

canal. Prof. Abbe, Chief Meteorologist of the U.S. Weather Bureau, who has been making a study of the rainfall & outflow of the Great Lakes, says, in this connection:—"The effect on the general level of Lake Michigan & Lake Huron, practically the same body of water, will be to increase the present outflow about three inches annually, so that the future outflow will be about 70 instead of 67 inches a year. The effect upon the depth of water & navigation in Lake Michigan & Lake Huron, & on the outflows of the Lakes St. Clair, Erie & Ontario will be barely appreciable & of no practical importance whatever in comparison with the uncertainty, the variability, & the great importance of the rainfall & evaporation. This slight drain upon Lake Michigan will be supplied by Lakes Superior & Huron, without affecting the surface level of St. Clair or Erie by more than a small fraction of an inch. The deepening of the channel through St. Clair & Detroit rivers will diminish the resistance to the flow of water, so that more will pass per second than before, provided the head of water, viz., the difference in level between Lakes Huron & Erie, remains the same; but this will not be the case. The effect will be felt at first mostly in the very center of the channel, & the total annual discharge at first will be much less than 1% more than at present. It may increase from 230,000 to 232,000 cubic feet a second, or from 67 to 67.6 inches a year, but the final result will be the same as if we opened a wider & easier communication between the two lakes, & they will come to the same level & act as one lake just as Huron & Michigan do now. As the influence of these two proposed engineering improvements on the regime on the lake is so small compared with that of the natural forces at work, it is especially important to accumulate & improve the climatological data, rainfall & evaporation, barometric pressure & winds, all of which affect the supply & the outflow."

Favors the Montreal Route.

The committee on canals appointed by Governor Roosevelt, of New York State, has been asking representatives of the transportation interests: "What is best to be done about the canals?" President J. J. Hill, of the Great Northern Ry. (U.S.A.), replied as follows:—

"The entire question of canal communication between the great lakes & the port of New York is one that deeply interests the whole country north of the Ohio river, & particularly the north-western states. A canal which would take less time & greatly less money to build would follow the River St. Lawrence to the vicinity of Montreal, & there turn south by way of Lake Champlain, but during the time of open water for such a canal the port of Montreal would be open to seagoing vessels, & I see no reason when a canal was built to within sight of Montreal harbor, where it could reach seagoing ships & with harbor dues much less than those in the

port of New York, why any traffic other than such as might be locally required for consumption at intermediate points or in the city of New York should bear the additional expense of transportation for say 400 miles from Montreal to New York. I do not think the national sentiment would be enough to pay the financial cost. If the present Erie canal were enlarged & deepened to a depth of 10 ft., so that canal boats of 3,000 tons might be used, it is more than likely that the best practical results would be obtained in this way. I do not know whether it would be possible to take water from Lake Ontario by way of the Oswego & Erie canals to the Hudson river. The low rates of rail transportation have at times made it impossible to operate the canal boats now in use profitably in the grain traffic between Buffalo & New York, & it is not by any means certain that with improved facilities for handling grain at terminal points & other favorable conditions, the rail rates have reached their lowest limit."

The Deep Water Ways.

The U.S. Deep Water Ways Commission is approaching the completion of its work, a large force being engaged at Detroit, tabulating & arranging results, and it is expected the final report will be presented early next year. Major Raymond, C. E. of the Commission, estimates the cost of the proposed waterway at about \$200,000. In a recent interview he said:—

"The route to be followed will be through the Sault St. Marie Canal to Lake Huron, through the river to Lake Erie, thence by ship canal around Niagara Falls to Lake Ontario. The question confronting the commission at this point is whether or not the Welland Canal, which is Canadian property, should be utilized by deepening, as it is now totally inadequate for use in ships of deep draught, or a new canal built in U.S. territory. This may be found the more desirable for international reasons. A depth of 30 ft. through the waterway should be sufficient to carry any vessel to the ocean. The entire scheme contemplates some very serious engineering problems, partly as to the system of locks. From the point above mentioned, two canal routes are suggested, both using the Hudson River. One is known as the Oswego-Mohawk Route, and the other as the Champlain-St. Lawrence Route. The Oswego-Mohawk Route is to start at Oswego & proceed along the Mohawk Valley, taking in such cities as Syracuse, Rome, & Utica, going thence to Troy, where it will connect with the Hudson, necessitating a deepening of the Hudson. This route will practically obliterate the Erie Canal, though it will take up some of its waterways. The Champlain-St. Lawrence Route has been surveyed from Lake St. Francis, which is an arm of the St. Lawrence River, diametrically across to the Richelieu River, which flows into Lake Champlain, & through this lake by means of a

canal to Troy. In addition to the consideration of the above suggestions, the commission will discuss the question of an increase of the locks of the Sault St. Marie Canal."

Province of Quebec Shipping.

The Montreal Warehousing Co. has installed a conveyor at its elevator there with which vessels can be loaded at the rate of 8,000 to 10,000 bus. an hour, without lighterage.

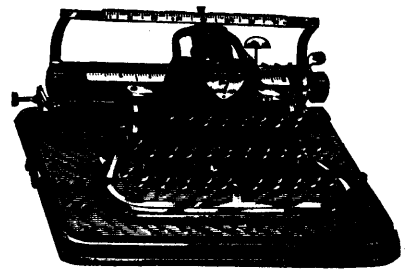
The twin screw ferry steamer *Levis*, to ply between Quebec & New Liverpool or St. Romuald, 8 miles above Quebec on the south side of the river, has been launched at *Levis*.

The str. *Majestic*, built by the Polson Iron Works, Toronto, for the Richelieu River Navigation Co., of St. Johns, Que., & which was described in our June issue, pg. 184, was launched at the Polson shipyard, Toronto, July 13. Her trial trip was made July 26; a few days later she left for the east to start running on the Richelieu River.

The str. *Mistassini* was burned to the water's edge at her wharf at Roberval, Lake St. John, July 24. She was owned by H. J. Beamer, said to be valued at \$50,000 & not insured. The press despatches spoke of her as a new boat, which is probably a mistake, as the only str. *Mistassini* registered up to Dec. 31, 1898, was built in 1891, at Roberval. She was a side-wheeler, 130 ft. long, 22 ft. 4 ins. wide & 8 ft. 2 ins. deep, gross tonnage 249.

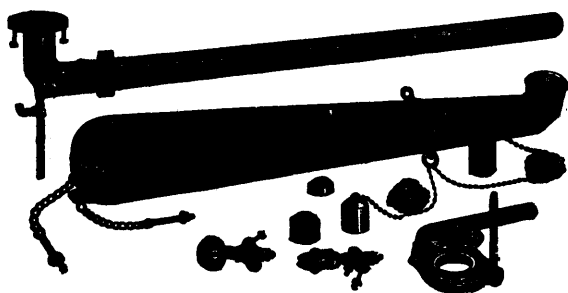
There is to be another shake up in the underwriters' rates for the St. Lawrence, & when the various agents receive notification of the customary increase for Sept., they will notice a decided excess over the rates of any previous year. This was stated to a Witness representative by one of the leading insurance representatives in the marine business. Some

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