

## THE QUEBEC BRIDGE DISASTER.

[By a member of our own staff, who visited the scene of the wreck.]

For the benefit of those readers who are not familiar with previous descriptive articles of the "Quebec Bridge" that have appeared in the Canadian Engineer, the following particulars of the bridge are given:—

### Dimensions of the Bridge.

The dimensions and points of interest of the bridge are as follows:



Main Pier and Steel Work Adjacent.

Type of bridge, cantilever.

Total length of bridge between abutments, 3,220 feet.

Consists of: two deck truss approach spans, each 210 feet long; two anchor arms, each 500 feet; two cantilever arms, each 562½ feet long, one suspended span, 675 feet long, the longest single truss span ever built.

Central span, centre to centre of main piers, 1,800 feet, the longest in the world.

Type of trusses, pin-connected.

Width, centre to centre of trusses, 67 feet.

Depth of trusses varies from 97 feet at the portals to 315 feet over main piers.

Clear headway over high tide, 150 feet, for a width of 1,200 feet.

Height of peaks of main posts above the river, 400 feet.

Capacity, two railway and two electric railway tracks, two roadways and two footwalks, all on same level.

Total weight of steel in bridge, 38,500 tons.

Weight of heaviest single pieces handled, 100 tons.

Longest single section shipped to bridge site, 105 feet.

Eyebars, the largest yet used, with a maximum of 56 on one pin.

Diameters of pins from 9 to 24 inches, and up to 10 feet in length.

Total number of field rivets to drive, about 550,000.

Type of traveller used for erecting anchor and cantilever arm trusses, gountry, running outside of trusses, on tracks at about floor level, and spanning highest point of bridge.

Weight of gountry traveller, fully rigged, with all accessories, 1,000 tons.

Steel wire cable on traveller, seven miles of seven-eighths.

Manilla rope on traveller, 13 miles of one-inch, one and one-half inch, one and three-quarter inch, and two-inch.

Grade of one per cent. on each end, connected at centre by vertical curve, 1,125 feet long.

Most complicated shop work was on the main pier shoes, the detailed drawing for which took one draughtsman six months to make. These shoes weigh 73¾ tons each.

Main piers built of concrete, faced with massive, rock-faced granite, were sunk with pneumatic caissons 150 by 49 feet, and 25 feet high. The tops of these piers measure 133 by 30 feet, and they contain 35,000 cubic yards of masonry.

Anchor piers, built of concrete, faced with granite, are 30 by 111 feet at the base, 56 feet high from bottom of anchorage metal, measure 24 feet by 105 feet at the coping, and contain 14,400 cubic yards of masonry.

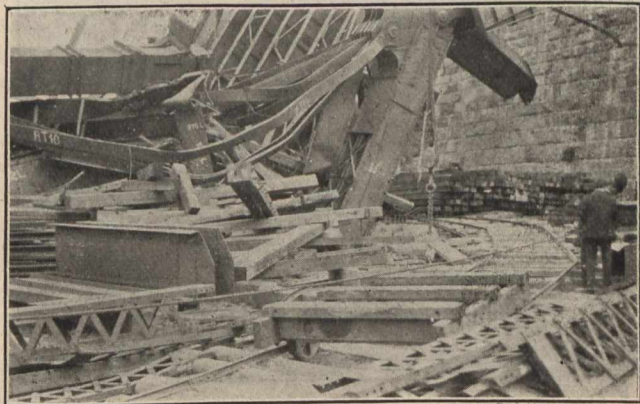
Abutments, built of concrete, faced with granite, are 80 feet wide, 40 feet deep, and contain 4,000 cubic yards of masonry.

### The Disaster.

On the evening of August 29th the enormous structure, known as the Quebec Bridge, collapsed, and in less than half a minute the work of two years was annihilated. The section which collapsed was the anchor arm, cantilever arm and a portion of the suspended span which had been built from the south bank of the St. Lawrence River outwards to join the portion being erected on the north bank of the river. It was estimated that the total weight of the bridge, when completed, would be 40,000 tons, and practically, 16,000 tons may now be seen, stretching from the anchor arm outwards to the river pier, a tangled mass of ruins. Engineers on the spot declare that never in the history of the world was such a sight of massive, twisted and crumpled steel structural work seen before. Upwards of seventy lives and two millions of dollars is the toll.

The collapse occurred, so far as can be authenticated, without any warning. Several statements have been made regarding warnings, and one, credited to Theodore Cooper, the consulting engineer of the Phoenix Bridge Company, the builders of the bridge, has been wholly or in part repudiated. At 5.35 p.m., shortly before the workmen were to have quit work, the bridge went down with a grind and a roar, and in less than 30 seconds nothing was left standing of the enormous structure, save the approach span.

Any casual attempt to arrive at the cause of the accident would be futile, and even a thorough investigation may not be productive of certainty in this respect. However, the Government has appointed a commission of able engineers to attempt this purpose. The commission consists of Professors J. G. G. Kerry and J. T. Galbraith, of Toronto; and Mr. Henry Holgate, C.E., consulting engineer, of Montreal. The latter commissioner was on the ground when the repre-



Anchor Arm.

sentative of the Canadian Engineer visited the bridge, and it was through Mr. Holgate that the information contained herein was obtained. The commission is working in harmony with the bridge engineers by whose assistance various main members have been located in the wreckage and plainly numbered in order that their present position may be traced from that which they occupied in the structure.

### General Appearance.

Not the least astonishing feature to be noted by the careful observer is the manner in which the bridge seems to have fallen. On the up-river side, the position of the steel on the ground does not seem to have anywhere fallen more than about six feet out of the vertical. On the down-river side, the steel may be found possibly twenty feet out of posi-