

Input 7 Bouch's bridge at Belah

A higher bridge (195 feet) of similar design had previously been built by Bouch at Belah in the Pennines. About 4 miles from Brough, the viaduct carried the South Durham and Lancashire railway across a gorge in Westmoreland. It was based on well known technology, making use of cast-iron columns and wrought iron struts and braces to form a space frame to support girder spans carrying the railway.

A similar method was used to construct the famous Crystal Palace for the Great Exhibition of 1851, a building with a cast-iron frame, timber floors and vast amounts of glass (**Figure C11**). The building was

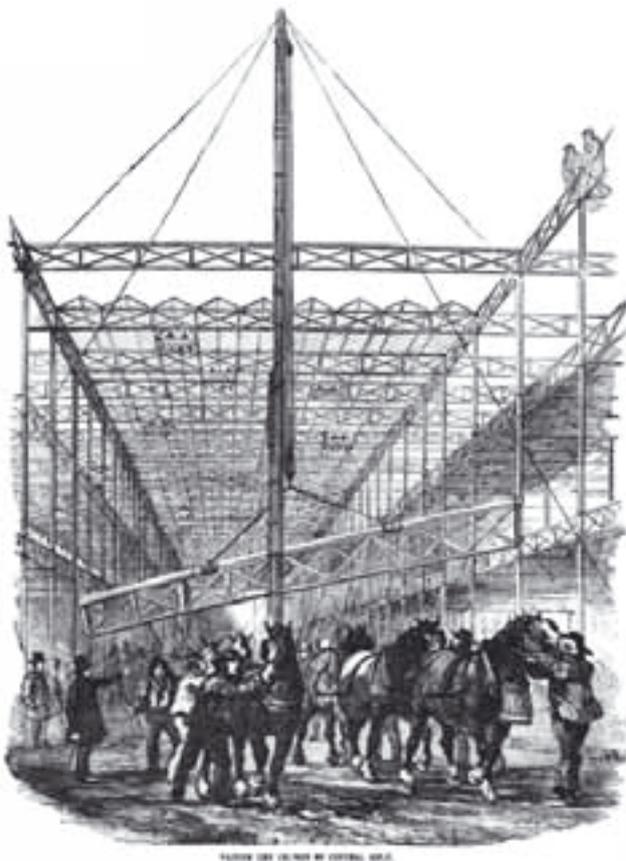


Figure C11 The Crystal Palace under construction

constructed in only 9 months. It was disassembled after the exhibition and re-erected in South London before destruction by fire in the 1920s.

The bridge built by Bouch at Belah was 1000 feet long overall, and carried on 15 piers, each arranged in a rectangular shape of hollow cast-iron columns bound together with wrought iron bracing bars. They were attached to the columns by circular straps. The columns were 50 feet apart at their base, tapering to 22 feet apart at their apex where they supported the railway (**Figure C12**).

The large batter undoubtedly made a stable structure, and the manufacture of the piers was carefully performed using precision machine tools – according to Mr Rothery at the later Board of Trade enquiry on the Tay Bridge. The viaduct served its purpose well for many years before demolition in 1966.

Although not designed by Bouch, bridges of similar construction still survive at Okehampton (the Meldon viaduct) and at Ilkeston (the Bennerley viaduct). Although now disused, they are preserved as Grade II listed structures.

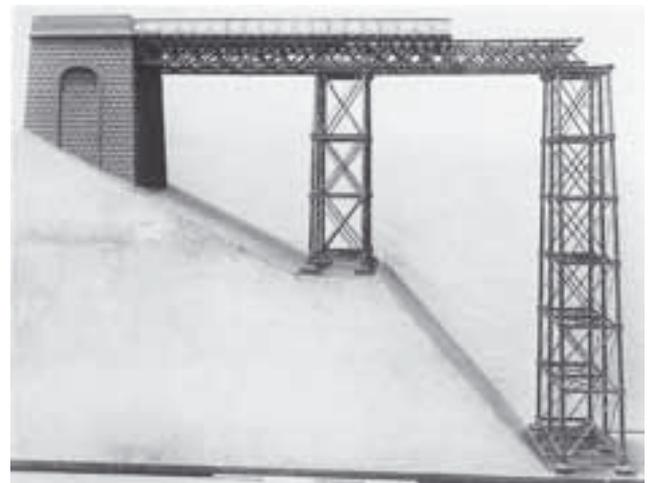


Figure C12 Belah bridge