

# The Canadian Engineer

*A weekly paper for engineers and engineering-contractors*

## NOTABLE C.P.R. TUNNELS IN BRITISH COLUMBIA

SPIRAL TUNNELS IN THE KICKING HORSE VALLEY—ROGER'S PASS TUNNEL THROUGH THE SELKIRK RANGE—FIRST OF THE SERIES OF ARTICLES DESCRIPTIVE OF DISTINCTIVE ENGINEERING FEATURES OF THE CANADIAN PACIFIC RAILWAY.

ON October 21st, 1880, the Canadian Pacific Railway Company signed a contract with the Government of the Dominion of Canada to build a railway across the prairies and through the Rocky Mountains to the Pacific coast. The contract called for completion in ten years' time. This was deemed by

many an out-and-out impossibility, owing to the topography of certain sections of the country and the inaccessible nature of the right-of-way for the supply of construction materials. By many, also, the project was pronounced a useless enterprise, to go down in history as one of the greatest blunders of the new Dominion. The country through which much of the railway would pass was believed by many to be a land "where nothing—not even a blade of corn—will ripen."

To the surmise regarding the engineering impossibility of the project within the time limit, it is a remarkable and equally creditable fact in

the history of Canada that trains passed from tide-water to tide-water in November, 1885, and that during the year fixed for the completion of the contract, the line earned \$20,000,000 for the builders. This latter accomplishment answers in a measure the traditional rumors of foolhardiness and blunder, as have likewise the annually increasing earnings of the company. During the past five years

the gross earnings have amounted in round numbers to \$10,500 per mile. The mileage of the line, as it stands at the present day, including branch services, amounts to 12,917 miles.

The speedy construction of the line in the early eighties necessitated a considerable amount of temporary

work. The judgment of this has been fully warranted, first in the matter of early operation and later by a realization of a large saving in first cost and interest and a correspondingly large sum in ultimate cost.

It was to have been expected, therefore, that increasing trade, with its resultant changes to rolling stock and right-of-way, would see in the past thirty years many millions spent in grade reductions, in the erection of permanent structures and in the development of better terminal facilities. Those who have followed the railway development of Canada are fully aware that the Canadian Pacific Rail-



Fig. 1.—The Kicking Horse Valley Which the C.P.R. Follows Past Mount Stephen.

way has outrun the railroads of older and more settled countries in this respect. It is with a view to calling attention in a cumulative sort of way to a few of the outstanding features of this track development that the present series of descriptive articles has been prepared. It is doubtful if there is in America a better illustration of what may be done in the way of grade reduction in