



# The Institution of Civil Engineers

## Panel for Historical Engineering Works

### NEWSLETTER

SEPTEMBER 1993 No.59

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ancient Great Ouse crossings in Bedfordshire. Built on the upstream side of the original ford, the present bridge comprises three parts. The six arches spanning the river proper form the river or great bridge. Historically, it is likely that the first bridge was built in cooperation between Harrold Priory and the lords of the Manors of Odell, Harrold, Carlton and Chellington, each manor being liable for one arch each starting from the northern bank. The remainder of the structure became the responsibility of the county following Henry VIII's Act of 1530-1531.

Immediately after crossing the river vehicles travelling south were forced to descend by ramp to the flood plain. However, a foot causeway for pedestrians and pack animals connected the end of the bridge to the point where the ground rose towards the village of Chellington. The marshy nature of the flood plain made vehicular passage difficult, and to mitigate this disadvantage the causeway was extended, albeit in a rather haphazard fashion, by widening the first nine arches of it over the most marshy part nearest the river before ramping down to ground level. This second part is now referred to as the long bridge, the third being the remainder of the causeway.

The arches of the long bridge will repay inspection, four having been widened twice with straight joints and that at the lowest part of the ramp (Span 1) three times. The position of the original ramp over and to the south of arch 10 may be seen clearly in its reconstructed form on the downstream side.

Turning now to the main bridge, the varying forms of the arches reflect past repairs, ownerships and vertical curve of the bridge. Whilst the original was probably built in timber it is now almost completely local limestone except for one arch in ironstone (11) and the 19th century widening in brickwork. Arch 15, the most northerly with a 15ft span, has a segmental shape, whereas arches 14 and 13, of 18ft and 15ft span

## Harrold Bridge - History and Recent Renovation ... Brian Powell

HEW 1883  
SP 955 565

#### History

In medieval times the convoluted course of the River Great Ouse to the north-west of Bedford formed a significant barrier to transport by road. Besides the ancient bridge at Bedford itself, believed to date from late Saxon times, there are records of only three bridges in Bedfordshire crossing the river before the 15th century. These were situated at Biddenham (1224, now called Bromham) and at Turvey (1136-1138) and Harrold (1136-1146). The road to the west crossed at Turvey and that to the north-west at Harrold, about 6½ miles direct from Bedford.

Harrold Bridge remains the most complete of all these

## Future Plans

In buildings and in level beam bridges, cast iron beams often provide support to relatively shallow brick arches. War-time tests on bridge decks demonstrated that composite action between the beams and the arches made a significant contribution to strength and we propose to carry out in-situ testing to investigate this effect in building floors. This experimental work will be backed up by analytical work, with the aim of providing guidelines for engineers involved in the appraisal of this common form of construction. We are looking for a suitable building and for funding for the in-situ tests.

## Obtaining Further Information about the Project

Please contact either Joe Marsh or Tom Swailes for more information (or with suggestions or offers of help or support!) An effort has been made to keep this newsletter brief and as a result it is short on detail.

We will be pleased to add names to our mailing list!

## Research Group Members

Tom Swailes: Civil and Structural Engineering, UMIST. tel: 061 200 4611; fax: 061 200 4646

Joe Marsh: History of Science and Technology Group, UMIST. tel: 061 200 3948

Ron Fitzgerald: Leeds Industrial Museum

Stuart Millns: AA Associates, Consulting Civil and Structural Engineers

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## Launch of Dock Road Edwardian Pumping Station, Northwich ...

On Monday 7 June 1993, His Grace The Duke of Westminster, DL, opened The Dock Road Edwardian Pumping Station, Weir Street, Northwich, situated adjacent to the Weaver Navigation.

North West Water, which owns the Pumping Station, has spent £30,000 on restoring the building and landscaping the surrounding site. The Company commissioned the Civic Trust in the North West to manage the restoration and provide interpretation for public visitor use.

The Pumping Station offers a fascinating look into the past. A Grade II listed circular brick building, it houses rare twin Hayward Tyler gas-fired triplex pumps and Crossley engines in-situ, fully restored to operational use by a team of eight North West Water employees and former employees.

The Pumping Station, with engines working, will be

open to visitors on weekends and public holidays, 2:00pm - 5:00pm, from Easter to the end of September. Group visits may be made at other times by arrangement through the Civic Trust in the North West. Telephone: 061 794 9314.

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## Conference on the Royal Dockyards - 22/23 October 1993

The Newcomen Society are organising a two-day conference in Plymouth on the Royal Dockyards. The first day will comprise a guided tour of the North and South Yards of the Devonport Naval Base and the Royal William Victualling Yard led by Jonathan Coad. On the second day there will be a series of lectures showing how the needs of the navy changed in the late eighteenth and nineteenth centuries and how the naval dockyards developed in response to them. The lectures will be held in the naval barracks HMS Drake and lunch will be provided in the wardroom.

Cost £47-50 per head, excluding overnight accommodation. For details please write enclosing a stamped addressed envelope to:-

Clive Ellam, The Executive Secretary, The Newcomen Society, The Science Museum, LONDON SW7 2DD

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## The Chairman's Column ... Roland Paxton

For many years the Panel has maintained close if informal links with the Newcomen Society. It was therefore with much pleasure that the Scottish Group of the Panel welcomed a party of more than eighty to the Society's five day summer meeting in Edinburgh and helped to arrange numerous visits. One of these, a joint event with the Local Association, involved a boat trip passing under the Forth Bridge to Inchkeith to inspect the 1804 lighthouse engineered by Robert Stevenson and Thomas Smith.



PHEW trip to Inchkeith 15 July 1993

It was also a pleasure recently to receive a visit from the architectural historian and restorationist Charles Peterson of Philadelphia, originator of the Historic American Building Survey, now the largest archive of its type. We discussed the Panel's policy on preservation and examined conserved structures on the Edinburgh and Dalkeith Railway 1831, and later, with Lord Elgin on his Fife estate at Broomhall, scanned records and visited the remains of the communications infrastructure introduced by the 7th Earl (of Marbles fame) for carrying limestone from his quarry down to the limekilns and harbour of Charlestown. Of particular interest was a c.1820 double-track railway inclined plane engineered by Charles Landale (died 1834), which includes a substantial 3 arch rubble masonry bridge crossing a steep dry valley at a considerable skew. Lord Elgin considers Landale to have been very well paid at £400 per annum, plus a horse!

Regarding publications, it is pleasing that the Panel's Southern and Eastern England volumes are scheduled for completion in November this year. Their editors and helpers are to be congratulated on meeting this time-scale. The heritage trail leaflet for Exeter, which has now been republished on the initiative of the South Western Local Association, is a considerable improvement on its predecessor and reflects great credit on all concerned. It is a very professional effort which undoubtedly will be well received by the public. I have discussed with the editor of the ICE Proceedings the incidence of historical engineering papers and the aim is to have at least two per annum. Donald McQuillan's informative paper on James Dredge will be published in November. This seems a good place to remind readers that the Editor of this Newsletter is always delighted to consider contributions including short articles. Please do not hesitate to contact him!

On the conservation front, the Panel-initiated Laigh Milton Viaduct management team continues to make good progress towards safeguarding the world's earliest surviving railway viaduct in a complex situation. As Secretary I am in a position to appreciate and am pleased to acknowledge here the very able chairmanship of Mr William Barr in progressing the project. Several key matters relating ownership, finance and guarantor are currently in the balance and we should know within a month whether it is practicable to start on site next spring with essential safeguarding work, estimated to cost £250,000. It is to be hoped that the viaduct will survive yet another winter!

About two years ago the Panel was requested by Colonel Mitford of Henley, Sir John Fowler's great grandson, to see what could be done to safeguard the unlisted and virtually unknown engineering structures erected by Sir John for his enjoyment of his wild and beautiful estate at Braemore near Ullapool. After investigation by the Scottish Panel Members and the submission of a case for class B listings for several works to Historic Scotland it is pleasing to report that the 'railway tunnel' byre in the hillside behind the site of the house and an iron footbridge over the Gleann Mor gorge

have now been listed at Category B.



Gleann Mor Bridge, 10 July 1991

The Panel's endeavours to influence a general improvement in the quality of conservation of historical engineering works, at first in Scotland through the introduction of an appropriate commendation as part of the annual Saltire Civil Engineering Awards, has moved a stage further. This year's entries have included seven in respect of HEW's and these are now being assessed by a sub-committee of the Scottish Group of the Panel. If an award is made it will be presented by the President at a ceremony in November.

Finally, Professor Alan Prasuhn and I have been in frequent correspondence for several months, mainly in making arrangements for the joint ASCE/ICE Thames Tunnel international landmark plaque to be dedicated by our respective Presidents on 25 September. The 135lb. USA-made bronze plaque with wording as agreed is now, through the good offices of Peter Stephens, in the hands of London Underground Limited for fixing. Sir Alan Muir Wood has very kindly agreed to give a short colour-slide presentation on the tunnel's history at London Underground Limited's offices at St James's Park tube station immediately after the ceremony. Although places at the event are limited any reader interested in attending should contact Mrs Mary Murphy at headquarters.

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## HEWs in the News ... Brian George

The *Daily Telegraph* of 27 April noted that the greatest sell-off of period property ever seen in Britain had begun, as defence cuts and Government economies threw on the market an unprecedented number of military properties.

A large aerial photograph depicted one of these, the Royal William Victualling Yard at Devonport (HEW 1486), which I described in No.54 of the PHEW Newsletter. The *Daily Telegraph* article noted that the Government is setting up a development corporation with £45 million funding over five years to oversee the sympathetic redevelopment of the Yard together with two