

Observations of Major-General Hutchinson.

In compliance with the terms of your Minute of the 6th instant, enclosing copies of the Reports of the Court of Inquiry and of Mr. Rothery on the fall of the Tay Bridge, and stating that the President of the Board of Trade wish to be furnished with any observations I might have to offer bearing upon the remarks made with reference to my inspection of that bridge, I would merely repeat the substance of my evidence before the Court of Inquiry, namely, that I was appointed to inspect the Tay Bridge on the 15th February 1878, and received at about the same time the plans and details relating to its construction, these plans and details having been the first information with which the Board of Trade had been furnished concerning the mode of carrying out this important work; that I devoted much anxious care and thought to this important duty, both before the inspection and during the three days (25th, 26th, and 27th February) that the inspection lasted; that as regards the theoretical strength of the bridge for carrying the weights to which it might be subjected, it appeared to be sufficiently strong; that under a test load of six heavy engines, run over it at various speeds up to 40 miles an hour, the high girders showed very moderate deflections and very little lateral movement; that from as careful examination as I was able to make, both before and after test, I saw no structural defects to excite any uneasy feeling either about the quality of the materials employed, or the way in which they had been put together; and that I was consequently justified in assuming that the work was sound and the workmanship good; but that, nevertheless, having regard to the comparatively narrow base of the piers, and their composite structure, it was desirable to submit them to as little racking motion as possible, and that I therefore recommended a moderate speed, not exceeding 25 miles an hour, to be observed in running over the bridge; that with regard to wind pressure there had been in this country no definite rules laid down for guidance, and that it had not been customary in open structures, such as the Tay Bridge, to consider the subject, as the necessary stability given to the piers for other considerations would enable them to bear any probable wind pressure that would come upon them. Had I, however, entered into these calculations, the theoretical results I should have arrived at with such data as were available at the time, would not, I believe, have justified me in recommending the Board of Trade to object to the opening of the bridge on the ground of insufficient strength to resist any anticipated wind pressure. Further, that as the bridge appeared to have been (as from the only means I had of judging, viz., from the plans and inspection after completion, I was justified in assuming it to have been) constructed of good materials, well put together, that it had well stood the tests to which it had been submitted, and assuming (as I was again justified in assuming) that it would be well and carefully maintained, there was no sufficient reason to justify me in recommending the Board of Trade to object to the railway over the Tay Bridge being opened for public traffic, subject to the recommendation as to the limitation of speed to 25 miles an hour.

Owing to the magnitude and importance of the structure, I was anxious to see how far the lateral stiffness of the piers (which had been satisfactory under the test of engines running fast over it) might be affected by the action of high wind upon the side of a train in motion over the bridge.

This I had intended to get, if possible, an opportunity of doing before the traffic commenced running, but I was laid aside by serious illness shortly after the inspection, and before my recovery the bridge had been opened for traffic.

H. G. Calcraft, Esq.,
&c. &c. &c.

C. S. HUTCHINSON,
12th July 1880.