

A PERSPECTIVE ON INDIAN INDUSTRIAL ARCHAEOLOGY

This account is based on a visit made in the winter of 1986-87 mainly to see aspects of education so that items of industrial archaeological interest occurred as supplementary to the main itinerary and not as deliberately planned visits. Therefore the observations are unlikely to be truly representative of the area visited which in itself is only a very small part of India.

INTRODUCTION

When considering industrial archaeology in India it is easy to think of aspects of that country's present working life as survivals of practices which have been replaced by later developments in the Western World. To use these examples to help understand and interpret the physical evidence of past industrial activities as found in Europe would be very misleading. It is therefore intended to make some general comments on working practices in India before considering three particular industries.

The contrast between industrial activities is more marked in India than in the West. Many small businesses are conducted under very simple conditions, for example people sitting on the pavement in a busy city using hand-driven blowers to heat metal for engineering production on a very small scale. However, the scale of other manufacturing activities makes India about the tenth in the world league of industrial nations.

Whereas nowadays in the United Kingdom a particular activity is carried out in more or less the same way wherever it is located in the country, in India regional variations are still pronounced. For example, brickmaking in the Delhi-Agra-Jaipur areas tends to be in large apparently permanent works firing bricks in large circular trenches. Further south, firing is in clamps and nearly always rectangular except around Udaipur where the usual shape is of a conical form.

In India there are many instances where those practising the same craft or trade or selling the same type of commodity do so in adjacent premises: the same used to be the case in this country as evidenced by street names such as Skinners' Lane, Gold Street and so on. In Delhi a number of firework makers and their shops were next door to each other and a little further along the same street the makers and sellers of automobile replacement parts were side by side. In Agra along a road called The Strand there was a row of about six 'firms' all making

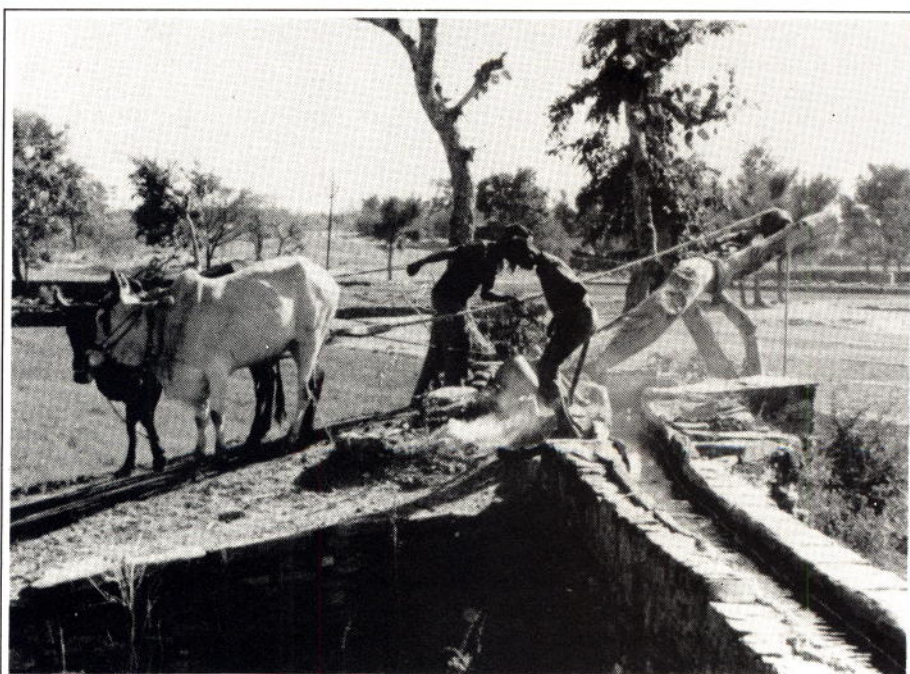
small millstones for grinding millet and similar. The situation in Jaipur was even more marked where whole areas of the city were given over to a single trade such as carpet weaving, jewellery making or stone cutting. From everywhere in the stone quarter came the sound of tools chipping on stone. One could stand at a street corner and whichever way one looked there were premises where stone was being cut—either in the open front of the building or outside in the street in front of the building. No wonder that vehicles bigger than the motorised tricycle rickshaws do not venture into the area. This same grouping of similar crafts also occurred in the villages. Badami, south of Bijapur, is a large village and the blacksmiths, again with open fronts onto the main road, were side by side. Elsewhere in the village at least four wheelwrighting businesses were grouped around the same open space.

The use of human musclepower is widespread. Most habitations appear to have overhead electric cables but whenever there is a small-scale need for power it was met by man or woman power. Restoration of the inlaid work in the Rang Mahal inside the Red Fort at Delhi required the new pieces to be ground to fit. Four men were doing this, each squatting on the floor and moving a bow back and forth with the cord of the bow wound around the shaft

carrying the grinding wheel he was using to shape his piece of inlay. Sieving and sorting cereals (nearly always done on a family scale) were done by hand as was winnowing—often by throwing baskets of grain into the wind but also by hand-powered winnowing machines. However, with the growth of cooperatives there are some oil-engine powered winnowing machines appearing. Small roadside potteries, usually making earthenware water pots, had stick wheels operated from the squatting position.

This last observation highlights a realisation that one aspect of Indian working life would appear to have no parallel here, either in the recent or distant past. They make very little use of any artefact to support what they are working on. Apart from in the hand block printing of textiles in lengths suitable for sarees, no workbenches are seen. Everything else is done with the work on the ground and the workmen squatting alongside it.

This was the case with the blacksmiths at Badami working on their very small anvils, the previously mentioned inlay grinders, carpenters planing wood, handmade-brick makers and shoe repairers who use a sort of lasting jack but it stands on the ground and not on a bench. Indians appear to be able to squat for hours on end and chairs seem to be non-existent in



Lifting water from a well for irrigation using a pair of oxen walking down a slope. By side of road between Ajmer and Udaipur (Rajasthan).

many places. Is this ability to squat due to the looser clothing worn in hot countries which is less restrictive to limb movements? This agility is also shown in the way they manage to hold the work without recourse to artefacts such as vices. Carpenters would hold the wood with their bare feet whilst they sat on the ground to cut it with a saw. The millstone cutters supported 18" [45cm] diameter stones on their edges with one foot on the uppermost surface of the curved edge.

Animals are still used in India on a considerable scale both for transport and on animal-machines of various kinds. Although horses are used this is comparatively small scale in comparison with the variety of other animals employed. It is noticeable that despite the years of the British Raj there was no evidence of the padded horse collar and all the horses seen were harnessed using a breast band. The animals most frequently seen at work were oxen. They were being driven around circular trackways to operate edge rollers for preparing clay for brickmaking, for crushing stone and with wooden frame 'rollers' for separating grain from stalks of some cereal crops.

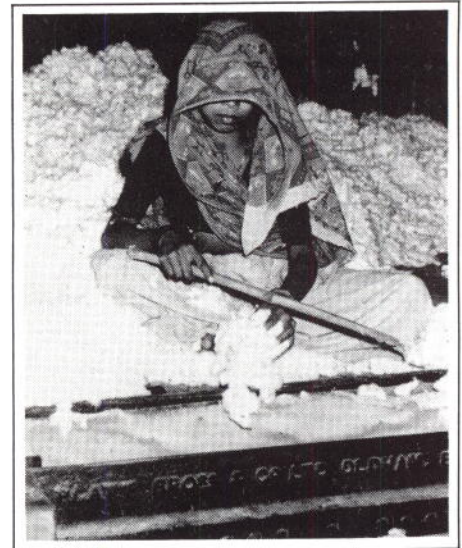
For most of the area visited, water lifting for irrigation by oxen involved them walking down an incline to pull a rope taken over a pulley and down to a leather bag in a well. Once the water had been emptied from the bag into a distribution channel at the top of the well, the oxen had to walk backwards up the incline to lower the bag down into the well ready for the next lift. Sometimes a single animal was used, more often two side by side and in one case three abreast were used to pull up two leather bags. Around Udaipur a different type of water lifting device was in use, the oxen walking continuously around a circular path to drive, by gearing, a chain of earthenware pots to lift the water from the well. There were many examples using primitive wooden protrusions meshing with each other but hardly qualifying for the term gearing. Others had iron gearing although the larger gear was of the peg type. Some were out of use where the water was being raised by small centrifugal pumps driven either by electric motors or by small oil engines.

BRICKMAKING

Brickworks abound in India or perhaps brick-making sites would be a better term since in many instances there are no permanent buildings, structures or machinery. Reference has already been made to the circular trough kilns of the Delhi-Agra-Jaipur area. The troughs were approximately 60' [18m] mean diameter, the

cross-section of the channel being about 10' [3m] wide and 8–10' [2.4–3m] high. The bricks were being stacked, fired and unloaded at various places around the trough and from the middle of the circle rose one or two cylindrical metal chimneys. There was no opportunity to investigate the connection between the channel and the chimneys but these kilns might be an Indian open-air variation on the Hoffman-type kiln.

In all cases where bricks could be seen being formed it was by hand and in the open. If machines were used they were probably in some shed and therefore hidden from view, but at most of the sites there were no sheds! At every site the green bricks were laid out in the open to pre-dry—one advantage of having a rain-free climate for long periods of the year. Since there was usually only one layer of bricks the pre-drying process covered a considerable area. There was an opportunity to observe operations at a brickmaking site close to the road between Dharwad and Haliyal. As one man dug the clay, using a mattock, others brought up water from a nearby stream and tipped it in the hole. The fellow paddled in this with his bare feet as he continued to chop out the clay, so carrying on the function of a pug-mill. Periodically the semi-fluid material was scooped out of the hole and added to the pile by each of the two brickmakers. The piles were covered with cloths to retain the moisture as the sun was shining all day, even in January. The brickmakers worked in teams of three. One was a woman, resplendent in brightly coloured saree, who took the clay from the pile worked it up into very nearly the right amount before passing it to the moulder. He threw it into a wooden mould having a bottom with the initials of the company for whom they were working. After scraping the excess clay from the top of the mould he tipped it onto a wooden flat by which the third member of the team carried it to the pre-drying rows. Apart from this third member, the other two carried on their work from the squatting position to which reference has been made previously, so that there was no other equipment or artefact on the site other than the brick moulds, flats, mattocks and water-carrying vessels. This site was one of about five in close proximity to each other, and the construction of the clamp for firing the bricks had not started. Some of the other clamps under construction and the clamp which was burning stood in isolation, the other brick making activities having moved to another site. The burnt clamp, standing on its own, was quite a common sight giving the impression that the bricks



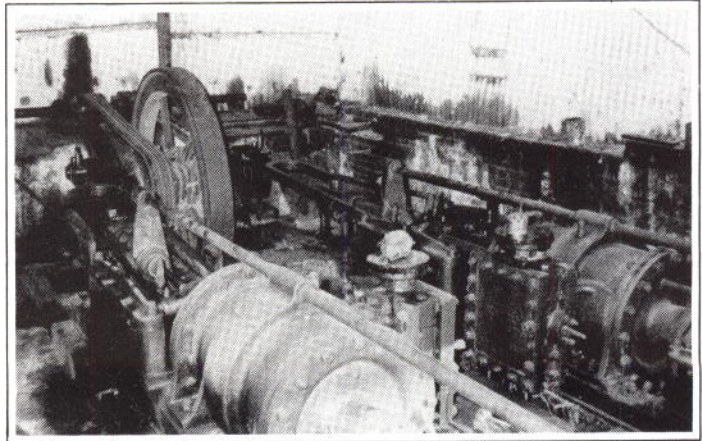
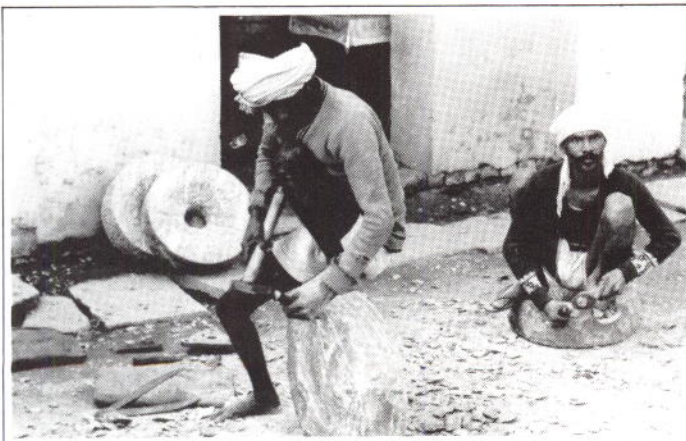
Feeding cotton into a gin, made by Platt Brothers & Co of Oldham and dated 1905; Bodeli gin mill (Gujarat).

are left in the clamp until they are required for use so that the clamp remains, through its gradual demolition, for a considerable time.

MANUFACTURING

Production of goods on a small scale can be easily seen in India since it is usually carried on in the open by the side of the road or in open-fronted buildings. Even activities needing a large space, such as ropemaking, are carried on in public places and at Ramdurg, between Badami and Goa, this was in the crowded main thoroughfare. Children are employed in the majority of cases to do the tedious work although women seemed to do most of the fetching and carrying and nearly always on their heads.

Whilst sites and buildings play so small a part in the small scale production activities, there is evidence of the change in style of plant for processing industries such as sugar refining. In the sugar growing area around Ramdurg there were several clusters of buildings each having an open fronted building over large diameter but shallow open-topped pans with squat corved tapering sided chimney. Further north, the older style refineries had a row of small cane boilers, each with its own tall metal chimney protruding through the roof of the open sided long shed. A visit to a modern refinery, operated by a cooperative between Aurangabad and Ajanta—more famous for its caves than its industrial archaeology—provided a contrast between very modern plant engineering and the older ways of handling material. Although



2 One of the grinding stone cutting establishments along Strand Road, Agra (Uttar Pradesh). Note that there is no use of work holding devices apart from the ground and their own limbs.

Pumps on a system built to Wilson's patent by Nasmyth & Co, Manchester, to provide hydraulic power for the baling press at Bodeli cotton gin mill (Gujarat).

most of the sugar cane was delivered by lorry, some came by oxen-hauled carts. Women worked barefoot on the raw cane moving along a conveyor feeding the up-to-date processing plant and after the produced sugar had been automatically bagged into sacks these were lifted, one at a time by six sweating men onto the back of another man who ran about 20 yards [18m] and up an inclined plank to load it onto a lorry.

The oldest example of the physical evidence of manufacturing activity was that associated with the cannon-founding in the old Jaigarh Fort, overlooking Amber, a short distance from Jaipur. The fort is high up in the hills and displays the largest wheeled cannon ever made—a magnificent weapon, disappointingly displayed under a low metal canopy. The cannon was made in the foundry in the fort and one can only guess at the labour needed to bring up the raw materials to this height. There does not seem to be much evidence of the foundry itself although a number of foundry tools are exhibited. Many of these were unusual but interpretative material was lacking. Still in situ is the man-powered cannon boring machine. Men turned a capstan, the vertical shaft of which extended down into the space below the platform on which the men walked. Wooden gearing connected the vertical capstan shaft to the horizontal shaft for turning the cannon. Although the capstan and the point of attachment for the cannon are visible at ground level it was not possible to see the gearing below but a rather crude model was very helpful in showing the arrangement.

TEXTILES

Activities seen relating to textile manufacture ranged from a cotton gin mill with heavy machinery to weaving and hand-block printing on virtually a craft scale. The cotton gin at Bodeli (in Gujarat between Dabhoi and Chota Udaipur) was one of ten owned by a Bombay industrialist. Ox-carts brought the raw cotton from the fields and at the mill were unloaded

into huge white heaps—so white in the Indian sun that it was disconcerting to the eye. From the heaps the cotton was taken in large shallow baskets on men's heads into the gin itself.

There were two lines of gins, manufactured by Platts of Oldham and carrying the date 1905. They were fed by women sitting on top of the machines. Cotton dust was everywhere—no extraction plant thought necessary here. After separating out the seeds, which were put in piles to await transport to the oil mills, the cotton was baled in a hydraulic press, by Richardsons, for which the hydraulic power came from a system built to Wilsons patent by Nasmyth & Co, Manchester.

Weaving and hand-block printing of fabric are carried on in many regions of India even though only a few places have a reputation for a particular type. There is also a problem in that many so-called factories are merely places to demonstrate the techniques to attract tourists in and persuade them to purchase from the shop which is the main concern of the proprietors, often selling products made elsewhere. As an example, a small building by the road between Jaipur and Amber claimed to be premises for hand-block printing and carpet weaving. The latter was done by a young boy working at amazing speed whilst the visiting party watched—he obviously gets plenty of practice at this—but he stopped as soon as the party went into the shop and started buying. On another occasion, this time in Aurangabad, the guide took the party in the evening to the 'Himroo Hand-loom Weaving Factory'. Because it was evening, perhaps all that could be expected was just a demonstration of silk-weaving and an invitation to purchase wares from the shop—and for which the guide would get his commission for leading the party there. Nevertheless there were about eight looms, all set up with the working portions covered as would be expected to protect the silk until work started next morning. The shuttles passed through the warp at no more than a foot above floor level so that there was a hole in the floor beneath each loom for the treadles to open or close the shed in the warp. The operator sat on the edge of the hole with his feet in the pit to work the treadles. Not seeing inside other 'hand-loom factories' it is not possible to say whether this was common practice.

CONCLUSION

The foregoing are only a few of the wealth of items in India of interest to industrial archaeologists. The romance of the Indian railway system is well-known. Road transport has its fascination in the lorries, nearly all of the same size but decorated in a highly individualistic manner—painted flowers, elaborate lettering and geometric patterns, with a similarity to canal boat painting in England. Even visits to the centuries-old forts and palaces offer industrial archaeological interest because water supply has always been a problem and there are 'tanks' (man-made reservoirs) such as in Krishk-i-Feroz in Delhi, at Fatehpur Sikri and Badami—now famous for the echoes from the surrounding hills of the sound from women beating out their dirty clothes against the steps of the dam. Presumably there were Victorian pumping installations in the larger cities but the only one seen was the Love Lane Pumping Station in Bombay and that looked as if it was being demolished. Even in India things do not survive for ever.

Geoffrey Starmar



MUSEUM NEWS

THE MUSICAL MUSEUM

This museum, established by Frank Holland, originally as a piano museum, is now celebrating the 25th anniversary of its foundation at Brentford. A Silver Jubilee Appeal for funding a move to new premises has been launched.

BATH INDUSTRIAL HERITAGE CENTRE

The Centre houses a reconstruction of the shop, offices and workshop of the aerated water manufactory of J B Bowler who set up in business in Bath in 1872. The firm continued under his family's control for 97 years. The material was moved from the original premises in Corn Street to Camden Works, Julian Road. Other displays include the story of Bath Stone. The Centre is open daily 2.00–5.00PM from February to November and for the same hours on Saturday and Sunday during December and January. Enquiries: ☎ 0225 318348.

THE BOAT MUSEUM, ELLESMERE PORT

The former Shropshire Union Canal Company icebreaker *Marbury* which was built in 1888, has been relaunched following extensive restoration.

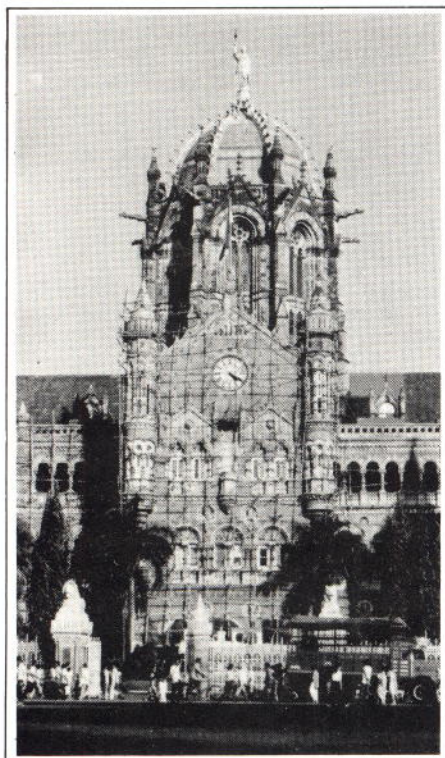
THE NATIONAL WATERWAYS MUSEUM

To be officially opened by HRH The Prince of Wales on August 5, the Museum will offer late opening on selected days during the summer months, remaining open until 9.00PM on August 3, 16 and 25 and September 6.

A major working exhibit is the Fielding diesel engine restored by the Gloucestershire Engine Preservation Society. The engine, built by Fielding and Platt of Gloucester, originally drove a generating set at the Quenington factory of Godwin Pumps. It has been placed in a new building in the Museum's replica canal maintenance yard and will be run on Sundays and special occasions by members of the Society.

WALSALL LEATHER CENTRE

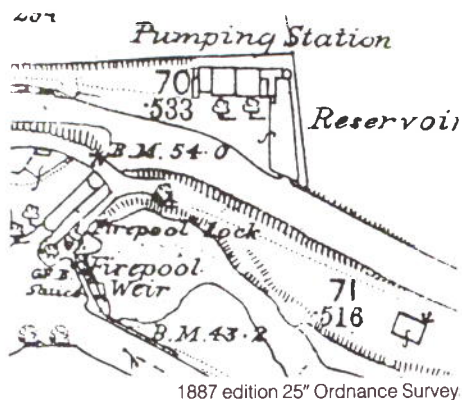
This working museum, depicting tanning, the work of the currier and horse collar and saddle making, is located at 56/57 Wisemore, Walsall. Opening hours are Tuesday to Saturday and Bank Holidays, 10.00 to 5.00PM, and Sundays 12.00 to 5.00PM. Enquiries: ☎ Walsall 721153.



Administrative building at Victoria Terminus, Bombay, formerly the headquarters of the Great Indian Peninsula Railway, embraced by scaffolding of bamboo poles lashed together with rope.

PRESERVATION AND RE-USE

FIREPOOL PUMPING STATION, TAUNTON, SOMERSET



1887 edition 25" Ordnance Survey

In early 1986 members of Somerset Industrial Archaeology Society became concerned for the future of the derelict Firepool Pumping Station that once served Taunton station, and the Society began an active campaign to save the building and to find an appropriate use for it.

The area in which the pumping station is sited has a recorded industrial history dating back to medieval times when the River Tone powered grist and fulling mills. The 18th century saw improvements in the river navigation and barges plied between the port of Bridgwater and the wharves on the Tone at Taunton's Town Bridge. But its importance increased with the Industrial Revolution and the greater need for transport and communications. The Bridgwater & Taunton Canal (1827) and the Grand Western Canal (1838) connected with the Tone at Firepool, and there was access to the Chard Canal from the Bridgwater & Taunton at Creech St Michael about 3½ miles to the south east. In 1842 the Bristol & Exeter Railway reached Taunton and a coal and culm wharf was set up, with a pair of limekilns near by. Water-borne traffic declined and the railway, which had purchased the Bridgwater & Taunton Canal in 1866, needed more and more water to service the various departments at Taunton station. A hot air engine house was built on top of the limekilns and the old coal and culm wharf was converted to a reservoir. In 1877 a 63,400 gallon wrought iron water tank was put on top of the building, and in 1889 replacement steam



Canal frontage showing the limekilns from the 1840s with the pumping house and water tank superimposed.

engines and pumps were installed in a re-constructed pumping station which remained in service until the 1960s, when the withdrawal of steam and the contraction of the railway network made it redundant.

The pumping station itself is an architectural collage. At its base are two lias-built limekilns, one with its original drawing chamber and grate. Though once common features in Taunton Deane, most limekilns have been destroyed and an example in an urban setting provides a rare opportunity for the public to study an accessible example. The external brickwork above the kilns was supplied by William Thomas of Poole, West Buckland, now Steety Bricks, the only surviving brick works of its kind in the country. The bricks are a reminder of the engineering quality of the local Keuper marl clay. The work above the eastern kiln with flooring strengthened by Barlow rail recycled from the Broad Gauge era, appears to be part of the hot air engine house, while the water tank topping the whole building dates from the days of the Bristol & Exeter Railway and is a reminder of the time when Taunton was a busy railway station and depot needing large quantities of water for locomotives and many other essential

purposes. Two sets of Pearn three throw pumps complete the historical picture.

For many years SIAS has been pressing for an industrial museum in Somerset and, although not ideal, Firepool Pumping Station is the last industrial building of any size left in Taunton that might become available and could be used in this way. British Rail Properties Board was approached and gave both cooperation and encouragement. SIAS members were allowed access to the building and a working party cleared out rubbish, repaired internal stairs and removed surrounding vegetation so that local councillors and Somerset Libraries and Museums Committee could inspect the building in safety. A feasibility study was undertaken, and an outline plan for an Industrial Heritage Centre was drawn up giving £124,000 as the estimated cost of renovating the building, carrying out external works and setting up a museum. At the request of the County Museums Officer the project was incorporated in a discussion document showing how Firepool fitted in with other strategic IA sites in the county. This study, in the form of *Firepool and Somerset's Industrial Heritage*, was submitted to the County and Borough Councils.

The overall scheme was not accepted as the building and site were thought too small for a museum representing the whole county. However, the attention SIAS drew to the building, and the case made for its preservation, generated interest and sparked off ideas. At the time of writing it seems that the building will be saved to begin a new phase in its existence. There is a scheme which aims to create a quay and slipway and moorings on the canal, and to turn the first floor of the building into a restaurant for the families and enthusiasts attracted to the canal and waterside. At ground level will be an IA exhibit explaining the elements of the building set in the context of the railway, the local canal system and the various Bridgwater Docks developments. The renovation of Firepool Pumping Station will be another notable step towards the completion of a leisure facility based on the Bridgwater & Taunton Canal which is once more navigable from end to end, thanks to the efforts of the IWA, British Waterways Board and the various local authorities, and will complement activities at the Bridgwater end where access from the canal to the dock complex will be restored during 1988.

Ann Ronan

AFFILIATED SOCIETIES

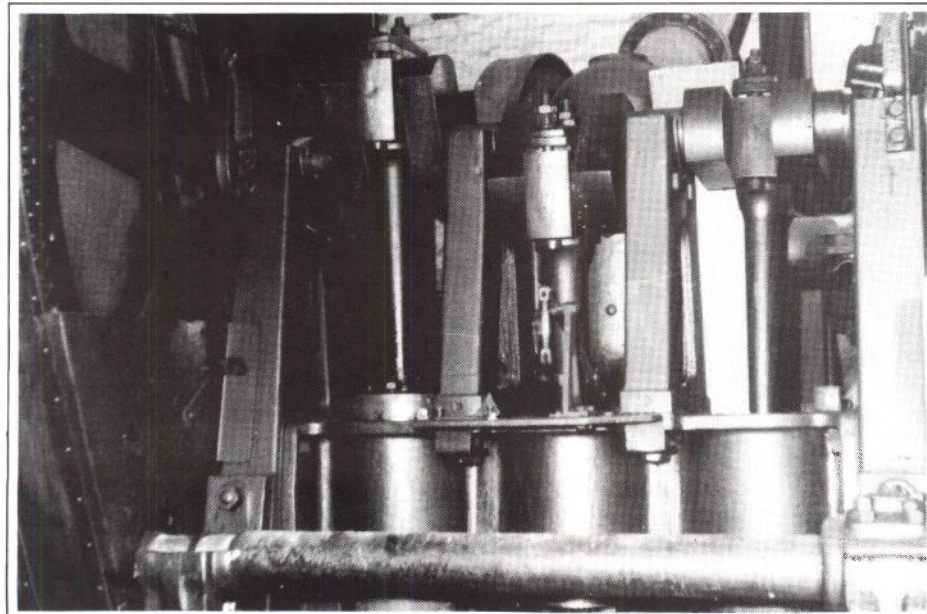
In March, the annual Affiliated Societies' Weekend was held in Ironbridge where more than 40 delegates represented 15 societies. There was lively discussion during all the sessions, with topics including publicity, co-operation with mainstream archaeologists, award schemes, and the value of computers to local IA groups.

Next year's weekend will be from 14 to 16 April.

Provisional details will be mailed shortly, and I hope that as many members of local societies as possible will attend this informal occasion which provides opportunities of discussion with other groups as well as hearing talks on relevant subjects. Put this date in your diary **now**. I hope that I shall meet many of you at the **AIA** Conference in Swansea.

Please send your society news, profiles and suggestions for topics for future weekends; my address is 13 Bromley Road, Midanbury, Southampton, Hants SO2 2AA.

Pam Moore



One of the Pearn three throw pumps still *in situ*.

SOCIETY PUBLICATIONS

Gloucestershire Society for Industrial Archaeology Journal: 1987. 72pp ISSN 0268 1420

The last issue under the editorship of Christopher Cox and a very interesting, well produced journal too. A contribution by M J Hoy on the Stonehouse and Nailsworth Railway details the promotion of the line by local woollen clothiers, its history from opening in 1867, its subsequent extension, and closure in 1966. Much of the line now forms the Stroud Valley Cycle Trail and most of the bridges survive as well as Nailsworth Station and Jones' warehouse near Egypt Mill.

Ian Standing's article on the Industrial Heritage of Bixhead and Bixslade in the Forest of Dean not only lists IA sites in the area but describes the fight GSIA and other bodies are waging against proposals for further refuse dumping in the old quarries there. The first part of a contribution on Brimscombe Steamboat Builders up to 1900 shows them to be famous world-wide for the quality of their small steamboats. Other contributions concern the three main roads through Painswick, the former Albion Inn at Coalway and the acquisition by the Stroud Preservation Trust of the former toll house at Cairns Cross for renovation.

North Western Society for Industrial Archaeology and History Journal: 4 (1987). 54pp 39111 £2.50 ISBN 0 906367 28 X

The Editorial poses the question as to whether the Society wants to produce a Journal in the future, the answer should be an emphatic 'yes!' Local society journals take some gathering together but the NWSIAH journal sub-committee should be proud of this production with its variety of contributions and quality of illustrations. There are six articles including 'The Rise and Fall of Toolmaking in Lancashire', 'The Industrial Development of Garston' and on the Manchester Dock at Liverpool, completed in 1813. Railways in Liverpool provide the topic for two contributions, one on the growth of the Dock Railways and the other on the Bramley-Moore High Level Coal Railway. However pride of place must go to Roy Foreshaw's article, 'Measured Surveying of Buildings and Land'.

NEWS FROM BRITISH WATERWAYS

Aire & Calder Navigation

The Listed Stanley Ferry Aqueduct, which was opened in 1839 and taken out of use following the construction of a new concrete aqueduct in 1981, has been deteriorating. Refurbishment of the unusual bow arch-suspended trough aqueduct has been financed by English Heritage. There are proposals for a waterside leisure complex nearby.

Hertford Union Canal

An environmental scheme has been funded by the London Borough of Tower Hamlets for the improvement of the 1.5 mile canal, also known as Duckett's Canal, which links the Regent's Canal to the Lee Navigation. The length includes three locks, lockside cottages, two Listed bridges at Gunmaker's Lane and Parnell Road and several timber loading wharves.

Fossdyke Navigation

Several environmental improvements have been made and landing stages provided on this navigation built by the Romans c120AD to connect the rivers Witham and Trent. At Saxilby, a footbridge originally provided by the Great Northern Railway at Newark in 1883, then moved to Claypole in 1983, has now been re-erected across the Fossdyke.

Its excellent illustrations should encourage participation in the Society's surveying and recording activities.

The Journal may be obtained from NWSIAH c/o Liverpool Museum, William Brown Street, Liverpool, L3 8EN for £2.50 plus postage.

BIAS Journal Volume 20 1988.

A well produced volume under the new Editorship of Robin Stiles. His stated aim was to focus on a principal subject but with a wide variety of techniques of analysis and source material. The chosen topic was the Somerset Coal Canal, parts of which have recently been cleared and recorded by Avon Industrial Building Trust. Mike Chapman has conducted a cartographical survey of the Coal Canal, using a variety of early maps and relating them to field evidence. The records made during the survey have been entered on the Avon County SMR, and the article provides an admirable model for similar recording work. Robin Stiles himself has written about the Somerset Coal Combination, a group of local coal owners using the canal who were accused of operating a price ring. John Broome attempts to locate the tucking mill near Midford which was the home of the geologist William Smith, at one time engineer during the construction of the canal. The third part of H E Dommett's article on Nailsea and the Glasworks examines the period 1840-1873 and concludes an excellent issue.

Suffolk Industrial Archaeology Society Newsletter No 21 (April 1988)

This issue includes the first part of a supplement on Brick Kilns in Suffolk compiled by C J Pankhurst which gives map references and details of their users.

Sussex Industrial Archaeology Society Newsletter No 58 (April 1988) ISSN 0263 516X.

A note on the rapidly disappearing cast iron, concrete and aluminium telephone kiosks is included. Metal headstones in the county are discussed by Tony and Mary Yoward. There is a short article on the surviving pumphouse at Luxfords Farm, East Grinstead where the roundhouse for a horse engine driven pump is being restored. The Chichester Canal Society

Staffordshire & Worcestershire Canal

The Sow aqueduct near Tixall has been restored by BWB staff. A new concrete trough was cast within the original stone structure and the stonework repaired using stone from the original quarry at Tixall. The CPRE has made a merit award to BWB Northwich area for the restoration.

Stratford Canal

The lift bridge No 26 on the North Stratford Canal near Hockley Heath has now been fitted for hydraulic operation; the old hand winch which wound lifting chains has been reconditioned and remains *in situ*.

Bridgewater Canal

The Grocers Warehouse, Castle Street, Manchester and its surroundings were opened to the public last Easter after restoration which included the reinstatement of the waterwheel and lifting gear.

Gloucester Docks

The burnt out shell of the Britannia Warehouse has now been demolished but a new building will be erected to resemble the original Listed warehouse. The Kimberley and Philpotts warehouses are to be linked by glass structures and converted to shopping mall, public house and offices.

have launched a fund raising campaign to complete the restoration of the Birdham to Chichester length of the former Portsmouth to Arundel Navigation.

NIAS Journal Vol 13, Part 2 (Nottingham Industrial Archaeology Society, March 1988). 11pp ISSN 0143 0297.

This contains a contribution on Mechanics Institutes with particular reference to the one in Nottingham. There is a recording report on the Cliff Mill at Gonalston on the Dover Beck, probably the Lowdown Mill referred to in *A Memoir of Robert Blincoe*. The former lace tenement factory in Beeston, built in 1886 and subsequently occupied by Myford Ltd, the lathe makers, has been demolished; the firm still occupies adjacent single storey buildings.

South West Wales Industrial Archaeology Society Bulletin: 47 (April 1988).

Through a transcript of a letter from one Thomas Glazebrook of Tewkesbury, dated 17 November 1784, D C Morrison is appealing for information concerning an engine built for water pumping at Penrice Castle. The Genwen Engine House at Bynea, Llanelli, built about 1806, has been reprieved from demolition and CADW is to recommend a restoration programme for the pumphouse which became disused in 1908. Neath Borough Council is carrying out work at Neath Abbey Ironworks to protect the blast furnaces from further deterioration.

Condensation No 50 (Westonzoyland Engine Trust, May 1988)

Short articles are included by Keith Hopper on Easton, Amos and Anderson, the steam engine manufacturers and on John George Appold, a London engineer born in 1800.

ALSO RECEIVED

Exeter Industrial Archaeology Group Bulletin No 41 (May 1988).

Hampshire Mills Group Newsletter No 5 and No 6.

GLIAS Newsletter No 115 and No 116.

Yorkshire Archaeology Society, Industrial History Section Newsletter No 27.

OTHER PUBLICATIONS RECEIVED

Tyne and Wear Museum Service Publications

Recent publications include *The River Wear*, a pictorial survey from Biddick to the river mouth, exceptional value at £1.80, and *Railways of Sunderland*, by Neil Sinclair which includes numerous illustrations and excellent maps and is priced at £3.25. Tom Corfe has edited *The buildings of Sunderland, 1814-1940* which follows the development of different types of building and traces local architects, price £1.25. *A Guide to the River Tyne* pointing out many buildings of interest is priced at £1.00. These publications may be obtained from Tyne & Wear Museum Services, Blandford House, Blandford Square, Newcastle-upon-Tyne NE1 4JA; postage and packing is extra.

CLEVEDON PIER

English Heritage and the National Heritage Memorial Fund have contributed £274,000 to rebuild the Victorian pier at Clevedon, near Bristol. The structure partly collapsed during tests in 1970. The pier, with its eight 100' spans and head with three cast iron pavilions was opened in 1869. The ironwork was fabricated by the Hamilton Ironworks, Liverpool.

REGIONAL NEWS

SCOTLAND

The two **Dredge** bridges in Inverness were damaged during dismantling and this may render their re-erection on Forestry Commission land impossible. Scotland's last sugar refinery machinery manufacturers, **Smith-Mirrless**, were closed in February 1988 and are now doing sub-contact work. The firm, now owned by Tate and Lyle, used to make as much as 80% of the world's sugar refinery plant.

The **Forth Railway Bridge** has its centenary next year and preparations are in hand for a special exhibition centre under the bridge on the North Queensferry side. Elsewhere the Garden Festival is acting as a drain on other events outside Glasgow, and has totally wasted any industrial archaeological potential. The existence of the Festival has opened up the massive Govan Graving Docks next door to intense vandalism, and their future looks very grim.

Industrial recording and their future has been put under great pressure because of coal mine closures. Seafield in Fife has already been recorded with full British Coal assistance and attempts are being made to record some Ayrshire pits.

Miles Oglethorpe

CUMBRIA

There is a dearth of hand-made paper and the mills to manufacture same in Britain. A modern paper-making company at Beetham near **Milnthorpe**, in southern Cumbria, is, however, proposing to put on an exhibition to celebrate this year's 500th anniversary of paper making in the UK.

Heron cornmill was recently renovated so that corn could once again be ground at this 250 year old mill. Henry Cooke, papermakers, are on the opposite bank of the river and were one of the founders of the Beetham Trust which renovated the mill. Messrs Henry Cooke would like to create a Paper Museum next to the cornmill and with sufficient backing it is possible that an actual hand-making process could be re-started and an appeal for £50,000 has been launched with this aim. Donations should be sent to Mr McGregor at Heron Cornmill, Beetham and in addition artefacts and memorabilia for the museum would be welcomed. The exhibition, which will also concern modern paper-making, will be opened for educational purposes.

M Davies-Shiel

YORKSHIRE & HUMBERSIDE

The **Yorkshire Mining Museum** at Caphouse colliery has now opened and can be visited daily, except Christmas and New Year's Day, from 10.00AM to 5.00PM. Visitors, in groups of not more than 15, descend the 140 metre shaft, sunk in 1791, in cages and are guided round the workings and pit bottom displays by a team of ex-miners.

Otley Council, West Yorkshire, and British Rail, have launched an appeal for £10,000 to repair the monument in **Otley** churchyard which was built as a memorial to the 23 men who died during the construction of Bramhope Railway Tunnel in 1845-49. The monument takes the form of a miniature replica of the castellated entrance to the tunnel.

Abbeydale Industrial Hamlet in Sheffield has been awarded a plaque under the Institute of Mechanical Engineers' Heritage Hallmark Scheme, in recognition of its water-powered tilt hammers and crucible steel melting shop. We are sorry to record the death in March at the

age of 84 of Frank Wilkinson, the scythemaker who was born at the hamlet. He worked there until it closed and continued to demonstrate his skills to countless visitors on working days after it re-opened as a museum.

Sheffield's new City Centre Plan includes some encouraging proposals including a further industrial conservation area on the lines of the one around Kelham Island. In addition a policy of archaeological investigation of city centre sites before redevelopment and the creation of a Sheffield Heritage Centre are proposed. The Ponds Forge site near the city centre was recently cleared for a new swimming pool; the oldest buildings demolished were erected in the 1860s by George Senior after the end of water power on the site. Senior's gateway has been left standing and may be kept as a landmark. The history of water power in The Ponds goes back at least to the 16th century, but regrettably the site is not to benefit from the new policy of archaeological investigation.

Although spot-listed by the DOE, the London Works, Howard Street, a small pre-1840 saw works has been demolished. The Crown Steel Works in Sylvester Street, which includes parts of a stove grate foundry built as the Chantry Works in the 1840s, has been demolished along with part of the adjoining Sylvester Works. The Listed early 19th century front wing has been kept but the developers have now applied for its demolition to improve access and parking; the Sheffield Trades Historical Society is opposing this.

Also in **Sheffield**, Joseph Pickering & Sons Ltd, cardboard box manufacturers, are moving from their Moore Street works after 120 years. A proposal has been made for demolition but the Listed Italian Renaissance terracotta facade, added in 1908 as part of a steel framed extension, will be kept on one corner of the proposed new office block.

Derek Bayliss

WALES

The **Welsh Mines Society** Weekend was held in the Devil's Bridge area on June 11-12 and a party of about 70, led by David Bick and George Hall, visited Llwyngwyddel and Llwynllywd Mines before reaching the Esgair Mwyn Mine where the Elenith Mining Company are processing dump material to recover lead and zinc ores. The party then visited Temple Mine on the banks of the Rheidol. The AGM and members slide shows were held at the Woodlands Hotel at Devil's Bridge. On Sunday, Simon Timberlake led the group to the Cwmystwyth mine where recently excavated opencast workings, begun around 1500BC for copper ore, were visited. The later dressing mill, erected in 1898, was also viewed but recent vandalism has placed the structure in jeopardy.

Peter Neaverson

EAST MIDLANDS

Clay Mills Preservation Group which has been formed to restore the 1885 sewage pumping station at **Burton upon Trent** has been offered a 99 year lease by the Severn Trent Water Authority. The station possesses four Woolf compound engines, built by Gimson of Leicester, paired in two houses, separated by the boiler house. There are also several other small engines used for pumping and generating power on the site. Interested members should contact Dave Wombwell, Bank House, Milltown, Ashover, Chesterfield S45 0HB.

At **Hopwas Pumping Station** belonging to the South Staffordshire Waterworks Company, two

mantled and removed for preservation. One engine has gone to the Fornett Industrial Steam Museum in Norfolk and the other to the new Leicestershire Museum of Technology at Snibston Colliery, Coalville.

Friar's or Donisthorpe's Mill, Leicester on the banks of the River Soar has recently undergone extensive restoration. Several later additions have been removed and the fine riverside facade of this Listed early 19th century worsted mill can now be fully appreciated.

Peter Neaverson

SOUTH EAST ENGLAND

Among the railway anniversaries which are becoming due, a popular Woking 150 festival was held in May to celebrate the arrival of the **London & South Western Railway** in 1838 and the beginnings of the development of the modern town of Woking.

The request for information on **egg vending machines**, similar to the one at Godalming, Surrey which was illustrated in the *Bulletin* 14:4 (Autumn 1987), has produced two responses, reporting sightings at Warehead Farm, Halnaker, West Sussex and in the village of Thriplow near Cambridge.

In the field of recording, Sussex IA Society have completed a survey of street furniture in **Worthing**.

The **Godalming Water Turbine Trust**, which is conserving a large Macadam-Fourneyron turbine of c1869 from a paper mill, has issued its first Newsletter. Interest is extending to other turbines in Surrey. A list has been obtained from Gilbert Gikes & Gordon Ltd of Kendal of the firm's installations in the county and several turbines have been inspected, including a complete example by W. Günther & Sons of Oldham, probably 1893, at Oxted Mill.

SERIAC 88, the 6th annual South East Region Industrial Archaeology Conference, was held at the University of Surrey, Guildford on March 12 and hosted by the Surrey Industrial History Group in collaboration with the University's Educational Studies Dept. The meeting achieved a record attendance of about 230, a third of whom joined in the programme of visits on the following day.

The theme, Extractive Industries, was introduced by Peter Robinson in a talk on the geology and mineral resources of SE England. The next two lectures, by Jeremy Hodgkinson on Wealdon Iron and Richard Williams on Limekilns, both covered a long time span and Elizabeth Eames dealt particularly with the medieval period in her talk on Tiles and Tilemaking. Rod Le Gear spoke on Chalk and Sand Mines, with particular reference to dene holes, with which many subsequent suburban housing developments are riddled. Finally Paul Sowan, in a talk on Stone Quarrying Underground, described the extensive quarries of east Surrey which have recently been surveyed and photographed by Subterranea Britannica and others.

Four sites were visited, starting with Swallow's Tile Works at Cranleigh where a flourishing business is still carried on making roof tiles entirely by hand. The party then visited Betchworth Chalk Pits and the associated lime kilns which include examples of rare Dietzsch kilns. Both archaeological and natural history organisations are involved in proposals to ensure the future of this site. The next visit was to the Fuller's Earth workings at Nutfield where staff of Laporte Industries led a tour of current and reclaimed pits and the processing plant. Finally there was a most enjoyable underground visit

to the Godstone Stone Quarries to see part of the seven miles of working in the Main series, led by members of Subterranea Britannica and Unit 2 Cave Research and Exploration. Next year's SERIAC will be hosted in Sussex by the Amberly Chalk Pits Museum on 11–12 March and the theme will be Museums.

Glenys Crocker

WEST OF ENGLAND

Steam Tug *Mayflower*, 1861

In 1981 Bristol Industrial Museum acquired its first (and, so far, only) ship. *Mayflower* had been built in Bristol in 1861 at the shipbuilding works of Stothert & Marten in Hotwells, at that time the only iron shipbuilders in the city. She was one of five similar vessels built for the Gloucester & Berkeley Canal Co in the 1860s and 1870s. After a working life of over 100 years, she was sold for scrap in 1967, but remained moored in Gloucester until purchased by the Museum, each of her owners over this period intending to restore her but lacking the wherewithal.

Upon her return to Bristol, a team of volunteers set about restoring *Mayflower* to working order, and to the typical appearance of a mid-19th century tug, of which type she is the only example. Although basically complete, she had been stripped of the majority of her brass and copper piping and was generally a very sorry sight. Six years and £30,000 later, she steamed again on 19 September 1987, and has since revisited Gloucester for the opening of the National Waterways Museum.

Now the oldest tug in the world, the oldest Bristol-built ship afloat and the oldest self-propelled ship in the British Isles, *Mayflower* is based in Bristol City Docks outside Bristol Industrial Museum. She will steam in the Docks regularly, carrying passengers, on weekends during the summer, and will make a return visit to Gloucester in August. Enquiries about steaming dates or about helping to run her should be addressed to Andy King, Bristol Industrial Museum, Princes Wharf, City Docks, Bristol BS1 4RN, ☎ 0272 299771. Joan Day

COUNCIL FOR BRITISH ARCHAEOLOGY —POLICY ON HISTORIC FARM BUILDINGS

At their January meeting, the CBA approved a policy document, prepared by their Historic Buildings Committee, on the subject of historic farm buildings, and how their preservation and definition should be approached.

The document begins by offering a definition — 'Farm Buildings may generally be deemed to cover the purely agricultural buildings of the farmstead'. It goes on to list the structures eligible for inclusion, such as barns, granaries, pigsties, stables etc. The next section deals with the question of the arrangement of buildings, and of whether a farmstead is all the same age, or if it contains buildings of various dates. It is pointed out that such factors affect eligibility for Listing, as indeed do the materials used in construction.

The second half of the policy document is devoted to possible adaptive re-uses of farm buildings, and the problems which arise. Recommendations are made concerning what the CBA regard as preferred uses. More specifically highlighted, are particular areas of controversy in adaptive re-use, such as the problems of external openings, and interior sub-divisions. The paper is to be welcomed; until recently, farm buildings have tended to be a neglected area of industrial archaeological study. In the

SOUTH WEST ENGLAND

The 20 mile Newquay branch from Par on the Cornish main line to the county's one real holiday resort has seen fluctuating fortunes over the years. Originating in two small mineral tramways built by local entrepreneur J T Treffry in the 1840s, the line in its present form was built by the Cornwall Minerals Railway, and opened in 1874. With the collapse of mining, goods traffic was to be replaced by 'trippers', as the spectacular cliff scenery at the tiny fishing and mineral harbour of Newquay became appreciated, towards the end of the last century. As the principle GWR line to the north coast of Cornwall, the Paddington publicity machine promoted this part of the 'Cornish Riviera' and the large hotels which had sprung up. Even after the last war 15 carriage holiday specials would wind their way up the old mineral line, double-headed with an additional push from behind for the 1 in 37 climb up the Luxulyan valley, under Treffry's magnificent viaduct/aqueduct.

Following many years of diesel units working the branch, this summer British Rail have introduced through trains, Saturdays only, which give the unusual experience of travelling up an historic mineral line in the comfort of a 125. Six trains each way include direct services to Glasgow, Manchester, Leeds and, of course, London. It is a single-line, except for a stretch at Bugle where the remaining china clay branch lines join, and so is worked as two single-line sections. On a recent journey from Newquay one of the numerous stops was therefore made amongst the clay works, where we met another 125, the down *Atlantic Coast Express* which was also halted, while the formalities of exchanging the single-line token took place under the supervision of the signalman at Goonbarrow Junction Box. Is there anywhere else where 125s penetrate such former mineral lines, or is this in fact unique?

John Stengelhofen

past few years, however, the threat to these structures has been more fully appreciated. The formation in 1985 of the Historic Farm Buildings Group was a vital step forward, and a number of regional surveys—for example in Norfolk and Hampshire—are in progress. As the paper notes, some local authorities now provide guidance to owners intending to adapt redundant agricultural buildings for other uses. The CBA document concludes that 'conversion of farm buildings to some use which respects the envelope and the interior volume is perhaps to be preferred to one which breaks up the interior completely, hides the structure and requires a large number of new openings'. This is certainly the ideal to aim for, but it has to be said, that when the only alternatives are a less than ideal conversion or demolition, it may be necessary to be pragmatic in approach towards proposals for re-use. Every week, applications for the conversion of farm buildings arrive; I would argue that unless the design is very extreme, it is often better to permit adaptation rather than lose the building completely. One point which is not mentioned in the CBA document, but which is important, is the necessity, wherever possible, to undertake at least a superficial survey, including photographs, of any farmstead or building likely to undergo substantial change.

Pam Moore

NATIONAL STONE CENTRE

Stone is represented in numerous aspects of our everyday life. It has been calculated that each of us, in one way or another, will make use of 350 tonnes of it in our lifetime. For a number of years there have been plans to provide a central point of reference for the stone industry in the form of a National Stone Centre in a 50 acre complex of 6 abandoned limestone quarries at Wirksworth in Derbyshire, purchased in May 1984 (see *Bulletin* 13:1, Winter 1985). At last, after much preparatory work, the Centre as an educational charity has been established as a company limited by guarantee. The site will be developed as a major focus for the display and interpretation of geological and environmental aspects, and the past and present roles of the quarrying and processing of stone. In addition, the site and surrounding area is of immediate interest to the geologist, industrial archaeologist, and natural historian, with splendid opportunities for inter-disciplinary studies.

Site development begins in mid-1988. The first stage will cost £500,000, half of which will be spent on site works and landscaping as part of a grant-aided Derelict Land Reclamation Scheme. It is planned that the main works, access facilities, landscaping, trails, external exhibits, machinery and workshops, will be developed in order to receive visitors in 1989.

Grants towards the initial £250,000 will come from the Countryside Commission, Tourist Boards, the Nature Conservancy Council, the Development Commission, local authorities, and, it is hoped, from a wide range of concerns involved in the industry. A promotional brochure sets out the details in order to assist in gaining the support which is still needed to carry the project forward.

The project Coordinator is Ian Thomas, who can be contacted at the National Stone Centre, Ravenstor Road, Wirksworth, Derbyshire DE4 4FR ☎ 062982 4833. He would like to hear from anyone who is interested in the history of the stone industry or can provide information about old equipment, historical source material, or photographs.

Derek Brumhead

AWARDS

EUROPA NOSTRA

The Birmingham City Centre Canal Walk project has been awarded the Diploma of Merit by Europa Nostra. The 1.5 mile walk between Gas Street Basin and Aston Junction passes 13 locks.

LLOYD'S BANK AWARDS FOR INDEPENDENT ARCHAEOLOGISTS

Three industrial archaeological projects were included in this year's awards, made at the Society of Antiquaries on March 23. Of the eight equipment awards presented by Andrew Selkirk, Editor of *Current Archaeology*, two were for IA: Leicestershire Industrial History Society for the purchase of equipment for their work on limekilns at Calke Abbey, and Laurie Draper for publication of his work on twentieth century iron mines on the Isle of Raasay. The IA section of Derbyshire Archaeological Society won one of five dating awards to fund an archeomagnetic test on their recently excavated 'white coal' kiln. Information about next year's awards, which are specifically aimed at voluntary groups and societies, can be obtained from Miss Winifred Phillips, Royal Archaeological Institute, 304 Addison Road, St John's Wood, London NW8 9EL.

AIA NEWSDESK

September 4 1988 STEAM DAY AND COMMERCIAL VEHICLE EVENT

at Beamish North of England Open Air Museum, Stanley, Co Durham.

September 9-11 1988 AIA ANNUAL CONFERENCE

at the University College of Swansea with additional programme following until Thursday 15 September.

September 17-18 1988 LONDON AND BIRMINGHAM 150

Gala Weekend at the Birmingham Railway Museum, Tyseley. For details, SAE to the Museum, 670 Warwick Road, Tyseley, Birmingham B11 2HL.

September 19-30 1988 IRONBRIDGE TRAINING EXCAVATION IN INDUSTRIAL ARCHAEOLOGY

Working on a site in the Ironbridge Gorge with training in a variety of techniques, the excavation will build upon the success of the two week project organised in 1987. Information from the Ironbridge Institute, Ironbridge Gorge Museum, Ironbridge, Telford, Shropshire TF8 7AW ☎ 095245 2751.

September 30-October 2 1988 NOTTINGHAM CANAL AND RIVERBOAT FESTIVAL

at the Victoria Embankment beside the Trent Navigation in Nottingham.

October 7-9 1988 HISTORIC FARM BUILDINGS GROUP CONFERENCE

at Higham Hall near Keswick. Enquiries to Susan Denyer, National Trust (HFBG), Rothay Road, Ambleside, Cumbria LA22 0JJ.

October 15 1988 EAST MIDLANDS INDUSTRIAL ARCHAEOLOGY CONFERENCE

at Wigston, Leics. Hosted by the Leicestershire Society, theme Framework knitting, to coincide with the opening of the Bushloe End Frame-shops. Enquiries to Booking Secretary. ☎ 0533 867588.

October 20-22 1988 L'INDUSTRIE, PATRIMOINE DE LA BANLIEUE

at La Courneuve, the ninth national conference on industrial heritage. Enquiries to the Association Banlieue Nord, 38 Avenue de la République, 93120 La Courneuve, France.

October 27 1988 THE EARLY DAYS OF THE INTERNAL COMBUSTION ENGINE

at the Ironbridge Institute. Information as above.

November 11 1988 INDUSTRIAL ARCHAEOLOGY AS ARCHAEOLOGY

At the Ironbridge Institute. This course will consider whether IA is the handmaiden to history or genuinely part of archaeology. Information as above.

November 17 1988 THE ORIGINS OF INDUSTRIAL HOUSING

at the Ironbridge Institute. This course will provide a forum to debate the question of where and how specifically industrial forms of housing became established. Information, as above.

CONTRIBUTIONS FOR THE BULLETIN

Until further notice all contributions for *AIA Bulletin* should be sent to the Editors, Department of History, Loughborough University, Loughborough, Leicestershire LE11 3TU. They will welcome all items of interest to other members of the Association.

Copy date: Sept. 15 for November Bulletin

REGIONAL CORRESPONDENTS FOR AIA BULLETIN

There are two additions, below, to the list of area correspondents published in the February *Bulletin*, to cover the Northern region. The only area for which a volunteer is still required to complete our coverage of the country is the Home Counties (Oxfordshire, Buckinghamshire, Bedfordshire, Hertfordshire and Berkshire).

NEWS ITEMS

Rosedale Ironstone Railway Project

The North Yorks Moors National Park and the Cleveland Industrial Archaeology Society have invited volunteers to help with recording and conservation work along the length of the former ironstone railway in Rosedale. The build-

Region 3: NORTHERN ENGLAND

Cumbria:

M Davies-Sheil, 12 St Mary's Park, Windermere, Cumbria LA23 1AY.

Northumberland, Tyne & Wear, Durham and Cleveland:

G Muirhead, 3 Barton Court, Seaburn Dene, Sunderland, Tyne & Wear, SR6 8PF.

ings remaining include engine houses, workshops, kilns and workers' cottages. The work is planned as a series of small group holidays to provide an introduction to practical industrial archaeology. Information may be obtained by sending a SAE to North Yorks Moors National Park (Dept.RS), The Old Vicarage, Helmsley, York YO7 5BP.



The former workshop buildings in Rosedale, with the old trackbed of the North Eastern Railway sweeping past them and up towards the head of the Dale.

Beehive Coke Ovens

The Industrial Section of the Derbyshire Archaeological Society has conducted several surveys in the last few years of beehive coke ovens in North Derbyshire. To enable us to evaluate the ovens which we have surveyed in a national context we would appreciate information on any other surviving beehive coke ovens in the rest of the United Kingdom. We would particularly like to know locations, number of ovens in the range, present condition and any other information relating to surviving ovens. Please send any information to Mark Sissons, 1 The Cottages, Far Coton, Market Bosworth, Nuneaton CV13 0PJ.

NEWS FROM TICCIH

AIA is affiliated to *The International Committee for the Conservation of the Industrial Heritage* and the British delegate is Professor John Harris. The international secretariat is now established with Stuart Smith at Ironbridge Gorge Museum Trust. International conferences are held every three years; the sixth in September 1987 was at Leoben in Austria whilst the next will be in Brussels in 1990.

The Council of Europe has arranged a conference on 'Mining Engineering Monuments as a Cultural Heritage' at the Bergbau Museum, Bochum on 4-11 September 1988. The Portuguese Industrial Archaeology Society are organising a week-long course on the history of the Glass Industry in September 1989. The conference will commence in Lisbon on the 17th and then move to Barreiro and Marinha Grande, returning to Lisbon on the 23rd; details may be obtained from the Secretary, Rua Rafael Andrade 19, 3º-1100, Lisboa, Portugal.

Eling Tide Mill

On National Mills Day, May 1st, the tide mill which was restored in 1980 as a working museum again entered the endurance marathon and smashed its own record established in 1987. The mill worked for 15 hours 26 minutes within one day which is very close to the optimum eight hours on each tide. The mill is opened throughout the year from Wednesday to Saturday, 10.00AM to 4.00PM; ☎ 0703 869575 for demonstration times.

AIA Bulletin

ISSN 0309-0051

Edited from the Department of History, Loughborough University, Leicestershire LE11 3TU, and published by the Association for Industrial Archaeology. 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 and research groups and bodies involved in the preservation of industrial monuments, to represent the interests of Industrial Archaeology at national level, to hold conferences and seminars and to publish the results of research. Further details may be obtained from the Membership Secretary, Association for Industrial Archaeology, The Wharfage, Ironbridge, Telford, Shropshire TF8 7AW, England. ☎ 095 245 3522

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