and the working chamber both water-tight and air-tight. All seams are caulked with oakum, pitch and tar. The cutting edges are made of 30″ x 30″ British Columbia fir. Each chamber is piped so that jets of water under high pressure can be made to loosen the sand and gravel. A sinking pump will lift the sand and gravel from the caisson, while buckets drawn through air locks will lift out the heavier material. The master carpenter on the caisson work, is Precule Belanger. The photographs show how the work at Sillery is carried on.

When the caisson has been floated into position it will be sunk to river bottom by being loaded with concrete. The river bottom is being dredged flat where the caisson will be sunk. After being floated in place between rows of piles, the side of the piling which is left open to admit the caisson will be closed and the caisson sunk and compressed air forced into the working chambers.

From the time the air is turned on until the job is finished it will be carried on without a moment's cessation, night or day, Sundays or holidays. As the cutting edges are cleared the caisson will be loaded with more concrete and sunk further and further. It is estimated that the caisson for the North Main Pier will be sunk at the rate of about a foot a day, although some large rock is likely to be encountered which will require the use of explosives. The borings for the new substructure were made for the Bridge Commission in 1909, by the McArthur Company, of Boston. When the cutting edges of the caisson for the North Main Pier rest at elevation 4 feet, the working chambers will be filled with concrete and the masonry work will be afterwards completed. Much of the granite that was used in the old piers can be recovered for use in the new piers. Piling is being driven in water 35 feet deep at the site of the caisson for the new North Main Pier. A platform will be built around the new caisson and to shore from each side of it. Three derricks will be placed at each side of the new pier. Four air compressors will be used, driven by steam from six boilers of 100 h.p. each. Three boilers will furnish steam to drive the concrete mixers, stone crushers, etc. Eight of the nine boilers used will be horizontal, and one will be of the vertical type.

In the caisson for the North Main Pier 270 men will be employed, working in shifts of 90 each. Two large boarding-houses have already been erected, accommodating 200 men. While it has not been announced whether the new Quebec Bridge will be a suspension or a cantilever bridge, it is practically certain that in the course of a few years Grand Trunk Pacific trains will be running over the substructure which the men now living in those boarding-houses have started to build.

CANADIAN ELECTRICAL ASSOCIATION.

The twentieth annual convention of the Canadian Electrical Association was held at the Royal Muskoka, Lake Rosseau, July 6-8, 1910. In addition to the reading of a number of technical papers, a very enjoyable social time was spent by the members and their friends. The officers elected for 1910-11 were as follows:—President, P. S. Coate, Chatham; 1st Vice-President, E. A. Evans, Quebec; 2nd Vice-President, W. L. Adams, Niagara Falls; Secretary-Treasurer, T. S. Young; Managers' Committee, J. J. Wright, R. S. Black, R. F. Pack, L. V. Webber, A. L. Mudge, D. H. McDougal, Toronto; W. C. Bird, Fort William; W. N. Ryerson, Duluth; A. A. Dion, Ottawa; F. A. Chisholm, St. John's, Que.

In this issue we give in full two of the papers read, and in addition, a brief summary of the others that were presented at the convention. Mr. A. A. Dion, of the Ottawa Electric Company, read a paper prepared by Mr. A. S. Loizeaux, Consumers' Gas, Electric and Power Company, Baltimore, Md., on the protection of services in large electric systems. Speaking from experience, Mr. Dion emphasized the great appreciation by the public to-day of an assured continuity of service, even where it was found necessary to charge higher rates for such a service. Consequently, because municipal plants claimed to have lower effective rates was no indication that the private companies would lose customers.

Mr. Chas. F. Scott, Pittsburg, a Past-President of the American Institute of Electrical Engineers, read an instructive paper on transmission line regulation.

The report of the committee on grounding of transformer secondaries was received. It was presented by Mr. A. A. Dion, Ottawa. The question of adopting methods for insuring protection to the public as well as to employees from

P. S. Coate, President Canadian Electrical Association.

the dangers of exposed electric wires is a burning one at present, not only in Canada, but wherever electrical energy is consumed.

The report of the committee on meters, their installation, care and testing, was up for discussion, and created a lively interest. Thorough and periodical tests were recommended to every central station manager where not already enforced. The question of meter-reading also was brought up, and methods for educating the public to an intelligent understanding of the usage of these necessary instruments were outlined.

Mr. H. S. Brown discussed electric heating and cooking apparatus. In a series of tests made the superiority of electrical appliances over those operated by gas was demonstrated. Not only are they more satisfactory because of their cleanliness, but they are also more economical of operation where reasonable rates are available, such as the large power companies are offering to-day in our towns and cities.

The choice of the place of meeting for next year's convention was left to the incoming executive. Ottawa, in all