

# The Canadian Engineer

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## The Canadian Engineer

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Editor—E. A. JAMES, B.A. Sc.

Business Manager—JAMES J. SALMOND

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HEAD OFFICE: 62 Church Street, and Court Street, Toronto  
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Montreal Office: B33, Board of Trade Building. T. C. Allum, Editorial  
Representative, Phone M 1001.

Winnipeg Office: Room 315, Nanton Building. Phone 8142. G. W. Goodall  
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### CONTENTS OF THIS ISSUE.

#### Editorials.

The New Quebec Bridge.....	307
Boiler and Engine Failures .....	307
A Great Company's Annual Report.....	308
Editorial Notes .....	308

#### Leading Articles:

Great Engineering Works on C.P.R.....	321
City of Westmount Destructor.....	329
New Locomotives for Grand Trunk Railway..	308
Stresses in Masonry Dams .....	310

#### Sanitary Review:

Stream Pollution .....	315
Sewage Disposal—Contact Beds .....	315
The Durham Main Sewerage Works.....	317

Page of Costs .....	319
Railway Earnings .....	313
Railway Orders .....	318
Engineering Societies .....	330
Construction News .....	331
Market Conditions .....	334

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issue. If proofs are to be submitted, changes should  
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### THE NEW QUEBEC BRIDGE.

Will the new Quebec Bridge be ready for traffic before the completion of the National Transcontinental Railway? It is very doubtful. But the construction of the new bridge is absolutely necessary to the completion of the Transcontinental Railway scheme.

It is fortunate that the Board of Engineers have made such satisfactory progress with their examinations and preliminary plans. We are informed that the centre span will be shortened by one hundred feet, thus leaving six hundred feet one hundred and fifty feet above high water. It is to be eighty-five feet wide, twenty-four feet wider than the old bridge. A new pier will be built on the Quebec side, and the span will be reduced from eighteen hundred to seventeen hundred and fifteen. The south side pier will be enlarged. This will be necessary, since the increased width and heavier members to be employed in the new structure will make it about fifty per cent. heavier than was calculated for the original structure.

The most important decision, however, is that which intimates that the new bridge may be a suspension one. Tenders will be called for both the cantilever and suspension type, and the cost and time of erection will have some considerable influence on the design to be adopted.

Another important announcement that has been made is in reference to the use of nickel steel. In the Canadian Engineer, Vol. XVII., page 83, Mr. R. E. Chadwick summarizes Dr. Waddell's paper on "Nickel Steel Bridges." In this paper particular stress was placed upon the use of nickel in bridges with such large spans as the Quebec Bridge. The new bridge will have nickel steel members. It is said the eye-bars and compression members are to be of this material.

It is some satisfaction to know that the Board of Engineers are having a free hand, and that the want of neither time or money is to be the cause of another failure.

### BOILER AND ENGINE FAILURES.

An interesting report is that of the chief engineer of the British Engine, Boiler and Electrical Insurance Company. And although written largely for their own company, yet it contains information of great value to the profession.

The first paragraph closes with this statement: "The ratios of breakdown of steam and gas engines have been approximately equal, viz., 1 in 9.4 and 1 in 9.1, as against 1 in 11.7 and 1 in 11.1 in 1907."

Following this are two tables showing the proportions in which the various parts of insured engines broke down. In 1908 the valves and valve gears of steam engines were responsible for 34.8 per cent. of the breakdowns. In gas engines the same parts were responsible for 31.3 per cent. of the failures. It should be noted, however, that in the case of the steam engine the number of failures was 14 per cent. above the average, and in the gas engine 1 per cent. below. Cylinders and cylinder ends were responsible for 6.2 of the failures in steam engines, but in gas 19.4. Connecting-rods and bolts—steam, 2.9; gas, 10.8, and so on throughout the tables