

Panel for Historical Engineering Works Newsletter

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Obituary: Professor R B (Reg) Schofield by Mike Chrimes

Readers will be sorry to learn of the death of Professor R B (Reg) Schofield. He was Emeritus Professor of Civil Engineering at the University of Ulster. He graduated in Mechanical Sciences from Corpus Christi College in the University of Cambridge, and after several years as a Chartered Civil Engineer in professional practice, joined the staff of the University of Salford.

He left for Northern Ireland in 1975 and retired as Professor of Civil Engineering and Head of Department in 1989. Much of his research has been in the field of fluid mechanics and open channel hydraulics, particularly in physical modelling. He had a long term interest in the history of engineering and made a significant contribution to its understanding.

His biography of Benjamin Outram entitled *Benjamin Outram, 1764-1805: An Engineering Biography* was published in 2000 and the last of his papers for the Newcomen society on experimental work of John Scott Russell was published in 2004.

He used his specialist knowledge in contributing to the *Biographical Dictionary of Civil Engineers*, writing the articles on Outram and Scott Russell, but most importantly on William Jessop, Sir Alec Skempton being too poorly to undertake it at that time.



Professor R B (Reg) Schofield

Brunel and Stephenson Plaques in Wales

by Keith Thomas

Autumn 2009 saw the last of three plaque presentations in Wales to commemorate the anniversaries of the deaths of two of the most famous Victorian engineers. I K Brunel and Robert Stephenson both died in the autumn of 1859, 150 years ago. Brunel died on 15 September and within a month Stephenson had passed away on 12 October. The Stephenson anniversary was being marked throughout Britain and we in Wales decided to take part. Stephenson's major work in Wales was the Chester and Holyhead Railway with the innovative and world beating tubular bridges at Conwy and Menai Straits. The construction of the whole route however posed many other challenges over its length.



Keith Thomas, Panel Member for Wales of PHEW presenting plaque to Richard Burnell, Vice-Chairman of Holyhead Maritime Museum

Whilst Brunel's professional contact with Stephenson, and indeed other contemporaries, was wide ranging, the instances of them working together are few. The professional rivalry between Brunel and Stephenson is evident from the beginning of their engineering careers. But despite this they remained on excellent terms, supporting each other's engineering projects with their presence and practical advice. This was evident when Stephenson invited Brunel and another great Victorian engineer, Joseph Locke to the floating out of the first iron tube of the Britannia Bridge across the Menai Straits. Brunel reciprocated with an invitation to the erection of the tubes for the Chepstow Railway Bridge. It was thought appropriate therefore to find common ground for commemorative plaques.



The Robert Stephenson Plaque at Holyhead Station. Ben Davies, Arriva Trains Wales; Owen Glyn Jones, Chair Ynys Mon County Council; John Chorlton, Mayor of Holyhead; Gerald Jones Station Manager © Keith Thomas

A plaque was arranged to be placed at Holyhead Station to commemorate Stephenson and his work on the Chester and Holyhead Railway. This was presented to Arriva Trains Wales on 17 September. A link with Brunel was found in that his ship the *Great Eastern* took shelter in Holyhead Harbour also 150 years ago during the great storm, known as the Royal Charter storm (after the ship Royal Charter which was wrecked off Anglesey with the loss of over 400 lives). A second plaque was prepared and presented to the Holyhead Maritime Museum commemorating the anniversaries of the two engineers and the visit of the *Great Eastern*.



Alun Griffiths, Chairman ICE Wales Cymru, unveiling the plaque with Councillor Nigel Howells of Cardiff Harbour Authority © Keith Thomas

In November, the Wales Association chairman Alun Griffiths presented a plaque to the Cardiff Harbour Authority to record Brunel's association with the area and particularly his plans for a dock in the Ely Estuary during his work on the Taff Vale Railway. This was another occasion where Stephenson and Brunel met professionally, Brunel representing the Taff Vale Railway and Stephenson the Bute Dock Company. Brunel's scheme did not come to fruition until much later. It was some years before proposals for Penarth were resurrected and the dock constructed. Working on the construction of the dock in the 1860s was a young engineer by the name of Henry Marc Brunel, Brunel's youngest son.

But there is also another link between Brunel and Penarth. On 6 February 1886 Brunel's ship the *Great Britain* made her last commercial voyage from Britain after her conversion from a passenger steamship to a sailing cargo ship a few years earlier leaving Penarth with a cargo of coal for Panama, a voyage that would take her round Cape Horn. The voyage was never completed. The vessel encountered a severe storm in the South Atlantic which resulted in her being abandoned in the Falkland Islands, from where she was eventually rescued and returned to her home port of Bristol and the dry dock in which she was built and launched in 1843. The plaque is at the Penarth end of the Cardiff Bay Barrage.



The Cardiff Bay Plaque © Keith Thomas

Bertha on the Stocks at Eyemouth by Roland Paxton

In *Newsletter No. 122* Brian George makes mention of what is "probably the only mobile civil engineering heritage work that we have", I K Brunel's drag boat from Bridgewater – operational from 1845-1971, which had been dispersed from Exeter Museum on its demise c.2002. *Bertha*, as she is known, eventually found her way to Eyemouth, and is now on my watch!

Details of *Bertha* (HEW 1145) and a view of her afloat at Exeter Museum can be seen in *Civil Engineering Heritage: Southern England*, ed. R A Otter. She operated at Bridgewater Docks by hauling herself with an iron scraper or blade along a chain, the ends of which were secured to

quayside bollards. The blade “mounted on a sliding pole was lowered by means of a chain. The vessel then hauled herself along the main chain bringing with it the mud and silt into the River Parret, where it was carried away by the tide. The vessel then hauled herself back along a lighter chain and the procedure repeated.”

“Built by G. Lunnel and Co., *Bertha* is 15m long of 60t and is constructed of riveted iron with a timber superstructure. The steam engine (also by G Lunnel) is a single cylinder double action engine and operates at a pressure of 40 psi. Steam is raised in a coal fired boiler of unknown vintage. The motion is transferred to the main drive shaft, which can be recognised by the large flywheel, by means of a single reduction spur wheel drive” (*Berwickshire Today*, 11 July 2002).

165-year old *Bertha* from her provenance and design is of outstanding historical significance, even though now firmly static at the quay-side on framed supports, and eye-catchingly unmissable at the west approach to the town centre. Her steam-powered engine, operational from 1844 is believed to be still in working order.

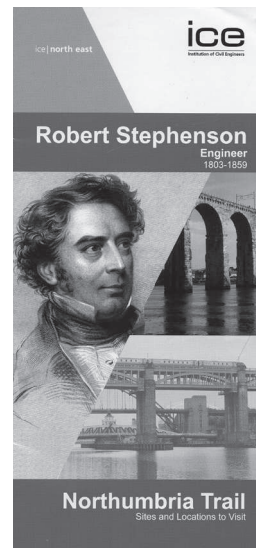
Since 2002, as part of Eyemouth Maritime Museum’s ‘World of Boats’, *Bertha* has been awaiting restoration and interpretation. This is well deserved and eagerly awaited by enthusiasts.



Brunel's 1844 steam drag-boat at Eyemouth, Scotland, May 2009 © Author

Robert Stephenson Trail Leaflet by The Editor

As part of the Robert Stephenson 150th Commemorations ICE North East has produced and distributed a Stephenson Trail Leaflet; which includes two related trails. The first is located in Newcastle-upon-Tyne, it identifies and briefly describes ten sites including Stephenson’s dwelling at 5 Greenfield Place, the ‘Forth Street Works’ and, of course, the iconic High Level Bridge. The second trail identifies a further eight sites throughout Northumbria and illustrates further fine examples of Stephenson’s contributions to bridge works including the Royal Border Bridge.



© ICE North East

Luton Airport: Hangar 89 (Britannia Hangar)

by Ian Anderson



Luton Hangar 89: side view, 14 March 2006

In 1966 a site was agreed between Luton Borough Council who owned Luton Airport and Britannia Airways for the construction of a new hangar. The Britannia Hangar, as it became known, was commissioned in 1967 by Luton Borough Council for Britannia Airways who then leased it from Luton. It was designed for servicing their fleet of Britannias and Boeing 737s, including engine overhaul and electrical systems. It included substantial stores and office accommodation. The Architects were Yorke Rosenberg Mardall who had previously designed the Intermediate Terminal Building and the Airport Fire Station. The main plan area is 378ft x 213ft, comprising eight primary external welded steel plate girders at 54ft centres, each supported on an internal 36" x 24" box column and a 60" x 24" I-section external anchor column at the rear. Each girder has a front 144ft 10in cantilever over the main hangar area and a rear anchor span of 67ft 11in with integral rear welded plate column, both measured to centre of columns. The clear height under the cantilever rises from 40ft at its root to 56ft