

# The Canadian Engineer

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## RAILWAY CROSS TIES

SUITABLE WOODS — NATURE OF MECHANICAL WEAR — PROTECTION  
— THE VALUE OF TIE PLATES — TYPES USED BY VARIOUS ROADS

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IN the construction and maintenance of a railway the cross tie is in itself an almost insignificant item, but when one considers the fact that the railways in Canada have to face an expenditure of over 10 million dollars per annum on ties alone, they have a bearing on the economics of railway management of much greater importance than would at first appear possible. This expenditure is one that is increasing every year. The statistics are not yet available for the year 1913, but the amount actually spent on ties by the steam and electric railways of Canada was \$5,540,769 in 1911, and \$9,373,869 in 1912, an increase of 69%, so that there is no doubt but that the figure for 1913 will be well over the \$10,000,000 mark.

The causes of this large increase are many, but the most prominent are: (1) The larger number used; (2) increase of cost per tie; (3) increased use of the more expensive hardwood ties, and (4) the shorter life of ties. Analyzing these items separately, the first needs little comment as the increase is a natural one due to the growth of railway mileage; a small proportion of this item is also accounted for by item (4), namely, the shorter life of ties.

The increased cost per tie is mostly caused by the greater demand and diminishing supply. Some years ago the supply was so unlimited that practically no ties were imported into Canada, and the railways could obtain very nearly all they might require from points in close proximity to their own lines, thus reducing the cost of haulage. But in recent years the available supply has become reduced and localized so that the railways have had to import ties to quite a considerable extent, large quantities of southern hard pine being brought over 1,500 miles from Louisiana and Georgia. In 1912 the value of imported ties was approximately \$1,700,000, or 20% of

the total expenditure of Canadian railways on ties. The average cost per tie of all the ties used in 1911 was 39c., and in 1912, 44c., and with the prices prevalent during 1913 there is little doubt but that there will be a similar increase in the average price for the year just passed.

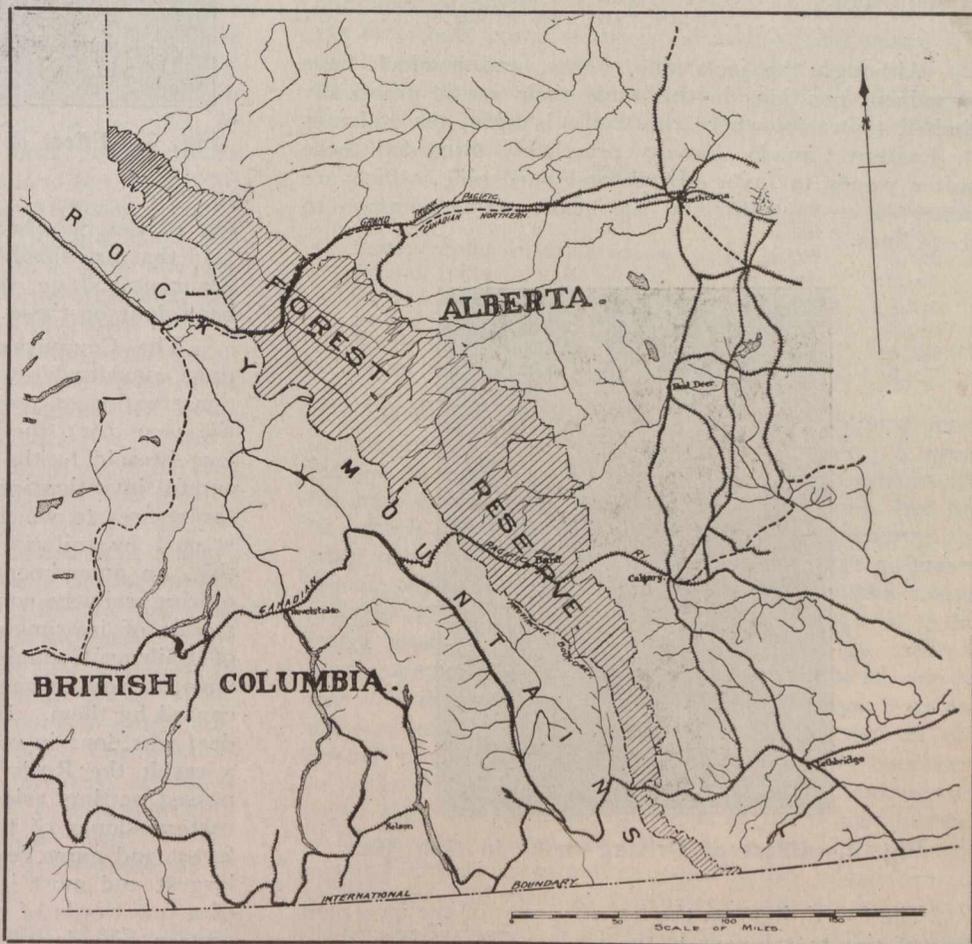


Fig. 1.—Rocky Mountain Forest Reserve.

There has been a steady increase in the use of hardwood ties to replace the softer kinds previously used. At one time there were more cedar ties used than any other kind, but in later years the number used has fluctuated considerably, while there has been a steady increase in the number of hardwood ties used, such as the oak and hard pine. In 1911 the percentages of these two kinds were 1.0 and .003 respectively of the total