

class terminal for both freight and passenger business owned jointly by the two companies. New station buildings were put up during the year and increased facilities provided at a number of places in Minnesota, in North Dakota, in Montana, in the State of Washington, and in Oregon. During the year 175 bridges were replaced and three abandoned, 111 bridges, 19,234 ft. in length, were replaced by timber structures, and seven permanent and 57 timber structures were replaced in permanent form. Of these, 46 were replaced by embankments and 18 were replaced by truss, girder, I-beam and reinforced concrete trestle, a total of 20,717 lineal feet, 119 timber culverts were rebuilt, 15 in temporary and 104 in permanent form. There are now under construction on operated lines 1,145 lineal feet of steel girder and I-beam spans; 870 lineal feet of steel truss spans; 1,408 lineal feet of reinforced concrete trestle; one 425-ft. double-track steel draw span and one 191-ft. movable leaf bascule span; also one steel highway viaduct, 738 ft. long.

Edmonton, Alta.—City commissioners of Edmonton, Alta., have called for tenders on 400,000 square yards of a total of 511,533 square yards of street paving to be laid the coming year. The estimated cost is \$1,734,786. Tenders will be opened on December 10, a day after the civic election. The plans call for 422,643 square yards of paving on the north side of the Saskatchewan River, and 88,893 square yards on the south side, formerly known as Strathcona. This does not include all the work to be done during 1913. It is simply the paving that has been petitioned for to date. The city is holding in reserve 111,533 square yards of paving for the municipal-owned plant to be built next year. The largest amount of work on one street is 47,531 square yards in Nelson Avenue, between First and Twentieth Streets. Others range from 4,189 to 28,531 square yards. Most of the forty-one streets affected will have more than 10,000 square yards of pavement. Four of the streets lead toward the country. Among these are the Fort Saskatchewan and St. Albert trails, Stoney Plain Road and Namayo Avenue. Namayo Avenue, formerly the southern portion of the trail to Athabasca Landing, will be paved as far north as the Grand Trunk Pacific tracks. Although provisions may later be made to pave First Street to Alberta Avenue, at the present time the plans show a pavement to Norwood Boulevard about a mile.

ONTARIO GOOD ROADS ASSOCIATION.

The executive of the above held a meeting in Toronto on Wednesday, November 20th last to discuss several important matters, among which was the proposal of a convention. It was resolved that an exhibition and convention should be held in the Machinery Hall of the Canadian National Exhibition, Toronto, February 26th-28th next. At this exhibition various road building and improving machinery will be demonstrated and different varieties and qualities of road sections will be on view. The first day will be devoted to the engineer, another day will be given to country roads and the other to town and city roads. Special facilities will be arranged whereby delegates will be able to attend the convention and hear the various speakers with comfort, it being decided to partition off a section of the building for this purpose. Major T. L. Kennedy, president of the association, and Vice-president N. Vermilyea were appointed to represent the association at the American Road Builders' Association, to be held December 3rd in Cincinnati. Mr. George Henry, Oriole, Ontario, is on a committee appointed to secure a permanent secretary.

The constitution of the association has been altered in order that all associations interested in improved roads may be represented at the February convention.

EFFECT OF METERS ON WATER CONSUMPTION.

The statistics given in the accompanying table are a concrete example of the effect of meters on consumption, and should commend itself forcibly to all citizens, in that it proves conclusively the fact that to meters more than to any other factor credit is due for checking wilful or neglectful waste of water. The figures are taken from the annual report of the Water Department of Houston, Texas. A pumpage of 141 gals. per capita in 1907 has been reduced to 53 gals. per capita to-day without depriving any person of this essential element. Dire results were predicted by fearful people just four years ago when the meter system was proposed, but to-day those who were formerly antagonistic are firm believers in this plan of delivering water to consumers.

Effect of Meters on Water Consumption, Houston, Texas.

Year.	Number of meters.	Percentage of consumers metered.	Average per capita pumpage.	Population city census.
1907	108	1.5 %	141 gals.	73,017
1908	303	4.0	122 gals.	79,464
1909	1,903	21.0	106 gals.	82,542
1910	4,556	48.0	82 gals.	95,930
1911	8,131	82.0	53 gals.	109,594

A total of 2,125,981,520 gals. of water was pumped as reported by the Chief Engineer for the year 1911, as compared to 2,859,091,610 gals. for the year previous. This represents a saving of 733,110,090 gals., notwithstanding several large conflagrations which occurred during 1911.

This fact deserves more than casual notice, as it is an economy that means more to the city than is represented in mere figures. It is a supply of pure water held in reserve for future use, insuring at the same time a lease upon the practical capacity of the wells for a greater period of time.

BRANCH MEETING.

At a joint conference held recently in the city of Victoria, B.C., between representatives of the Vancouver and Victoria branches of the Canadian Society of Civil Engineers, it was decided to hold a convention in Victoria in the early part of December at which subjects of interest to the profession will be discussed and plans prepared for a demand upon the government for legislation at the coming session of the legislature in order to protect the interests of the Canadian engineers. Chief among the demands to be made upon the government will be one asking that as far as possible positions in the government service shall be confined to British subjects.

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS.

Mr. Benjamin E. Briggs, city engineer of Erie, Pa., was elected president of the American Society of Municipal Improvements at the annual convention in Dallas, Texas, November 13th to 15th. Messrs. Edward H. Crist, of Grand Rapids, Mich.; William A. Howell, of Newark, N.J., and A. F. MacCallum, of Hamilton, Ont., were elected vice-presidents; Mr. A. Prescott Folwell, of New York city, was re-elected secretary, and Mr. E. L. Dalton, of Dallas, Texas, treasurer.