

Panel for Historical Engineering Works Newsletter

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John Rennie Exhibition © ICE Archives

John Rennie @250 Exhibition Opening by Peter Cross-Rudkin

The exhibition to celebrate the 250th anniversary of John Rennie's birth (advertised on page 5 of *Newsletter* No.130) opened on 29 July with a wine reception for a number of guests. Armed with a 64-page booklet that described the panels custom-built for the exhibition, they were greeted by the portrait in oils painted by (Sir) Henry Raeburn in 1811 that normally hangs in the Brunel Room of the Institution. The route round the Council Room, where the main exhibits were displayed, started with digital images of three more portraits from various stages of his working life. A portrait of his second son, Sir John, was in its usual position further round the room. A remarkable composite portrait, *Men of Science living in 1807-1808*, prepared much later in 1861-1862 and normally kept in the Institution's Library, showed Rennie prominent in the foreground.

Further panels highlighted his work as a mechanical engineer, the canals and waterways that he designed and supervised, masonry bridges, with one panel devoted to Waterloo Bridge including paintings of it under construction, cast iron bridges, land drainage, docks and harbours, including an unsigned drawing apparently in Rennie's own hand, and a miscellany including the Bell Rock Lighthouse and Rudyard Dam. Between the panels five display cases contained more personal items, including a book of household accounts, a manuscript biography by his sons


on which Samuel Smiles based a section of his *Lives of the Engineers*, the minute book of the Smeatonian Society of Civil Engineers, which he led for the last ten years of his life, and the clarinet (sic) which he played. Copies of 20 contemporary drawings of his works, increased to A0 size and laminated, were available loose for visitors to study in detail, and more large-scale plans were displayed in the corridor leading to the Archives.

ICE Publishing made a special effort to have pre-publication copies of the August 2011 issue of *ICE Proceedings: Engineering History and Heritage* (a themed issue devoted to Rennie) available for guests at the ceremony, and each received a mug with Rennie's portrait prominent on the side. Mugs can be purchased from Val Lawless in ICE's Library, whose role in the organisation of the exhibition ensured its success.

John Rennie Anniversary Celebrations at Rudyard Lake by Roger Cragg

West Midlands ICE celebrated the 250th anniversary of the birth of John Rennie with the unveiling of a commemorative plaque at Rudyard Lake in Staffordshire.

The ceremony was held on the actual birth date, Tuesday 7 June. The plaque was unveiled by Damian McGettrick, Chairman of ICE West Midlands Region. The event was supported by British Waterways, owners of the reservoir, and the Rudyard Lake Trust which operates the visitor facilities at the site.



Towards the end of the same month, another foreign engineer was appointed to a similar position but at the slightly higher salary of 24,000 francs. For the next eight years, Herr Heinrich August Meissner, a German previously employed by the Salonica Junction Railway, was to become the driving force behind the successful construction of the Hejaz Railway.

In order to conform to the D.H.P. Beirut-Damascus-Muzeirib line, on which supplies and rolling stock would have to be brought in, a narrow-gauge track of 1.05 metres was used. [My bold type. M.B.]

Perhaps that will help the discussion about the gauge. I wonder whether the earlier railway's rack section dictated the choice, depending on which particular rack system was employed? Which indeed, as there are up to ten different types!

Finally, Nicholson has an interesting whole-page 'boxed' section (p.110) headed 'Lawrence's Trains?', which deals with the question of how many (= how few) locomotives (as distinct from bridges and lengths of track) were actually derailed/wrecked by T E Lawrence.

I'd better stop before I confuse things any further! I only hope that these notes will be of interest.

Regards

Maurice Berrill
(Co-opted member, Scottish PHEW)

Llanstephan Bridge

Dear Editor

I am indebted to Mr John Clarke, Director Structures of BRB (Residuary) Limited, for provision of information enabling me to offer fullness to the following note.

Identity: Moat Lane to Tallylyn Railway, MLT 95-65, NGR SO 11484162.

Description: the abutments consist of stone masonry clad walls founded on a 10 inch thick mass concrete slab probably on made-up ground.

The deck consists of three inner cast iron inverted Tee-beams of span 26ft 6in, depth 19½ in, bottom flange 16in wide, top flange 5in wide. The inner intervals consist of original brickwork jack arches and the outer of precast concrete sectional jack arches of unknown date.

The edge beams are of inverted Tee form with webs offset toward the outer sides, the bottom flanges being 11¼ in wide and the top flanges 9in wide.

Horizontal flat steel tie-bars are connected to the bottom flanges of the main cast iron beams by means of riveted steel spreader plates. Three of these bars are missing having corroded through.

One of the main girders is cracked through, an event which is thought to result from overloading or more probably from a casting defect. It is possible that cracking was accelerated by crevice corrosion promoted by water infiltration of the deck.

The cracked girder is propped by a military column resting on sleepers and supporting the beam through two RSJ bearers, shims and folding steel wedges. The prop assembly is encased in reinforced concrete from 300mm below track-bed level to near the top of the column.

The whole structure is at present converted into an embankment based on a piped geo-textile layer surmounted by granular fill and a block of foamed concrete beneath the deck tightened by cementitious grout. This work appears to have been done in two stages, firstly propping by the railway authority following an inspection and assessment in 1990 and secondly after a feasibility study, design and contract management by Ove Arup and Partners resulting in C J Pearce and Company Limited encasing the prop and forming the embankment in 2001.

A most interesting feature of this bridge is the form of parapets which consist of cast iron panels bolted together end-on-end and riveted to connector plates in turn somehow connected to the edge beams. It is clear that the original design intention was to use the parapets structurally contiguous with the edge beams of the deck. The panels are ingenious tray-like castings flush on the inner face and provided with cored hollow flanges top and bottom and solid bolting flanges on the sides.

I find it slightly sad that this rare structure is mainly hidden from view and that it has been authoritatively stated that it will remain as an embankment most probably for ever, but who knows, one day after reading this note, some organisation might take an interest in this piece of engineering heritage.

Regards
P J Peters (Sherborne)

Book Review

Pioneers of the Highland Tracks: William & Murdoch Paterson. A Biography of Two Railway Engineers. By Anne-Mary Paterson. The Highland Railway Society, 2010. 80pp. Paperback. £9.90. ISBN 9780954548551

In the second half of the nineteenth century railway communication in the Scottish Highlands was revolutionised in the finest tradition of Telford after his death by his former pupil Joseph Mitchell and the civil engineering Patersons. Both Paterson brothers were apprentices of Telford's former chief assistant John Macneill (William) and Mitchell (Murdoch).

Anne-Mary Paterson, author of this authoritative and valuable portrayal, based largely on family records, with more than 70 mainly contemporary photographs many published for the first time (including some by resident engineer William Roberts), was the daughter of civil engineer (and a grand-nephew of William and Murdoch), William Paterson. Her father's biographical details and those of five other members of this remarkable engineering family are included in the epilogue.

The main chapters cover William's, and then Murdoch's, early years (from 1839-1853) working for Mitchell on Highland railway projects and Inverness Harbour, and then, with Mitchell, on achieving the lines from Inverness to Nairn, and northwards from Perth to the completion of the Sutherland Railway by 1868.

After Mitchell's retirement in 1867 Murdoch was appointed Engineer to the Dingwall and Skye Railway and for completing the main line northwards from Sutherland to Wick by 1874. From 1875-1898 Murdoch's work brought railway coverage in the Central and Northern Highlands more or less to its zenith. His fine structures still in service include Findhorn Viaduct; Alltna-Slanach Viaduct (timber – modified 2001); Waterloo Bridge, Inverness; Invershin Viaduct; Wick Bridge and railway station (part); and the magnificent Culloden Viaduct – a stunning image of which adorns the book's covers and spine.

I have not the slightest hesitation in commending this useful and attractively produced book to *PHEW Newsletter* readers as, in describing and recognising the lives and work of two heroes largely unsung by Mitchell and posterity, it adds much to our understanding of their achievement.

Roland Paxton

HEWs in the News by Brian George

The Forth road bridge (HEW 0204), opened in September 1964, and like the Severn road bridge is to have a supplementary crossing. Transport Scotland has chosen Forth Crossing Bridge Construction as its preferred bidder after an 18-month competitive tender (*NCE*, 7 April). The new 2.7km bridge will have a 2.1km main cable-stayed section and two approach viaducts..

The Ecclesbourne Valley Railway was reopened to Wirksworth on 6 April (*Rail*, 20 April – 3 May). Until now the EVR's 8½ mile branch line has been better known for its test track facilities and its short, steeply graded line between Wirksworth and Ravenstor. However, summer weekend and high-summer Wednesday tourist trains are now to run following a £1.75 million project to restore the line.

There are no immediate plans to seek a new junction at Duffield to connect with the national network. If the quarries around Wirksworth were to reopen, the case for a connection would be much stronger. Passengers will have to change trains at Duffield

on to East Midland Train services to reach Matlock, Sheffield or Derby. Freight trains (limestone) ceased to use the line from Wirksworth to Duffield in 1989 and the connection with the main line was removed in 2003.

The Inverness and Aberdeen Junction Railway was opened in stages between 1854 and 1858, the Highland Railway being responsible for the section from Inverness to Keith and the Great Northern of Scotland Railway building the section from Keith to Aberdeen. In 1923 the former length became part of the London, Midland and Scottish Railway and the latter part of the London and North Eastern Railway. *Rail*, 4-17 May tells us that improvements to the 108-mile route could be completed in December 2016 at a cost of around £203 million. That is the conclusion of a Network Rail GRIP stage 2 study, based on successful completion of the remaining evaluation and design stages and a start of work on site in autumn 2014.

The study looks at options that would allow an hourly service between Aberdeen and Inverness and half-hourly services at each end of the route along with a reduction in journey time from 138 to 120 minutes. New signalling would be required along with some double tracking and new stations capable of accommodating six car trains at Kinton and Dalcross. There are 10 intermediate stations from Aberdeen at Dyce, Kinton, Inverurie, Inch, Huntly, Keith, Elgin, Forres, Nairn, and Dalcross. Also on this route is the branch line from near Elgin to a freight terminal on the coast at Burghead and the privatised Keith and Dufftown Railway Association. (*Newsletters* Nos.63 and 88).

In *Newsletter* No.126, June 2010, I mentioned the possibility of coal traffic on the privatised Weardale line. *Modern Railways* July reports that daily coal traffic was due to begin running on the Weardale Railway in mid-June, with 1,500 tonne trains running Monday to Friday from Wolsingham in County Durham to Scunthorpe. The coal reaches Wolsingham by lorry from UK Coal's Park Wall North opencast site in nearby Sunnyside. The Weardale preserved line is owned by Iowa Pacific subsidiary British American Railway Services and this is the largest such commercial freight flow on a preserved line to date. The trains are being hauled by Colas and join the Network Rail system at Bishop Auckland. *Rail* 29 June-12 July showed a photograph of a test train pausing at Shildon on 16 June.

As forecast in *Newsletter* No.128 and under the heading 'New crossing to Barrow', *Modern Railways*, July reported that since the end of March the line between Arnside and Grange-over-Sands on the route between Carnforth and Barrow has been closed while Network Rail replaces the entire double track deck of the 51-span Arnside viaduct (HEW 963) over the river Kent estuary. Network Rail has decided to renew the deck completely to the latest standards, both to restore the line speed of 60mph and to enable heavier freight trains to use the route. Access walkways will be provided on both sides of the new structure to enable maintenance and inspection while trains continue to run. The line was due to reopen on 18 July. Passive provision has been made in the design for the addition of a public walkway across the estuary in the future.