

# The Canadian Engineer

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## The Canadian Engineer

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### THE QUEBEC BRIDGE.

Thus far the Commission that is investigating the Quebec bridge disaster, has not been able to arrive at any conclusion as to what the actual cause of the collapse was, while the verdict of the Coroner’s Jury is, “We have not been able to adduce the cause of the collapse of the bridge, but believe it our duty to declare that, according to proof adduced at the inquest, all necessary precautions were taken to ensure the safety of the structure.”

The evidence given up to the time of writing is to the effect that the design, shop work, and erection work on the site were given the best possible care, and nothing was left undone that would make the structure a worthy monument to the skill of the engineers. In the words of Mr. Holgate, Chairman of the Commission:—“As far as we have been able to learn, there had been the greatest care taken all along the line to ensure the safety and permanency of the Quebec bridge structure. The best engineers on the continent prepared the plans and specifications, and a wonderful care and accuracy in carrying them out was shown. We found absolutely no trace of dishonesty or graft in connection with the construction of the bridge. This seems to be the case of the best engineering brains on the continent and the very best accepted engineering methods being on trial.”

At the time of the collapse it was said that the bridge went down without any warning. It has been shown, however, that the bridge showed signs of weakness, which were apparently neglected by the engineers in charge. Even the workmen gave more attention to these than did the men who were responsible for the safety of the structure. Many of the workmen have stated that the bridge showed signs of distress three weeks before the collapse. Of course, with the structure a tangled mass of steel at the bottom of the river, there is no evidence of this further than what has been stated by the men. If from the design this can be shown to be the case then those who had charge of the erection should be severely censured for the loss of life incurred, if not for the collapse itself.

The opinion of eminent engineers is that the bridge would have carried its load when completed, and that in this respect the design was all right, but the stresses on the finished structure, and those during erection are totally different, and it is these latter that were not properly provided for. At the time of the disaster the portion of the bridge hanging over the river (nearly 750 feet), practically constituted a long heavy lever. The finished bridge would have presented an arch, and on the lever and the arch the strains would be of an entirely different character. It is quite possible, too, that the bridge had a slight lateral motion, as there was a strong wind blowing at the time of the accident. The weight of the overhanging span, being thrown on one side, made an additional weight, straining the members beyond their factor of safety on the side to which the weight was thrown. In this case the bridge would appear to collapse vertically, but such would not actually have been the case. The side receiving the weight would have gone down almost straight, while the other side would have fallen inwards somewhat.