

The Canadian Engineer

ESTABLISHED 1903.

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 Lindenstrasse,
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, July 27, 1911. No. 4.

CONTENTS OF THIS ISSUE.

The Grand Trunk Pacific	105
The Spirit of the North	106
Leading Articles:	
Conditions Along the Proposed Route of the Hudson Bay Railway	93
Proposed Specifications for Steel Sheets, etc.....	95
Handling of Men	97
Correcting Back Firing and Fuel Waste in Pro- ducer Gas Engine Plant	98
Railway Mileage of the World	99
A Study of Ventilation in Sleeping Cars	100
Designing a Concrete Construction Plant	103
Concrete in a New Hydro-Electric Station	103
The New Dry Dock for the Polson Iron Works....	104
A New Field Gun	104
Chlorine Treatment of Drinking Water	106
Ballast	108
Costa Rica and Guatemala Sands	108
Railroad and Company Earnings	110
Kinds of Wood Best Adapted for Crossties	111
Notes on Pile Driving Costs	112
The Influence of Underdrainage on Spring Floods.	115
The Training of Engineers	116
Quebec Asbestos Field	118
Forest Products of Canada	118
Railway Orders	119
Engineering Societies	120
Construction News	121
Market Conditions	60

THE GRAND TRUNK PACIFIC.

The predicted date of completion of the Grand Trunk Pacific Railway has been changed more than once. Mr. Charles M. Hays, the president of the road, recently spent six weeks inspecting the greater part of the system now under construction. After this visit, he stated the road will be completed from the Atlantic to the Pacific ocean in 1914—a forecast which has the benefit of twelve months' elasticity. From Winnipeg to Edmonton, ninety-five per cent. of the territory on both sides of the new transcontinental is good wheat-growing land. The remaining five per cent. is suitable for grazing purposes. But Edmonton is not the end of the fertile belt in Alberta. For 150 miles west of the provincial capital, there is more excellent land. This fact will in due time help Edmonton considerably. It must naturally become the distributing point for the Peace River region as well as for other large stretches of country, the settlement of which is but a matter of a few years.

Good progress has been made with the section of the road running through the clay belt of Northern Ontario. This is completed a considerable distance both east and west of Cochrane, a divisional point of the Grand Trunk Pacific and the present terminus of the Temiskaming Railway. On both sides of the line again, there is good farming land.

By the time the main line is finished to the port of Prince Rupert, in British Columbia, the company's branch from the port of Montreal to the main line will have been built and ready for traffic. Three charters have been granted by parliament for connecting Montreal with the main line.

The Grand Trunk Pacific will be able to give considerable assistance in the movement of the Western crop this year. The company has elevator facilities at Fort William. Last season they brought over their road 6,000,000 bushels of wheat to Lake Superior. During the coming crop movement, they anticipate carrying 12,000,000 bushels to the head of the lakes. A branch line will tap the coal deposits west of Edmonton, where the mines will be operated by at least three eastern companies. The distance from the coal mines to the main line is about fifty miles, and this track is practically completed.

The road will be practically level from ocean to ocean, the average gradient being four-tenths of one per cent. On completion, the company will take over the eastern section from the Dominion government and will operate it for the first seven years at cost, and after at a rental of 3 per cent. on the cost of construction. The completed Grand Trunk Pacific Railway will be made up as follows:—

Section.	Miles.
Moncton to Winnipeg (National Transcontinental, under construction)	1,805
Winnipeg to Edmonton (constructed).....	793
Edmonton to Prince Rupert (part constructed)....	962

The Canadian Northern Railway will probably have a completed transcontinental by the time the Grand Trunk Pacific is running trains from the Atlantic to its sister ocean. Canada will then have three coast-to-coast railway systems.