

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.Managing Director.—James J. Salmond.
Managing Editor.—E. A. James, B. A. Sc.
Advertising Manager.—A. E. Jennings.

Present Terms of Subscription, payable in advance:

Canada and Great Britain:			United States and other Countries:		
One Year	-	\$3.00	One Year	-	\$3.50
Three Months	-	1.25	Six Months	-	2.00
Six Months	-	1.75	Three Months	-	1.00

Copies Antedating This Issue by More Than One Month, 25 Cents Each.

Copies Antedating This Issue by More Than Six Months, 50 Cents Each.

ADVERTISING RATES ON APPLICATION.

HEAD OFFICE: 62 Church Street, and Court Street, Toronto, Ont.
Telephone, Main 7404 and 7405, branch exchange connecting all departments.

Montreal Office: B33, Board of Trade Building. T. C. Allum, Editorial Representative, Phone M. 1001.

Winnipeg Office: Room 404, Builders' Exchange Building. Phone M. 7550.
G. W. Goodall, Business and Editorial Representative.London Office: Grand Trunk Building, Cockspur Street, Trafalgar Square,
T. R. Clougher, Business and Editorial Representative. Telephone
527 Central.Germany and Austria Hungary: Friedrich Lehfeldt, 2 Lindenstrassa,
Berlin S.W., 68. Telephone IV., 3198; Telegrams, Advertise, Berlin.
Address all communications to the Company and not to individuals.
Everything affecting the editorial department should be directed to the Editor.

The Canadian Engineer absorbed The Canadian Cement and Concrete Review in 1910.

NOTICE TO ADVERTISERS.

Changes of advertisement copy should reach the Head Office two weeks before the date of publication, except in cases where proofs are to be submitted, for which the necessary extra time should be allowed.

Printed at the Office of The Monetary Times Printing Company,
Limited, Toronto, Canada.

Vol. 21. TORONTO, CANADA, Aug. 3, 1911. No. 5.

CONTENTS OF THIS ISSUE.

Editorial:

A Science Graduate and Railway Operation	135
Cast Iron Pipe Specification	135

Leading Articles:

Standard Plans and Specifications for Retaining Walls	123
Economical Coal Purchasing	125
Selection of Length of Transition Spiral	126
Tests of Oil-Cement Concrete in Roads	127
Steel Pipes for Water Mains	129
Economical Proportioning of Concrete	130
Owned vs. Rented Construction Plants	130
Electric Furnaces	131
Flow Through Locomotive Water Columns	136
Depreciation as Related to Electric Properties ..	137
A Novel Method of Overcoming Peak Load Troubles ..	143
The Necessity of Steel Highway Bridge Inspection, etc.	144
A New Theory for the Design of Reinforced Concrete Reservoirs	147
Engineering Society	150
Construction News	151
Market Conditions	60
Railway Orders	58

A SCIENCE GRADUATE AND RAILWAY OPERATION.

The appointment of Mr. S. B. Clement, Chief Engineer and Manager of Maintenance for the T. & N. O. Railway, this week serves to draw attention to the field, and the possibilities of that field, of railroading as a vocation for the graduates of the Faculties of Applied Science of our Canadian university.

First, we wish to congratulate Mr. Clement upon his appointment to the position of chief of affairs on a road which is so successfully meeting the requirements not only of a colonized road, but of a direct transportation route feeding two transcontinental systems.

Engineering, which has to do with the maintenance of way and the general business of the road, outside of train operation, are so intimately connected that we are surprised Canadian railroads have not encouraged in a greater degree their engineers to combine with their engineering training the business end of railroading. This has been done very successfully in the United States, and in the few isolated instances where it has been tried in Canada it has worked out most successfully, both for the corporation and the individual.

The careful training the Science student receives in the University, his field experience—both technical and executive—while carrying on his engineering work, and his wide general knowledge should make him an exceptionally good man to handle the business of a railway.

Recently there was brought to our attention the various steps necessary to secure the consent for a siding on one of our Canadian railways. The merchant applied to the terminal superintendent, the terminal superintendent sent it on to the division superintendent, the division superintendent transferred it to the division engineer, the division engineer requested the resident engineer to report, and this report had to go back the same four steps that the request came. What a saving to the railway in time and how much better would the customer have been satisfied if the superintendent and the engineer had been one so that direct dealing would have been possible!

We have written on this subject before, and although very little progress is being made in the appointment of resident engineers as superintendent or for an amalgamation of the two departments, yet we believe the day will come when the engineers will not only have the control of the track and bridges but will be the managers of operation.

CAST IRON PIPE SPECIFICATIONS.

About a year ago, the Canadian Society of Civil Engineers issued standard specifications for cast iron water pipe. This move was the outcome of the extremely confused condition that existed with reference to cast iron water pipe specifications—every engineer or community having different opinions as to what was desirable in such a pipe.

Although these specifications have been before the engineering profession for considerable time, yet there is still a great deal to be desired in the bringing about a reformation in the confused state intimated above. The buyers of cast iron water pipe still cling to their antiquated specifications; or worse still, forget to specify anything definite, with the result that they think themselves outraged when supplied with a heavy grade.