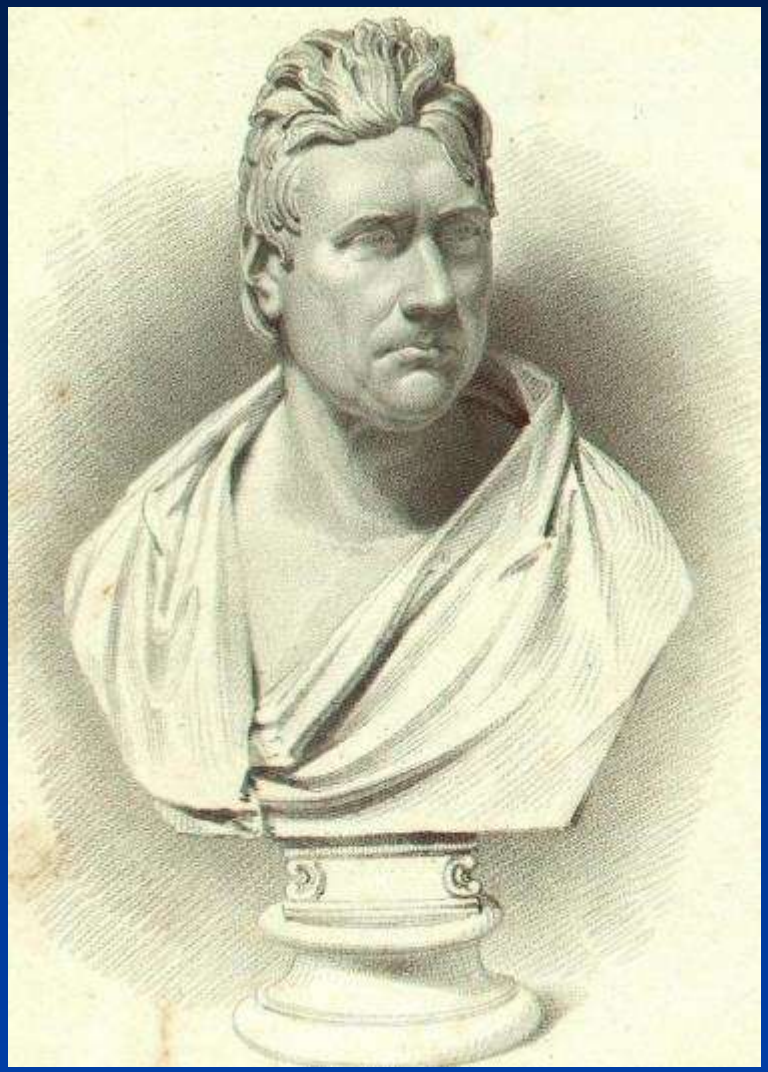
John Rennie in Scotland 1779-1821

Society of Antiquaries of Scotland after dinner presentation on 30 November 2012

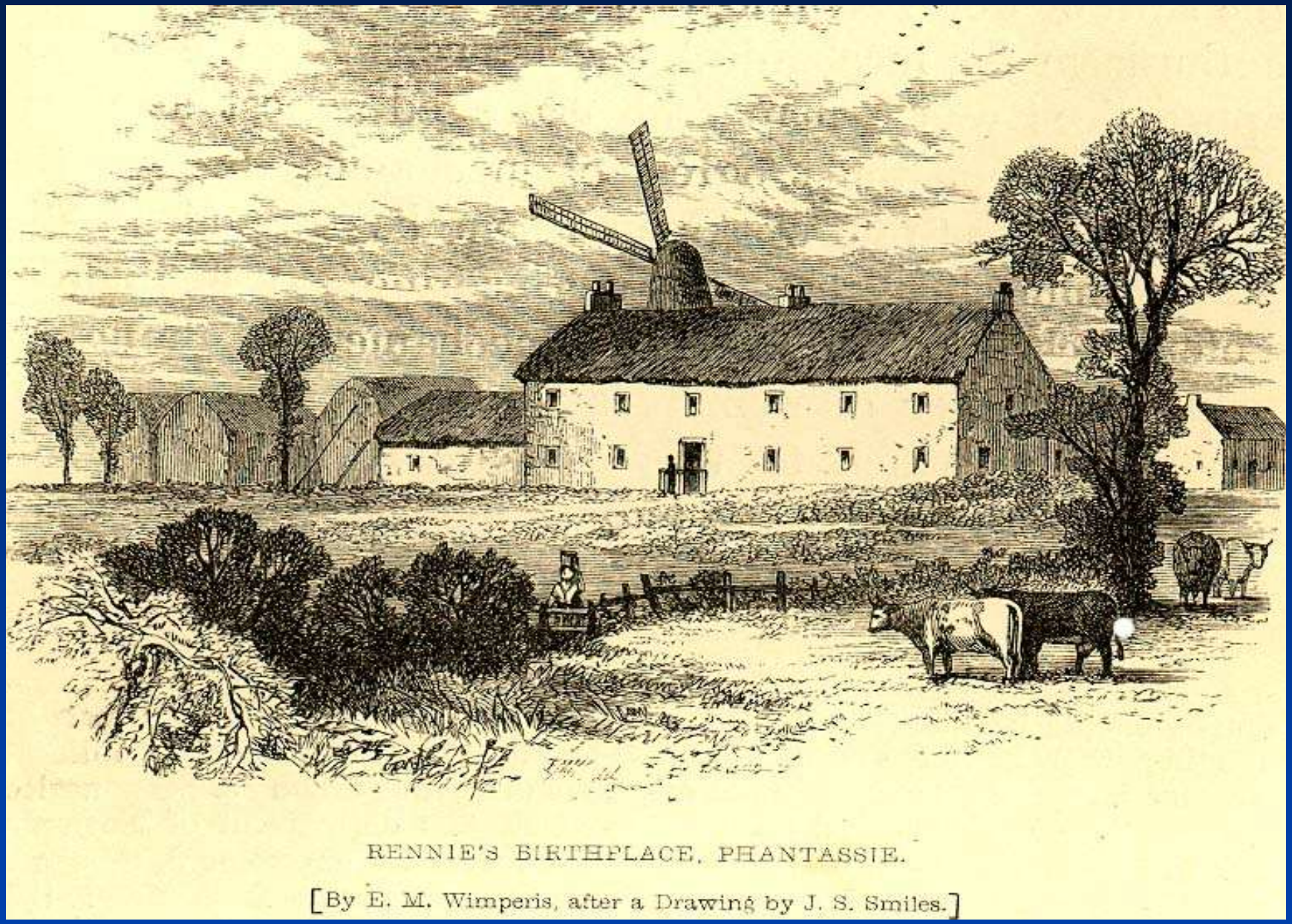
by

Professor Roland Paxton FRSE, Heriot-Watt University



John Rennie (1761-1821) Bust and grave inscription in St Paul's Cathedral. Rennie's date of birth was actually 7 June 1761

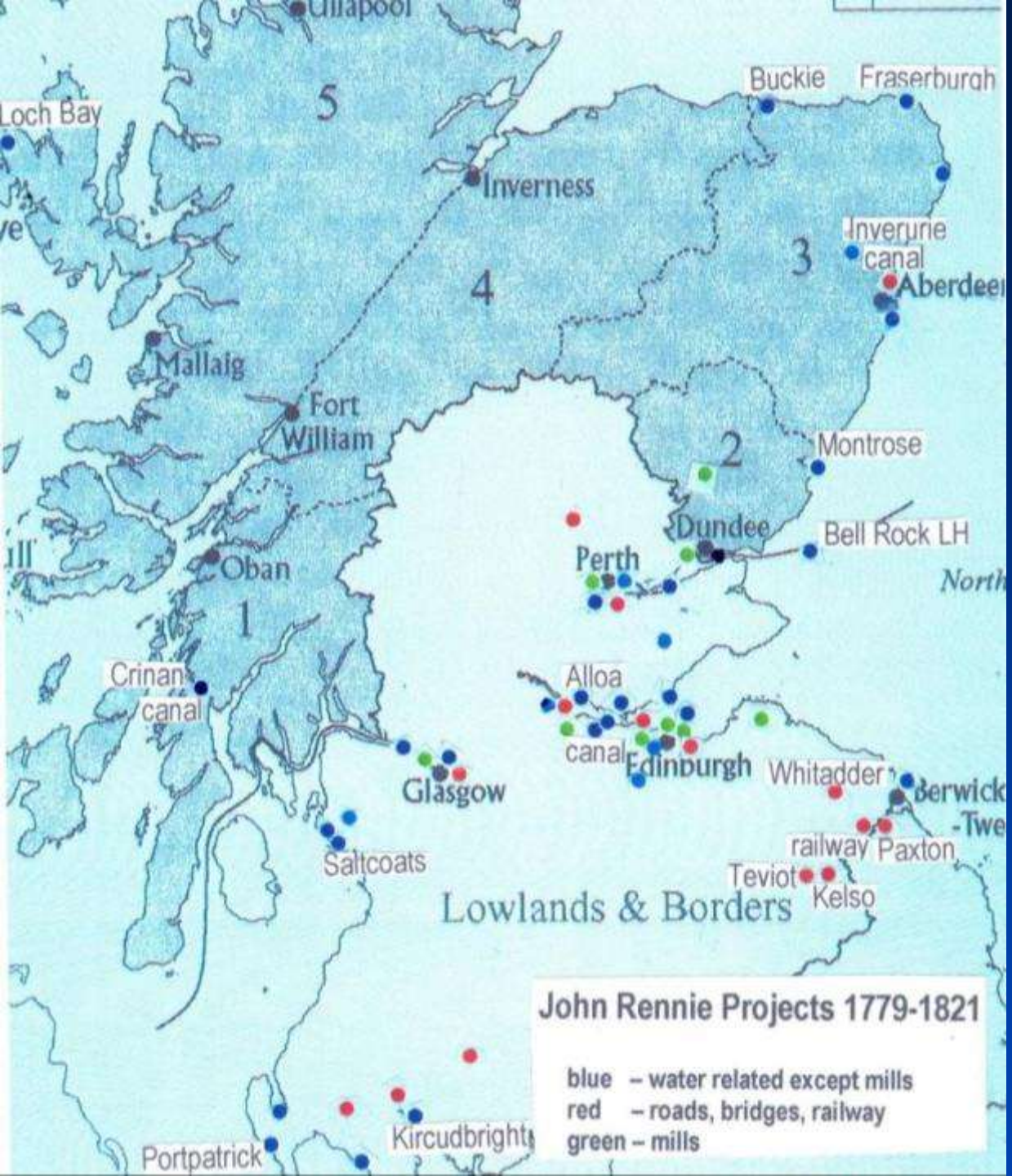
Here lie the mortal remains of
JOHN RENNIE
CIVIL ENGINEER
F.R.S. F.A.S.
Born at Phantassie in East Lothian
7th July 1761
Deceased in London 4th Octr. 1821
THIS STONE
is dedicated to his private virtue
and records
the affection and the respect of
his family and his friends
but
the many splendid and useful works
by which
under his superintending genius
England, Scotland and Ireland
have been adorned and improved
are
THE TRUE MONUMENTS
OF
HIS PUBLIC MERIT
Waterloo—Southwark—Bridges
Plymouth Breakwater
Sheerness Docks &c, &c. &c.



Rennie's birthplace, Phantassie, East Linton

man of the name of Rannie. He was intended for a mill-wright, and was breeding to that buſineſs under the famous Mr Mackell at Linton, Eaſt Lothian. He had not then attended Mr Gibſon for the Mathematics, &c. much more than ſix months; but on his examination, he diſcovered ſuch amazing powers of genius, that one would have imagined him a ſecond Newton. No problem was too hard for him to demonſtrate. With a clear head, a decent addreſs, and a diſtinct delivery, his maſter could not propoſe a queſtion either in natural or experimental philoſophy, to which he gave not a clear and ready ſolution, and alſo the reaſons of the connection between cauſes and effects, the power of gravitation, &c. in a maſterly and convincing manner; ſo that every perſon preſent admired ſuch an uncommon ſtock of knowledge amaſſed at his time of life. If this young man is ſpared, and continues to proſecute his ſtudies, he will do great honour to his country.

David Loch's school examiner's report on Rennie at Dunbar High School in 1778.
Rennie was at Edinburgh University 1780-83 – studied part-time under Professors Robison and Black
FRSE 1788 FRS 1798

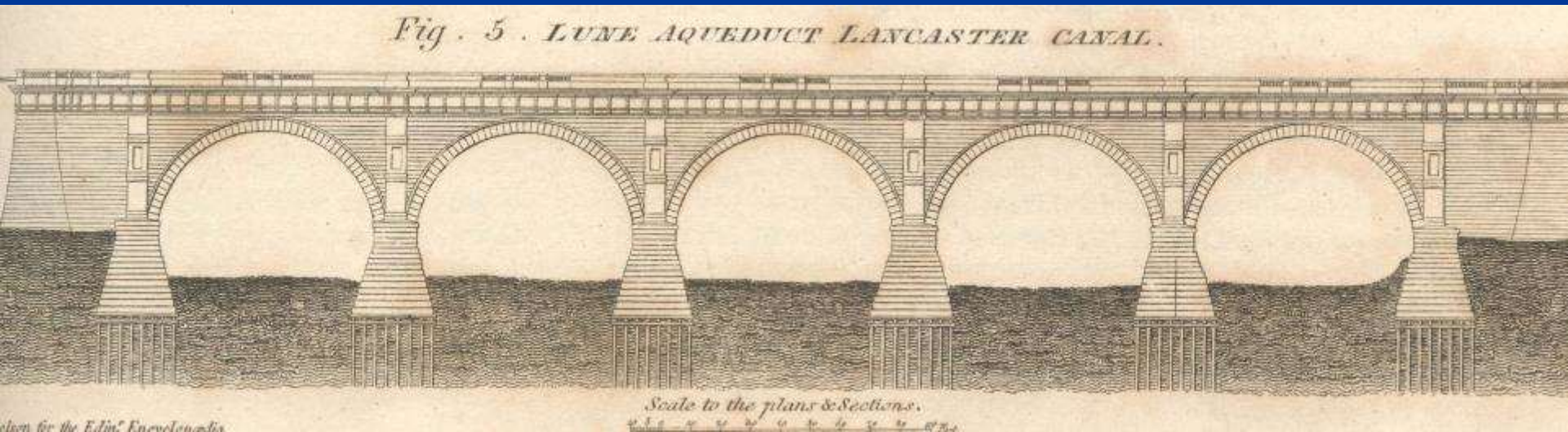


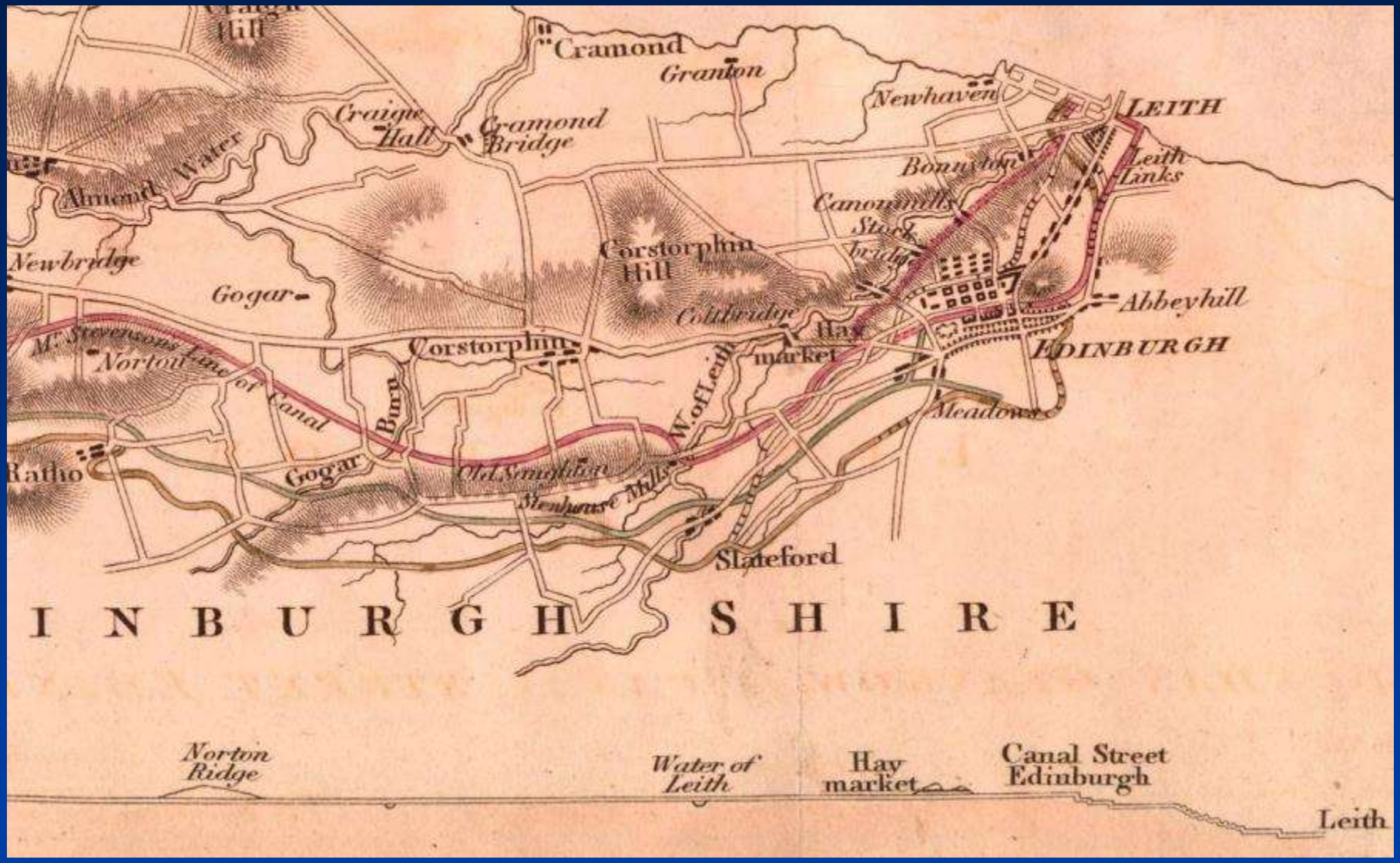
Rennie's Scottish Projects.
His early work included: mills and millwork (green) canals, harbours water supply (blue) roads, bridges, Railway (red)

to Rochdale — I am now on my way to Inveraray
to survey [illegible] — Loch Crinan to Loch Gilp two
arms of the sea — for Vessels of large Burthen — I shall
be at Inveraray for a fortnight to come. where any
letters addressed to the Post Office will find me —
from Inveraray I go by the Ports of Tobermory in
the Isle of Mull to Ullapool & then to Wick in
Caithness to survey the different Harbours at that
place & about the beginning of August next

Rennie letter re. Rochdale Canal in July 1792. Busy life – Crinan Canal survey – Inveraray, Tobermory, Ullapool, Wick, Inverness

9-mile Crinan Ship Canal 1794-1809 and Lune Aqueduct 1798





Edinburgh and Glasgow Canal project – Rennie's line (brown) connecting Leith harbour. Baird's line (green) begun 1817

proposal

Rennie's Queensferry ramped pier improvements 1808-17.

Note Hawes (Newhalls) and Longcraig piers

tertained of it have fallen very ſhort of the reality. It appears from an account kept by the ſuper-
intendant, that during the year ending 15th May 1811 there croſſed at the Queen's-ferry TWO HUNDRED AND TWENTY-EIGHT perſons every day throughout the year. And on ſome days ſo many as FOUR HUNDRED AND FORTY-SEVEN were ferried over. There paſſed during the ſame year

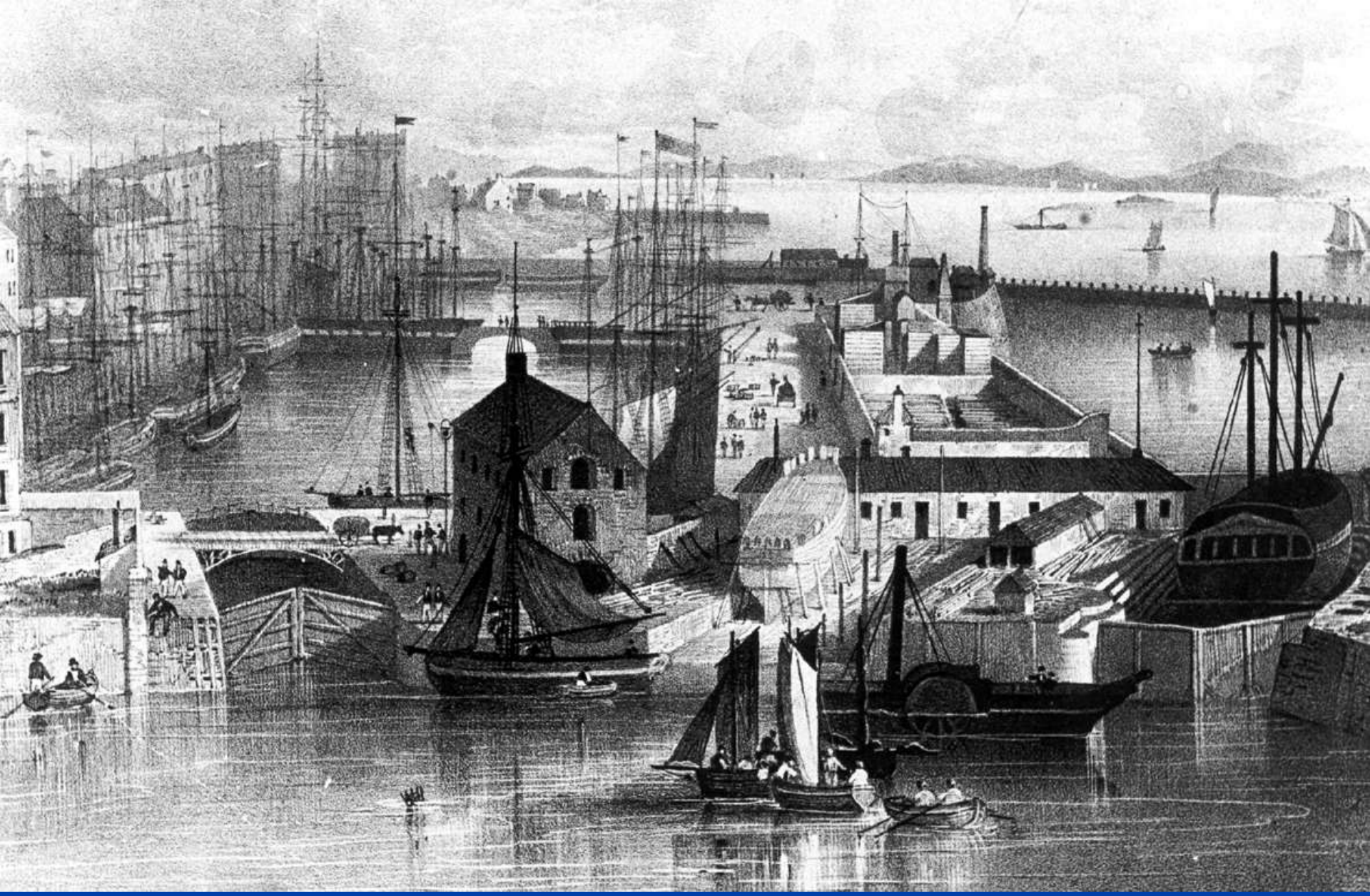
Carriages	1515
Carts	4254
Horſes	13,154
Cattle	18,057
Sheep	25,151
Barrell Bulk	5,520
Dogs	2,615

by far the greater part of which travelled along the Great North Road. The value of the goods intended for ſale amounting to near 400,000l., making a total of inſurable property conveyed by this communication of about 900,000l.

Queensferry patronage in 1811 from Rennie's report

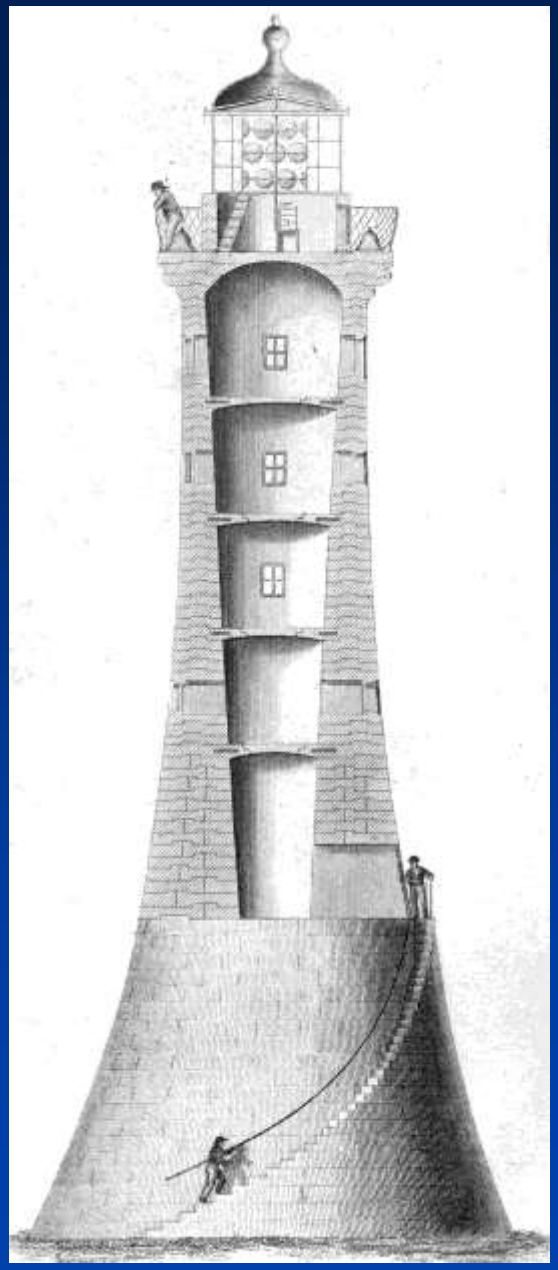
Hawes Pier, Queensferry in 2008

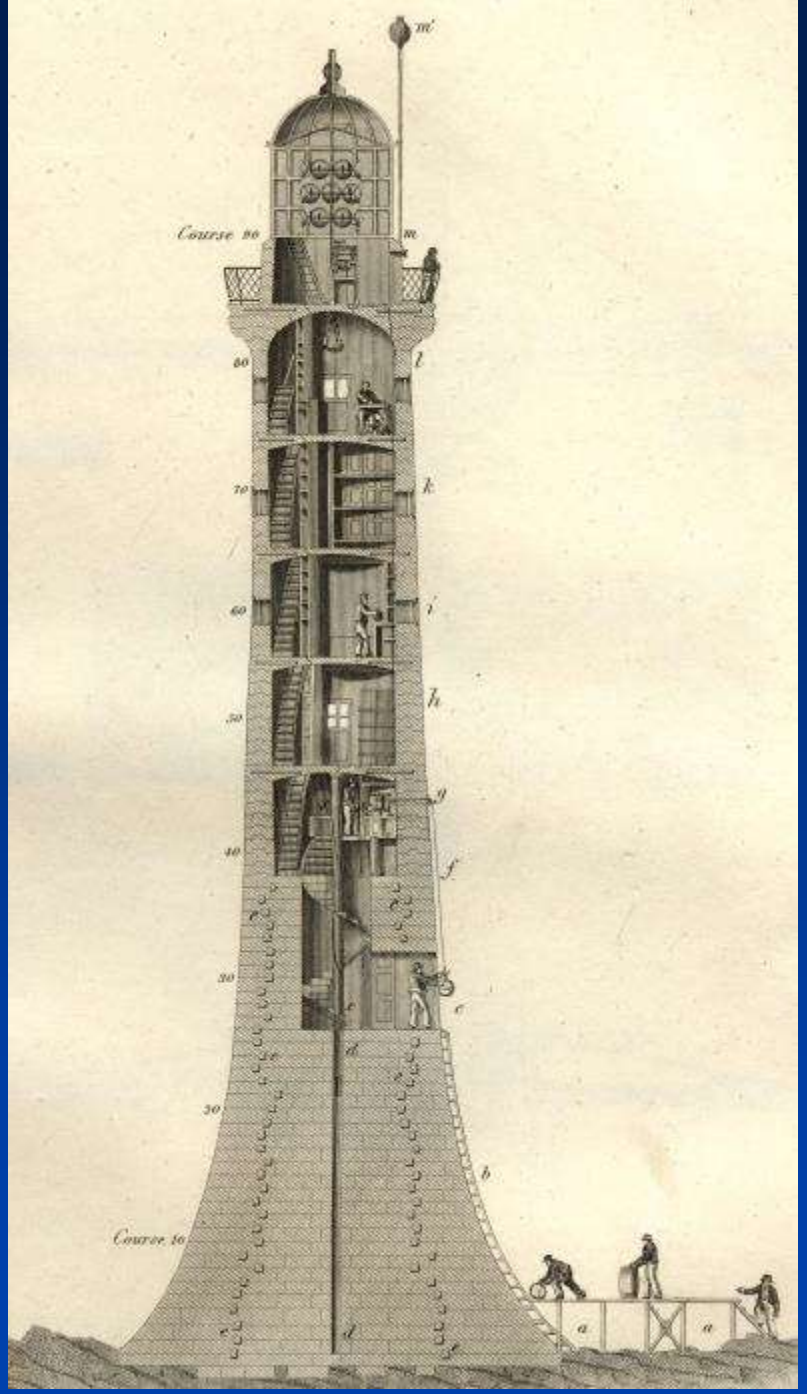
Leith docks entrance lock as preserved in 2010



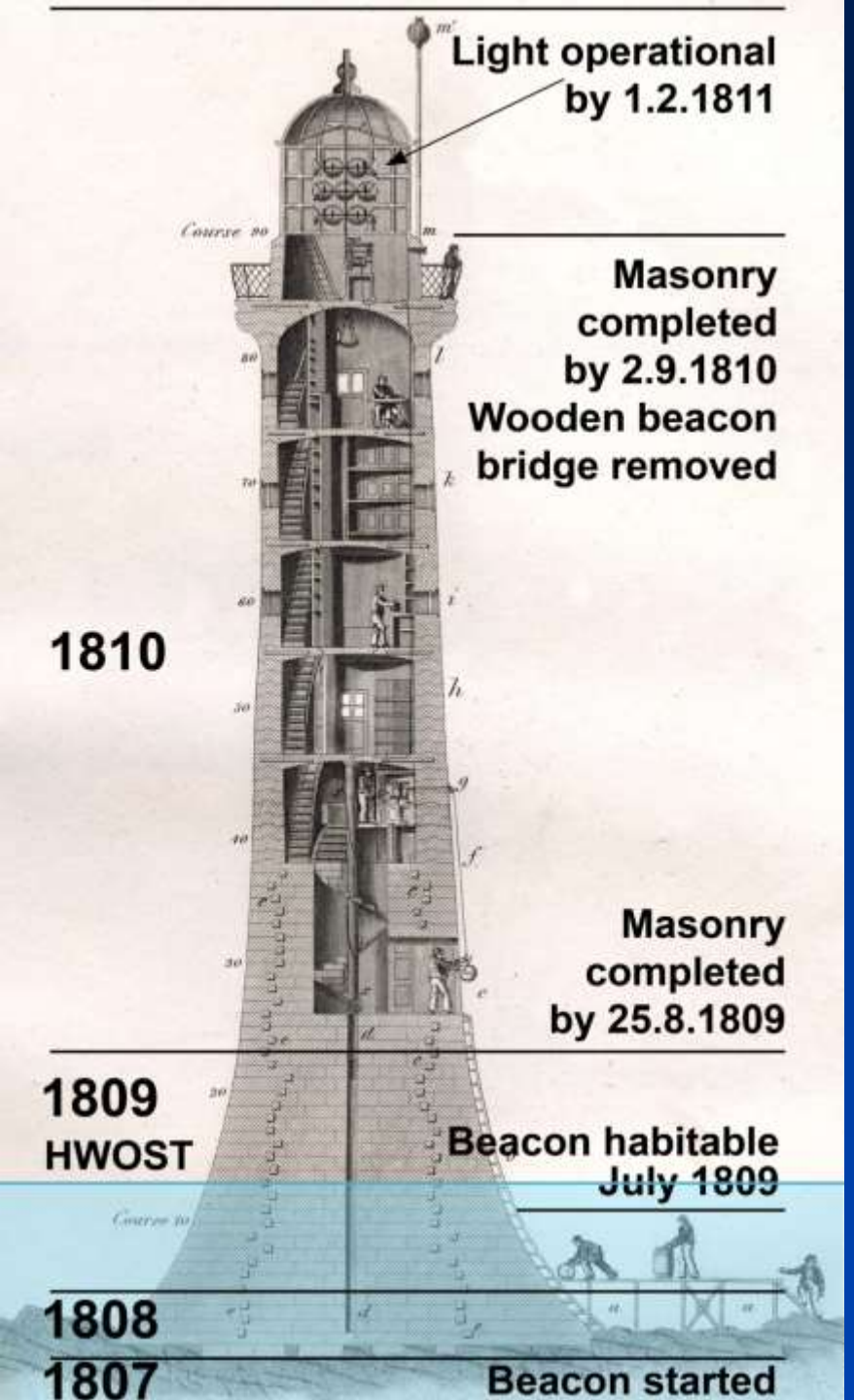
Leith docks in 1838 – note Rennie’s entrance lock and docks (left) and dry dock (right)

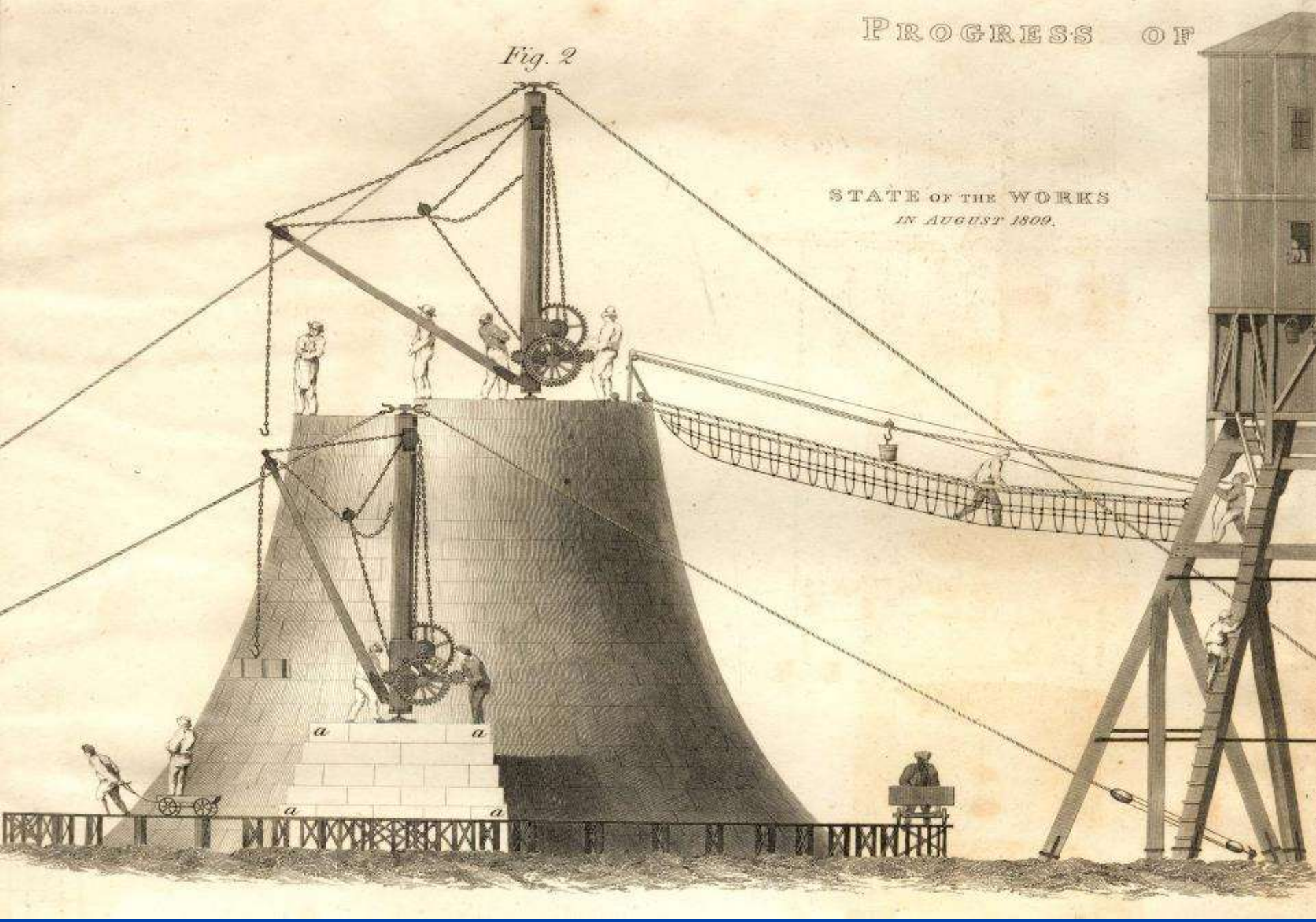
Bell Rock Lighthouse - Stevenson's design (left) 1800-06 and as-built (right) under Rennie 1807-10



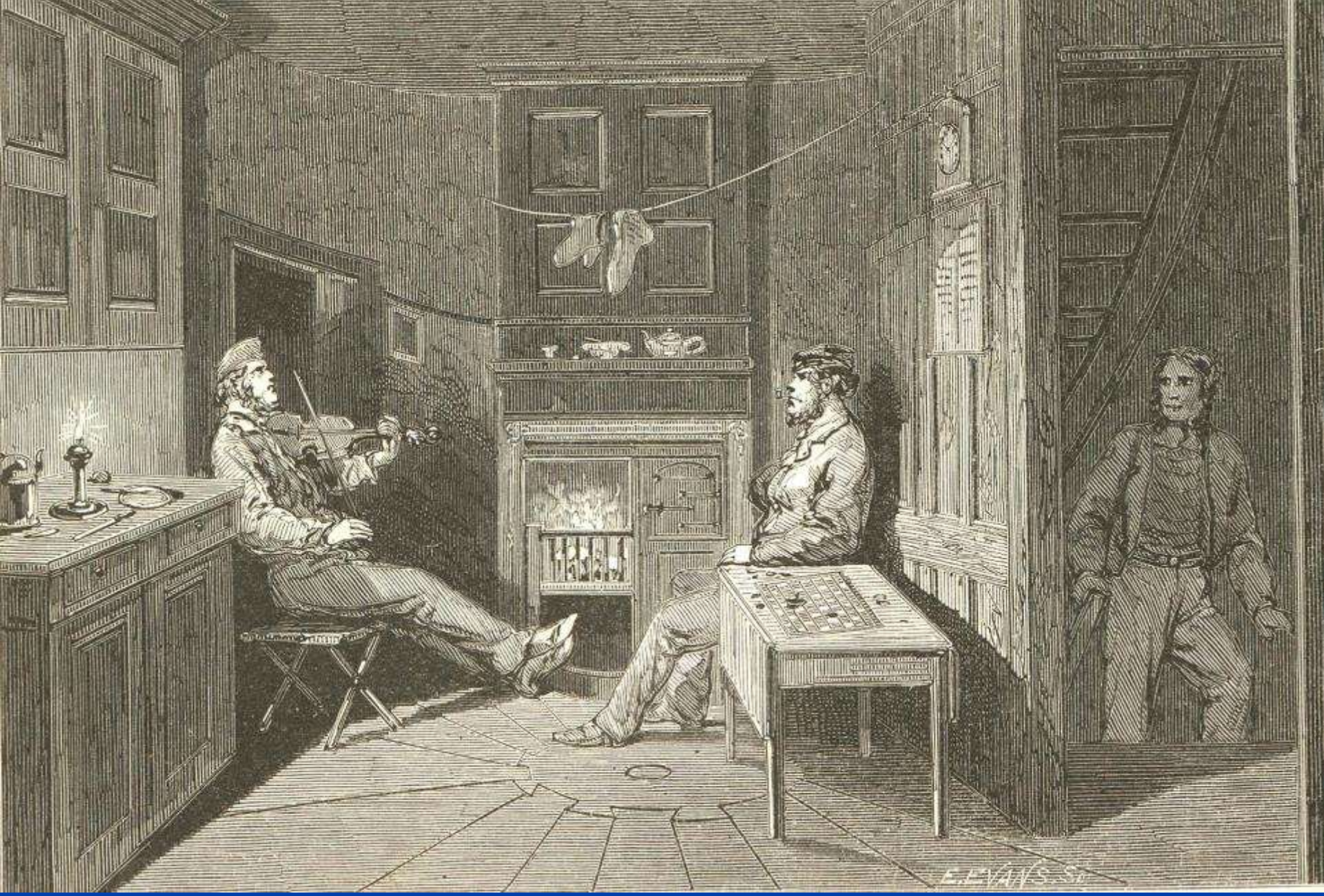


Bell Rock Lighthouse as erected 1807-11. Slow progress until beacon built alongside, then completion of masonry in 13 months

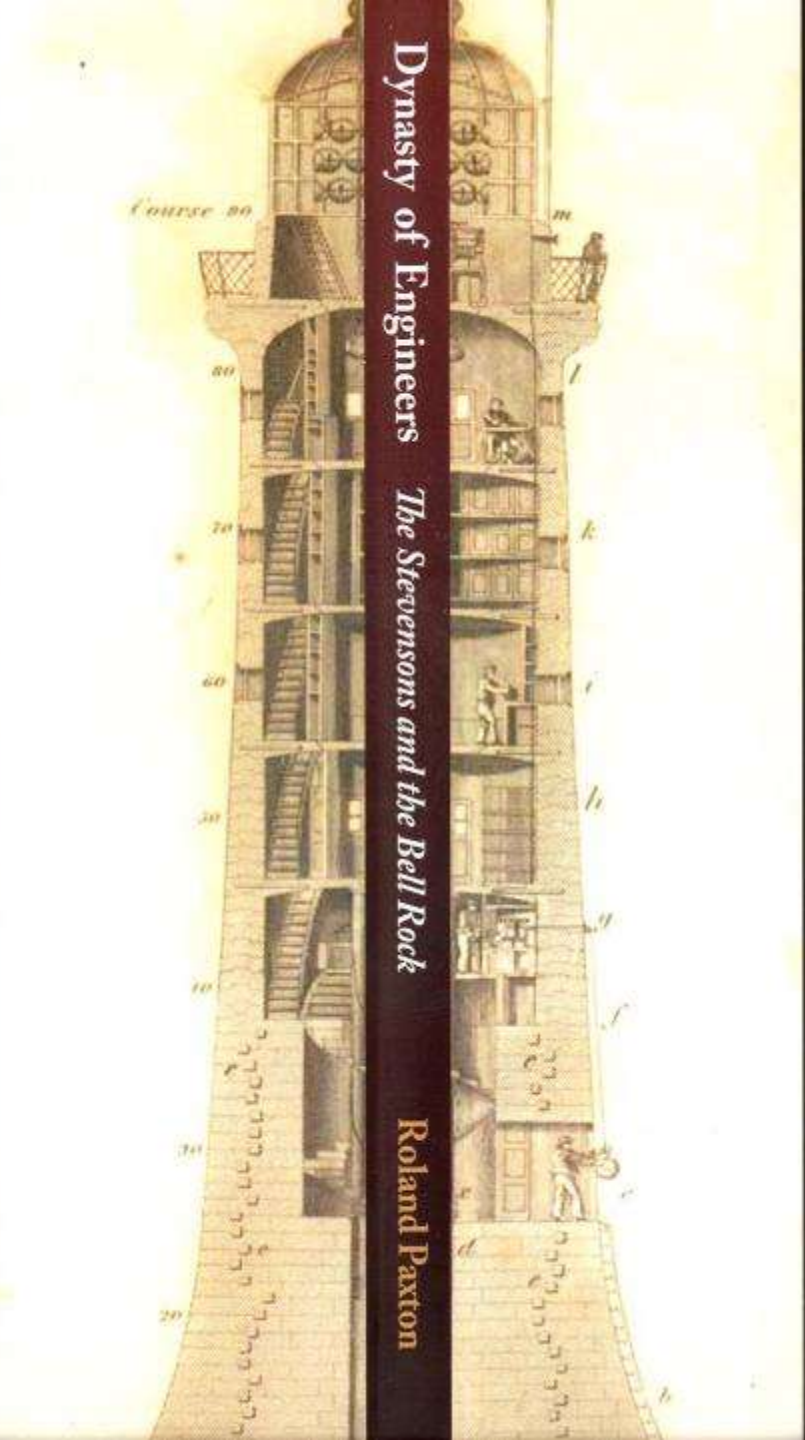




Bellrock Lighthouse progress 1809 – note innovation



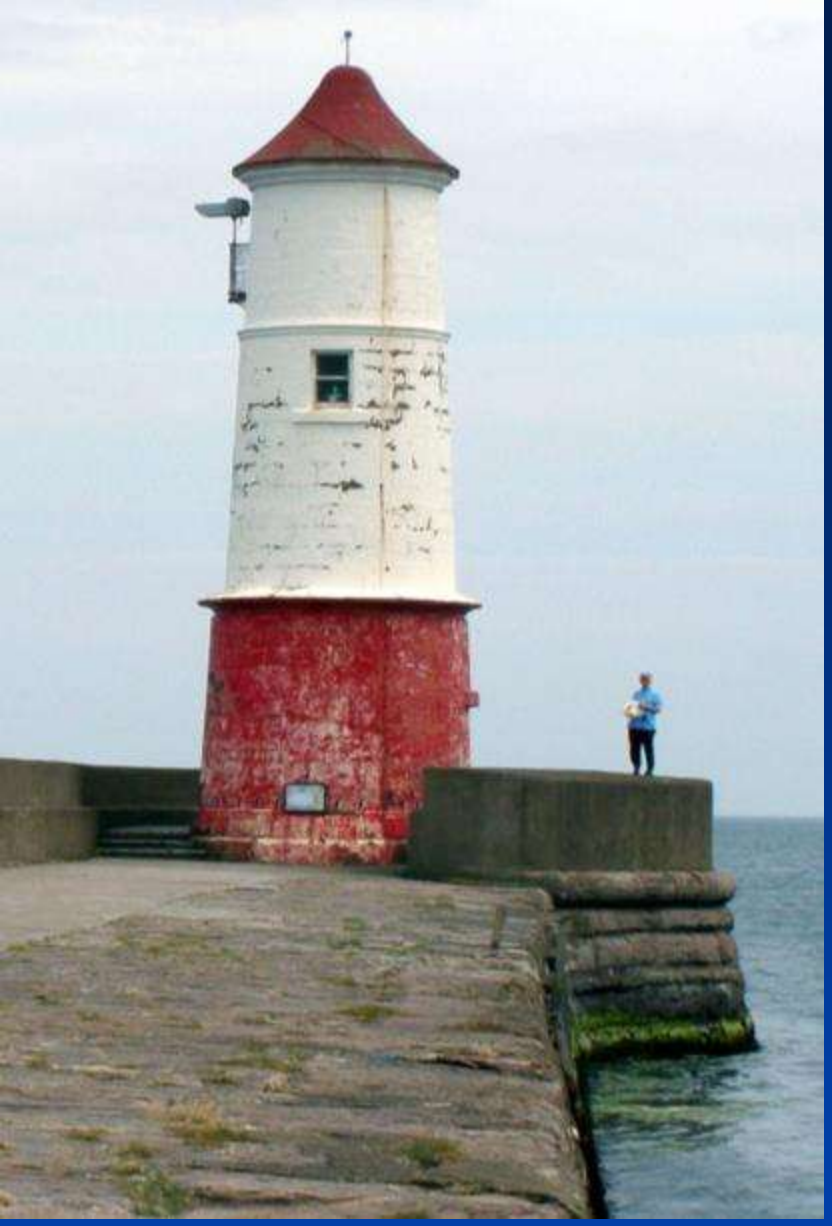
Bellrock Lighthouse kitchen – note floor dovetailing

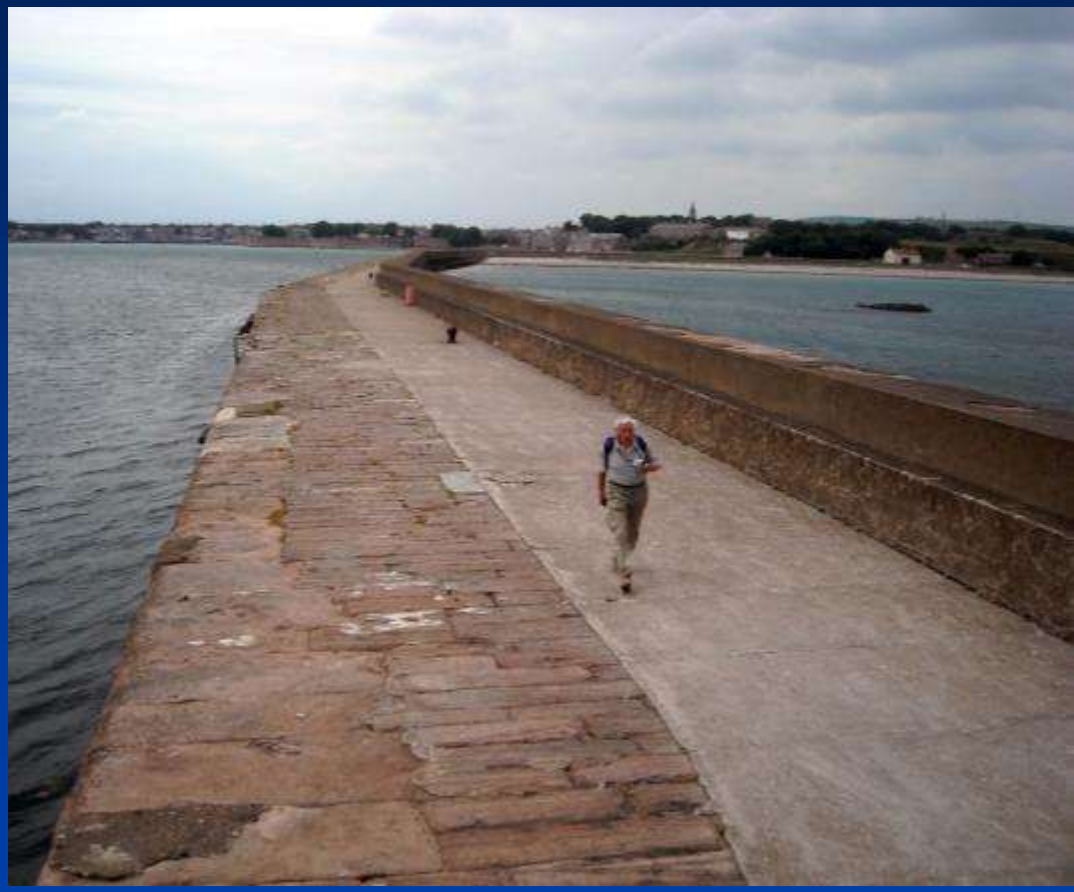


Dynasty of Engineers *The Stevensons and the Bell Rock* Roland Paxton

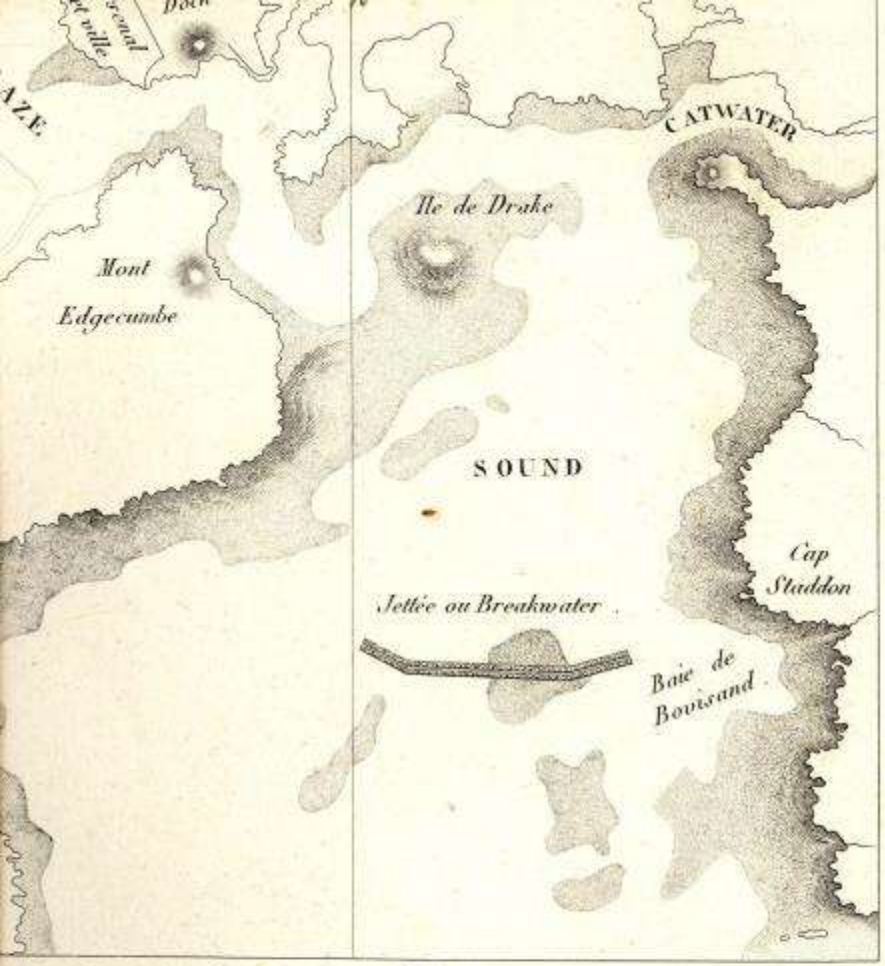
Dynasty of Engineers

The Stevensons and the Bell Rock





Rennie's Berwick Pier and lighthouse 1808-24. About 30 ft wide and 2000 ft long cost £63,000 – still in service



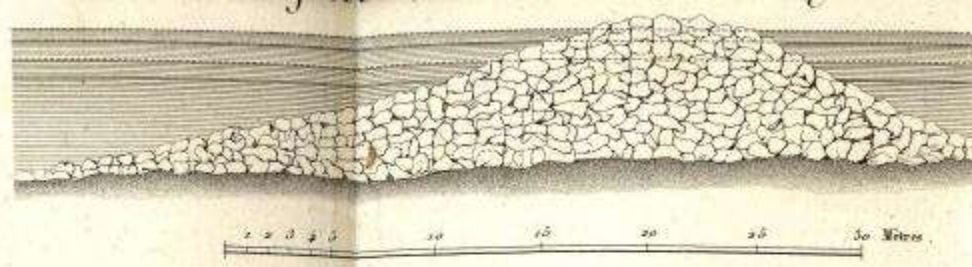
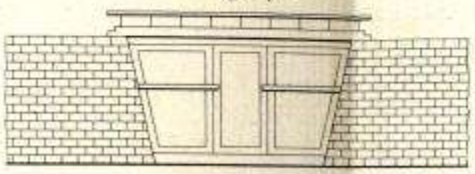


Fig. 7.



Fermetures à panneaux des formes de construc.on

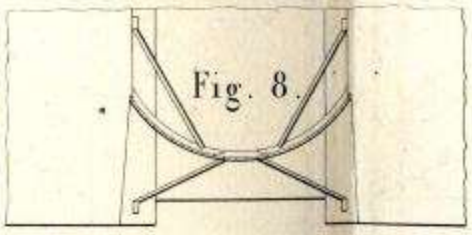
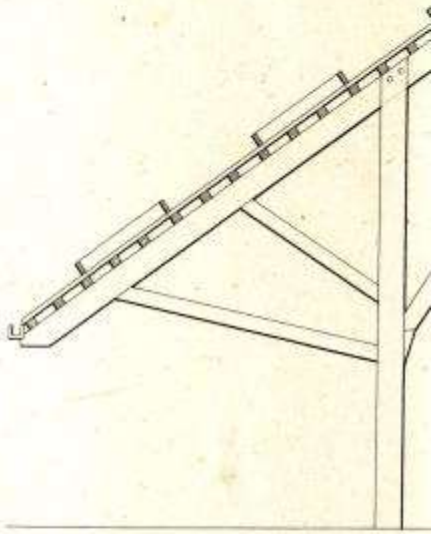
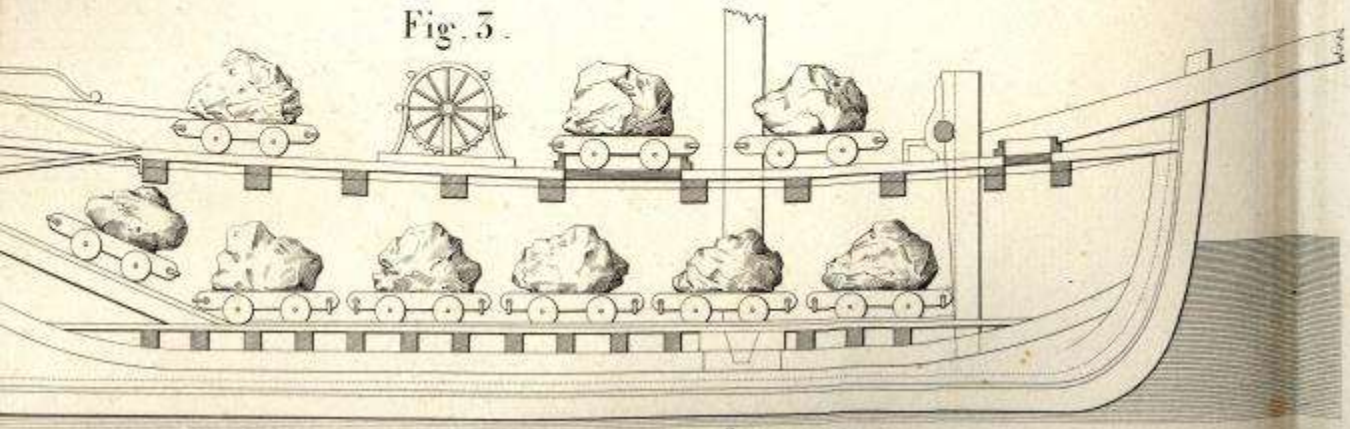


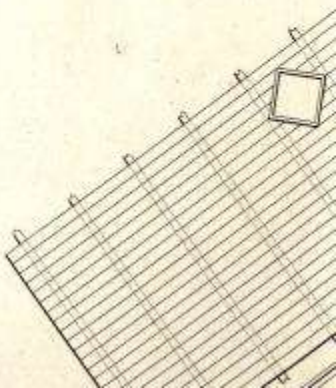
Fig. 8.

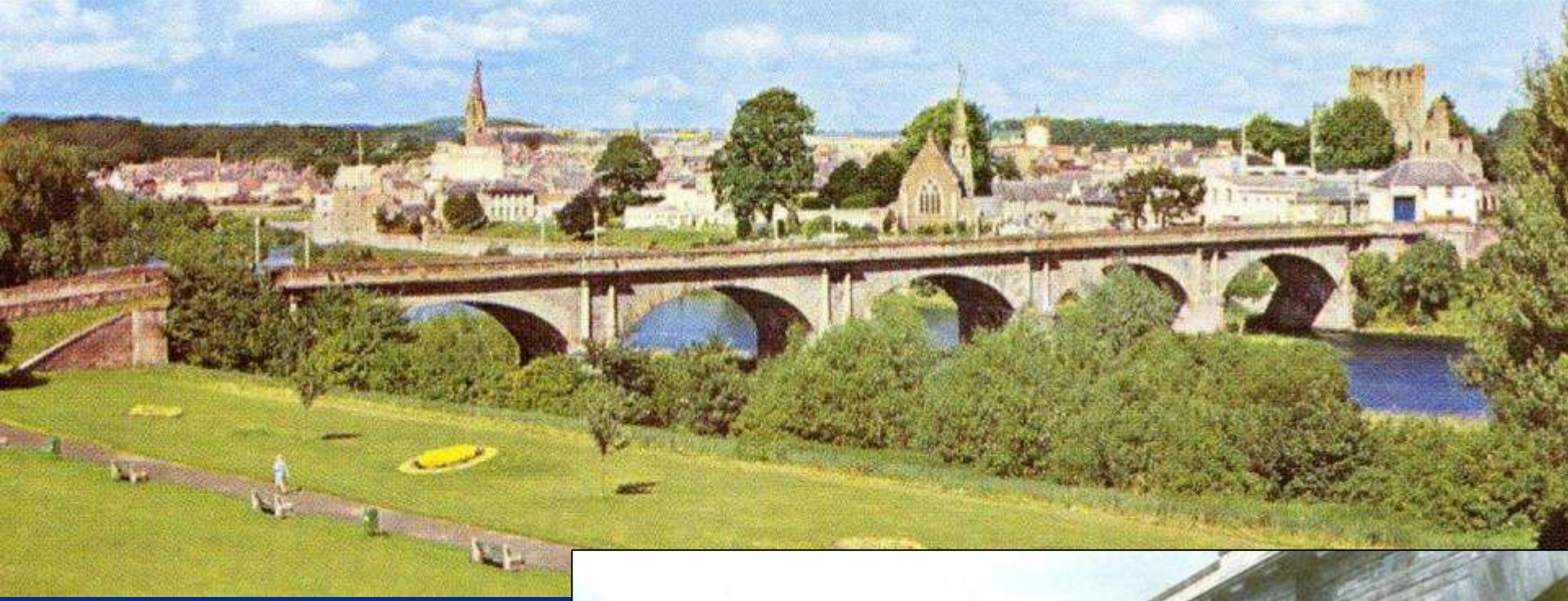


Plymouth Breakwater 1812-47

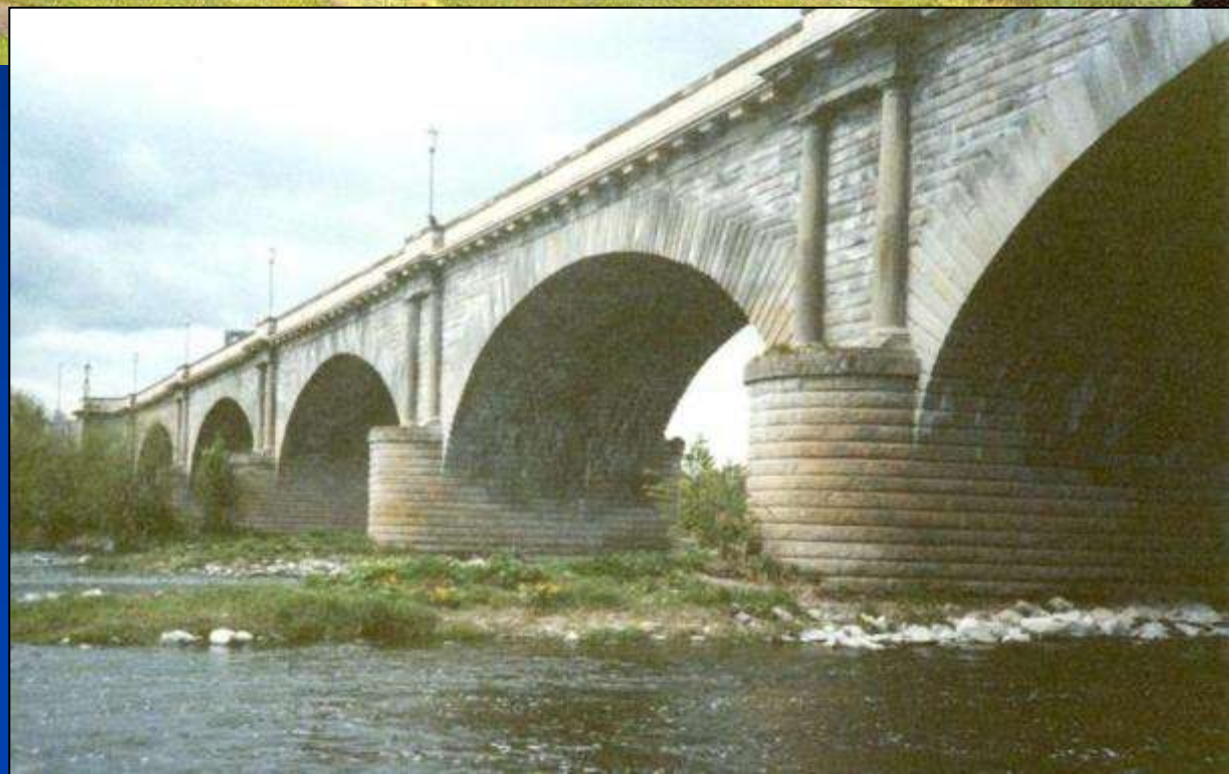
Fig. 3.





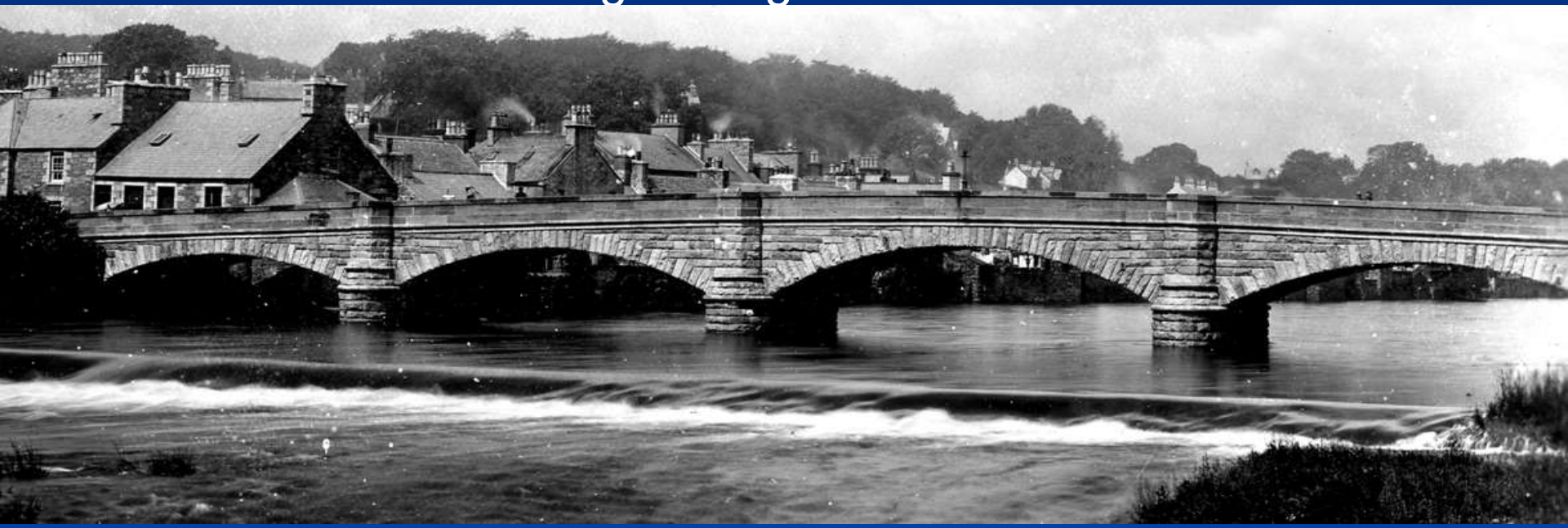


Kelso Bridge 1801-04
72 ft spans (elliptical)

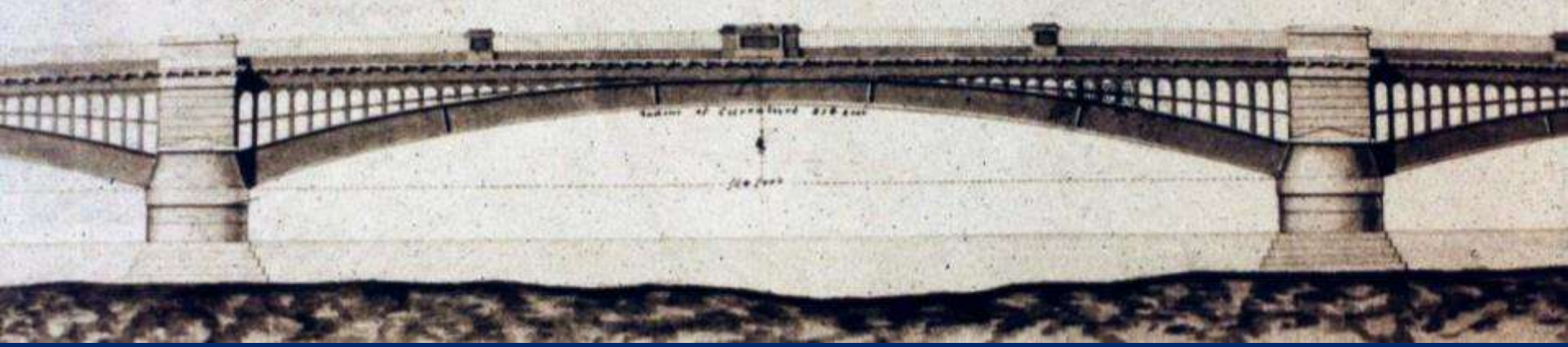


Musselburgh Bridge 1806-8 widened in 1925 on downstream side by Blyth & Blyth, Edinburgh

Musselburgh Bridge 1806-8 in 2010

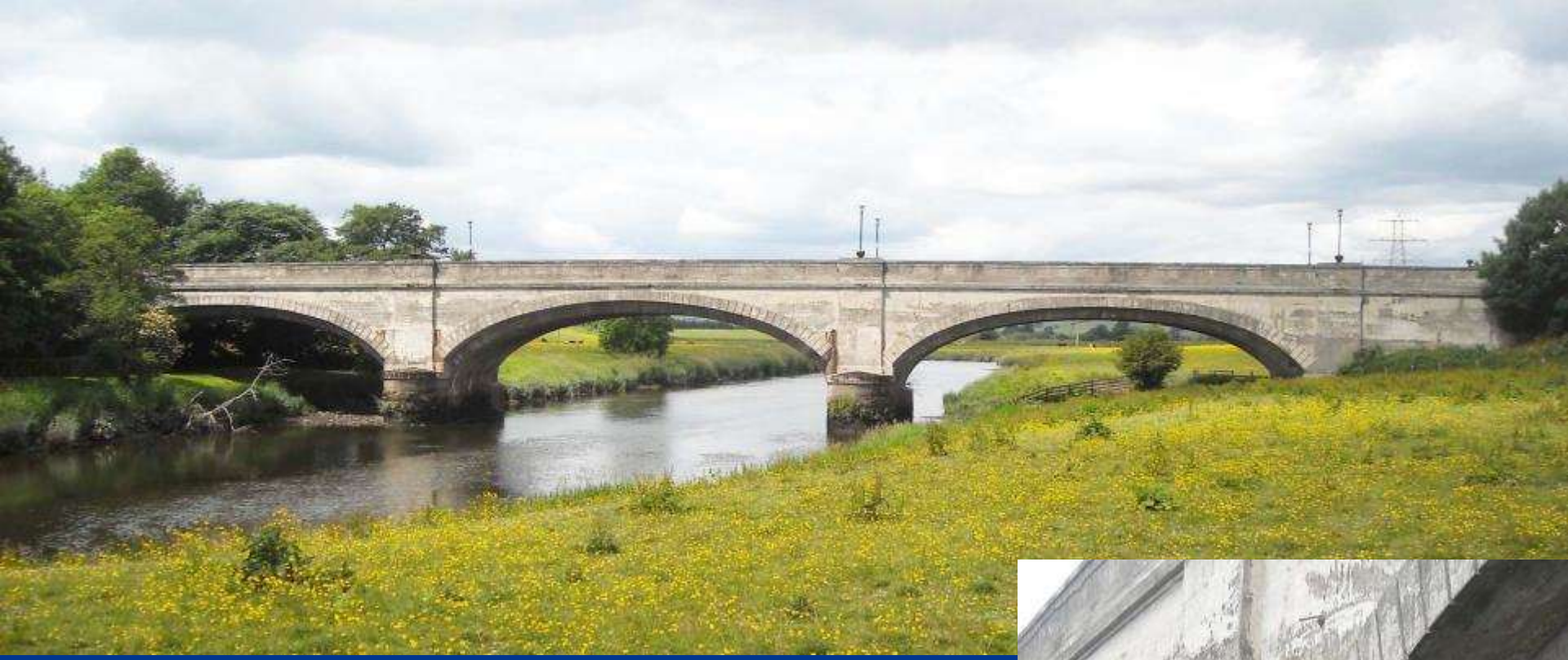


Cree Bridge, Newton Stewart 1812-14 – cost £8234



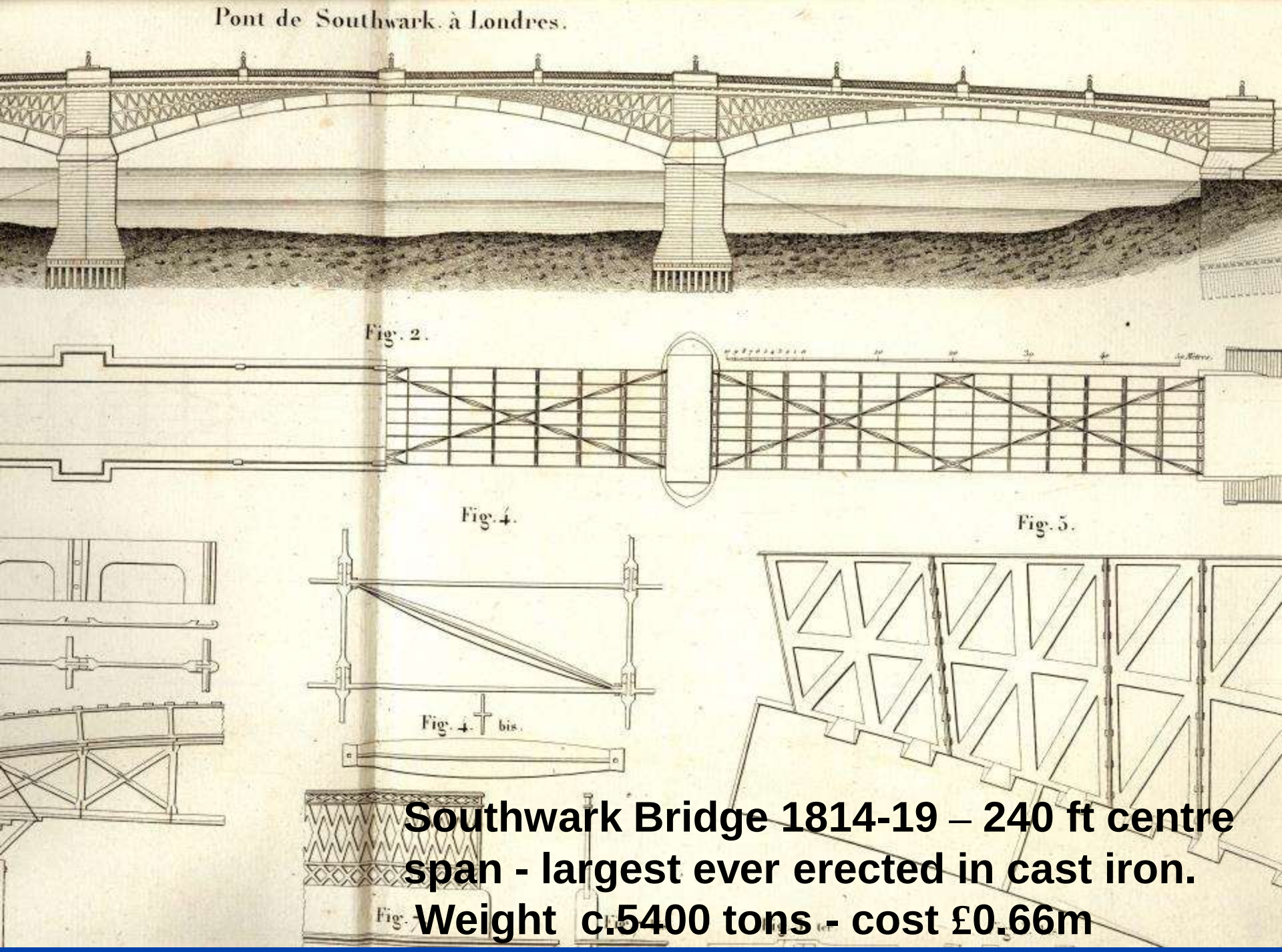
Glasgow, R. Clyde, Hutcheson Bridge Proposal 1815
(120 ft – 140 ft- 120 ft spans: ribs 48-66 ins deep)

Ken Bridge, New Galloway (90ft. max) 1820-24. Extensive water -way as earlier bridges destroyed by floods in 1806 and 1815



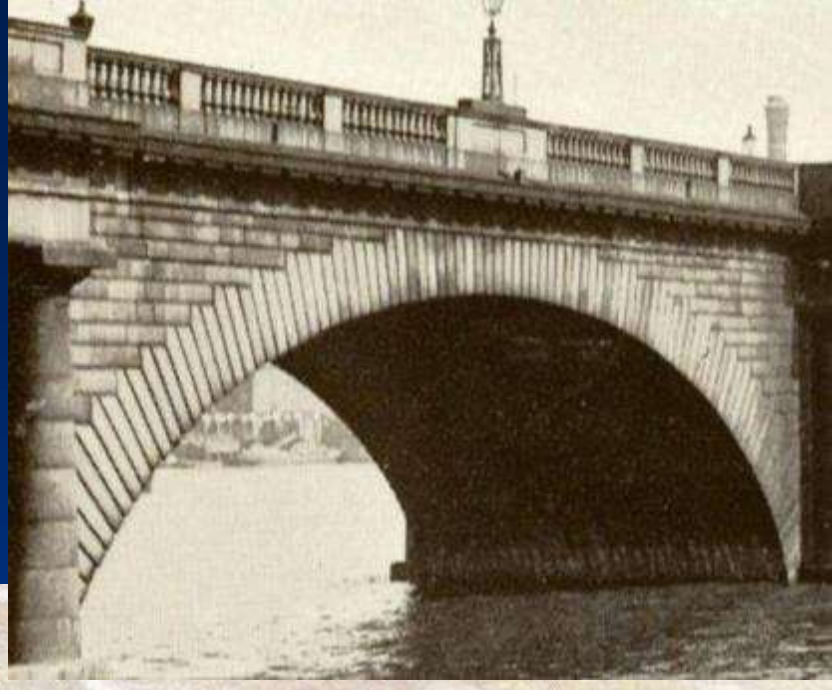
Rennie’s Bridge of Earn 1819 as widened with concrete in 1925 retaining the elliptical shape of the original arches visible under the bridge

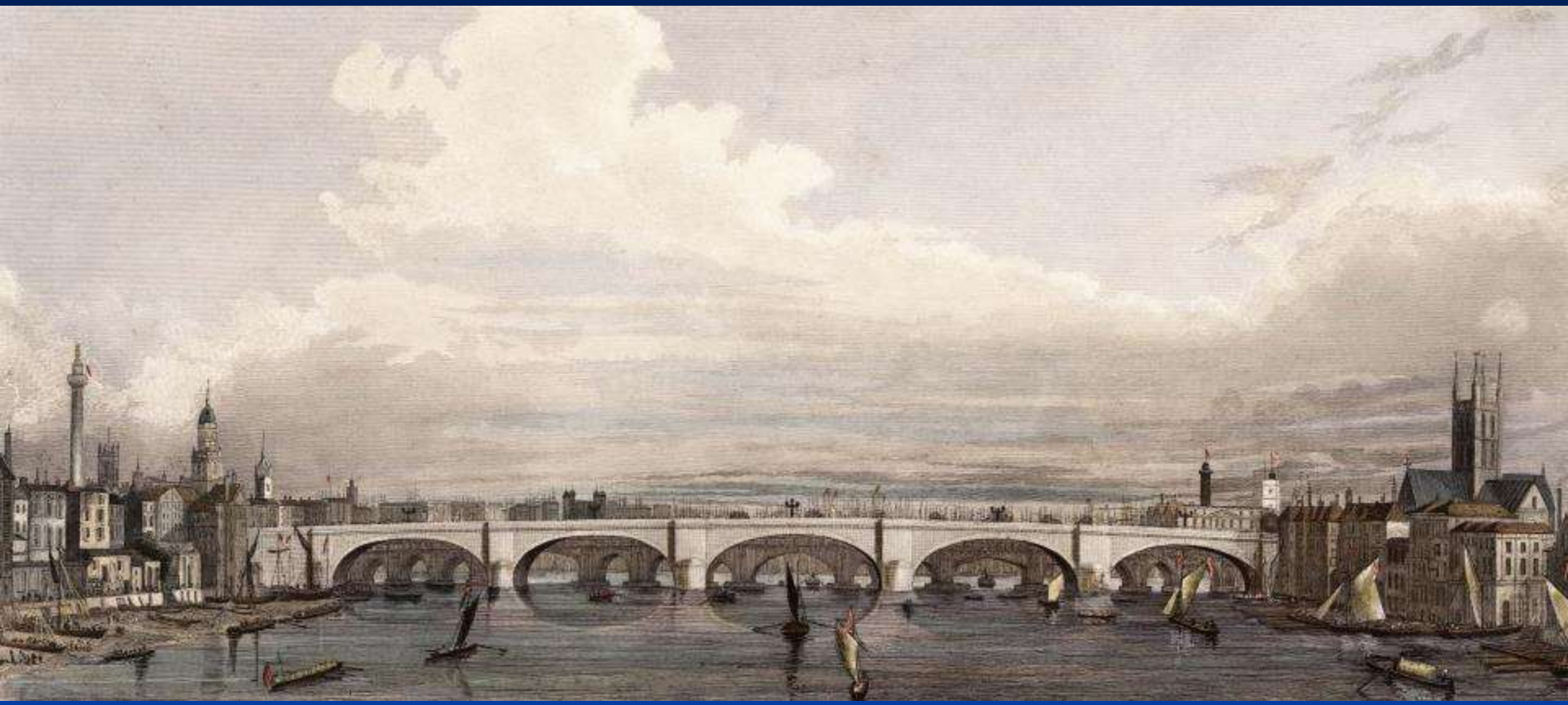
Union Bridge, Paxton 1819-20. Rennie advised on the strengthening of the tower and abutment. Capt. Brown, Engineer
The world’s oldest suspension bridge still carrying vehicles



Southwark Bridge 1814-19 – 240 ft centre span - largest ever erected in cast iron. Weight c.5400 tons - cost £0.66m

Waterloo Bridge 1811-17 – then *the finest bridge in Europe*, cost £1M. Note balusters. Under demolition from 1934, note temporary spans. Rennie also designed new London Bridge in 1821- built after his death





London Bridge opened 1831 cost £2.5m. 150 ft span arches.
Sold in 1968 for $2.5m now at Lake Havasu City in Arizona

Rennie Memorial, East Linton, including Waterloo Bridge baluster (not seen) and James Rennie, at its relocation at Phantassie in 1981 (left). 1936 memorial on bypass (right)