

Act," in which he dwelt with disputes arising out of drainage, how to avoid and dispose of them. He recommended that councils should have the right to put in culverts on roads, if necessary, to get rid of water, without recourse to the cumbersome proceedings under the Ditches and Water Courses Act. A paper of exceptional value to surveyors in New Ontario, north of the "Height of Land," was read by James Robertson on "Equipment and Supplies." Many pointers were given to surveyors in that country, also as to the nature and quantity of victuals required, and the best mode of transporting and storing them. The outfit should average 100 pounds per man, exclusive of food supplies, and including instruments, tools, cooking utensils, tents, blankets, etc. Each package should not exceed 100 pounds, so as to admit of convenient handling. The paper concluded with a detailed list, stating number of articles, quantities and supplies taken by the writer on a 68 days' trip with twelve men in 1902. After the reading of this paper, a general discussion followed in which the members unanimously agreed that the present rate of nine cents per acre was totally inadequate for surveys in the district referred to, several of the speakers stating that instead of receiving any personal remuneration, the net result of their last season's work had been a deficit. G. B. Kirkpatrick, director of surveys, promised to lend his aid in endeavoring to arrive at a more satisfactory method of payment for these surveys in future, and a resolution was passed in support of the petitions of individual members asking the Crown Lands Commissioners to grant some compensation in those cases where losses have already been incurred.

"Transportation" was the subject of a paper by J. S. Sing, in which the writer referred to the large sums spent by Canada and the United States on the Soo canals and locks, amounting to \$15,000,000. The tonnage of freight passing through the locks had increased from 181,938, in 1865, to 1,321,200 in 1885, and from 15,062,146 in 1895, to 35,961,146 in 1902. Of the total traffic, five-sixths passed eastward to the Atlantic, and one-sixth westward, the total value of this commerce being \$358,306,000. The net tonnage of vessels passing through the Suez Canal was less than one-third of that of the Soo. 25,000,000 bushels of Canadian grain were exported from Canadian ports in 1902, and 22,000,000 bushels of Canadian grain were shipped via United States ports. Canadian grain last year supplied 21 per cent. of New York grain exports, 40 per cent. of Boston, and 65 per cent. of Philadelphia. Duluth had grown at the expense of Chicago. Duluth's wheat receipts in 1901 were 18,000,000 bushels; Chicago's, 41,000,000; while in 1902 the figures were, Duluth, 43,000,000; Chicago, 38,000,000. In 1903, 19,000,000 bushels of grain were carried by boat from Lake Superior ports to Kingston some of which cost only three cents a bushel for transportation, while from the same ports, via Georgian Bay, and thence by rail to Montreal, the cost was from three and three-quarters to four cents. The large lake freighters had carried grain from Duluth to Georgian Bay ports at three-quarters of a cent per bushel. The grain carried by the Grand Trunk and Canada Atlantic during 1903 was: From Depot Harbor, 15,000,000 bushels; Midland, 14,000,000; Collingwood, 1,200,000; and Meaford, 5,000,000, a gain of 5,000,000 bushels over 1902. 45,000,000 bushels of grain were shipped through Canadian ports in 1902, compared with 184,000,000 via Buffalo. These figures pointed to the necessity of Canada making strenuous efforts to divert a share of this trade through Canadian ports. There were two ways of doing this; one by doubling the capacity of the Georgian Bay elevators, and reducing the grade and easing the curves of the railways to Montreal; the other way was to increase the capacity of the canals to accommodate the largest boats, on which another \$100,000,000 must be spent if the canal system was to be an important factor in transportation. The Manitoba wheat production had increased in five years from 7,000,000 to 23,000,000 bushels, and at the present rate of increase, by 1913 the crop would be 242,000,000 bushels, exclusive of the yield farther west. These conclusions pointed to the possibility of there being four or five transcontinental lines during the present generation.

In the discussion which followed, J. Alex. Culverwell called attention to the additional transportation facilities

which would be gained by the completion of the Trent Valley Canal. This could be done for five million dollars, making the total cost of the waterway nine millions, as compared with \$100,000,000 to be spent on the Erie Canal. Out of the 200 miles from Midland to Lake Ontario, only 18 miles were actual canal. Freight could be handled more economically by the barge system in canals than by the large lake carriers. Germany had adopted barge canals for carrying ore to the shipping ports, as also had the United States from Buffalo to New York, therefore, the Trent Valley waterway should not be neglected, but should be completed without delay, and the public should be induced to realize the importance of this work in its relation to grain transportation.

J. F. Whitson read a biographical paper on the work of David Thompson, astronomer royal, 1784-1850, the first white man to navigate the Columbia river from its source to the Pacific, and who made many journeys across the North American continent. Thompson prepared many valuable maps as the result of twenty-eight years' surveying, but the importance of his work was not appreciated by the Government, and he died in poverty. Mr. Whitson thought it no wonder that boundaries were disputed when the work of early explorers and surveyors had received so little encouragement. T. Wilkie followed with some notes on the original survey of Hawkesbury Township, 105 years ago, and the reports of the council and board of examiners were presented by G. B. Kirkpatrick.

On February 25th, the report of the Committee on Engineering was brought in by E. G. Barrow. He also presented a paper on "Cement Concrete Sidewalks in Hamilton," which he strongly recommended, in the face of the increasing cost of wood and the necessity for a permanent material. In Hamilton, 96 miles of this walk has been laid in five years at a cost of 12.5 cents per sq. foot. Curbing cost 33 to 40 cents per lineal foot. The paper included some suggestions as to the position, the grade and the fall which sidewalks should have. The reports on exploration and polar research were taken as read, and A. R. Davis presented a useful paper on reciprocity between land surveyors' associations as to examinations.

In the afternoon, the Legislative Committee's report was presented by Major Sankey, a discussion following. It was stated that loose methods were observed in the filing of plans by certain railways. Under Dominion charters, engineers had the privilege of signing the plans. Under provincial charters, the plans have to be signed by surveyors. All plans should be signed by provincial surveyors, as some were submitted to the Railway Committee, which did not represent true surveys, and it was not in the public interest that such practices should continue. Some legislation was needed to prevent men leaving the employ of surveyors without reason or notice, the surveyor being out of pocket, and the public service suffering thereby. Major Sankey suggested that the Commissioner of Crown Lands be approached on the subject. He did not want a one-sided agreement, but there should be some penalty for men who desert surveying parties without reason. The report was adopted.

A resolution of regret on the death of John McAree was carried, and the retiring president was accorded a vote of thanks.

C. A. Jones, Petrolea, was elected president; J. W. Tyrrell, Hamilton, vice-president; Captain Killaly Gamble, secretary-treasurer; J. F. Whitson, and W. A. McLean, auditors. Two members of the council are to be elected by letter ballot, the nominations being P. S. Gibson, E. T. Wilkie, Thomas Fawcett, M. Gaviller, C. C. Fairchild, L. V. Rorke and James Robertson. The other members of the council are: Hon. E. J. Davis, Alex. Niven, A. J. Van Nostrand, G. B. Kirkpatrick, and Villiers Sankey.

The annual dinner was held at McConkey's on the 24th, W. R. Aylsworth presiding. Speeches were made by the Hon. E. J. Davis, Commissioner of Crown Lands; Col. Otter, E. D. Armour, Prof. Galbraith, Principal Manley, and others. There was a good attendance.

The following are the results of the annual examination before the Board of Ontario Land Surveyors: Final—J. W. Fitzgerald, Peterboro; W. J. Blair, Berlin, J. H. Smith,