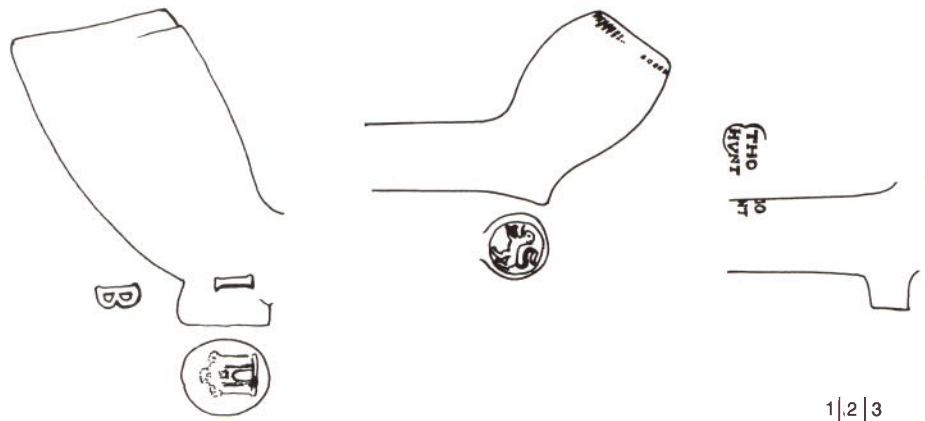


## PERCEIVING THE PIPE

The development of scholarly archaeology throughout the world has rested upon the establishment over a very long period of techniques of study and of bodies of information which have been used in successive work. In particular, the importance of research on archaeological finds has been immense, allowing chronologies to be developed for the understanding of the development of excavated artifacts like pottery, coins and other metal wares which are crucial in establishing dates for sites and contexts where they are found. The archaeology of the post-medieval and industrial periods has been generally ill-served to date by this kind of work, since neither period has been studied seriously by archaeologists until recent decades. The compilation of precise typologies for finds is painstaking and extensive work, and will be needed for many decades to come.

The following article describes one major project which is developing a bank of information about one particular class of archaeological finds from the post-medieval and industrial periods: marked clay tobacco pipes. The results of the project will be of immense value to industrial archaeologists in helping them to understand finds of pipes upon sites they are examining, and to understand some of the important conclusions which can be drawn from their discovery. Similarly comprehensive and expert work is desperately needed for other kinds of artifacts, for example to create a better understanding of different types of slags, of low-class nineteenth-century pottery, of bricks and tiles, of metal wares, or of glass-wares. A better understanding of what can be learned from such objects in the industrial period is vital to the continuing development of our subject.

When Elizabethan explorers and sailors first introduced smoking to Britain they laid the foundations for an industry which now provides archaeologists with one of the most important classes of artifacts for the post-medieval and industrial periods: the clay tobacco pipe. During the late sixteenth century tobacco was an expensive luxury and pipemaking was confined to the largest cities. During the seventeenth century the price of tobacco fell rapidly. This was due both to increased imports from the new plantations in America and to widespread cultivation of the crop in this country. The result was that the habit of smoking spread quickly to all areas of the country and through all levels of society.



- 1 Edinburgh tobacco pipe c1695-99. The castle stamp on the heel identifies it as an Edinburgh product and the maker's initials 'IB' are moulded on the sides. This pipe was recovered from the ill-fated Scottish settlement of New Edinburgh (1698-1700) on the Darien coast of Panama.
- 2 Low countries pipe 1610-30. One of many found within the harbour area at Plymouth, representing some of the port's trading connections in the early seventeenth century.
- 3 Stem stamp made by Thomas Hunt c1680-1700 at Marlborough in Wiltshire, found at Egham in Surrey, which lies on the main route to London.

From the earliest days of smoking, white clay was used for making pipes. The manufacture of white clay pipes spread from this country to northern Europe and Scandinavia and vast numbers of exports from Britain reached to almost every corner of the globe. Clay pipes remained the principal way of taking tobacco until the end of the nineteenth century, when the introduction of briar pipes and cigarettes rapidly started to undermine the market. Even today, white pipes are still made and exported from this country using techniques which have not changed in over three centuries.

With the rapid growth of interest in the post-medieval and industrial periods it is increasingly important for archaeologists and historians to understand the importance of pipes as a source of information. There are a number of reasons why this is so. First, pipes were extremely common. Tobacco was smoked at all levels of society from the court down to working women and children in rural areas. This means that pipes are found on almost every site where people have lived or worked during the seventeenth, eighteenth or nineteenth centuries. Being durable, they survive well under most conditions and are easily recovered in excavation or field walking. Second, pipes had an extremely short life expectancy. They were produced in very large numbers, being one of the earliest 'mass produced' or 'disposable' products. As they were cheap, extremely fragile and had no inherent or recyclable value they were

discarded very soon after manufacture. This sets them apart from other finds, such as pottery, which may have been used or displayed for a number of years before being discarded, or metal wares or coins, which had both long lives and a value for recycling even when worn out. Third, the social, regional and chronological variations exhibited by pipes allow them to be used as evidence in a number of ways for the dating and interpretation of a site. The shape of a pipe bowl often allows it to be dated to within twenty or thirty years of manufacture, and the style of bowl will indicate in which part of the country it was made. Trade routes from production centres can therefore be traced. Likewise, the quality and finish of a pipe affected its cost and can thus be used as an indication of the social status of the site where it was found: for example showing whether a domestic waste heap belonged to a poor or a relatively well-off family. All these factors combine to make pipes one of the most rewarding classes of artifact to study. They provide a commonly available and reliable dating medium, and they can be used to study social status and trade links.

The archaeological importance of pipes is further enhanced by the fact that many of them bore the mark of their maker. Makers' marks are particularly important because of the way in which pipes were made. From the early seventeenth century onwards small family run workshops were set up all over the country. Most

towns had a pipemaker or two to supply the local demand and it is not uncommon to find pipemakers working in rural areas or pipes being produced as a sideline on small farms. This pattern of small-scale local manufacture combined with the fact that many makers marked their products means that it is possible to carry out very detailed studies of the local trade and market patterns by studying the marks. It is possible in many cases to identify where and when pipemakers lived by examining the types and distribution of their wares which have been found, and by comparing all the archaeological evidence with the dates and addresses at which particular pipemakers are found in documentary sources. Patterns of trade can then be assessed. We find, for example, west-country marks at coaching inns on the routes to London or Dutch pipes at ports trading to the low countries. On a more local scale, studies in Lincolnshire have shown that pipes were distributed between 16 and 47 miles from the various production centres, thus suggesting the market areas of those towns. Pipemakers have stamped their names, initials or other decorative devices on pipes since the earliest days of the industry. These marks vary by period and region, but the initials or name of the maker is by far the most common type. The marks were applied in a number of ways. In 1693 John Houghton referred to 'a stick at head hollowed and cut for the purpose' of marking-pipes. Such a wooden stamp for marking pipes has been found in the Thames. From Chard in Somerset a pipeclay stamp used by the seven-

teenth century maker George Webb has been found, whilst in the nineteenth century metal dies appear to have been most frequently used.

Given the potential of pipes for dating and interpretation it is clearly a great advantage if the marks can be readily identified and attributed to individual makers. For many years makers' lists have been built up from contemporary records such as parish registers, directories, poll books and taxation schedules which name individual people and their occupations, so that now details exist for many thousands of individual workers from all over the country. Research funded by the Leverhulme Trust is underway at the University of Liverpool to compile an illustrated catalogue of the makers' marks which can be used in conjunction with this list. The aim is to produce a standard reference work of pipe marks in which there will be a twice life-size illustration of each different die recorded. This is a substantial job since many thousands of different marks are known to exist. In one extreme case a maker has already been found who used over 100 different marks during his career.

Researchers from the project are examining as many substantial collections of pipes as can be located, for example at county archaeological unit stores, at local museums throughout the country, and in private collections. Details of each marked pipe, its findspot, date and storage place are being collected and all the information entered into a computer database. In addition an impression of each mark is made in

plasticine and a permanent reference copy made in plaster. It is only through the systematic collection and analysis of this data that the full potential of the information carried by the pipes can be realised. This will not only make an accurate identification and dating of the makers' marks possible for the first time but also make a substantial contribution to the methodology of post-medieval and industrial artifact analysis.

This study has a number of important implications for industrial archaeologists. It is one of the first comprehensive studies to deal with a class of artifact commonly found on industrial sites. As such it should both enable a much more accurate dating and identification of excavated deposits and stimulate research into other post-medieval finds. It will also allow researchers to study a wide range of secondary topics, such as local trade patterns, in far greater detail than has been possible from artifacts before. It is only through the systematic study of artifacts and their proper analysis and integration with classes of information that we can hope to arrive at the fullest possible understanding of the past.

If readers know of any collections of pipes with stamped marks which could be included in this survey, or if you need advice on the excavation and recording of pipes, they should contact Dr David Higgins, National Pipe Stamp Catalogue, Department of Continuing Education, The University of Liverpool, PO BOX 147, Liverpool L69 3BX.

D A Higgins

## 1992 AND ALL THAT

With the coming of a single European market at the end of 1992, Industrial Archaeology as well as other facets of our daily lives may have to take on a more international bent if it is not to seem out of step. This can only enrich our understanding of the industrial heritage and stimulate us in our contributions to the subject. Two recent books on international European subjects are reported here by Dr Barrie Trinder, Editor of *World Industrial History*, which **ATA** members receive once a year as part of their subscription.

*Water Towers* by Bernd and Hilla Becha is an English language edition of a collection of photographs originally published in Germany as *Wasserturme*. It is now published by MIT Press

of Cambridge, Massachusetts, and London (1988) for 39.95. The Bechers themselves contribute a short note of about a third of a page on the functional aspects of water towers, but the two longer introductory essays by Rayner Banham and Weston J Naef are concerned with the artistic qualities of the photographs. The collections itself consists of views of over 200 watertowers, in timber, steel and concrete, and in almost every possible architectural style from the Romanesque to the Modernist. This approach to industrial monuments is more familiar in Germany than in England, and the publication of an English version of one of the outstanding examples of the genre is to be welcomed.

*The Various and Ingenious Machines of Agostino Ramelli: a classic sixteenth-century illus-*

*trated treatise on technology* is a welcome contribution to the international study of the history of technology. It is a reprint by Dover Publications of New York and the Scholar Press of Aldershot (1987) of the edition of 1976 by John Hopkins University Press. It has been translated into English by Martha T. Gnudi with technical annotations and a pictorial glossary by Eugene S. Ferguson. However it is essentially a facsimile edition of one of the classics of Renaissance technology, originally published in French and Italian in Paris in 1588. Agostino Ramelli was an Italian military engineer employed by Henry III of France. The drawings include numerous devices intended for use by artillerymen, as well as devices for raising water, windmills, pontoon bridges, and equipment for drawing heavy loads.

## WORK AT WET EARTH

Work has begun clearing the overgrown site of the Wet Earth colliery complex at Clifton, half way between Manchester and Bolton. The work is being carried out by Greater Manchester Archaeological Unit, with additional outside funding. It will include repair to some of the low walls of the former buildings, and the erection of notices interpreting the site for visitors.

This is an important early industrial site, since the Gal or Engine pit was the first deep mine in the area. Sinking commenced in the late 1740s, supervised by the young Matthew Fletcher, to exploit the Doe seam which had earlier been worked by bell pits. The Doe was reached at 260ft, and later the shaft was deepened to the Five Quarters seam at 330ft. However, flooding soon became a problem, and this is probably how the colliery received its name of Wet Earth. In the 1750s James Brindley was consulted about the flooding and proposed working bucket pumps by cranks driven by a wooden

waterwheel 22ft in diameter sited in a chamber some 20ft below ground. To drive the waterwheel Brindley took water from a weir upstream on the River Irwell, bringing it by a tunnel 2,440ft long to the left bank of the river. To reach Gal pit, on the other side, he constructed an inverted siphon of 220ft horizontal length under the river bed. On emerging from the siphon, 20ft above river level, the water flowed along a leat some 3,300ft long to the wheel chamber. An underground tailrace led the water back into the river, along with the water pumped up from the mine. Brindley carried out this work some three years before he commenced work on the Bridgewater Canal.

Around 1790, Fletcher cut a canal to join the Manchester, Bolton and Bury Canal at Clifton Junction, and constructed a terminal basin at Wet Earth so that coal could be more easily transported from the colliery to local markets. Once the canal basin was in use, water for the waterwheel was taken from there, and the earlier tunnel, siphon and leat fell into disuse.

Pumping by waterwheel had begun in 1756 and continued until 1867 when the wheel was replaced by a turbine. Water power thereafter continued to be used until 1924, making a run of nearly 170 years.

A second shaft was sunk in 1805 which was later deepened to reach the Trencherbone seam at 600ft. A colliery railway was built to connect Wet Earth to the Lancashire and Yorkshire Railway, and a third shaft was sunk in the 1860s. The colliery finally closed in 1928 and all buildings were demolished soon afterwards.

The clearing of the site is expected to uncover and make safe where necessary the old Gal pit, the site of the underground wheel chamber, the exit from the inverted siphon, the canal basin and dry dock, a locomotive shed, a winding engine house, and several other buildings associated with the colliery complex.

Bill Jones



## DEFINING OUR TERMS

As well as dealing with physical remains of sites and monuments, industrial archaeologists are used to studying the materials and products of industries when surviving examples can be found, and documents describing those goods when they cannot. A large new research project is being undertaken which should substantially assist in this task of studying goods and commodities.

The project is to compile a dictionary of goods traded in England and Wales in the period leading up to the Industrial Revolution, from about the mid sixteenth century to the beginning of the nineteenth. The project is funded by the Leverhulme Trust and is based at Wolverhampton Polytechnic, where work will continue for several years, with publication proposed in about 1994 in book form and some years later on computerised compact disk. The principal people undertaking the project are Nancy Cox, an Honorary Research Fellow at Wolverhampton, and Angela Brown, a Research Fellow funded by the Leverhulme Trust. Two industrial archaeologists are closely involved: Dr Barrie Trinder of the Ironbridge Institute, and Peter Wakelin of the Portbooks Programme at Wolverhampton Polytechnic (and editor of this Bulletin!). A large number of volunteers are also becoming involved in the collection of evidence for the Dictionary.

One of the greatest problems for students of trade and material culture in the pre-industrial period is to understand precisely what was meant by the terms for goods and commodities which are found in contemporary sources. Some words may be obscure in meaning, such as 'pennadice', probably some kind of sugar product. Others, like 'household goods', may have clear general meanings but be elusive in definition. It is perhaps even more difficult to understand the historical significance of particular goods or commodities. For instance it may be known that 'alamode' was a thin, light glossy silk; but little can be inferred from its occurrence unless it is known when and where it was produced, what it was used for, and whether it was more akin in value to, say, modern polyester or an expensive Liberty's silk. Accessible studies exist for very few types of goods to provide such a systematic understanding of the contemporary context for their production, trade or use. The Dictionary of Traded Goods will contain some 4,000 entries and offer definitions and discussions of perhaps 8,000 different terms in contemporary usage. The dictionary in book form will be

about 500,000 words in length. The database version of the dictionary will be much longer, containing fully referenced arguments for all the definitions derived and various systems to allow rapid cross-referencing of subjects and more sophisticated analysis of the information contained.

Many of the terms for traded goods contained in contemporary sources are ill-defined or not defined at all in existing dictionaries, which reflect the sources they have used. The Oxford English Dictionary and most of its successors have drawn upon literary sources. Wright's and other dialect dictionaries have studied the spoken word. No major dictionary has drawn significantly upon the manuscript and printed documents of tradeland industry; yet these were written by people expert in their separate fields and familiar with contemporary terminology in a way that the more widely quoted literary figures could never be. The Dictionary of Traded Goods will use quotations from a variety of printed sources in the traditional way pioneered by the OED. However it will also derive definitions and further information from systematic analysis of extensive sources which have not previously been used, such as the Port Books, Books of Rates, industrial account books, probate inventories and newspapers.

The main systematic technique to be used has already been developed successfully by Barrie Trinder and Nancy Cox in work on probate inventories. By studying the context of words in a large number of inventories it is often possible to infer definitions. For example, the word 'tamarine' is defined in the OED simply as 'some kind of cloth', but from mercers' inventories it can be inferred that it was popular in the second half of the seventeenth century, it was grouped with the stuffs as opposed to the cloths, it was sometimes made of worsted and sometimes of other fibres, and it was ready dyed or patterned. This method of deriving definitions can be applied to several sources, including Port Books, and is greatly enhanced by the computerisation of evidence for rapid and thorough analysis.

The dictionary will define general terms like 'Manchester wares' and 'timberstuff' as well as more specific words such as 'plod' or 'magnus'. The information provided will allow the commodities to be set in their context of trade, suggest their uses and technological significance, and indicate how terms changed in meaning or fell from use. In many cases the dictionary will therefore not just provide definitions of terms but permit readers to build up

an understanding of broader topics such as the implications of different colours in textiles, the rapid growth in the range of hardwares, or the technological development of glass products. This will make the dictionary an important tool for those working on all aspects of trade or studying industry or domestic conditions in the seventeenth and eighteenth centuries. Until this tool is provided, historical understanding of early industrialisation and trade will remain severely handicapped by inadequate comprehension of terminology.

The work of compiling such a major Dictionary sets huge needs for the discovery and analysis of appropriate evidence. Any readers will be welcomed who would be interested in assisting the project by helping to find documentary or artifactual evidence to contribute to the definitions of the words. Detailed guidelines for extracting relevant evidence can be provided for any volunteers who would like to read documents in local archives, or even put their feet up at home with some contemporary published sources or early novels. Anyone who might be willing to help the project should contact Angela Brown or Nancy Cox, School of Humanities and Cultural Studies, Wolverhampton Polytechnic, Castle View, Dudley, DY1 3HR ☎ 0902 313001 extension 2333.

## THE GOLD RUSH

Readers who enjoyed the recent centenary season of Chaplin films may be itching to follow in the snowy footsteps left behind him in *The Gold Rush* (1925). If, unlike the little tramp, you already have some gold to spend, then you can both relive the film and see some of the industrial remains from the real thing. The (American) Society for Industrial Archaeology is arranging a study tour of the Yukon and Alaska gold mining regions in August or September next year. It has written to ask members of the **AIA** to join in the excursion and has provided the following details. If you decide to go, do check your accommodation is not teetering on an icy cliff-edge, and make sure you get back in time for next year's **AIA** conference.

### Yukon 1990

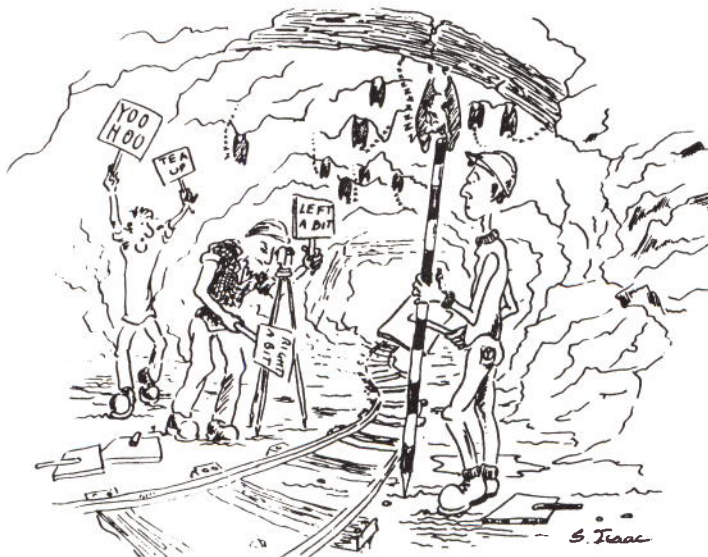
*Explore the dredges and gold field of Bear Creek, near Dawson. Ride the narrow gauge White Pass and Yukon Railway. Tour the steamers that once plied Yukon waterways. Operate the most northerly navigation lock in North America. Enjoy a 'flightseeing' tour by vintage DC3s between Whitehorse and Dawson. These are some of the highlights of the 1990 SIA Fall Tour of the Yukon and Alaska.*

*The Society for Industrial Archaeology in cooperation with the Canadian Parks Service and the United States National Parks Service invite you to join this unique experience. Spend nine days in the North touring historic industrial sites. The major destinations are Whitehorse, Skagway and Dawson.*

*The tour will occur in either the last week in August or the first week in September, 1990 (the date is to be confirmed). The trip starts in Vancouver with air travel to Whitehorse. Travel through the Yukon and Alaska will be by bus, rail and charter plane. The fare of \$1,800 (US) covers all travel, accommodation and most meals.*

*Plan now to journey north in the Fall of 1990.*

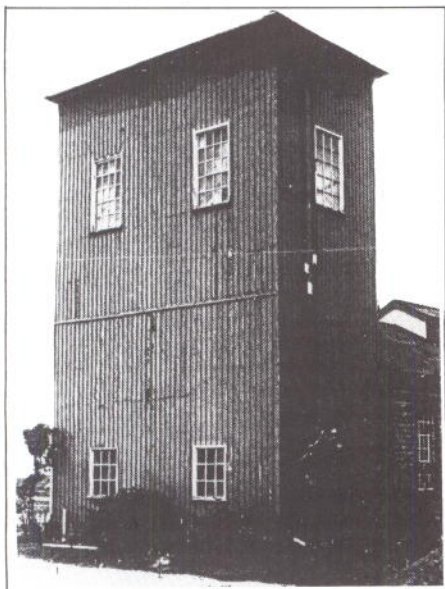
Further details from the Society for Industrial Archaeology, Room 5020, National Museum of American History, Smithsonian Institution 3



Drawing: Susan Isaac

← New surveying methods for mines occupied by bats. See 'Metal Mining Conference', p6

## PUMP HOUSE FOR SALE

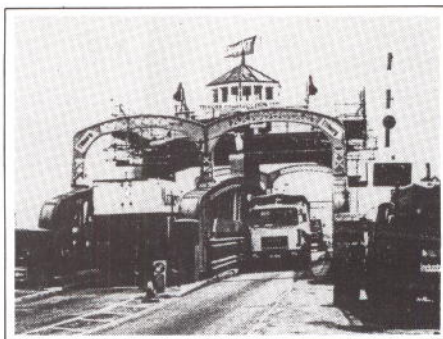


For sale: the timber-clad accumulator tower at Cross Keys Swing Bridge pump house.

A monument related to the history of railways, steam engineering, and waterways is coming up for sale in Lincolnshire. The Department of Transport has written to the **AIA** asking for a notice to be inserted in the Bulletin advertising for sale the Cross Keys Swing Bridge Pump House at Sutton Bridge near King's Lynn. This Grade II\* Listed Building was originally designed and built in 1897 by the Midland and Great Northern Railway Company to open and close the swing bridge, over the River Nene.

## SITES AND MONUMENTS RECORDS: THE EXAMPLE OF HERTFORDSHIRE

The recent appointment of a County Archaeologist for Kent has filled the last gap in the English counties in the provision of direct professional advice on archaeological matters to the local authorities. The role of County Archaeologists varies widely from county to county, but a fun-



Cross Keys Swing Bridge, Sutton Bridge, Lincolnshire.

The property consists of a single storey brick building housing pumps, with a timber-clad, steel-framed tower containing hydraulic accumulators, all situated 200 yards from the bridge. A workshop containing Victorian tools for the maintenance of the pump is also included.

The electric pumps, formerly steam-powered, lifted water from the river into the accumulators in the tower. When required, the water flowed along 200 yards of pipe and through a turbine to open the bridge. Directing the water to the reverse side of the turbine closed the bridge. Although the engine house was disconnected from the bridge in April 1988, the mechanism is still usable. The building has its own vehicular access and space for a small car park for visitors.

The Department of Transport is keen that an interested group should purchase the site. For further information, contact David Burnell, Department of Transport, Cranbrook House, Cranbrook Street, Nottingham ☎ 0602 476121 extension 435.

damental duty is the establishment and maintenance of an archaeological database, commonly called the 'Sites and Monuments Record' or 'SMR', as a management tool that underpins virtually all their work.

The idea of compiling what is essentially a list of archaeological remains reaches back after 150 years to the establishment, from 1908, of the Royal

Commissions on Ancient and Historical Monuments. Their work was extended by the Archaeology Division of the Ordnance Survey, especially after the appointment in 1920 of O.G.S. Crawford as Archaeology Officer, and the OS record cards are still the cornerstone of most existing SMRs. Further surveys, often on specific themes, followed through the 1950s and '60s, including such important publications as *A Matter of Time* (RCHME 1960), which surveyed the destruction of sites along the Thames Valley gravels, and *The Future of London's Past* (Rescue 1973). Both these publications highlighted the need not only for basic information, but for the positive use of that information to manage the archaeological heritage. This growing awareness of the need for an adequate database as a management tool was given further impetus by the publication of the Walsh Report on the Protection of Field Monuments in 1969, which recommended that:

*A consolidated record of all known field monuments should be held by the County Planning Authorities so that they may be aware of all such monuments in their areas.*

*County Councils which have not already done so should consider whether adequate professional archaeological assistance is available to them and should examine whether the appointment of an archaeological officer on a full or part-time basis is called for in their areas.*

These recommendations were substantially repeated as Government policy in DOE Circular 11/72, 'Field Monuments and Local Authorities', and were instrumental in the increasing employment of Archaeological Officers linked to local authority, and especially county, planning departments.

Hertfordshire has employed a County Archaeologist since 1976, and the Hertfordshire record (now called the County Archaeological Record or CAR), was established at about the same time. It was computerised from an early stage and has undergone considerable development since its inception. It is primarily designed to identify and evaluate the archaeological resource of the county so as to enable decision on the management of that resource to be made. This ability is crucial at a time when the historic environment is under threat, particularly from development and agriculture. It is not primarily designed to be used for educational, academic or recreational purposes, though clearly it can and does also fulfil these functions.

The Hertfordshire CAR currently contains about 6,500 records, each containing up to 37 separate information fields. It has been carefully designed and refined over several years to be readily usable by a wide audience, and print-outs are accompanied by a 'User's Guide' and bibliography. The principal information relates to the exact location of the site or find, its nature and condition, relevant history and descriptive information, known sources if any, and management information. Sensitive data relating to ownership, and evaluation criteria for possible statutory protection, are normally omitted from records destined for external users. The CAR is currently maintained on an IBM personal computer using Dbase III software. It is mainly operated through alternative choice 'menus', allowing easy access. External use of the Hertfordshire CAR is frequent and ranges from schoolchildren to academics. Queries are normally dealt with by 'phone or letter, usually within 24 hours.

Computerisation generally only came slowly to

HERTFORDSHIRE COUNTY PLANNING & ESTATES DEPARTMENT  
COUNTY ARCHAEOLOGICAL RECORD

5715: LONDON COAL DUTY BOUNDARY MARKER, POTTERS BAR

DISTRICT: Hertsmere

PARISH: Potters Bar

NGR: TL 2432 0273 MAP NO: TL20SW,78/B04 HEIGHT O.D. 100m. AREA: 0.0 ha

CONDITION: Very good SURVIVAL: Complete

FORM: Other Structure

PERIOD: Post-Medieval

REMARKS: City of London Coal Duty Boundary Marker on E side of railway cutting. Ashlar obelisk on tapered base with plinth and cornice, about 4m tall. City of London crest in relief on W face of obelisk. '14 and 15 VIC/C146' incised on N face of base. (From the 17th century the City of London levied a duty on imported wines and coal. An act of 1851 set up boundary markers alongside railways, rivers, canals and turnpike roads; 10yrs later boundary changed and markers were transferred to new sites. Duties abolished in 1889.)

AUTHORITIES: (1) DoE List Hist Bldgs  
(2) Johnson: Ind Mons in Herts, 1964, record 3700(\*)

## ARCHAEOLOGICAL HISTORY:

S.A.M.:

SITE STATUS: LBII AREA STATUS:

LAND CLASS ON SITE: Waste(19); Railway cutting(21)

LAND CLASS AROUND SITE: Railway(21); Golf course(20)

SITE MANAGEMENT:

GENERIC TYPE: 4045: London Coal Duty Boundary Marker

DATE OF COMPILATION/AMENDMENT: 1.6.85 / 9.3.89 / 11.6.89

Monument recorded: an example from the Hertfordshire SMR database.



SMRs despite its clear advantages in storing such large quantities of information. That information must be capable of analysis and manipulation as well as storage. If SMRs are to be effective management tools, it must be possible to retrieve information in various combinations. It is necessary, for example, not only to know how many moated sites exist in Hertfordshire, but how many of these are of sufficient value to be worthy of statutory protection as Scheduled Ancient Monuments. Other information requirements can be much more sophisticated, and computerisation is the only practical means of being able to search the whole record for particular fields of information or combinations of fields. It is a fundamental means of ensuring that the 'management tool' can be used to its full effectiveness.

However, the computer record is only one element of the CAR. It also includes a complete map coverage of the whole county at 1:10,000 scale, showing the location related to each record; a complete transcription of the aerial photographic evidence for the county, and a comprehensive cover, also at 1:10,000 scale, showing 'Areas of Archaeological Significance' throughout the county. These are areas of particular potential identified and defined from the raw information in the CAR, and primarily designed for development control purposes.

The Hertfordshire CAR is currently undergoing a comprehensive revision, which is now about three quarters complete. This requires a full-time post which to date has been partly supported by English Heritage, but the County Council will totally fund the post from 1991. Beyond the current revision, there will always be a need for updating the CAR, not only because of new and revised information, but also because of the changing perceptions and demands of the historic environment. Sites and Monuments Records will never be 'finished', and nor should they be.

Mike Daniells  
County Archaeologist  
Hertfordshire County Council

## PENETRATING THE PILBOX

The Surrey Industrial History Group is pursuing a new survey in order to advance understanding of the archaeology of internal defence at the start of the last war: a survey of surviving pillboxes in the county. Interest in pillboxes has increased since the recent publication of the book by Henry Wills, *Pillboxes: a Study of UK Defences 1940*, which attempted to set out the background for the creation of the wartime concrete objects which we all know and love. Wills is a Wiltshire newspaper photographer, who began a survey of the boxes having discovered that the official records of the strategy which created them were inaccessible and little was known about their construction or intended use. His work shows that even in recent periods of history, archaeological investigation can sometimes tell us things which it would be impossible to discover from other means. Although Wills managed to establish a first gazetteer, the Surrey Industrial History Group has found that many pillboxes remain to be added to it. A project to scour the Surrey countryside for further examples has therefore been set up. Readers in other parts of the country which have pillboxes may be interested to read the following extracts from an article by Chris Shephard in the May issue of the SIHG Newsletter.

*Pillboxes were first developed to provide protection from bombardment for machine guns and crews on the battlefields of the First World*

## THE EIFFEL TOWER AND ITS RIVAL IN LONDON

This year the Eiffel Tower is 100 years old and has been carrying a slogan emblazoned vertically in lights which reads '100 ans'. Including the television transmission aerial the structure is 1,051 feet high and was built of wrought iron, being one of the last large works using this material before the dawn of the age of steel. It was inaugurated on 31 March 1889. The centenary of the Eiffel Tower in Paris brings to mind London's answer to that tower, the Metropolitan Tower, which was constructed as far as the first stage, a height of 155 feet, on a site now occupied by Wembley Stadium. It was intended to be higher than the Eiffel Tower and the main feature of a new recreational park.

Sir Edward Watkin, of Great Central Railway and Channel Tunnel fame, was one of the chief promoters. A plot of land 280 acres in extent was purchased at Wembley and in November 1889 prizes of 500 and 250 guineas were offered for designs. Needless to say there were many entries, a good deal of which were, to put it mildly, absurd. Even Mr Arnold Hills of the Thames Ironworks, who was an ardent proponent of vegetarianism, envisaged a colony of aerial vegetarians who would derive sustenance from fruit and vegetables grown in hanging gardens. His plan also included a one-twelfth size replica of the Great Pyramid of Giza, a temple, an international store and, at the top of the tower, a hotel, and flats which could be let for prices commensurate with their altitude. The more fanatical projects need not be mentioned.

Sir Benjamin Baker FRS was among the judges,

## AFFILIATED SOCIETIES

The affiliated societies' weekend took place from 14-16 April in Ironbridge. The topics covered included the roles of such bodies as English Heritage, the Royal Commission on Historical Monuments in England, and local authorities and buildings preservation trusts. There was also a session on the Council for British Archaeology and Listed Buildings consent cases, which provided a lead into discussion about an AIA network of correspondents to be set up shortly. I was unable to be at the weekend because of illness, and would like to record my thanks to Marilyn Palmer for stepping in to take the chair, and to Peggy Lyon, who ensured that the domestic arrangements

*War. They were first introduced to Britain on the east coast to protect ports left vulnerable by the depletion in strength of the Royal Navy following heavy losses. Between the wars some development took place and the British Expeditionary Force used French pillboxes and built some of their own in Flanders during 1939 and 1940.*

*With the war situation worsening in 1940 a series of proposed defence lines was drawn up to which the defenders would withdraw by stages if the worst happened. Very little detail can be put on the skeleton map of these as all but one command's papers seem to have been destroyed. So a lot of what we find out during our survey will be previously unrecorded.*

*The design of pillboxes was the responsibility of branch FW3 of the Fortifications and Works Directorate of the War Office. Drawings were issued to each army command, and the Commander of Royal Engineers at each command modified them to suit local conditions and available materials. His plans were then passed on to civilian contractors and sub-contractors who*

who selected a design very similar to that of M. Eiffel's in Paris. Steel girders from the Newton Heath Ironworks in Manchester were delivered direct to the site by rail, but when Wembley Park opened in May 1894 the tower was only completed to the first stage and work stopped at the end of the year. The Metropolitan Tower-Construction Company had insufficient capital to complete their work and public opinion turned against having such a tower in London. It stayed as it was for 13 years. Demolition, making use of explosives, was completed in July 1907 by the Manchester firm of Heenan and Froude.

Readers who are railway enthusiasts may have a copy of L.T.C. Rolt's book, *The Making of a Railway* (1971), which largely consists of photographs by the Leicester photographer S W A Newton of the construction of the Great Central Railway. On page 37 there is a picture of a Ruston excavator at work on railway buildings near Wembley. What was built of the Metropolitan Tower can be seen in the distance.

Other British rival towers were more successful. On Merseyside, New Brighton Tower is no longer with us, but less than thirty miles to the north Blackpool Tower still stands. Many cities now have telecommunications towers, but with the British Telecom Tower in London reaching a height of only 620 feet, compared with the 1,051 feet of the Eiffel Tower, the effect the latter had on the imaginations of people in 1889 needs little explanation. More than a decade before the first heavier than air flight it gave a considerable section of the population an aerial view of a city, previously the preserve of a tiny minority of aeronauts.

R J M Carr

ran smoothly. Every one I have spoken to seems to have found the weekend both enjoyable and useful, and it was well attended. The provisional dates for the 1990 weekend are 30 March to 1 April. There will be more information in the next issue of the Bulletin, but please put the date in your diaries.

I am working on the revised issue of the list of local societies, and hope this will be ready by the autumn. Each affiliated society will receive a copy. At the risk of sounding boring, may I reiterate my plea for copy . . . . . especially profiles of local societies. Ideas for topics for future Working Weekends are also welcome. Please note my new address: 20 Stourvale Gardens, Chandlers Ford, Hampshire SO5 3NE.

Pam Moore

*carried out the actual work. Nearly all loopholes were factory made. All boxes were to be built of concrete with reusable shuttering, but with wooden shuttering in short supply a variety of materials was used including brick and corrugated iron. The concrete itself was of variable quality.*

*The pillboxes have now toned into the countryside but at the time considerable effort was put into their camouflage, such as at Elstead Mill, where a pillbox was disguised as a summer house. Many have found other uses including, locally, garden sheds, garages, housing for swimming pool filtration equipment, and one as a base for an aerial. Most, however, have ended up as rubbish dumps. Despite the difficulty of demolition these historically important structures are slowly disappearing and it is important that they are recorded.*

Fieldworkers considering the merits of undertaking a similar survey can get in touch with Chris Shephard at Rose Cottage, 22 Ridgway Hill Road, Farnham, GU9 8LS.



**IRONBRIDGE WORKING WEEKEND 1989**

This year's working weekend at Ironbridge for representatives of societies affiliated to **AIA** and for other interested individuals was on the subject of the protection of monuments. Speakers from a variety of backgrounds contributed and nearly all of the sixty or so delegates who attended participated in lively discussions.

Peter White, Principal Inspector for English Heritage, began the event by providing an overview of powers for the protection of Listed Buildings and the work of English Heritage. He ranged over the different roles in maintaining and watching over monuments and in providing advisory services performed by English Heritage. A detailed discussion ensued on the vexed topic of the precise definitions of the features and artifacts protected when a building is listed. The current legal opinion was that whereas the definition of a 'building' excluded its contents, that of a 'Listed Building' included the building's curtilage and fixed contents which were integral to its design and operation. However this remained to be tested in court and English Heritage was seeking some changes in the law to clarify the matter. There will be more on this issue in further issues of the Bulletin.

John Crompton demonstrated work in progress to create a database for the **AIA** of endangered sites and monuments. This currently contained over 1,000 records and was growing rapidly. Its purpose was to speed up and enlarge the potential for responding to applications for the destruction or alteration of monuments. It was anticipated that members of affiliated societies would have an important role in this, since a network of correspondents was being developed who would investigate local threats and report back to the **AIA**. The information received from local informants could then be integrated with information from the database about similar monuments so that an informed case could be made to the authorities.

The Assistant County Planning Officer for Hampshire County Council, Phil Turner, talked about local planning officers and the local planning role. He emphasized that planning officers

often have in mind a much wider notion of environmental conservation than historical conservationists in general or industrial archaeologists in particular. He suggested that 'the environment is too important to be left to the professionals' and it was vital for all those in local societies to become familiar with the broad range of issues in environmental conservation so that a total strategy for conservation could be pushed forward.

On the Sunday morning, Keith Falconer of the English Royal Commission spoke about its work in industrial archaeology. He focused on the example of the northern mills survey RCHM has been carrying out, and the development of techniques for rapid survey of buildings made possible by modern technology and experience developed during a thematic survey of similar monuments. In particular he persuaded all present of the value of aerial photography in allowing the rapid assessment of likely phasing in a large mill complex, and of electronic survey tools in providing rapid and accurate elevations.

The final speaker was the recently appointed Historic Buildings Officer for the Council for British Archaeology, Jane Grenville, who works from the CBA's northern office in York. The CBA was appointed by ministerial directive to comment on applications for listed buildings consent nationally, along with the Victorian Society, the Ancient Monuments Society, the Georgian Group and the Society for the Protection of Ancient Buildings. The CBA looked at all types of monuments, and attempted to evaluate them from a specifically archaeological viewpoint, rather than from the point of view of environmental value or amenity. It was hoped that the establishment of the new CBA panels on industrial monuments (reported in the last Bulletin by Don Storer) will assist the task of making cogent responses to the vast number of applications that pass through the CBA office annually. A vast amount of work was necessary in order to ensure that local authorities were actually sending the applications for consideration.

The weekend also contained less formal activities, giving time for delegates to visit the Ironbridge Gorge Museum sites, and in particular to see the newly established rolling mill at Blists Hill in operation, rolling rails from wrought iron re-heated in the puddling furnace. A reception

was also held in conjunction with the Council of Europe tour of the UK. Delegates from this important international colloquium were visiting Ironbridge during the same weekend, and a sherry reception for them was hosted by the **AIA**, at which the opportunity was taken for discussion and the exchange of international views on the industrial heritage.

The weekend proved to be one of the most stimulating and successful that has been held by the **AIA** to date. In a report on the event for the Surrey Industrial History Group Newsletter, Alan Crocker made a last remark that deserves wider notice .... 'These meetings are very worthwhile and I hope that other members will decide to attend in future years'.

**METAL MINING CONFERENCE**

The joint **AIA** conference with the National Association of Mining History Organisations on the British metal mining heritage took place on 16 and 17 June. The programme prepared by **AIA** President Dr Marilyn Palmer proved very attractive to delegates from a wide range of backgrounds. The conference showed the enormous benefits to be gained from interchange between those with quite different interests in metal mining and its archaeological remains. In addition to members of **AIA** and NAMHO the delegates included representatives from all the major regional mining history research groups, officers of most of the county council planning departments with metal mining sites within their jurisdiction, and representatives from each of the National Parks in metal mining areas and the National Trust. An impressive list of speakers included people concerned with planning and monument protection, the academic study of the sites through survey, excavation and documentary research, the practical conservation of mining sites, and the development of tourism. Attention was also given to the need for the investigation of mines to take account of the protection of any bats in residence.

The main papers from the conference are to be made more widely available through publication in a special issue of *Industrial Archaeology Review* (similar to the highly praised recent issue on textile mills) in honour of the pioneering mining historian Arthur Raistrick. It is hoped that the great success of this inter-disciplinary conference will be followed by similar events on other elements of the industrial heritage, such as railway preservation or coal mining.

**A BLUDNER**

The production team of the *AIA Bulletin* does make mistakes. Some readers may have spotted that in the last issue we referred to the first day covers being issued in conjunction with the new stamps for sale from July featuring sites of importance in the Industrial Revolution. Adrian Bradbury of Leicester has produced a first day cover for the **AIA**, and we said the envelope illustration was reproduced 'here'. Well it wasn't. Sharp eyed readers may have seen it in a philatelic leaflet enclosed with the Bulletin; but in case they did not, we are having another go herewith. The drawing is of the Iron Bridge, by Susan Isaac, a professional illustrator and graduate of the Ironbridge Institute, who also did the drawings for the current **AIA** membership leaflet.

For good measure, we are also reproducing here the miniature sheet of the stamps, issued on 25 July. Or that's what we think we're doing.





## REGIONAL NEWS

### YORKSHIRE AND HUMBERSIDE

Thwaite Mills, on the River Aire at Stourton near Leeds is expected to open to the public during August. Its waterwheels, dating from 1823, powered stone crushing machinery, putty or whiting mills, and an engineering workshop. Earlier, they provided power for crushing rapeseed and linseed for oil. Restoration has cost 2.5 million. The tower of a mill used for making whiting, Cliff Mill, situated at Hessle adjoining the north end of the Humber Bridge, is open to the public daily in summer and weekends only in winter.

Grimsby Borough Council has approved plans to create a Fishing Heritage Complex at Alexandra Dock. It will include a hotel, a pub, craft shops, offices, apartments, and the 'Lincoln Castle' paddle steamer from the Hull to New Holland ferry. Also in South Humberside, Immingham Museum, newly housed at 1-2 Waterworks Street, emphasises the role of the Great Central Railway in developing Immingham and its docks. The Baysgarth Museum at Barton-on-Humber, and the Normanby Park Farming Museum at Normanby Hall near Scunthorpe, both include new display about country crafts. Springhead Pumping Station at Springhead Lane, Hull, is opening on a daily basis as a museum of Hull's water supply. Its centrepiece is an 1867 beam engine.

Sheffield City Council has commissioned a feasibility study of proposals for a National Museum of Steel in the city, which was the scene of many steel 'firsts', including the successful commercial application of the Bessemer converter and the invention and development of stainless steel. The first method of steelmaking in Sheffield was the cementation furnace, a structure shaped somewhat like a pottery bottle kiln, in which wrought iron was baked with charcoal in a sealed stone chest. The method was used there from the early eighteenth century until 1951-2, and the last furnace to be used, then one of five at Doncaster Works, is now the only complete survivor in the city, and is a Scheduled ancient monument. Until recently it was hidden in the yard of the British Iron and Steel Research Association Laboratories, built in the 1950s, but they have now been demolished and the site is being developed for the Midland Bank. The cementation furnace, which dates from 1848, will now

stand by itself in the car park. An office block of similar date, which stood between it and Doncaster Street, has been demolished despite attempts to have it spot-listed and used as an interpretation centre for the furnace. A part of another cementation furnace at Bower Spring, Sheffield, which is also an ancient monument, has been taken into the care of the Sheffield Trades Historical Society.

*Derek Bayliss*

### GREATER LONDON

At Bank the controversial redevelopment of the area to the east of the Mansion House, which included the Mappin and Webb store, continues to attract public attention. Unlike Covent Garden there appears to be no trade off in favour of a good cause. The scheme presently approved, by the architect James Stirling, will involve the demolition of eight listed buildings. SAVE are appealing against the loss. A previous much publicised scheme for a tower by Mies van der Rohe was rejected.

Restoration work on the tower at Kew Bridge Steam Museum has been completed at a cost of 110,000, funded by English Heritage and the Thames Water Authority. Lord Montague performed an opening ceremony on 19 January. The at one time promising Wandle Industrial Museum scheme has recently been suffering problems. Work at Crossness pumping station is proceeding satisfactorily. The Markfield Road beam engine is due to be steamed and a volunteer with experience of working a large rotative engine is required to give advice. (Please contact Mr A. Spackman ☎ 0763 87331.

In April a visit took place by the Greater London IA Society to the Southside Buildings, Northolt Aerodrome, which are coming to the end of their life and are due for replacement by a new terminal. Built at the end of World War II for RAF Transport Command, they were intended to have a life of 20 years. After the war, Northolt was for a time the busiest civil airport in Europe, but the last BEA flights were transferred to Heathrow in 1954. Since then the buildings have been used by the RAF, now largely for VIP transport purposes. The Spitfire at the gate is a genuine aeroplane but soon to be replaced by a plastic replica. 'Jason', the nuclear reactor at the Royal Naval College, Greenwich, used for training purposes, is reported due for retirement. The GLIAS recording group have written to request a visit but details are not yet finalised.

*R J M Carr*

### EAST MIDLANDS

The Framework Knitters Museum at Bushloe End, South Wigston, Leicestershire, is now regularly opened to the public. This time-capsule of a master hosier making gloves has undergone considerable restoration ready for the quartercentenary of the invention of the stocking knitting frame by William Lee. It is open on the first Saturday of the month all year, and until the end of September on Sundays and Bank Holidays, from 2pm to 5pm. Parties may visit by prior arrangement, by contacting Ian Varey ☎ 0533 792587.

The Heritage Brewery Museum at Anglesey Road, Burton-upon-Trent, based on a working Victorian tower brewery is also now open for visitors. You are invited to 'see, sniff and sample' between 10am and 4pm from Tuesdays to Saturdays throughout the year and on Sundays from 11am to 3pm from May to September. For details ☎ 0283 69226.

Provisions laid down in the Reservoirs Act 1975 concerning the safety limits of dams in deluge conditions have meant that the 1km long embankment for the mill pond at Arkwright's Lumford Mill at Bakewell required restoration and strengthening. With costs estimated at £100,000, the owner has had to build a new dam at the upper end of the pond and breach the main embankment to drain the main part of the pond. Interested bodies, including English Heritage, the Peak District National Park and the Severn Trent Water Authority had offered £45,200 towards the original work. How many more landscape features, mine reservoirs and relics of water powered industry are also under threat?

The East Midlands IA Conference Number 37 was held at Nottingham in May in celebration of the opening of the Midlands Counties Railway from Derby to Nottingham in 1839.

*Peter Neaverson*

### SOUTH WEST

The fine weather through May and June have allowed extensive fieldwork on the Mineral Tramways Project. Adam Sharp and John Smith of the Cornwall Archaeological Unit report that much has now been achieved under generally pleasant conditions, although aggressive dogs, and the inevitably thick brambles provided occasional diversions (quite literally in places!).

All accessible sections of the Poldice Tramroad and the Redruth and Chacewater Railway, (and its branches), together with the Tresavean, Portreath and Roskear Branches of the Hayle Railway have now been systematically walked. Where necessary, suitable footpath links around blocked sections of their trackbeds have been located. Subsidiary footpaths linking the railways with mines and other sites of interest have also been examined.

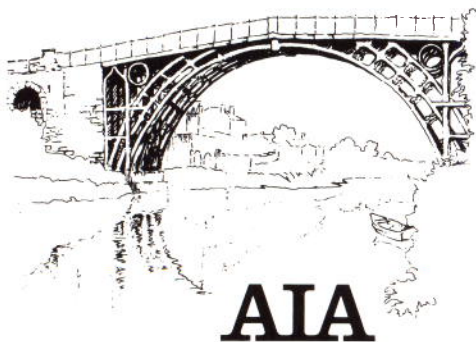
These mines, with other industrial sites along the routes have been the subject of brief appraisals; Ken Brown is presently engaged on the production of a definitive map of engine house locations in the Camborne/Redruth-Gwennap areas which will allow remaining structures to be properly evaluated.

CAU is currently engaged in the production of a report for the Project sponsors. This will outline a network of footpaths, based on the tramway routes, and linking Devoran with Portreath and Carnkie. It is intended that this Project will provide the framework within which the long-term consolidation of the industrial heritage of this area can be achieved.

A branch of the Groundwork Trust, newly established in Pool, Redruth, is expected to co-ordinate the implementation of these management recommendations.

In the same area, CAU have provided Kerrier District Council with an evaluation of Tresavean Mine in advance of proposals for landscape management under a Derelict Land Grant. Although most of the large structures on the mine have already disappeared, it is hoped that the remaining features will now be safeguarded.

English Heritage are worried about the continued use of the chimney of Fortescue's pumping engine house, Grenville United, as an incinerator, and feel that damage to the structure may ensue if this is not checked. A small white pickup has been spotted near the site, but so far it has not been possible to get the registration number, or to photograph the offender in the act. Help is requested on this one.



# AIA

ASSOCIATION FOR INDUSTRIAL ARCHAEOLOGY

OFFICIAL FIRST DAY COVER

A. G. Bradbury, 3 Link Road, Leicester L.F.D.C. No. 79

The AIA official First Day Cover

**September 3-8 1989  
SECOND INTERNATIONAL  
CONFERENCE ON THE HISTORY OF  
MINING**

At Bochum, West Germany.  
Details from Prof Dr Klaus Tenfelde, Institut für  
Geschichte Abteilung für Wirtschafts und So-  
zialgeschichte, Universität Innsbruck, Innrain  
52, A-6020 Innsbruck, Austria.

**September 15-17 1989  
AIA ANNUAL CONFERENCE**

At Huddersfield Polytechnic.

**September 16-23 1989  
INTERNATIONAL CONFERENCE ON  
THE HISTORY, TECHNOLOGY AND IA  
OF GLASS**

In Lisbon. Organised by the Associação Portu-  
guesa de Arqueologia Industrial, Apartado  
5374, 1708 Lisboa Codex, Portugal.

**18-30 SEPTEMBER 1989  
The Ironbridge Training Excavation**

Details from Janet Markland, The Ironbridge  
Institute, Ironbridge Gorge Museum, Iron-  
bridge, Telford, Shropshire, TF8 7AW  
☎ 095245 2751.

**14 October 1989  
EAST MIDLANDS  
IA CONFERENCE No 38**

On the theme of 'Effluent Nottingham' organ-  
ised by the Nottinghamshire Industrial History  
Society. Details from L. Mason ☎ 0602  
255785.

**November 6 1989  
IS HISTORY NICE?**

The Danger of the Deferential Museum, day-  
school at the Science Museum. Details avail-  
able from Ironbridge, as above.

**November 16 1989  
BEHIND THE HIGH STREET:  
THE HIDDEN HISTORY OF THE TOWN  
CENTRE**

A day-school at the Ironbridge Institute. Details  
available from Ironbridge, as above.

**November 18 1989  
SPAB WIND AND WATER MILL  
SECTION**

Autumn meeting on theme of water turbines, at  
Bishopsgate Institute, London.

**November 30 1989  
THE USES OF PORT BOOKS FOR  
INDUSTRIAL HISTORY**

A day-school at the Ironbridge Institute. Details  
from Ironbridge, as above.

**April 6-8 1990  
COMPUTING FOR LOCAL AND  
REGIONAL HISTORY**

Organised by the Association for History and  
Computing UK Branch at Wolverhampton Poly-  
technic. Details from Peter Wakelin, School of  
Humanities and Cultural Studies, Wolverhampton  
Polytechnic, Castle View, Dudley DY1 3HR  
☎ 0902 313001 ext. 2333.

**May 26-29 1990  
EUROPEAN CONFERENCE ON  
HERITAGE TOURISM**

At Canterbury, organised by ICOMOS on the  
subject of damage to the heritage by tourism and  
methods of control. Details from Jane Faw-  
cett, ICOMOS UK, 10 Barley Mow Passage,  
Chiswick, London W4 4PH.

**May 31 - June 3 1990  
SOCIETY FOR INDUSTRIAL  
ARCHAEOLOGY  
19th ANNUAL CONFERENCE**

In Philadelphia, USA. Details from Sally Elk or  
Carmen Weber, Philadelphia Historical Com-  
mission, 1313 City Hall Annex, Philadelphia,  
PA 19197, USA ☎ 215 686 4543.

*Information should be sent to the Editor as soon  
as it is available.*



REGIONAL REPORTERS MAP

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Cumbria LA23 1AY.

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ter M28 4FD.

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**Region 13:** WEST OF ENGLAND  
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Mrs Joan Day, 3 Oakfield Road, Keynsham,  
Bristol BS19 1JQ.

**Region 14:** SOUTH WEST ENGLAND  
Devon and Cornwall  
John Stengelhofen, Kelly Coppice, Calstock,  
Cornwall PL18 9RA.

## AIA Bulletin

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15 June for August 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 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. ☎ 095245 3522.*

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