The result of all the Government's work during the past winter is to show how much can be accomplished by keeping open the channel at Cap Rouge. This has, without doubt, maintained an open channel up to Three Rivers, and this year stands out in striking contrast to last winter, when the bridge took and the winter's pack rendered the river between these points impassable. The Department of Marine and Fisheries is to be highly praised for the broad and determined effort to improve the ice conditions which has been so successful during the past winter.

The writer feels sure however, that much greater good could be accomplished by keeping the ice-bridge broken up at the foot of Lake St Peter and at the Sorel Islands. The lake itself could be kept nearly free of ice by having a boat like the "Lady Grey" making daily trips over the ship channel at full speed. The great wave generated by the propellers would be very effective in breaking up the thin surface ice that forms there. In addition, it might be necessary to have perhaps two strong harbor tugs to sail over other parts of the lake to break up the ice nearer to the north and south shores. It is the writer's belief that one ice-breaker could keep the river clear at the Sorel Islands as well as at Port St. Francis, and that this, together with one powerful ice-breaker at Quebec, would effectively keep the ship channel open. The hardest work would be in December and January, which may be termed the two "ice months." In February, the sun becomes stronger and assists very much the work of clearance. In March, practically no new ice is formed of any size. In the spring, instead of thick, hard, clear ice on the lake, which is difficult to break and retards the opening of the river above that point, we should find a surface of water practically free of ice. No floods would result, and the ships could begin running to the port of Montreal early in April, if not in March. If a serious attempt was made, as it will have to be sometime, to navigate all the year round, it will be found to be of great advantage to wall in the channel through Lake St. Peter. Such a canal has been successfully built through Lake St. Clair, at Port Huron. The influence of this canal would be to outline the channel, and produce sufficient current to prevent freezing. The ice on the rest of the lake would be held in and allowed to disintegrate in the spring without moving down to block the channel. The canal thus formed would be easy to navigate in the dark, and might in itself prove to be sufficient to maintain an open channel throughout the rest of the river. The canal could be built wide enough to give a suitable artificial navigable river and could be deepened very easily. In the map of the river reproduced at the end of this paper, the outline of such a canal is shown. To regulate the current in the canal, gates could be built at the mouth and a part only of the volume of water allowed to enter. It might, at first sight, be thought that the boats employed in the lake to keep the ice broken might become frozen in and helpless. Such boats could be supplied with pipes in order to blow steam into the water around them. The effect of such a small amount of heat in this way would effectually prevent a boat freezing in. In Fig. 10 is shown a diagram illustrating the effect of a ship like the "Lady Grey" in warming the water immediately surrounding it. Temperature measurements were made at different depths as soon as the boat had tied up in the St. Louis Basin at Quebec. The temperatures going down gradually increased with the depth, to thirty-six feet. On drawing the thermometer up, however, the temperature was found to have risen considerably. The rise commenced most markedly at fourteen feet from the surface, which is just the draft of the "Lady Grey." It is noticed that even in the coldest weather a ship like the "Lady Grey" never freezes in, but the ice is loose and disintegrated all round the ship from the natural heat of the ship and the effect of the circulating water. This could be increased very much by the use of special steam pipes in the water. A case has been recorded where a pond in which a dredge was working was kept open for a month with the air temperature at thirty below zero Fahrenheit, by blowing steam from an old 60 h.p. boiler, burning waste stumps, into the water under the dredge. At the end of this time the operations were stopped only by the inability to work the machinery of the dredge in the intense cold. Under normal conditions, the pond would freeze solid to the bottom. This is but one example of many which could be cited to show the wonderful effect of a small amount of heat in preventing ice formation. A thin surface layer a few hundredths of a degree above the freezing point will effectually protect the water from ice.

Any plan which may be carried out for the purpose of winter navigation on the St. Lawrence must include as is now contemplated by the Government, the placing of piers at suitable spots along the shore below Three Rivers, where the tide frequently sets loose the heavy battures from the bays and shallow places. These piers would effectually pin the ice and prevent it from moving out. No ship could run the risk of being shoved out of the channel by one of these great masses of floating ice. Wherever such piers are now found in the river above Quebec, the battures are prevented from moving. Much of the heavy floating ice met with in the Gulf could be prevented in this way. The navigation of the Gulf is a problem in itself, but with the use of ice-breakers patrolling the waters, with the Marconi System, and with suitable signal stations along the shore, no boat need run any risk of this kind. It would be necessary to fit every boat coming up the river with an iron or wooden apron over the bow. A boat so equipped becomes in itself an ice-breaker of no mean ability. Such an outfit is now used on all boats running to Russian ports, and adequately protects the ship from harm.

In conclusion, I feel sure that time will see the fulfilment of our hope for Montreal as the great distributing centre for the products of the West. Its natural advantages make this possible, and with the ice problem solved, nothing can prevent our city from becoming one of the greatest seaports in the world.

I desire to express my great indebtedness to Hon. L. P. Brodeur, Minister of Marine and Fisheries, for having permitted ice studies to be made by my assistants during the time that the ice breakers were working. Also to Mr. G. J. Desbarats, the Deputy Minister, for his unfailing interest and kind encouragement in the work.

WORKMEN'S COMPENSATION IN QUEBEC.

The Monetary Times.

On January 1st, as the result of the passing of a Workmen's Compensation Act in Quebec, the insurance companies raised their rates in that province. The law was generally thought to be severe upon the employer and the risk assumed on his behalf by the insurance company was, therefore, greater. Mr. F. P. Walton, Dean of the Faculty of Law, of McGill University, has performed an admirable service to employers, employees and underwriting companies interested by the publication of the Act, together with his commentary thereupon. The principle of the Act has been accepted in so many countries that its adoption here, he thinks, can occasion no surprise. Very few of the witnesses, who were heard by a Quebec Government commission in 1908, appeared to be satisfied with the law as it then stood. The em-