



THE INSTITUTION OF
CIVIL ENGINEERS

PHEW NEWSLETTER

Panel for Historical Engineering Works

SEPTEMBER 1999 no.83

CONTENTS

Renovation of Outwood Viaduct

New Heritage Trail Leaflet - Clyde Bridges

The Chairman's Column

A Visit to the Götha Canal

Correspondence:

Teaching of History

Jervoise

Conference Notices:

TICCIH 2000

International Congress on Urban Heritage

HEWs in the News

Editor's Note



Outwood Viaduct
Author's photograph

RENOVATION OF OUTWOOD VIADUCT by Norman Hoyle

After renovation, Outwood Viaduct (HEW 2087) was formally opened as a footpath, bridleway and cycleway on Friday 26 June 1999 by Sir William McAlpine, President of the Railway Heritage Trust. It had fallen into dereliction since the railway closed in 1966, but its proposed demolition by British Rail was forestalled by public objection led by the Trust and it was given Grade II listed status.



Outwood Viaduct
Author's photograph

It spans the River Irwell at the western edge of Radcliffe, Greater Manchester, adjacent to the Asda store (SD 782 067). The spans were fabricated and erected by Andrew Handyside of Derby in 1881, replacing the 1846 timber trestle structure. The overall length is 336ft and the average deck height above the river is 60ft. There are five spans, each comprising six cast iron open spandrel arch ribs with lateral bracing. Each 60ft rib being in three segments 10ft 6ins deep at the springings. The four tapering brickwork pillars are 31ft x 7ft 6ins at the bottom with single archway piercing, over masonry piers with cutwaters, all skewed 10 degrees.

The spans are deflected in three chords (1-2-2) to give a radius of 1,420ft with a gradient of 1 in 100 rising south to north. The spacing of the internal ribs coincided with the rail gauge.

Extensive cracking in the flanges of the ribs has been remedied by cold stitching and worn arrises of the pillars replaced by bricks reclaimed from demolition sources. The pier foundations were found to be sound.

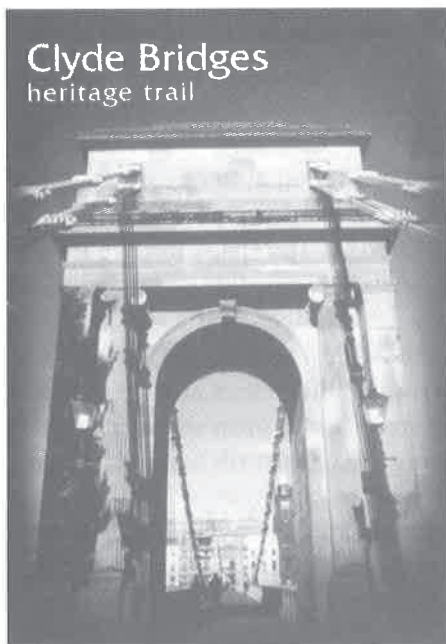
Restoration of the viaduct was run in conjunction with the greening of an extensive derelict colliery area to the south into an urban parkland. The viaduct work, amounting to £1.7m, was funded jointly by English Partnerships, Heritage Lottery Fund, Railway Heritage Trust, Pilsworth Environmental Company and Bury

Metropolitan Borough Council. (The Pilsworth company has been established to distribute landfill tax rebates into local environmental, heritage and community projects). The project was designed and managed by Bury Metropolitan Borough Council with Mowlem as main contractor.

Bury Metropolitan Borough Council promoted the opening as a festive occasion with a minimum of formalities and included a schools art exhibition with the viaduct as the leading theme. They have also commissioned a water-colour by Frances Winder, postcards of which are on sale locally. The viaduct and parkland have a significant role in Bury's Radcliffe Renewal strategy.

NEW HERITAGE TRAIL LEAFLET - CLYDE BRIDGES

Information supplied by Gordon Masterton



Published by the Institution of Civil Engineers, Glasgow and West of Scotland Association

As part of Glasgow's celebration of the title UK City of Architecture and Design 1999, the Glasgow and West of Scotland Association of the ICE have recently produced a Heritage Trail leaflet relating to eighteen Glasgow bridges over the River Clyde. The leaflet is A5 size which unfolds to a single A2 sheet, one side of which would make an attractive poster. A clear location map is supported by a photograph of each bridge together with a relatively brief description of their histories. As is common with the production of such leaflets, sponsorship has been provided by a number of sources, in this case by Glasgow City Council, The Babbie Group and the Scottish Office. A

separate schools programme will introduce a new generation to civil engineering as children in primary schools in West Scotland are given the chance to construct a scaled down bridge.



Victoria Bridge - 1854, Glasgow's oldest surviving complete Clyde Bridge

THE CHAIRMAN'S COLUMN by Professor Roland Paxton

During a recent visit to the United States of America, I re-visited the developing Burdon Ironworks Museum, Troy, New York State in the company of Dr Tom Carroll, Executive Director of the Hudson Mohawk Industrial Gateway and was delighted to find the June 1998 issue of our Newsletter on display! Dr Carroll, a mine of information about the industrial archaeology of the area, had arranged a visit to three conserved 'Whipple' truss bridges, at Normansville, west of Albany; Union College Schenectady; and Forts Ferry over the Erie Canal, of which the following is a brief account.



Erie Canal Bridge, Forts Ferry
Author's photograph

The Whipple bowstring truss, invented and patented in 1841 by 'the father of iron bridges in America', Squire Whipple (1804-1888), essentially used cast iron for the deck beams and arch member and wrought iron for the links, ties and braces. It was ingeniously designed, economical, and easy to erect. Several hundred of these bridges were erected during the second half of the nineteenth century, mainly in New York State. Very few now survive and none of the three visited were at their original sites.



Normansville Bridge, Albany USA (1867, c.1900)
Author's photograph

The Normansville bridge of 113ft span was the largest and most impressive of the three examples seen. It was fabricated by Simon De Graff of Syracuse, New York, whose name with the date 1867 is cast into several iron parts. It was probably built originally for a site nearer Syracuse and re-erected at Normansville c.1900. Most of the details can be appreciated from the photographs and the finely executed Historic American Engineering Record drawing [see: Richard S Allen 'Whipple Cast and Wrought Iron Bowstring Truss Bridge', 1867, Albany, in Robert M Vogel, ed. *Mohawk-Hudson Area Survey*, Smithsonian Studies, Washington, 1973].

The Union College campus and Erie Canal bridge conservations are more recent and the work of Dr Francis Griggs of Union College, where Whipple attended the class of 1830. Dr Griggs organised students, staff and friends of the College to do the work and is to be congratulated on an excellent achievement. The Erie Canal bridge, of which only the trusses are original, now gives access to a bird sanctuary, Forts Ferry settlement and history

exhibition area. It was originally erected across the enlarged Erie Canal at Sprakers in 1869.



Normansville Bridge, under the deck
Photograph courtesy of A Mierzejewski



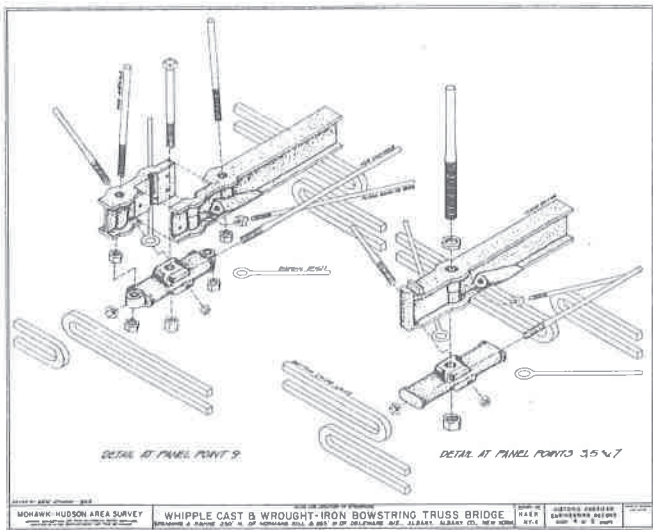
Dr Carroll inspecting inscription, Normansville Bridge
Author's photograph

Closer to home, the American Society of Civil Engineers is considering designating the Forth and Clyde Canal as an 'International Landmark', with a plaque ceremony next year when work on reopening the canal will be well advanced. The possibility of a joint event with the Institution of Civil Engineers is being explored with Dr Jerry Rogers, CHHASCE.

The adjudication for the Historic Bridges Award 1999 for England and Wales, is progressing well and site visits have been arranged. The awards will be

presented in London on 18 November by the President of the Institution of Civil Engineers, Professor George Fleming. More anon ...

Next day the main event was the series of 11 locks in two flights at Berg from Lake Roxen to Lake Boren and to Motala on the eastern shore of Lake Vättern. At Motala the museum has a very good record of the canal. In a short video the part played by Telford is well documented compared with the strong emphasis on the work of von Platten in the tourist leaflets. On passing the von Platten memorial where he is buried the ship gave a long blast on the horn traditionally to try and awaken him.



Normansville Bridge

Photograph courtesy *Historic American Engineering Record*

A VISIT TO THE GÖTHA CANAL

by Kenneth McCrae

A canal had been built in the late eighteenth century from the Göta River to Lake Vänern to bypass the Trollhätten Falls. This was the first step in a venture to connect the Kattegat to the Baltic and so avoid payment to the Danes by ships passing Elsinore. In 1808, Count van Platten endeavoured to complete the link to the Baltic through a series of lakes. It was the similarity of this project to the Caledonian Canal that made von Platten seek Thomas Telford's advice. Telford went to Sweden in July 1808 and spent six weeks surveying the line of a canal. His report was laid before the Swedish parliament in 1809. The canal company was launched that year and work began on the eastern length from Motala under Daniel Bagge with 60,000 soldiers and seamen but lacking technical skills. Von Platten by sheer persistence got tools, equipment and skilled men from Britain. In 1813 Telford made his second visit to Sweden with two assistants while two Swedish engineers came to Britain for nine months. Von Platten died in 1829 and the canal was finally opened in 1832. Today two vessels the "Juno" and "Wilhelm Tham" make four day excursions through the canal. I joined the Juno built at the Motala Verkstad in 1874 at Riddarsholmen, Stockholm. The first days travel was through Lake Mälaren and down the Baltic coast to the head of Slätbaken Fjord and the first lock at Mem.



Göta Canal - Forsvite cast iron lifting bridge
Author's photograph



Göta Canal - Berg flight of seven locks.
Boat at top 'Wilhelm Thom'
Author's photograph

After crossing Lake Vättern we came to the Göta canal's oldest lock built in 1813 and a cast iron lifting bridge of the same date at Forsvite and so into Lake