1911.

ED

.

S

10

tween

DRK

rvice

y. 8.45

daily

unday

N.Y.

NG

VS.

D

re

MARINE DEPARTMENT

Dominion Marine Association. PRESIDENT, F. Plummer, Toronto; COUNSEL, F. King, Kingston, Ont.

Great Lakes and St. Lawrence River Rate Committee. CHAIRMAN, E. E. Horsey, Kingston, Ont. SECRETARY, Jas. Morrison, Montreal.

International Water Lines Passenger

Association. PRESIDENT, W. M. Lowrie, New York. SECRETARY, M. R. Nelson, New York.

The Shipping Federation of Canada. PRESIDENT, A. A. Allan, Montreal; MANAGER, AND SECRETARY, T. Robb, 526 Board of Trade, Montreal.

Ship Masters' Association of Canada. GRAND MASTER, Capt. J. H. McMaugh, Toronto, Ont.; GRAND SECRETARY-TREASURER, Capt. H. U. Jackson, 376 Huron St., Toronto.

Harbor and River Works, 1909-'10.

The total expenditure of the Department of Public Works for the year ended Mar. 31, 1910, was \$11,342,365.29. Of this sum there was expended on harbors and rivers \$3,207,233.59; on dredging, plant, etc., \$3,669,030.18; and on telegraphs, \$443,649.70, the remainder being on public works, other than those affecting transportation interests. The total revenue received was \$485,884.96, of which \$45,816.92 was from graving docks, and \$136,747.31 from telegraph lines.

The expenditure on dredging, which covers the provision, maintenance and repairs of dredging plant as well as the channels, now amounts to nearly one-third of the department's total expendi-ture ture. for deepening channels has been that of excavation, and this is the only method in the case of maritime harbors. On the inland lakes and rivers, however, con-siderable study has recently been given to a more economical and better method; that is, to raise the surface of the wa-ter by means of dams and controlling by means of dams and controlling works at the outlets, thus establishing reservoirs for the storage of the sur-plus water which comes down in the spring, so that later they may be gradu-ally ally released to increase the low water flow in time of deficiency. The Depart-ment has in hand at a number of points improvements of this nature. Com-paratively few years ago 14 ft. naviga-tion was ample for all needs, but now 20, 22 and in the larger ports 25 ft. are required. In addition to the ordinary silting in of harbors and rivers, larger wessels, both passenger and freight, of much deeper draught, are being built. Much additional dredging has been ren-the with the lowering of Auch additional dredging has been ren-dered necessary through the lowering of the Water level, especially on Lake Huron. Although to some extent this is due to the diversion of the Chicago drainage canal, in all probability the main cause is to be found in the im-provements which have been made in brovements which have been made in the Detroit River. Among the places where work has been carried on special ment. mention may be made of the progress of the improvements under way at Fort William, Victoria Harbor, and Tiffin, Ont. At Fort William, access can now be had to the Grand Trunk Pacific Ry. 3500,000 hunt elevator: the channel 3,500,000 toria Harbor is 125 ft. wide and 1,600

ft. long, while the channel to the G.T.R. elevator at Tiffin has been completed to the required width and depth for its entire length. A new dredge the Nereus—was acquired for the Maritime Provinces, and after being overhauled at Halifax, she was set to work at Bathurst, N.B. The dredging plant now owned by the Department consists of 42 dredges, six stone lifters, one snag boat and 21 tugs.

of 42 dredges, six stone inters, one snagboat and 21 tugs. The principal expenditures on harbor and river works were made in Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Ontario and British Columbia. Of the works in these provinces the more important have been:— The preparation of several additional shipping berths, the extension of the Sand. Point wharf and the erection thereon of a warehouse at St. John, N.B.; the erection of a wharf at Pointe a Carcy, the preparation for slips on the St. Charles River, and building of a deep water wharf at Levis, Que.; the construction of a new western entrance to Toronto harbor, which, when completed, will consist of two parallel piers 220 ft. south of the present western entrance, having a length of 2,200 and 2,-500 ft. respectively, between which there will be a depth of 18 ft. of water. For the maintenance of water levels, the principal work in hand is on the Ottawa River. One dam is under construction at the foot of Lake Timiskaming, a second at the outlet of Lake Kipawa, the plans for a third at Gordon creek, another outlet of Lake Kipawa, and plans are in preparation for a fourth at Lake la Quinze.

Winnipeg-Edmonton Navigation.

The possibilities of the development of water transportation in the three prairie provinces has been receiving the attention of the Public Works Department. In the early pioneer days, prior to the advent of the railways, a num-ber of flat-bottomed sternwheel vessels were built and operated on the Saskatchewan River with considerable suc-Their operation covered a period CASS. from 1875 to 1886, when vessel carriage was gradually abandoned, it having been found cheaper to ship by rail. Very little consideration was given to the opening up of commercial waterways in the Northwest from that time until the fall of 1909, when the Department gave instructions that a careful study of conditions should be begun, and provision made to carry out the necessary surveys and investigations to enable a definite conclusion to be reached as to what was possible in that direction, and to form a fairly approximate estimate cost of the

In the fall of 1909 a preliminary investigation was made of the Saskatchewan River between Lake Winnipeg and The Pas, a stretch of 146 miles, the most difficult portion to be improved. In the last 23 miles the fall is 101 ft., to improve which will necessitate the construction of two dams and five locks. giving a 9 ft. draught at low water as far as the end of Cedar Lake, which would be the head of deep water navigation and the point of transfer. The approximate estimate of the cost of these improvements is \$3,000,000. An important feature in connection with the scheme outlined is that at one of the proposed dams a water power of some 80,000 h.p. would be created, which would be of immense importance in the establishment of local industries on the possible milling of wheat and grinding of pulp on the line of the projected railway to Hudson Bay.

Early in the summer of 1910 the investigation of the Saskatchewan River above The Pas was continued, and seven parties were placed in the field under the direction of L. R. Voligny. The work directed to be done consists of a reconnaissance survey of the river from The Pas to Edmonton, 752 miles, and four level parties, two transit parties, and one contour party have been engaged on it. Each level party set out to cover 188 miles of the river, to ascertain the accurate river slope; the transit parties undertook the necessary topographical and hydrographic work in portions of the river requiring special consideration. The greater part of the work of improvement will be required at La Colle falls, some 23 miles below Prince Albert, the work extending 12 miles below to The Forks, where the north and south branches of the Saskatchewan meet. This stretch of the river is very crooked and narrow, containing no less than 15 rapids, and it is the most difficult and dangerous part of the North Saskatchewan River to navigate. Other portions of the river requiring improvement will be the Cadotte, Nipawin and Tobin rapids. The work, which, it is hoped to complete the levels of 530 miles of the river, and the making of special local surveys to ascertain what wing dams or other structures will be necessary to procure a navigable channel. The Saskatchewan River is an alluvial stream of rapid flow, and is obstructed by shifting sandbars; the latter presenting the greatest impediment to navigation. Above Cedar Lake, the river seems to be adapted for only shallow draught navigation for such eraft will not be very great. An important link in this chain of

An important link in this chain of water communication, says the Deputy Minister, has already been secured by the construction of the St. Andrews lock and dam, on the Red River, below Winnipeg, and 28 miles above Lake Winnipeg, which were formally opened for traffic July 14. This lock and dam afford, at periods of lowest water observed, uninterrupted navigation for vessels drawing up to nine feet of water between Winnipeg and points on Lake Winnipeg, which has an area considerably larger than that of Lake Ontario. The lock has an effective length of 200 ft. and a width of 45 ft., large enough for a vessel of 1,600 tons capacity. The maximum lift will be 21 ft. at the period of lowest water. The lock possesses all the latest features, including automatic self-balanced opening and filling valves, which are being used for the first time in Canada. The lift is obtained by the construction of a movable dam, consisting of a fixed substructure or dam of roll curtains of wooden laths. This movable dam is the first of its kind to be built on the continent. "With the de velopment of navigation on the Saskatchewan," the Deputy Ministér says in conclusion, "Canada would stand unique among the countries of the world in the matter of water transportation; 30 ft. navigation (soon to be 35) from the sea to Montreal, a distance of nearly 1,000

83