in October.

The Curlew reservoirs are the responsibility of Shell and Esso but the production facility will be owned and operated under lease by Maersk.

Bruce Hedge, 7 Clement Close,
Wantage OX12 7ED.

Conservation in action - how you can help

How many times have you driven past a familiar industrial building only to find a partly demolished shell, or perhaps even an empty site? The CBA is looking to recruit volunteer listed building correspondents to cover industrial buildings in a number of areas throughout England. Would you like to join them?

Each year the CBA, along with the other amenity societies, is notified of over 6,000 applications for listed building consent in England and Wales involving demolition. Via a network of local correspondents, who are asked to assess applications, visit the site and report back on the archaeological implications of a proposal, we are able to influence decisions affecting the future of listed buildings of all types. Of over 5,500 (English) applications for listed building consent involving demolition notified to the CBA last year, nearly 300 affected industrial buildings - a relatively high proportion of the total listed building stock. Industrial buildings do seem to attract more than their fair share of major alterations and this, combined with the CBA's long-standing interest in industrial archaeology, has led to an emphasis on industrial casework. With an average overall response rate running at 8.5%, our industrial response rate is just over 18%, while four out of five of the most recent inquiries at which CBA evidence was presented affected industrial buildings. Three of these were proposals for total demolition: Garden Street Mill, Halifax; Kings Mill, Settle; and Alne Maltings, Boroughbridge.

Areas rich in industrial buildings where we would particularly welcome assistance are: Blackburn, Bolton, Burnley, Bury, Chorley, Hull, Knowsley, Liverpool, Merseyside, Oldham, Pendle, Preston, Rotherham, St Helens, Sefton, Sheffield, Stockport, Stockton-on-Tees, and Wigan.

We also have general vacancies in the following local authority areas: Alnwick, Arun, Bedford, Berwick upon Tweed, Blackpool, Blyth Valley, Boston, Bracknell Forest, Brighton, Bromsgrove, Castle Morpeth, Chester le Street, Congleton, Crewe & Nantwich, Darlington, Derwentside, Durham, East Riding of Yorks, East Lindsey, Eastbourne, Fylde, Halton, Hampshire, Hartlepool, Hereford, Hove, Leominster, Luton, Malvern Hills, Mid Bedfordshire, Middlesbrough, Newbury, North Warwickshire, Nuneaton and Bedworth, Reading, Redcar and Cleveland, Redditch, Rugby, Sedgefield, Slough, South Herefordshire, South Bedfordshire, South Ribble, Stratford upon Avon, Teesdale, Teignbridge, Tewkesbury, Torbay, Wansbeck, Wear Valley, West Devon, Windsor and Maidenhead, Wokingham, Worcester, Wyre, Wyre Forest and all of Cornwall.

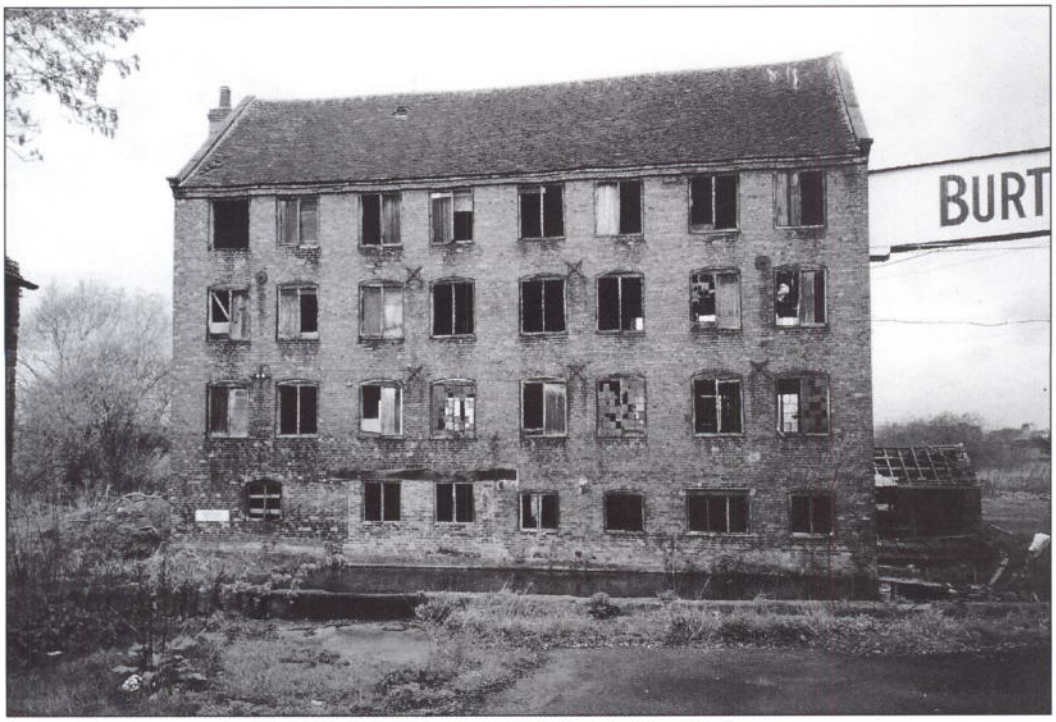
If you would be interested in finding out more please ring Carol Pyrah, CBA Conservation Officer on 01904 671417, email to archaeology@compuserve.com or write to her at the Council for British Archaeology, Bowes Morrell House, 111 Walmgate, York YO1 2UA, Fax 01904 671384.

Heritage Hallmark for Kew

The Institution of Mechanical Engineers (IMechE) and the American Society of Mechanical Engineers (ASME) have jointly awarded to the Kew Bridge Steam Museum their Engineering Heritage Hallmark. On 10 July, Mr Denis Brandt (Chairman of the Kew Trust) received the award from Mrs Pam Liversage, President of IMechE, and Mr Keith Thayer of ASME.

A number of awards are made each year and the Engineering Heritage Hallmark Scheme recognises excellence in mechanical engineering. Preference is given to locations that are accessible to the general public and Kew Bridge, with its superb collection of Cornish beam engines which pumped fresh water to London, is regarded as particularly appropriate. The IMechE, a learned society, celebrated its 150th anniversary this year. Further news from Kew Bridge was the opening of their Water for Life Gallery to the public on 15 September.

Robert Carr



Eighteenth-century mill building at Greensmiths Mills, Burton upon Trent: the subject of two recent applications and currently proposed for conversion to office use

Photo: Faith Cleverdon

'Restoration' or 'reconstruction' at Portland Basin

A £7.1m scheme has started to redevelop the Portland Basin at Ashton-under-Lyne, near the meeting of the Ashton, Peak Forest and Huddersfield canals, six miles east of Manchester. The Ashton Canal Warehouse stood on the northern side of the wharf. Originally a three-storey building of 1834 with timber floors supported by cast-iron columns, a short branch of the canal flowed directly into the building where it was divided into three channels. The hoists in the warehouse were water-powered with a large waterwheel positioned on the wharfside. In 1972, the warehouse (a listed building) was damaged by fire, but retained its status as a building of considerable architectural merit. In 1985, the Council restored the eastern half of the building as a heritage centre and museum.

Work is now underway to bring the other half of the warehouse back into use and restore the building to its original height. This is being undertaken by Tameside MBC in partnership with a private developer as part of the Council's vision for Portland Basin to become a high quality environment with a high visitor/tourist profile. Funding has been obtained from sources including European Regional Development money, Heritage Lottery funding, English Partnerships and the Single Regeneration Budget. As well as an enlarged museum facility, the project also includes a conference suite, pub/bistro, housing and environmental improvements. Work is due for completion in late 1998.

Early press releases talked of the 'restoration' of the warehouse, or a sympathetic re-building to full height. Recent reports of site visits, however, would suggest that 'reconstruction' would be more accurate as the existing building and remains have been totally demolished - although the canal arm survives. Thus does the creation of 'heritage' override the claims of archaeology!

A.D. George

Fibres and fashion

A stunning new permanent exhibition, 'Fibres, Fabrics and Fashion' was launched on 15 September in the £1m textile gallery of the Museum of Science and Industry in Manchester.

6th Annual Mills Conference, Bolton

Do industrial archaeologists appreciate that there is now a whole industry devoted to Regenerating Textile Mills as business units, educational, media or cultural centres?

The movement in the past few years has been given a stimulus by City Challenge money available to local authorities, also the Single Regeneration Budget and European Regional Development Fund grants. The process is now largely local government inspired following the pioneering efforts of Ernest Hall at Dean Clough, Halifax, the Skopos mill shops (Dewsbury-Barley) and the Hockney Gallery at Saltaire near Bradford. The geographical areas covered by the new schemes have to be fairly tightly drawn to quality for government assistance - the criteria of high unemployment, inner city deprivation and poor environments still looming large. This of course may conflict with English Heritage's listing policy (recently extended) where the examples are more scattered and often do not fall within the designated areas.

Bolton claims to have had a strategy for its 118 redundant textile mills since the 1970s when the town began to attract large mail order firms to some of the larger more easily adapted twentieth-century mills (Beehive, Sir John Holden's Mill, etc). They converted Lincoln Mill as the Bolton Enterprise Centre (managed workspaces) and Eagle Mill as an extension to the Bolton Institute of Higher Education. The good work has continued in the Halliwell City Challenge area with some 14 mills designated for improvements including the striking Egyptian Mill - creating warehouses and offices internally whilst repairing the outside fabric. New SDI grants may also assist the massive Swan Lane Mill No.3 - a listed building badly in need of exterior refurbishment.

Over 100 delegates of Planning Authorities, architectural partnerships, urban regeneration bodies, conservationists and mill occupiers attended this year's conference held in Bolton on 19 June. They heard from Ray Jefferson, Director of Planning and Engineering, Bolton Metro, Martin Waller of the Verna Group who occupy Egyptian Mill, Mark White of BDO Stoy Hayward on finance for mill improvements, and Gerry Fitzhenry on delivering high technology networks to mills. A choice of workshops in the morning and afternoon sessions included managed workspaces, cultural centres sustainability, funding and telematics. There was also a problem case study of part of Manningham Mills, Bradford, presented by a community partnership who wish to establish an arts centre and museum in the empty South Mill if the necessary safety work is carried out and the co-operation of the Listers' receiver is forthcoming. All the speakers and groups provided comprehensive information for the delegates' information pack.

The following mills were visited on a heritage coach tour during the conference:

Grecian Mill, grade II spinning mill with separate warehouses, office block and doubling shed (1845/1860s), Lever Street, in multi-occupancy; Gilnow Mill, partly rebuilt in 1868 with Italianate details; Sir John Holden Mill, late spinning mill of 1927 by Bradshaw, Gas and Hope, using electricity from the outset. Set in suburb of Astley Bridge, occupied by Littlewoods; St Helena Mill, Bolton's oldest mill built in 1780s and extended 1820s. Converted to offices for Greater Manchester Probation Service.

A.D. George

Industrial History of the West Country

Last June saw a very gentle week of IA with course tutor Roger Eckersley, based in the opulent comfort of Dillington House, set in rolling parkland at Ilminster in Somerset.

Highlights included a visit to Sheppy's Cider Farm at Bradford-on-Tone, which has a superb museum containing many unique agricultural implements, quite apart from the extensive tasting session! Delegates also saw the Tonedale Mills at Wellington (see *IA News* 98) followed by an afternoon at the Coldharbour Mill working wool museum, watching demonstrations of woollen and worsted cloth manufacture and viewing the 1910 horizontal cross-compound steam engine whose restoration gained the 1991 AIA Dorothea Award.

On Tuesday we saw old lace mills in Chard, a flax mill in Crewkerne and then to Bridport in Dorset to the Bridport-Gundry net works where, among other items like army camouflage netting for home and and foreign armies, all the paraphernalia for Wimbledon is manufactured. As a works visit this was doubly fascinating, as the firm is very go-ahead.

A ride on the West Somerset Railway to Williton led us on to explore the iron mine remains on the Brendon Hills. Our guide, Mike Jones, has an outstandingly erudite grasp of his subject and played an prominent part in the excavation of Langham Hill engine house which we visited. Raleigh's Cross Mine, the major work of the area, has remains of a complete mining village, served by the standard gauge West Somerset Mineral Railway. Stations were constructed on the top portions of this line, but never used as the Railway Inspectorate of the late 1860s were not happy with the arrangements for working the incline. The amazing incline took the ore down 800 feet at 1 in 4. The walls of the winding house, constructed beneath the railway line, survive. The incline was worked by gravity, but from 1883 to 1916 a Robey steam engine worked the drums.We also visited the Caernarvon pit, close to extensive Roman shamelling trenches.

In contrast, Thursday was devoted to the Somerset levels and moors, where the topic was water management. After visiting Westonzoyland pumping station, we went to Bridgwater Docks and Canal, a brick and tile museum (half finished) and then to the immaculate1942 Crossley diesel engines working at Gold Corner pumping station.

Friday was the last day, the morning spent at Clarks shoe museum at Street. Then to lead mining sites up in the Mendip Hills, and so to Blagdon pumping station. These sites were part of the programme at the 1987 AIA Bath Conference.

It was a superb week graced by excellent weather. Somerset IA Society provided the guides where needed. Roger Eckersley set a relaxed pace throughout with slide shows in the evenings.

Roger Ford

Bridgwater Docks and warehouse, visited in June

Photo: Michael Harrison

The exterior of Jack Tucker's Garage, now on show at the National Motor Museum, Beaulieu
Photo: National Motor Museum

A 1930s garage

Within the National Motor Museum at Beaulieu, Hampshire, an historic garage has been recreated using many items from William Tucker & Son, West End Garage, Wedmore, in Somerset. Jack Tucker was the son who retired in 1985. Whilst the building is a complete fabrication, everything in it, all fixtures, fittings, tools, cans and detail are all artefacts from garages and workshops that have closed down, collected by the museum for over 25 years.

Beaulieu Motorworks tells the part the pre-war garage played in country life, how it adapted from being a blacksmith or wheelwright or bicycle maker to look after the needs of the motor vehicle. There were no tied stations, so each petrol company wanted a pump on the forecourt, resulting in a plethora of enamel and painted advertising signs on and around the garage. These eyesores were hated by the Council for the Protection of Rural England and others, who campaigned vigorously against this type of advertising.

The museum garage was made possible by the generous support of T & N plc and matching funding from the National Heritage Lottery Fund. Further details on Beaulieu Motorworks are available from Michael E. Ware, ☎ 01590 612345.

Ram and horses

At the Ram Brewery, Wandsworth, the regular delivery of beer locally by horse and dray (two Shire or Shire-type horses per dray) is coming to an end. At present this is a genuine commercial operation using relatively modern drays with pneumatic tyres, modern brakes and a partial cab for the draymen. Do not confuse this with the fairly common practice of special delivery using show horses and a period show dray.

The Ram Brewery is probably the last in Britain to use horses commercially for delivery in an inner city area and it would be interesting to hear of other possible contenders for this title. The Brewery has stated that anger and bad behaviour from motorists complaining at the slow speed of the horses is forcing their decision!

Robert Carr

The end at last for Cornish tin?

The end of 4,000 years of the tin industry in Cornwall looks a step closer with the announcement in August that South Crofty, Europe's only remaining tin mine, will close within months with the loss of 270 jobs unless a rescue package can be arranged. Falling world tin prices and a strong pound are blamed for this latest blow to the long-troubled industry. Meanwhile, a grant of almost £1.2 million from the Heritage Lottery Fund was made in early October to pay for the completion of the Trevithick Trust's 'gateway' centre for Cornwall's industrial heritage at Taylor's Shaft of nearby East Pool Mine (see *IA News 101*, 12-13).

English Heritage Grants

Among the Historic Buildings and Monuments repair grants totalling £10 offered by English Heritage in 1996/7, were 18 grants in excess of £100,000. These included £200,000 to the Kiln Warehouse in Newark, Nottingham, and £260,000 to No.7 covered slip at Chatham Dockyard, Kent.

Alexander Cordell

The novels of Alexander Cordell, who died in July, have seldom been far from the public eye since he began his career as a writer in the 1950s. His rumbustious recreations of the South Wales valleys in the Industrial Revolution were his most famous works, and in particular the trilogy which began in 1959 with *The Rape of the Fair Country*. For millions of readers, these made tangible a turbulent period of social and economic history which permanently left its mark on the population and landscape of Wales.

Cordell was not a native of Wales. His homeland, his career, and his name were all adopted. He was born George Alexander Graber in Sri Lanka in 1914, and had worked as both an army officer and a quantity surveyor. It was only after moving to Monmouthshire in 1936 that

Alexander Cordell at Blaenavon
Photo: Western Mail & Echo

he began to learn about the struggles of the Welsh working classes, a subject which was to become his main passion and motivation to write. It dominated no less than seven of his 20 novels, including *The Hosts of Rebecca* (1960), *The Fire People* (1972), *The Sweet and Bitter Earth* (1978), which was set in the North Wales slate quarries, and *The Land of My Fathers* (1982), concerned with the Tonypandy Riots. He was driven by a keen sense of social justice, and used his skill as a popular novelist to convey political ideas with force. His evocations of the blood red skies of Merthyr, the close communities of Cardiff Bay, and the exploited hillsides of Blaenavon, permanently colour those places in the minds of a whole generation. He made real in the imagination subjects which were previously dusty history for many, carrying out detailed research to address facets of past lives that academic historians had neglected.

From the 1950s onwards, Cordell was closely associated with industrial archaeology in South Wales. *The Rape of the Fair Country* was set in and around Blaenavon Ironworks, and he took a strong interest in Cadw's on-going guardianship programme at the site, as well as the restoration of the Neath Canal (where in 1969 the sequel *Song of the Earth* was set). He was a regular visitor to the ironworks and was often to be seen talking to the staff there, even in the last few months of his life. His dream was that one day Blaenavon would be the location for filming *The Rape of the Fair Country*. Indeed, this idea saved the ironworks from demolition in the late 1960s, when a stay of execution was granted at the request of Richard Burton. The film was never made, but the ironworks lasted long eneough for its permanent preservation to be agreed. Only recently, Cordell brought American producers to the site, and the film might yet reach the screen. But whatever happens, his words still survive to bring the whole area - now known appropriately as 'Cordell Country' - potently to life.

The Blaenavon area is currently subject to extensive consultation with a view to developing its industrial heritage.

Peter Wakelin

Reprinting industrial landscapes

Barrie Trinder's *The Making of the Industrial Landscape*, published by Dent in 1982, and subsequently as a paperback by Alan Sutton, has been out of print for a long time. A new paperback edition is appearing from Phoenix Giant in November, as a straightforward reprint in which the only modifications are the correction of a few typographical errors. In the light of modern studies of industrial landscapes, the book's approach will now seem a little old fashioned, but the reprint will make available to new generations of students one of the standard texts on British IA and it is much to be welcomed.

A useful leaflet

The City of Bath is deservedly famous for its fine Georgian architecture, but this useful leaflet for visitors, *Bath's Civil Engineering Heritage*, decribes ten industrial sites in the area, including bridges, railways, canals, roads, quarries and the Roman water supply. Published by the Institution of Civil Engineers, copies can be obtained on request at the Tourist Information Bureau in Abbey Chambers.

Short Notices

Civil Engineering Heritage: Wales and West Central England, by Roger Cragg, Thomas Telford Publishing, 2nd edition 1997. 320 pp, £12.50. (ISBN 0 7227 2576 9).

Revised, enlarged and updated second edition of one of the Civil Engineering Heritage Series compiled by the Panel for Historical Engineering Works of the Institution of Civil Engineers. Heavily illustrated.

Industrial England, by Michael Stratton and Barrie Trinder, Batsford/English Heritage, 1997, £15.99. (ISBN 0 7134 7563 3).

Latest volume in the Batsford/English Heritage series, providing a new and generally unconventional look at a range of industrial archaeological topics. A full review will appear in *Industrial Archaeology Review*.

Mirrors by the sea - an account of the Hythe sound mirror system, by R. N. Searle, Hythe Civic Society, 1995. 42 pp, £3.50. (ISBN 1 900101 009).

This book describes the six large acoustic mirrors which were designed and built in the 1920s and 1930s to detect the approach of enemy aircraft over the Kent coast between Dungeness and Dover.

New Mills: A look back at its Industrial Heritage, New Mills Local History Society, 1997. 60 pp, £4.95 inc. postage (ISBN 0 899109 01 3).

Collection of photographs of East Mills area (the scene of the 53rd East Midlands IA Conference). Obtainable from New Mills Heritage Centre, Rock Mill Lane, New Mills via Stockport, SK12 3ES.

Small Mines of South Wales, by A. J. Booth, Industrial Railway Society, 1995. 96 pp, £12.95. (ISBN 0901096 86 5).

This book includes brief descriptions, photographs and site plans for 32 small independent coal mines in South Wales.

London's Industrial Archaeology, No.6, edited by Mary Mills, Greater London IA Society, 1997 (ISSN 0142-6273).

The sixth journal of GLIAS, with Kenneth Hudson giving a personal perspective on IA and the historical imagination, Tim Smith on railway coke ovens and the Silvertown Way and By-pass, and Grace Pond on women gas workers of the First World War, accompanied by a collection of historic photographs.

Southampton University IA Group Journal, No.5, edited by Edwin Course, SUIAG, 1996 (ISSN 0967-3474).

The journal includes articles by Edwin Course on the Hockley Viaduct, Clare Church and Edwin Course on the industrial archaeology of a seaside resort (Bournemouth), Neil Lake on Sowley Ironworks at Beaulieu, James Paffett on the Royal Dockyard Schools, and Richard Reeves on traditional charcoal burning in the New Forest.

Books Received

The following books have been received for review in *Industrial Archaeology Review:*

A Canal People: the photographs of Robert Longden, by Sonia Rolt (Sutton Publishing, 1997)

Bagnall: a narrow gauge legacy, by Allan C. Baker, *et al* (Narrow Gauge Railway Society, 1997)

Civil Engineering and Engineering in Britain, 1600-1830, by A.W. Skempton (Variorum, 1996)

Exmoor's Industrial Archaeology, ed. by Michael Atkinson (Exmoor Books, 1997)

Explosives in the Service of Man: Ardeer and the Nobel Heritage, by John E. Dolan and Miles K. Oglethorpe (RCAHMS, 1996)

Standard Steel - Locomotive Builder and Dealer, by Rick Stewart (Narrow Gauge Railway Society, 1997)

The Archaeology of Essex: Proceedings of the Writtle Conference, ed. by Owen Bedwin (Essex CC Planning, 1996)

The Archaeology of Mining and Metallurgy in South-West Britain, ed. by Philip Newman (PDMHS/Historical Metallurgy Society, 1996)

EDUCATION

Developments at Nene

The first students who will be majoring in Industrial Archaeology at Nene College have begun their third year of study. During the summer they worked on their dissertation topics which range from a Northampton shoemaking village to a study of limekilns on the north east coast. Third year students worked on a variety of projects in South Wales during a residential trip in September.

From 1 October, Gary Campion, previously working for English Heritage's listing section and completing his PhD at the University of Leicester, joined the Industrial Archaeology teaching staff, in place of David Cranstone, who decided for personal reasons not to take up the post. Gary's research for his thesis, on domestic industry, has already involved him in research in Northamptonshire.

Certificate in IA at Birmingham

The School of Continuing Studies of the University of Birmingham launched a CertHE course in IA, organised and tutored by Dr Barrie Trinder in September 1996. The two-year course is of equivalent status to a first year of undergraduate study. It has five modules, two of them consisting of nine days of study at monthly intervals at Birmingham, two residential five-day spells based in the library of the Ironbridge Gorge Museum, and a personal project. The course recruited 11 students, including the vice-president of the AIA, the husband of the current president, and several members. So enthusiastic are the students that they have organised several expeditions to sites of IA interest in addition to those on the course. The final day of the Ironbridge-based residential week in May was spent studying Black Country industrial landscapes from a member's narrow boat cruising the Stourbridge Canal.

The course will be recruiting during the spring and summer of 1998 for the two-year period commencing in September. Details from: School of Continuing Studies, The University of Birmingham, Edgbaston, Birmingham B15 2TT.

Getting practical at Oxford

A series of short practical and professional courses aimed at mainstream archaeologists, but with some relevance to industrial archaeology, is offered by the University of Oxford Department of Continuing Education. Examples of topics between December 1997 and March 1998 include Archaeological Publishing, Health and Safety, Planning and Development, Heritage Projects and the Lottery, and Writing for Archaeologists. Details: Mrs Marie Bryan, OUDCE, 1 Wellington Square, Oxford OX1 2JA. ☎ 01865 280349.

West of England

The region's IA societies continue to be active and some have recently celebrated significant milestones, or are about to. One of the earliest, South Wiltshire (SWIAS) celebrated its 30th anniversary with a dinner in Salisbury in October 1996, whilst the Somerset society (SIAS) issued a silver jubilee edition of their excellent *Bulletin* in April of this year. Bristol (BIAS) will publish its 30th annual *Journal* next year.

New sources of funding continue to provide both opportunities and threats for the region's industrial heritage. The redevelopment of Bristol's 'Harbourside' continues to attract publicity. The attention of local IA and conservation groups is now focused on the remaining structures of the former Canon's Marsh Gasworks. Originally established as an oil-gas works in 1823, the site was partially dismantled in the late 1960s and is now used for storage and distribution. The buildings of urban gasworks have not fared well in recent years and Bristol is fortunate to retain listed structures, especially monumental purifier houses, on Canon's Marsh. No detailed plans for redevelopment are yet available but the buildings appear to be under some threat. No far from Canon's Marsh, it was hoped that funding for the enhancement of Bristol's centre - a part of the Floating Harbour until the River Frome was culverted in the interwar years - would include opening up of old quays. Unfortunately, the 'water option' was not adopted by the City Council.

On a positive note, the Avon Industrial Buildings Trust has been awarded a substantial sum by the Heritage Lottery Fund for restoration work on the Midford Aqueduct of the former Somersetshire Coal Canal. It is hoped that contracts will be signed soon. There has been a considerable interest in the canal with an active society to advance this. Apart from the aqueduct, the mystery of the canal's 'caisson lock' at Combe Hay, some three miles south of Bath, has long intrigued canal and IA enthusiasts and scholars. The exact location of this experimental lift is a subject of debate that now seems close to resolution. Following a geophysical survey of the area in 1996, a small trial excavation was carried out on 31 August last. The brief excavation, although not conclusive, has provided sufficient evidence for further work. It is intended to provide an excavation report in *BIAS Journal 30*. The 'lottery' award will also finance a technical study of the two miles of canal route between this site and the aqueduct at Midford.

Awaiting full interpretation: the brick and tile museum at Bridgwater, Somerset *Photo: Michael Harrison*

At Saltford, a local group - the Saltford Brass Mill Project - has been set up to maintain and provide access and interpretation at this ancient monument. This initiative has attracted funding from the new unitary authority (Bath & North East Somerset Council), New Horizons and Rural Action.

At Bridgwater, the brick and tile museum at the former Barham Bros. brickyard on East Quay is now controlled by the County Museums Service. There has been limited opening so far, and many of the artefacts are awaiting full interpretation. Conservation has been completed on a limekiln within the Somerset Trust's Bishopswood nature reserve on the Blackdown Hills.

Mike Bone

South East England

News of wind power in Surrey and commemoration of the technological breakthrough that led to the rapid expansion of the Wealden iron industry in Sussex make up this roundup of events in the south-east.

In the far east of Surrey stands the country's oldest working windmill at Outwood. This post mill was built in 1665 and, as the millwrights put on the final pieces of the roof, they could see the glow from the Great Fire of London. The windmill was last used commercially by William Jupp, described as the last of the true Surrey millers, in 1934. The mill fell into disrepair and in 1960 its mate, reportedly the largest smock mill in Britain, collapsed as a result of its rotten condition. Later the post mill came into the possession of Gerald and Raymond Thomas, who spent many years lovingly restoring it to full working order and flour was once again produced for demonstration purposes. The building was given a Grade I listing.

Keeping the mill on an even financial keel was difficult at the best of times, but it also had to weather more physical storms for it lay right in the track of the 1987 'hurricane'. It is only because of the presence of mind and perseverance of the two brothers that it survived, as they remained at their posts all night ensuring that the sails were kept turned into the wind to avoid damage or total destruction. Now, unfortunately, both brothers have passed on and the widow of Gerald, the last to die, has put the mill on the market.

The property, which includes the miller's house, a bungalow and stables, is expected to fetch £900,000 by agents Knight Frank. The danger is now that the property can only be afforded by someone looking for a prestigious and secluded home and this landmark in our industrial heritage may be lost to public access forever.

Also in Surrey, a much later user of wind power is about to be restored by the Surrey Industrial History Group. This, too, lay in the path of the 1987 storm, at Holmwood, south of Dorking, but fared rather worse than Outwood Mill. This Duke and Ockenden ('Dando') Climax windpump was used to supply water from a well to a model farm via a water tower standing next to it. During the 'hurricane' the annular sails were blown off but it appears that all parts are still on the site. The 'pump is shortly to be moved to the Rural Life Centre at Tilford, near Farnham, where it will hopefully be restored to working condition and re-erected.

Wind of a different sort also plays a part in the report from Sussex, where the first blast furnace in the country was erected in 1496. While the iron industry in the Weald had been in existence since Roman times at least, it was severely limited by the essentially small scale nature of the bloomery technology then in use.

Blast furnaces were already well established on the Continent before the example at Newbridge in Ashdown Forest was established. However, it was undoubtedly due to its arrival that the expansion of the Wealden industry really took off. Established under instructions from Crown officials on Duchy of Lancaster land, its initial output was iron shot and parts for gun

carriages for the military. The man responsible for the works was one Henry Fyner, a goldsmith, who imported skilled Frenchmen to operate the furnace.

This 500 year old landmark in the British iron and steel industry was recognised last year by the unveiling of a plaque at the site by Michael Edwards, a former Master of the Guild of Ironmongers and member of the Wealden Iron Research Group. The event, supported by English Heritage and the Forest Conservators, took place on the site of the hammer pond where a representative group had gathered beneath the magnificent oak trees, now a scene of tranquillity, undoubtedly a far cry from when the furnace was in its heyday.

Chris Shepheard

The Dando Climax windpump at Holmwood, near Dorking, which the Surrey Industrial History Group is planning to restore
Photo: Chris Shepheard

REGIONAL CORRESPONDENTS

Please support your Regional Correspondent by sending relevant material which may be of interest to our readers.

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Region 2: IRELAND
Michael Coulter, Department of Environment, Historic Monuments and Buildings, 5-33 Hill Street, Belfast 1

Region 3: NORTHERN ENGLAND
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Region 4: YORKSHIRE AND HUMBERSIDE
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Region 14: SOUTH WEST ENGLAND
Devon and Cornwall
John Stengelhofen, Withy Garden, Loggans Road, Copperhouse, Hayle, Cornwall TR27 4PL

8 November 1997
NORTH WEST IA CONFERENCE
at Manchester College of Arts and Technology, the 21st regional conference on 'Manchester's Waterside Heritage' with lectures and guided walks. Booking forms from Sue Mitchell, GMAU, University of Manchester, Oxford Road, Manchester M13 9PL. ☎ 0161 275 2314.

15 November 1997
CURRENT PERSPECTIVES IN SCOTTISH INDUSTRIAL ARCHAEOLOGY
at the Department of Archaeology, University of Edinburgh, a one-day workshop on aspects of previous, continuing and future research in Scottish IA. Details from Dr Mike Cressey, Centre for Field Archaeology, 12 Infirmary Street, Edinburgh EH1 1LT. ☎ 0131 508198.
e-mail michael.cressey@ed.ac.uk.

21 March 1998
GUNPOWDER AND GOVERNMENT
at Rewley House, Wellington Square, Oxford, a dayschool examining the manufacture of gunpowder in its local, national and international contexts. Details from Local History Course Assistant, OUDCE, 1 Wellington Square, Oxford, OX1 2JA. ☎ 01865 270369.

4-5 April 1998
AIA IRONBRIDGE WEEKEND
at Ironbridge, annual weekend on the theme of 'Industrial Collections in Crisis'. All welcome. For details, please contact Gordon Knowles, Affiliated Societies Liaison Officer, 7 Squirrels Green, Great Bookham, Leatherhead, Surrey KT23 3LE.

4 April 1998
SOUTH WEST REGION IA CONFERENCE
at Godolphin School, Salisbury. Details available from Robert Steel, 3 Shady Bower Close, Salisbury SP1 2RQ. ☎ 01722 332955.

25 April 1998
SOUTH EAST REGION IA CONFERENCE
at Princes Hall, Aldershot on the theme of 'Secret South East'. Details from J.D. Asteraki, 122 Reading Road, Finchampstead, Wokingham, Bucks RG40 4RA.

7-17 June 1998
MILLS TOUR OF CYCLADIC ISLANDS
wind and water mills of Greek islands of Andros, Mykonos, Paros and Tinos. Details from Alan Gifford ☎ 01283 702299, or full itinerary and booking details from Island Holidays ☎ 01764 670107.

4-11 September 1998
AIA ANNUAL CONFERENCE 1998
at Seale Hayne Agricultural College, near Newton Abbot, Devon. Advance notice only.

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.

Tyneside: Venue for this year's annual conference (see inside) *Photo: Michael Harrison*

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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.

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