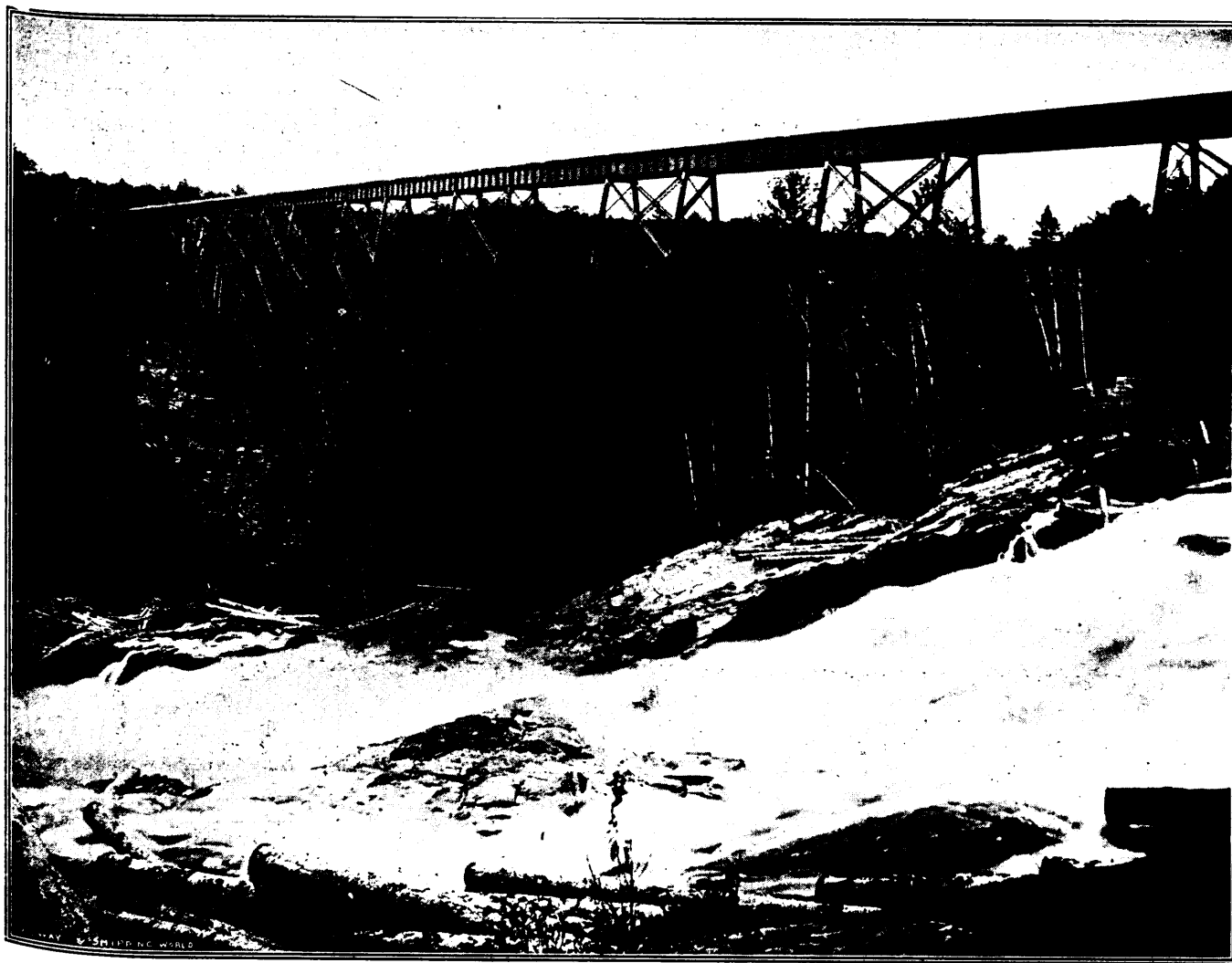


and 40 ft. respectively, and 1 half through, plate girder skew span of 40 ft. The upper deck will, on reaching the trestle work on the south side, diverge to the east, and parallel the railway on a descending grade, cross the Great Northern Ry. tracks to the embankment. The motor track will join the railway tracks on the west arm of the T and will diverge therefrom at the wooden trestlework and parallel it to the embankment. The track will be laid with 75 lb. rails, and the highway floor will consist of longitudinal wooden joists carrying a light double thickness of plank flooring, the lower one diagonally and the

tween the pivot pier and a point about 100 ft. outside pier 2, the water is too deep and swift to warrant the use of falsework, consequently the north arm of the swing span will be cantilevered. It is suggested that the 225 ft. fixed span be erected by putting in 2 bents of false work, thus erecting two long panels of the trusses, and cantilevering out one additional panel, then floating in, one at a time, the other portions of the trusses, and coupling up during slack water. In regard to the 380 ft. fixed span, it is proposed to have it erected by providing toggles over piers 3 and 4 to attach to the spans there erected, and cantilevering

The plans and specifications were prepared by J. H. Waddell, consulting engineer of Kansas City, Mo., under those general supervision the bridge will be erected. The B.C. Legislature, in 1901, voted \$500,000 for the erection of this bridge, and the engineers estimate that the total cost of the completed structure will be about \$730,000.

H. J. Colvin, District Passenger Agent, C.P.R., Boston, Mass., writes: "THE RAILWAY AND SHIPPING WORLD is an excellent publication."



MASKINONGE BRIDGE AND VIADUCT, GREAT NORTHERN RAILWAY OF CANADA.

The Maskinonge river and valley, situated on the G.N.R. between Ste. Ursule and St. Justin, Que., are crossed respectively by a 96 ft. clear deck span and a steel viaduct 1,000 ft. in length of 60 and 40 ft. spans. After crossing the railway, the river skirts the viaduct and falls into the valley below in a series of cascades whose total height is 170 feet. The bridge and viaduct are built to Dominion Government specifications, and the location is most picturesque.

upper one transversely to the spans. The design of the 225 ft. span between piers 2 and 3 is a little complicated owing to the divergence of the trusses. The vertical posts drop below the bottom chords in order to receive the ends of the cross-girders. The latter are of varying depths according to their lengths, the bottoms of all cross girders lying in a plane inclined slightly to the horizontal. The longitudinal girders rivet into the cross girders, and the latter support steel bents that carry the highway girders overhead. The entire span will be thoroughly braced in both horizontal and vertical planes, and will expand over pier 3. Falsework can be used to advantage under the five 159 ft. spans and the south arm of the swing span, but be-

out the metal work to meet at midspan.

The quantities of material in the superstructure are estimated as follows:—Steel in the 5 spans of 159 ft. each, 1,720,000 lbs.; steel in swing span, 1,300,000 lbs.; steel in drum and operating machinery of swing span, 151,000 lbs.; steel in 380 ft. fixed span, 1,577,000 lbs.; steel in 225 ft. fixed span, 1,470,000 lbs.; steel in plate girder spans and steel bents, 614,000 lbs.; metal in timber trestle, 22,000 lbs.; total steel, 6,854,000 lbs.; timber in spans, 515,000 ft. B.M.; timber in trestle approach, 250,000 ft. B.M.; total timber, 765,000 ft. B.M.; piles in trestle approach, 15,000 lineal ft.; rails and splices, 92 short tons. The swing span is to be operated by a 25 h.p. gasoline engine.

Hillsborough River Bridge, P.E.I.

The substructure of the Hillsborough river bridge on the Murray Harbor branch of the P.E.I. Ry., at Charlottetown, now under construction by M. J. Haney, C.E., contractor, of Toronto, is among the large works of the continent. Piers 0, 1, 2, 3, 4, 5, 10 and 11 have pile foundations cut off level 10 ft. below the mud line, the pier area being dredged for the purpose. On the level pile tops box caissons are floated. These box caissons are built up of 12x12 in. hemlock timbers, and have floors 3 ft. thick of solid timber, and are thoroughly screwed and bolted together. The boxes are filled with cement to a point 5 ft. below low-water mark, where the masonry