The river pier of the new works of the Chartered Gas Company is, taken altogether, a unique structure. It is 718 ft. in length, inclusive of the abutment pier on the shore, inside the river wall, and is divided into four spans of 64 ft. each, four spans of 65 ft. each, and four spans of 58 ft. each, these dimensions being measured along the centre line of the pier. The general design and all the details connected with this work are shown in Plates VIII and IX. The rails upon the pier platform are 27 ft. 10 in. above Trinity high water, at the pier head, which is level.

From the pier head round the curve and thence on to the abutment behind the river wall, the rails have a total fall of 4 ft. 10 in., equivalent to a gradient of 1 in 100. This of course greatly facilitates the transfer of the loaded coal wagons from the pier head to the quay, whence they are distributed through the retort houses. The width of the pier is 44 ft. from hand-rail to hand-rail, at the pier head, reduced to 25 ft. at the shore end, and gradually increased from the latter width to the former round the curved portion, as shown in plan Fig. 1, Plate IX.

The foundation consists of cast-iron cylinders, 6 ft. diameter, sunk to a level of 18 ft. below low water into the bed of the river. These cylinders are shown in detail Figs. 5-7, Plate IX; they were cast in lengths of 9 ft., of 1½ in. metal, and in one piece of the full diameter. The lengths are connected together by flanges 3 in. wide, and 1½ in. thick, by 1½ in. bolts placed at intervals of 9 in. The bottom length of each cylinder is cast with a cutting edge (see Fig. 7) slightly turned outwards, in order that the sinking might be facilitated. The top length is furnished with a cast-iron cap, of the form by ½ in. In the interior of the abutment the tubes rest upon the concrete, as shown, and an opening is cut in the box to form a through connexion with the 4 ft. cast-iron mains which pass from the valve chamber, as shown in plan, Fig. 2. These mains, which terminate in special castings at the point of junction with the wrought-iron tubes, are fastened to the latter by bolts 1½ in. diameter, pitched, 9 in. apart. The details of these connections are seen in Figs. 13, 14, and 15, which show the arrangements on the east and west abutments. The rivets throughout the boxes are ½ in. diameter, and 1½ in. pitch, and special care was taken in securing tight joints, all being made good with tape and red lead. After completion the tubes were tested to a pressure equal to 36 in. of water. The structure has given perfect satisfaction since its erection.

THE RIVER PIER.

Plates VIII and IX.