

started on August 8th, 1908, there has elapsed one year and five months. This does not, however, give a correct idea of the speed with which the first portion of the work was put in. On August 8th, 1908, the contractors started work and by December 20th, 1908, had completed the structure with the exception of bridge floor and accessories, which were put in during the following summer and fall.

Photographs entitled "Construction December 1st, 1909, and Construction December 16th, 1909," will give a very good idea of the way the major portion of the work was pushed.

The concrete in the central section of piers was poured in zero weather and special precautions were taken to ensure a good quality of work. The sand used in the concrete was heated by blowing steam through it and the mixer was fed by a steam jet, which thoroughly heated the mix. This was poured into the pier forms, which had previously been saturated with live steam, for 24 hours. The steam was kept on under the tarpaulins for another 12 hours and then sawdust and manure were packed on the top of the moulds. The forms were left on till the following summer.

It will be seen that all this work necessarily involved a large expenditure. The total cost of the dam amounted, in round numbers, to \$225,000. Against this expenditure we have the following gains: The law costs saved; the frazil trouble lessened; the saving of leakage through the old dam, which from one survey in 1904 amounted to 4,000 cubic feet per second out of a total flow of 11,500 cubic feet per second; and most important, the increased head.

The average available head at the Chaudiere, during low water, previous to the construction of the new dam, was about 30 feet; the corresponding low water flow, 11,000 cubic feet per second. This is equivalent on a 24-hour power and efficiencies used in good practice, to 27,500 horse-power. Only some 60 per cent. of this, however, was available, due to leakage through the old dam, so that 16,500 horse-power gives a better idea of what could be obtained.

It is proposed to hold the surface of the water above the new dam, to elevation 52.00, which means an increased head of 8 feet. Allowing 2 feet for variation and losses, the increase in head will be 6 feet. This cannot, however, be taken advantage of immediately by all the plants on account of their low headworks, but this defect will, no doubt, be remedied in the near future. The 36 foot head, under present low water conditions, would give, with some efficiencies as above, 33,000 horse-power.

When the impounding scheme is completed, a minimum flow of 28,000 cubic feet per second is expected. This, under a 30 foot head, gives 70,000 horse-power, and, under a 36 foot head, will give 84,000 horse-power.

The Cities of Ottawa and Hull, who did not contribute to the scheme, are also greatly benefited by having their pumping water ensured to them. This adds greatly to the fire protection. Then too, the effects of increased power, given by the dam, will not only benefit the power owners but will materially aid in the stirring growth that is to bring Ottawa to the front as an industrial centre.

#### THE OTTAWA ELECTRIC RAILWAY COMPANY.

Ottawa is without doubt one of the best served cities of its size in America in the way of street railways. The routes are conveniently laid out; the car service is good; the equipment is modern. In no city in the temperate zone is street railway travel so comfortable. On the coldest day in winter, the cars are as comfortable as on the balmy day of summer,

every car being heated by electricity, and kept at a uniform temperature. Compared with the discomfort of travel in winter in the street cars of some cities, Ottawa cars are bliss.

The first street railway in Ottawa was the old fashioned horse car line, which was incorporated in 1866, and granted a perpetual franchise by the city. A twenty-minute service was provided by the six cars in use, but when the bad road seasons came, in spring and fall, it was often found necessary to suspend the service. In winter the service was by sleighs, and strange as it may seem, the charter of the present company permits it to run a sleigh service in winter. This was not because it was feared it would be impossible to keep the line open, but at the outset it was unknown how great the expense would be, the whole proposition of electric railways in Canada being only an experiment.

The horse car line suffered with every other business concern in the period of depression following 1874, and for years the receipts of the company were cut down to half what they had been, and for twelve years up to 1882, no dividend was declared.

At this time the company possessed nine cars and fifty-five horses, the cars moving at an average speed of six miles an hour.

In February of 1891, however, a new company, The Ottawa Electric Street Railway Company, was incorporated with Messrs. Thomas Ahearn, Warren Y. Soper, William Scott, D. C. Dewar, and R. Quain as provisional directors. In June of the same year J. W. McRae was elected president; G. P. Brophy, vice-president, and William Scott, D. C. Dewar, Thomas Workman, R. Quain and P. Whelan, directors. J. E. Hutcheson was appointed superintendent, J. D. Fraser, secretary-treasurer, and Thomas Ahearn, general manager. In May the first ground had been broken, and at the formal opening of the line, on June 27th the directors of the new company gave a banquet to leading citizens in honor of the event.

In 1893, with the consent of the City Council, the Ottawa City Passenger Company and the Ottawa Electric Street Railway Company were amalgamated.

The Ottawa Electrical Railway Company has extended its lines about the city in various directions as traffic warranted it; it has made it possible for many to live remote from the heart of the city and enjoy the green trees and wholesome air of outlying places; it has given the people of Ottawa access to parks and bathing places in all directions. Shortly after the road was first built the company started a place of amusement at Rockcliffe Park. On that property being acquired by the city the company acquired land at Britannia, 9 miles up the Ottawa, and opened a park there, erecting pavilions, building a long pier out over the sandy beach, and providing bathing and boat houses for the convenience of patrons. Britannia had long been a favorite resort for Ottawans, but as soon as street railway connection was provided, people began to go there by thousands.

The number of men employed by a railroad is a good index of growth. In 1894 the Ottawa Electric Railway employed 200 men; now there are 650 men in the service of the company. In 1891 the company carried 1,520,000 people; in 1908 there were 14,000,000 passengers carried. Such is the wonderful growth of the concern.

The directors and officials at present are Thomas Ahearn, president; P. Whelan, vice-president; Warren Y. Soper, Thomas Workman, Senator George Cox, and George P. Brophy, directors; James D. Fraser, secretary-treasurer; J. E. Hutcheson, superintendent.

The company operates on 45 miles of track and has 150 passenger cars.