

Panel for Historical Engineering Works Newsletter

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Isambard Kingdom Brunel and Photography

By Rose Teanby

1839 experienced two simultaneous revolutions in Britain, industrial and photographic. As the fabric of Britain was transformed into the foundation of today's infrastructure, the invention of photography ran parallel. The cutting edge technology of painting with light onto chemically treated paper was immediately recognised by engineers for its potential to accurately represent their work, without unnecessary artistic interpretation. A photograph was a true likeness, drawn by the sun itself.

In 1827 Isambard Kingdom Brunel (1806-1859) became Resident Engineer for the Thames Tunnel and Nicéphore Niépce produced the world's first surviving photographic image. As Brunel's elliptical arched Maidenhead Bridge opened in 1839, immediately claiming the title of widest and flattest brick bridge in the world, the invention of photography in Britain was announced to the Royal Society by William Henry Fox Talbot (1800-1877).

Talbot was a polymath with interests encompassing the arts, mathematics, science and technology. He was not a gifted artist and became frustrated by his own inadequacy, prompting his quest for a scientific solution to the problem. He remarked, "how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper".

Talbot was also MP for Chippenham, Wiltshire, which added a political dimension to an already crowded diary. It also introduced him to the promoters of the Great Western Railway and its chief engineer Brunel. Talbot and Brunel were to have a prickly yet, at the same time, strangely symbiotic relationship.

Their first documented contact was in 9th March 1834 when Brunel wrote "to solicit the support of your influence with members" for the second reading of The Great Western Railway Bill. Despite Talbot's support it was rejected by the House of Lords on 25 July 1834 but a second bill succeeded the following year. Brunel could now build "God's Wonderful Railway" from Paddington in London to Temple Meads in Bristol.

Brunel and Talbot both shared an interest in the development of atmospheric railways, subsequently adopted by the South Devon Railway. But by 1844 the tenor of their correspondence had changed from respectful deference on Brunel's part to defensive bickering, as the Great Western Railway line came too close to Talbot's home at Lacock Abbey for comfort. "I can assure you that I adopted the line which all things considered appeared to me the least destructive" wrote Brunel on 23rd December 1844, but Talbot persisted in his quest for adequate compensation. Brunel's final recorded letter talks of an application to Parliament for "a deviation of a few yards" as the Wiltshire, Somerset and Weymouth Railway branch line challenged their fragile professional relationship.

Although their communication became politely acrimonious, Talbot could not ignore other Brunelian structures transforming the nineteenth century English landscape. One such construction spanned the river Thames and became known as Hungerford Bridge, Brunel's first completed chain suspension footbridge.



Construction of the bridge was authorised by an Act of Parliament of 1836 with the intention of bringing more custom to the newly rebuilt Hungerford Market at Charing Cross. Opened in 1845, it had a relatively short working life of fifteen years, becoming a victim of the successful expansion of the rail network, leading to the Charing Cross Railway Act in 1859 and a new railway bridge taking its place. This act authorised the demolition of the suspension bridge in the year that saw the demise of Brunel himself.

An Aircraft and Three ferries during the British Raj

By Sydney Xavier

Recently, I had the pleasure of reviewing *The Raj Agent in Ceylon 1936 - 1940* by Sharada Nayak (Published by the author in 2015).

An interesting photograph of an aircraft and a reference to a ferry caught my attention.

Further investigation revealed that the aircraft was a WACO YQC VT-AIX 5-seater. It was owned by a private Indian company and the regularly flew mail to India from Colombo



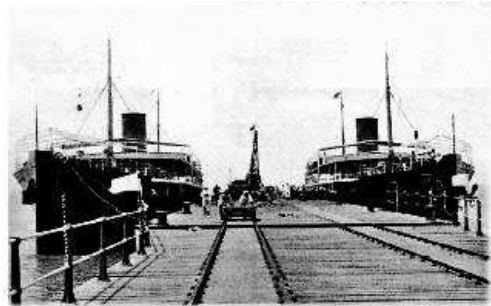
The photograph shows Mr AVittal Pai OBE, CIE with his wife at Ratmalana, Ceylon, ready to fly to Delhi, India, in Sept 1940 after end of Mr Vittal Pai's tour of duty in Ceylon.

Three ferries were named after the Viceroy's of India: they were *Elgin*, *Hardinge* and *Curzon*. The ships "*Elgin*" left and "*Hardinge*" right, are shown at the pier in Dhanushkodi, India. ("*Curzon*" is not shown in the picture).

The South Indian Railway Co. Company set up a ferry service between India and Ceylon. In The paper by Dr J Inglis on 'The trials of geared-turbine ferry steamers' presented at the Institution of Naval Architects on July 27th 1913 covered all three ferries. This was reported and the paper and discussion was reproduced in both *The Engineer* and *Engineering*.

The main technical facts are that the vessels were designed to a performance of specification and were 250 ft long, 38 ft broad, and 865 tons on 6 ft draught of water. The contract specified that the vessel was to carry 160 tons dead weight and to travel a distance of 20 sea miles at 16.5 knots. Indian coal was used to power the geared turbines. Passenger capacity and crew numbers are not known.

The vessels were commissioned in 1914 and the ferry service ended in 1950.



This rare picture was supplied by the author of the book during my follow-up correspondence.

ICE Museum display - Edinburgh Doors Open Day

By Roland Paxton

In the 1970s PHEW's redoubtable Technical Secretary Maurice Barbey often said that there was more to being a panel member than recording HEWs. One of several manifestations of this in Scotland proved to be supporting what has become the ICE Scotland Museum curated at Heriot-Watt University. Its wonderful collection of about 400 artefacts, mainly instruments, calculators, equipment and materials used in civil engineering design and construction from 1800, probably unique of its kind in the world, is open to the public during university normal working hours [see web site via Google].

The collection, which reflects the dedication and enthusiasm of its ICE curators, is based on donations. The cost of its fine display cases was met from a £15,000 Forth Bridges Visitor Centre legacy in 2012. Remarkably, more than half the Museum's items are now on display, enhancing the academic environment of the University in and around its Arrol and Chadwick Buildings, and informing students, staff, ICE members and the public. Its fascinating projects featuring such names as Telford, Jessop, Jardine, the Stevensons, Arrol, Grainger and Miller, have attracted significant visitor and media interest.



Derek Chambers showing a sample of a new Forth Crossing cable and its bird-friendly transparent shielding © R. Paxton

Recently the collection was promoted by taking part in the Scottish Cockburn Association's Edinburgh Doors Open Day event on Saturday 23 September. This occupied c.150 hours of our time and comprised organising four 1 hour tours at 1½ hour intervals. The tours, led by Museum curators Prof David McGuigan, Derek Chambers and John Andrew were nearly fully subscribed and attracted much favourable comment. Attendees included the National Museums of Scotland's Keeper of Technology Klaus Staubermann and his German Museum guests. During the guided tours some of the Museum's more popular items were highlighted and explained. All tours ended at the William Arrol Conference Room where, overlooked by our unique oil portrait of the erector of the Forth Bridge, visitors were treated to view a selection of items, photographs etc. not on permanent display.



Prof David McGuigan explaining rocker/roller and rocker bearings from each end of the 100m Bilston Viaduct iron girder © R. Paxton



Recently acquired brass, ball and socket joint, level used from 200 years ago. Note typical Museum display label © R.Paxton

The main focus of the day was exhibits on the Forth bridges, which the Museum has prioritized in its acquisitions. Many visitors remained after each tour to

view these and to ask more questions. Our written feedback on the tours was, without exception, excellent.

Chairman's Column by Gordon Masterton

Some mixed feelings as I write this, having just returned from the funeral of one of our most distinguished past members, Denis Smith. Whilst sad for the family and friends of course, the funeral was a genuine celebration of Denis's life and disparate interests, from engineering heritage to folk and jazz music, and an uplifting reminder of a life well spent. I particularly liked this section from the reading from Ecclesiasticus delivered by his son Graham, in praise of craftsmen:

"All these rely on their hands, and each is skilful in his own work. Without them a city cannot be established, and men can neither sojourn nor live there. Yet they are not sought out for the council of the people, nor do they attain eminence in the public assembly. They do not sit in the judge's seat; nor do they understand the sentence of judgment; they cannot expound discipline or judgement, and they are not found using proverbs.

But they keep stable the fabric of the world, and their prayer is in the practice of their trade."

Very apposite for engineers too. In the UK, at least, we tend not to be deeply involved in "the council of the people". There remain very few engineers in Parliament. But, nevertheless, we keep stable the fabric of the world, and our achievements lie in the practice of our profession. I hope we might have a full obituary for Denis Patrick Smith (1930-2017) in a future issue.

I received a letter from another long-standing contributor to this newsletter, Brian George of "HEWS in the News" fame. Quite understandably, at the age of 92, Brian has decided that with very great regret that this issue of Hews in the News must be his last. Brian has contributed the column for 27 years, and his final piece will be his 108th. What a wonderful contribution and we wish him and his wife Pamela all our grateful thanks and best wishes. We'd like "Hews in the News" to continue but we need a volunteer so please let me, Carol or Dermot know if you would like to preserve the continuity of a familiar and much-loved part of our Newsletter.

The Panel continues to be active in the promotion of engineering in the media, and the excellent series presented by Rob Bell on Channel 5 "The World's Greatest Bridges" had an episode on Iron Bridge and its successors partly filmed in the ICE library, featuring Thomas Telford's bold conceptual design for a single span cast-iron bridge to be thrown across the Thames. As always, more is filmed than used, so my attempt to squeeze in a reference to our 200th anniversary failed, but it was a decently sized segment and made up for another occasion when Channel 5 filmed me at the Forth Bridge for "Britain's Greatest Bridges" but excessive background noise prevented its use in the programme – or perhaps that was just a polite let-down!