

# Panel for Historical Engineering Works Newsletter

Number 107 September 2005

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Sarah Boyack (r) Clarke family & Prof Paxton © Dr S Arthur

## Delayed Recognition for Scotland's Railway Hero has Arrived at Platform 4 (*The Scotsman* headline!)

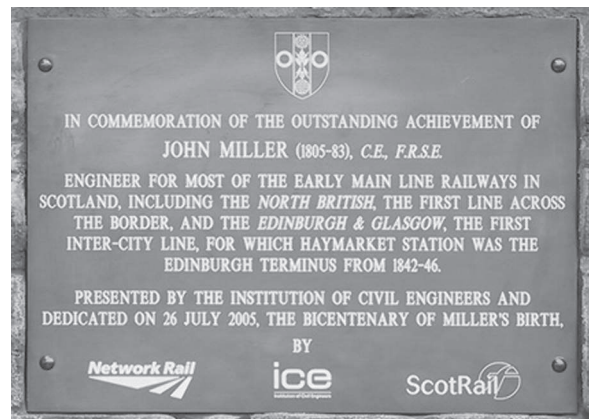
On 26 July, the 200<sup>th</sup> anniversary of the birthday of *Scottish Railway Engineer Extraordinaire* John Miller CE FRSE, a plaque provided by the Institution of Civil Engineers was unveiled in his honour at Haymarket Station, Edinburgh, by Sarah Boyack, MSP Edinburgh Central.

Sixty people attended the ceremony at the invitation of former ICE East of Scotland Region Chairman, Brian Cooper and Professor Paxton of PHEW including Miller's great, great, grand-daughter Paula Clarke, her husband Michael, and daughter Dr Natasha, who is thought to have a facial resemblance to her forebear. Press coverage included nearly a full page in *The Scotsman*.

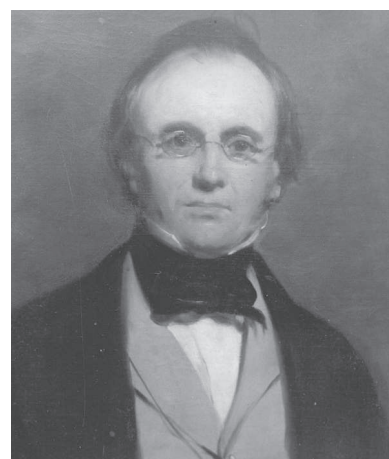
Professor Paxton introduced Sarah Boyack and invited her to perform the unveiling which she did in style, calling for Miller's legacy to be honoured by making the station the modern accessible transport hub for which she had campaigned.

Brian Cooper thanked everyone concerned for their valuable support, particularly Sarah Boyack, John Yellowlees and the staff of First ScotRail, and Duncan Sooman and Bob Gardiner of Network Rail.

The plaque is a welcome outcome of the Institution's policy of encouraging its regions to publicly promote outstanding civil engineers and their works. On being asked by Brian Cooper for an appropriate candidate, Professor Paxton on behalf of PHEW suggested Miller and Haymarket Station and was given the go ahead to organise matters.



Plaque made by Alexander Pollock Ltd. © Dr Scott Arthur



Miller, aged forty-two © Roland Paxton

To furnish a background for the occasion, the School of the Built Environment at Heriot-Watt University, where Miller's portrait is on display, published 70 copies of an illustrated short *Appreciation* of Miller by Professor Paxton based on his research over many years.

The plaque wording provides cogent backing for Miller's recognition, to which could have been added, if room, that:

His well-engineered works, many of which are still operational, more than halved passenger travel time between Scotland's main cities and with England.

He also planned Glasgow's earliest main line passenger terminals at Bridge Street and Queen Street.

He brought to fruition, from his plans for 1,500 miles of railway lodged in Parliament in 1845, the *Glasgow, Dumfries & Carlisle*, and the first leg of the legendary *Waverley* Line.



Haymarket Station from an invitation to Mr Buchanan to the private opening on 18 February 1842 © Roland Paxton

At the time of his retirement in c.1850 Miller had more mileage of railway to his credit in Scotland than any other engineer. He was only 45, and had acquired the wherewithal to enjoy life for the next three decades as a country gentleman with estates at Polmont; Leithenhopes, Innerleithen; and Drumlithie and take an interest in politics.

He served as a Liberal MP for Edinburgh from 1868 to 1874.

Professionally, he was trained as a land surveyor by Thomas Grainger who took him into partnership in 1825, aged 20. About this time he attended part-time classes at Edinburgh University. He was welcomed into the Institution of Civil Engineers by Telford as an Associate in 1830 and a corresponding member in 1832, and was its longest serving member when he died in 1883. He became FRSE in 1841.

According to Professor Paxton, Miller was in the first rank of early railway engineers, in personal contact with Locke, the Stephensons, Brunel, and Vignoles. He was intelligent and ambitious and his railway engineering is characterised by determination, effective management and the skilful application and development of traditional practice. His use of these skills in achieving 'locomotive friendly' gradients involved major works in cuttings, embankments, tunnels and viaducts with hundreds of masonry arches including Britain's largest span on a railway of 181ft at Ballochmyle, towering 164ft above the Ayr. The *Edinburgh & Glasgow* alone has 7 viaducts with 86 arches.

Miller is second to none as a designer of large masonry railway viaducts, but his legacy was more far reaching. His bridge timber-work was widely promoted in editions of Newlands' *Carpenter and Joiner's Assistant* from 1860 into the twentieth century. From 1848 his key assistants B Hall

Blyth and G Cunningham, who became his son-in-law and added 'Miller' to his name, continued his tradition of making an outstanding contribution to Scotland's transport infrastructure through the leading civil engineering firm which bears Blyth in its name down to the present day.

## The Challenge – History in the Civil Engineering Curriculum

by Tom Swailes and Mike Chrimes

### A welcome change to engineering degrees in the UK

With the support of the ICE as the senior engineering institution, the Engineering Council UK (EC<sup>UK</sup>) now require that all engineering degrees support students 'understanding of historical, current, and future developments and technologies'. The word 'historical' is the key change. Many people will be surprised that an understanding of past technologies was not previously identified as an essential element of the education of a professional engineer. The omission had left the treatment of this important subject patchy across the university sector, good in places, but thinly spread in others.

The change appears too in revised curriculum guidelines issued by the Joint Board of Moderators (JBM). The JBM publish a list of degree courses accredited against standards set by the Institutions of Civil, Structural, and Highways and Transportation Engineers and endorsed by EC<sup>UK</sup>. Given the importance of the JBM stamp of approval to potential students and to employers of graduates, each university and college takes its 5-yearly JBM accreditation visit seriously. Although the JBM guidelines are not prescriptive, failure to follow them could leave the offending academic department in some difficulty.

### Where we are now?

PHEW has taken the initiative in establishing the present position in civil engineering degree programmes, with a view to finding ways of supporting academic institutions in the area of the history of civil engineering. An e-mail survey was carried out by PHEW member Tom Swailes, who then chaired follow-up discussion meetings at the headquarters of the ICE in London and of Historic Scotland in Edinburgh. Thirty universities completed the survey questionnaire, a response rate of over 50%. The meetings were attended by 10 university academics, 5 PHEW members, ICE Head Librarian Mike Chrimes, several independent engineers with an active interest in history, and by representatives of the Conservation Accreditation Register for Engineers (CARE), English Heritage, Historic Scotland, the Motorway Archive Trust, the Royal Commissions for Ancient and Historic Monuments in Wales and Scotland, and the JBM.

The survey established that in about 50% of university departments, history of civil engineering formed a part of either a first year module, usually concerned with professional studies, or of a final year or Masters-level module with a conservation or refurbishment slant. Many academics say they use historical examples to illustrate their teaching of 'mainstream' subjects such as structures, hydraulics and geotechnics, but it was clear that activity in this area could be increased considerably if authoritative source material for historical engineering case studies was more readily available. The idea of a digital teaching and learning resource box full of historical raw material was well received. The idea of visiting lectures by experts in the