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OBITUARY – HAROLD EDWIN MERION ('HARRY') EAGLES by The Editor



'Harry' Eagles
© Paul Dunkerley

Harold Edwin Merion ('Harry') Eagles, died in Medway Maritime Hospital on 29 December 2002 after a long period of deteriorating health. He was in his eightieth year. He became a Chartered Civil Engineer in 1955 and spent much of his working life in local government in London. It was in 1981 that he first became associated with the affairs of the ICE's historical engineering panel and later became its representative for the Kent area, a position which he held until 1998.

Many Panel members will remember the very enjoyable and informative visit based at Canterbury which he organised in 1988. Members will also recall his willingness to assist in their historical research. He made a significant contribution to the Kent chapter within the Panel's book *Civil Engineering Heritage: Southern England* first published in 1994, and he contributed to a number of local publications dealing with the civil engineering history and heritage of Kent. He had an easy and cheerful manner and has been missed from recent Panel meetings.

Our condolences are extended to his daughter Caroline, son John and his friends and family.

DR JIM SHIPWAY'S GRADUATION by Roland Paxton



Dr Jim Shipway being congratulated by the Chairman
© Professor Paul Jowitt

Congratulations to Jim Shipway, Panel Member for the West of Scotland, on obtaining his PhD from Heriot-Watt University, Edinburgh, for a thesis entitled 'Some aspects of the development of the girder bridge 1820-1890'.

CONSERVATION ACCREDITATION – PRESS RELEASE

Information supplied by Eunice Waddell

The scarcity of engineers skilled in conservation has led to the proposal to form a list of those qualified and formally accredited to deal with the conservation of the built environment.

The Institution of Civil Engineers (ICE) and the Institution of Structural Engineers (IStructE) have jointly formed a Conservation Accreditation Register for Engineers (CARE), whose purpose is to create and regulate an accreditation scheme for Engineers. English Heritage and Historic Scotland fully support this development. The Chartered Institute of Building Services Engineers has been invited to join the scheme.

The CARE Panel, chaired by Ian Hume, MStructE, has been working hard since its formation in the autumn of 2002, preparing guiding principles and assessment criteria. Its next task is to form the assessment teams who will ultimately consider applications for accreditation from engineers versed in conservation. Accreditation should prove a major asset to engineers wishing to work on historic structures and it is hoped that CARE will encourage more engineers to acquire the necessary skills and seek to qualify.

The CARE Panel hope to be ready to invite applications for accreditation in the summer of 2003

All enquiries should be directed to Eunice Waddell, ICE Engineering Department, on 0207 665 2238 or eunice.waddell@ice.org.uk.

FIRST INTERNATIONAL CONGRESS ON CONSTRUCTION HISTORY – ESCUELA TÉCNICA SUPERIOR DE ARQUITECTURA, MADRID: 20–24 JANUARY, 2003

by Peter Cross-Rudkin

This wide-ranging Congress was organised by the Polytechnic University of Madrid, in association with the College of Architects of Madrid, the American Society of Civil Engineers, the Construction History Society (UK) and the Institution of Civil Engineers. The themes of the Congress included historical methods of construction of buildings and public works; materials of construction; structural analysis of historical structures and the development of structural forms; stereotomy; archives and historical documents; and university education and the future of construction history. Abstracts of papers had been submitted by the end of March 2002 and 189 were accepted, some jointly written, so that there were 262 authors in the official programme. As well as a sizeable but by no means overwhelming contingent from the host country, they came from the United States and Japan, Germany and Malaysia, Italy and Poland, and several other countries between.

The variety of papers provided ample choice for everyone, with a wide range of topics and geographical location. To give some idea, subjects which might particularly interest readers of the *Newsletter* included the repair of a Greek temple, Roman dams in Spain, mediaeval bridges in Sicily, detailed drawings of a 16th century bridge in Nuremberg of a quality of construction well in advance of anything in Britain at the time, construction techniques in early concrete dams, early reinforced concrete in India, suspended cable roofing in Italy, first developments in prestressed concrete in Italy, teaching construction history in Malaysia and the work of the Historic American Engineering Record. The Panel was represented by contributions from Mike Chrimes on *Robert Stephenson and planning the construction of the London and Birmingham Railway* and Peter Cross-Rudkin on *The organisation of civil engineering construction in Britain 1760–1835*.

The proceedings of the Congress were printed and made available to delegates as they arrived. Well produced, they run to over 2000 pages in three volumes, with ample illustrations. They are available as follows:

Book Code: Dep-1147; ISBN 8497280716; pp.2,158; paperback. European Union countries 22€; other European countries 29€; other destinations 40-45€. Email: libreria@cccpc.es; fax: +34913199556; mail: Colegio de Ingenieros de Caminos, Canales y Puertos, Servicio de Librería, Calle Almagro, 42, 28010 Madrid, Espana.

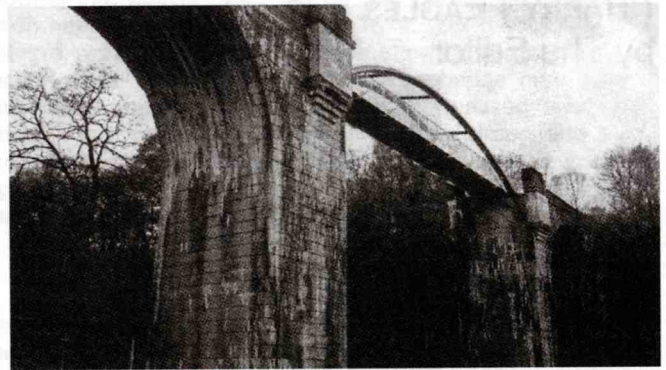
In the call for papers, it was suggested that a bibliography of construction history might run to 10,000 items, but that no such bibliography exists. Those articles that have appeared are scattered amongst journals in other disciplines, and are biased according to the perspective of the architect, engineer, archaeologist or economist who wrote them. It was apparent that some of the Congress's themes already have a substantial following, and that in some countries there is a substantial corps of researchers. Other themes notably construction techniques and industrial structures and other countries (such as the United Kingdom) were less well represented. There has moreover been little attempt at synthesis, or to develop a methodology for the subject.

One of the stated aims of the Congress was to promote construction history as a legitimate and important field of study in its own right, and to determine the role of this field in

the future. In addition to the lecture sessions, there were panel discussions on stereotomy; design versus analysis; construction history and university education; and international collaboration in construction history. For the majority of delegates these were perhaps the least satisfactory aspect of the Congress, with too little time for the panel members to develop their themes and even less for other contributions. Nevertheless the planning that went into the panels seems likely to bear fruit outside the Congress, with continuing, possibly more formal collaboration between the sponsoring bodies. This should result at the least in a continuing series of Congresses, held possibly every three or four years. The Congress provided a useful means of meeting and networking with researchers in other countries working in similar fields, and it was evident that, on several occasions, researchers working in isolation were benefiting from suggestions of comparative data in other countries and fields. At a more fundamental level, it is to be hoped that the involvement of the Institution of Civil Engineers, the Construction History Society and the Newcomen Society with similar bodies elsewhere which developed at the Congress will produce a greater momentum in this important subject area.

GLEN OGLE CYCLE WAY

by Alan H W Baker



Kendrum Burn Viaduct
© Scott Wilson Scotland Limited

A new section of the National Cycle Network Route 7 has been constructed through spectacular Scottish countryside. Glen Ogle Cycle Way, centred around Lochearnhead, makes extensive use of the disused Glasgow to Crianlarich railway line, and allows cyclists and walkers to travel along dedicated paths, remote from vehicular traffic. The upper section of railway line was once described as having one of the best views in the United Kingdom.

As designers, Scott Wilson Scotland Limited have worked with their client Sustrans to transform a valuable but neglected asset into important new infrastructure.

The route is centred on two railway lines which were abandoned in the 1960s. The old railway line from Glasgow split north of Balquhiddier Station with the lower branch following the glen north to Lochearnhead where it turned east. The upper branch took a higher route towards the top of Glen Ogle and Crianlarich. The railways followed natural trails through the landscape without causing additional disruption to the existing land use. The new cycle way takes full advantage of this, providing a safe, off road, route for cyclists and walkers in addition to access to local communities.

Starting from the south, the cycle way runs through some dense forestry plantation before emerging into open countryside to follow one of General Wade's old military roads. The route then follows the low level railway line towards Lochearnhead. Within this section, the cycle way

crosses the valley of Kendrum Burn via a multi-span railway viaduct constructed mainly of mass concrete. The river span was originally of steel construction but this was removed after the railway line was closed. A significant feature of the project is the replacement of this missing span with a new lightweight steel arch. At Lochearnhead, a new connection was made between the lower and upper levels of the route, meandering at a gentle gradient up steeply sloping hillside. The route then continues northwards, providing the user with some fine views across Loch Earn.

THE CHAIRMAN'S COLUMN by Professor Roland Paxton

In 1981, when I was planning a cycle path project for Lothian Regional Council, a cast iron beam bridge of 1831 literally 'came to light' at Braid Burn on the line of the former Edinburgh and Dalkeith Railway. PHEW members who visited Edinburgh in 1981 may remember parting shrubs and large weeds to inspect it! The bridge, the only known survivor of several similar structures, is remarkable in providing probably now unique examples of 'L' and inverted 'T' cross-section empirically designed cast iron beams of the 'Tredgold era'. The bridge is also notable for its authentic conservation (with beams unpainted at my request) and for still being in service after 172 years.

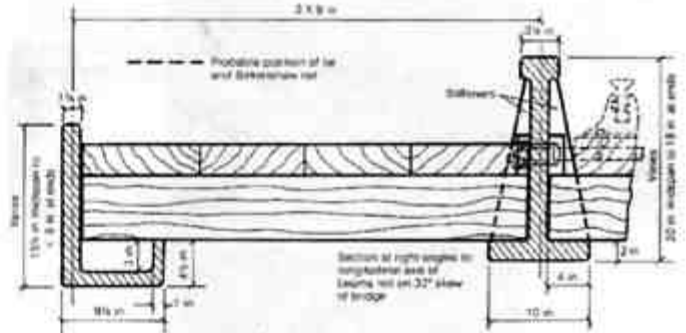
In August 2001, the bridge's deck was lifted under the direction of the City of Edinburgh Council to increase the water headway in the burn. I was invited to attend during this delicate operation and, in the event, was able to advise on the successful overcoming of a complication that arose when two beams were found to be attached to hidden bank seating plates by corroded wrought iron wedges. Sir William McAlpine and Sandra Purves, Secretary, PHEW Scotland, also visited the work and we were all impressed by the care taken in its execution.

The Council entered the project for a 2002 Saltire Civil Engineering Award in the *Conservation* category, but was unsuccessful. This outcome was not too surprising to PHEW Scotland who had become concerned about the quality of some of the Awards Committee's recent judging decisions. So much so, that in 2001 PHEW Scotland withdrew from advising this Committee after its advice was not taken in a case involving ingenious innovation on a small project. The withdrawal decision was a difficult one for PHEW as it was at its instigation that the Awards Committee had, with reluctance, introduced a *Conservation* category in 1993. Although PHEW advised this Committee for nine years, mostly with success, it has never been allowed a vote in the adjudication process.

At its annual meeting last November, PHEW Scotland resolved that the exceptional care taken in preserving the historic materials on the Braid Burn Bridge Project deserved to be recognised by the Institution if it did not attract a Saltire CEA commendation. As mentioned, it didn't, and *Special Commendation* certificates have been prepared and framed and will be presented to the client, engineer and contractor by Sir William McAlpine and myself in March. Sir Robert McAlpine Limited has generously agreed to sponsor the award.



Braid Burn Bridge – 'Exceptional Care' award
© Institution of Civil Engineers



Braid Burn Bridge cross-section – beam and rail details
© Roland Paxton, *Civ. Engrg Technol.* 8. (August 1983)



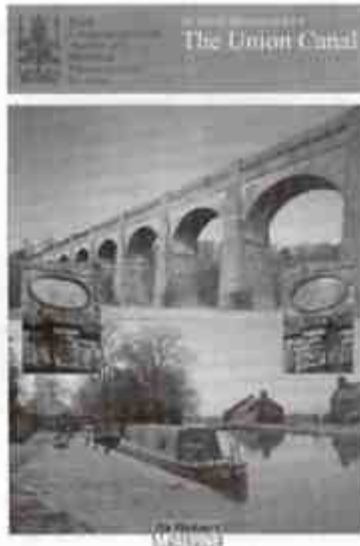
Braid Burn Bridge – Bank seat plate lug fixing detail – Effective, and probably the only surviving example
© The City of Edinburgh Council



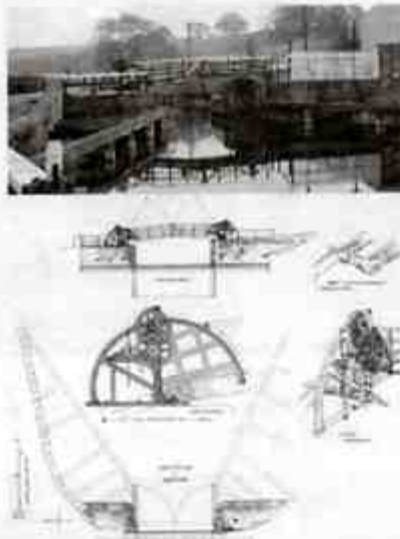
Braid Burn Bridge – 18ft span iron beams 'as found'
© The City of Edinburgh Council



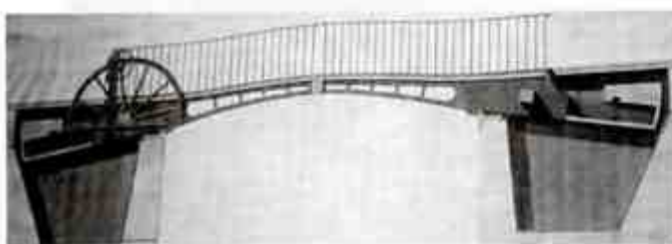
Braid Burn Bridge after being raised 0.9m – September 2001
© The City of Edinburgh Council



RCAHMS Union Canal Broadsheet – Avon Aqueduct; 'Laughin and Greeting' keystones; Linlithgow Basin
© RCAHMS [ISBN 1902419294]*



RCAHMS Forth and Clyde Canal Broadsheet – Craigmarloch bascule bridge. Drawing by the late G Hay
© RCAHMS [ISBN 1902419308]*



Forth and Clyde bascule bridge drawing 1810 – Telford
© Alasdair Cullen Wallace



RCAHMS Mallaig Railway Broadsheet – Glenfinnan Viaduct with the timber centering used to build it
© RCAHMS [ISBN 1902419316]*

My term as a Commissioner on the Royal Commission on the Ancient and Historical Monuments of Scotland, for the past five years as Chairman of its Architectural Programme Committee, has just ended. I was thought to be its first civil engineer member and it was pleasing to see our discipline featuring in the advertisement for my successor! Contributing to the survey, record and knowledge promotion of Scotland's historic built environment proved most worthwhile and, at times, even exciting! I already miss the outstanding professionalism of the RCAHMS, but have a delightful reminder of it in a splendid presentation album comprising 54 images of works and people associated with my decade in office. I wish to take this opportunity of acknowledging the invaluable support I, and also PHEW, have received from the RCAHMS staff, particularly Geoffrey Stell, Head of Architecture and his team. Our latest RCAHMS/PHEW collaboration has been on the production of broadsheets to enhance public enjoyment of the regenerated Forth and Clyde and Union Canals and the Mallaig Railway.

From these beautifully produced broadsheets*, each with map and 30+ images, many from originals, including Smeaton drawings, I have illustrated as an example the late Geoffrey Hay's finely executed drawing of a cast-iron cog geared bascule bridge erected on the Forth and Clyde Canal. Bridges of this type were provided as replacements when the 1770's–1790 timber drawbridges decayed, some having been erected by 1805. Others were installed on the Union Canal c.1822. An 1810 drawing of this bridge type was found by Alasdair Cullen Wallace among Gotha Canal drawings in Sweden. It was not adopted for the Caledonian Canal because *'unless they are always very carefully raised to a proper height, the masts of the vessels will, in passing, strike against, or be impeded by the part of the bridge which is raised up'* [Jessop/Telford report. November 1805]. The Mallaig Railway broadsheet includes images of 'Concrete Bob' McAlpine's bridges under construction and, from a joint exercise by Dr Colin Stove and myself, the radar image of the horse and cart entombed in Loch-nan-Uamh Viaduct.



Dr E Kemp talking to Mr S Ritch astride the Menai Bridge link being conserved at Heriot-Watt University
© Roland Paxton

being the priority over the next five years. A bid to the Heritage Lottery Fund is likely to be submitted in either December 2002 or June 2003.

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The same *Bulletin* for December noted that British Waterways intended to floodlight the spectacular Caen Hill flight of sixteen locks at Devizes (HEW 1078) for Christmas to celebrate the completion of the five-year £30m Heritage Lottery Fund backed improvement works on the Kennet and Avon Canal. The locks were closed in 1951 but were reopened by Her Majesty Queen Elizabeth II on 8 August 1990. The event will mark the 40th anniversary of British Waterways Board, which was formed under the 1962 Transport Act to take over the canal system on 1 January 1963. *The Times* 30 December showed a photograph of the floodlit locks and noted that they would be lit until Twelfth Night (January 6). Meanwhile the *Bulletin* for January 2003 has noted that British Waterways has started a two-year £1m programme of conservation work to restore the Georgian Grade I listed Dundas Aqueduct (HEW 188) on the canal at Limpley Stoke, near Bath.

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British Waterways has signed an agreement with Bellway Homes for a £35m development at Chester's historic Tower Wharf on Chester Canal (HEW 1202), which eventually formed part of the Shropshire Union Canal. The proposed development overlooks the newly restored basin adjacent to the canal, which was filled in during the 1950s but cleared out and restored by BW in July 2000. The restored basin will provide the focal point for 174 dwellings, offices, leisure facilities and a working boatyard.

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The Aston to Maesbury section of the Montgomery Canal is due to be reopened formally on 4 April following many years of work to restore Aston lock flight and the pounds below to the start of the dry section. Much of the work on this section has been financed by Inland Waterways Association, mostly from the Humphrey Symons legacy, notes *Head Office Bulletin* of January 2003. British Waterways has engaged additional staff to work on the canal to progress its restoration and in particular to deal with the sensitive nature conservation issues.

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The Daily Telegraph 30 December showed a woeful photograph on the front page of Brighton's West Pier (HEW 212), a section of which had fallen into the sea the previous day after being buffeted by a strong wind and heavy seas. A walkway had collapsed, taking with it the south-east corner of the concert hall. The collapsed part of the structure, most of which was built in 1866, has raised fresh doubts about a £20m plan to restore the only Grade I listed seaside pier, closed to the public for 27 years.

Rachel Clark, general manager of the West Pier Trust, described the loss of the concert hall as a tragedy, saying that the Trust had been prevented from restoration that would have saved the pier because of a legal challenge to the funding of the project. Owners of the neighbouring Palace Pier (HEW 429) mounted the European Court challenge 18 months ago, saying that the funding represented unfair competition (See also *Newsletters* No.90 and No.91). Regrettably, a further photograph in the *Daily Telegraph* on 21 January showed a complete collapse of the concert hall onto the pier deck raising more doubts about restoration of the pier.

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The ever-present civil engineering problems of landslips associated with the ingress of water behind cuttings have caused particular difficulties for railways this year. The *Falkirk Herald* 28 November reported on train services returning to normal after a massive landslip at Carmuir tunnel after 150 tons of rubble and earth blocked the entrances to the twin tunnels just yards from the Falkirk Wheel. The stone facades of the tunnel were also badly

damaged and have now been repaired with concrete. Network Rail says that it is planning to spend £30m on drainage works in Scotland over the next three years.

The *Scotsman* 26 November also discussed the Carmuir event together with news that part of the Aberdeen-Inverness line would be closed for another month following extensive storm damage as engineers were faced with damage at 90 sites from flooding and landslips on a 30 mile stretch between Forres and Keith in Moray. The foundations of six bridges had been undermined by floodwater and more than 20 culverts had collapsed or been damaged.

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Painting and maintaining the Forth Bridge will more than triple in price to £280m and take up to 14 years to complete according to an estimate reported in the *Scotsman* 19 November. The giant structure has to be constantly repaired and repainted, but Railtrack Scotland pulled the plug on previous contractor Rigiblast because the Aberdeen firm had fallen behind schedule. Now the cost and time schedule has risen dramatically after the new contractor, Balfour Beatty, awarded a new contract twelve months ago, has warned that the work will have to be done more thoroughly if the bridge is to be restored to its former condition

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The *Scotsman* 28 December reported an interesting study by Dr Peter Lewis of the Open University in Milton Keynes showing that uneven track set off the Tay Bridge disaster, which happened on 28 December 1879. His reappraisal of Britain's worst structural failure has shown that an uneven section of rail track in the centre of the bridge may have caused an unbearable strain as trains passed over it. Lateral oscillations were induced in the high girders and the oscillations grew with time, because joints holding the bridge together were defective, and this in turn resulted in fatigue cracks being induced in the cast iron.

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Readers of this newsletter are asked, whenever they read of something which they think might deserve mention here, to send it, or a copy, by about a week before the general deadline, to:

Mr A B George BSc FICE
8 Clevedon Close
Exeter
Devon
EX4 6HQ

EDITOR'S NOTE

May I repeat my regular appeal for suitable material for inclusion. Contributions, which are both informative and appeal for further information, or publicise forthcoming conferences or the availability of recent books, etc., are particularly welcome. Contributions should be sent to the Editor **not later than 30 April 2003**.

Contributions on disk are acceptable (Word format). A printed copy will also be required. Diagrams or photographs and/or illustrations may be included.

Dr R A Otter BSc PhD CEng MICE
54 Southbrook Road
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Hampshire
PO9 1RN

email: robert.otter@port.ac.uk

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This Summer, ASCE and PHEW are to visit the ICE East of Scotland Museum in Heriot-Watt University's School of the Built Environment. They will view our new display centered on a wrought iron link from Menai suspension bridge. For the initiated, it is 7.56ft long and of 4 x 1.56in cross-section, widening to 10in at each end with a 4.20in diameter hole. This c.1823 link weighing about 180lb, painstakingly brought here from Wales by Michael Jones and myself (not in my Peugeot 106!), is on loan from the Welsh Assembly Government. Unusually, the link lacks a proof testing mark (a 0.125in diameter saucer-shaped depression with raised cross). It is shorter and of larger cross-section than links used in the open air and was probably used in an anchorage tunnel. The old paint nearest the iron was ivory in colour. Whilst the link was being prepared, we were delighted to field questions from PHEW's *Corresponding Member* and bridge historian, Dr Emory Kemp of West Virginia University's IHTIA.

* Available at £1.50 each from Mr G Stell, RCAHMS, 16 Bernard Terrace, Edinburgh, EH8 9NX

INDIAN RAILWAYS – A VICE-REGAL CONNECTION

The Chairman feels sure that Lord Elgin will not mind the following part of a recent letter from him being shared with Newsletter readers. It reads:

'The recent copy of the PHEW Newsletter had a flier with a wonderful Indian railway bridge under construction and it reminded me that, in fact, I think I do have a number of Indian railway engineering project photographs. The 9th Earl was Viceroy from 1894/1899 and the largest of the railway bridges ever built in India in the 19th century was named after him but was not, in fact, opened to traffic until the year after his return to Britain. The Elgin Bridge went northeastwards from Lucknow.

Some years ago at this very moment [30th January], Lady Elgin and I went to Delhi for the 50th Anniversary Celebrations of India's independence. One of these events was to take us to see the Railway Museum in Delhi where I made a formal re-presentation to the museum of a silver spike which was sent back to my grandfather as being the replica of the last spike to be driven into the completed railway track over the Elgin Bridge. It was good also to see that the Vice-regal train, which had been specially made for Lord Elgin's tour of duty, was in the museum.

We travelled by rail from Delhi to Jaipur and I took the route timetable of the Viceroy's visit in 1896 which passed from Simla through Delhi to Jaipur. The modern train ran at the same speed as the Vice-regal train had run and the copious notes printed in the Vice-regal route memorandum were as apt today as they had been in 1896 and the only change came in that, instead of being welcomed at Jaipur with a host of elephants with all their trappings and carriages and a 21-gun salute, there was only one small moth-eaten elephant. Later in the visit, however, the Maharajah himself entertained us most hospitably . . .'

THE HISTORY PROGRAM OF THE CANADIAN SOCIETY FOR CIVIL ENGINEERING

by Alistair MacKenzie

The Canadian Society for Civil Engineering established a History Program in 1983. The Committee responsible for this Program is the CSCE National History Committee, whose mandate is 'to record and preserve whatever tangible evidence remains of the significant works of earlier

generations of Civil Engineers and through suitable publications and publicity to make the general public and even engineers themselves, more aware of the importance of Civil Engineering in the historic development and welfare of Canada'.

The principal activities of the Committee are:

Historic Civil Engineering Sites

Civil Engineering Sites of important historical significance are identified and commemorated. At an appropriate location on each site, a plaque is displayed containing brief information about the site and its importance. A Comprehensive Document is prepared for each site containing the research information leading to its Nomination, Photographs of the site, and copies of Press coverage of the Commemoration Ceremony, etc. From this information, a brief explanatory brochure is prepared for the information of participants at the 'plaquing' ceremony and of visitors to the site thereafter. To date, 34 National Historic Civil Engineering Sites, 2 Regional Historic Sites and 3 International Sites (with ASCE) have been commemorated and 'plaqued'.

Oral History Program

To date eight interviews with distinguished engineers have been recorded and an Oral History Student Scholarship has been established but no award has yet been made.

Publications

The National History Committee regularly produces a 'History Notes' insert to the Society's bi-monthly magazine *Canadian Civil Engineer*. Committee members have recently produced two books: *A Civil Society* by Peter Hart is a history of the Canadian Society for Civil Engineering and *For King and Country* by Mark Andrews is a biography of Lieutenant Colonel John By. Work is underway on a book on the National Historic Civil Engineering Sites, a Biographical Directory of Canadian Civil Engineers, and a Bibliography of Canadian Civil Engineering. Articles on Civil Engineering History are contributed to several other appropriate journals and magazines, e.g. *Canadian Journal of Civil Engineering* and *Canadian Consulting Engineer*.

Awards Program

An annual award commemorating the founder of the CSCE History Program, the late W Gordon Plewes, is given for outstanding contributions to the literature of Civil Engineering History. This award was first made in 1994 and nine awards have now been presented.

Preservation of Historic Civil Engineering Works

The CSCE National History Committee work closely with

appropriate National and Local organisations to encourage the preservation of Historic Civil Engineering Works.

Research

This has taken the form of physical research in identifying artifacts of interest as well as academic research into early Canadian Civil Engineering History.

Education

Whenever possible, lectures, presentations and seminars are given by committee members to engineering students, engineers and the general public. This initiative includes

presentations on Civil Engineering History to CSCE Section Meetings and to Student Conferences, Student Chapter Meetings, etc. In association with the North American Alliance on Civil Engineering, work has been undertaken to examine ways in which Civil Engineering History could be introduced to the Curriculum of Engineering Schools.

Website

The National History Committee's Website contains information on the committee and its activities and also lists and briefly describes the National Historic Civil Engineering Sites. It can be accessed through the main CSCE Website www.csce.ca

The Canadian Society for Civil Engineering, through its National History Committee was awarded the 2002 'Pierre Berton History Award'. This award is presented annually by Canada's National History Society to recognise individuals or institutions that have made outstanding contributions to popularising Canadian History.

NOTICES ON FORTHCOMING EVENTS

- **Robert Hooke – Events to mark the tercentenary of the death of Robert Hooke (1635–1703)**

Robert Hooke was a true polymath. Author of the influential 'Micrographia' (1665), he was one of the leading natural philosophers of his day. As an inventor, he was second to none. He also played a major role in the rebuilding of London after the Great Fire, while his diaries give a revealing picture of his lifestyle and milieu in the Restoration metropolis.

A major international conference, organised under the auspices of Gresham College, London and co-sponsored by The Royal Society, will give attention to all aspects of Hooke's life and work. The main event will be held at The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG over 7–8 July 2003. The basic conference fee will be £125.

Further information can be obtained from Mrs Julie Jones, 7 Court Road, Letcombe Regis, Oxon OX12 9JH. Tel: 01235 762744; email: julie.jones6@btinternet.com

Another tercentenary commemoration of Hooke's life will be held on *Thursday 2 October 2003 at Christ Church, Oxford*. It will take the form of a meeting in which some of the present holders of the positions occupied by Hooke will take part. Admission is by ticket only and those interested in attending are invited to contact the Secretary, Hooke Commemoration, The Development Office, Christ Church, Oxford OX1 1DP. Tel: 01865 286854; fax: 01865 286587; email: development.office@chch.ox.ac.uk

- **Robert Stephenson (1803–1859): The Man and his Works**

A one-day symposium to commemorate the bicentenary of Robert Stephenson's birth is to be held on *Tuesday 24 June 2003 at the Institution of Civil Engineers, One Great George Street, London*. It has been jointly arranged by the ICE, the Newcomen Society and the American Society of Civil Engineers. Contributors are Michael Bailey, Mike Chrimes, Denis Smith and James Sutherland, and from the other side of the Atlantic, Henry Petroski, Alistair MacKenzie and Larry Lee.

The symposium fee is £35 and further details can be obtained from Mike Chrimes, Head Librarian, Institution of Civil Engineers, One Great George Street, London SW1P 3AA. Tel: 020 7665 2250; email: mike.chrimes@ice.org.uk

- **The Annual Smeaton Lecture**

The Smeaton Lecture has been arranged for Tuesday 22 July 2003 at 1800 at the Institution of Civil Engineers, One Great George Street, London.

The speaker will be Lieutenant-Colonel Benjamin Day of the Royal Engineers who will consider aspects of the construction of the Iron Bridge at Coalbrookdale, opened in 1781.

The meeting is open to both members and non-members of the ICE and booking is not required.

CORRESPONDENCE AND AN APPEAL FOR INFORMATION

Correspondence ... *Brick Jack-Arches*

Dear Editor

I wonder if any of your readers of PHEW *Newsletter* No.96, December 2002, share my concern at reading that the brick jack-arches on Buttington Bridge have been replaced by concrete planks as part of its refurbishment? It seems that this is a common fate of brick jack-arches on bridges carrying traffic. I have often thought that it should be possible to provide a slab over the existing deck, so keeping the jack-arches intact. Has the Bridges Sub-Panel done any survey of just how many bridges with brick jack-arches remain intact? It would be a pity if we suddenly woke up to the fact that they have all gone. Perhaps your readers could assist in reporting examples as any such survey would need to be comprehensive to be of value.

Dr Michael Gould

An Appeal for Information ... *Water Supply Monopoly Proposal in 1696 by Frank M Law*

In the Berkshire Record Office [ref W/AZ 4] is the following text, dated 19 August 1696, drawn to my attention by John Simms, a local historian.

"Proposals made to the Mayor and Aldermen of the towne of Wallingford By Daniel Dennell, Richard Lowbridge and ptners for the Accommodating of ye said Towne with water for one Thousand years under ye Rent of one peppercorn pr yeare.

1st That ye Corporation grant them some convenient place in the Towne to Build a Cisterne etc and also Liberty to Breake up ye Streets & Pavemts to lay in pipes to Dispearce ye water about ye Town to such Inhabitants as will agree for and take ye same and yt no other person shall be admitted to fix any engine or water workes to serve any part of ye sd Town with water during the Tenure aforesd and yt ye sd Mayor &c shall quit free and Discharge ye sd waterworke from all manner of Taxes so fare as in them lyes.

2nd In case of fire ye Mayor &c shall comand ye Engine to worke & ye pipes to be opened to Extinguish the same, any Breach or Damage there by to be repaired at ye said Mayor etc Charge".

This succinct document appears to be the first attempt to produce a supply for subscribers in Wallingford, but it is believed to have fallen on deaf ears. No doubt people stuck to their back garden wells. However, it was surely part of a wider sales drive by venture capitalists to bring modern services to key towns. Do readers know of Daniel Dennell? Richard Lowbridge had already supplied the town of

Bridgwater with water in 1694 from a mill stream at Durleigh that he owned [ref <http://www.mcdonnell-au.com/fh/section10.htm>]. However, I can find neither of them in British Library catalogues, or in *DNB*.

The 1690s clearly saw a boom in this type of activity. Hugh Barty-King in *Water – The Book* (Quiller Press, 1992) describes George Sorocold's "water wheel and other engines" to put water into part of Derby in 1692. In 1694 he joined with Richard Barry of Westminster to gain a 99-year agreement to put a similar system into Norwich. And five entrepreneurs contracted with Bristol Corporation in August 1696 to supply fresh water 'at reasonable rates' using a Sorocold water wheel to lift Bristol Avon water. No doubt many other initiatives were going ahead in a growth spurt in the national economy. Were these new ideas spread by pamphlet, or Royal Society meeting, or by word of mouth?

Any information can be sent to Frank Law at fmlaw@onetel.net.uk or sent in via the Editor (see page 8).

BOOKS ANNOUNCEMENT

The River Tyne from Sea to Source by Ron Thornton. Hardback, Zymurgy Publishing, ISBN 1-903506-03-4. £16.99

Through a series of paintings and sketches this book celebrates the history, cultural heritage, rural splendour and modern development of the Tyne. The book should interest many throughout the world who have affection for and pride in the River Tyne.

The journey begins outside the harbour and follows the river to the confluence near Hexham. From there the course of the River North Tyne is traced to its source at Dedwater Fell beyond Kielder and then the River South Tyne to its origins at Cross Fell beyond Alston.

HEWS IN THE NEWS by Brian George

The Express and Echo, Exeter, 26 November discussed the South West Excellence in England Awards and the Small Visitor Attraction of the Year Award given to an activity on one of the disused branches of the London and South Western railway (HEW 2170) east of Exeter. This branch line to Seaton, opened in 1868 was closed in 1966. However, the track bed from Seaton to Colyton, a village 2½ miles inland, was taken over by the Seaton Electric Tramway and running along the river Axe estuary now attracts thousands of visitors a year. There is an intermediate station at Colyford, where there is a signalled and ungated level crossing of the A3052 coast road.

The Matlock Mercury 14 November has recorded the disastrous collapse of the Cromford Aqueduct, (HEW 1474), which crashed into the ground after a lorry drove into it. Hydraulic cutting gear was used by firefighters to make the Grade I listed structure safe following the accident. The district council conservation officer said that the council was very concerned that this historic structure had been so badly damaged, after pieces weighing up to five tons fell and hoped that it would be restored to its former glory.

The warehouses of Sir Richard Arkwright's Upper Mill (1772) still stand fronting Mill Lane in Cromford. The road in front of the building is spanned by the small aqueduct of internal width 3ft 9in and height 2ft 9in, constructed of ¾in cast-iron plates, having a total length of approximately 75ft, supported on stone pillars. The longest length over the road was 22ft with 14ft headroom.

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In *Newsletter* No.86 I reported on a £3.1m scheme to strengthen Shaldon Bridge, Teignmouth (HEW 1761), SX 931 730 to SX 931 725. Works commenced on 26 March 2001 and have now been completed and were officially opened on 4 December, the previously cantilevered 1.2m footways having been replaced by 2.5m pedestrian and cycleways. These are now carried on steel girders 1,000 deep supported on steel piles 508 diameter encasing concrete in turn supporting 358 diameter columns on each side of the existing 6m carriageway and in line with the carriageway piers. All this has enabled the 7.5 tonne vehicle weight restriction to be removed. The lifting span at the Teignmouth end has been completely rebuilt. Design has been by Devon County Council with South West Highways Limited as the contractor.

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The Grantham Canal (HEW 1850) is the longest of ten canals engineered by William Jessop in South Nottinghamshire and the adjoining counties. It was constructed between 1793 and 1797 as a 33 mile waterway connection, with 18 locks, between Grantham and West Bridgford, near Nottingham. The canal was abandoned in 1936 and is no longer navigable (except by canoe) but the towpath is walkable throughout its length.

The *Inland Waterways Association Head Office Bulletin* for October recorded that in September, Waterway Recovery Group, with assistance from Grantham Canal Restoration Society and Grantham Navigation Association, completed a weeklong canal camp to start restoration work on the flight of locks near Cropwell Bishop, where locks 9, 10 and 11 are located in a section that is now dry. The aim was to clear out silt and rubble from the floor so that British Waterways can survey the structures. BW and local restoration groups plan to reopen this stretch of canal, with support from WRG, within seven years.

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The *Inland Waterways Association Head Office Bulletin* for November tells us that the Company of the Proprietors of the Chelmer and Blackwater Navigation Limited was established by primary legislation in June 1793. This enabled Richard Coates and John Rennie to build the navigation between Colliers Reach Heybridge, and Springfield Basin, Chelmsford. The waterway is still governed by the original Act of Parliament and 'transportation' is still the penalty for those found guilty of damaging the Navigation. (Rennie was engineer and Coates was resident engineer).

Working with this company, IWA's Chelmsford Branch has identified works totalling in excess of £600,000 that need to be undertaken during the next four years. So far applications to the Countryside Agency for a Lottery Heritage initiative grant, and Essex Environment Trust for a Land Fill Tax Scheme grant, have all been successful. Meanwhile Essex Environment Trust has awarded a grant for £24,500, which will be split into two parts to support the funding of repairs to the lock paddle gear (£11,500) and repairs to Stoneham Weir.

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Also from this bulletin we read that work on the restoration of the Cotswold canals, mentioned in the last *Newsletter*, having required an Environmental Impact Assessment, has revealed 106 badger sets along the route, and their relocation may involve the purchase of land. The project team is having to monitor bat use of the Sapperton tunnel because it has been long abandoned and roof falls will have reduced the draught in winter when the bats are hibernating.

Restoration work on the project is likely to proceed in two phases as originally foreseen, with the first phase including from Saul, on the Gloucester to Sharpness canal, to Stroud (HEW 292), and another length from Inglesham, near Lechlade, to Siddington, near Cirencester (HEW 1139),

being the priority over the next five years. A bid to the Heritage Lottery Fund is likely to be submitted in either December 2002 or June 2003.

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The same *Bulletin* for December noted that British Waterways intended to floodlight the spectacular Caen Hill flight of sixteen locks at Devizes (HEW 1078) for Christmas to celebrate the completion of the five-year £30m Heritage Lottery Fund backed improvement works on the Kennet and Avon Canal. The locks were closed in 1951 but were reopened by Her Majesty Queen Elizabeth II on 8 August 1990. The event will mark the 40th anniversary of British Waterways Board, which was formed under the 1962 Transport Act to take over the canal system on 1 January 1963. *The Times* 30 December showed a photograph of the floodlit locks and noted that they would be lit until Twelfth Night (January 6). Meanwhile the *Bulletin* for January 2003 has noted that British Waterways has started a two-year £1m programme of conservation work to restore the Georgian Grade I listed Dundas Aqueduct (HEW 188) on the canal at Limpley Stoke, near Bath.

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British Waterways has signed an agreement with Bellway Homes for a £35m development at Chester's historic Tower Wharf on Chester Canal (HEW 1202), which eventually formed part of the Shropshire Union Canal. The proposed development overlooks the newly restored basin adjacent to the canal, which was filled in during the 1950s but cleared out and restored by BW in July 2000. The restored basin will provide the focal point for 174 dwellings, offices, leisure facilities and a working boatyard.

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The Aston to Maesbury section of the Montgomery Canal is due to be reopened formally on 4 April following many years of work to restore Aston lock flight and the pounds below to the start of the dry section. Much of the work on this section has been financed by Inland Waterways Association, mostly from the Humphrey Symons legacy, notes *Head Office Bulletin* of January 2003. British Waterways has engaged additional staff to work on the canal to progress its restoration and in particular to deal with the sensitive nature conservation issues.

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The Daily Telegraph 30 December showed a woeful photograph on the front page of Brighton's West Pier (HEW 212), a section of which had fallen into the sea the previous day after being buffeted by a strong wind and heavy seas. A walkway had collapsed, taking with it the south-east corner of the concert hall. The collapsed part of the structure, most of which was built in 1866, has raised fresh doubts about a £20m plan to restore the only Grade I listed seaside pier, closed to the public for 27 years.

Rachel Clark, general manager of the West Pier Trust, described the loss of the concert hall as a tragedy, saying that the Trust had been prevented from restoration that would have saved the pier because of a legal challenge to the funding of the project. Owners of the neighbouring Palace Pier (HEW 429) mounted the European Court challenge 18 months ago, saying that the funding represented unfair competition (See also *Newsletters* No.90 and No.91). Regrettably, a further photograph in the *Daily Telegraph* on 21 January showed a complete collapse of the concert hall onto the pier deck raising more doubts about restoration of the pier.

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The ever-present civil engineering problems of landslips associated with the ingress of water behind cuttings have caused particular difficulties for railways this year. The *Falkirk Herald* 28 November reported on train services returning to normal after a massive landslip at Carmuir tunnel after 150 tons of rubble and earth blocked the entrances to the twin tunnels just yards from the Falkirk Wheel. The stone facades of the tunnel were also badly

damaged and have now been repaired with concrete. Network Rail says that it is planning to spend £30m on drainage works in Scotland over the next three years.

The *Scotsman* 26 November also discussed the Carmuir event together with news that part of the Aberdeen-Inverness line would be closed for another month following extensive storm damage as engineers were faced with damage at 90 sites from flooding and landslips on a 30 mile stretch between Forres and Keith in Moray. The foundations of six bridges had been undermined by floodwater and more than 20 culverts had collapsed or been damaged.

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Painting and maintaining the Forth Bridge will more than triple in price to £280m and take up to 14 years to complete according to an estimate reported in the *Scotsman* 19 November. The giant structure has to be constantly repaired and repainted, but Railtrack Scotland pulled the plug on previous contractor Rigiblast because the Aberdeen firm had fallen behind schedule. Now the cost and time schedule has risen dramatically after the new contractor, Balfour Beatty, awarded a new contract twelve months ago, has warned that the work will have to be done more thoroughly if the bridge is to be restored to its former condition

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The *Scotsman* 28 December reported an interesting study by Dr Peter Lewis of the Open University in Milton Keynes showing that uneven track set off the Tay Bridge disaster, which happened on 28 December 1879. His reappraisal of Britain's worst structural failure has shown that an uneven section of rail track in the centre of the bridge may have caused an unbearable strain as trains passed over it. Lateral oscillations were induced in the high girders and the oscillations grew with time, because joints holding the bridge together were defective, and this in turn resulted in fatigue cracks being induced in the cast iron.

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Readers of this newsletter are asked, whenever they read of something which they think might deserve mention here, to send it, or a copy, by about a week before the general deadline, to:

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EX4 6HQ

EDITOR'S NOTE

May I repeat my regular appeal for suitable material for inclusion. Contributions, which are both informative and appeal for further information, or publicise forthcoming conferences or the availability of recent books, etc., are particularly welcome. Contributions should be sent to the Editor **not later than 30 April 2003**.

Contributions on disk are acceptable (Word format). A printed copy will also be required. Diagrams or photographs and/or illustrations may be included.

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