

# The Canadian Engineer

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## HYDRO-ELECTRIC ICE TROUBLES

AT an informal breakfast party in Montreal during the recent annual meeting of the Engineering Institute of Canada, several engineers interested in hydro-electric problems were gathered around the table. One of the engineers was John Murphy, electrical engineer of the Department of Railways and Canals, Ottawa, who has devoted considerable time during the past twenty years to the subject of ice troubles in hydro-electric plants.

The talk turned to the canalization of the St. Lawrence river, and the possible means of obviating ice difficulties in connection with the proposed large power developments.

"Why not heat the river?" asked Mr. Murphy, and naturally everyone laughed; but Mr. Murphy explained that he was perfectly serious, and that there is some possibility of being able economically to heat a stream of water even as large as the St. Lawrence river to an extent sufficient to obviate frazil troubles in the development of hydro-electric power. Mr. Murphy declared that he had demonstrated in experiments that an astonishingly small quantity of heat, properly applied, would keep flowing water from freezing, and that a thousandth of a degree in temperature will in some cases have an enormous influence on the formation of frazil.

If the water be not heated, the only other remedy for ice troubles, declared Mr. Murphy, is to heat the turbines, racks, etc. Mr. Murphy has had practical experience in the efficiency of the latter method, as he has kept a large hydro-electric plant near Ottawa running continuously throughout several winters by the aid of a comparatively small boiler, whereas, previous to the installation of the boiler, this plant was always shut down during unusually cold weather. Frazil will not stick to metal, said Mr. Murphy, if the temperature of the metal be one-thousandth of a degree higher

than the freezing point of the water; but if the metal be of lower temperature, frazil will cling and build up rapidly, preventing the operation of the entire plant.

In the reference to the International Joint Commission regarding development of St. Lawrence power, the governments of the United States and Canada have included certain instructions to the engineers in charge of the investigation for the commission. One paragraph of these instructions relates to the handling and disposal of ice as a fundamental difficulty on the St. Lawrence river. It states that the necessary arrangements for this purpose should be discussed, as well as those recommended for ice disposal during the construction period. No doubt the engineers in charge will take into serious consideration the suggestions made by Mr. Murphy and the data that he has collected on the subject, however fanciful the idea of heating a river may seem, and however little it may seem to solve the problems presented by cake ice, which is generally more troublesome than frazil.

The entire subject of ice troubles in hydro-electric plants is a very important one in this country in view of our great dependence on water powers and the large extent to which they will undoubtedly be developed during the next few years. It is to be hoped that the Research Council or some university will carry on the investigations that Mr. Murphy has begun, in order to determine whether some simple and inexpensive solution can be found for the entire problem.

## Letters to the Editor

### MUNICIPALLY OWNED ASPHALT PLANTS

Sir,—In the last issue of *The Canadian Engineer*, page 179, I see that Mr. Mullen, of the Milton Hersey Co., gives a list of municipally owned asphalt paving plants in Canada. He has, however, omitted to mention London, which has owned and operated a municipal plant, 1917 to date, inclusive, and which is, I believe, one of the most successfully operated plants in Canada.

H. A. BRAZIER,  
 City Engineer.

London, Ont., February 2nd, 1920.

### ANOTHER ONE OVERLOOKED

Sir,—I notice in your edition of *The Canadian Engineer*, under date of January 29th, 1920, an article on page 179, under the heading of "Municipally Owned Asphalt Plants," in which article is given a list of cities on the North American continent owning their own asphalt plants, and in which list I do not find Winnipeg mentioned. Winnipeg is the owner of three asphalt plants—one stationary and two portable—and I believe that this city was the first in Canada or the United States to own its asphalt plant. The stationary plant was put into operation first in the year 1899, so that you will readily agree with me that the city of Winnipeg should at least be included in the list.

W. P. BRERETON,  
 City Engineer.

Winnipeg, Man., February 5th, 1920.

### DRIFTING SAND FILTERS AT TORONTO

Sir,—We have noticed with interest a descriptive article in your issue of October 2nd, 1919, entitled, "Operation of Drifting Sand Filters at Toronto." We have read through the details, and find no reference to any of the firms interested in the supply and construction of this equipment, and we think, under the circumstances, we may look to you to insert in an early issue information based upon the following details:—

The drifting sand filter plant installed at Toronto was carried out in the form of a joint contract by the John verMehr Engineering Co., Ltd., of Toronto, and William