

The Canadian Engineer

WEEKLY

ESTABLISHED 1893

Vol. 15.

TORONTO, CANADA, JUNE 5th, 1908.

No. 23

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.

Editor—E. J. A. JAMES, B.A. Sc.

Business Manager—JAMES J. SALMOND.

Present Terms of Subscription, payable in advance:

Canada and Great Britain:		United States and other Countries:	
One Year	\$2.00	One Year	\$2.50
Six Months	1.25	Six Months	1.50
Three Months	0.75	Three Months	1.00

ADVERTISEMENT RATES ON APPLICATION.

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

Montreal Office: B 32 Board of Trade Building. T. C. Allum, Business and Editorial Representative. Phone M 2797.

Winnipeg Office: 330 Smith Street. G. W. Goodall, Business and Editorial Representative.

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

NOTICE TO ADVERTISEES:

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, JUNE 5th, 1908.

CONTENTS OF THIS ISSUE.

Editorial:	Page.
Sewage Disposal	379
Expert Evidence	379
Leading Articles:	
Action of Water on Galvanized Iron.....	380
Peat as a Steam Fuel	381
Determination of Area of Waterways.....	387
Brick as Roadway Foundations.....	389
Preignition in Gas Engines	390
Equipment for Swing Bridges	393
Rail Fasteners and Ties.....	397
French River Bridge	400
Suction as Applied to Pumps.....	404
Powerful Pump Engines	406
Winnipeg's High Pressure Service	407
Elimination of Fire Risk	409
Correspondence	
Covered Highway Bridge	382
Vertical Curves	382
Location on G.T.P.	383
Book Reviews	409
Society Notes	384
Orders of Railway Board	385
Construction News	411
Market Conditions	414

SEWAGE DISPOSAL.

On June 27th the ratepayers of Toronto will be asked to vote upon two by-laws, one involving \$2,400,000 for a trunk sewer and sewage disposal works, and a second involving \$750,000 for a water filtration plant. When the matter was first discussed there was a danger of several other schemes being voted on at the same time. Fortunately it is not so. It would be better if for the present the water filtration scheme were abandoned, and the question of the trunk sewer, and that only, were brought before the people.

The question that Toronto is face to face with is a live question in most inland towns and cities of Canada. For years they have poured their sewage into the rivers and lakes, sometimes contaminating their own water supply, in other cases polluting the water supply of other municipalities—in every case endangering the health of the people of the Province. Some years ago this method of pouring sewage into fresh water was not as objectionable as to-day. The urban population was not so dense, and the stream flow and water levels did not vary to such a degree. Many streams that ten years ago had a summer flow sufficient to dilute the emptied sewage are now, in summer months, a series of stagnant ponds and pools, breeders of disease germs. For years Toronto Bay has been a large cesspool, and Toronto's water supply has been a constant source of danger. The trunk sewer and sewage disposal works are a local necessity—a necessity that Toronto's citizens will recognize and supply the money for their construction.

But what about other towns and cities that are as unscientific and unhygienic as Toronto in matters of sewage disposal? It seems to us that Provincial Boards of Health should secure the services of an experienced sanitary engineer, who would act as consulting engineer for the municipalities; but he should do more: he should inspect the sewage disposal works throughout the country and recommend improvements where necessary. The Provincial Board should prevent the adoption of poor schemes and demand the betterment of many existing systems. Canada can ill afford to continue many of the existing sewage disposal plants. It would be good economy to improve and remodel them now.

EXPERT EVIDENCE.

Within a month in three Canadian cities there have been held three investigations. In each case the final decision is expected to be influenced by the evidence of expert engineers. Sane, conservative, practical advice is what is required; yet one cannot sit in the courtroom half an hour without concluding that the fate of the various propositions depends not upon their practicability, their reasonableness, or the justice of the claim, but upon the impression, artificial or otherwise, that the legal gentlemen are able to create by the use or abuse of the witness.

Expert witnesses have been used in the past, and will be in the future, to draw a herring across the trail. It has been suggested that expert evidence can be bought by the yard, or pound, or hour, as the occasion required. Perhaps this is one reason that great latitude is allowed counsel in cross examination. In direct