But the point I wish to make is not whether a tunnel in this case would be better than an open cut, but that in deciding which should have been used, all factors, not merely the strictly engineering one, should have been considered, just as Mr. Challies is doing in connection with the Dominion power developments.

Summary of Further Discussion

Dr. Otto Klotz recalled the story of Lord Kelvin, who, on a visit to Niagara Falls, in 1897, in connection with the meetings of the British Association for the Advancement of Science, said that he hoped to see the time when all the waters of Niagara Falls would be used for power and not a drop would go over the Falls to waste.

Dr. Deville felt that some form of propaganda, or at least education for the public, was necessary. He gave as an example the case of a land sub-division in Ottawa, where he had been approached to have the necessary plans made. He negotiated with an Ontario land surveyor and found out what it would cost to have the proper survey made and plans registered. The parties for whom he obtained the information seemed to be quite amazed and indignant at the price charged and seemed to wonder why some of the doctor's assistants could not do this in their spare time in the office.

Alfred Buckley said he was conscious of a kind of distress by any disparagement of what had been called propaganda. He had spent some years at Letchworth and had been greatly impressed by the sociological significance of the town planning movement. In Canada it had seemed to him that something more intensive was needed even than what was implied in the word education. He was disposed to use the word evangelism. As a mere question of policy it was notorious that men's minds were often reached through their emotions, and psychology and sociology were sciences as well as town planning. Mr. Cauchon had argued that the basis of the movement was ethical and the speaker agreed. He would risk a paradox by suggesting that the greatest of all forces was inertia. He was not blind to the need for professional organization and the co-relation and co-operation of the different sciences involved, which were the machinery and executive of the movement, but a convinced people was necessary for progress and there was an enormous amount of work to be done in Canada in this direction.

The chairman, in replying to the discussion, said he did not object to propaganda of the right kind. Education of the public by means of practical demonstrations of town planning was not only legitimate, but was the most effective means of carrying on propaganda.

WATER STORAGE ON ST. MAURICE RIVER

THE great benefit derived from water storage is soon to be further demonstrated on the St. Maurice River, where a large water-power undertaking will soon be started. The increased power made possible at the various sites on this river by the La Loutre reservoir, the largest but one in the world, is a strong incentive to prospective power users. It is estimated that the conserved water thus made available represents a total increase of over 500,000 h.p.

The proposed development above referred to is reported to be in connection with the operations of the St. Maurice Paper Co., the latter having leased two sites in the lower portion of the river, known as Les Forges and La Gabelle. It is intended to combine these two, giving a total effective head of 33 ft., while the regulated flow from the La Loutre reservoir increases the power now available at this site, namely, 20,000 h.p., to 42,000 h.p.

Another proposition reported in this connection is the construction of a hydro-electric plant utilizing the combined sites of La Gabelle and Les Grès, the latter site being controlled by the Shawinigan Water and Power Co. The latter power company would carry out the development and supply hydro-electric power to the St. Maurice Paper Co. under a special contract.—From "Conservation," the monthly bulletin published by the Commission of Conservation, Ottawa.

ELECTRIFICATION OF CANADA'S RAILWAYS

By L. G. Denis
Hydro-Electric Engineer, Commission of Conservation

THE question is often asked, "Why are not more of our railways electrified?" It is pointed out that Ontario and Quebec, abounding in water-powers from which cheap hydro-electric energy can be made available wherever required, are coal-less, and the coal necessary to operate our steam roads in these, our largest provinces, has to be hauled long distances, and almost all of it has to be imported from the United States.

In view of these facts it would seem at first sight hard to explain why all our railways, at least within these provinces, have not already been electrified. Although electric tramways and interurban electric railways have rapidly developed in our thickly populated districts, yet the electrification of heavier traffic roads has been confined mainly to very short distances in connection with operations imposed by special conditions, such as the Montreal terminal and Mount Royal tunnel of the Canadian National Railway, the St. Clair tunnel of the Grand Trunk, and the Detroit tunnel of the Michigan Central.

An explanation is found in the fact that, although electricity fills every requirement of railway service, the problem of electrification is not one of mere ability to secure cheap power, but is governed rather by the volume of traffic or amount of power necessary to operate the line. To use electricity, a large investment in equipment and installation must be made, and this is little less for sparse than for dense traffic. Electrification has so far proceeded slowly, even in the United States, because railroad executives were not convinced that the advantages to be gained are always worth the cost. From their angle it is purely an economic question, with the amount of traffic as the principal factor. But, for us, there is also a national aspect in that it means substituting the utilization of our own water-powers for the importation of foreign coal.

When a section of railway has become ripe for electrification, the additional advantages gained by the conversion are almost numberless. In a recent paper before the American Institute of Electrical Engineers, Calvert Townley states: "The service performed on the electrified sections comprises practically every kind of railroad transportation. The Bluefield division of the Norfolk and Western Railroad in West Virginia is an example of an important coal road operating through the mountains. The Chicago, Milwaukee and St. Paul 440-mile main line, through Idaho and Montana, demonstrates what can be done by a transcontinental carrier on a large scale with through traffic, both freight and passenger. The New York, New Haven and Hartford Railroad stretch of 73 miles between New York and New Haven shows how through freight and a heavy passenger traffic can be taken care of on the most congested four-track section of an important eastern carrier and what is possible for complicated freight-yard operation, while the New York Central and the Pennsylvania out of New York city are splendid examples of our greatest modern passenger terminal electrifications."

*From "Conservation," the monthly bulletin published by the Commission of Conservation, Ottawa.

William Cross, 262 Garden Ave., Toronto, is now secretary of the employment bureau of the Toronto Branch, Engineering Institute of Canada.

R. C. Desrochers, secretary, department of public works, Ottawa, has called for tenders until July 2nd for nurses' home at the Sir Oliver Mowat Sanitorium, Kingston. Plans and specifications are on file at the offices of the chief architect, department of public works, Ottawa; Power & Son, architects, Kingston; the superintendent of Dominion buildings, Postal Station "F," Toronto; and the overseer of Dominion buildings, central post-office, Montreal, Que.