make the approaches as short as possible. They are, therefore, each formed of twenty steps. The quantity of cast iron contained in the tower saddles, anchorage girders, cross girders, verticals in parapet girders, &c., is 108 tons. The steel in the chains, plates, and pins, weighs 78 tons, and there are 4 tons of wrought iron in bolts, &c. There are 5000 cubic feet of timber work in the platform.

The bridge had to stand a test moving load of 96 lb. per square foot, without giving a greater strain on the steel chains than 12 tons per square inch, and the breaking strain of the steel was 36 tons per square inch. The links were made by Messrs. Cammell, at the Cyclops Steel and Iron Works, Sheffield, the rest of the iron-work being made at Prague. The contract price for the bridge was 18,500£.

WIDENING OF THE VICTORIA BRIDGE, PIMLICO.

PLATE XLIV.

Amongst the numerous works, of greater or less importance necessitated by the construction of the system of railways designed by Sir Charles Fox, in the year 1852, for improving the access to the Victoria Station, Pimlico, the chief was undoubtedly the widening of the Victoria Bridge over the river Thames. The original bridge was constructed during the years 1859-60, from the designs of Mr. John Fowler, and it crosses the river about 150 yards eastward of the Chelsea Suspension Bridge at a point where the width of the waterway between the embankment walls is 740 ft. It consists of four segmental arches of 175 ft. span at the springing, the rise being one-tenth of the span, or 17 ft. 6 in., and the clear headway above Trinity high-water level being 22 ft. Besides the four river spans the bridge also comprises a land arch of 70 ft. opening, crossing the Grosvenor Road on the northern bank, and a corresponding arch of 65 ft. span, crossing the wharves of the Brighton Railway Company on the southern side of the river.

This, the original bridge, was 30 ft. 9 in. wide between parapet walls, and carried two lines of railway of mixed gauge, namely, the ordinary 4 ft. 8½ in. and the 7 ft. gauges, the Victoria station being at first used by the London, Brighton, and South Coast, the London, Chatham, and Dover, and the Great Western Railways. At the time Sir Charles Fox’s plans were worked out, however, the increasing traffic and the anticipation of other companies using the station, rendered it desirable to entirely separate the traffic of the London, Brighton, and South Coast Railway from that of the other companies above mentioned, and it was, therefore, determined to remove the broad gauge from the two existing lines, and to devote the latter, together with an additional narrow gauge line laid down beside them, entirely to the traffic of the London, Brighton, and South Coast Company, and to provide for the London, Chatham, and Dover, and Great Western traffic, three mixed, and one narrow gauge line. The construction of these additional lines of course necessitated a great increase in the width of the bridge, and although at first it was proposed to erect an independent supplementary bridge to carry these lines, yet eventually it was determined to join up the new work to the existing structure.

The new bridge has a width of 98 ft., and by its construction the width of the combined bridges has been increased to 132 ft. between parapet walls. It consists, like the original structure, of four river spans of 175 ft. each, and two land openings of 65 ft. and 70 ft. respectively. The details of its construction we shall now proceed to describe, referring for that purpose to Plate XVIII., and the figures on the succeeding page.

The manner in which the foundations of the new river piers, of which there are three, were constructed, is explained by Figs. 9, 10, and 11 (see next page). From these it will be seen that each pier is founded upon four cast-iron cylinders, these cylinders being each 21 ft. in diameter outside, and formed of metal 1½ in. thick. Each cylinder has a total height of 24 ft., and is formed in three lengths, bolted together by means of flanges, as shown in the section, Fig. 11; the lengths being also formed in eight segments united in a similar