HMSNEWS

Historical Metallurgy Society

56 Spring 2004

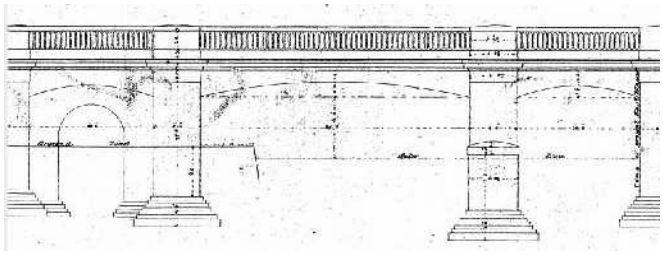
Brunel's First Bridge 'Found' at Paddington

Isambard Kingdom Brunel's first iron bridge has been discovered by Dr Steven Brindle. The cast-iron structure is the only one of its kind and one of only eight surviving Brunel bridges in Britain. The bridge was obscured by later brickwork and was discovered only a few months before it was due to be demolished and replaced.

The bridge survives as the northern end of Bishop's Bridge Road near London's Paddington station and carries the road over the Grand Union canal. The bridge was previously noted only as a rush-hour bottleneck and was earmarked for replacement by a wider bridge costing £62 million as part of a road improvement scheme. Although Brunel's bridge was built in 1838 it was obscured by a brick parapet added early in the 20th century. Before Dr Brindle's discovery, no one realised that the scruffy brick Edwardian bridge, which swallowed Brunel's creation, was of any importance.

Brunel's Bridge as revealed when the later bricks were removed.

Dr Steven Brindle (an Inspector of Ancient Monuments for English Heritage) discovered references to a canal bridge at Paddington while researching for his Great Western Railway project. While examining Brunel's little-known notebooks, which are stored at the Public Record Office in Kew, west London, he came across details of load testing on cast iron beams. Further searches revealed correspondence with Grand Union Canal Company confirming the construction of the bridge in 1838. However, at this stage it was not known



One of Brunel's drawings of the bridge

if the bridge still existed. Dr Brindle inspected the structure on Bishop's Bridge Road and found the iron bridge hidden beneath the much larger road bridge spanning the rail lines into Paddington. The structure of the original bridge was visible from underneath but had not been noted before as the canal towpath had been closed. Dr Brindle said that "elation was coupled with shock" when he visited the canal towpath and found that the bridge had survived intact except for its railings, but then discovered that the bridge was due to be demolished. "If I had started the book a little later or not bothered to examine Brunel's notes, it would have been destroyed by now — melted down and forgotten," said Dr Brindle. Philip Davies, the regional director for London English Heritage, said: "It was Brunel's first iron bridge and it's of huge importance historically and to the heritage of the country." Westminster City Council halted demolition plans and gave instruction for the bridge to be carefully dismantled and moved out of the way of danger.

Brunel had previously built his bridges of brick, but iron was chosen for the first time on this occasion because of the exceptional 35ft span and the need for a shallow arch and gradient from the eastern side. With its two cast iron arches spanning the canal, the unique structure is the earliest of only eight surviving Brunel iron bridges in the country. Like most of Brunel's designs it was endlessly delayed and bitterly argued over, and much of it was a financial disaster — but it was one of the wonders of the 19th century world, and the whole line has now been proposed as a world heritage site.

Dr Steve Brindle, said: "It undoubtedly deserves to be scheduled as an ancient monument. The bridge is remarkable because it was an evolutionary dead end and never repeated. Brunel was wilfully original and adopted a technique that required few bolts or fastenings and relied on gravity. Even now, the bridge

just comes apart. It was optimised for the use of cast iron, which was rapidly superseded by wrought iron. The latter was stronger and more flexible, allowing Brunel to design much larger structures such as that at Saltash. Like many Victorian structures, it was over-engineered. The iron beams were slender but strong and it has proved quite capable of bearing the weight of modern traffic. It was an enormous relief to find there were hardly any bolted fixings because if Brunel had used them they would have been corroded solid by now. We would have had to drill them out, which would have been a much more difficult and time-consuming process, as well as damaging the structure. The graceful curves of the ironwork also shed water and prevented it from rusting."

The bridge is now being dismantled and will be stored at Fort Cumberland, Portsmouth until enough money can be raised for restoration and rebuilding in a new location. Colin Barrow of Westminster City Council, said: "The next stage will be to secure funding for its full restoration and confirm its new location. One option we are considering would be positioning it as a public footbridge over the canal where it would enhance Brunel's magnificent legacy in this area." The cost of doing so is put at £1.5 million, and help is being sought from the National Lottery heritage fund. English Heritage hopes that the reconstruction will be completed in time for the 200th anniversary of Brunel's birth in 2006.

Metalworking at Minehowe, Orkney

The ongoing archaeological investigations at Minehowe, Orkney have revealed interesting evidence for metalworking.

The site was 're-discovered' in recent years and featured in a Time Team programme in 2000. The initial focus was the mound with the remarkable flight of steps leading down to a corbelled subterranean chamber. The recent excavations (by Nick Card and Jane Downes) have revealed a wealth of evidence for metalworking at the site.

The settlement outside the ditch has revealed a third or fourth century AD circular stone-built structure which contains three or four small 'kilns', metal ingots, ore, slag and several crucibles.

A trench opened towards the top of the mound on the site of a geophysical anomaly revealed a well-preserved Iron Age stone-built furnace. "It came as a very nice surprise when this thing turned up. Although we often find the residues from metalworking, to find an actual furnace is extremely rare," said Nick Card.

YOU MAY NOTICE THAT THIS ISSUE OF HMS NEWS IS A LITTLE THINNER THAN USUAL. UNFORTUNATELY LITTLE HAS BEEN SENT TO ME. IF YOU WANT TO SEE MORE IN THE NEWSLETTER THEN PLEASE SEND ME SOME COPY

Metallurgy
a touchstone for cross-cultural interaction
28th – 30th April, 2005

FIRST CALL FOR PAPERS

A conference to celebrate Paul Craddock's contributions to the study of metal through the ages

Dr Paul Craddock leaves the British Museum in 2005, after nearly forty years of research into the history of metallurgy. An international conference is to be held at the British Museum 28–30th April 2005 to celebrate his work.

The conference will reflect the breadth of Paul's research into early technology and aims to examine the 'why' as well as the 'how' of the exploitation and use of metals. In particular it will address the transfer of technologies between cultures across time and space, innovation and also interactions between metalworking and other material technologies — all with reference to archaeological/historical contexts. There will be no parallel sessions, but the poster session will allow maximum participation.

We look forward to welcoming you to the conference and hope that many of those who have known and worked with Paul over the years, as well as those who know him only from his publications, will contribute. The refereed proceedings will be published.

Abstracts of 200–400 words should be submitted by August 31st, 2004 to slaniece@thebritishmuseum.ac.uk Please give the title followed by the author's name and title, affiliation, full postal address and email address.

Advisory committee:
Michael Cowell, Alessandra Giumlia-Mair, Peter Northover, Thilo Rehren, Michael Wayman.

Organising committee:
Susan La Niece, Ian Freestone, Duncan Hook, Janet Lang, Nigel Meeks.
Scientific Research, The British Museum, London WC1B 3DG, UK

Industrial Archaeology in Shropshire

A one day conference dealing with the industrial archaeology of Shropshire will take place on Saturday 26th June at the Shirehall, Shrewsbury, organised by the Shropshire Archaeological and Historical Society and supported by Shropshire County Council and the Ironbridge Institute for Industrial Archaeology. Many of the talks have a metallurgy or mining theme, and will present the results of recent research. Peter King will review the charcoal iron industry of north Shropshire, James Lawson will re-evaluate the pre-19th century lead industry in Shropshire and Mike Shaw will present new research on barites mining and processing in West Shropshire. Of related interest, a paper by Paul Belford will deal with the industrial landscape of Coalbrookdale in the 18th century and Roger White will review the industries of the Clee Hill, an area that has seen extensive ironstone mining and smelting. On the Sunday there are options of field trips to the lesser known sites of the Ironbridge gorge or the Brown Clee, including areas of ironstone extraction. Cost is £10 and booking forms are available for David Poyner, 136, Hoo Road, Kidderminster, Worcestershire, DY10 1LP. Email David@D-Poyner.freeserve.co.uk

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HMS Conference 2004: Portsmouth

The 2004 HMS conference will be held in Portsmouth from the 10th to the 12th of September. Please see the enclosed flyer for details and an application form.

Report from the HMS Conservation Officer

Last November, HMS Council appointed Paul Belford as the society's new Conservation Officer. Based at the Ironbridge Gorge Museum, Paul Belford is the director of the museum's archaeology unit. As well as a member of HMS Council, Paul is also Secretary of the HMS Archaeology Committee. Paul writes:

"The role of the Conservation Officer is to keep a 'watching brief' on sites of metallurgical interest in the UK which might be threatened by decay, demolition or redevelopment. Normally, these sites will be appropriately dealt with by local authority planning officers under the aegis of planning regulations – as enshrined in PPG15 and PPG16. However, there may be cases where, for one reason or another, measures have not – or can not – be taken within this framework. For instance, the local planning authority may be unaware of the significance of a particular site: it may have been overlooked by previous work, or it may not be on the Sites and Monuments Record. In other cases a site may not be threatened by redevelopment, but might be in an advanced state of decay or dereliction.

"I can assist local members when a case arises, either by talking to local planning officers about the significance of a particular site, or, by writing officially to express concern on behalf of the society. Indeed, I am reliant on members throughout the country to keep me up to date on these matters."

Paul would therefore appreciate information about any sites which appear to be under threat. Before making a balanced judgement on the action that may need to be taken, he will need:

- A synopsis of the recent planning history (if relevant)
- A location map and/or plan of the site
- Some photographs if possible
- A brief description of the historical background and significance of the site
- Notes on who to contact (site owner, planning officer, etc.)

Paul adds: "Usually a successful outcome can be achieved through a series of phone calls or emails to the appropriate people. Only in exceptional circumstances will there be a need for a formal written objection to a particular scheme. We need to be very careful as a society about the proportionality of our response to any particular case."

To contact the HMS Conservation Officer please write to

Paul Belford
HMS Conservation Officer
c/o Ironbridge Gorge Museum Trust
Coalbrookdale
Telford
TF8 7DQ

Subsequent correspondence may be by telephone or email, but the initial contact must be in writing, please.

History Committee News

The response to the questionnaire has been excellent. If you have not yet returned your copy, it is not too late. If you require a further copy of the form, let Eddie Birch know (eddiebirch@btopenworld.com).

The first 'history' data sheets are nearly ready for publication. They will cover tin, lead and copper. Iron and steel will follow. We plan to prepare sheets on

operations such as casting, finishing, and joining in the next round. The sheets will be available through the society's web site.

An application for a grant to have the HMS papers professionally archived has been subject to numerous bureaucratic delays. It seems probable that we will be able to submit the application during April.

While the committee does not have the resources to generate bibliographies, we are considering ways in which existing relevant bibliographies might be made more widely available.

Eddie Birch

Percy's Metallurgy

Volume 1 of John Percy's 1861 Metallurgy (Fuel; Fire-clays; Copper; Zinc; Brass; Etc) has been produced as a two volume paperback facsimile by Elibron Classics (www.elibron.com). This is available for $21.95 plus postage. It is not clear yet whether Elibron plan to produce facsimile reprints of the other volumes.

Missing some back issues of Historical Metallurgy? Order Now and Save Money

The price of HMS back issues is linked to the membership fee. As a result the cost of all back numbers will be going up this year to £10 per issue. Any two issues will in future cost £15 (not applicable to the current year's issues) while any six issues will be £30. Larger orders will cost £5 each. To minimise the increase these prices will in future be inclusive of postage at surface-mail rates. A surcharge will have to be made for air-mail outside Europe.

Because these price changes were not announced in the last newsletter we are continuing to supply at the old rate of £7.50 per issue PLUS POSTAGE until the end of May 2004. The discounts for multiple copies will be two for £10 and six for £25. Again postage will be extra.

HMS special publications (£10 PLUS POSTAGE)

- *Boles & Smeltmills*, (lead mining and smelting)
- *Metals and the Sea*
- *Mining before Powder*
- *Mining and Metallurgy in South-West Britain* (mainly Copper, Tin & Arsenic)
- *Iron & steel on the European market in the 17th Century* (published by the Swedish Ironmasters Association) £10 plus postage
- Also available are a few copies of a two part facsimile edition of Percy's Metallurgy, Volume III — Lead costing £34 inc postage

All issues are available, although earlier ones may be reprints without the original covers. Please order from

Brian Read,
22 Windley Crescent,
Darley Abbey,
Derby
DE22 1BZ, UK or
e-mail brian.read2@ntlworld.com

REMEMBER
From the 1st June the new prices will apply

APPLICATIONS FOR GRANTS are invited to the R.F. Tylecote Fund and the Coghlan Fund.

Application forms may be obtained from Michael Cowell, Hon. Treasurer, "Little Gables", 17A Thorncote Road, Northill, Bedfordshire SG18 9AQ.

Application forms must be submitted by the end of September, 2004.

Contributions for HMS News are welcome at any time but the three deadlines are:
1st March
11th June
5th November
Electronic contributions are preferred in a PC-compatible format (diskette or email attachments).

The Hon. Newsletter Editor David Dungworth,
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