

The Institution of Civil Engineers

Panel for Historical Engineering Works

NEWSLETTER

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CONTENTS

- ☛ *Maritime Engineering around the Irish Sea*
- ☛ *North Western Association 3rd Annual Day School*
- ☛ *HEWs in the News*
- ☛ *The Chairman's Column*
- ☛ *Book Review*
- ☛ *Biographical Dictionary of British Civil Engineers Project*
- ☛ *Record Form Update*
- ☛ *Telephone Numbers (Ph'one'Day)*
- ☛ *Editor's Notes*
- ☛ *List of Panel Members (attachment)*

Maritime Engineering around the Irish Sea • Paul Dunkerley

The second Annual Day School organised jointly by the North Western Association's Historical Engineering Group, the University of Liverpool Centre for Continuing Education, and the National Museums and Galleries on Merseyside was held last year at the Merseyside Maritime Museum, on the theme of *Maritime Engineering around the Irish Sea*.

Paul Dunkerley, HEG Founder Chairman, described the construction and development of seaside piers with particular emphasis on those extant around the Irish Sea. Using Ramsey Pier on the Isle of Man as a good example of a very basic seaside pier, he described the change from timber piles to iron screwed piles from 1853 onwards, and finally the introduction of jetted piles in 1859. Southport Pier and the Morecambe Bay railway viaducts had seen the introduction of the first jetted piles by Sir James Brunlees, who was also responsible for Llandudno Pier, where a disastrous fire earlier the same week as the Day School had robbed that pier of its land-based pavilion,

once famous for housing the largest swimming pool in the country in its basement. The pros and cons of using cast iron, wrought iron and steel for the various pier components were described generally, with mention of the considerable lengths that Victorian engineers went to in order to protect their new iron structures from corrosion, satirised by Lewis Carroll in "Through the Looking Glass":-

"I heard him then, for I had just
Completed my design
To keep the Menai Bridge from rust
By boiling it in wine."

Phil Barber, Chairman of Shoreline Management Partnership, described the processes and problems facing coastal defence engineers, particularly with reference to the vast number of organisations that have to be consulted on coastal matters, and in relation to sea level rise and its implications. Coastal engineers are now promoting large-scale coastal management plans covering long lengths of coastline as being the best way to co-ordinate the efforts and activities of the very large number of organisations with interests in the coastal zone. The variety of solutions available to coastal engineers described included the innovative offshore breakwaters and submerged reefs along the Wirral coast, which sparked off a lively discussion on the effectiveness of such novel structures.

Chris Archibald, Associate with Building Design Partnership, described the cyclic nature of the history and fortunes of Fleetwood Docks, which have mirrored those of the region closely over the years. Founded by Sir Peter Hesketh Fleetwood in 1836, the town was planned by Decimus Burton on the 'etoile' principle, using the only raised ground known as 'The Mound' as the centrepiece of the plan. The rise of the fishing industry this century was followed by the 'Cod War' during the 1960s, which decimated the fishing fleet at Fleetwood, only a few inshore boats remaining. Due to the decline of other trade, the Wyre Dock has been converted into the finest 300-berth marina on the West Coast, only two miles from the open sea even on the lowest tides. The

The down side buildings at Durham station won the Railway Heritage Trust Award for the restoration of the fine canopy and North Eastern Railway station building dating from 1857. The canopy, or roof, (HEW 453) comprises cast iron Vierendeel-type trusses with a span between columns of 34 feet 6 inches cantilevering towards the track a further 9 feet 6 inches. The 5 feet deep trusses, spaced at 15 feet centres, are supported by 8 feet high columns surmounted by spandrel supports 3 feet 6 inches deep, so giving a clearance above the platform of 11 feet 6 inches.

Excellent coloured photographs of both these items appear in *Modern Railways*.

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A group of enthusiasts led by Professor Bill Williams of Leeds are unhappy that the contribution made by Thomas Telford to civil engineering and life in Scotland is so little known to the public at large. They feel that organisations like Scottish Tourist Board and Scottish Holidays could do much more by reviving and presenting to the public - the Scots themselves and tourists - this part of Scotland's heritage.

In eighteen years Telford could report the completion of 920 miles of new road, raising the standard of 280 miles of old military roads, over 1,000 bridges and many new and rebuilt harbours.

A project is envisaged which will include written text and video tapes. Its cost would fall under two headings: travelling costs for meetings and for those producing the on-site video material; and the cost of assembling and editing the video. There would also be lesser costs of correspondence, telephones, printing, etc., and a preliminary rough estimate suggests a figure around £65,000.

The hope is that the National Heritage will agree to support this enterprise as one of the smaller projects funded with the proceeds of the National Lottery. Then the products could be used by the Scottish Tourist Board and its offices wherever Telford's works are to be seen, in schools and colleges and quite possibly for television broadcasts.

Readers wishing to refresh their minds on Telford in Scotland are recommended to read A R B Haldane's *New Ways Through The Glens*, published by David and Charles of Newton Abbot, 1973.

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Readers of this Newsletter are asked, whenever they read something which they think might deserve mention here, to send it (or a copy) to:-

The Chairman's Column Roland Paxton

Readers of earlier Newsletters may recall the Panel's initiative in setting up a trust to save from imminent collapse and preserve for posterity Laigh Milton Viaduct, Ayrshire, engineered by William Jessop from 1808-11 (see map). The project has proved particularly challenging because of the lack of original records, ownership difficulties, inaccessibility of the viaduct to the public road network, the precarious state of the viaduct after one and a half centuries of neglect and, unusually for a project of this kind, the lack of any financial support from either British Rail Property Board or the Railway Heritage Trust.



Courtesy of Strathclyde Regional Council

I am delighted to report that after three years of dedicated effort by the management team chaired initially by Mr W J Barr and for the last year by Lord Howie, with myself acting as secretary and engineer for the preliminary works, refurbishment of the viaduct has now begun.

The following brief chronology is indicative of the *modus operandi* and main developments so far:-

1991

The Scottish Office declined a request from the Panel to take the A-listed viaduct into its care, but indicated willingness to consider financially supporting an appropriate Trust.

1992 (February)

Project formed, becoming in 1993 a limited liability company with charitable status (VAT exempt), its directors being four civil engineers, an elected member from each of the three local authorities involved and a banker/lawyer with Company and Trust expertise (The Lord Howie of Troon, The Hon Sir William McAlpine Bt, W J Barr OBE, Provost D Coffey Kilmarnock & Loudoun District Council, P A Hearn Clydesdale Bank

plc, Councillor A C Lambie Strathclyde Regional Council, Provost G T Macdonald Kyle & Carrick District Council and myself). Valuable support also given by local authority and Historic Scotland officials.

1993 (December)

Works access road put out to tender and contract awarded to Barr Limited, the lowest tenderer within ten days, meeting a time deadline for £140k of EEC funding. Included structural strengthening to a ScotRail operational over-bridge.

1994 (February)

Listed building consent applied for and obtained with conditions by June 1994.

1994 (April)

Radar scanning of viaduct's foundations carried out by Geospace Consultancy Ltd.

(April)

Strathclyde Regional Council agreed to take on ownership and future maintenance of the viaduct on satisfactory completion of the whole refurbishment. Their Roads Department agreed to act as the Project's agents for contract documentation and supervision of the main work and in August 1994 received competitive prices from four contractors ranging from £981k to £1,552k for a lump-sum 'design and build' contract. Acceptance of the lowest tender, that of Barr Limited, was recommended.

(August)

Royal Commission on the Ancient and Historic Monuments of Scotland carried out a photographic survey of the viaduct and donated two sets of prints.

(October)

Project resolved that the lowest tender be accepted for the main work as soon as the legal and administrative formalities were agreed.

1995 (February)

Funding package completed totalling £1.065m. (National Heritage Memorial Fund up to £400k, Historic Scotland £277k, EEC £200k, SRC £63k + services, Kyle & Carrick DC £65k, Kilmarnock & Loudoun DC £45k, Enterprise Ayrshire £15k). Ownership and public access agreements concluded, the ownership consideration being £2.00 plus legal costs. Agency agreement between the Directors and SRC concluded. SRC accepted Barr Limited's tender on behalf of the project. Project Directors covered for 'all risks' under the contractor's insurance policy. Work expected to be completed before SRC ceases to exist in March 1996 under local government reorganisation.

The following account of the project was published in *The Herald* on 23 February 1995 under a panoramic view of the viaduct:-

The world's oldest surviving railway viaduct, which was built over the River Irvine in Ayrshire in 1811 as

part of the old Kilmarnock-Troon line, yesterday was saved from collapse by the completion of a £1m package.

Work to refurbish the Laigh Milton viaduct near Kilmarnock, regarded as an outstanding example of early British civil engineering, is expected to begin next month and finish within a year.

The A-listed sandstone structure is in a fragile state, but full restoration is thought possible, allowing it to become an important landmark for tourists and students of engineering.

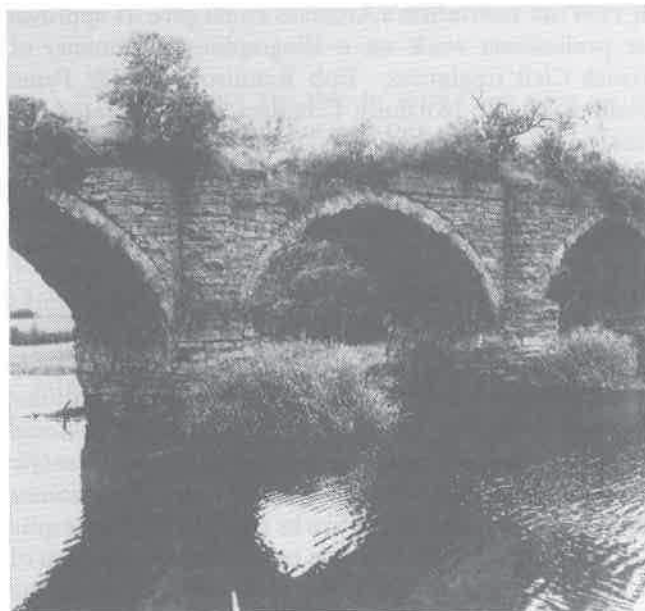
Professor Roland Paxton, secretary of the viaduct's conservation project trust, and a professor of civil engineering at Heriot-Watt University in Edinburgh, said yesterday that it had taken three years to secure the necessary funds.

The latest, and largest, donation is a grant of up to £400,000 from the NHMF. Historic Scotland has pledged almost £300,000, and a further £200,000 has been obtained from the EC.

Other contributions have come from Strathclyde region, which is to adopt the viaduct, and from Kyle and Carrick DC, Kilmarnock and Loudoun DC, and Enterprise Ayrshire.

Barr Limited of Ayr has been awarded the design and build contract, worth almost £1m, for the work.

Readers will be kept informed of progress.



Laigh Milton Mill Viaduct
Courtesy of The Royal Commission on the Ancient and
Historical Monuments of Scotland