

INDUSTRIAL ARCHAEOLOGY NEWS

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Philadelphia IA • Gateshead excavations • school air raid shelter • Conference and Dorothea Awards • Volk's dynamo • Blackpool Tower • railway awards • regional news



INDUSTRIAL ARCHAEOLOGY NEWS 144 Spring 2008

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COVER PICTURE

Excavations at the Kelvin Works site at Gateshead from
the east, with the Baltic Flour Mill behind (see page 7)

Photo: Tyne & Wear Museums Archaeology

Philadelphia, Workshop of the World?

Philadelphia was the location for the 36th Annual Conference of the Society for Industrial Archeology, the AIA's fellow organisation in North America, from Thursday 7 to Sunday 10 June 2007. This was a return visit, the 19th Conference having been held here in 1990. The AIA often invites mayors to attend its conference dinner, but while the Mayor of Philadelphia did not attend the opening reception he was sufficiently impressed by the SIA's visit to proclaim 'Industrial Archeology Awareness Week', although what this meant on the ground was not clear.

Roger N. Holden

Many places have claimed the title 'Workshop of the World' (currently it must be China) but it is perhaps a surprise to find Philadelphia among the claimants. More widely known for Benjamin Franklin and its role in American independence, Philadelphia is not generally thought of as one of the great industrial cities of the United States, like Lowell, Detroit or Pittsburg. But these are known because they had a single dominant industry: cotton, motor cars and steel. By contrast, Philadelphia had a large number of smaller and varied manufacturing industries which in sum gave it some claim to the title 'Workshop of the World' by the beginning of the twentieth century. These businesses produced quality goods in small runs, requiring skilled workmen and remained family owned. Even the Baldwin Locomotive Works, perhaps the largest and best known Philadelphia industry, did not become a corporation until 1902.

Philadelphia was noted as a textile city, but it was not concentrated on a single fibre or process; characteristic products were knitted fabrics, carpets, narrow wares and lace. However, since 1970 this industrial base has disappeared and

beyond the booming commercial and tourist oriented 'Center City' there are vast acres of industrial dereliction.

The absence of urban renewal noted by Richard Hartree when he visited Detroit on the SIA Fall Tour in 2005 (*IA News 136*, Spring 2006) is also in evidence here and was commented on by Professor Walter Licht in his very stimulating lecture at the opening reception at the Benjamin Franklin Hall of the American Philosophical Society. This lecture was titled, in academically trendy style, *Industrializing/De-industrializing America* and considered this theme with particular reference to Philadelphia. Professor of History at the University of Pennsylvania, Licht does not use the term 'Industrial Revolution', indeed he suggested that so discredited is the idea of the Industrial Revolution that nobody will ever again write a book with that in the title - this sounds like a challenge! He found irony in the fact that he was studying industrialization at a time (the 1970s and 1980s) when the process of de-industrialization was well under way. So he next turned to the study of de-industrialization which he considers has happened in the 'blink of an eye' almost without public debate. Europe has of course also experienced de-industrialization, but it was something of a shock to an Englishman to be told that even in Thatcherite Britain we had done better in helping displaced workers and regenerating urban areas! Although there may seem to be an inevitability about the process he emphasised individual decision making, companies for example choosing not to invest in new plant to counter competition for short-term financial reasons.

Those who had arrived earlier on Thursday were offered walking tours of 'Center City' or Brewerytown and an 'Archives and Artifacts' tour. The latter took in four institutions with archive repositories relevant to the industrial history of



Falls Bridge, East Falls, Philadelphia. Built 1895 as a two-level bridge with trolley cars on the top deck, the top deck was in fact never used
Photo: Roger N Holden

Philadelphia: the Franklin Institute, the Historical Society of Pennsylvania, the Athenaeum of Philadelphia and the American Philosophical Society. It is not possible here to mention all the collections, but the huge architectural archive of the Athenaeum includes the Hexamer insurance surveys of Philadelphia. Similar plans exist for other US cities and are far more comprehensive than anything available in Britain; in particular they include a 3-D perspective view of each site. Some of these can be viewed on-line at www.philageohistory.org (if you have the right plug-in on your viewer).

Following the standard format for SIA Conferences, Friday consisted of a choice of all-day tours: 'Benjamin Franklin Bridge, Philadelphia Navy Yard & Sunoco Refinery'; 'Bridging the Schuylkill: From Bartram's Garden to Rittenhouse Town'; 'Philadelphia Transit Past and Present'; 'The Jersey Side of the Delaware'; and 'Kensington & Frankford - Textiles, Metals and Beer' or 'East Falls and Manayunk'. The last two promised textiles interest and I choose the latter. An indirect route to our first stop, at the University of Philadelphia in East Falls, took us past some industrial sites in north-west Philadelphia: the site of the Budd Manufacturing Company, notable builders of railroad equipment, the site of the Midvale Steel Company, and the former Atwater-Kent Radio factory of 1923, which has a saw-tooth roof, misleadingly presented to us as 'unique'. Philadelphia University originated in 1884 as the Philadelphia Textile School, when it was perceived that America textile manufacturers were losing out to European (i.e. German and French) manufacturers in terms of quality and design because of their reliance on on-the-job training; a familiar story! Given that textile manufacturing has now disappeared from the region it may be surprising that the University still has a textile department, teaching weaving, knitting and dyeing but it does so to train textile designers who are still employed by firms in the United States, designs being sent to China for production. To teach weaving fundamentals they still have some of the hand Jacquard looms acquired by the Textile School in the 1880s. However they also have more modern equipment, neither US nor British but German, Swiss and Japanese. The University also has a research facility in Manayunk, appropriately housed in an old mill.

The most interesting visit in Manayunk was to the dye works of G. J. Littlewood, a survivor from Philadelphia's many small family owned businesses operating in niche markets. Founded in 1869 the firm concentrates on fibre dyeing, usually of synthetic rather than natural fibre. It might be wondered where exactly some of the brightly coloured results of their work were going, the examples we were given included toys such as teddy bears, paint rollers and very-expensive Cowboy hats.

Manayunk was a mill town, owing its origin to the Manayunk Canal built after 1815 in typical North American fashion as an aid to river navigation, bypassing difficult sections of the Schuylkill River, so that it then provided ready sites



Row houses in Roebling, NJ, the village built for workers at the Roebling steel works. Note that these ones retain their open verandahs; many have been filled in
Photo: Roger N Holden

for water powered mills which used the fall from the canal back into the river. Later they were supplemented by steam powered mills on the hillside behind. Now the few remaining mills are being put to alternative uses like apartments. The canal largely survives, including the masonry of some of the locks and there are plans to re-open it and provide a water front for the town which has previously turned its back on the canal and river.

Returning to Philadelphia, we stopped off to look at two steel bridges over the Schuylkill River, the Falls Bridge of 1895 and the Strawberry Mansion Bridge of 1896. We also diverted into Fairmount Park to view the Memorial Hall, one of the few permanent buildings of the 1876 Centennial Exhibition which houses in its basement a scale model of the exhibition. Used after the Exhibition as an Art Gallery for many years, it now being restored to its former glory to house a children's museum, the Please Touch Museum. This building has fire-proof brick-arch floors, exposed at one point where a well has

been cut between the floors. The main girders are clearly I-section rolled beams, yet our guide maintained that they were cast-iron, surely they must be wrought iron?

For those with energy left after the day's tours, the evening was devoted to a 'Show & Tell' session, the equivalent of the AIA's Members Contributions. With only three contributions this was a leisurely affair, the most outstanding being Steven Abramowitz's photographs. Steven is a photographer who looks for the geometrical patterns and the beauty of dereliction particularly in industrial and railroad subjects, producing stunning photographs.

Apart from the lecture at the opening reception, the SIA conference does not have the invited speakers which form the bulk of AIA Conferences, but instead invites a submission of papers for presentation at an all-day session on the Saturday. These included papers relevant to the area, and one suspects that some of these speakers had in fact been 'leant on'. A total of 32

papers were presented in three sessions each consisting of three panels running in parallel. You have to decide which papers you wish to hear, although you are provided with abstracts of them all. This first panel I attended had the title 'Studies in Cement & Concrete'. This fitted Dennis Howe's opening paper on 'Research at Whiteport, NY, Archeological Site and Synthesis of Rosendale Cement Manufacturing in the 19th Century' and also the second by Sara Wermeil on 'John A. Roebling's Sons Company's Concrete Floors, 1892-1914'. However, the last paper did not fit at all, 'Proctor, North Carolina 1830-1945: The Changing Structure of Residences and Economic Power in an Industrializing Appalachian Drainage' by Elizabeth Cahill and Ann Chancey.

A panel in the second session covered sites in Philadelphia, of which the most interesting was John Bowie's presentation on 'The John Grass Wood Turning Shop', a representative of the myriad of small family businesses which made up Philadelphia. Founded in 1863 and owned throughout the twentieth century by three generations of the Bower family, it ceased work in 2003 when the last Bower retired. It now stands as a 'time capsule', a traditional wood turning shop full of the accumulated clutter of decades, stacked one suspects with little regard for 'health and safety' law. Negotiations have been started to maintain this as a wood turning museum,

although at present prospects are not good. But it has to be asked how do you turn such a place into a museum? It seems impossible without destroying the atmosphere.

At midday a big lunch is eaten, which also provides an opportunity to hold the SIA Business Meeting, AGM as we would know it, followed by a further session of papers. The final panel I attended included one of only two non-USA papers presented during the day: 'Hydropower in Imperial India' by Loren Michael. The development of hydro-power in the early twentieth century can be seen as the start of Bangalore's current pursuit of becoming a flagship 'hi-tech' centre. Clifford Zink's paper on John A. Roebling's Sons Co. paved the way for a visit to the company town on the following day. Roeblings were the 'world's largest' manufacturer of wire rope, producing wire rope for many major suspension bridges in the USA, including the Golden Gate Bridge.

The day concluded with more food being consumed at the Fairmount Water Works, the site of Philadelphia's first water works where steam pumps were installed in 1812-15 to raise water from the Shuylkill River to a reservoir for distribution to the city. The high cost of fuel, and two boiler explosions, led to a dam being constructed across the river in 1819 so the steam engines could be replaced by water wheels, which

in turn were replaced by Jonval turbines after 1851. It has long ceased as a water works, but its rather grand classical buildings have survived in other uses and are now being restored as a water interpretive centre. There are plans to 'animate' a turbine and pump of 1851, for many years walled up out of sight.

That marked the end of the main conference but for those staying two tours were arranged for the following day. Unfortunately a cruise along the Delaware River was cancelled, but the other tour to Roebling went ahead. Roebling is on the New Jersey side of the Delaware River and getting there involved catching the PATCO train across the Benjamin Franklin Bridge to Camden and then the NJ Transit River Line to Roebling. The NJ Transit River Line began operations in March 2004, using diesel-powered Swiss/German-built articulated rail cars of a type used on rural branch lines in Germany. It operates between Camden and Trenton along the line of the Camden and Amboy Railroad of 1834, the first railroad in New Jersey and one of the first in the United States. In 1904 the Roebling company established a steel works at what is now known as Roebling to supply their Trenton wire rope making works, and built a workers' village outside the gates. The steel works closed in 1974, some derelict buildings remain on site but there are plans for re-use, in particular a museum in the main gatehouse. We had a walking tour of what is considered to be one of the best surviving industrial villages in the USA, with its 'row' houses for the workers, 'paired' houses for lower management and detached houses for the managers. We were privileged to see inside a manager's house whose owners have been carefully restoring it to original condition.

I was the only person this year from Britain but I would encourage AIA members to consider attending the SIA Conference or Fall Tour. It enables you to see part of the USA from an IA perspective, beyond the tourist traps, and meet with like minded people. The Fall Tours are sometimes in more out of the way places which might be difficult to arrange to get to, such as this year's tour to Ely, Nevada. The 2008 conference is in San Jose, California, from 29 May to 1 June. Details, booking and membership details are on the SIA web-site, www.sia-web.org. However, be warned that there are no leisurely 09.00 starts on SIA Conferences, Friday tours can start as early as 07.30 and even the Saturday Paper Sessions start at 08.15 - one sometimes gets the impression that sleep is an unknown concept in America!



John Grass Wood Turning Shop, 2nd Street, Philadelphia. A 'time-capsule', but how can you preserve it as a museum?

Photo: Roger N Holden

AIA Spring Visit to Saarland – 19-24 May 2008

The star attraction of this important former coal and steel area on the River Saar in Germany bordering France is undoubtedly the immense Voelklinger ironworks, the first industrial monument to become a World Heritage site but other attractive sites include an eighteenth-century oil mill, the railway museum at Losheim am See, the oldest steam winding engine on the Saar coalfield at Velsen and a city rich in ceramics over the border in France. Travel by coach, with stops in Reims and Epernay for a champagne experience. For details contact Paul Saulter, 80 Udimore Road, Rye, Sussex, TN31 7DY. Updates on www.heritageofindustry.co.uk

Education and the school air raid shelter

Underground trench shelters on school sites were often sealed at the end of World War II. Many have since been dismantled or infilled, yet others have been mapped by the Defence of Britain Project, the Historic Fortifications Network and the National Mapping Programme. Archaeological survey emphasises their defensive function whilst the recording of occasional graffiti allows a glimpse into the buildings' educational use. A school air raid shelter in Surrey, with surviving wall art and graffiti, has allowed further interpretation of the educational and occupational functions of the school air raid shelter and the relationships of its occupants.

Sue Morecroft

From late 1939 many air raid shelters were built on school sites for use during daytime air raids. At the sound of the siren children and teachers would abandon their world of classroom and playground with its moderated regular timetable and place themselves in totally enclosed, relatively dark spaces for uncertain periods of time. Air alerts could bring the sound of silence, whilst others would be punctuated by the sounds of enemy bombings, aerial dogfights or machine gun fire. These enclosed spaces were thus primarily for defence, but equally the air raid shelter was an extension of the classroom in which children were controlled, educated and occupied by their teachers. The Board of Education recognised the wide variation in defensive provision and suggested oral work as an ideal way to occupy children in all shelters, recommending spelling-bees, story telling, singing, games and craft work.

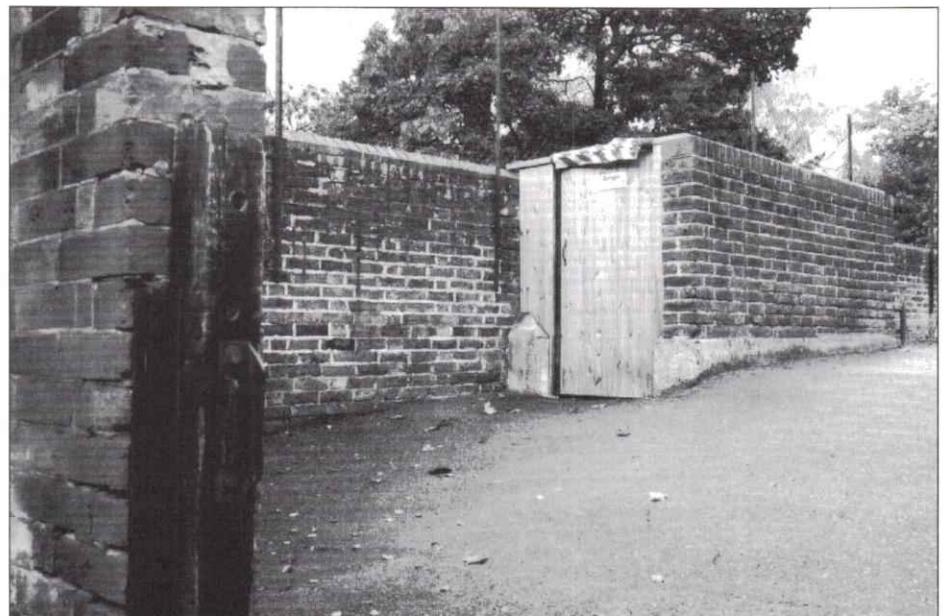
A surviving school air raid shelter in Redhill, Surrey shows that the boys of St John's School were occupied in craftwork, as the long flat walls of five underground trenches are even now decorated with a series of colourful murals. Covering the length of each wall are illustrations of Treasure Island, The Pilgrim's Progress, Beowulf, Robin Hood, Snow White, Robinson Crusoe and Gulliver's Travels. The painting of these murals is captured in a Pathe film from the series 'Blitz and Pieces' in which the boys of St John's enter their air raid shelter and paint the murals under the supervision of a teacher. The commentary records that mural painting was to keep the boys' minds occupied during air raids, but as it may have been filmed as wartime propaganda, this assertion must be questioned. Oral history has since suggested that the murals were actually painted in art classes rather than during air alerts.

Mural painting may have begun at any time after the shelter's construction in late 1939 but oral history suggests the beginning of 1941 when Mr Allen, a qualified arts and crafts teacher, began teaching at St John's. The school log book records that the murals were inspected by school governors in April, filmed by Pathe on 7 July and recorded by Fox photos on 31 July 1941. Mr Allen

occasionally entertained classes with magic lantern lectures and these, as well as contemporary book illustrations, may have inspired the creation of the murals. Both sources show stylistic similarities to the murals with their rolling landscapes interspersed with character tableaux and their separation of interior and exterior spaces. But not all of the murals have survived, as a comparison of built surfaces and film evidence shows that at least two murals were concealed by more recent paintings after filming took place in July 1941. In fact, mural painting appears to have stopped abruptly as the Gulliver's Travels mural is half finished and the opposing wall is whitewashed and grid lined in preparation for painting.

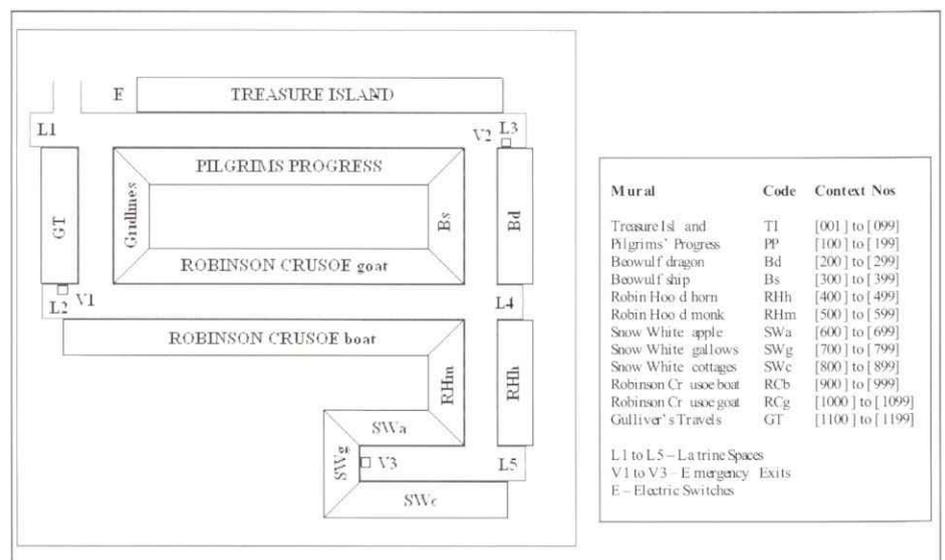
With such scant evidence for the creation of the shelter murals, it is the paintings themselves that have proved to be the best primary source

for interpretations of their creation, the working methods of the painters and the social relationships of the shelter occupants. Visual survey shows that most designs were drawn onto the square grids, landscapes were often painted before the character tableaux and each area of colour was outlined in black or dark blue paint. Closer scrutiny has resulted in the archaeological recording of many paint anomalies – paint drips, splashes and smudges – all produced during the creation of the murals. Painting on a vertical surface can result in drips and smudges on previously painted, lower colour contexts although splashes tend to radiate out in any direction from a painted area. There is therefore a direct contextual relationship between paint anomalies (and their originating colour contexts) and underlying paint areas. These contextual relationships have been recorded, analysed and



Playground entrance to St John's School air raid shelter, Redhill, Surrey

Photo: Sue Morecroft



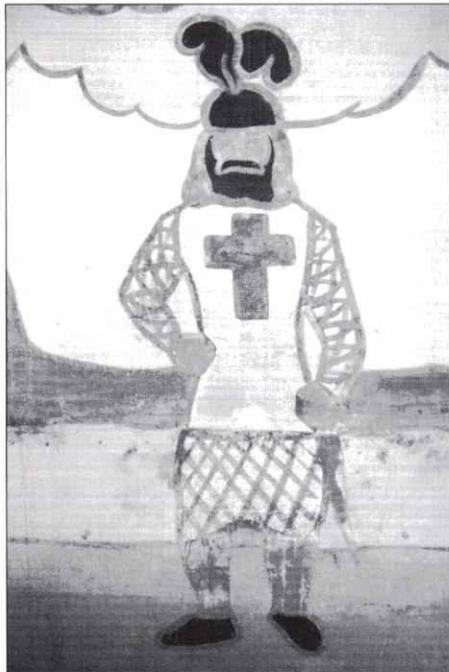
Air raid shelter plan showing the location of murals

reassembled into colour-coded Harris matrices for each mural.

The presence of anomalies indicates that painting in these sections was generally from bottom to top, whereas a more sensible painting sequence, from top to bottom, may have occurred in areas with no anomalies as any drips and smudges would be overlain by later, lower paint layers. Perhaps, as oral history suggests, a mural was painted by a succession of timetabled art classes – younger boys painting lower areas and older boys painting the higher sections – rather than each mural being painted by the same pupils who regularly sat in that trench during an alert. Along the length of the murals, stratigraphic evidence suggests reversals in the painting sequence of colours indicating the edges of individual work areas. Longer murals suggest the work of three to four painters or teams, who may even have swapped paint pots after applying colours, and shorter murals suggest divisions into one or two work areas. The outlining of long cloudscapes appears light and flowing as if applied by an adult hand, whilst character and landscape outlining is often thickly and inexpertly applied. This may suggest that teachers participated in the murals, helping with more difficult painting tasks, in addition to supervising the boys.

Archaeological analysis has suggested a few instances where teacher supervision may have been lacking. On the Beowulf mural, six orange oval marks on pink ground and a nearby, heavily scribbled pink splotch on orange ground may have been the result of deliberate, perhaps mischievous, sabotage undertaken by two neighbouring painters. On the Robinson Crusoe raft tableaux are three or four long horizontal marks, made by fingers or brushes being dragged across wet paint. Perhaps this was accidental damage or even deliberate intent. Another example is the location of blue paint used on the Snow White mural, which is also found splattered across the ceiling and onto the green tree canopy of the nearby Robin Hood mural. This suggests rivalry and mischief between mural painting teams and a lack of converse evidence on the Snow White wall could mean there was no opportunity for retaliation due to a greater teaching supervision.

As well as a means of occupying the boys, the murals may have had a secondary function, not only for storytelling, but also as didactic instruction. A survey of mural content and comparison with written texts has shown that the most violent aspects of the stories are rarely illustrated. The choice of storylines also appears to have ideological links with contemporary events. For example, wartime conditions in Britain, with a limitation on imports, home production focused on munitions and farmland extended to feed the population, could be compared to Robinson Crusoe's dependence on his own island's natural resources. The mural is a flowing landscape with different images of Robinson Crusoe growing crops, caring for livestock and making household goods. This mural may have been painted to encourage



King Richard in the air raid shelter

Photo: Sue Morecroft



Long John Silver makes an appearance too

Photo: Sue Morecroft

'Make Do and Mend' and the reuse of goods in wartime Britain. In a second mural, Snow White is endangered by a seemingly innocent old woman in an apparently safe environment just as people in Britain were endangered by fifth columnists and daily bombing raids. A third mural has an illustration of a young Beowulf and his warriors journeying abroad to help a foreign kingdom repel a violent enemy and a second shows a young warrior helping an older Beowulf to slay a dragon. This suggests an analogy with the succession of young men who, throughout the war, were conscripted into the British armed forces to fight overseas. These murals do appear to link classic adventure stories to contemporary events and they may have been the means to instruct the boys of St John's on wartime protocols, safety measures and perhaps future expectations.

St John's boys' air raid shelter was built to accommodate 272 boys and it would have been extremely cramped during an air raid. Each pupil had less than 0.45 meters of bench space, seated on opposing rows of benches attached to the long walls of each trench. The boys were seated with their backs against the painted walls and there were obviously opportunities for pencilling graffiti as many instances have been recorded including a drawing of an aeroplane overlain by a blue paint drip. These are small pictures, games, scribbles and initials which may have been covertly drawn concealed by other seated pupils. This perhaps suggests slightly distant supervision by teaching staff, but other graffiti found at mid mural height may have been openly drawn perhaps due to a lack of supervision. The height of these last graffiti also suggests a level of defiance as they are nearer adult eye level, although their wall position between electric ceiling lights does suggest some attempt at concealment.

The survival of graffiti and wall art in this air raid shelter at St John's School in Redhill may be unique. But there may be further wall art in other shelters yet undiscovered which could add to our understanding of the educational and occupational functions of this building type. Archaeological survey has provided an interpretation of the trench shelter as a place for work and creativity, for teamwork between teachers and pupils, and also as a place for instances of fun and mischief. It was perhaps a place of achievement when the murals became known outside the school environment through the visual images of film and photography. And the shelter interior was yet another space in which to educate or be educated, it was both an interruption and a continuation of learning and it was also a place where noughts and crosses could alleviate the boredom.

In the last few years St John's boys' air raid shelter has been the focus of a community project involving oral history, archaeological survey and historical research, resulting in the production of a DVD, a website (www.stjohnsschoolredhill.co.uk), and regular shelter tours for local schools. The shelter has become a shared environment, acknowledged by both past and present pupils, and its survival has resulted in an educational project which once again has ensured 'that time spent in shelters is not time wasted' (Board of Education Circular 1535 dated 18 December 1940).

**VISIT THE AIA
WEBSITE**

www.industrial-archaeology.org.uk

Excavations at a Gateshead iron works

In February and December 2006, Tyne and Wear Museums Archaeology excavated two sites on either side of South Shore Road in Gateshead, Tyne and Wear. These Kelvin Works and Ingersoll Rand sites have shown that valuable evidence of the nature and use of buildings within an iron works can be obtained from relatively small areas of surviving archaeological deposits. Further industrial sites are now coming to light during development projects in north east England.

Julie Parker, Tyne and Wear Museums Archaeology

Desk based assessments showed that there was little evidence for activity around the area of South Shore Road in Gateshead prior to the medieval period when the site was part of a large park owned by the bishops of Durham. In 1747, William Hawks & Co. set up an iron works to the east of the two sites. After the death of William Hawks in 1755, the works expanded rapidly so that by 1840 there were buildings present on both sites. However, the works closed suddenly in 1889.

After the closure, the site on the south side of the road became known as the Kelvin Works, which was out of use by 1919. By the mid-twentieth century, the site was used as a gears works, again under the name of Kelvin Works. The standing buildings were demolished in 2005. The site on the north side of the road was empty by 1898 and a power station built in the south-eastern quadrant of the site. In the 1950s, buildings associated with the Baltic Flour Mills extended into the western end of the site. These buildings and the power station were demolished between 1973 and 1984 and the Ingersoll Rand building was constructed on the site. This building was demolished in 2006.

Archaeological excavations on the south side of South Shore Road (Kelvin Works) revealed several phases of construction, all related to industrial activity on the site. Before any construction had occurred, a ravine at the eastern extent of the site had been backfilled with brick and rubble. The main phase of construction saw the building of two red brick chimneys with a brick-lined flue connecting them. Four other flues ran from these chimneys away from the site. One flue ran from the northern chimney towards the Ingersoll Rand site. A large rectangular structure of sandstone measuring 36.6m by 10.7m was then built on the site. Its walls survived to a height of around 1.5m and measured 0.59m thick where free standing and 1.19m thick for the south wall which acted as a revetment wall against higher ground. The inside face of the southern wall had two rows of square slots, averaging 1.25m apart, with residue on the wall around them. The purpose of these slots was not clear, but may have been to support machinery. There were also two flues running down through this wall at the eastern end. A few minor alterations were made to this structure, such as a

new doorway and the rebuilding of the wall to its north. This rebuilt wall formed part of an extension to the east of the building.

At the Ingersoll Rand site, an evaluation showed that much of the site had been truncated by the Ingersoll Rand building. However, an area close to the River Tyne showed promise. On excavating a 37m by 7m trench, structural remains were present at the east and west ends of the site, all constructed on made-up ground. At the east end of the trench was a rectangular brick structure with a brick surface. In the south-west corner of this structure, the wall had a recess,

probably to house machinery. Immediately overlying the brick surface was a deposit rich in slag, again suggesting industrial use. The structure was then partially rebuilt on a slightly different alignment with a new brick surface built above the previous one. This surface had a vitreous patina suggesting a continued industrial use. A large (2.52m external diameter) circular flue had been constructed at the north end, cutting through the older phase of the structure. The inside of this flue showed clear signs of heat damage. The heat had also reddened the made-up ground through which the flue was cut. The



Circular flue running north to south across the Ingersoll Rand site

Photo: Tyne & Wear Museums Archaeology



Brick structure at east end of Ingersoll Rand site

Photo: Tyne & Wear Museums Archaeology

south side of this structure had been truncated by an east to west twentieth-century wall, probably associated with the power station.

At the west end of the site two sandstone walls at right angles to each other formed the earliest structural remains. Due to a lack of dating evidence, it is not known whether these were contemporary with the earliest structures at the east end of the trench. These stone walls had been demolished and two sandstone plinths constructed with a black floor surface deposited between them, covering the stone walls. A slag-rich deposit had built up on top of this floor. The whole area was then demolished and the ground levelled for the construction of a power station, one corner of which survived in the south-east corner of the trench.

Using map evidence, it becomes clear that the earliest structures found within the Ingersoll Rand site were built between 1827 and 1840,

whereas those found on the Kelvin Works site date between 1862 and 1898. Map evidence also suggests that the large sandstone built structure on the Kelvin Works site formed an extension to the south of a building which fronted onto South Shore Road which was aligned further to the north during the nineteenth century. This earlier building was in existence by 1840. This map evidence suggests that the two sites represent buildings which were part of the Hawks Iron Works and show that the works was expanding steadily over the course of mid nineteenth century. The first edition Ordnance Survey map of 1862 showed warehouse-type structures on the Ingersoll Rand site. However, the presence of slag deposits above two of the floor surfaces and a floor surface with a patina suggest that the large subdivided rectangular building was in fact used for hot works, as was the building on the Kelvin Works site.

At the end of the nineteenth century many of the Hawks Iron Works buildings had been demolished except for those on the Kelvin Works site which were taken over by the South Shore Engineering Works. The area was then completely redeveloped with South Shore Road realigned to its present line in the early twentieth century and many of the buildings in the immediate area of the two sites demolished. The only building to survive was the Kelvin Works building constructed between 1840 and 1856 immediately south of the excavation. This later building was only demolished in 2005. The redevelopment of the Ingersoll Rand site saw the construction of an electrical power station which caused the destruction of the majority of the remains of buildings associated with the iron works except near the northern edge of the site. The remains of the power station were in turn destroyed by the construction of the Ingersoll Rand building.

LETTERS

Llechwedd Slate Quarry

Pat Frost (*IA News 143* page 18) writes in good faith about recent events at Llechwedd slate quarry as she has learnt of them from the caving magazine *Descent*. Unfortunately her source is extremely inaccurate.

The management of J.W. Greaves Welsh Slate considered that the winding drum house on floor 5 had to be demolished in order to quarry slate which lay underneath it. The incline itself was quarried away long ago. The buildings and the surviving machinery had been studied by the Gwynedd Archaeological Trust as part of a scheduling enhancement process in the 1990s, from which it was concluded that they did not merit statutory protection, though a photographic record was carried out. The Robey steam engine was removed in the early twentieth century, though the winding drums probably dated from the Victorian period but for much of its later working life the incline was operated by an electric motor. The machinery has been retained and the quarry management have ensured that it will be properly studied by an industrial archaeologist and, if appropriate, conserved.

Cadw did not 'put a stop' to further demolition; the advice of Cadw and of the Royal Commission has been sought and acted on. The quarry's directors are well aware of their responsibility to their heritage and are actively seeking ways in which the historic structures and machinery at Llechwedd quarry, at Maenofferen quarry and at the Quarry Tours operation can be conserved. We as industrial archaeologists must remind ourselves that 'conservation' is not simply a matter of preserving working sites in aspic and that it can equally mean safeguarding jobs and sustaining a distinctive culture and language as well.

*David Gwyn
Nant y Felin, Llanllyfni Road, Penygroes,
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Useful old slag

I am currently investigating the use of large blast furnace slag blocks in construction and would be grateful if readers could advise me of any examples they know of. In my area they were used by the Butterley Company in the 1830s, but slag seems to have been little used elsewhere other than in crushed form. I am aware of some examples of copper slag used in South Wales, and of the massive blocks forming the Tees breakwater after 1859.

One interesting example is Ironville House, Derbyshire (SK436518), built about 1850 as the Company doctor's house and surgery, and recently listed Grade II. This is built of broken slag blocks from the nearby Codnor Park furnaces, but apart from a few rows of terraced housing

nearby, and the slightly later Old Vicarage at Ripley close to the Butterley works, I know of no other examples in domestic building. Similar broken blocks are also used in boundary and retaining walls in the area.

The photograph below shows the Portland Colliery Tramway embankment at Jacksdale (SK 445515), immediately over the border into Nottinghamshire. This is about 200m long and was built in the 1830s with slag cast into large blocks at Codnor Park. Apart from the later Tees breakwater, I know of no other use of slag in such massive block form, but would welcome any information on other examples.

*John Boucher
Westwood Farm, Main Road,
Westwood, Notts NG16 5HU*



Slag blocks used in the Portland Colliery Tramway embankment at Jacksdale, Nottinghamshire

Photo: John Boucher

Conference awards

Following the 2007 Preston conference there were, as usual, two awards to be made. The Conference Award, which is voted for by those attending the conference, is made for the site visited which showed the most merit in interpreting Industrial Archaeology. The President's Award is made to the site showing the greatest initiative in forwarding industrial conservation, particularly from a voluntary group. So on 28 November, Angus and Brenda Buchanan, accompanied by Marilyn Palmer, Roy Murphy, Mike Nevell, Mark and Hilda Sissons met in Burnley to make the awards.

The Conference Award went to the Queen Street Mill in Harl Syke. Queen Street had received substantially more votes than any other site, despite being visited at the end of the conference when attendance numbers were lower. The mill, run by Lancashire County Council's Museums Service, is the world's only intact surviving nineteenth-century steam powered weaving mill, bringing history to life with all the sights, sounds

and smells of the mill. The award recognises the achievement of Queen Street in being one of very few textile industry sites where virtually the whole premises with its machinery has been conserved. Where modifications have been made to interpret the mill and provide visitor facilities this has been done sensitively and without losing the visual impact of the site. The one thing that cannot be conveyed nowadays is the shattering noise of a big weaving plant in full production which I well remember from my visits to them.

The President's Award went to Sylvia Wilson and the Whitefield Conservation Action Group for her indomitable work in the conservation of the Whitefield area of Nelson. Marilyn Palmer has described Whitefield and Sylvia's work in *IA News* 143. Those of us who were fortunate enough to visit Whitefield with her were overwhelmed by her passion and commitment in conserving this area as a living community through building refurbishment and in working to ameliorate some of the more dogmatic and unthinking excesses of both local and national government.

Mark Sissons

Dorothea Award 2007

In October, Geoff Wallis of Dorothea Restoration Engineers and Michael Messenger visited Kelly Mine to present the 2007 Dorothea Award for Conservation.

Kelly Mine has worked for micaceous hematite ('shiny ore') since at least 1797 and closed in 1951. A legal dispute left the site intact and nature quickly concealed a unique collection of mining equipment and artefacts. The Kelly Mine Preservation Society was formed in 1984 to save and restore this important monument, and has been quietly working to put the site back to its original working condition, where possible using the techniques the miners would have used.

The plant can now be run with the original water turbine or with a contemporary oil engine turning the stamps that crushed the ore and hauling the incline. The washing and drying processes can also be demonstrated.

All this has been achieved from subscription income and a limited number of grants and the society are to be congratulated on a most authentic restoration. Open days are just twice a year but working parties are on site most Sundays and Wednesdays. AIA members would be made most welcome.

SHOT gets AIA President

SHOT, the American-based 'Society for the History of Technology', celebrated its 50th anniversary at its annual meeting, held this year in Washington DC on 17-20 October. The society was established in 1957 on the initiative of Professor Melvin Kranzberg, an outstanding historian of technology and institutional statesman, who went on to create ICOHTEC (the International Committee for the History of Technology) in Paris ten years later. It was on this occasion, in 1968, that Angus Buchanan, attending as the first British representative of ICOHTEC (he went on to become Secretary General and then President of the Committee), met Mel Kranzberg and struck up a firm friendship that only ended with the death of Mel in 1995.

SHOT has acquired a range of Awards, the most prestigious of which is the Leonardo da Vinci Medal, awarded once a year to a leading scholar in the History of Technology. Angus received this Medal in 1989, and at the recent Conference in Washington he joined the 11 other surviving Leonardo Medallists in a series of special sessions and television interviews. The Conference was well attended by over 400 members, reflecting the remarkable success of the discipline in the United States, where the industrial archaeological dimension of the subject has always been widely recognised. The anniversary celebrations will continue at Lisbon next October, but before that ICOHTEC will be celebrating its 40th anniversary at its Symposium in Vancouver on 5-10 August 2008. Any member of the AIA who is interested in attending either event can get more details from the President, Angus Buchanan (hssraab@bath.ac.uk).



Angus Buchanan (right) presents the Conference Award to Ian Gibson for Queen Street Mill, in the engine house at Queen Street.
Photo: Mark Sissons



Geoff Wallis of Dorothea Restorations presents the Dorothea Award and cheque to John Turner, Chairman of the Kelly Mine Preservation Society. Michael Messenger (right) represented the AIA on site at the Kelly Mine
Photo: John Shipman

Volk's 1880 dynamo: a tale of chance rediscovery

In 1880 Magnus Volk conceived a plan to illuminate his house in Brighton with electric light. At that time there was no public electricity supply, so Magnus had no alternative but to make his own. Two years earlier he had assisted his friend William Jago at a public lecture on the possibilities of electric light and remembered showing a slide of a dynamo manufactured by Siemens and Co. of Woolwich. Inquiries to Woolwich produced a satisfactory reply and a suitable dynamo was purchased and installed in the garden shed of Magnus's house at 40 Preston Road. Driven by an Otto gas engine connected to the domestic gas supply, the dynamo produced 50 volts DC. This was more than enough for the light bulbs then available. Magnus thus became the first person in Brighton to have his house lit by electricity, as a result of which he later won the contract to install the first electric lights in the Royal Pavilion.

Two years later he and his now growing family moved to a larger house in Gloucester Place, just when a public electricity supply became available for the first time. The new home was soon connected and his dynamo and gas engine were rendered, temporarily at least, redundant. However, once the Royal Pavilion installation was completed early in 1883, the two pieces of idle machinery and an electric motor he had built for a customer who had subsequently cancelled the order were available for another project. He realised he had the basics for Britain's first electric railway.

Volk's Electric Railway opened on 4 August 1883. The original car was a lightweight affair, only 12 feet long with seats for 10-12 passengers, powered with that unwanted electric motor. The electricity was generated using that very same Siemens dynamo and Otto gas engine, now installed in one of the arches in the sea wall, with which he had powered his domestic electric lighting.

It has to be said the dynamo was only just up to the task, so when the railway was extended and enlarged in the winter of 1883-84, Magnus realised that something more powerful would be needed

and a larger Siemens dynamo producing 160 volts at 40 amps was obtained. The original dynamo was presented to William Jago, who was science lecturer at Brighton School of Science and Art, to assist in his demonstrations. What became of the gas engine is not recorded.

The Science Department of the school later became part of Brighton College of Technology, later known as the Municipal Technical College, which opened its new building on Richmond Terrace in 1897. In 1909 Dr Hughes, the head of the Electrical Department at the Technical College, rediscovered the dynamo among some relics. By quoting the serial number to Siemens & Co., he was able to confirm that it was indeed the original dynamo supplied to Magnus Volk in 1880, and as such he put it on display as a historic artefact. In 1970 the Technical College became part of Brighton Polytechnic, which itself became Brighton University in 1992. By this time the Electrical Engineering Department had moved from Richmond Terrace to Moulsecoomb.

In recent times the dynamo was loaned out to the Engineerium where it was displayed for some years, though always looking a little out of place amongst all those

steam engines. A couple of years ago the Engineerium was facing closure and its contents, collected over many years by Jonathan Minns, put up for auction. To make sure the dynamo was not lost the Chairman of Volk's Electric Railway Association (VERA), Ian Gledhill, contacted the Engineerium to see if it was one of the items to be sold. Ian was told that it was not amongst the auction items, as it had not been part of Jonathan Minns' collection, but its current whereabouts were not known. Jonathan Minns later told VERA member Nick Kelly that it had been reclaimed by the university, but nobody seemed to know exactly where it was.

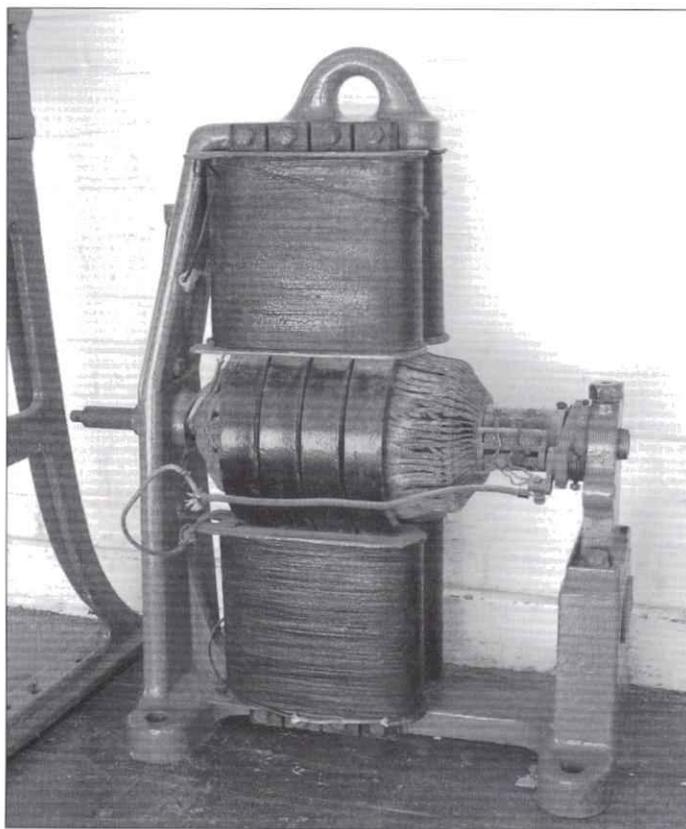
Later, Nick happened to be visiting the university and on walking down a corridor saw the dynamo just standing there against the wall. He recognised it at once and confirmed its identity by checking the serial number. It seemed that the university were on the point of throwing it out as scrap. He pointed out to them its historic value and said that if they didn't want it VERA would like it. A few weeks later Ian Gledhill was called by David Burton, who is in charge of the engineering laboratories at the

university. He said that the current Head of Department, obviously not so appreciative of historic artefacts as Dr Hughes, wanted the dynamo got rid of as soon as possible. There was also a lathe and an electric motor which had also belonged to Magnus Volk. The next morning a visit confirmed that the dynamo and lathe had belonged to Magnus. David Burton was anxious to see both items preserved and told VERA that if we wanted them we could have them, but they had to go quickly as the Head of Department was getting agitated at this 'junk' continuing to clutter up his corridor. VERA was given two weeks to remove them.

Considering that it had once powered the railway the dynamo is surprisingly small, standing only about 3 feet high, but it is also remarkably heavy. It is hoped to open a museum on Magnus Volk & his railways. Meanwhile the dynamo and lathe have been taken to safe storage and plans are in hand to have them on display soon.

For the technically minded, the dynamo is a Siemens D5 self-regulating shunt-wound dynamo, generating 50 volts DC at 46 amps, running at 1280 rpm. It was built at the Siemens factory in Woolwich in 1878, serial no 1179A. According to an article written in 1984 by Doug Hill, then lecturer in the electrical department of Brighton Polytechnic, who had the dynamo refurbished in 1978, the dynamo was still in working order at that time. Mr Hill commented that being an early machine it was not very efficient compared to modern generators, and would have struggled to achieve 65% efficiency, so no wonder it would not have been adequate to power the larger cars Magnus used on the extended railway from 1884 onwards.

Ian Gledhill & Jim Hawkins

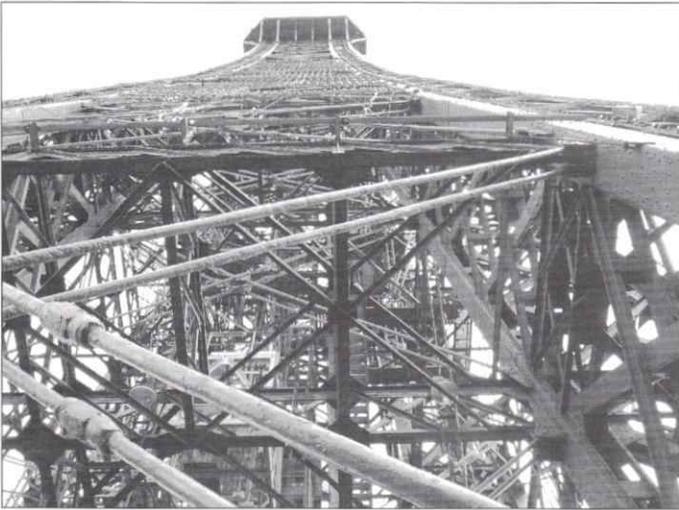


Magnus Volk's 1880 dynamo. Found at last!

Photo: Ian Gledhill & Jim Hawkins

MBE for IOM industrial archaeologist

Peter Geddes has received an MBE as recognition of 25 years' work in local history projects. One of his proudest achievements was overseeing the installation of the Snaefell mine waterwheel at Laxey which was completed in 2006 (in time for the AIA Isle of Man conference!).



A close-up view of Blackpool Tower

Photo: Barry Hood



The magnificent ballroom at the Blackpool Tower

Photo: Tony Yoward

Blackpool Tower

One memorable AIA 2007 Conference visit was to the Blackpool Tower. The group was met by Geoff Sage, the complex manager and (laughing) expoliceman who used to do the security checks in the Tower. He apologised for not being able to spend more than an hour with us but he was so full of enthusiasm for the place that he was with us for two hours.

The tower was an imitation of the Eiffel Tower of 1889. The lads in Lancashire are not shy when it comes to ambition and what is good enough for Paris is good enough for Blackpool. The Tower took three years to build and opened in May 1894. It is not as tall as the Eiffel Tower but the height to the Crow's Nest is 518 feet 9 inches, with breath-taking views of the beaches and surrounding countryside. The

complex has the largest sprung dance floor in the world and another main attraction is the Tower Circus and aquarium.

Geoff Sage showed us into the Tower Circus where the staff were busily cleaning up before the next performance. The spillage of popcorn and lemonade is a big problem and makes the aisle carpets sticky but sales help the cash flow. Geoff Sage was very enthusiastic about the history of the complex and the personalities who have performed in it, especially the world famous clown, Charlie Cairoli, who came from Italy but stayed in Blackpool for 40 years. Many of us still remember him but sadly he died in 1980. He was still performing in the circus and entertaining the crowds at the age of 69. Geoff took us into the Charlie Cairoli Room which contained several of his costumes, musical instruments (he

was an accomplished musician) and several photographs and colourful posters.

We were shown behind the scenes in the area and visited the elephant and horse stalls, no longer occupied. Geoff explained that because of logistics and animal welfare issues, they had to use plastic elephants these days. 'You would hardly know the difference' he said and several of us may have looked a little incredulous. We were introduced to Dangerous Dave, part of whose job is maintenance which includes replacing the thousands of light bulbs on the outside of the Tower. Abseiling down a steel strut from 400 feet, with a bagful of coloured light bulbs, was not something the AIA members were keen to practice.

Geoff and Dave took us onto the roof of the complex and into the lift winding gear room. It looked

very similar to a coal mine winding gear but was now obsolete and had been replaced by smaller and very powerful electric motors. The old winding gear was too large to remove and has remained on site for the last 15 years.

We visited the changing rooms as well and they looked very mundane and were not exactly glamorous, especially when you consider all the famous artistes (Arthur Askey, Duke Ellington, Cleo Lane, etc) who have passed through them. Geoff said that the rooms were due to be upgraded but were typical of the period.

The AIA members declined the opportunity to dance to the melodious notes of the Wurlitzer organ. The ballroom was beautiful and gilded in gold; various couples were in full flow and had obviously trained as ballroom dancers. We thought that several couples were trying to impress each other with their dancing technique but we sneaked out before anyone could offer to show us the ropes on the dance floor.

The final tour was in the lift to the viewing platform, 480 feet above the base. The views were magnificent. The tide was out and we saw miles and miles of sand and promenade and mile after mile of Blackpool.

It was a memorable trip and we were most grateful to Geoff Sage and Dangerous Dave for their time and patience in showing us to the more exotic parts of the Blackpool Tower.

Barry Hood



Blackpool from the Tower

Photo: Barry Hood



A Charlie Cairoli outfit displayed at

Blackpool Tower

Photo: Barry Hood

St Pancras International

On the evening of Tuesday 13 November last year Eurostar ceased business at Waterloo international station and on 14 November re-opened at St Pancras. Eurostar trains had already visited St Pancras station using the long tunnel from Dagenham and two SNCF bo-bo diesel-electric locomotives with a special test coach have been stabled at Ebbsfleet. This outfit had the job of verifying that all was well between Continental Junction and St Pancras in time for the new train services to start. A large work force has been employed at St Pancras to get things ready by mid November.

£600 million has been spent at St Pancras, twenty times as much as the total of £30 million needed to fully restore *Cuttie Sark* (see *IA News 142*, page 17). The latter is an essential investment for Greenwich, a poor London Borough. Compared with air travel a Eurostar journey emits just ten percent of the carbon dioxide. It could be argued that the £600 million spent at St Pancras is essential to save the Planet. Having the Eurostar terminus north of the Thames, conveniently next to King's Cross and near other major railway stations, will encourage far more travellers from north of London to use rail rather than fly.

Although planned in the 1860s, London never had a grand central station at which all the railway lines

coming into the Capital could interchange passengers. The awkward journey across central London with luggage from terminus to terminus is for many people unfamiliar with the Capital a considerable disincentive to through travel.

Despite a little apprehension, the Eurostar service from St Pancras International to the Continent via Stratford through the Channel Tunnel did start on time on Wednesday 14 November 2007. Some keen enthusiasts travelled out on the last Eurostar to leave Waterloo and returned on the first one into St Pancras. The refurbished and extended station had been officially re-opened by HM the Queen with grand ceremony on Tuesday 6 November. A nice touch at this Royal opening was an actor, Timothy West, playing the part of William Henry Barlow. He addressed the Queen as the Midland Railway's engineer responsible for the original design of the station.

On Monday 12 November 2007 no Eurostar trains could be seen at the North Pole Junction depot, Wormwood Scrubs. They had probably already left for Temple Mills in the Lea Valley by that date. The new timings from St Pancras to the Continent came fully into force on 9 December 2007 when most other fresh UK timetables were implemented.

The excellent new platforms beneath the northwest part of the station at St Pancras International for what used to be Thameslink also came into use on that date. King's Cross Thameslink station in the Pentonville Road closed for good on 8 December. The interchange with First Capital Connect trains to Bedford and Brighton is now much more convenient.

The opening of St Pancras International Station to the public was an unexpected shock - what an anti climax. On the evening of the first day, Wednesday 14 November 2007, there was nothing there - just a bare train shed bereft of facilities. The long Champagne bar was simply a row of seats along a platform. Not what one had been imagining from the enormous publicity: a swiz.

However as the days passed and more and more of the shops and eating facilities opened, St Pancras has been transformed into something rather magical, especially in the evenings, and it has become a place to visit. The pre-Christmas atmosphere was terrific. The overriding consideration was to make sure that the trains really did start on 14 November, and they did. Shops, cafés and entertainment had to wait.

Robert Carr

The National Railway Heritage Awards for 2007

The presentation of the 2007 National Railway Heritage Awards was made in Merchant Taylor's Hall

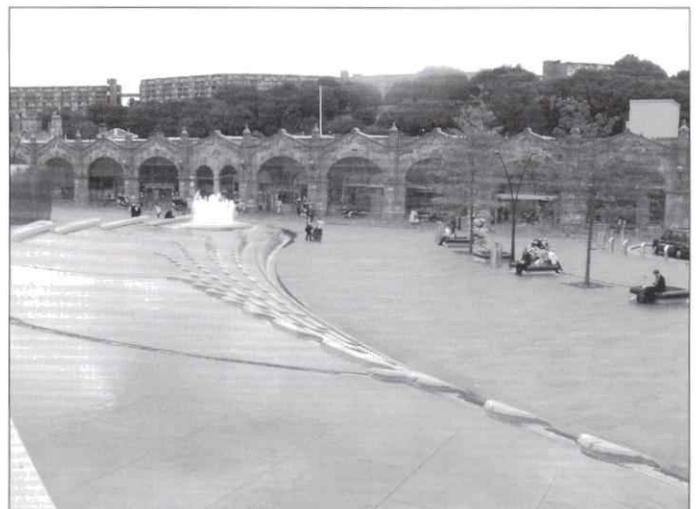
in London on 5 December by Gwyneth Dunwoody MP, Chairman of the Commons Transport Select Committee. These awards were instituted in 1979 with the object of encouraging high standards of structural restoration and environmental care by amateur groups involved in railway preservation, and were later extended to restoration work by public and commercial organisations as well as by private individuals restoring operational or redundant railway structures. The winners were announced by Steven Brindle from English Heritage, author of *Brunel: the Man who Built the World* (2005) and *Paddington Station: its History and Architecture* (2004).

The Ian Allan Publishing Heritage Railway of the Year Award went to the South Devon Railway for what in the judges' opinion presented the best all round achievement in meeting the expectations of visitors to a heritage line. The Ian Allan Publishing Award, given to the best overall entry in this year's competition, went to the South Yorkshire Passenger Transport Executive for the magnificent restoration and transformation of Sheffield station (see photograph).

The Modern Railways Restoration Award for the most meritorious entry in the commercial sector went to Arup/Allies and Morrison for the splendid new Western Ticket Hall at King's Cross St Pancras Underground Station, a boon to those of us who have had to pick our way from the mainline station during the recent building



Taken on the first day of service operation, Wednesday 14 November 2007, the photograph shows the interior of the William Barlow trainshed looking north. Many people are drinking champagne
Photo: R J M Carr



The restored railway station and Sheaf Square in Sheffield with its 'Cutting Edge' stainless steel sculpture recalling the city's role in the production of steel
Photo: Robin Leleux

works for the creation of St Pancras International for Eurostar trains.

The Westinghouse Signalling Award for the best restored signal box or signalling installation was won jointly by the Severn Valley Railway (Holdings) plc for Bewdley South Signal Box and by Network Rail/Construction Marine for Falsgrave Signal Box in Scarborough. The London Underground Accessibility Improvement Award went to the Stannah Lift Services for its sympathetic installation of new passenger lifts at Hove Station. The Railway Heritage Trust Conservation Award for the best restored listed structure in which the Trust had been involved went to Network Rail for their truly magnificent restoration of New Bailey Street Bridges in Salford.

For his work in turning Dent Station House on the Settle and Carlisle Railway into a unique holiday cottage, Robin Hughes won the First Engineering Craft Skills Award for the high quality material he had used in the conversion. It is the highest station mainline station in Britain and is already available for hire!

The GNER Volunteers Award was shared between the Swanage Railway for the Southern Railway footbridge formerly in use at Merton Park and now installed in Corfe Castle station, and the Severn Valley Railway for the replica GWR type Pagoda waiting shelter erected at Northwood Halt. All those present congratulated the Severn Valley Railway on their hard work in raising funds to meet the enormous cost of the damage done to the line by last summer's floods.

The Network Rail Partnership Award was won by the Hull and East Yorkshire MIND Charity for the sensitive conversion and creation of a vibrant Arts Centre in the former Parcels Office at Bridlington station. The Association of Train Operating Companies' Station Environment Award was won by TransPennine Express for their high level of all round care and custodianship of their many heritage stations.

Information about next year's awards can be obtained from the NRHA Public Relations Officer, Mike Lampport at mike.lampport@btinternet.com. As the Chairman of the judges, hard-working Robin Leleux, author of *The East Midlands in the Regional History of the Railways of Great Britain* series, has

said, the judging is done by an ever-expanding team of judges who have travelled many miles and braved rampant bullocks in the course of duty! Marilyn Palmer sits on the Panel of Adjudicators (yes, I do have an interest in the technological as well as social aspects of industrial archaeology!) and can also provide information on the awards, which do a very good job in maintaining the heritage value of our railway network and encouraging public as well as private operators to meet very high standards.

Marilyn Palmer

ARCUS finds a toilet

Butcher Works in Arundel Street is one of Sheffield's most important surviving cutlery and edge tool workshops and is listed Grade II*. It is built round the four sides of a courtyard, with a tall central chimney; the main parts date from the 1820s and 1850s. It had many sets of grinding troughs where grindstones were driven from lineshafting, and one range had these on three floors, supported on brick arches and cast iron columns.

W. & S. Butcher was a leading firm of manufacturers and merchants, particularly in the important North America trade in the early nineteenth century before it established its own steel and cutlery industries. The firm remained here well into the twentieth century. More recently the works has housed a variety of small firms, some in the cutlery trade (particularly scissor making). It was very atmospheric, and was used several times as a film set for Victorian period scenes. Now it has been refurbished as apartments by J. F. Finnegan. The conversion has been carefully done and has preserved most of the buildings, though some of the atmosphere has gone.

A team of archaeologists from ARCUS (Archaeological Research and Consultancy at the University of Sheffield) have surveyed the buildings and unravelled their complex history over the last two years. One aspect was the toilets in the works. Toilets were not provided for the workers until the late nineteenth century, when a curved block was constructed around the chimney base, so that two of the cubicles would have been heated when the chimney was in use. ARCUS also discovered and restored a rare mid-nineteenth century

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Bramah pan closet toilet, probably used by the company's directors. The surviving cast-iron bowl would originally have been topped by a ceramic bowl, possibly decorated.

The engineer and inventor Joseph Bramah (1749-1814) developed the first widely used flush toilet, which was superseded in the late nineteenth century by the valve closet toilet that we use today. Bramah also invented the hydraulic

press and jack and the fountain pen, developed a famous improved lock, and contributed to the development of machine tools. Henry Maudslay, another famous name in that field, joined him in 1789 and became his foreman, but left in 1797, supposedly after a disagreement over pay.

While Bramah spent his adult life in London, he was born at Stainborough Lane Farm near Barnsley. His biographer Ian McNeil (*Joseph Bramah: A Century of Invention*, David & Charles, 1968) points out that this was only a few miles from the Wortley forges, where a mechanically minded boy could have seen much of interest. There are two plaques to Bramah in Silkstone church, while Barnsley Council sponsors an annual Bramah Lecture on local and industrial history, which is presented jointly with the South Yorkshire Industrial History Society. The next Bramah Lecture is on 31 March 2008, at the Cooper Gallery, Barnsley, when Harold Taylor will speak about the lime trade at Cawthorne Basin at the head of the Barnsley Canal.

Derek Bayliss



The Bramah toilet as found

Photo: ARCUS

John Wilkinson Monument

July 2008 marks the 200th anniversary of the death of the ironmaster John Wilkinson. His cast-iron monument in Lindale, and the area in which it stands, is cared for by Allithwaite Upper Parish Council. When it was suggested that the monument looked scruffy and needed repainting, we discovered that there had been virtually no maintenance or safety checks since the major restoration in 1984.

The council commissioned consulting engineers, who removed the plaque which has a raised impression of Wilkinson's head. The space revealed was big enough for the engineer to crawl inside the monument and, with the aid of some ingenious ladders and planks, to take a good look. Happily, there are no serious defects, but the report advises remedial and maintenance work to the interior as part of any refurbishment programme. There is some rusting and pitting and we were surprised to learn that the monument is not actually fastened down, but rests on its own weight.

What started as a simple idea to repaint the monument and hold some celebrations in the village, has escalated into a full-scale community project. We must raise sums in excess of £21,000, which is considerably more than we had originally bargained for! The good news is that the County Council has already made a grant available specifically for the cost of an interpretation panel, which will be erected at the site to explain something of the Wilkinson story. We also recently received a kind donation from the Cumbria Industrial History Society for which we are very grateful.

It is unlikely that funding will be in place to carry out the major works in time for July, but we are keen that various aspects of the original project will still go ahead. They include educational work involving Lindale School, unveiling the interpretation panel and events at Castle Head as well as a village social event. Details of the celebration weekend, planned for July 19/20, will be publicised soon.

We hope the July events will raise much needed funds towards the cost of the work on Wilkinson's monument and the setting up of a permanent fund to ensure that it is properly managed and maintained

into the future, because the parish council does not have money available from within its limited budget. For further information and details of the July event, I can be contacted by email at: jane@janehall.wanadoo.co.uk.

Jane Hall

New Science Museum Library at Wroughton

The new Science Museum Library at Wroughton near Swindon was opened by Lord Waldegrave on Friday 7 December 2007. The new reading room on the south east of Wroughton Aerodrome has facilities for up to 30 readers at a time. A short distance away is the Library store, a new building inside a former hangar. With 18 km of shelving, it is climate controlled and very suitable for the long-term storage of rare items. The Library has more than 6,000 items pre-1800. As well as books there are personal papers of important scientists, technologists and engineers, plans, including dyelines, photographs, trade literature and so on.

Readers familiar with the Science Museum Library in London will recognise many items formerly on the shelves there. It should still be possible for readers in London to have access to most of the books at Wroughton. There is a 24-hour shuttle-service transferring material between Wiltshire and South Kensington. The new Library has more room than it had in South Kensington and is a wonderful asset for the locality. There are 420,000 items there.

It is the intention to develop the facility at Wroughton into a major international attraction for scholars. Seeing the pre-eminence of the material held this should not prove difficult. Unlike most research libraries this one will be freely open to the whole general public.

There was a period of considerable disagreement between the Science Museum and Imperial College over the future of the Science Museum Library, with a strong possibility that the Library collection would be broken up and dispersed. However, with the help of £3 million from the Government it did not happen and this important collection will remain intact at a more remote location.

The aerodrome at Wroughton covers 550 acres and 90 per cent of

the Science Museum's artefacts are now there. The library opening was the first opportunity for all disappointed supporters to meet and consider the future after the 'Inspired' project (see *IA News 143*, page 13) was dropped as a contender in the People's £50 Million Lottery Giveaway. (Sustrans' Connect2 project was voted the eventual winner.) It is still intended to develop a substantial museum on the site, although perhaps on a slightly reduced scale.

Robert Carr

The Botanic Gardens Garage

The Botanic Gardens Garage is the oldest motor garage surviving in Glasgow, and quite possibly anywhere in the UK. Built in Vinicombe Street in 1906-12, it was designed by David V. Wyllie, and has a distinctive façade of green and white glazed terracotta tiles. It has been recently upgraded to a Category A listing by Historic Scotland, recognising the building's national and international rarity and architectural significance. However, it is also on the official Buildings At Risk Register, maintained by the Scottish Civic Trust.

The building is safe in the short term now that owners Arnold Clark have withdrawn a plan to demolish this building and replace it with a new 4-storey structure incorporating flats, cottages, retail space, and a restaurant. A campaign to save the building by restoration and re-use, not demolition, has the following website: www.botanicgardensgarage.org and can be contacted by email at info@botanicgardensgarage.org

Closure of East London line

The East London railway line presently part of the underground system closed on Saturday 22 December 2007 for two and a half years while extensive works take place. When these are completed it will emerge in June 2010 as a new part of London Overground with extensions to Dalston Junction in the north and Crystal Palace and West Croydon in the south. It is reported that track is already being laid on the disused route to Peckham which is to be reinstated.

The line passes under the Thames by means of the

internationally famous tunnel constructed by the Brunels in 1825-43 and listed Grade II*. It is expected that civil engineering work will take place at both ends of this tunnel. In Rotherhithe the historic circular brick shaft used by the Brunels at the start of their mammoth tunnelling work will become surplus to requirements and is to be leased to the Brunel Engine House Museum who will make use of it for additional displays.

The planned vehicular access to the Thames Tunnel never took place and it was sold for railway use in 1865. A line from the LBSC railway at New Cross Gate was built through the tunnel to a terminus at Wapping on the north bank and opened in 1869. This line was later extended northwards by Sir John Hawkshaw to give access to Liverpool Street Station in 1876. The celebrated Brighton Terriers designed by William Stroudley in 1872 were locomotives which worked this line, the nickname deriving from their activity of burrowing underground. Fifty were built 1872-81 and ten survive. What successful engines they were.

Robert Carr

London Transport Museum re-opens

The museum re-opened on 22 November 2007 after a £22m refurbishment lasting two years, with funding from HLF.

Japanese silver mine

The Iwami Ginzan silver mine on Honshu Island in Japan, which dates back to the sixteenth century, has been added to the UNESCO World Heritage List alongside 15 other successful worldwide bids.

Wealden Iron Industry

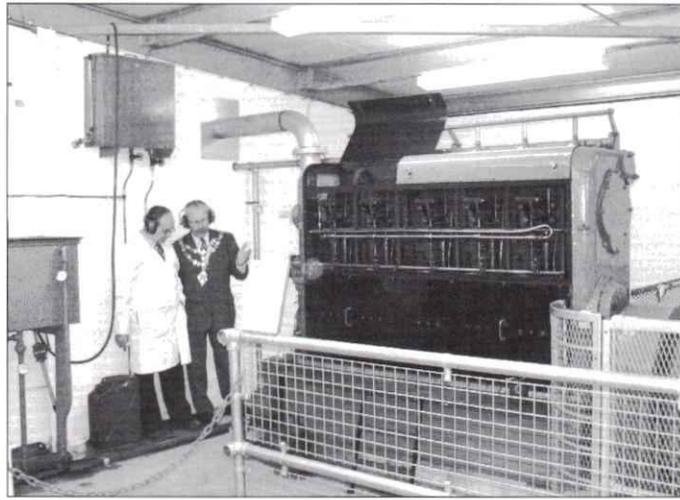
The Tebbutt Research Fund has grants available towards research into any aspect of the Wealden Iron Industry or subjects pertaining to it. Applicants may be individuals or groups, who should write a letter giving details of themselves together with relevant information concerning the research envisaged. This should be sent by 31 March 2008 to David Brown, Hon Sec Wealden Iron Research Group, 2 West Street Farm Cottages, Maynards Green, Heathfield, Sussex TN21 0DG.

A new engine house at Hereford

The Rotherwas Engine House at the Waterworks Museum Hereford was opened by Chris Chappell, the Mayor of Hereford, on 30 September 2007 with over 250 guests and visitors in attendance. Inside is the 170bhp Blackstone engine of 1939 which had been important in fire fighting at the Rotherwas munitions factory. It was rescued from a bunker in September 2006 and taken to the museum to be put in a new building, helped by HLF. The mayor started the diesel engine by compressed air and it now forms a perfect centrepiece of the museum's new exhibition of Hereford in WWII. The engine was donated by Collins Engineering Ltd of Pontrilas, Herefordshire. The Waterworks Museum Hereford has been awarded the Museum Accreditation with commendation.

Heartlands Project for mining district

Over £22m lottery funding has been given to regenerate an historic area in the heart of the Cornish Mining World Heritage Site near Camborne.



The restored Blackstone engine and the Mayor of Hereford in the new Rotherwas Engine House
Photo: Waterworks Museum Hereford

The plan includes a World Heritage Site gateway and parkland at Pool, including a performance space for events and artwork, educational facilities and cycle links to local trails. Local MP Julia Goldsworthy said the project would create 'an inspiring new landscape equipped with great facilities, rather than an eyesore you would rather avoid. This project will deliver fantastic new services and will re-energise

and regenerate the local area, providing a strong platform for future development.'

TICCIH calls for papers in China

The International Committee for the Conservation of the Industrial Heritage is holding its first conference in China, at Chengdu City, on 1-4 September 2008.

Everyone interested in presenting a paper is requested to send the complete title and its summary on one A4 page (about 500 words) by 29 February 2008. For further information, please see the website: www.mnactec.com/TICCIH/

Chengdu is the capital of Sichuan Province, within which there are five World Heritage Sites, among which the Dujiangyan Irrigation System is the ancient irrigation engineering, listed as the first Industrial Heritage in China. In and around Chengdu City there are industrial heritage museums and sites such as the Museum of Industrial Civilization, Museum of Printing, Museum of Traditional Paper Making, Museum of Shu Brocade, Museum of Jinsha Site, etc. The city also has operating a local mini train, running since the 1930s. The Conference will not only reveal industrial heritage sites around Chengdu, but also show exhibits about industrial heritage elsewhere in P.R.China.

Conference participants are asked to register their interest in attending the Chengdu conference by 1 March 2008. Final registration must be paid by 1 August, 2008.

REGIONAL NEWS

Yorkshire

The floods after heavy rainfall last June affected many areas of South and East Yorkshire, and reminded us of the destructive power of water. Many homes were flooded, notably in Sheffield, Rotherham, Doncaster and Hull. In Sheffield the A6102 to Stocksbridge was badly undermined south of Oughtibridge, where there was a history of problems back to the nineteenth century, and it is unlikely to reopen until later this year. A brick bridge of c1860 over the Don, on a minor road to Wardsend Cemetery, was washed away. An active archaeological excavation on an industrial site in Sheffield, and one just completed, was flooded.

Christine Ball described the damage at Kelham Island Museum in *IA News 143*, page 12. The river wall and car park need to be rebuilt. The construction of a one-tenth scale Brooklyn Bridge as part of the Upper Don Walk has been postponed. After a massive cleaning operation, changes are being made to the displays, but it will be some

time before the museum can reopen to the public. Rotherham Museums, like Sheffield, had their social history reserve collection stored in a building that was flooded, and lost much of it.

The biggest drama was the threat that Ulley Reservoir's earth dam near Rotherham would collapse. It was built in 1874 for water supply to Rotherham but bought by the Borough Council in 1986 as a country park, which is popular for water sports. Erosion appeared during the rains and floods, and a collapse would have inundated many homes, a major electricity substation and part of the M1. A massive pumping operation lowered the level and removed the threat. Now a programme of investigations and design work is in progress. It is likely that the reservoir will be remodelled, the overflow channel filled in and new spillways built. The work will take until autumn 2009.

Middleton Park to the south of Leeds has a history of coal mining from at least the early seventeenth

century. The Brandling family developed the Middleton Railway (1758) to carry coal into Leeds from the foot of the Park. There are many mining remains of different periods, and the Friends of Middleton Park are carrying out an archaeological survey as a Lottery funded community project, supervised by Martin Roe of Meerstone Archaeological Consultancy. A survey has recorded almost 280 mine shafts, and found evidence for the medieval management of the woodland. This winter key areas are being surveyed in more detail. Similarly, a survey of the site of West Bowling Golf Club, Bradford, before redevelopment found traces of an eighteenth and nineteenth-century landscape. Despite later disturbance, evidence was found of coal and ironstone mining and agriculture.

A new interactive map at www.holbeckurbanvillage.co.uk celebrates the work of the pioneers of the Industrial Revolution in Holbeck, Leeds, and shows how the Urban Village is preserving their

legacy. Phase two of the regeneration of Matthew Murray's Round Foundry is under way, and will convert the Dry Sand Foundry, 101 Water Lane, and the Engine House into offices. The name comes from a circular casting hall of 1802, destroyed by a fire in 1875. Some of the converted buildings are now the Round Foundry Media Centre, and a plaque of 1929 records Murray's achievements. A new plaque in a series to commemorate the industrial heritage of Hunslet, Leeds, marks the site of the Midland Engine Works of J & H McLaren, founded in 1876 and moved to the Airedale Works, Hunslet Road, in 1946. The firm made steam engines, traction engines and ploughing engines, and from 1926 it was Britain's first volume maker of high speed diesel engines.

The historic Kirkstall Forge site in Leeds is being redeveloped. Most has been demolished, but the listed forge building will be kept and listed cottages refurbished. It was claimed to be Britain's oldest iron works, founded by the Cistercian monks of

Kirkstall Abbey and active for over 750 years. It was run for generations by the Butler family. Iron making ended in the 1920s and it then specialised in making axles and other heavy steel drop forgings, closing in 2002. The 10-year development is estimated to cost £240m. The rare water-powered tilt hammer is in situ and no decision has been reached about its future. A 60-ton anvil, which took two days to excavate, has gone to a forge in South Yorkshire.

Important Yorkshire textile mills still on the English Heritage Buildings at Risk Register include Manningham Mill, Bradford; Hunslet Mill, Leeds; and Waterloo Mill, Silsden. Another is Lumb Mill at Wainstalls, a remote location north west of Halifax. It began as a water-powered cotton spinning mill in 1803 and was converted to worsted yarn spinning in the 1820s. Water power was used until 1953, when it failed and production was transferred to a new building. The replacement mid-nineteenth century pitchback wheel is being restored privately, but the mill building is now used for motor repairs.

Shaw Lodge Mills, Boyes Lane, Halifax, mentioned in the last report, have been listed at Grade II*. A well preserved textile warehouse, India Buildings, 88 Horton Street, Halifax, which is listed Grade II, has been recommended for recording before development. Legrams Mill, 1 Summerville Road, Bradford, was built in the 1870s and later as a worsted spinning mill with combing sheds, to designs by the Bradford architects Lockwood and Mawson, and is listed Grade II. Again, archaeological recording has been recommended before development, as it was for Springfield Mills, Stanningley, built in the late nineteenth century for boot and shoe manufacture but later converted to worsted manufacture.

2007 saw the 50th anniversary of the acquisition of Rockley iron furnace, near Birdwell, Barnsley, for preservation by what is now the South Yorkshire Industrial History Society. The furnace was built c1700, used until the 1740s or later, and briefly reused around 1800 with a change to coke fuel. On the same site is a ruined Newcomen engine house with an 1813 datestone, for draining an iron ore (and coal?) mine. The anniversary was marked by a lecture to the Society by David

Crossley, who carried out excavations in the 1970s and 80s at the Furnace and the earlier Rockley Smithies, now under the M1. Conservation work, funded by English Heritage and two local trusts, was carried out in October to repair and consolidate the standing brickwork at the Society's site at Bower Spring, Sheffield. This has the remains of two steel cementation furnaces of c1828, which survive in cross section so that the internal features can be seen, and it now stands by the latest extension of the city's Inner Relief Road.

Archaeological excavations on development sites in Sheffield have continued to find many remains of crucible steelmaking. As the areas where the process was most used are being extensively redeveloped, this is a once-only opportunity. The process was developed by Benjamin Huntsman in Handsworth and Attercliffe around 1742, using bars from cementation furnaces as raw material. It was the main steelmaking process until Bessemer developed his Converter in the late 1850s, and it continued in use in Sheffield until 1972.

Most firms had anything from five crucible holes upwards, but a few examples have been found in recent excavations, for example in the Crofts area off Tenter Street, of single crucible holes. Nothing has been found in the literature to explain these; one idea is that they may have been used by very small and specialised edge tool firms. A previously unsuspected and well preserved crucible shop cellar was found by ARCUS at the Titanic Steel Works, Malinda Street, which also has a listed standing crucible shop

with cellar; it is hoped to conserve these, possibly with some public access. Several other sets of crucible holes, from demolished works, have been found on the same large development site. Excavations by York Archaeological Trust at the site of Union Forge, Savile Street, which worked as a steam hammer forge until 1995, found a crucible furnace cellar, the bases of two cementation furnaces, and a reverberatory furnace, possibly an open hearth furnace for making steel but probably a reheating furnace.

A new conservation area at John Street, Sheffield, covers Stag Works (1877 for Lee & Wigfull, silver and electroplated goods) and Portland Works, Randall Street (1877 for R F Mosley, cutlery manufacturers). New listings in Sheffield at Grade II include three cutlery works (the 1850s Don Cutlery Works in Doncaster Street, Sellers Wheel in Arundel Street, and 48-50 Garden Street) while the fine group of 1850s-70s cutlery works in Milton Street, Eye-Witness Works (home of Kitchen Devil knives) and Beehive Works, have been upgraded to II*.

Whirlow Wheel, the water-powered cutlery grinding wheel mentioned in the last report, has been partly demolished after a photographic record was made. The back wall, foundations and water turbine have been kept. An intact grinding wheel in the Porter valley, Shepherd Wheel, dating back at least to 1584 but with buildings of around 1800, was formerly open to the public, but the dam is silted up and leaking and there are now only occasional open days. Funding has been found for a survey of the dam

and a project officer, and funds are being sought for repairs to permit limited running of the wheel.

Excavation by MAP Archaeological Associates at the site of High Town Glassworks, Castleford, found remains of the early twentieth-century glassworks and a late nineteenth-century brickworks, and confirmed that there was an earlier glassworks. Archaeological evaluation has been recommended for the site of the town's earliest pottery, Russell's (or the Mere) Pottery, probably founded in 1770 and used until the late twentieth century as part of Castleford Pottery. In East Yorkshire, an exhibition in Beverley last summer recalled the long industrial history of the town's Beckside district at the head of the navigable Beverley Beck. It was a centre for tanning and leather working from the fourteenth century and later had boatyards, an animal feed mill, an engineering works and a gasworks.

The Yorkshire Dales National Park has commissioned surveys of the Burtsett stone quarries in Wensleydale, which have been traced back to the mid-tenth century, and the Stone House Marble Works in Dentedale, which had two water-powered mills, one for sawing and one for polishing, and closed in 1907. The Park is supporting the Kettlewell Historic Industries Project in Wharfedale, funded by the Local Heritage Initiative, to improve access to the lead smelt mill and other industrial sites, and increase public understanding of the industrial history of the village. Recent listings include a rare sighting tower at Ilton near Harrogate, built in 1903 to verify the alignment of Carlesmoor aqueduct which supplied Harrogate with water from Roundhill reservoir.

The Heritage Lottery Fund has granted £42,100 to Kirklees Culture and Leisure Services, working with the canal based Mikron Theatre Company and British Waterways, to promote the inland waterways network among young people. An archaeological watching brief has been recommended for repair work on Paddock Foot aqueduct on the Huddersfield Narrow Canal, one of the few to survive relatively unchanged from the Canal's construction in c1794-1811. The consultants Arup, with a grant of £85,000 from the development agency Yorkshire Forward, have



The crucible cellar on the Union Forge site in Savile Street, Sheffield

Photo: Derek Bayliss

reported on the problems of replacing the collapsed Norwood Tunnel on the Chesterfield Canal, and suggest that a surface route with new locks would be feasible. The centenary of the collapse, which cut off the canal's Derbyshire stretch, and the plans for restoration, were marked by festivities at Kiveton Park in October.

Sheffield still has two former horse tram depots, Tinsley (1874) and Heeley (1878), both listed. The Tinsley depot housed the Sheffield Bus Museum until recently, but that has now moved to Aldwarke, Rotherham, as the South Yorkshire Transport Museum. The Heeley depot has been converted to apartments, though the developer demolished the entrance arch without permission in January 2007, claiming that gales had left it unstable, and was required to rebuild it.

The Grade II* listed Wicker Arches, a stone viaduct of 40 arches, 660 yards long, built in 1849 to carry the Manchester, Sheffield and Lincolnshire Railway across the Don valley and to support Sheffield Victoria station, have been added to the Buildings at Risk Register. They have suffered decades of neglect, and a damp course inserted in 1990 has failed. A proposal to demolish two or three arches for a road scheme was narrowly averted, and a statement by Network Rail that 'we treat it the same as any other bridge' is not very reassuring, but the Arches continue to carry goods trains to and from Stocksbridge steel works.

Derek Bayliss and David Cant

East Anglia

There are perhaps two themes this year: the conversion of industrial buildings to apartments and offices, and the reliance of any preservation schemes on individuals or local initiatives, though the Essex County Council systematic recording of its industrial monuments puts all other local authorities to shame.

In Cambridgeshire, the Stretham Old Engine problems are at last solved thanks to Ross Childers, the engineer of the Middle Fen Drainage Board who worked with the Waterbeach Level Drainage Board to solve the problem of the jammed scoop wheel. A fitter, working in a very confined space, has also succeeded in repairing the broken

steel plate which had been fouling the flywheel. Equal acknowledgement is due to Keith Hinde and the preservation trust who negotiated all this. The guided busway along the abandoned Cambridge to St Ives branch is under construction, but as a consequence almost all the surviving structures are being demolished, including a rather nice three arch bridge taking the Over to Longstanton road across a cutting. After much local lobbying Histon station, the only one complete with canopy, is being preserved, and the gatekeeper's hut from Histon has been dismantled for re-erection.

Plans for Foster's steam mill in Cambridge, already including flats in the main building, now envisage moving the records of the county and Cambridge into the silo. The private owners of Willingham smock mill are making good progress with its restoration, with sails under construction, hopefully to be installed shortly. At the Cambridge Museum of Technology, now the boiler repairs are completed and the main Hawthorn Davey engine is being steamed again, work has started on overhauling the first of the 94hp 'Y' type gas engines from the National Gas Engine Co. of Newcastle-under-Lyne, which hopefully will be back in service in time for its centenary in 2009.

During 2007 the Essex County Council Historic Environment Record (ECCHER) commenced fieldwork on two more comparative surveys of industrial monuments, following 17 previous surveys including Industrial Housing, The Malting Industry and Poor Law Buildings. The latest reports comprise a countywide survey of extant Watermills and Steam Mills and little by little a survey of the entire active and redundant Railway Network. These projects aim to identify and record each site, assess significance and statutory designations and offer recommendations for future site management. As part of the Industrial Housing report in 2006, recommendations were made for new Conservation Areas and Conservation Area extensions to incorporate industrial housing across the county. Since then four Conservation Area extensions have been designated to include Courtauld 'Tudor' cottages and early twentieth-century Garden City style industrial housing built by local

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Chimney top repair.
(See picture top right)



Sluice gate repair.



Bridge repair.
(Photo courtesy of London City Council)

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industrialists the Crittalls and the Hunts of Earls Colne.

Also in Essex, the Museum of Power in Langford is trying to secure the future of the 1904 'tin tabernacle' of St Mary's Mission in South Woodham Ferrers. This was erected to serve a rapidly growing population. The intention is to re-erect it on the museum site to be both exhibit and much needed display space. In June the Essex Fire Museum was opened in the former Auxiliary Fire Service garage at Grays Fire Station. This museum is very much the work of Roger Pickett, a now retired firefighter who has been collecting artefacts, photographs and memorabilia since 1983 and has become Assistant Curator. Initial funding came from the Essex Fire Authority. Opening times are rather restricted by its presence on an operational station.

In Norfolk, the Time and Tide Museum in the old Tower Curing Works in Yarmouth (which the AIA visited as a working site during the Norwich Conference) has proved very successful, with visitor numbers 40% above those predicted when it

opened, though the poor summer may have been a factor in this. In Lowestoft the replating and restoration of the last steam drifter, the *Lydia Eva*, is under way with the help of a large Lottery grant, and it is hoped also to get the engines working so she can put to sea under steam again. Whether she will attempt to repeat the trip to Kings Lynn made after she was first restored is less certain. Fakenham Gas works Museum has also had a good year with better publicity and increased visitor numbers, even though only open on Thursdays. It is hoped next year to also open at weekends in high summer. Perhaps its popularity may be increased by the Skaledale gasworks kits in the Hornby Railway range, which are very much based on Fakenham!

At Gressenhall rural life museum (now called 'Roots') the boiler has been overhauled and returned, so their stationary steam engines should be working for special events. Less happy is the total lack of any news about the unique New Mills Compressor station, which compressed air for

the Schone ejectors used in the Norwich sewerage system. One disastrous suggestion was to convert it to a restaurant, which would of course mean removing most or all of the machinery, at present very largely intact and the only thing to give meaning to the building. Also in Norwich, conversion proceeds apace at Colman's mustard works, and reports suggest that despite their listed status some liberties have been taken with the fine mid-nineteenth century mill buildings, such as adding picturesque but irrelevant 'lucams'. One loss is the fine large 1937-8 garage of Steward and Pateson's brewery with its wide span roof, the second such loss in Norwich.

On the Suffolk border the maltings complex at Ditchingham, where malting was brought to an end by a roof fire some years ago, is shortly to be converted into the usual flats. The main oddity of the principal building is that it was built as a silk mill and converted for malting. In WWII its floors were reinforced to act as a depot for the USAF, but afterwards it returned to malting and was one of the last floor maltings to work in East Anglia. The Norfolk IAS continues to investigate buildings due for demolition, including an early but much altered maltings (c1800) in North Walsham. Unusually for Norfolk the perforated kiln tiles were glazed, and came from Stanley tiles of Nuneaton. Another site was in Yarmouth, where concrete covers on the ground floor may have been over pickling tanks for herring curing, though within living memory the building has only been used for beating chambers and net storage. Kelly's Directories variously list Mr E A Baker, its owner from c 1900 to the late 1930s, as boat owner, fish merchant and fish curer, so do little to resolve the conundrum. In the west of the county, Campbell's Soup factory near Kings Lynn, built towards the end of the 1950s and a good example of the industrial buildings of its period, is to close, while the beet factory at Whittington is diversifying into biofuels and using the waste heat

from the sugar refining process to provide heat for glasshouses.

Finally we come to Suffolk. Here too there are business closures, notably Storeys of Brantham which went into administration in the spring. This site houses one of the world's first plastics factories, making Xylonite (better known as celluloid). On the current 'Buildings at Risk' register is Bawdsey Manor, where radar was developed in the 1930s. However, the world's first Radar Transmitter block, now a museum, does not seem to be threatened. At risk for a different reason, from coastal erosion, is the 215 year old Orford Ness lighthouse, now only 45m from the shore. Lowestoft station is threatened with demolition with a new station 400 metres further away from sea and shops, all in the interest of more redevelopment. Fortunately, not only most of the inhabitants and all rail users are fighting the proposal, so too is One Rail, our local operating company. For years many of the malt floors and kilns at Snape Maltings have been standing near derelict, but work will shortly commence on converting these either to housing or as part of the expanding Aldeburgh Music campus. A successful maltings conversion at Elsey's Yard in Bury St Edmunds which has won an award

for craftsmanship now provides accommodation for the vulnerable and homeless. Another recent conversion is in Halesworth, where the long empty North Sea Telegraph booster station has been converted into housing.

Undoubted losses include Marriage's steam flour mill at Felixstowe Dock, along with the tank farm, the remaining seaplane sheds from the Marine Aircraft Experimental Establishment and the Dock basin. All were in the way of the expansion of this giant container port. In Bury St Edmunds there is an uncertain future for the timber Round House which was the pay office of the cattle market. This too was in the way of redevelopment, but there seems some doubt about where it might be re-sited and who will meet the cost of renovation. Luckier has been the Macfarlane drinking fountain in Stowmarket Recreation Ground. Because it has a dedication to the Stowmarket men who fell in WW1, the British Legion and Town Council promoted a fund for its restoration.

On the milling front, work is actively proceeding on the restoration of Bardwell Mill, largely funded through local sponsorship (£25 for a shutter – they need 192) and special events. Work by the Suffolk Mills Group on Syleham Mill

started well but came to a sudden halt when Chris Hulcoop fell from a ladder and broke his arm. Here the roundhouse is in fair shape and houses all the original machinery, but the buck was almost non-existent. An aluminium roof is being installed to keep the roundhouse dry. At Pakenham watermill the top floor of the miller's house is being converted into a self-contained flat to be let to provide income, and at Butley the mill itself has been converted into five holiday apartments. The large Lark Mills complex at Mildenhall is to be converted into flats and offices, but the three water turbines are to be retained in situ, and one, a 1956 Gilkes, will be used for power generation. Finally, Woodbridge Tidemill is looking for £1m to renew the water wheel, improve access especially for the disabled, in part by installing decking round the wheelhouse, which would also improve evacuation in case of fire – a serious concern in an almost completely wooden building.

Sources of information include Suffolk IAS, Norfolk IAS and Suffolk Mills Group newsletters, Ken Alger, Alan Denny, Peter Filby, Adam Garwood, Keith Hinde, Derek Manning, Tony Vine and Steven Worsley.

David Alderton

REGIONAL CORRESPONDENTS

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

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Region 2: IRELAND

Fred Hamond, 75 Ocksley Park, Belfast BT10 0AS

Region 3: NORTHERN ENGLAND

Cumbria, Northumberland, Tyne and Wear, Durham and Cleveland
Graham Brooks, Coomara, Carleton, Carlisle, Cumbria CA4 0BU

Region 4: YORKSHIRE

North, South and West Yorkshire and Humberside

Derek Bayliss, 30 Muskoka Avenue, Bents Green, Sheffield S11 7RL

Region 5: NORTH WEST ENGLAND

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Roger N. Holden, 35 Victoria Road, Stockport SK1 4AT

Region 6: WALES

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Region 7: WEST MIDLANDS

Shropshire, Staffordshire, West Midlands, Warwickshire, Hereford and Worcester

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Region 8: EAST MIDLANDS

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Region 10: GREATER LONDON

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Region 12: SOUTH EAST ENGLAND

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Region 14: SOUTH WEST ENGLAND

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**ADVERTISE
IN IA NEWS**

Local Society and other periodicals received

Abstracts will appear in *Industrial Archaeology Review*.

Scottish Industrial Heritage Society Review, Special Issue: Wilsontown – 2006??

Berkshire Industrial Archaeology Group News, 14, Summer 2007

Bristol Industrial Archaeological Society Bulletin, 122, Autumn/Winter 2007

Cumbria Industrial History Society Bulletin, 68, August 2007

ICE Panel for Historical Engineering Works Newsletter, 115, September 2007

Greater London Industrial Archaeology Society Newsletter, 231, August 2007; 232, October 2007

Hampshire Industrial Archaeology Society Newsletter, 69, December 2007

Hampshire Mills Group Newsletter, 78, Autumn 2007

Histelec News: Newsletter of the South Western Electricity Historical Society, 36, August 2007

Industrial Heritage, 33/2 Autumn 2007

Industrial Heritage Association of Ireland Newsletter, 30, November 2007

Lancashire History Quarterly, 11/2, Winter 2007

Manchester Region Industrial Archaeology Society Newsletter, 121, September 2007; 122, November 2007

Merseyside Industrial Heritage Society Newsletter, 278-281, August – December 2007

Museum of Bath at Work Newsletter, Summer Special 2007

Northamptonshire Industrial Archaeology Group Newsletter, 103, Summer 2007; 104, Autumn 2007

Piers: the Journal of the National Piers Society, 84, Summer 2007

SAVE Britain's Heritage Newsletter, July 2007

Scottish Industrial Heritage Society Bulletin, 44, September 2007

Search: the Bulletin of the South Wiltshire Industrial Archaeology Society, 86, September 2007

Somerset Industrial Archaeological Society Bulletin, 105, August 2007

Surrey Industrial History Group Newsletter, 159, September 2007; 160, November 2007

Sussex Industrial Archaeology Society Newsletter, 136, October 2007

Sussex Mills Group Newsletter, 136, October 2007

TICCIH Bulletin, 37, Summer 2007

WaterWords: News from the Waterworks Museum, Hereford, Autumn 2007

Welsh Mines Society Newsletter, 57, Autumn 2007

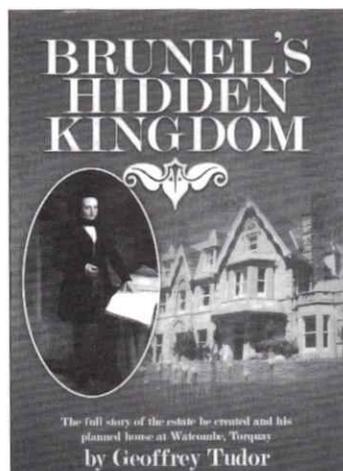
Yorkshire Archaeological Society Industrial History Section Newsletter, 71, Autumn 2007

Yorkshire History Quarterly, 12/3, Winter 2007

Books received

Brunel's Hidden Kingdom, by Geoffrey Tudor. Creative Media Publishing, 2007. 160pp, 141 illus. ISBN 0-9546071-2-0. hardback £19.50.

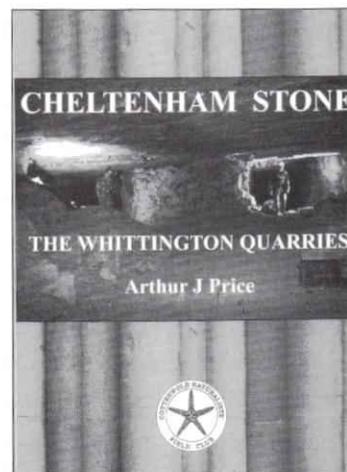
A surprising aspect of the world of I.K. Brunel is examined in this book which has a forward by Professor Angus Buchanan. It describes the 12 years Brunel spent creating his Watcombe Park estate at Torbay in Devon, helped by his wife Mary and gardener Alexander Forsyth. Although the ambitious scheme was never completed, Brunel laid out a garden and landscape, traces of which still survive. His Watcombe Garden Book, recently discovered at Bristol University, includes his



notes on water supply, water gardens, instructions for tree planting schemes and shelter belts, with tables recording tree measurements and designs for topiary. During his years working on his grand project he also had time to help protect Babbacombe Beach from a proposed gasworks and gave financial support for a local water supply and rebuilding the parish church. Many of the book's illustrations are in colour, with copies of Brunel's notes and designs as well as photographs of the estate today.

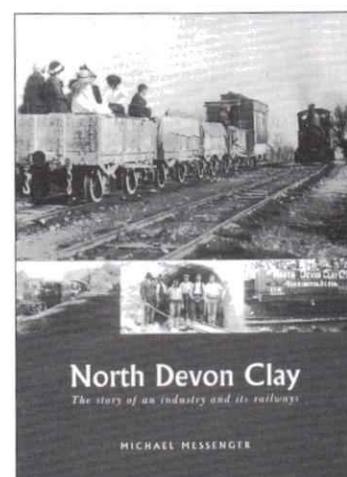
Cheltenham Stone: The Whittington Quarries, by Arthur J. Price. Cotteswold Naturalists' Field Club, 2007. 167pp, 124 illus. ISBN 1-904530-08-07. £12.99.

This book takes a new look at the sources of freestone for the buildings of Regency and Victorian Cheltenham. While the Leckhampton quarries are well known, it now seems that other quarries were just as important. The book concentrates on underground quarrying at Dodwell Hill and Syreford around Whittington, a quiet village east of Cheltenham. Archive documents, personal reminiscences and the results of many years' fieldwork by the author above and below ground are presented with detailed maps, surveys, drawings and photographs. After describing the history of the quarries, quarrymen, stonemasons and builders, chapters cover underground fieldwork and the finds made, while an important final chapter discusses their interpretation. The many illustrations, several of which are in colour, include underground plans, scale drawings of artefacts, and photographs which show the evidence for underground quarrying techniques as well as examples of finished buildings. Arthur Price's book is a valuable contribution to the subject and is fully referenced with a comprehensive index.



North Devon Clay, by Michael Messenger. Twelveheads Press, 2007. 120pp, 168 illus. ISBN 978 0 906294 65 9. hardback £21.00.

The remote deposits of ball clay in north Devon were exploited after 1881 when the 3-foot gauge Torrington & Marland Railway was built. Remarkably, the engineer was the internationally known J. B. Fell who used it to demonstrate his patented ideas on light railway construction, resulting in spectacular timber viaducts. An eclectic collection of locomotives worked this 6-mile line for over 40 years, and within the works until 1971. The much-delayed standard gauge North Devon & Cornwall Junction Light Railway, from Torrington to Halwill Junction, eventually opened in 1925 with government backing to support agriculture and relieve unemployment. It was one of the last branch lines in Britain but immediately struggled against competition from road transport. This book describes the development and growth of both the ball clay industry, at Marland and Meeth, and of the railways that made the industry possible. Whilst the clay industry thrives, the railways have all been superseded and their full stories are recorded. First published in 1982, the book has been fully revised and expanded as a result of much additional research and information. Many new striking photographs are included, alongside maps, diagrams and scale drawings of the narrow gauge locomotives and rolling stock.



4-6 APRIL 2008
CROSSING PATHS OR
SHARING TRACKS? FUTURE
DIRECTIONS FOR THE
ARCHAEOLOGICAL STUDY
OF POST-1550 BRITAIN &
IRELAND

at the University of Leicester, to consider the contributions made by AIA and other organisations to the study of post-1550 material heritage. A flyer and booking form are included with this mailing. Or contact: Prof Marilyn Palmer, e-mail: mai@le.ac.uk

19 APRIL 2008
INDUSTRIAL ARCHAEOLOGY
OF THE LAKE COUNTIES - 40
YEARS ON

at the University of Cumbria Ambleside Campus, with speakers on the contribution of organisations involved in IA in the district, hosted by the Cumbria Industrial History Society. For details and a booking form send SAE to Dan Elsworth (CIHS), 7A Town Street, Ulverston, Cumbria LA12 7EY.

19 APRIL 2008
SERIC

at the University of East London Campus in Docklands, the South East Region IA Conference, hosted by the Greater London IA Society.

23-25 APRIL 2008
INDUSTRIOUS WILTSHIRE

at Urchfont Manor, lectures and field visits exploring IA in south Wiltshire and the Vale of Wardour. For details contact Urchfont Manor

College, Devizes, Wiltshire SN10 4RG, Tel: 01380 840495. website: www.urchfontmanor.co.uk

26 APRIL 2008
TRANSPORT IN NORTH EAST
WALES

at Connah's Quay Civic Hall, the Friends of Clwyd Archives annual day school, with speakers including David Gwynn, Barrie Trinder and Geoff Pickard on transport in NE Wales. Details from Roy Coppack, Bryn Gwyn, 2 Rhodfa Anwyl, Rhuddlan LL18 2SQ, email: roy.coppack2@btinternet.com

10 MAY 2008
EMIAAC 75: SETTING SAILS IN
SNEINTON

at the Bakersfield Community Centre, Sneinton Dale, Nottingham, hosted by the Nottinghamshire IA Society. For details and a booking form send SAE to EMIAAC 75, Joan Hodges, 2 Knighton Road, Woodthorpe, Nottingham NG5 4FL.

10 MAY 2008
MILESTONE SOCIETY
SPRING MEETING

at Battle Town Hall, East Sussex, with a local theme based around East and West Sussex. Guests are welcome. Enquiries to John Atkinson via Terry Keegan, email: terry-keegan@supanet.com or Tel: 01299 832358.

17 MAY 2008
SWWRIAC

at Kingswood Civic Centre, Bristol, the South Wales & West Region IA

Conference, organised by Bristol IA Society. For a booking form, send SAE to Roger Davis, 8 Northfield Road, Portishead, North Somerset BS20 8LE.

19-24 MAY 2008
AIA SPRING VISIT TO
SAARLAND

See advert inside. Contact Paul Saulter, 80 Udimore Road, Rye, Sussex, TN31 7DY, or see website at www.heritageofindustry.co.uk

29 MAY - 1 JUNE 2008
SIA ANNUAL CONFERENCE
 at San Jose, California, USA, the 37th Annual Conference of the Society for Industrial Archeology. Details, booking and membership on the SIA web-site, www.sia-web.org.

29 JUNE - 4 JULY 2008
6TH WORLD
ARCHAEOLOGICAL
CONGRESS

at University College, Dublin. The theme 'Critical technologies - the making of the modern world' will be of interest to AIA members, with four sessions on Archaeologies of internment; Atomic Archaeology; Method and Machine; and Nostalgia for Infinity. More details at www.ucd.ie/wac-6/.

13-16 JULY 2008
TRADE AND INDUSTRY
AROUND THE SOMERSET
MOORS

at Dillington House, a course on IA around the Somerset Moors or 'Levels' through lectures and field

visits. Details from Dillington House, Ilminster, Somerset TA19 9DT, telephone 01460 52426, website: www.dillington.co.uk

5-10 AUGUST 2008
ICOHTEC SYMPOSIUM

at Vancouver, Canada, a symposium celebrating the 40th anniversary of the International Committee for the History of Technology. For details, contact Angus Buchanan, e-mail: hssraab@bath.ac.uk.

22-28 AUGUST 2008
AIA ANNUAL CONFERENCE
 at Lackham near Chippenham, Wiltshire, the AIA's annual conference. Details and a booking form are included with this mailing.

More Diary Dates can be found
 on the AIA website at
www.industrial-archaeology.co.uk



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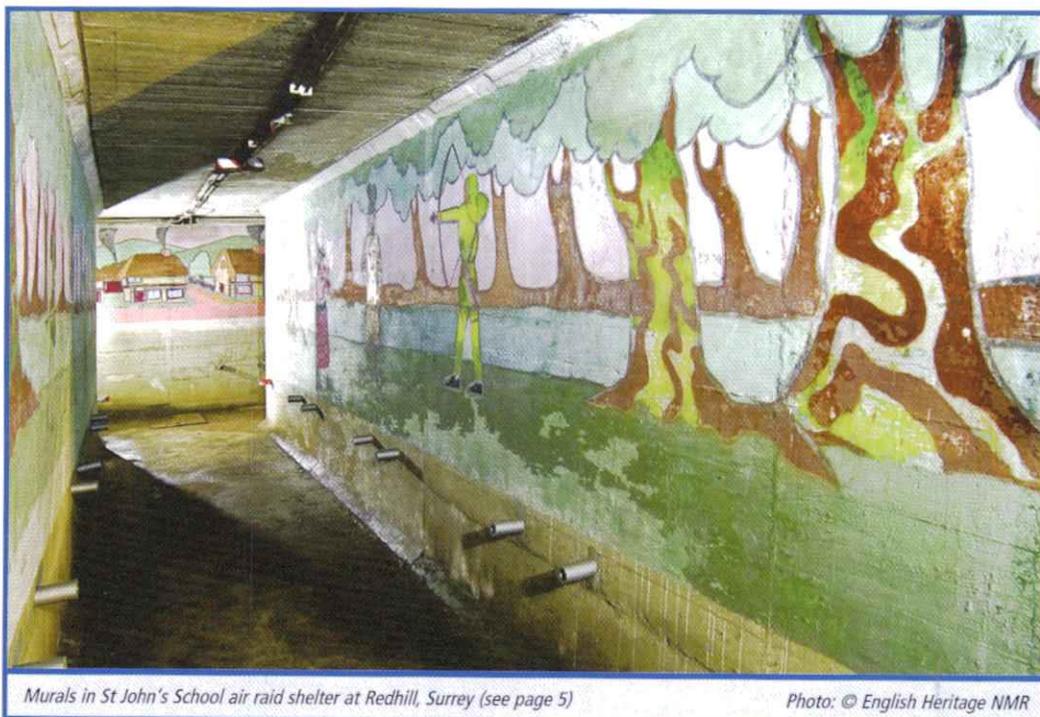
Published by the Association for Industrial Archaeology. Contributions should be sent to the Editor, Dr Peter Stanier, 49 Breach Lane, Shaftesbury, Dorset SP7 8LF. News and press releases may be sent to the Editor or the appropriate AIA Regional Correspondents. The Editor may be telephoned on 01747 854707 or e-mail: aianewsletter@yahoo.co.uk.

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. Tel: 0116 252 5337 Fax: 0116 252 5005.

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



Murals in St John's School air raid shelter at Redhill, Surrey (see page 5)

Photo: © English Heritage NMR