
The Chairman's Column: Book Review ... Roland Paxton

'Thomas Telford's Temptation' by Charles Hadfield.
M & M Baldwin, Cleobury Mortimer, Salop. -. ISBN
0947712194, £12.95 (£14.20 inc. p&cp)

In this recently published book sent to me by Mark Baldwin, Charles Hadfield reviews the contributions made by Telford and Jessop to the engineering of the Ellesmere and Caledonian Canals. In the space available here I have confined my consideration to one of Hadfield's major queries: who was the engineer most responsible for the conception and creation of Pontcysyllte Aqueduct in cast iron on tall masonry piers? For more than 150 years posterity has recognised these innovations as Telford's and neither Jessop during his lifetime, nor his family later, raised any objection to this as far as is known.

Hadfield now hypothesises in support of Jessop believing that the aqueduct '*cannot be called Telford's*' (p.114) and suggests that posterity was misled into this mistaken attribution by a conspiracy instigated by Telford and Rickman. An unlikely story! Most engineering historians will not be surprised at the dearth of personal papers of engineers of Jessop's generation, but Hadfield finds this '*strange*', and poses that Telford successfully engaged in '*character erosion*' against Jessop by not mentioning him when he ought to have done and by causing his papers to be '*mislaid*' (p.10). He even invokes Miss Marple! The reader is given a selection of facts and much comment tending to diminish Telford's and Rickman's reputation, and then is invited to judge whether or not Telford was tempted as charged.

In attempting to support his case in chapter 3, Hadfield critically examines the canal company's publications of 1805/1806, which firmly established Telford as the '*Engineer*' for the aqueduct (p.48). Hadfield finds Telford's use of the title '*Engineer*' hard to accept, mistakenly believing that Telford's engineering role was that of '*a resident engineer in charge of day-to-day construction*' (pp.16,93). There is no doubt from the above publications, Telford's job description in the Minutes (p.78) and from his writings that his brief was wider than that of a resident engineer, and that it included planning and design. Hadfield seems unaware that the Canal already had a resident engineer in Duncombe, who for salary and acting as '*resident engineer*' from 1791-mid 1803, received £4402.2.5d.

Hadfield mentions from the company accounts that Jessop received £1103.18.0d including expenses, from 1791 to 1805 but, perhaps significantly, omits that Telford from 1793-1805 received over £6,400, about 75% of which was for salary and expenses. The relatively small sum paid to Jessop, amounting on average to about £100 per annum or less including expenses, contrasts markedly with Whitworth's 600 guineas per annum for design and completion of the Forth & Clyde Canal from 1785-91, and is suggestive of a comparatively small time commitment by Jessop at Pontcysyllte over and above his known early work and acting for the company on at least 4 Parliamentary Bills. These figures are consistent with Telford having had the design and planning role for the aqueduct, Jessop the approval and ultimate responsibility, at least in the early years, and probably a minimal involvement in the as-built design and erection of the aqueduct, particularly after his alternative proposal in 1801 for a railway on the piers was not adopted. This would offer an explanation for his name not being included by the company on the aqueducts information card in 1805 (p.48), his non-attendance at the opening ceremony and why Telford rather than himself was retained as consulting engineer thereafter.

Chairman Hunt's independent and authoritative confirmation in 1805 that Telford, in consultation with Jessop, '*... invented and with unabated diligence*' carried the aqueduct into execution is worth high-lighting in support of Telford's evidence. In 1805, '*invent*' meant '*devising something not known before*' (Dr Johnson). Hadfield's assessment of the 1805/06 evidence and his claim that the idea of the iron aqueduct could have been Jessop's is unconvincing.

Much of chapter 5 is taken up with a consideration of discrepancies in various drafts of Telford's '*Life*', written some thirty years after the event and from which Hadfield deduces that '*Telford's failing memory or an abiding jealousy of Jessop*' (p.177) make this an unreliable source. Telford does seem to have had one minor lapse of memory relating to the timing of an event in 1795, but the rest of this supposition is unsubstantiated. In fact, Telford made sure that his '*enlightened colleague*' and '*friend*' received a handsome 3-page tribute in the '*Edinburgh Encyclopaedia*' in 1817 and acknowledged the

'advantages and satisfaction' he had received from more than 20 years enjoyment of Jessop's 'uninterrupted intimacy'.

In moving from 1806 to the 'Life' Hadfield has completely overlooked earlier and important evidence by Telford, which was known to Sir Alexander Gibb when making his assessment that Jessop acted, in effect, as a consulting engineer. Telford wrote in the *Edinburgh Encyclopaedia*, 17 years earlier than in the 'Life' and thus free from any allegation of unreliability arising from memory loss, that at Pontcysyllte he had *introduced a still more decided deviation from the usual form by building upright piers only and instead of masonry arches, putting cast iron ribs ...* (v.XV, 312). For the Canal, he wrote, *The engineers were John Duncombe, who traced the original lines; William Jessop, who was occasionally consulted in obtaining the acts and during the early part of the canal operations; and Thomas Telford, who planned the aqueducts and under whose direction these, as well as all the canal works, were executed.* These explicit, widely circulated and, as far as is known, uncontroverted statements provide first hand evidence that Telford introduced the masonry piers and cast iron arches and trough concept, in consultation with Jessop, thus supporting posterity's attribution.

Finally, the earliest known design for an iron aqueduct anywhere, is Telford's sketch of March 1794 for Pontcysyllte Aqueduct in Reynolds' note book (p.89, see also *Newcomen Society Transactions*, v.51, 129-142). The levels indicated seem to be those for the masonry aqueduct then proposed. The signature and content of the sketch are consistent with the March 1794 dating. The sketch shows a soundly based design on the arch and column principle, utilising the strong compressive quality of cast iron and with the trough acting as a beam. Similar in fact to, and the forerunner of, Telford's London Aqueduct which Professor Schofield rightly considers 'a truly nice piece of engineering in both thought and execution' (p.86) and which still exists. Hadfield is unimpressed by the sketch, suggesting that the date is a mistake for March 1795, that the aqueduct would probably have collapsed under its own weight, which is most unlikely, and dismissing it as a 'dream structure' (p.90). If Telford had prepared the sketch in March 1795, it would almost certainly have shown masonry piers to utilise the stone already cut.

Enough! The book is well illustrated, contains many useful facts and references and is very readable, with much thought-provoking comment, but the seeker after truth should tread warily!