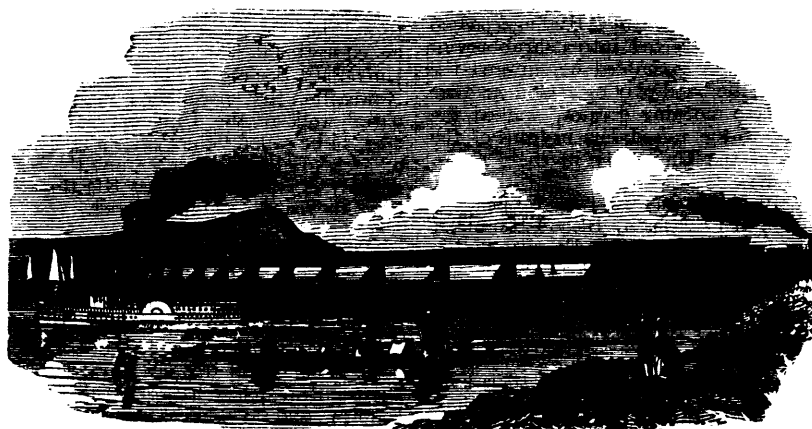


think quietly over the nature of these obstacles, and then looks up at the lofty rib of iron, which stretches high in air from shore to shore, he must be more or less than human if he does not regard it as the grandest and most successful engineering work which the world has yet seen. After all the bridge is by no means an imposing structure. Its height from the water and its immense length gave it more the appearance of a gigantic girder than a bridge. Viewed at sunset, when its dull tints are brightened into red, and with Montreal as a background, with all its tin roofs and steeples glittering like silver in the sun, it looks well enough, though never much more than an iron footpath to the picturesque city beyond; and few can believe at the first glance that it is really more than five times longer and bigger than the longest bridge ever yet constructed.

The piers were formed by forcing down coffer dams of wood in the exact places where the foundations were to be laid, then driving rows of piles round these, and filling in between the two with wads of clay, forced down till they were watertight. The water inside the coffer dam was then pumped out by steam pumps, and the work of clearing out the gravel and mud, and laying the masonry down on the very rock, commenced. Quicksands let in the water to such an extent that no pumps could keep the coffer dams empty, and tiers upon tiers of piles had to be driven all round them till the subterranean communication was cut off at last. At other times huge boulders were in the way, and divers had to be employed for months in the bed of the river, securing chains to these rough masses before they could be hooked up and taken away. When all was clear and progressing well, the mere force of the swift current would sometimes destroy the dams, and masses of floating ice in one short winter's day laid waste the



VICTORIA RAILWAY BRIDGE AT MONTREAL, FROM ST. LAMBERT.

The following interesting particulars of the Victoria Bridge, and the materials used in its construction, are thus given :

First stone No. 1 Pier, laid 20th July, 1854.
First passenger train passed, 17th December, 1859.
Total length of Bridge, 9184 feet lineal.
Number of Spans, 25—24 of 242 feet, and one of 330 feet.
Height from surface of water to underside of centre tube, 60 feet.
Height from bed of river to top of centre tube, 108 feet.
Greatest depth of water, 23 feet.
General rapidity of current, 7 miles an hour.
Cubic feet of Masonry, 3,000,000.
Cubic feet of timber, used in temporary work, 2,250,000.
Cubic yards of clay used in puddling dams, 146,000.
Tons of iron in tubes, say 8250.

Number of rivets, 2,500,000.
Acres of painting on tubes, one coat 30, four coats 120 acres.

Force employed in construction from the middle of May to the middle of November :

Steamboats, of 450 horse power.....	6	} 12,000 tons.
Barges	71	
Manned by.....	500 sailors.	
In stone quarries.....	450 men.	
On works, artisans, &c.	2000 men.	

Total..... 3040 men, 142 horses, and 4 locomotives.

ADDRESSES TO THE PRINCE FROM THE LEGISLATURE AND FROM THE GRAND TRUNK RAILWAY, AND CEREMONY OF THE INAUGURATION.

As the Legislature had invited the Prince to formally open the Victoria Bridge, both houses in their addresses to His Royal Highness at Quebec, thus referred to the great work. That of the Legislative Council contained this paragraph: "Though the formal opening of that great work, the Victoria Bridge, known throughout the world as the most gigantic effort in modern times of engineering skill, has been made a special occasion of Your Royal Highness' visit, and proud are we Canadians of it, we yet venture to hope that you will find in Canada, many other evidences of greatness and progress to interest you in the welfare and advancement of your future subjects.

The address of the Legislative Assembly contained a similar paragraph, as follows: "The approaching opening of the Victoria Bridge by your Royal Highness has been the more immediate cause of your present visit to Canada, and we trust you will find in that stupendous work the most striking evidence in which the capital and skill of the Mother Country have united with the energy and enterprise of the Province in overcoming natural obstacles of the most formidable character." The replies of His Royal Highness will be found on page 132.

The following address was presented to the Prince at the inauguration, by the Directors of the Grand Trunk Railway :

May it please your Royal Highness,—The Directors of the Grand Trunk Railway Company of Canada, beg leave to offer to your Royal Highness a respectful welcome to the Province. The Canadian Parliament has made the completion of the Victoria Bridge, the

labour of a whole summer. Some of the piers were destroyed by ice and quicksands as often as six or seven times year after year; and on the *average* of the whole twenty-four piers, the works of each one were actually destroyed *thrice*. At last the piers got above water, and were faced towards the set of the current with a long massive wedge of granite masonry, strong and sharp enough to divide even the icefields of the St. Lawrence. The dangerous rapidity of the stream made it impossible that the tubes could be built on shore, floated out on rafts, and then raised to their positions in one piece, as was the case with the bridge at Menai. So the whole tube was first actually built in England, and sent out piece-meal, with every plate-bar and angle-iron numbered with such minute exactness, that, as far as putting together was concerned, there was no more difficulty than with a child's toy. Thus, with the assistance of a temporary scaffolding stretched between the piers, tube after tube was slowly built across the centre, where the great span of three hundred and fifty feet comes. As may be imagined, the work of building this across with no supports from below, presented a series of engineering difficulties, such as have never yet been encountered in any piece of iron-work that was ever

put together. Mr. Hodges, however, persevered and triumphed here, as he had done elsewhere, and at length at the close of last year, five years after the commencement of the work, the first stone and iron bridge over the St. Lawrence was completed. It was tested with a strain more than ten times greater than any which the ordinary exigencies of traffic can ever bring upon it. The deflection of the centre tube under this great pressure was little more than an inch, which recovered itself the instant the load was removed from off it.

occasion on which to invite our most gracious Sovereign to visit her Canadian possessions, and, in welcoming your Royal Highness to Canada as her representative, they have referred with just pride to this great work as evidence of the results achieved through the union of British capital and skill, with Canadian enterprise and progress. The Victoria Bridge, as your Royal Highness is aware, has been constructed in the face of the greatest engineering difficulties. It is the connecting link of eleven hundred miles of railway, extending from the extreme Western limits of Canada nearly to its Eastern boundary, and also affording an outlet to Provincial trade to the Atlantic when the rigour of our climate closes the natural channel by the Saint Lawrence. This great national highway has been carried through by a vast outlay of British capital, fostered by the most wise policy and generous aid of the Canadian Parliament, and, as now completed, will develop and promote not only the interchange of commerce and intercourse between the various districts of this widely extended Province, but will also secure to it a large share of the rapidly increasing trade of the West. Canada now possesses a complete system of railway communication, combined with an internal navigation of unrivalled extent; and, in your future progress to the West, your Royal Highness will observe the best evidence of the wisdom and energy which have thus been applied to the development of the resources of this great Province. The Directors have now to express their profound gratitude to their most gracious Sovereign and to your Royal Highness for your consideration in honouring this enterprise with your presence, and they pray that your Royal Highness will now be pleased finally to inaugurate the completion of the Victoria Bridge, and thus to permit the greatest engineering work of modern days to be associated with the auspicious occasion of the first visit of the Heir Apparent of the Throne to her Majesty's loyal Province of Canada.