THE ALBERT BRIDGE OVER THE RIVER CLYDE.

Plates XV. and XVI.

The bridge crossing the Clyde at Glasgow, and forming the subject of present description, was erected in place of the old Hutchesontown Bridge, built, according to the plans of Mr. Robert Stevenson, C.E., in the year 1829. The new bridge—now called the Albert Bridge, and the foundation-stone of which was laid with all due masonic pomp and ceremony on Friday, 27th of May, 1870—is illustrated in considerable detail on Plates XV. and XVI.

The site of the Albert Bridge is in a direct line with Saltmarket-street, with which it connects Crown-street, Hutchesontown, on the south side of the Clyde. A timber bridge for foot passengers, justly admired for the simplicity of its construction and its light appearance, was erected on the same site in the year 1803, from the design of Mr. Peter Nicholson, the author of "The Principles of Architecture, Carpentry," &c. Its length was one sweep of 340 ft., and its breadth was only 7 ft. 4 in. It was proposed in 1814 to erect on the same spot a bridge that would be suitable for all kinds of traffic. Designs were obtained from Ronnie, the eminent engineer, and the cost of the bridge was estimated at 18,000L or 19,000L. The proposal took no further practical shape till the year before mentioned, 1829, when the foundation-stone of the now demolished Hutchesontown Bridge was laid. That bridge served all the purposes of the district till the year 1864, when it was found to be in such an unsafe condition as to render its removal absolutely necessary.

When the old bridge, on being examined by engineers, was found to be so dangerously insecure, the Bridge Trustees agreed to the recommendation that the structure should be completely removed, and that a new bridge, at once more elegant and more convenient, should be substituted for it. Parliamentary powers were obtained by the trustees authorising them to expend 39,000L on such an undertaking, and forthwith they instructed Messrs. Bell and Miller, civil engineers, Glasgow, to prepare plans for a new bridge. Those gentlemen did so, but when the estimates based on those plans and the accompanying specifications were opened, it turned out that the lowest offer for the execution of the work ran up to 54,000L; and under these circumstances the engineers were directed to prepare a design for a bridge of a less costly character. Without making any great change in regard to external appearance, they so modified the structural features of the proposed work that contractors were found willing to undertake the work for 48,000L, and on this footing the Bridge Trustees resolved to proceed with the erection of the bridge. The successful contractors were Messrs. Hanns, Donald, and Wilson, engineers, Paisley.

By referring to Plates XV. and XVI., it will be observed that the Albert Bridge crosses the river in three spans. The roadway has a total length of 410 ft., and its breadth is 60 ft. It is nearly level, having an easy rise to the centre of 1 in 70.

The general design of the bridge is shown in the diagram at the top of Plate XV., and also in Fig. 1 of Plate XVI. In the former of those figures the depth to which the cast-iron cylinders are sunk is indicated. The centre arch has a clear span of 114 ft., and the two side arches are 108 ft. each, the radius of the former being 171 ft., excepting for a short length at the haunches, where the curve is altered by tangential segments of 70 ft. radius. The radii of the side arches, in like manner, are 156 ft. and 65 ft. The bed lines of the river at the commencement and completion of the works respectively are shown in the general elevation, it being part of the plan to lower and level the bed of the river until there should be 8 ft. and 14 ft. 6 in. between it and low and high water respectively. The clear headway between high water and the crown of the middle arch in the centre was thus to be 17 ft. 5 in., reduced in the side spans in proportion to the falling gradient of the roadway. The piers are of the design shown, 11 ft. wide immediately above the level of low water, and reduced in width beyond the springing of the arches.

Figs. 3 and 4, Plate XVI., are longitudinal and transverse sections through the centre span of the bridge, showing the construction of the ironwork, and the arrangement of the diagonal bracing and road plates. It will be seen that in the length of the span the longitudinal girders are braced by seven cross girders. The main girder is 3 ft. deep in the centre, increasing to 4 ft. at the springing. The width of the top and bottom tables is 18 in., and they are formed of two ½ in. plates, riveted together and to angle iron 4 in. by 4 in. by ½ in. The thickness of the web is ¾ in., stiffened with T-irons, 4 in. by 3 in. by ½ in., which act as cover plates. The