

Arrangements have been made with the University Club, Vancouver, whereby the members of the society have the use of the club reading-room.

No papers have been arranged for the coming season as so many members are overseas.

## VICTORIA

NINE meetings were held during the year, with an average attendance of twelve. Six papers were read and discussed, as follows:—

E. Davis, "Rules and Regulations of British Columbia relating to Annual Rental of Water Powers"; C. E. Fowler, "Architecture of Bridges"; R. F. Hayward, "Mexican Light and Power Company's Development"; W. Young and W. C. Smith, "Domestic Water Supply of Greater Vancouver"; D. O. Lewis, "Marine Wood Borers"; Dr. Plaskett, "Construction of New

Dominion Observatory and Telescope on Little Saanich Mountain, Victoria."

Three applicants were elected branch associates, of whom two are now corporate members of the society.

Three corporate members and three branch associates have joined the overseas forces during the past year, bringing our known total up to twenty-five in the C.E.F., and of this number two corporate members have been killed in action during 1916.

The membership of the branch stands as follows:—

Members, 24; associate members, 33; juniors, 8; students, 1; branch associates, 9; total, 75, showing a decrease of four compared with last year's total.

The following officers were elected for 1917 at the annual meeting, held December 13th:—

Chairman, D. O. Lewis; vice-chairman, R. A. Bainbridge; treasurer, E. Davis; secretary, R. W. Macintyre; other members of executive, E. G. Marriott, C. Hoard and (ex-officio) F. C. Gamble and H. W. E. Canavan; auditors, Lewis W. Toms and J. B. Shaw.

# CANADA'S RAILWAY PROBLEM AND ITS SOLUTION\*

OUR RAILWAYS SHOULD BE MORE CONSOLIDATED—LEAVE THE CANADIAN PACIFIC AS IT IS AND FORM NEW PRIVATE CORPORATION TO TAKE OVER C.N.R., G.T.R., G.T.P. AND TRANSCONTINENTAL

By WILLIAM FRANCIS TYE, C.E.,

Formerly Chief Engineer, Canadian Pacific Railway Co.

After a great deal of study of Canada's railway problem, the writer of this paper has arrived at the following conclusions:—

1. The National Transcontinental, the Grand Trunk Pacific and the Canadian Northern railways are unable to earn their operating expenses and their fixed charges. Canada has built, and is operating, the first of these roads, and Canada and the various provinces have guaranteed the principal and interest of most of the bonds of the other two. As the roads are unable to earn their fixed charges, they must, of necessity, be paid by the country.

2. The failure of these roads is due to the duplication of lines by all the railways, encouraged and bonused by the government; to the excessive cost of the Grand Trunk Pacific and National Transcontinental railways; to the failure of the Grand Trunk Pacific to provide itself with an adequate system of feeders in the west, and to the construction, by the Canadian Northern, of the long and unproductive stretches of road across British Columbia and Northern Ontario, without feeders, terminals, etc.

3. If the Canadian Northern, the Grand Trunk Pacific and National Transcontinental be maintained in two separate systems, it will cost at least \$400,000,000 to build the necessary branch line feeders and terminals, to provide them with adequate rolling stock, and put them in proper physical condition to compete with the Canadian Pacific.

4. It will be necessary that the Grand Trunk Pacific build five to six thousand miles of feeders in the west.

5. It will be necessary that the Canadian Northern build two to three thousand miles of feeders in the east, and terminals costing many millions in Montreal, Toronto, Ottawa, Quebec and Vancouver.

6. Canada has already sufficient railway mileage for years to come. The additional mileage necessary for these roads could only be had by duplicating existing lines. Such duplication of lines would only add to the burden to be borne by Canada in the way of subsidies, guarantees, etc., without doing the country any good.

\*Abstract of paper presented to the Canadian Society of Civil Engineers at Montreal, January 18th, 1917.

7. Canada has sufficient railway mileage and traffic for two good transcontinental systems—the Canadian Pacific and another—but not enough for three.

8. A consolidation of the Grand Trunk, the Grand Trunk Pacific, Transcontinental and Canadian Northern railways would give a well-balanced system. The Grand Trunk has an excellent system in the east, with terminals in all large and important centres; the Canadian Northern has not. The Canadian Northern has a good system of feeders in the west; the Grand Trunk has not. Each is strong where the other is weak. Combining them must, of necessity, be the most economical and efficient way of handling the situation.

9. Such a combination would not require more than \$100,000,000 to provide it with sufficient rolling stock and to put it in proper physical condition to compete with the Canadian Pacific.

10. The saving in capital cost would be at least \$300,000,000 and, at present rates of interest, the saving in fixed charges, at least \$15,000,000 per annum.

11. The Transcontinental cost \$100,000 per mile to build. The parallel Canadian Northern cost less than \$50,000 per mile, and is, in every way, as efficient an instrument of transportation. The Quebec bridge, with approaches, will cost \$40,000,000, and will not be necessary for many long years to come.

12. The Transcontinental, including the Quebec bridge, has cost Canada at least \$100,000,000 more to build than it would have cost the Canadian Pacific to build as efficient a road.

13. Including operating expenses and fixed charges, it costs the Canadian Pacific about \$70 to do \$100 worth of business. Including operating expenses and interest on cost, it costs the Intercolonial and the other Canadian government roads from \$200 to \$220 to do \$100 worth of business.

14. Canada should follow the wise example set by Sir John Macdonald when dealing with the Canadian Pacific in 1879-80, and form a new private corporation, with sufficient power and the necessary safeguards, to take over and consolidate the Grand Trunk, Grand Trunk Pacific, Transcontinental and Canadian Northern railways, and develop another Canadian Pacific, rather than to have the government take