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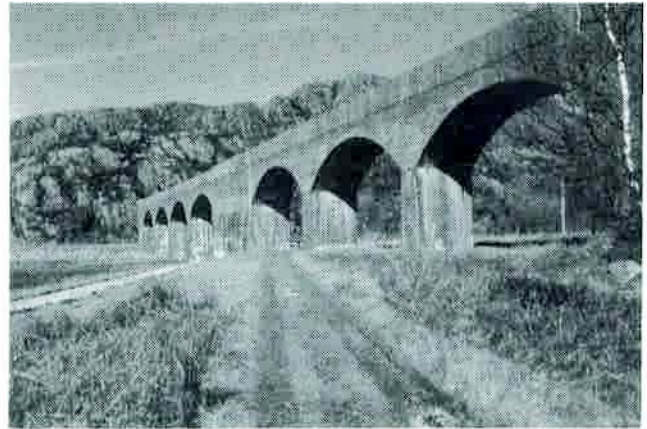
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Loch-nan-Uamh Viaduct

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MEDIA RESPONSE TO THE SOLUTION OF A HIGHLAND 'MYSTERY'

by The Editor

Readers of this *Newsletter* will already be aware of the hitherto unsuccessful attempts to discover whether or not a horse and cart had met an untimely end, buried in the pier of a nineteenth century Highland viaduct (see *Newsletter*, No.88). The use of radar scanning finally proved the truth of the tale and the announcement of the discovery received extensive media coverage. The press release which sparked such interest is as follows:

There has been a long-standing legend in the West Highlands that, as a result of an accident, a horse and cart belonging to contractor Robert McAlpine was buried in a pier of a concrete viaduct on the West Highland Railway Extension during its construction in c.1899. If true this would probably be the only known case of a horse and cart entombed within a British viaduct.

In 1984 Roland Paxton of the Institution of Civil Engineers' Panel for Historical Engineering Works attempted to resolve this matter by following up a suggestion that the remains were in Glenfinnan Viaduct. Holes were made through the walls of the hollow King post (main) piers and internal photography was

done gratis by Geoff Nelson, Steeplejack using a fish-eye lens on the end of a pole. Nothing was found. On advice from Mr Macmillan of Arisaig, the search then switched to the curiously wide central pier of the dramatic 8-span Loch-nan-Uamh viaduct. Drawings at Railtrack show this pier with a cavity measuring 37 x 11ft in plan, with 5ft thick side walls and 9ft thick end walls. In 1997 Professor Paxton arranged for radar specialist Dr Colin Stove to scan through the pier, but the work was not completed. Last year Jim Shipway, great-grandson of the Railway's designer, organised the drilling of holes through the pier wall and found not a cavity, but stone rubble!

Professor Paxton then advised Sir William McAlpine, great grandson of Robert McAlpine, the viaduct's builder, that he thought the matter could be resolved by using the latest state-of-the-art radar scanning techniques developed by Radar World Limited, to whom Dr Stove is the Chief Scientific Consultant. A research exercise was then set up by Professor Paxton and Dr Stove, sponsored by Sir William McAlpine, and a site survey was carried out on 7 April 2001 using specially developed equipment.

the history of Water Towers indicated that they were exploring publication opportunities.

Finally, it was announced that John Carter the Yorkshire representative, had decided to stand down from the Panel after many years of service. Arrangements are in hand for his replacement.

THE CHAIRMAN'S COLUMN

by Professor Roland Paxton

In March as part of a 3-day visit to Denmark I presented a lecture in Copenhagen on the work of PHEW to the societies for the History of Technology (HITEK) and Roads and City Planning (V & B) of the Association of Engineers in Denmark (IDA). HITEK was formed in 1997 and is at present developing its activities. V & B was established earlier and is currently trying to establish a Danish Roads Museum. My hosts were Carl Johan Hansen, Civil Engineer, of Denmark's Ministry of Transport Road Directorate, Secretary of both societies and Dr Tom Rallis, Chairman of the Historical Engineering Section of HITEK. Our guide to historic bridges on Day 3 was Kirsten-Elizabeth Høgsbro former Museum Keeper, National Museum of Denmark.



Carl Johan Hansen and Tom Rallis at Øresund
© Roland Paxton

Day 1 commenced with a visit to the offices of COWI consulting engineers where we were the guests of Anton Pedersen, Head of the Bridges Department. He designed the huge Store Bælt suspension bridge with a clear span of 1.62km. After being shown an impressive scale model of this, we travelled from the island of Zealand, on which Copenhagen is situated, via the newly opened 18km long Øresund tunnel/bridge to Malmö, Sweden. At Malmö Technical Museum the exhibits included the Viking

Raving Enge timber-piled road c.980 and other examples of early Danish road construction. At Malmöhus Castle (1536) traditional style timber bridges were inspected. Old buildings of Danish origin in the Great Square included the Gothic style St Petri Church (1320), the Town Hall with its renaissance façade (1546), Residens (1730) (County Headquarters) with Empire façade and the Lord Mayor's, Knock's House (1515).



Traditional style timber bridges at Malmöhus Castle (1536)
© Roland Paxton

From Malmö we went north to Helsingborg with its notable Kärnan tower dominating the townscape. We returned by ferry to Denmark at Helsingør and Kronborg Castle where, amid 16th century architectural Gothic style splendour we failed to detect Hamlet's father's ghost! On the approach road to Fredensborg Castle (1720) with its authentically renovated royal road we stopped to admire a King Christian VII milepost. Our day concluded at Fredericksborg Castle (1569) with more traditional timber bridges.



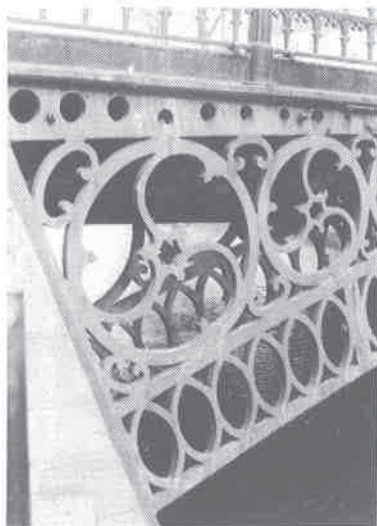
Mile post of the reign of Christian VII (c.1780)
© Roland Paxton

Day 2 was spent in Copenhagen and included visits to the historic harbour, bridges, the renovated Kastellet, and other early buildings with notable spires and towers. At the Historical Institute of Copenhagen University several hours before my lecture were well spent in the informative company of its Director, leading industrial archaeologist, Professor Ole Hyldtoft.



18th century bridge leading to Parliament Building,
Copenhagen
© Roland Paxton

Day 3 commenced with a visit to the Great Belt (Store Baelt) Exhibition Centre, where a lecture about Store Baelt bridge was in progress and we saw attractive displays. Then eastwards over the bridge and across Fünen Island to Little Belt (Liuibaelt) suspension bridge (c.1964) where we viewed an exhibition about the bridge in an anchorage chamber with the Bridgemaster. We then crossed the bridge into Jutland and returned to Fünen via an impressive 1.2km long 1930s combined road/railway multi-span steel truss bridge, Little Belt designed and constructed by Professor A Engelund. On our return we stopped to inspect Denmark's oldest cast iron bridge at Odense



Cast-iron bridge, Odense – springing detail
© Roland Paxton

(1844) (see Dr Tom Day's article below) and the elliptical masonry arch Vårbyå Bridge (1785) in Zealand on the road between Slagelse and Korsør. Both bridges are good examples of technology transfer, the latter being the more important in Danish road development.

It was not until the 1760s and 1770s that a serious effort was made to improve Denmark's roads with the setting up of road commissions and calling in expert assistance from France in the person of one of J R Perronet's best students from the Ecole des Ponts et Chaussées, Jean Marmillod. In 1764, under the superintendence of Marmillod and two other French road engineers, the building of a highway network in North Zealand was begun in accordance with high quality French practice. Marmillod trained a corps of competent Danish road engineers who faithfully followed his methods, of which Vårbyå Bridge was the largest and finest of three bridges that we saw exhibiting a 1750s French influence.

Recent publications received are a book from Japan and a copy of West Virginia University's latest *IHTIA Review*, XI, 1, with informative articles on the new HABS/HAER database and covered bridges. The book, published by the Japanese Society of Civil Engineers Historical Studies Committee, is an illustrated inventory of 2,000 historical engineering works throughout modern Japan (1865-1945). The Panel congratulates the Committee on a fine achievement.



Vårbyå Bridge, 1785
© Roland Paxton

FREDERIKSBRO, ODENSE – DENMARK'S FIRST IRON BRIDGE

by Thomas Day

The writer acknowledges that this essay is broadly based on an article 'Fra Ironbridge til Frederiksbroen' by Henrik Harnow (MORGENPOSTEN Fyens