

# The Canadian Engineer

WEEKLY

ESTABLISHED 1893

Vol. XIV.—No. 9.

TORONTO, SEPTEMBER 6th, 1907.

{ PRICE 15 CENTS  
\$2.00 PER YEAR.

## The Canadian Engineer

ESTABLISHED 1893

Issued Weekly in the interests of the

CIVIL, MECHANICAL STRUCTURAL, ELECTRICAL, MARINE AND  
MINING ENGINEER, THE SURVEYOR, THE  
MANUFACTURER AND THE  
CONTRACTOR.

Subscription: Canada and Great Britain, \$2.00 per year; United States, \$2.50;  
Foreign, 10s., payable in advance.

Advertising rates on application.

HEAD OFFICE: 62 Church Street, and Court Street, Toronto.  
TELEPHONE MAIN 7404.

Montreal Office: B 32 Board of Trade Building. A. H. Clapp. Phone M 2797.

Winnipeg Office: 330 Smith Street. Amalgamated Press of Canada, Limited  
Phone 5758.

Vancouver Office: Representative: A. Oswald Barratt. 417 Richards Street.

British Representative: A. Webster, 34 Park Ave., North Hornsey, N., London.

Address all communications to the Company and not to individuals.  
Everything affecting the editorial department should be directed to the Editor.

### NOTICE TO ADVERTISERS:

Changes of advertisement copy should reach the Head Office by 10 a.m.  
Monday preceding the date of publication, except the first issue of the month for  
which changes of copy should be received at least two weeks prior to publication date

Printed at the office of THE MONETARY TIMES PRINTING CO., Limited,  
TORONTO, CANADA.

TORONTO, CANADA, SEPTEMBER 6th, 1907.

### CONTENTS OF THIS ISSUE.

Editorial:—

Quebec Bridge Collapse . . . . .	309
Peat Fuel . . . . .	310
Notes . . . . .	310
Market Conditions . . . . .	310
Book Reviews . . . . .	312
The Quebec Bridge Disaster . . . . .	313
A Boiler Shell Drill . . . . .	315
Wooden Pipe . . . . .	315
Calculation of Overhaul . . . . .	317
New Milling Machines . . . . .	318
Omaha Pumping Plant . . . . .	319
Engineering News from Great Britain . . . . .	321
Parsons Steam Turbine in Marine Service . . . . .	323
Modern Amateur Machine Shops . . . . .	324
Universal Index and Spiral Head . . . . .	325
St. Lawrence Ship Channel . . . . .	326
Septic Tanks . . . . .	328
A Seamless Drawn Steel Bath Tub . . . . .	331
Mineral Resources of New Zealand . . . . .	332
News Items . . . . .	335
New Buildings . . . . .	335
Marine . . . . .	335
Trade Inquiries . . . . .	335
Tender . . . . .	336
Contracts Awarded . . . . .	336
Municipal . . . . .	336
Obituary . . . . .	336
Catalogues and Circulars . . . . .	339
Concrete Pavements . . . . .	340

### THE QUEBEC BRIDGE COLLAPSE.

On another page is given a detailed description of the collapse of what was to have been the largest bridge in the world. Up to last Thursday the work on the steel superstructure had proceeded very favorably, and in a few seconds of time the completed portion of the bridge was no more, and coupled with the collapse of this immense structure, upon which the eyes of engineers the world over were fixed, there was an appalling loss of life.

It is too early to be able to say what the cause was, but it is evident that some one has blundered. Many bridge experts have passed their opinion on the design as being quite satisfactory, and although a bridge of this span has never before been built, the data designers have to be guided by, are sufficient to enable them to make their calculation practically perfect. There are many things that would cause a structure of this kind to collapse besides faulty design, viz.; poor material, careless workmanship, faulty erection, and possibly the removal of the false work at too early a stage. One of these was undoubtedly the cause of the terrible disaster. At this stage it is too early to say which. We only know that the work already completed is no more, and the lives of between 80 and 90 workmen have been sacrificed.

Nothing will be left undone to find out the cause. If the design is at fault it will be laid aside. If the workmanship was not up to standard then the builders should be made to pay the penalty. In any case the blame for the downfall should be brought home to the party or parties who were the cause of it.

To say that the undertaking is impossible would be unsafe, since it would almost seem that nothing is impossible to the engineer of to-day. One thing is certain, there is a limit of length to which a single span may be built with safety, and it is just possible that in this case the limit has been more than reached.

If poor workmanship or the method of erection was the cause it is more than likely that the particular fault will never be found, but if on the other hand the design was wrong it will be an easy matter to place the blame. It appears that a number of changes have been made since the original design was prepared, and it is not unlikely that the error in calculation, if there was one, was made when the changes were in progress, and as every engineer well knows, one mis-step in the calculations, or the placing of one weak member, would mean the collapse of the whole.

There is only one consolatory thing in the whole affair, and that is that the collapse came when it did. Had the defective portion held until the bridge was completed, at some time when the bridge was carrying more or less of an overload it would have gone down, and the loss of life would have been considerably greater, to say nothing of the increased financial loss.

If it is possible to build a bridge with a single span of 1,800 ft., the Quebec Bridge will be built, but before another attempt is made the present design should be checked from beginning to end, and positive proof given that it will be absolutely safe. If the design is defective