

## ALABAMA ARCHAEOLOGY

*The Historic American Engineering Record (HAER) is one of the longest established and most important industrial archaeological survey organisations in the world. Visiting students have always played a vital part in its work. This article describes the experience of one student from England of working with HAER. Before she went, most of her friends asked simply, 'Birmingham, Alabama! Why in the world are you going there?'*

Known world wide for its race riots, and to a lesser extent for its industrial decay and entrenched conservatism, it may be only industrial archaeologists who get excited about the idea of visiting Birmingham, USA. Birmingham once boasted the country's largest producer of pig iron—now Sloss furnaces are a leading museum, one of the first to tackle the problems of preserving and interpreting twentieth-century industry.

Nearly twenty years after HAER's recording project on the furnaces helped to establish Sloss's importance, HAER is back in Birmingham. I joined part of a three year team. My placement was funded by the International Council on Monuments and Sites (ICOMOS), which should signify the importance of Birmingham's other industrial sites—its foundries, mines, large areas of workers' houses, for example. The project is hosted by the local Historical Society (can you imagine a local history society here financing such a project?) and there are laudable plans for a more integrated interpretation and preservation programme for industrial sites.

HAER requires each team to produce illustrative sheets and a historical report. Architects draw the structures or processes concerned with each site, and historians do the blurb for the sheets and research. No doubt many readers have seen the quality of work produced, the envy of many here. The teams are

given a good deal of flexibility in the way their site is recorded—thus my project (one of four) decided to concentrate on how its engineering shop made a drum for a mine winding engine in c1925. This enabled not just an explanation of how the site worked, but illustrated the interdependent nature of Birmingham's iron industry. The winding drum was made with local iron and went to a local mining company. Thus HAER was actively backing up current academic thought on the nature of the South's iron industry.

Despite this flexible approach there are drawbacks. Although the recording project addressed issues of building design, it did not cover in great depth the architectural and construction details of each building. A more disciplined British approach here might at the very least aid future researchers using the archive produced. There was a lack of guidance over the level to which sheets and reports were to be aimed—at school teachers or fellow industrial historians or retired foundrymen? Would it be a good idea to use more young engineers and archaeologists, not the traditional young architects?

If Birmingham required a record of its important foundry industry, it is perhaps disappointing that an engineering works (one of many across America) was selected, rather than a cast iron pipe manufacturer where Birmingham led the industry. Local politics, funding, and the willingness of firms to participate all play a role in the decision-making process. When I left Birmingham this spring it seemed possible that HAER's role would be reduced to just recording a baseball park! Thankfully its projects actually include a major Sloss mine and mid-nineteenth century furnace.

The projects are progressed at a fair lick, and the quality of work coming out of HAER's Birmingham teams was much appreciated. However in twelve weeks it is hard to do justice to many sites, let alone an under-researched area such as foundries and machine shops. (I stayed an extra six months in Birmingham to write my dissertation for the Ironbridge Institute on over 60 foundry sites in the city centre—from down-market sash shops to the innovative pipe shops). In the South you have further problems with the unsurprisingly sensitive areas of industrial relations and segregation, and the under-researched issues of technological change and wage rates in North and South.

Working for HAER was an extremely interesting experience—not just for the work satisfaction



### FREE BRIDGE DEMOLISHED

Regular *Bulletin* readers will be aware of the saga of the Free Bridge, just downstream from the Iron Bridge. Following the Ladywood Bridge Public Inquiry, its demolition was sanctioned, and had been completed by late September. The centre arch was demolished using a dragline with ball and chain mounted on a floating pontoon (just visible on left of picture); the side arches were then tipped over and broken up in situ by machines on either bank. A small section of the upstream side of the southern arch was cut out intact, and is destined to be displayed nearby, together with a brief history of the 1909 ferro-concrete bridge. A temporary Bailey bridge will carry traffic until the new cable-stayed permanent replacement is ready in summer 1994; plans and drawings are on display in the Tollhouse on the Iron Bridge.

John Powell



but also to see the strengths and weaknesses of an admirable institution. And I very much enjoyed Birmingham itself too. Yes, it has its faults. But it is also a good example of how ex-industrial cities need not go permanently to the dogs.

Others interested in scholarships to join HAER should contact ICOMOS UK, 10 Barley Mow Passage, Chiswick, London W4 4PH.

Tanya English

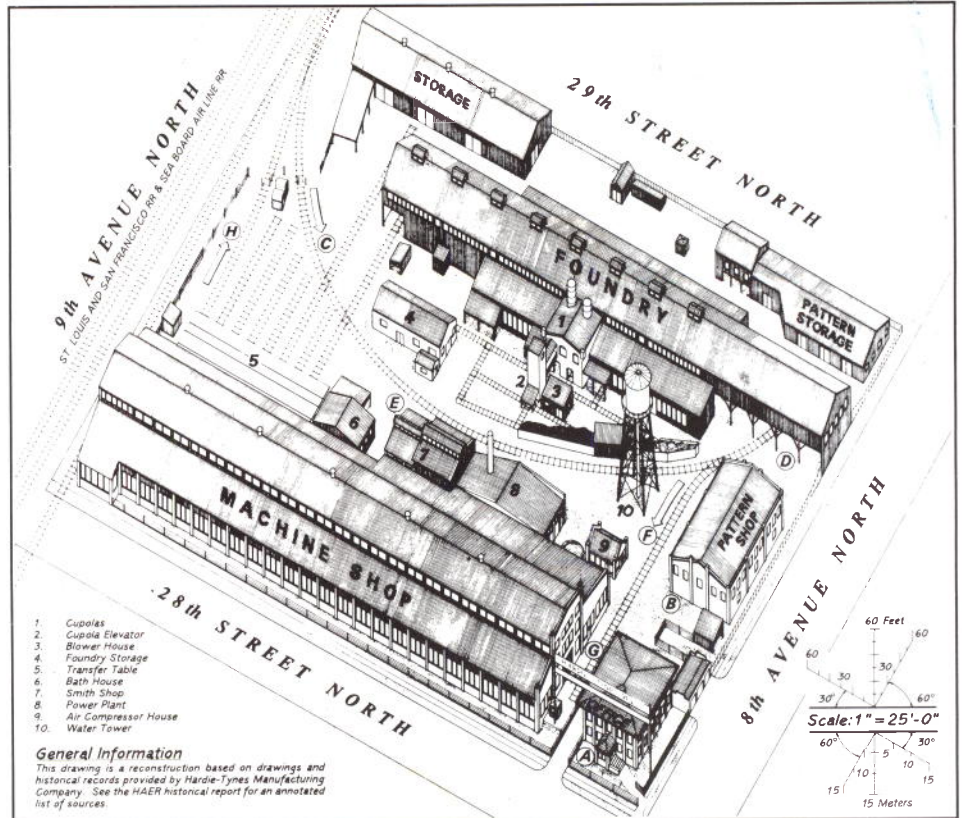
## ENGINEERING: AN INDUSTRIAL ARCHAEOLOGICAL PERSPECTIVE

The spread of mechanical engineering skills, essentially the ability to manufacture such things as steam engines, agricultural implements and bridge parts, using machined castings and forgings, was one of the most significant developments of the industrial revolution period. Many aspects of the industry are already well covered in historical literature, but a comprehensive picture of its growth is difficult to obtain. Alex Hayward, External Affairs Co-ordinator at the Science Museum and Barrie Trinder, Senior Research Fellow at the Iron-bridge Institute hope to establish an informal network amongst people working in this field which will help to provide a clearer view of the origins and growth of the industry.

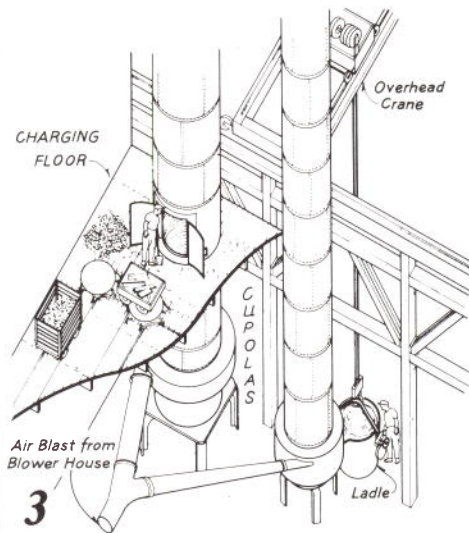
Discussion at the first meeting held at the Science Museum in March suggested that the engineering 'factory', taking orders for machines, making them and installing them, has its origins in the 1790s, with enterprises like the Soho Foundry of Boulton and Watt, Matthew Murray's Round Foundry in Leeds, and John Hazledine's Coleham Foundry in Shrewsbury. Machine tool technology subsequently developed, especially at Henry Maudslay's works in London, and in Manchester. By the mid nineteenth century a foundry making agricultural implements could be found in most market towns of substance. Factories building steam locomotives proliferated, while the development of iron ships made shipbuilding a part of the engineering industry. In the late nineteenth century companies making heavy electrical equipment employed many of the techniques of earlier engineering concerns, while the agricultural depression led some firms who had made agricultural implements to turn to new products.

The object of the network is to take a multi-disciplinary approach to the growth of the mechanical engineering industry in the nineteenth century, bringing together the work of the conservation and recording agencies studying buildings associated with the industry, museum curators concerned with collecting the products of particular works, historians of technology who may be studying the development of machine tools, local historians looking at the impact of engineering works on particular communities, and business historians investigating particular companies. It is hoped within the next two years to produce a bibliography, a gazetteer of well-preserved sites (which may be built up in sections in the *Bulletin*), and some indications of the surviving products of various works.

Anyone interested in becoming part of the network should contact Alex Hayward at the Science Museum or Barrie Trinder, the Iron-bridge Institute, Ironbridge Gorge Museum, 2 Ironbridge, Telford, Shropshire TF8 7AW.



### Cupola Operations



The cupola furnaces melted iron. Raw materials were elevated from the yard to the charging floor in trolleys and put into the cupola by hand.

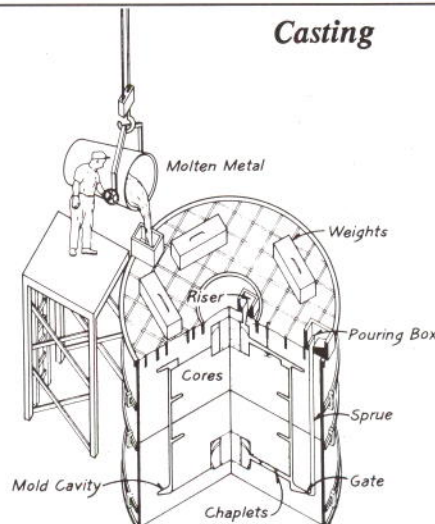
First a bed of coke was heated in the cupola. Steel was added, to make a stronger iron known as "semi-steel," followed by scrap and pig iron, limestone and coke.

Once the charge was hot, air blast was applied. The metal melted within minutes. The cupolas could be charged and tapped continuously. The molten metal was collected in the foundry ladles.

above: HEAR survey—the main drawing from a survey sheet: site operations at the Hardie-Tynes Manufacturing Company c1925

left: two detail drawings from a survey sheet on the foundry process for mine hoist manufacture at Hardie-Tynes

### Casting



The flasks were assembled, with cores inside resting on metal chaplets. The flasks were clamped and weighted down to withstand the pressure of the molten metal entering the mold.

The metal was poured from two ladles into both pouring boxes. It flowed down the sprues and through the gates into the mold cavity.

As the casting began to solidify and shrink, the hub was "churned" with steel rods and extra metal poured into the riser.

Historic American Engineering Record, USA National Parks Service: top drawing by Zvonimir Franic, 1992; lower drawings by Laura Letton, 1992



## CUMBRIA CONFERENCE

The 1993 AIA Conference, which was held on 10-12 September in Charlotte Mason College, Ambleside, was organised by Chris Irwin and the Cumbria Industrial History Society (CIHS). The one hundred and twenty or so delegates stretched the resources of the college: the lecture hall was full and the dining room packed. Those lucky enough to have accommodation in the main building did not have to go outside but those in other buildings had a sometimes wet and always uphill walk for all conference events. Despite this everyone seemed to think it was a good venue.

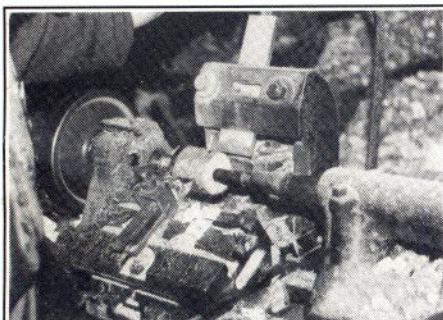
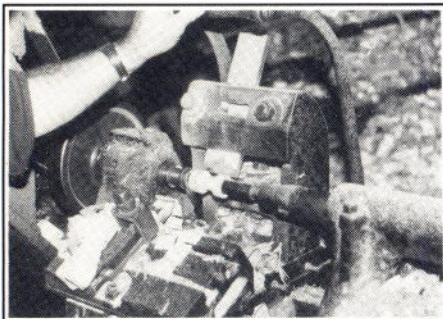
Proceedings opened after dinner on Friday with a welcome by John Marshall of CIHS and an introduction to the area by Mike Davies-Shiel. The abundant water power and the availability of coal, wood, stone and metalliferous minerals as well as good pastures for cattle and sheep were the basis of Cumbria's industrial past. We were given a time chart from the twelfth century to the present outlining the development of the various industries based on these raw materials.

Later in the evening Michael Trueman introduced us to *IRIS* (the Index Record of Industrial Sites), about which much has been written (see *Bulletin* 20.3), and will no doubt be written in future, and we had half the members' contributions. A highlight was Anna Niznik's presentation on the textile mills of Lodz in Poland.

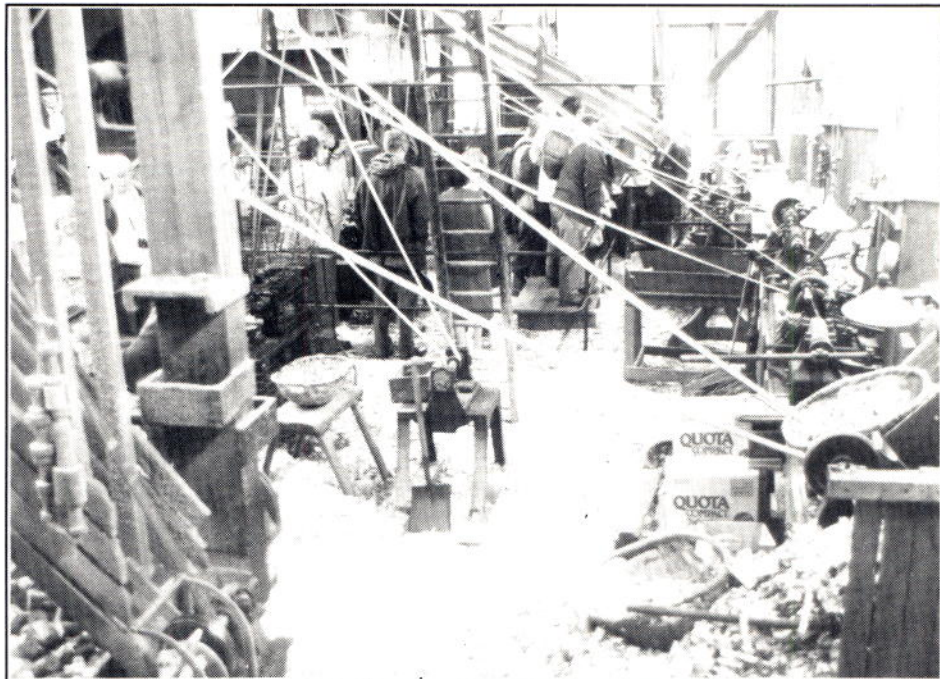
Saturday morning was bright and sunny but delegates were indoors listening to Andy Lowe on the problems (and successes) of industrial archaeology in a rural national park and Harry Fancy on the history of Whitehaven. This was of considerable interest in itself but was also a prelude to an additional programme visit. The remaining members' contributions rounded off the morning.

There was a choice of three visits on Saturday afternoon—to Gatebeck and Sedgewick gunpowder mills (Alan and Glenys Crocker), to Tilberthwaite slate quarries (Rob David), or a lake cruise and ride on the Lakeside and Haverthwaite Railway with a tour of the industrial hamlet of Newland.

The conference dinner in the evening included the presentation of the AIA awards (as



Bobbin turning at Stott Park: before and after  
Photo: Marilyn Palmer



A Health and Safety Nightmare? —the Stott Park Bobbin Mill, winner of the President's Award at the Cumbria Conference  
Photo Marilyn Palmer

reported on page 7), but there was no lecture afterwards. Delegates could however watch videos of past conferences or sit in the bar or lounge talking. There are reports of some doing this into the small (and no so small) hours.

The Association's AGM on Sunday morning was followed by reports from the Royal Commissions and coffee. Marilyn Palmer then delivered the Rolt Memorial Lecture with the title, *Industrial Archaeology: continuity and change*. The full text will appear in *IA Review*.

Conference concluded with expressions of thanks to the CIHS, Chris Irwin and the staff of Charlotte Mason College. However, before leaving Cumbria a number of delegates took part in the additional programme arranged for Sunday afternoon. This included several visits using independent transport, including the famous charcoal blast furnace at Duddon, the Armit Library (with over 10,000 books of local interest), waterpower sites in Ambleside, and a conducted walking tour of Kendal. In the evening Professor Fawthrop gave a fascinating presentation of the machinations involving the L&NWR, the 'little' North Western Railway, the Lancaster and Carlisle and others to construct or not to construct a railway line from Wennington to Milnthorpe.

The additional programme was spread before and after the conference this year. It is difficult to judge whether this suited members better. Certainly numbers required two coaches on the three main days' visits, but two coaches were required at least some of the time at Cirencester and Dudley in previous years.

The programme started on the Wednesday before the conference with a visit to Glasson and Lancaster Docks and canal sites using private cars. In the evening Alan and Glenys Crocker gave us a presentation on Lakeland gunpowder manufacture as a trailer for Thursday's visit to Low Wood gunpowder works.

Further visits on Thursday included Newland settlement and the rebuilding of the furnace there, Stott Park bobbin mill and the industrial village of Cark. An excellent buffet lunch was provided in the dining room at Lakeside pier/station in an evocative atmosphere. John Gavin gave the evening lecture on paper

making in Lakeland.

Friday was largely devoted to Barrow-in-Furness. One party spent the morning in the Record Office and Town Hall while the others went on a rather wet walkabout. A traditional Lancashire hot pot lunch was followed by a talk on the docks and, in particular the new dock entrance gate. The highlight of the afternoon came just after high tide when we watched the gate being opened.

There was also a stop at Roa Island, where there was an unsuccessful speculative venture to develop rail-fed steamer services to other parts of Lancashire and to Scotland. Rapidly improving rail links to other parts soon quashed this idea. Later there was a brief stop at the typical Furness Railway station at Grange-over-Sands and at the Wilkinson Memorial at Lindale in Cartmell.

On Monday the choice was Whitehaven and Sellafield or Florence haematite mine and Whitehaven. Of the latter all I can report is that haematite is a very red ore which seems to attach itself firmly to anything with which it comes in contact. The tour of the planned town of Whitehaven should have been led by Harry Fancy but he had been called away and Tony Pomfret deputised. It was very interesting but also rather wet.

At Sellafield an introductory survey of the history of the site preceded a conducted tour of the power station and, with the necessary clothing and other precautions, of the new radioactive waste processing and storage facilities. No one became radioactive and everyone was allowed home.

In the evening Ian Matheson gave a fascinating slide show of the remains of some of Lakeland's mines which led into Thursday's visit to mining sites at Coniston. A feature was a picnic lunch in the windiest part of the Coniston Fells.

Thanks are due to Chris Irwin and all the members of the CIHS who made the conference and the additional programme such a success. They had no control over the weather but they are used to it! Next year we shall be in the (supposedly) more tranquil climate of Hampshire.