

that section of the country, and in British Columbia they are adopting the best available methods of road construction. They have 16,000 miles of road that are passable, of which 8,000 are trails, and they now have under construction roads that will connect up their provincial system, and they hope they will soon make them interprovincial. There is one piece of road which is being blasted out of the rock and will cost a million dollars to build, but the people are in earnest in regard to road construction and are willing to pay and be taxed in order that in a few years they will have roads equal to those of any province in Canada.

L. C. Charlesworth, deputy minister of public works, Alberta, said that in his province they have also the problems of large mileage, small population and lack of materials, and the basic problem is the need of money. There is still something to be added to the volume on education, and that concerns the value of the roads, for people should realize that the money spent will be returned ten times over if properly expended.

A. W. Campbell, Dominion Highway Commissioner, expressed gratification that the people in all provinces were showing such a keen interest in road construction, and he thought the convention did good in bringing the problems of east and west together for discussion.

President Squire then appointed various committees, including those dealing with program, resolutions, registration, reception, etc., concluding the first session of the convention.

Second Session

The second session was held Tuesday afternoon, and the program was somewhat altered, due to the fact that C. A. Magrath, B. M. Hill, A. Fraser and A. H. Blanchard, who had been scheduled as the four speakers for the afternoon, had all found it impossible to attend the convention. Addresses were delivered instead by Hon. Beniah Bowman, minister of lands, forests and mines, Ontario; S. L. Squire; E. O. Hathaway, district engineer of the U.S. Bureau of Public Roads; and A. W. Campbell, Dominion Highway Commissioner.

Hon. Mr. Bowman outlined the difficulties of building roads in Northern Ontario, and said that in the newly settled districts they were mainly desirous of obtaining good foundations. He hoped that a trunk highway from Winnipeg to Kenora would soon be built.

Mr. Squire called attention to the fact that, while there are 37,500 miles of railroads in Canada, there are 350,000 miles of roads, occupying land valued at \$750,000,000, yet the miles of roads have obtained less assistance from the government than have the 37,500 miles of railroad. The rolling stock on the roads is fully as valuable as the rolling stock on the railroads.

Fully half the perishable food never reaches a market, for lack of better highways, declared Mr. Squire. In 1914 the average cost of haulage in the United States was 21c. per mile per ton. Gravel had reduced the cost to 13c. and macadam to 7c., although these figures had doubled since 1914. Had all the roads in Canada been macadamized last year, the saving in transportation costs would have greatly exceeded the amount (\$20,000,000) voted by the Dominion government as five-year aid to highway construction.

In outlining Canada's assets, one large U.S. bond house recently referred to the Dominion's progressive road policy as a national asset. "Grants" for highway construction are not gifts, but investments, said Mr. Squire. The road problem in Canada is great because we have a mile of road allowance for every 22 people in the Dominion, while the United States has a population of 55 for every mile of road.

Mr. Hathaway's paper on "Federal Aid" will receive attention in a later issue.

Commissioner Campbell Emphasizes Proper Location

Mr. Campbell said that every province has organized a complete highways department, and that, although the federal aid act had been passed less than a year ago, eight of the nine provinces had already submitted general program plans involving the improvement of 18,000 miles of roads. The

ninth province has its plans nearly ready. As federal aid is only 40% of the cost of the road, the \$20,000,000 voted by the Dominion government contemplated an expenditure of \$50,000,000 by both provinces and Dominion. It is interesting to note, said Mr. Campbell, that the eight provinces which have submitted plans have received legislative authority for the expenditure of \$73,000,000 on their programs.

The chief anxiety of his department, said Mr. Campbell, is not to dictate the types of roads that are to be built, but to see that the roads are properly located. Thousands of miles of roads, he declared, have been poorly designed, following the lines of survey over hills and valleys. He emphasized the importance of proper drainage and crowning, and stated that the earth road will have to form a great part of the mileage in the west for many years to come. At the same time, he declared that it would be uneconomical to build cheap roads for heavy traffic, and where high-class roads are needed, the government's 40% aid will be forthcoming. Mr. Campbell expressed his pleasure at learning that in one Manitoba municipality only 10 or 12 miles out of 195 miles of road were not gravelled. This shows remarkable progress, he thought, as gravel makes an excellent road if properly attended to and applied in layers so that the traffic can work it in.

Motorists are entitled to much of the benefit of road improvements, said Mr. Campbell, for the taxpayers in the cities and towns pay more than half the cost of the roads. The roads should be maintained very carefully in order to protect the investment.

Third Session Begins

President Squire requested J. A. Duchastel, a past-president of the association, to take the chair at the third session, Wednesday morning. Hon. F. C. Biggs delivered his paper on "Roads as an Aid to Agriculture;" A. P. Sandles, secretary of the National Crushed Stone Association, spoke extemporaneously; A. R. Hirst, state highway engineer, Wisconsin, read his paper on earth, clay and sand roads; and Mr. Cuthbert showed numerous lantern slides relating to highway work.

Russell T. Kelley, of Hamilton, a director of the association, presided at the fourth session. The papers presented were: "Bituminous Treatment of Sand Roads," by Col. W. D. Sohler, ex-chairman of the Massachusetts Highway Commission; "Organization of Provincial Highway Departments," by A. E. Foreman, chief engineer, British Columbia Public Works Department; and "Broken Stone Roads," by Geo. Hogarth, chief engineer, Ontario Highways Department. Mr. Hogarth was not present, but his paper had been received and was read by J. R. Roberts, of the Barrett Co., Ltd., Montreal.

Banquet

At the banquet Wednesday evening, speeches were delivered by Hon. Mr. Grierson, Hon. F. C. Biggs, Hon. S. J. Latta, Dr. Desaulniers, Dr. Doolittle and several other prominent guests, Mayor Gray acting as toastmaster, assisted by Mr. Kelley.

The papers delivered at the fifth session, Thursday morning, Mr. Squire presiding, were: "Road Dragging and Maintenance," by H. S. Carpenter, deputy minister of highways, Saskatchewan; "Highway Bridges and Culverts," by M. A. Lyons, chief engineer, Good Roads Board, Manitoba; and "Asphaltic Concrete Pavements," by W. H. Connell, consulting engineer, Philadelphia. Brig.-General C. H. Mitchell, of the University of Toronto, was not present to read his paper on "Schools for Highway Engineering."

At the opening of the last session, Thursday afternoon, the delegates sang the national anthem and gave three cheers and a tiger for the King in honor of the King's birthday. Wm. Findlay presented his paper on "The Value of the Local Association in a Nation-wide Highways Movement."

Hon. S. J. Latta gave an address in which he emphasized the importance of the home in British patriotism. What is needed in the western country is the provision of good, utility highways that will serve the homes of the settlers, and they will have to get down to business and spend immense sums