INDUSTRIAL ARCHAEOLOGY NEWS

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THE BULLETIN OF THE ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY

FREE TO MEMBERS OF AIA

Hatfield Conference • Trencherfield Mill engine • Boar's Head Mills • awards
Rhode Island • Svalbard ropeways • Pontcysyllte Aqueduct • regional news

ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY AIA

INDUSTRIAL ARCHAEOLOGY NEWS 131
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COVER PICTURE
This model of a pre-war Comet aeroplane serves as an inn sign outside the Comet Hotel, Hatfield. The hotel was opened in 1936 and is close to the de Havilland site venue for the AIA Conference
Photo: R J M Carr

AIA Hatfield Conference 2004

The 2004 conference, 'Hertfordshire and the Lea Valley', was held at the University of Hertfordshire's de Havilland Campus in Hatfield on 13-19 August. Thanks are especially due to Tim Smith and Malcolm Tucker with their fellow conspirators Bob Carr and Mary Mills, and of course to conference organiser Tony Parkes. Thanks also to Tony Jervis and John Brown for contributions to this report.

Roger Ford

AIA Chairman Mike Bone welcomed 112 delegates to the 2004 Conference on the Friday evening, after the daytime seminar (to be reportin in *IA News 132*). All lectures were held in a curiously designed theatre, which featured easily the worst slide production I have ever seen (and the ugliest ceiling). For the lectures from the next day onwards a 'normal' slide projector was set up and the built-in facilities not used.

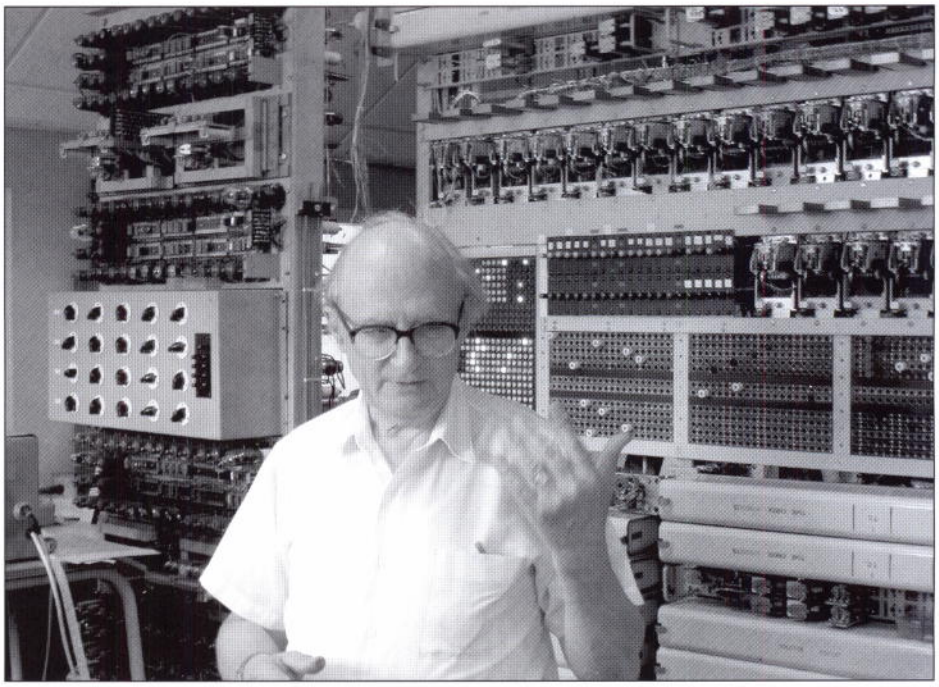
Tim Smith gave the introductory lecture on the Hertfordshire area, followed by Dr Jim Lewis on the Lea Valley. A short burst of members' contributions rounded off the evening, first with Derek Bayliss showing slides from the 1970s taken at the Leighton Buzzard railway. Brian Adams followed on the Rafael Salaman tool collection (all of which have now been displaced by mechanisation), then Paul Sowan on the discovery of Reigate stone blocks built into a Roman tile kiln, and finally John Crompton gave a thorough analysis of an early rail trip by Queen Victoria, starting at Watford and foraying via Drayton Manor to Chatsworth and Belvoir.

The first of Saturday morning's lecturers were Hertfordshire planning officer Jonathan Smith, on the planning process and IA, and Amber Patrick on maltings – the area was particularly rich in these, but because the majority were timber-framed, they had a poor survival rate. After coffee, Dr Richard Hills spoke on paper-making in Hertfordshire, which was very much a local industry due to the abundance of water supplies. Then Brenda Buchanan gave an erudite explanation of the early application and manufacture of gunpowder at Waltham Abbey. This closed as a factory at the conclusion of WW2 but continued as a research facility until the 1990s.

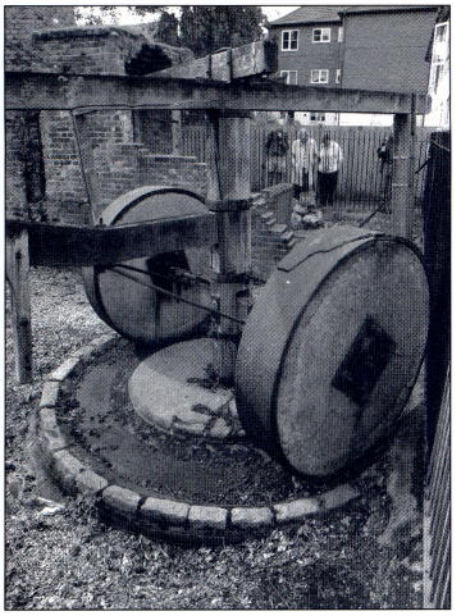
There was a choice of three visits on the Saturday afternoon. The Apsley Paper Trail started with a visit to John Dickinson's Frogmore Mill, which still produces specialist papers. We saw paper made from all sorts of vegetable sources, including elephant droppings (euphemistically labelled 'elle pooh'). They have a Foudrinier machine of 1896, installed second-hand in 1907. The afternoon concluded with a wonderful spread of home-made cakes laid on at the beautifully restored Redbournbury Watermill. The second visit was to the Leighton Buzzard narrow-gauge railway (built for sand conveyance), where closed coach no. 12 was reserved for AIA delegates, with ordinary visitors in a separate vehicle. Loco 'P.C. Allen' hauled the train and time was allowed to see Stonehenge works, loading sidings and quarry.

The third trip was to the Ware Maltings, visiting a series of sites on the River Lea. The town of Ware was a major malting centre for the London trade, at one time having nearly 100 malt houses. The annual conference dinner was held in the evening.

As is now traditional, Sunday morning started with presentations of the AIA Awards, reported elsewhere, followed by the AGM when the main change this year was a swap between Mike Bone

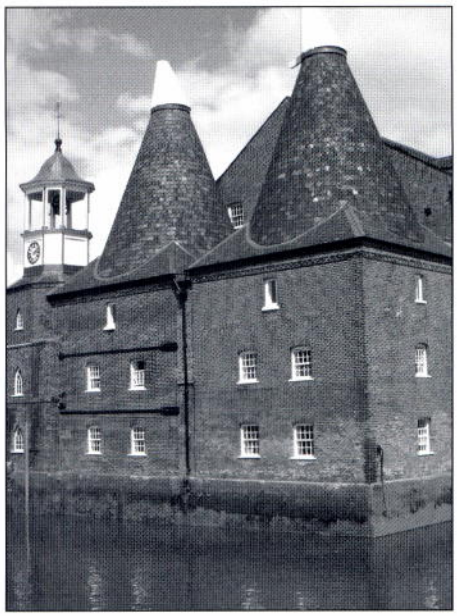


Explanation of the Colossus Mark 2 rebuild at Bletchley Park
Photo: R J M Carr



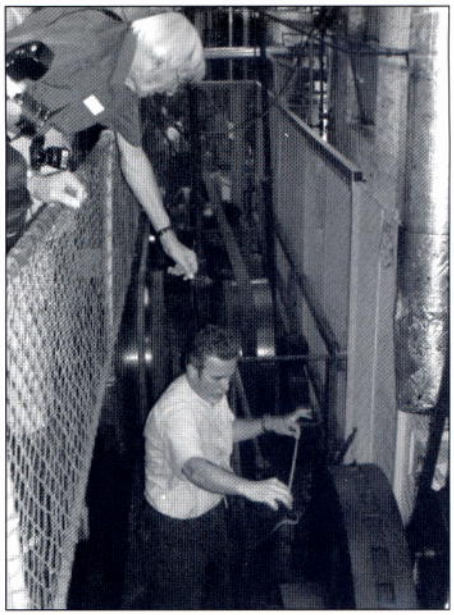
Edge mill at the James Pulham Terracotta Works, Broxbourne

Photo: M Harrison



The Clock Mill, Three Mills, Bromley-in-Bow

Photo: Marilyn Palmer



Colin Bowden takes over by getting the man in charge at Frogmore paper mill to measure the flywheel of the steam engine, since he was not allowed in there himself!

Photo: Marilyn Palmer

The AIA admires Station X at Bletchley Park

Photo: M Harrison

Visiting the King George V Pumping Station at Enfield

Photo: M Harrison

and Prof. Marilyn Palmer – Marilyn now becomes Chairman and Mike becomes Vice-Chairman. Christine Ball was voted onto Council. Dr Alison Sheridan also spoke briefly to remind delegates of the prestigious British Archaeological Awards which are the 'Oscars' of archaeology and are held every two years. They include the AIA Ironbridge Award for the best adaptive, innovative re-use of any historic or industrial building. Details of this AIA-sponsored award are given on the AIA website.

The Rolt Memorial Lecture was delivered by Dr Denis Smith on 'Landscape with Writers: Engineering and the Industrial Landscape in English Literature'. He was assisted by Sonia Rolt, who gave prose and poetry readings to illustrate the lecture. When published in *Industrial Archaeology Review* this should widen members' reading tastes!

On Sunday afternoon one visit went to Waltham Abbey Gunpowder Mills, many of the remains of which were viewed from a tractor-pulled 'land train' (though it is hoped to re-commission the narrow gauge railway that supplemented the site's canal transport system, which has left behind some very fine cast-iron aqueducts. The second tour first saw Whitewebbs Road Transport Museum where, in addition to the vehicles, there is a 200-feet deep well sunk into the chalk, designed to top up the 'New River' by means of two compound beam engines, removed in 1950, though the valve house remains. The remnants of the New River were visited in the grounds of Myddelton House, and then a visit was paid to the Flash Lane aqueduct, constructed in 1820 to shorten the course of the New River by taking it over the Cuffley Brook. The third visit took a walk around the hat-making district of Luton (many of these small manufactories are still going on), with a visit to the Luton Museum which, amongst other interesting things, contains a wonderful Roman hoard of gold and silver

Canal and bridge at the Royal Gunpowder Mills, Waltham Abbey *Photo: M Harrison*

coins, all struck during a short 30-year period of British history.

Evening lectures featured Phillip Birtles on the history of early aviation under de Havilland, whose first successful flight took place in 1910. Having sold Hendon Airfield to the British government for £400, the company moved in 1934 to the campus site we were on. Then Hugh Davies gave an absolutely outstanding lecture on Bletchley Park, the Enigma machine and the world's very first, top secret, computer called Colossus.

The all-day trips started on the Monday, with either the Stort Valley Maltings, with lunch at Harlow, a trip around the area centred on Stansted Airport, visits to Great Dunmow Maltings, and French & Jupp's maltings at Stansted; or Luton (as on Sunday) followed by a further enthusiastic session with Hugh Davies, aided by Peter Jervies at Bletchley Park where Enigma, a replica Bombe machine, and the soon-to-be-finished reconstruction of Colossus took centre stage.

In the first evening lecture GLIAS secretary Brian Strong gave a brief history of the London Distilling industry and the site on Three Mills Island in the River Lea where the grain was prepared. He was followed by a dissertation on the Grand Union Canal system from Alan Faulkner, who has written three books on the subject. The last commercial cargoes were barrels of Rose's lime juice shipped until 1981.

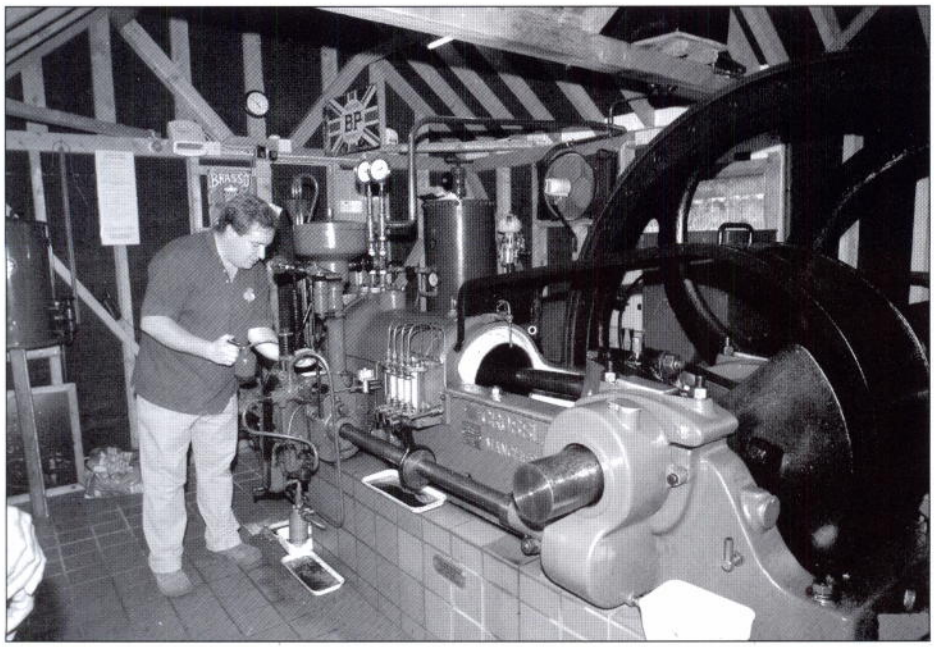
Tuesday was marred by heavy showers. One party went to West Hertfordshire, starting at Frogmore Mill on the paper trail, then dividing into two groups at Startops End where lunch was taken. One group walked around the reservoirs at Tringford pumping station, while the other group took a canal walk to Bullbourne workshops, where wooden lock gates were crafted from 1848 until March 2004. Both groups eventually reunited at Pitstone Green Museum, where such delights as a brush-maker's shop, plumber's shop, shoemaker's shop and a wheelwright's shop are housed in farm buildings. The second party spent the morning at the RAF Museum at Hendon, where the Grahame White building was opened especially for us. This contains WWI aircraft, some genuine, some recreated. After lunch we took a walk around the restored site of the Royal Small Arms factory at Enfield Lock, then on to see the Royal Gunpowder Mills at Waltham Abbey. Evening lectures were by Lindsay Collier on the Museum of Industry of the Lea Valley at Waltham, and Tom Ridge on the surviving industrial buildings on the west bank of the River Lea close to Bow Locks.

Wednesday's trips went to the Lower Lea Valley and the Central Lea Valley. The Lower Valley visit suffered from very bad traffic congestion, the first 15 miles taking 1¼ hours! The first port of call was Sir Joseph Bazalgette's 'temple to sewage' pumping station at Abbey Mills, then on to Three Mills for a thorough tour, and finally around Old Ford and Hackney Wick.

The Central Lea Valley tour commenced with a walk around Boxbourne, followed by inspection of the preserved steam pumping engine at Turnford. Next, a really spectacular feature, to the Humphrey engines at Enfield which pumped the 420-acre 2.7 million gallon King George V Reservoir. Denis Smith was on hand to explain how these almost unique (no pistons, gearing or rotative parts) producer-gas engines functioned until 1968/9. After a further visit to the Royal Ordnance Buildings, where Lee Enfields were manufactured, the party adjourned close to Tottenham Hale to visit a Woolf compound beam engine used to pump sewage. It was a very dodgy area. To quote Dr Bob Carr: 'this place started as a Victorian sewage works and has gone down hill ever since.' However, there was a very high standard of graffiti! Finally, to Low Hall Pump House Museum, as described by Lindsay Collier on the previous evening.

The final two lectures on the conference on the Wednesday evening took in Garden Cities, by Mervyn Miller, and watercress growing by Stevie Fletcher. Next day we all explored the former concept, starting with an interesting conducted tour of Letchworth which included the beautifully restored ballroom on the top floor of the Spirella corset factory, the rest of which is offices, and a selection of architect-designed houses. The Garden City was developed prior to WWI to the philosophical concepts of Ebenezer Howard who considered that towns should combine the best of the urban environment and the best of the country. After lunch, to Stevenage (dire), concluding the conference visits in the industrial zone of Welwyn Garden City.

The 2004 Conference will be remembered for some outstanding field trips – for my money Bletchley Park was especially memorable – which more than made up for the university's sadly unimaginative catering.



Crossley diesel engine of 1932 at Redbournbury corn mill *Photo: M Harrison*

The Trencherfield Mill Engine Restoration

The importance of the Trencherfield Mill engine at Wigan has long been recognised as being an almost unique survivor of such significant size and still in its original location and still in steam. Various attempts were made at restoration over the years but although intentions were good, resources could never be found to carry out the depth of restoration required. Finally the engine was deemed unsafe to run two years ago. Fortunately, the Heritage Lottery Fund stepped in to help Wigan Metropolitan Borough Council who saved the mill some years ago to ensure the engine was at last extensively restored. The restoration began in October 2003 and was completed for opening in September 2004. The author and Project Manager is Engineering Director of Heritage Engineering based in Glasgow.

J. S. Mitchell

Engine builders J. & E. Woods of Bolton were already in decline when they built their greatest engine in 1906-7. In five short years they would close with uncompleted engines on their shop floor. It could be argued that Woods had taken the corliss engine principle to its zenith in their own distinctive way with their unique valve gear and trip mechanism. The 2,500 hp Trencherfield engine embodies their art in its finest form. A few larger engines have been built but few survive and next to none in their original location. This is critical as something is lost when an engine is moved. They are parted from their fine, often purpose-built engine houses, lifted from their massive stone or concrete beds – stained with 100 years of cylinder oil matted in cotton dust, waxed and glazed for posterity. Indeed the engine builder's art can be seen in the installation, the well-rectified mistake, and the ingenious adaptations. As with archaeology in general the context is historically as important as the object.

The engine had a hard working life since its installation in the new Trencherfield Mill in 1907 and was in such a critical condition that further running would have proved to have had catastrophic results with at least three potential massive failures. This called for a challenging approach to the restoration and a clear focus was maintained from the outset on the ethos that would be maintained throughout the works. It was decided that evidence of previous attempts at restoration should be carefully assessed and differentiated from the ongoing repairs that are the feature of any engine through its working life. To that end extensive replacement of parts, although inviting on a cost basis, was stoically avoided in favour of good-quality repair of the original components, thus adding to the history of the engine rather than wiping it out. This resolved, we were faced with a project that was technically challenging but ethically simple: bring the engine back to close to new condition so that it could continue to be steamed with the minimum possible risk to the integrity of the object and indeed ensuring that its future condition was maintained to the highest engineering standards.

Between ourselves as contractors and Richard Gibbon (NRM retired), as the technical consultant for WMBC, challenging decisions had to be taken with the agreed ethos in mind as each component was removed, evaluated, catalogued and reported on. There were several major issues that gave some concern to the client before work began: (1) the 70-ton flywheel was known to be adrift on the common crankshaft between the two engines, Rina and Helen; (2) vacuum was almost impossible to maintain when the engine was steamed; (3) the significant play, visibly obvious, in the corliss valve gear linkages and the internal (and external) heavy 'knocking' was ominous to say the least.

Jonathan Minns soberingly presented the flywheel options in his original report on the engine. These were to dismantle the assembly (in fact two flywheels with a half inch air gap between) and remove the parts through the roof using, as Jonathan put it, a 'serious crane' to allow proper assessment of the crankshaft and any damage done by the flywheel(s) 'rolling' on their two sets of six staves. It was decided to go for his second option, that of supporting the structure and removing the staves on Helen, which, as it was discovered, had suffered the most damage and the tightening of the staves on Rina.

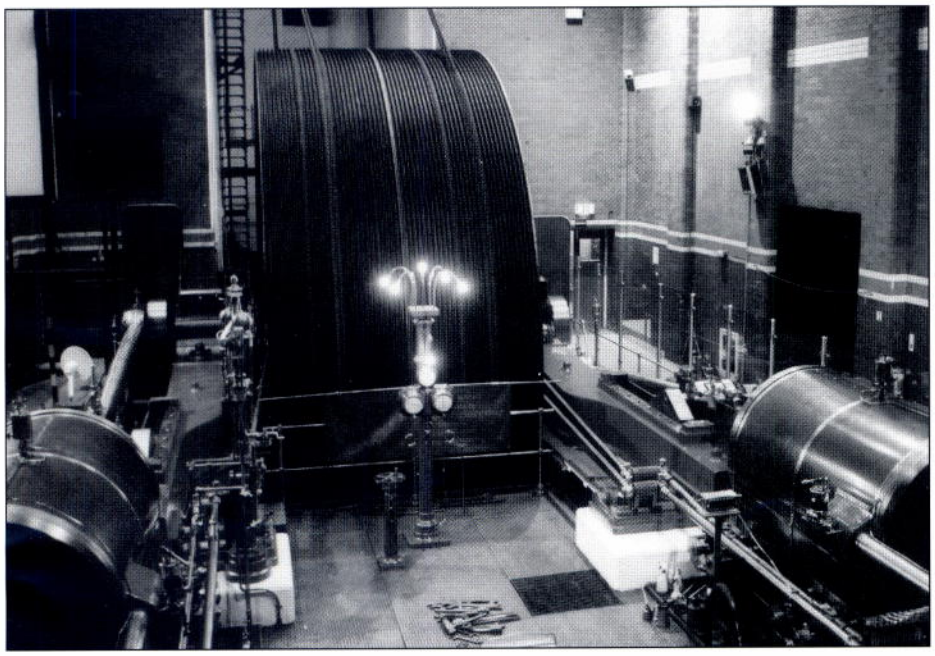
To properly assess the problem the flywheel was rotated after disconnection from the connecting rods then dial gauges attached to its face and periphery. It was found that Helen's flywheel was 'tumbling' on the crank to an alarming degree and the subsequent damage found on the removed staves (each over 2 feet long and weighing over 100 kilos) rendered them beyond repair. New staves were made with the measured one-degree taper and each fitted by bluing and filing to an individual fit.

To achieve the above a special lifting frame had to be designed, itself weighing 5 tonnes, which allowed the support and minute positioning of the flywheels using four synchronised 20-tonne hydraulic jacks to facilitate the removal and refitting of the staves.

Woods had a unique design with the valves placed below the cylinder. This prevented the risk of 'hydraulicing' the engine, with further protection provided by relief valves on each port. On removing the corliss valves (of which the low pressure ones measure over 1.5m long) it was found that the valve bodies had been oscillating within their bores and effectively 'tooling out' the bores to a conical oval. This called for *in situ* re-boring and a challenging decision as to the best course of action to follow regarding the 16 valve bodies. Richard and I decided, when confronted with this large proportion of the engine laid out on the bench, that there was really no choice and that the comparatively 'easy' course of pattern making and recasting was not an option. Each finished bore was measured, its valve body measured and a set of cast iron repair pieces engineered into each. The centre was carefully offset and the whole machined to fit the new bore. This process can be explained more fully should any reader be interested. See the Heritage Engineering advert on page 17 for contact details.

The rather massive air pumps (for drawing vacuum) were removed to our Glasgow workshops where their constituent parts were found to be completely worn out. Each set of valve plates and rubbers was refurbished and in one case the air pump piston rod was found to be wasted beyond repair and replaced.

On the steam piston trains we found a 'good



The fully restored Trencherfield Mill engine *Photo: Heritage Engineering*

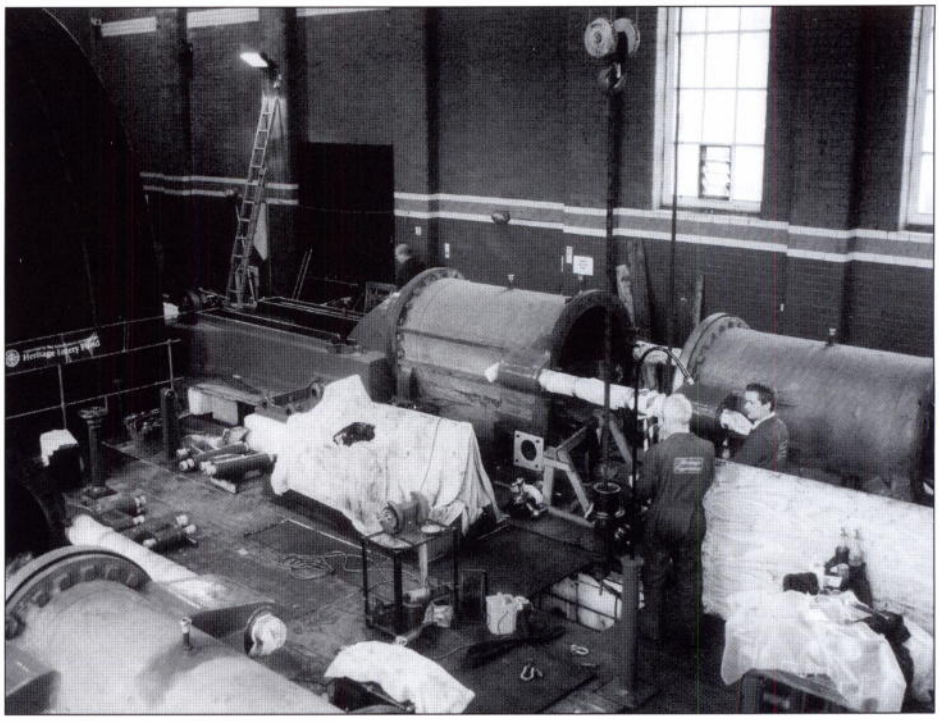
news/bad news' situation with all four cylinder bores remaining relatively free from pitting and still concentric. However, the hefty bronze and babbited piston slippers (fitted below the piston rings to support and centralise the weight of the piston) were worn down to the bronze and beginning to scrape out a trough in each cylinder. We believe that had the engine been run for much longer serious damage would have been imposed on at least two of the cylinder bores. Pistons and rings were completely serviceable and replaced.

The metallic rod packing was an education in itself, with each cylinder set repaired to the point that each was individually different to the next and indeed one 'home made' set defying our capability to understand how it could possibly have worked (it didn't). It was decided that the babbited sets (completely destroyed) would not survive if refurbished due to the pitted rod condition and so one bronze set that had survived in good condition was copied in special cast iron and standardised throughout the engine – without any alterations to the packing housings.

One set of components offered us no choice if the engine was ever to run again. The 'small end' and 'big end' bearings on both engines had been completely fractured due to running out of adjustment and were a major source of the 'knocking' to be heard when the engine ran. These were replicated in phosphor bronze (pb1) when analysis of the originals revealed an alloy of uncertain pedigree!

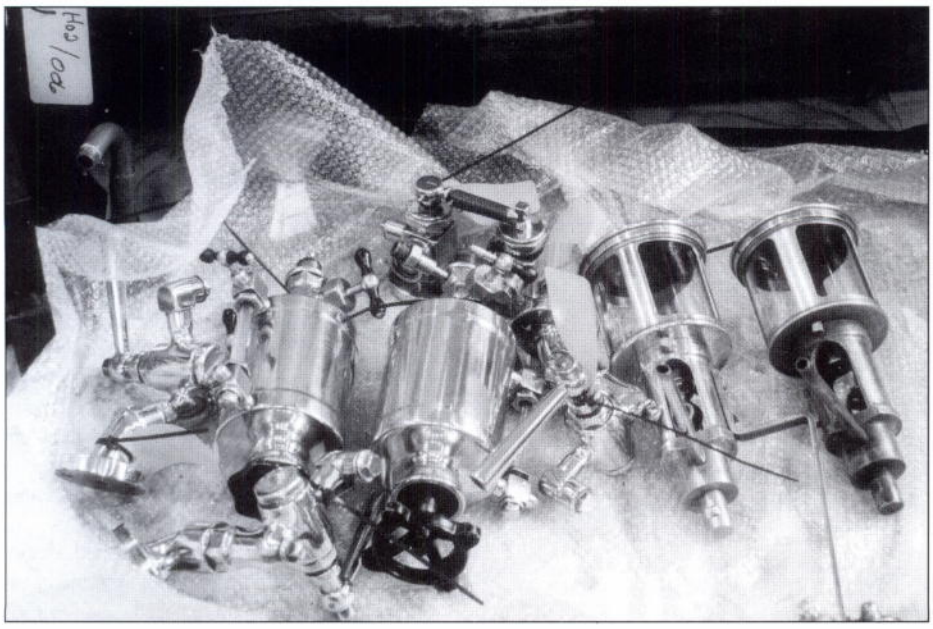
The crankshaft main bearings, each comprising of a lower white metalled bronze section and two cheek bearings, were removed for inspection, again using our jacking frame. On removal of Helen's lower bearing the white metal cascaded to the floor in a dramatic impersonation of shattered glass. These triple-pieced bearings had to be re-babitted and machined using almost 0.5 tonnes of high tin content (95%) white metal.

Loss of vacuum was due in part to the failing air pumps but the most significant cause was the wrongly adjusted valve gear itself, ushering steam straight through the LP cylinders to the condenser causing volcanic eruptions in the airpumps.



Taken apart: restoration underway on the Trencherfield Mill engine *Photo: Heritage Engineering*

Paintwork restoration provided the recurring dilemma of what period or colour to restore to, mitigated to some extent by poor adhesion of all the layers to the iron and intermediate layers put down on greasy surfaces, in effect, making the decision for us. Sampling proved the original scheme had been green and cream, indeed matching a band of similarly coloured glazed brick around the engine house. There was no alternative but to remove all the paint from the engine and clean the cast iron surface to allow good adhesion. The original colour scheme was restored.



Gleaming brass fittings for the Trencherfield Mill engine *Photo: Heritage Engineering*

The above gives a very brief summary of the more significant milestones of the restoration but there were a plethora of smaller but vital tasks from restoring the (largely non-functioning) pressure lubrication system (the reason for such a high rate of component failure) to building a rig to clear the corliss valve operating lever oil seal system using oil at 40,000 pounds to the square inch to clear blockages.

We believe that the depth of restoration carried out in this case is unusual (along with some of the techniques developed) and will no doubt add to the long running debate about how far to go in such cases but we have learned a tremendous amount about this engine during the restoration. We would suggest that an engine under steam, with a comprehensive maintenance regime and intensive training of the operating staff in good engineering practice established, along with a good conservation record, will survive in good condition beyond those allowed to stand idle with dubious internal 'mini environments' creating havoc below the probably gleaming exterior. Thus knowledge of the engine as a working entity is passed on.

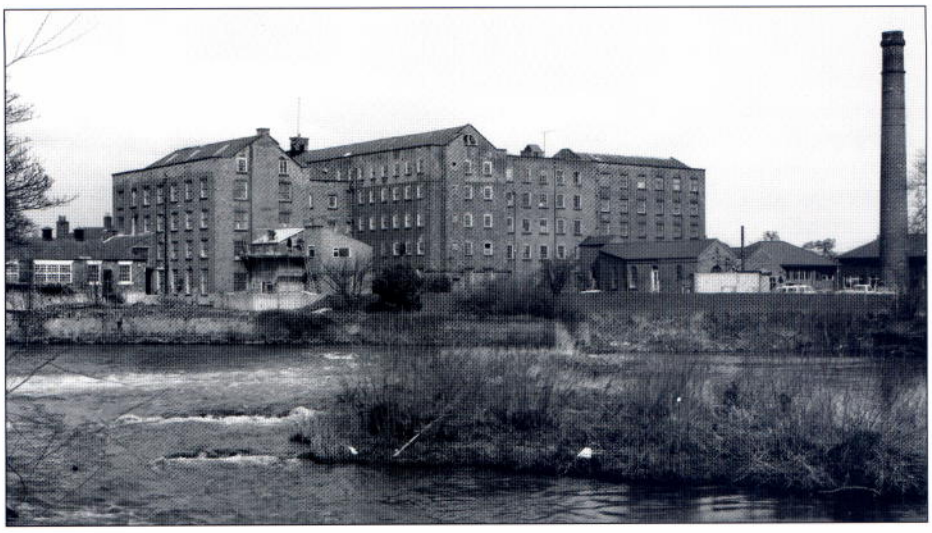
WMBC is justifiably proud of its engine (as Heritage Engineering are in having been involved) and are establishing a volunteer group to complement the full time staff. The engine became operational again in September but has been open to the public throughout the restoration. Not wishing to enter the fray of 'biggest' and 'best', here are some statistics for the reader's interest:

Tandem twin triple expansion with one high pressure cylinder, one intermediate cylinder and two low pressure cylinders, 25ins, 40ins and 44ins diameter respectively.
Stroke 60ins
Power 2,500 hp at 65 rpm
Flywheel diameter 26ft 6ins, weight 70 tons.
Rope speed 90 feet per second.

Boar's Head Mills, Darley Abbey

The Boar's Head cotton mills at Darley Abbey on the northern outskirts of Derby have long been inaccessible to industrial archaeologists, but now the site has been subjected to a detailed survey by English Heritage. The buildings have been found to be of special interest for their demonstration of the use of innovative fireproof constructional techniques. The author is Senior Investigator and Team Leader in the York office of English Heritage.

Adam Menuge



West, Long, Middle and East Mills in 1975

Photo: English Heritage

The large Boar's Head complex of cotton mills, developed by the Evans family from 1782, takes its name from the Evans family crest, which was also adopted as the company trademark. The complex has been of interest to industrial archaeologists for many years, but as it has remained in industrial use throughout its life (albeit not for textile manufacture since 1970) there have been few opportunities to explore its development in detail. Historians have been hampered by the loss of many of the company records, and Jean Lindsay's 1960 article on the business history, capitalising on the period up to 1810 for which the surviving documents are most extensive, has remained a solitary exception (*Business History Review,* 34 (1960), 277-301).

A pioneering investigation by Arnold Pacey and Stuart Smith in 1968, deposited in the National Monuments Record, identified the existence of an important early iron roof in West Mill. A brief inspection by the RCHME in 1988 refined Pacey and Stuart's analysis, distinguishing two forms of roof in West Mill, and offering a tantalising glimpse of 'fireplates' sheathing the timbers of the earlier Long Mill. In spite of these advances the site remained much less well known, at least in detail, than Arkwright's complex at Cromford, or the Strutts' at Belper and Milford. Given the early origins and extensive survival of the buildings at Darley Abbey, this has been a source of some regret, and has stood in the way of a more rounded appreciation of the early development of the cotton industry in the Derwent Valley.

The decision to seek World Heritage Site status for the Derwent Valley was a spur to action. Through the generosity of the present owners and occupiers, and with the support of Derby City Council and the Arkwright Society, the whole site was investigated and surveyed by English Heritage in 2000. As a result we are now in a position to judge more precisely the significance both of the site as a whole and of the individual buildings.

The Evans family had extensive industrial interests long before they embarked upon textile manufacturing, with a portfolio that included metals, paper and banking. They were acquainted socially and in business with Richard Arkwright, and they also acquired the custom of the Strutts, with whom they intermarried. Their first mill, now known as Long Mill, was built in 1782-3, but suffered a serious fire late in 1788 and was rebuilt the following year. At 17 bays and five storeys plus an attic, it is large for its date (a reflection of the ample power afforded by the Derwent) though it is not as large as Arkwright's almost contemporary Masson Mill. A substantial addition, now known as Middle Mill, is difficult to date precisely; it followed the re-routing of the original mill leat between 1798 and 1800 and may be the 'New Wheel House' for which accounts survive in 1804-5. It was badly damaged by fire in 1947, as a result of which it was re-floored and re-roofed.

The Evans family were distinguished more by their business acumen than by the technical prowess in which both Arkwright and the Strutts, in different ways, excelled. Nevertheless, much of the interest of the buildings at Darley Abbey lies in the light they shed on the development of fireproof constructional techniques, either borrowed from the Strutts or developed in partnership with ironfounders increasingly skilled in the necessary techniques.

The earliest application of the new technology was on land made available to the north of the mill by the re-routed leat. Here a wood yard was established in which the principal building, built in two phases between 1797 and 1801, has emerged as a rare surviving example of the proto-fireproof constructional technique pioneered by William Strutt in the 1790s. The technique was well documented by H.R. Johnson and A.W. Skempton prior to the major mill clearances at Derby, Belper and Milford (see

West and Long Mills

Photo: English Heritage

Transactions of the Newcomen Society, 30 (1955-57), 179-205), but until recently there were thought to be no extant examples. The brick vaults of the ground-floor ceiling spring from timber skewbacks attached to timber beams, and the undersides of all three features are covered with plaster. Cast-iron columns, of the same rounded cruciform sectional form as the Strutts used at their fully iron-framed North Mill, Belper (1803-4), support the beams at mid-span.

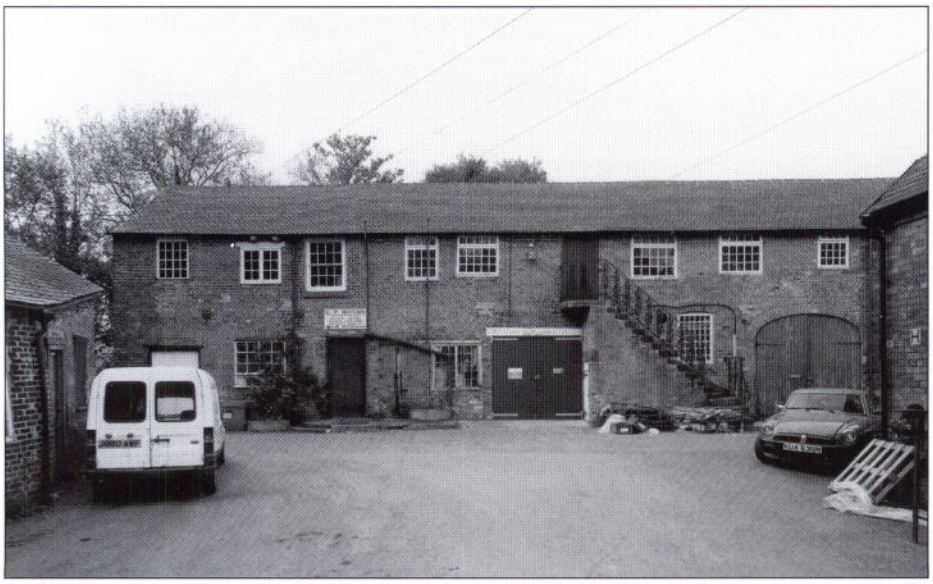
As originally built, the Wood Yard building consisted of two storeys, with the five brick-vaulted bays placed centrally within conventionally floored two-bay ends. The upper floor was sufficiently well lit to function as a workshop, but on the ground floor the two outer fireproof bays correspond to cart openings in both the front and rear walls, and are walled off from the three remaining bays as well as from the two-bay ends, each of which incorporated a chimney stack against the gable wall. Such a complicated differentiation of internal spaces suggests a highly specific range of functions, which, however, remain conjectural. As a result of the recent investigations at the Boar's Head Mills this building is now listed Grade II* for its technological interest. Subsequently another example, dated by documentary evidence to the period 1798-1811, has been identified as the former Bump Mill of Hewitt & Bunting, now part of the Walton Works on Chatsworth Road, Chesterfield. This differs in having the timber skewbacks sheathed in metal as a further protection against fire.

A major chapter in the development of the Boar's Head site commenced in 1818 with the construction of East Mill, adjoining Middle Mill. The five-storey extension is built in iron-framed fireproof construction and is particularly noteworthy for the form of its cast-iron roof. This has a king-post mounted on a low-set collar and employs simple iron-keyed joints at the foot of the king-post. The roof has stood the test of time, but when West Mill was begun just three years later an entirely different form was adopted, mixing cast- and wrought-iron elements. This was in turn slightly amended during the two-phase construction of West Mill (one phase bridges wheel-pits in a second mill leat). A number of other iron roofs followed between the 1820s and the 1850s. That of the three-storey North Mill, built c1835 following another diversion of the first leat, is recognisably descended from the West Mill roof.

The iron roof in West Mill *Photo: English Heritage*

A feature of both North and West Mills is the use of metal plates to protect the timber ceilings separating the top floor from the roof-space. Plates are also found protecting all the exposed timbers (beams, joists, lintels and roof timbers) in Long Mill. Since there is some variation in size it is not impossible that those in Long Mill represent an early expedient, along the lines of Hartley's fireplates, designed to safeguard a mill of conventional construction. All the evidence, however, points to their being secondary, and perhaps as late as the construction of West Mill from 1821 onwards.

The Boar's Head Mills are important for a variety of reasons, not least for their very considerable integrity of survival. Most of the buildings erected between the 1780s and the middle of the nineteenth century remain, including ancillary buildings such as the bobbin shop and two of the coppice barns used to store and dry timber. The English Heritage survey (Historic Buildings & Areas Research Department *Report Series* B/002/2003) will help to place the buildings more firmly within their regional and technological context.



The Wood Yard building *Photo: English Heritage*

Understanding the Workplace: an agenda for IA in Britain

In June 2004, a two-day seminar entitled 'Understanding the Workplace: an agenda for industrial archaeology in Britain' was held in Cripps Hall in Nottingham University. Funded by AIA with a subsidy from English Heritage, its aim was to provide a research context for work on the historic environment by the statutory heritage organisations and archaeological units in Britain.

Marilyn Palmer & Peter Neaverson

Back in 1991, AIA published a document called *Industrial Archaeology: working for the future.* The result of widespread consultation with a range of specialist groups, this attempted to recommend priorities for research and conservation in industrial archaeology. More than ten years later, AIA Council felt there was a need to revise this document and to join other specialist groups in producing a research agenda for our discipline.

Archaeology underwent a radical change during the 1990s, with an increasing emphasis on developer-funded activity. This prompted English Heritage to sponsor a programme designed to provide local authority archaeologists with a framework for making judgements about the relative importance of the sites on which work is being undertaken. Such research agenda have already been published at the national level for the Iron Age and the Roman periods, while the production of regional research agenda is also well under way. The scope of industrial archaeology, too, has undergone changes, with considerably more emphasis being placed on the social and economic as well as the technological context of the development of industry.

The two-day seminar in June 2004 was attended by over 60 people, the majority from the archaeological community in the regions as well as the major heritage bodies. They heard 22 papers on a diverse range of topics, given by members of English Heritage, the Royal Commissions in Scotland and Wales, contract and local authority archaeologists and university academics.

The first session provided the framework, including an introduction on 'Research frameworks in industrial archaeology' by Marilyn Palmer (University of Leicester) and a paper by Shane Gould (English Heritage) on the difficult topic of the changing statutory framework in which archaeologists work. Paul Belford of the Ironbridge Gorge Museum Trust outlined the role of the archaeological consultant, while Helen Gomershall of West Yorkshire Archaeology Service has since offered to supplement this with a paper on the role of the curatorial archaeologist. David Thackray, the chief archaeologist for The National Trust (which owns a great many industrial sites) discussed the place of statements of significance in assessing their importance, while Miles Oglethorpe of RCAHM Scotland talked about the role of industrial heritage in defining national identity.

Two sessions followed on 'The Workplace' and 'Industrial Settlement'. In the first, Ray Riley (University of Portsmouth) bravely tackled the topics of production and consumption, while Ian Mellor of the University of York looked at the use of spatial and access analysis in understanding the use of space in textile mills. In the second, Jim Symonds from ARCUS (University of Sheffield) had offered a paper on recording industrial archaeology in an urban environment, but was at the last minute unable to attend. His paper will, however, be included in the publication. Geoffrey Timmins from the University of Central Lancashire looked at landscapes of outworking, while Eleanor Casella of the University of Manchester described her work on twentieth-century settlement at Alderley Edge in Cheshire and pointed out the value of excavation even in such a recent context.

The after-dinner slot was filled by the AIA President, Professor Angus Buchanan, with a retrospective from his long experience in the discipline as well as his thoughts for the future. He was joined by Keith Falconer, Head of Industrial Archaeology in English Heritage, to talk about spreading the boundaries of industrial archaeology beyond the confines of Britain. Animated discussions of all these papers took place afterwards in the bar!

The subject of transport got a brief consideration on Sunday morning, with two quaintly titled papers – David Alderton of AIA on the role of transport in a rural area, called 'The chicken or the egg? Industry and transport in East Anglia', while David Gwyn (Govannon Consultancy, Caernarfon) looked at North Wales in his presentation, 'Closely observed trains: the landscape of the Vale of Festiniog'. The question of the relationship between industry and landownership occupied the remainder of the Sunday morning, with a paper from Michael Nevell (University of Manchester Archaeology Unit) on the 'Manchester Methodology' developed by himself and John Walker for studying the industrial growth of Tameside. This was followed by Marilyn Palmer (University of Leicester) looking at the role of technological innovation on the nineteenth-century country house estate and David Crossley (University of Sheffield) on the important role played by woodland in industrial processes. Justine Bayley of English Heritage, whose paper on the role of archaeological science in industrial archaeology could not be included in the seminar, has offered to submit this for the publication. The session ended with a paper from Paul Barnwell, also of English Heritage, on agriculture as industry, looking especially at the farmsteads in the uplands of northern England and southern Scotland.

The final sessions considered the archaeological evidence for the lifestyles of the workforce engaged in industrial activity, an area of research which has excited considerable interest in recent years. Jason Wood of Heritage Consultancy Services took as his title 'Talking Sport or Talking Balls? Realising the value of the sports heritage', describing a pilot project mostly concerned with football stadiums originally undertaken for English Heritage. Not to be outdone, Shaun Richardson (Ed Dennison Archaeological Services Ltd, Beverley) discussed cinema-going under the title of 'Welcome to the cheap seats: cinemas, sex and the landscape', using oral as well as building evidence to elucidate what was once a major social activity of the twentieth-century workforce. Religious life was also important to them, and Stephen Hughes described the work undertaken by RCAHM Wales on the many churches and chapels in Welsh industrial settlements. Dr Sarah Tarlow (University of Leicester) appropriately concluded the seminar with a comprehensive paper on 'Death and commemoration', looking at the evidence of churchyards and cemeteries for what she has described as 'the archaeology of emotion'.

This packed programme left little time for formal discussion, but a brief paper for comment will be circulated to all those who attended the seminar prior to the publication of the papers. This will take the form of an extended issue of *Industrial Archaeology Review* edited jointly by the present and past editors of the journal in the course of 2005. Meanwhile, we would like to thank all speakers for their enthusiastic participation in the formulation of a research agenda for industrial archaeology, and English Heritage and The National Trust for their support.

AIA Annual Conference 2005

in Derbyshire based at Nottingham

2 – 8 September 2005

Details when available from AIA Liaison Officer (address on page 2)

Marilyn Palmer to receive SHA's Award of Merit

Prof. Marilyn Palmer, who took over as AIA Chairman at the annual conference, has been selected to receive the Society for Historical Archaeology's Award of Merit for the year 2005. The award recognises her role in ensuring the acceptance of industrial archaeology as an academic discipline, her services as a Commissioner with the RCHME and on committees concerned with IA for English Heritage and the National Trust, and her work to integrate IA within mainstream archaeology. Her research and publications on buildings and landscapes have set new theoretical and methodological horizons and have helped to make historical and industrial archaeology respected elements of academic archaeology in the UK. The society from the USA is holding its conference in York, England, in January 2005, where the award will be presented.

A tax message from the Treasurer

Congratulations to those members who responded to last year's appeal to sign a Gift Aid declaration. We obtained over 100 new declarations, many of which were from members of long standing. Our claim from Inland Revenue was for a total of £4,300 of which about £3,000 was back-dated claims related to these long standing members. I know that there are still well over 100 members who have not made Gift Aid declarations. We shall appeal again to them this year and I hope their response will enable us to achieve an even larger cheque from Inland Revenue next year. The response will be important in our review of the subscriptions for 2006.

Secondly, there is Income Tax Relief in respect of Membership Subscriptions. This is important to members who have income from professional IA work. We have now received a letter from Inland Revenue telling us that AIA's name will be added to the list of approved bodies when it is updated later this year. If you wish to claim before our name is on the list tell your Tax Inspector that the letter of approval was dated 7 September 2004.

Richard Hartree

The President's Award

After some considerable delay, AIA Secretary Barry Hood presented the 2002 conference's President's Award to the Summerlee Heritage Centre on 22 September.

Home Counties correspondent

Phil Morris is handing over the job of *IA News* Home Counties Regional Representative, and we thank him for his input over recent years. His successor is Henry Gunston, who is a member of the Vale of White Horse IA Group, which is based in Wantage. Henry has a variety of research interests, including the development of railways in East Africa and the history of weirs, sluices and other engineering structures on inland waterways and reservoir dams. Henry will be pleased to receive current information on IA-related activities within Bedfordshire, Berkshire, Buckinghamshire, Hertfordshire (Henry's 'county of origin') and Oxfordshire. His address is: 6 Clement Close, Wantage, Oxon OX12 7ED.

The Dorothea conference puzzles

Mystery objects for the entertainment of conference delegates this year were provided jointly by myself and Tony Parkes. The 'box with handle' was bought recently in a flea market in Bulgaria. It is beautifully made but I have no idea what it is. The seller had no idea either! One delegate was positive that the curious 'ball and ring' tongs were for leading a bull by the lips having 'seen one in use'. It must have been one very angry bull! It was in fact for distorting shoes to make room for bunions. A respectable looking piece of hand-powered engineering equipment was clearly some form of boring machine, but no-one guessed its use correctly. It is a 'boxing engine' used by a wheelwright to bore the hole through a newly assembled wheel to take the tubular bearing or 'box' which ran on the axle.

Tony Parkes provided what is believed to be either a 'vernacular' rug-making hook, a device for securing a clothesline after hoisting up loaded with washing, and a precision machinists' 'go/no-go' gauge, (or possibly a toffee hammer!).

100% of donations will go to the Bulgarian Partners Trust, which supports humanitarian work in that country. I am Hon. Secretary.

Geoff Wallis

AIA AWARDS 2004

The winners of AIA-sponsored awards were announced and presented at the time of the AGM at the Hatfield Conference.

Dorothea Award

The Swannington Heritage Trust project to restore Hough windmill was this year's winner of the AIA-Dorothea Award for Conservation. Denis Baker, Chairman, and Martin Bird, volunteer and producer of their excellent printed brochure were at the Conference to receive their award. The derelict tower mill in Leicestershire was bought in 1994 and has been carefully restored with help from the National Heritage Lottery Fund.

Essays Awards

There were just two entries in the Student category and this year's winner was Tegwen Roberts, on twentieth-century company archives. An abstract from this essay will be published in the next issue of *IA News*.

Publications Awards

The entries for the 2004 competition were as follows. There were five entries in the Occasional Publication category covering a wide variety of topics and the judges were presented with a difficult problem in the selection of the winner. The entries were: *Driven by the Dane: nine centuries of waterpower in South Cheshire and North Staffordshire,* by Tony Bonson (published by the Midlands Wind & Water Mills Group); *The Wey Navigations: an historical guide,* by Alan R. Wardle (published by the Surrey Industrial History Group); *Saddleworth Villages,* by Neil Barrow et al (published by Saddleworth Historical Society); *Where shall we build the waterworks? A Waterworks Museum adventure in science, technology, geography and history for secondary school pupils, years 9 and 10* (published by the Waterworks Museum, Hereford) and *A Guide to the Industrial History of the Borough of Waverley,* ed. by Glenys Crocker (also published by the Surrey Industrial History Group).

The winner was *A Guide to the Industrial History of the Borough of Waverley,* ed. by Glenys Crocker. This booklet was an enlarged and up-dated version of one published in 1985 and is the eleventh in a uniform series of guides issued since 1991 which cover the whole county of Surrey. The Award was presented to the Editor, Glenys Crocker, by our President, Professor Angus Buchanan at the AIA Conference held at Hatfield in August.

In the Newsletter category, no entry was received and only one entry was received in the Regular Journal category for which no award was made.

Entry forms for the next competition will be mailed to AIA-affiliated societies in due course. Please submit your entries.

Peter Neaverson

Fieldwork and Recording Awards

This year there were five entries for the Fieldwork and Recording Awards. Three were entered for the Main/Initiative Awards and two Student entries. As usual they covered a diverse range of subjects.

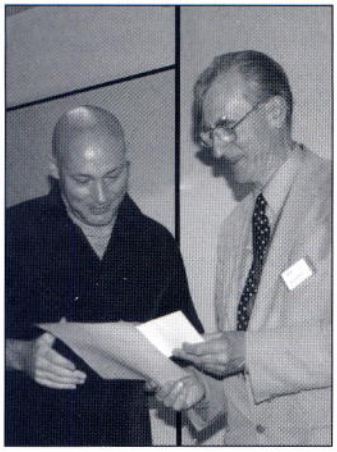
The main award went to Mike Nevell and John Roberts of the

One of the Conference puzzles (the thing, not Geoff)

University of Manchester Archaeology Unit for the Park Bridge Industrial Archaeology Landscape Project that was funded by the Heritage Lottery Fund, Oldham MBC and Tameside MBC. This included a number of reports including those on the Tramway at Ashton, Top Forge, Coke Ovens, Bright Shops, Rocher Vale nineteenth-century pumping Engine, Fairbottom Bobs (two nineteenth-century cottages), a Newcomen type atmospheric engine, Bottom Forge and a desktop survey of the Park Bridge Ironworks. There was also a summary of the excavation and survey works from 1999-2002 and a published book entitled *Park Bridge Ironworks and the Archaeology of the Wrought Iron Industry in North West England 1600-1900* (ISBN 1871324 270 available from University of Manchester Archaeology Unit for £10).

According to Owen Ashmore in 1969, Park Bridge ironworks complex was the largest surviving example in the county and an industrial community based on engineering. The ironworks was established in the 1780s due to the availability of waterpower and the demand for textile machinery in the nearby cotton towns of Ashton and Oldham and later local coal supplies and improvement in communication routes helped the site to expand into the remote parts of the Medlock Valley. The works is unusual in that it continued to specialize in wrought iron products into the late nineteenth century. The works closed in 1963 and several parts were demolished in the early 1970s. In 1971 the Medlock Tame Valley Conservation Association was formed to protect the area. Most of the remaining buildings show common design features associated with buildings of the engineering industry and are primarily function. Most common are single-storey, multi-gabled glazed roof sheds. The work on the Fairbottom Bobs engine sites illustrates just how much can still be learnt from sites that have been dismantled a long time ago.

The reports contain information on the physical setting of the site, the archaeological and historical setting, detains of significant remains and potential remains as well as background data and documentary sources. The book assesses the iron industry of the North West prior to 1900, the association of the ironworks with the Lees family and the remains of the Park Bridge site including the colliery and tramway. The judges concluded that this was a very impressive body of work and 'considerably advances the standard of the detailed study of a regionally important site.' The popular publication was also much praised as it made the specialist material in the reports more accessible.



AIA President Angus Buchanan presents Thomas Saul Crawshaw with the Student Award for his work on Manchester cemeteries and graveyards

Photo: Jonathan Briggs

Stanley Challenger, winner of The Initiative and Lifetime's Achievement Award for his work on The Lancashire Textile Project, is seen with Recording Awards Officer, Dr Victoria Beauchamp

Photo: Jonathan Briggs

The Initiative Award went to Stanley Challenger Graham for The Lancashire Textile Project. The result of 30 years' work, much of it voluntary, is a huge archive of primary material that details the lives and work experiences of Lancashire textile workers. Stanley, a former engineer at Bancroft Shed was responsible for running the steam engine, realized that the industry was dying and began to record it. The project was funded by the Department of the Environment and based at the Pendle Heritage Centre. Before Bancroft Mill closed the buildings and the working practices were recorded using sound recording and photography. A comprehensive social life questionnaire covering household, housing and housework, clothing, family life, social life outside the home, politics, education, health, work and marriage resulted in transcripts that record for prosperity the life of mill workers in the early and mid twentieth century. The project is accessible via three CD ROMs that contain all the transcripts, 500 photographs and memoirs, articles and other supporting documents. As a result it was decided to award Stanley with a Life Time Achievement Award. (More information can be found at www.oneguyfrombarlick.co.uk, or from Stanley himself at Stanley@barnoldswick.freeserve.co.uk).

The Student Award went to Thomas Saul Crawshaw for 'An archaeological consideration of the condition and heritage of the burial spaces of Manchester from the late nineteenth onwards'. Section 1 looked at the differences between a graveyard and cemetery, Section 2 looked at three disused burial spaces in the Cheetham Hill area of Manchester (St Luke's, St Mark's and a Wesleyan Burial ground) and Section 3 assessed the condition and problems faced by municipal cemeteries in Manchester. The first site St Luke's, after support from Manchester's Georgian Group, Victorian Society, Civic Society, Friends of Friendless Churches and English Heritage was saved an has become a wildlife garden for an adjacent school. St Mark's is neglected and continues to deteriorate and the Wesleyan site is now under a retail park. The report documents the problems of redevelopment and people's reactions to exhumation and re-interment. The report finally concludes that burial sites are at risk from vandalism, lack of finances and manpower, and from the weather. To save them and record them Crawshaw suggests that local/national government and historical archaeologists must become involved and as a nation we should cease to take burial sites for granted.

A Highly Commended certificate was awarded to Alice Hall for her student entry 'What can bottle evidence from Alderley Edge reveal about domestic life during the industrial revolution.' This was an original piece of work whose theories have potential when assessing domestic sites of the industrial period. The report was based on the excavation of Hagg Cottages, built in the 1740s and adjacent to the Alderley Edge mines. The report looked at what bottles might be able to tell us about food and drink consumed, the type of medicines available in the period and how far these products were travelling. Through a questionnaire the author tried to assess the impact of brand names in the mid years of the twentieth century. Some assessment was also made of the firms that produced these products.

The final entry was from Simon Underdown and Robert Smith for a Building Survey and Photographic Record of the former Malthouse, Kerrison Road, Norwich. Surveys were carried out to the RCHME Level 3 and included plans and photos. The building dates from 1824 and consisted of a malthouse with long germination room, two furnace kiln towers and malters' cottages. The report provides a good record of the building and is therefore part of the overall picture of the development of the malting industry and Norwich's part in it.

The winners attended the AIA conference at Hatfield and gave poster presentations of their work. A big thank you to the judges, Amber Patrick, Keith Falconer and Jim Symonds for their time and effort in marking the entries. Entries for next year should be submitted by 1 March 2005.

Victoria Beauchamp

A report from Rhode Island

The Annual Conference of the Society for Industrial Archeology was held at Providence, Rhode Island, USA, on 10-13 June 2004. As much of the state faces onto Narraganset Bay, Rhode Island has always had a strong maritime focus. But textiles formed a major part of the economy in the nineteenth century and the story of Samuel Slater who took Arkwright's cotton spinning technology to the United States in 1790 and established what is considered to be America's first cotton spinning mill, at Pawtucket, is well known. As the industry expanded in the nineteenth century, a diverse engineering industry developed in its wake. But the textile industry went into decline from the 1920s and much of the state's industrial base followed. Very little of the old industries now survive, but we were able to visit two surviving textile companies.

Slater Mill in Pawtucket, still stands and is a designated Historic Site housing a museum of textile machinery, while the adjoining Wilkinson Mill of 1810 houses a display of historic machine tools. The opening reception of the Conference was held here on the Thursday evening. We were allowed to wander freely round the exhibits, rather than being taken on a guided tour as public visitors are, and staff were available to tell us about the exhibits. But, as with certain prominent museums in this country, the staff seemed to know remarkably little about the machinery in their care and could do little more than 'spin yarns' about the hardships of children working in the mills. For those who had arrived earlier on Thursday there had been a choice of a walking tour around Providence or a visit to Cranston Print Works. Cranston Print Works is one of the surviving textile firms in New England and operates on two sites, at Cranston which houses the design studio and engraving works, while printing of cloth is carried out at Webster on a site established by Samuel Slater in 1812. The cotton cloth used is largely imported from China.

Friday was devoted to all day tours, with choices covering marine industries or military sites, excursions to the Upper and Lower Blackstone Valleys, into south-east Massachusetts, or the Pawtuxet Valley. The Blackstone Valley running up to Worcester in Massachusetts, was heavily industrialised. The Pawtuxet Valley was a lesser valley but also heavily industrialised with a large concentration of textile mills and this was the tour I selected. We started at the Scituate Reservoir and water treatment works before proceeding to Hope village where we had hoped to go inside the Hope Mill, which is partly used for narrow fabric weaving and still uses two 1894 turbines. Unfortunately the owner had been called away so had to be content with viewing the exterior. However, later in the day we were able to go inside Arctic Mill, a multi-storey spinning and weaving mill dating largely from 1865, although no longer used for textiles. This mill also used turbines for power generation and electricity is still generated on site from a turbine installed in 1984. We had a more comprehensive tour round Anthony Mills where the spinning mill of 1872 is now largely empty, enabling us to study its structure, while the weaving mill of 1909 is occupied by Concordia, another surviving textile firm. Concordia have survived by specialising in twisting and doubling of filament yarns for medical and industrial purposes. We did pass a number of other mills en route which, regrettably, we had not time to stop and photograph except for the Lippitt Mill of 1809. We also stopped to view the Arkwright Bridge, a Platt truss bridge of 1888, and visited the New England Wireless and Steam Museum. This museum has a collection of mill engines, which are run on steam, together with a collection of early electronic equipment and a fully operational wireless telegraph station of 1907. This is a museum created and run by enthusiasts who are knowledgeable about the machinery in their care; see their informative web-site at http://user.ids.net/~newsm. The evening was devoted to 'Show-and-Tell', the SIA's equivalent to the AIA's 'Members Contributions', held in the former Union station building now occupied by the Rhode Island Foundation.

Saturday was paper sessions, with parallel sessions so you had to choose which to go to. Some sessions comprised papers devoted to one clear theme, such as museums, bridges and World War 2 shipyards in Richmond, California, while others had a less clear focus. Papers included a presentation by Mark Watson of Historic Scotland on the TICCIH list of textile sites; Sara Wermiel on heavy timber framing in New England, distinguishing between the 'slow-burning' system used in mills and 'warehouse' construction; and Charles Parrott on tall factory chimneys. The day was rounded off by an evening cruise down Narragansett Bay with on-board buffet, forming a most acceptable alternative to the slightly formal Conference Dinner we have at the AIA conferences.

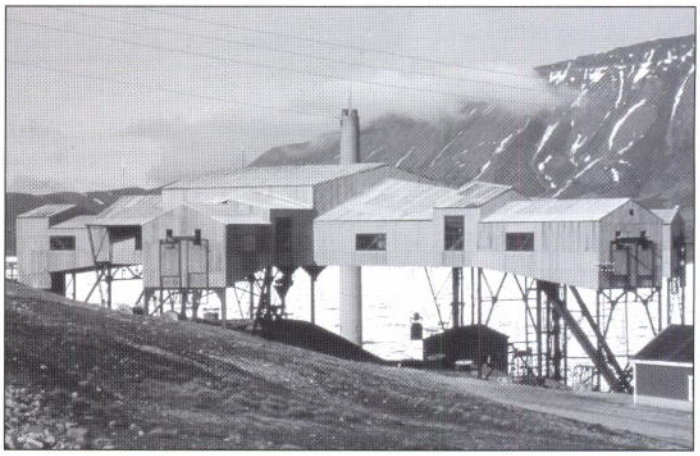
Finally on Sunday, there was a choice of tours covering iron making or 'IA and Environmental History'. The latter was really a tour of the Lower Blackstone Valley looking particularly at the way water supplies had been used to power industry. To this end we visited a number of mill sites including Pawtucket, Central Falls, Lonsdale, Georgiaville and Allendale, finishing back in downtown Providence where the courses of the two rivers which meet here have been subjected to considerable alteration over the years.

So, as last year at Montréal, water power was a major theme. Although mills and other industries did use steam engines, with Providence being home to some major engine builders, the availability of abundant supplies meant that water remained an important source of industrial power long after it had ceased to be so in this country. Indeed water is still being harnessed for industrial power. The various mills visited gave opportunity to understand the American timber, slow-burning, system of mill building. Cast-iron columns were sometimes used but elsewhere columns were of wood. Compared with Lancashire mills, New England mills were much narrower to accommodate throstle, or later ring, frames but where mules were used they were installed longitudinally rather than transversely thus also fitting into narrower mills. Looms were also installed in multi-storey mills, although some north-light sheds were built in the early twentieth century when a mode of construction had been developed which could withstand heavy snow falls.

Roger N. Holden

Svalbard ropeways protected

On the Arctic archipelago of Svalbard there survive the physical remains of a hundred years of coal-mining. The most visible artefacts are the lines of timber pylons of the ropeway system which transported the coal across the ice and snow from the mines to the stockpile at the loading quay, to await the summer thawing of the sea ice and the arrival of the ships. I described the system in 'The industrial archaeology of Spitsbergen', *Industrial Archaeology Review* Vol. XXIV No.1, May 2002, 23-36, and that paper referred to the contradictory views on the one hand of those would preserve these important historical relics of remarkable human endeavour, and on the other of those who would sweep away the industrial 'eyesores' in an attempt to return to a pristine Arctic wilderness.

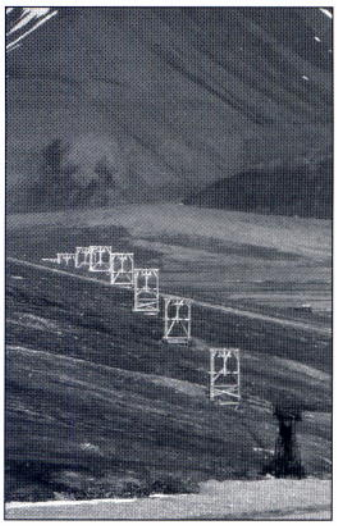


Ropeway central at Longyearbyen, Svalbard, now preserved by the Norwegian Government
Photo: Ken Catford

This dichotomy was expressed clearly in the 2002-03 annual report of the Polar Heritage Committee of ICOMOS (International Council on Monuments and Sites) which highlighted the extent of the argument, under the simple title: 'Polar heritage – rubbish or relics?' Even important relics from the heroic age of exploration and discovery in Antarctica are apparently under threat from those more extreme environmentalists whose ambition is that the polar regions should be swept clear of anything and everything man-made.

It therefore comes as a relief to industrial archaeologists, and no doubt to the dismay of some environmentalists, to learn that the Norwegian Government has come down firmly on the side of preserving the mining relics of Svalbard. The Directorate for Cultural Heritage has passed a law protecting some 10km of ropeway pylons, as well as the structure of 'ropeway central' at Longyearbyen which housed the ingenious interchange mechanism to direct the coal buckets between the different branch lines of the ropeway system. This structure is stated to be 'both architecturally and technically an important symbol for Longyearbyen and the development of activities in Svalbard. It is a unique piece of the totality of high Arctic cultural heritage.'

Ken Catford



The branch ropeway from Mine 5 in Endalen, Svalbard

Photo: Ken Catford

Buckland Windmill receives Conservation Award

The Surrey Industrial History Group has been making annual Conservation Awards to restoration projects in Surrey since 1983. The 2004 Conservation Award of SIHG has been presented to Dr Duncan Ferns for his restoration of the Buckland Windmill, at Buckland near Reigate in Surrey. The award was commemorated by the presentation of a plaque to Dr Ferns by Prof. Alan Crocker, President of the Surrey Industrial History Group at a ceremony on Saturday 17 July.

The Buckland Windmill is unique in that it powers a sawmill and wood-working machinery and is believed to have been originally constructed in the 1860s or early 1870s. Many of its components were found in the dilapidated mill building in 1994. Restoration began in 1995 and proceeded in stages, with advice from the Mills Section of the Society for the Protection of Ancient Buildings and with financial support for different stages from the Surrey Historic Buildings Trust, Mole Valley District Council, the BAA Gatwick Environmental Grants Scheme and the Enterprise Grant Scheme of DEFRA.

The mill is located in the garden of Dr Ferns' house, which dates from 1713 and was for generations the home of the estate carpenters of the Buckland Court Estate. It was the site of a commercial steam-powered sawmill from 1892 to 1950. Both the mill and the house are listed Grade II. For further details, see www.bucklandsurrey.net or contact Dr Ferns on fernsdc@hotmail.com, or ☎ 01737 843388.

Pontcysyllte Aqueduct revealed

During the winter 2003/2004, extensive refurbishment work was undertaken, under the guidance of Cadw: Welsh Historic Monuments, on the Pontcysyllte Aqueduct, which carries the Llangollen Canal across the Dee Valley linking the villages of Trevor and Froncysyllte. The aqueduct is a masterpiece in civil engineering, built in 1805 to the design Thomas Telford, who took over as company engineer from William Jessop. The 19 sandstone piers and cast iron trough tower above the meadowland, carrying the canal for a distance of 1,007ft at 127ft above the river.

Cast-iron plates were bolted together to form the trough measuring 11ft 10ins wide and iron supports in its bed support the 4ft 8ins wide towpath, leaving a width of 7ft 2ins for the boats. The ironwork was provided by William Hazeldine's foundry and cast at his Plas Kynaston works near Trevor. The high standard of workmanship was observed when the trough was dewatered. The works at Pontcysllte have included refurbishment of the Trevor canal basin, hopefully ensuring the survival of the canal for another 200 years.

Four miles south of Pontcysllte, Telford and Jessop had decided on

An unfamiliar view of the famous Pontcysyllte aqueduct's iron trough, revealed when the waterway was drained during recent refurbishment work in January 2004

Photo: Pat Frost

an aqueduct at Chirk to carry the canal over the Ceiriog Valley. The Ceiriog Aqueduct was completed in 1801, extending 700ft at 70ft above the river and meadowland. The aqueduct was the proto-type for the larger Pontcysllte structure. Although similar in construction, the aqueduct at Chirk has ashlar walls surmounting the piers, and the walls were backed by brick. Only the floor of the canal was formed by Hazeldine's cast iron plates. The existing full cast-iron trough was added in 1869.

Pat Frost

Northern viaduct appeal

The Northern Viaduct Trust owns two Grade II* listed viaducts on the former 1861 railway across the Pennines from Barnard Castle in County Durham to Tebay in Cumbria. Smardale Gill Viaduct, with 14 arches and 90 feet high, was rescued from demolition in 1989 and the award-winning viaduct now carries a footpath across a remote valley through a nature reserve. Podgill Viaduct, acquired in 2000, has 11 arches and is 84 feet high. It forms part of a new mile-long footpath created by the Trust on the bed of the old railway. The footpath is reached by the new Stenkrith Millennium Bridge over River Eden gorge on the southern outskirts of Kirkby Stephen.

Both viaducts are sturdy structures in local stone and are dramatic features in the landscape. They were designed by Cumbrian engineer Sir Thomas Bouch, whose reputation was later ruined by the collapse of the first Tay Bridge in 1879.

The Trust's limited funds have come entirely from grants and donations. Funds are now needed for future maintenance and to complete the Podgill footpath to make a circular walk suitable for wheelchair access. Information on how to make a donation can be obtained from Michael Pettigrew, Secretary to the Trustees, The Northern Viaduct Trust, Remlane House, 25-27 Hagley Road, Stourbridge, West Midlands DY8 1QH.

Double decker at Coalport

Coalport Bridge (rebuilt in iron c.1818) is currently being restored and a temporary footbridge has been erected to maintain the link. Work is due to finish in December 2004. Coalport Bridge is overshadowed by the Iron Bridge and tends to be overlooked by visitors. It is to be hoped that the present restorations will attract more visitors away from the established museum sites to explore the lesser-known eastern end of the Ironbridge Gorge.

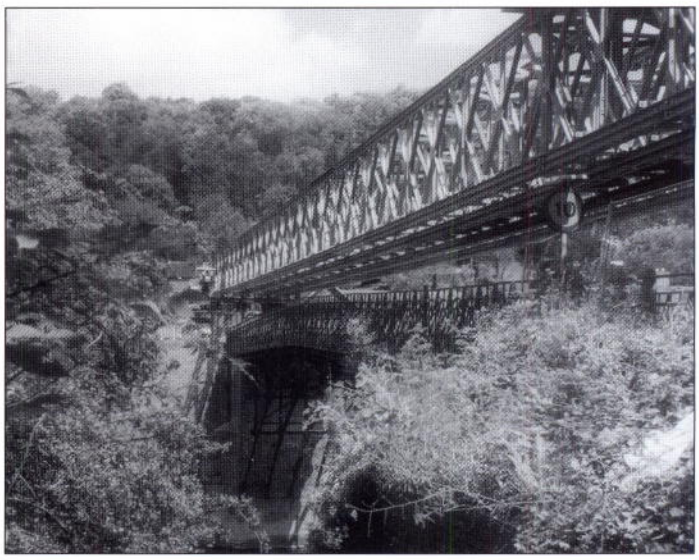
Paul Vigor

Coal mines close in France and England

La Houve mine at Creutzwald, Lorraine, was reported to have closed on 23 April. The end of French coal mining was marked by three days of festivities. In England, the Stillingfleet Colliery near Selby, Yorkshire, closed on 30 July.

Chris reads the News

Congratulations to Chris Irwin who appears to be the only diligent reader of *IA News*. He is the sole AIA member to have pointed out to your editor the 'deliberate mistake' in *IA News 130*. Of course, the caption for the funnel photograph on page 10 should read *SS Great Eastern*, not *Great Britain*!



The double-decker structure erected to maintain a footbridge link while restoration work is undertaken at Coalport Bridge across the Severn *Photo: P H Vigor*

The Editor welcomes correspondence on all matters of interest to our readers

Casting the Iron Bridge

Has Paul Vigor (Letters, *IANews 130*) mis-read my Iron Bridge paper in *Industrial Archaeology Review*, Volume XXVI:1, 2004? Surely the sentence at the top of page 7 makes clear the I also believe the large castings were 'cast at a riverside foundry – probably Bedlam' and not in the Square. This assumption is based on the practical evidence we gathered in the Timewatch experiment plus the supporting Rochefoucauld quotation. It is the deck plates that I think might have been cast in an air furnace in the Square, but only because the logistics make sense to move these castings as much on the level as possible. I do not claim to have any evidence for this yet. Someone has built the Tontine Inn and the Market buildings over the site, so doing a dig to discover any remains is problematic. Typological evidence of the radials, however, does suggest they may have come from three different furnaces – for which the prime candidates must be Coalbrookdale, Bedlam, and for those made as last minute alterations, the putative air furnace in the Square. There are reports covering this and much more, commissioned by English Heritage from us, that in due course will be published.

David de Haan
Programme Director
Ironbridge Institute
Deputy Director
Ironbridge Gorge Museum Trust
D.deHaan@bham.ac.uk

More re-used milestones

The re-used Dorset milestone described in *IA News 130*, page 12, is one of three that I know of, the other two being on the A354 Dorchester to Blandford road. The first is one mile southwest of Winterborne Whitechurch and reads 'Blandford 6 Dorchester 10' on the front and XXVIII miles to Sarum X to Dorchester VI to Blandford on the rear. The second is one mile northeast of Winterborne Whitechurch and reads 'Blandford 4 Dorchester 12 on the front and XXVI Sarum IV Blandford XII to Dorchester on the rear.

It has been suggested that a good reason for the milestones being turned round and re-cut is that the roman numbers were not so easy to read from a horse-drawn vehicle travelling at speed! It is quite possible that the damage is more recent than the change in lettering style. The Harnham, Blandford & Dorchester Trust expired in 1879, well before any motorised vehicle was around to bump into the milestone. The biggest cause of this sort of damage today is the dreaded tractor mower.

The milestone mentioned is one of 223 currently surviving in Dorset and is along one of the eight turnpikes that ran into Dorchester and on which milestones still exist today. Well restored milestones can be found along the Dorchester to Blandford route. Several other individual milestones around the county have been restored and the Dorset members of the Milestone Society are working hard to increase this number. Full details of The Milestone Society can be found on the website at www.milestone-society.co.uk where you can find details of how to contact your local regional co-ordinator.

John Tybjerg
Dorset Region co-ordinator,
The Milestone Society
27 Fernwood Close, St Ives
Ringwood BH24 2NQ

Skills, society and song

Nice try Tim! *(IA News 130)* But you prove the point. Had the local technologist and his skilled technician not produced the shadouf, the village writer would have had to help with the irrigation in order to earn his daily bread. He would therefore have had neither time nor energy to spend listening to and making the appropriate record of the 'song'.

Peter M. Hughes
6 Lingwood Close
New Mill, Holmfirth HD9 7NN

BELGIUM BECKONS

In April 2005, 'Belgium beckons' to the AIA, when the lesser-known but fascinating area in the south of Belgium around Mons and Charleroi will be explored. We give below a sample of the sites to be visited. The trip by coach will start from the UK and take in sites on the way.

The coal and steel industry in this area has dwindled in recent years but the group will be finding out what remains, including the early nineteenth century site at Le Grand Hornu. Here a remarkable oval iron-working complex was developed, planned with workers' housing round the edge, which was unique in Europe at that time.

Steel working was a major industry in the Charleroi area and Le Musée de l'Industrie in the industrial suburb of Marchienne au Pont, housed in an old forge, tells the story of iron and steel working in the region.

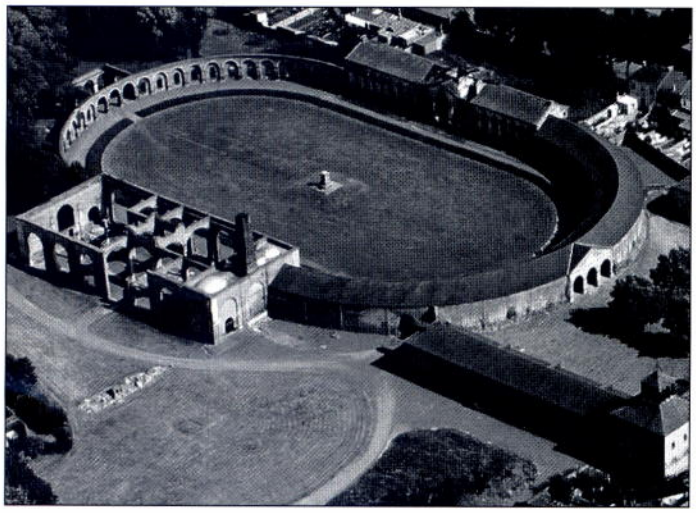
Two important former mining sites will be visited, including Bois-du-Luc in the Borinage, where mining began as early as 1838. This also features a planned workers' community with a newly restored 'Salle de Fêtes' originally built in 1854.

The tour will include a number of significant canal sites: Les Fontinettes, a boat lift built in 1888 at Arques in France, as well as the World Heritage Site, with four lifts, at la Louvière in Belgium on the historic Canal du Centre. Other canal sites will include the famed incline plane at Ronquières and the enormous new boat lift at Strepy Thieu.

Also included: a glance at the blue stone industry at Soignies, which could include a visit to the quarries and Couillet, the home of the first soda factory developed by Ernst Solvay after 1865.

The tour will leave the UK on Monday 18 April and returns on Friday 22 April 2005.

For further details please contact Paul Saulter, 80 Udimore Road, Rye, Sussex, TN31 7DY or www.heritageofindustry.co.uk



Wales

Archaeologists have been active monitoring and recording a number of industrial sites in Wales over the past year. In the autumn of 2003, Castlering Archaeology undertook a watching brief during the construction of a new entrance to Graig Park Country Club, Meliden, Flintshire, on land occupied in the nineteenth century by the Talargoch Mining Company. The mining complex includes the Grade II listed Clive Engine House, which stands as an imposing three-storey building adjacent to the Country Club site.

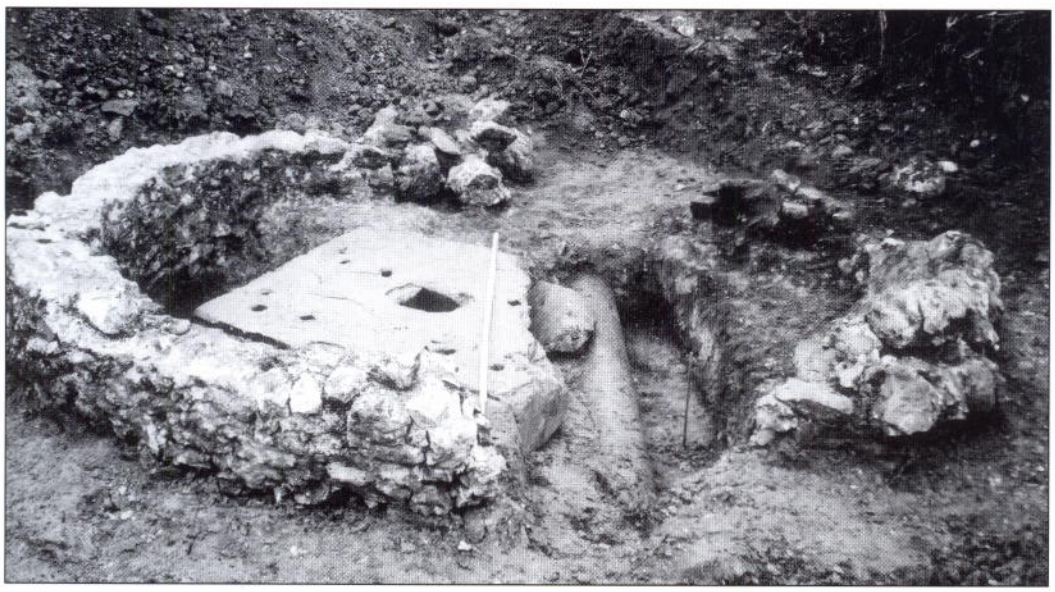
Considerable excavations were undertaken north of the engine house in an attempt to locate and assess the stability of a probable circular shaft which was recorded on the 1889 O.S. map. These excavations helped locate the limestone rubble walls of a capstan, a rare mining feature in the North-East Wales ore field. A stone slab in the centre included a series of circular rectangular slots where fixing bolts held machinery. This structure northwest of the engine house is presumably the capstan referred to in the 1883 Catalogue of Plant and Machinery, which refers to '240yds of steel wire rope to attach to a capstan.' Structural evidence of lead mining in North-East Wales is scant due to the low value attributed to industrial remains in the past, which has led to considerable loss of the physical remains. The capstan has been preserved *in situ*, although buried under archaeological supervision.

Since October 2003, Castlering Archaeology have also been monitoring a programme of coal extraction and reclamation prior to future development on the former site of Brymbo Steelworks being undertaken by Brymbo Developments Ltd. The site comprises 8.7 hectares of industrial land. The long history of iron and steel production dates back to the eighteenth century, when John Wilkinson, following his purchase of Brymbo Hall Estate in 1794, opened coal and ironstone pits and built the first blast furnace on site. Over the next 200 years, the site was continually expanded south and east of Brymbo village.

The Brymbo Steel Company was formed in 1884 and the first basic Open Hearth Furnace in Great Britain was in production in 1885, continuing until the 1940s. The flues of the open hearth furnaces are currently being uncovered as part of the reclamation scheme. Post WWII, Guest Keen & Nettlefolds took over and the steelworks developed into one of the biggest all electric steel making plants in the country, being the first to feed hot metal from the open hearth furnaces into the electric furnaces.

In 1990, the last steel was poured at Brymbo and the plant was fully decommissioned. The current works on site involve opencasting for coal, followed by a programme of reclamation, which will enable a mix of housing and light industry to be developed on the site. The early iron works site has been set aside as a heritage area. The monitoring programme has recorded successive phases of industrial activity, including the foundations of the coking plant established in the 1890s and the more recent concrete foundation of the Billet Mill and its cooling pits and fume extraction plants added to the site in the 1980s.

The position of the recently discovered capstan foundation close to the Clive Engine House at Graig Park, Flintshire *Photo: Castlering Archaeology*



Excavations reveal how part of the Graig Park capstan foundation had been cut through by a water main in 1963 *Photo: Castlering Archaeology*

Cambrian Archaeological Projects report that a large scale watching brief and detailed recording has been undertaken on the charging area behind the furnaces at Blaenafon Ironworks, Gwent, on behalf of Cadw. (The refurbishment of the site was reported in *IA News 130*, page 10). The excavation revealed two working surfaces, the later one composed of hard-packed ash covered with a limestone spread and in parts supplemented by cast-iron plates. It is suggested that the original working surface area of the charging platform was later reinforced by the addition of a limestone spread and when this began to suffer degradation it was supplemented by the addition of cast-iron plates. That these plates only appear outside Furnaces 4 and 5 may be evidence that these two furnaces were the last in production. It is believed the plates were made from the cast-iron loading platforms from the tops of previously demolished furnaces, possibly numbers 1 or 3. Short lengths of cast-iron tram tracks were found *in situ* on the charging area.

The other notable features uncovered were the flues. The gas tunnel running underground, along the length of the platform has been known for some time, indeed a section of it has been exposed to the south of Furnace 2. Its purpose was to collect gas, from the rear of each furnace, and feed it across the site in overhead cast-iron pipes to the steam engine house, where the highly flammable gas was burned as a supplement to the coal normally used by the engines, thus saving on fuel costs. A section of the gas tunnel behind the remains of Furnace 6 was investigated and found to contain a vertical shaft, exiting the stone retaining wall 4 m above ground level between Furnaces 6 and 4. Since they connect to the gas tunnel these flues are clearly associated with this system but their actual function remains one of some conjecture.

Local historian John Evans has suggested that the structures should not be seen as flues, but more as safety valves. He points out that during the smelting process the material within each furnace was often subject to sudden and violent slumping as the ore moved down the furnace and new loads placed on top. This slumping could easily cause a large volume of gas to enter the tunnel system and run a serious risk of rupturing the pipes. In this eventuality an escape mechanism for the surplus gas charge would be required and the 'flues' would appear to be able to fulfil this function well.

Cambrian Archaeological Projects also recorded buildings at the Emlyn Colliery and Brick Works (SN 582134) prior to demolition. The buildings were identified as a former locomotive shed, a brick kiln, joinery and a smithy shop, all associated with the colliery and brickworks. The brick kiln may date from around 1912/1915. It is a 16-chambered 'Hoffmann' transverse-arch kiln with a chimney stack approx. 25m high. The state of the kiln was essentially one of recent abandonment, with bricks scattered around in a 'down tools' fashion. Stacks of fired and unfired bricks filled the kiln gallery in all its northern chambers. A few unfired bricks were settled on the conveyor system that surrounds the kiln. The bricks were all blank, other than some newly fired bricks stamped 'LONDON'. There is evidence of repair work, probably that mentioned in documents in 1938. Within the walls of the north-west bay arches, a few bricks have their maker's name showing, 'E.J & J PEARSON'. The roof of the kiln appears to have been stripped of insulation material and several modern gas jet regulators were still in place, having replaced the earlier method of coal stoking. The earlier stoke-holes had been bricked up.

A third project by Cambrian Archaeological Projects was a watching brief at Genwen Quarry, Bynea, Carmarthenshire (SS 546996) when site investigation and landscaping works were carried out adjacent to Genwen Engine House. Coal mining had started at Bynea around 1766 but the existing beam engine house was built in 1805-6 for a 52-inch cylinder Boulton & Watt pumping engine. The engine house was altered in 1837 when a larger engine was installed and the quarry established at Bynea. Four trenches exposed a number of walls and brick vaults near the engine house, which may be associated with a railway terminal or ground stabilisation and the mineshaft entrance. The entrance to the adit was also revealed.

Pat Frost

North of England

The last year has seen two old coal mining pumping houses come up for sale. The first was the Stublick Colliery site (NY 833605), sold at auction 30 September 2003 and unfortunately the North Pennine Heritage Trust were unable to acquire the site. Prior to the sale the site consisted of a pumping house, which probably contained a Newcomen engine with a probable Cornish boiler, a sawmill building and two square chimneys. All of the structures appear to be in original condition and are well preserved. They have been listed as Grade II* as examples of Victorian colliery buildings.

The coals from this colliery were raised by a series of horse gins and adits along the valley. The water raised by the pumps was fed into the large reservoir at NY 824610, which then provided power to the two smelt mills at Langley. Very little remains of the smelt mill site but the long flue with its unique bridge to carry it over the Hexham to Allendale railway and the large chimney at NY 841612 are preserved. The village of Langley also had a large brickworks, which at present is undergoing conversion into housing and work units (NY 827612). It was run by the Langley Barony Fireclay Company who specialised in the production of white glazed sanitary ware. Sinks were sold under the trade name of BARONITE and were exported to Argentina, Brazil and the Arab states. If you follow the footpath along the access road to the brickworks the large retaining wall has numerous examples of the various wares built into it.

The second site to come up for auction was the much smaller pumping house (NY 660586) on the Hartleyburn Colliery. This was sold in July 2004. When viewed from the A689 this building looks like a small field barn, but closer examination reveals it to be a house for a small beam engine. The house is built into a bank with a two-storey room, which housed the steam engine and the single storey back room for the chimney. The wall supporting the bob

Hartleyburn Colliery pumping house is set to become a holiday cottage
Photo: Graham Brooks

The Middlesbrough tower stands alone at the docks *Photo: Graham Brooks*

is 107cm thick and has a small square hole for the beam to pass through.

The building stands on the side of Lord Carlisle's private railway although it predates the railway. The railway was only extended to the mine after the Earl of Carlisle leased the site in 1836. When James Thompson took over the Earl's mining concerns in 1838 the list of assets included a steam-pumping engine at Hartleyburn, which had a cylinder of 16 ins diameter and a stroke of 36 ins. The boiler was 18 ft long by 4 ft diameter. This would nicely fit into this building. Planning permission has been granted for the conversion of the building to a holiday cottage but with no external alterations allowed.

Staying in the north Pennines it has also been announced that Wrights bus garage in Nenthead is to be demolished. This building in the centre of the village was originally the lower part of the Vielle Montagne Zinc Company five-storey gravity mill erected in 1909. The majority of the site was demolished in 1965.

Middlesbrough Dock Tower (NZ 504209) has now been renovated, but unfortunately it stands alone in middle of the recently reclaimed Middlesbrough docks awaiting the building of new houses, offices and hotels. This red brick tower with its clock turret has sat on the docks for about a century but very little is known of its history.

In Carlisle planning permission has been granted to convert the seven-storey stone-built Shaddongate mill (NY 394555) into housing. The building along with its chimney dominate the Carlisle skyline. Originally built in 1835 as a cotton-spinning mill by Peter Dixon & Sons, the factory was taken over by Robert Todd & Co. in 1883 and the mill was converted to wool. It continued to operate until 1975 and the weaving shed to the rear are still used by Linton Tweed.

The chimney next to the mill was originally 320 ft high and at the time of construction was claimed to be the highest in the world. About 20 ft have been removed from the top at various times over the last century.

Graham Brooks

South East England

The Surrey Industrial History Group continues its tradition of making an annual Conservation Award, and the 2003 award went to David Lloyd Leisure for its conversion of the former Pumping Station and Electric Light Works of the Horton Hospital into part of a leisure centre, including the restoration of the pump-room and its machinery which now form a visual feature at the entrance to the centre. This is the third time the building has been converted to another use since electricity generation ceased in 1935.

The Horton Hospital was one of the five great mental hospitals established in Epsom in the early years of the twentieth century by the London County Council. At their peak they accommodated over 8,000 patients, but they have now been largely demolished and are in the process of being converted into housing estates. Little has been written about the history of these hospitals. Being largely outside the scope of industrial history or archaeology, all that a group such as SIHG can do is to endeavour to encourage someone, preferably with a medical background, to take up the task.

The 2004 Conservation Award was presented to the Buckland Windmill, a unique wind-powered sawmill, which is reported elsewhere in this issue.

The Fourneyron turbine, originally installed at Catteshall Mill near Godalming, was moved from its 'temporary' site near Guildford to the Ironbridge Gorge Museum on 25 July 2004, where it will be installed outside 'Enginuity', the new engineering interactive centre.

The Rural Life Centre at Tilford, near Farnham, celebrated the 30th anniversary of its opening in 2003. Starting with a single plough in 1967, the collection has grown to some 40,000 exhibits of agricultural machinery, tools, vehicles, workshops and equipment, shops and their goods and several buildings recovered from other sites and rebuilt at the Centre. It is now one of Surrey's principal museums, supported by a strong volunteer support group, the 'Rustics'. The Amberley Working Museum in West Sussex celebrates another anniversary in 2004 - its 25th year. The President of the Museum, Prince Michael, opened a new Railway Exhibition Hall on 26 May.

Also in Sussex, the restoration of the Wey & Arun Canal and the Arun Navigation continues. Following the opening of the new Drungewick aqueduct in June 2003 it is hoped that a six-mile stretch of the canal will soon be open from Loxwood to Newbridge, which would amount to more than a quarter of the canal's original length of 23 miles. Another stretch of the canal, originally part of the Arun Navigation, was opened in May 2004 at Lordings (also known as Orfold) lock near Wisborough Green. A unique scoop-wheel has been rebuilt at this site. The wheel, 14ft (4.2m) in diameter, works as an undershot waterwheel using the flow of the River Arun, but the downstream sides of the paddles are curved to form scoops to raise some of the water about 10ft (3m) into the summit level of the Arun Navigation. The pumping rate at 2 rpm is 1000 gal/h (8,100l/h).

In Hampshire, the restoration of three trams under the 'Tram 57' project has ceased for the time being because they have had to be moved out of the Transco warehouse which has been their home for 24 years because the building is to be demolished on account of the insurance problems of asbestos-clad buildings. The collection is now dispersed and the present locations do not allow for restoration work. Furthermore, as the trams had priority for covered storage, Southampton's collection of historic buses is now stored in the open. A search is under way for more suitable accommodation. Asbestos has also caused problems for the Twyford Waterworks Trust, as this has been found to be present in the boiler-house, which has been taken out of use and can no longer provide steam to run the engine. Some storage and workshop accommodation has also been lost.

A German motor torpedo-boat (known to the RN as an E-boat) has been towed from Germany to the British Military Powerboat Trust's base at Marchwood for refurbishment. It is thought to be the only survivor of the 100 boats built almost in its original condition. The BMPT has to leave Marchwood in September 2005, and an alternative site is being sought. Some possibilities are as far away as Glasgow and Dartmouth.

In the Isle of Wight the 80-ton hammerhead crane installed at the Cowes shipyard of J. S. White & Co in 1911/12 has been listed Grade II. This ensures its preservation only as long as it is working, but it does create a basis on which the IoW Council and others may formulate a policy for its future preservation.

Elsewhere in the Isle of Wight, the early roller mill installed at Calbourne in 1895 has been preserved as a complete working system covering three floors, with the basic machinery in working order. The mill was originally intended to be driven by a waterwheel, but this proved to be inadequate. After a brief period of drive by an oil engine, a steam engine was installed which was in its turn replaced by the gas engine there today. The mill ceased full-scale production in 1955. Roller mills replaced the traditional stone grinding mills towards the end of the nineteenth century. Their greater output and improved extraction of fine white flour ultimately resulted in the demise of traditional mills.

Alan Thomas

Local Society and other periodicals received

Abstracts will appear in *Industrial Archaeology Review.*

Museum of Bath at Work Newsletter, Winter, Spring & Summer 2004
Brewery History, 114, Spring 2004
Brewery History Society Newsletter, 28, Summer 2004
Construction History Society Newsletter, 65, February 2003
Cumbria Industrial History Society Bulletin, 56, 57, 58 & 59, August & December 2003, April & August 2004
GLIAS Newsletter, 213 & 214, August & October 2004
Industrial Heritage, 30/2, Summer 2004
Industrial Heritage Association of Ireland Newsletter, 22, June 2004
Lancashire History Quarterly, 8/2, Summer 2004
Manchester Region Industrial Archaeology Society Newsletter, 108, August 2004
The Mundling Stick (Lion Salt Works Trust), 10/2, Summer 2004
Museum of Bath at Work Newsletter, Summer & Autumn 2003
PHEW Newsletter, 102 & 103, June & September 2004
SAVE Britain's Heritage Newsletter, October/November 2003 & April 2004
Scottish Industrial Heritage Society Bulletin, 33, August 2004
Somerset Industrial Archaeological Society Bulletin, 96, August 2004
Suffolk Industrial Archaeology Society Newsletter, 141, September 2004
Surrey Industrial History Group Newsletter, 140, July 2004
TICCIH Bulletin, 25, Summer 2004
The Vision: The newsletter for the Friends of Newport Transporter Bridge, 1/04, February 2004
WaterWords, (News from Hereford Waterworks Museum), Summer 2003, Winter & Spring/Summer 2004
Worcestershire Industrial Archaeology & Local History Society Newsletter, 25, Winter 2003
Yorkshire Archaeological Society, Industrial History Section Newsletter, 60, Spring 2004
Yorkshire History Quarterly, 9/4, June 2004

Books Received

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

The Archaeology of twentieth century Tameside, by Michael Nevell & John Walker. Ashton-under-Lyne: Tameside Metropolitan Borough Council, 2004. 115 pp, illus. ISBN 1 871324 20 7.

This is the final volume in the *History and Archaeology of Tameside* series, published jointly by the Council and the University of Manchester Archaeological Unit. It uses the physical evidence of the last 130 years to chart the emergence of the twenty-first century landscape of Tameside. From new urban communities to changes in the rural landscape and industry the book describes how modern Tameside was created.

End of Voyages: The Afterlife of a Ship, by Michael Stammer. Stroud: Tempus Publishing, 2004. 192 pp, 150 illus. ISBN 0 7524 2999 X. £17.99.

This book looks at the shipping industry from a new angle and considers the question 'what happens to a ship when it is no longer needed for its original purpose?' There are sections on ship breakers' yards and the remains of shipwrecks around the coasts of the world. There are ships which have been preserved or have been converted to take on a new life, while salvaged fittings including figureheads are found in many unlikely places yet are all part of the archaeology of shipping through the ages. The author is curator of the Merseyside Maritime Museum.

The Metropolitan Railway, by David Bownes. Stroud: Tempus Publishing, 2004. 128 pp, 200 illus. ISBN 0 7524 3105 6. 12.99.

In 1863 the Metropolitan Railway showed that underground travel was a viable alternative to the congested streets of London. It was a world first and came to create the suburban sprawl known as 'Metro-land', reaching almost 50 miles into the countryside and allowing thousands to work in the City and live in modern homes in rural surroundings. The modern day Metropolitan line still boasts the furthest destinations on the London Underground. The author is senior curator of photographic collections at London's Transport Museum.

13 NOVEMBER 2004
LANDSCAPE OF THE MINES
at the University of Stirling, the Forth Naturalist & Historian's 30th annual Man and the Landscape Symposium, in collaboration with Scottish Industrial Heritage Society. The theme is the rise and fall of coal mining and its impact on the landscapes of central Scotland. Booking enquiries to: Man & the Landscape Symposium Registration, M Scott, Pathfoot C4, University of Stirling, Stirling FK9 4LA, ☎ 01786 467269, email: mbnl@stir.ac.uk

5-10 JANUARY 2005
CONTINUITY AND CHANGE
at York University, the Society for Historical Archaeology's Annual Conference on all aspects of historical archaeology from the fifteenth century to the present day. Conference Chair: Harold C. Mytum, Department of Archaeology, University of York, The King's Manor, York, England, United Kingdom Y017EP, email: hcm1@york.ac.uk.

2-3 APRIL 2005
AIA IRONBRIDGE WEEKEND
at the Ironbridge Institute, Coalbrookdale, on the theme of railway structures. Advance notice only. Full details will be sent with the next mailing.

18-22 APRIL 2005
BELGIUM BECKONS
AIA tour of Belgium. Details are given on an inside page. Please contact Paul Saulter, 80 Udimore Road, Rye, Sussex, TN31 7DY, or see www.heritageofindustry.co.uk

23 APRIL 2005
SOUTH EAST REGION IA CONFERENCE
at Chertsey Hall, Heriot Road, Chertsey, Surrey, hosted by Surrey Industrial History Group. Advance notice only.

3-6 JULY 2005
EXPLORING DEVON'S INDUSTRIAL HERITAGE
at Dillington House, Ilminster, Somerset, a course examining the evidence for past industries in east Devon, with lectures and two field visits to textile sites, watermills, breweries, lost railways, canals and other industries on the edge of Dartmoor including the famous Haytor granite quarries, once a supplier for London Bridge. Details from Dillington House, Ilminster, Somerset TA19 9DT, ☎ 01460 52426, e-mail: dillington@somerset.gov.uk, website www.dillington.co.uk

8-10 JULY 2005
NAMHO CONFERENCE 2005
at Juniper Hall Field centre, Mickleham, near Dorking, Surrey, organised by the Wealden Cave & Mine Society with the assistance of the Chelsea Speleological Society, Kent Underground Research Group and Subterranea Britannica. A programme of lectures, underground and surface trips, focusing primarily on medieval and post-medieval underground building-stone quarries, chalk mines and underground quarries, and the Wealden ironstone mines. For details see the website: http://namho2005.wcms.org.uk and for further enquiries e-mail: namho2005enquiries@wcms.org.uk or ☎ 01737 243912, or write to Robin Albert, 13 Beaufort Road, Reigate RH2 9DQ.

2-8 SEPTEMBER 2005
AIA DERBYSHIRE CONFERENCE 2005
Advance notice only. Watch these pages for more information.

PLEASE VIEW THE AIA WEBSITE'S DIARY SECTION FOR THE LATEST NOTICES OF CONFERENCES AND MEETINGS

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.

Please view the AIA Website's Diary Section for the latest notices of conferences and meetings.

www.industrial-archaeology.org.uk

Frogmore Paper Mill (see Hatfield Conference feature on page 2)

Photo: M Harrison

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Final copy dates are as follows:

1 January for February mailing
1 April for May mailing
1 July for August mailing
1 October for November 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 Liaison Officer, AIA Office, School of Archaeological Studies, University of Leicester, Leicester LE1 7RH.
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