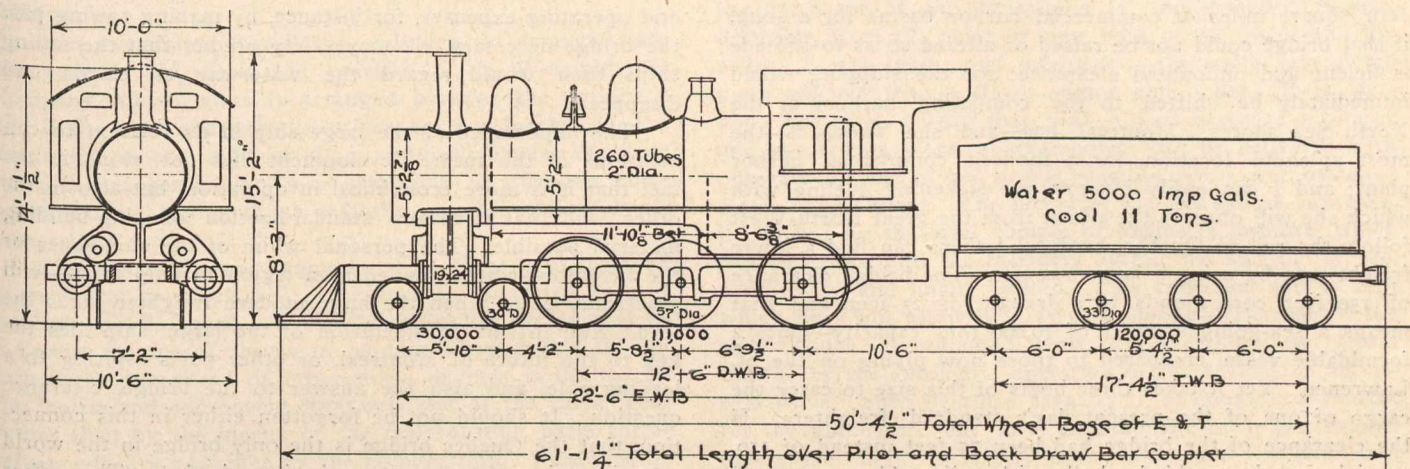


of the hopper type, without shelves or flat plates in coal space to hinder or obstruct the easy descent of the fuel to the fireman—a wise and convenient provision.

its contents and effective pull of engine is thrown. This admirable provision is supplemented by some cross bracing of the bolsters and flat plates carrying the air brake



Tender Light	48000 Lbs. loaded—120000 Lbs.
Weight on Drivers Working order	—111000 "
" of Engine	" —141000 "
" " and Tender	—261000 "
Heating Surface Tubes	—1618 Sq.ft.
" " Fire Box	—148 "
" " Total	—1766 "
Grate Area	—302 "
Working Pressure	—180 Pds.

Diagram of
10 Wheel Freight & Passenger
Locomotive

Design of Tender.

The general design of tender frame differs materially from general practice, since there are no through bolts, the back and front drawbars being carried by two 18 in. I beams, on which the whole stress of carrying weight of tank and

apparatus, which act as diagonal braces. The drawbar at back of tender is applied to the I beams in a similar manner, and is interchangeable with drawbars in cars.

[It must be a satisfaction to our readers to perceive by the specification of new ideas embodied in the design of these Canadian locomotives, that in constructive locomotive engineering, the Dominion is undoubtedly progressive.—Editor.]

CANADA ON THE WORLD'S HIGHWAY

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IV.

THE QUEBEC BRIDGE: A REJOINDER.

The old story over again! Whenever great problems involving provisions for the future require solution, we always find the cautious, conservative mind on the wrong side; because its conservatism leads to scepticism in regard to the future evolution. The greatest, most fatal mistakes are made in this perfectly human and honest way, simply for the lack of imagination, and the Quebec bridge over the St. Lawrence river at Cap Rouge furnishes only a new example of the truth of this old axiom.

Mr. John Kennedy, Montreal's noted harbor engineer, and Mr. Hugh Andrew Allan, of the shipping firm of H. & A. Allan, have both endorsed the bridge plan as satisfactory, and thereby put themselves on record as entertainers of the conservative views in regard to the future of Montreal. This is done in an interview published in the Montreal "Gazette" of March 15th, which later was quoted in the debate on the subject in the House of Commons. Both gentlemen referred to the conditions on the Manchester canal as proofs for the fact that worse obstacles than the Quebec bridge clearance are successfully overcome in other places.

Now, this is certainly a reading backwards of facts. To compare the splendid St. Lawrence river with the narrow, winding, artificial canal, with locks and with crossings

existing prior to the canal! In my previous article I simply called attention to the fact that the Quebec bridge, with its insufficient clearance, would reduce Montreal's harbor from the position as a seaport to that of an inland waterway harbor, and thereby check the aspirations of Canada's commercial centre; yet I had no idea of comparing Montreal's maritime location with that of Manchester, for the conditions differ too widely for that. The harbor proper for that part of England where Manchester is located is Liverpool; and the artificial harbor of that industrial centre, with its canal as an accessory, is created in order to save freight on material to, and on industrial products from, Manchester. Enormous exertions were necessary in order to accomplish this, and the best possible had to be made of the natural and artificial obstacles encountered. As special ships had to be provided for the navigation on the canal, this is and must remain strictly local in character, and the real ocean traffic will, as before, use the harbor of Liverpool, there to tranship its cargoes for Manchester into railway cars or lighters.

Montreal is a natural seaport, located at the head of one of the world's mightiest natural waterways, and the regulation work necessary to keep this stream up to level with the demands of navigation is insignificant compared to what has to be done in other places. Montreal's geographical location as a commercial centre resembles more