

Length, 305 ft.; breadth, 71 ft.; depth, 42 ft. She was built at the Armstrong works for the Russian Government in 1899, under the supervision of Vice-Admiral Marakoff, at a cost of upwards of \$1,000,000. She has 3 screws astern & 1 screw forward. The forward screw is not intended for speed purposes, but to enable the ship to clear her way & prevent lumps of ice accumulating under her bottom, which is effectually done by reversing the bow screw. The propeller blades are very massive, & made of nicked steel. Her speed is about 16 knots. She cuts easily through field ice of 4 to 5 ft. thick, & through packed ice of much greater thickness. To attain the speed of 16 knots with all boilers working, the highest indicated power developed was about 12,000. Cutting through ice of about 18 ins. thickness she maintains a speed of about 6 knots. She has large cargo, or coal space, & with 3,000 tons of coal aboard she draws 25 ft., & only 19 ft. with 300 tons of coal in her bunkers. The Ermack would be larger, & would cost more than a suitable ice-breaker for the St. Lawrence could be constructed for. Probably at a cost of \$600,000 we could secure a vessel better suited for the work required in Canada, with lighter draught & strong enough for all purposes.

The Sampo was built by the same firm in 1898 for Russia, & is of the following dimensions: Length, 202 ft.; breadth, 43 ft.; depth, 22 ft. She has 1 screw aft & 1 forward. She did good work in the harbors of Helsing-

fors & Hango, & cut through ice about 12 ins. thick at a speed of 8 knots, without pressing the machinery. She has cut through a drift (or packed) ice from 5 to 8 ft. in thickness. Piled ice would perhaps be a better term for packed or drift ice.

The Saratooki Ledocal is a smaller type of ice breaker & was built for service on the river Volga. She is a twin screw. Her machinery is of the compound type, working at a pressure of 100 lbs. Her propellers are of maganese bronze—with blades & boss cast in one piece of great strength—almost unbreakable. She has successfully cut through ice 3 ft. thick. Her dimensions are: Length, 147 ft.; breadth, 37 ft.; depth, 16 ft. Her boilers are constructed so that oil may be used instead of coal. She is a smaller vessel than the Sampo & would probably not be quite large enough for work on the St. Lawrence.

The Baikal, also built by the Armstrongs, was for passenger carrying & ice breaking combined, on Lake Baikal, & the line of the Siberian railway. Her dimensions are: Length, 200 ft.; breadth, 34 ft.; depth, 17 ft. She has triple expansion engines with a speed of 12 knots. She cuts through ice 12 to 18 ins. thick.

In addition to this vessel, a very large railway ferry steamer was constructed for ferrying railway cars across Lake Baikal. Her dimensions are: Length, 290 ft.; breadth, 57 ft.; draught of water, 18 ft. She has 2 screws astern & 1 forward—3 sets of triple expansion

engines working at a pressure of 160 lbs. She is built of Siemens-Martin steel, abnormally strong & heavy. Her displacement is 4,200 tons. She is fitted up with staterooms, saloon, etc., for accommodation of passengers.

The Odessa, a small ice breaker, was constructed to work in the port of Odessa, in Southern Russia. Her dimensions are: Length, 158 ft.; breadth, 42 ft.; depth, 25 ft. She has triple expansion screw engines & can cut through ice of about 2 ft. thick.

It must be admitted that the time has come for the Government of Canada to take prompt action in providing an ice-breaker for the St. Lawrence. I would suggest the construction immediately of a vessel, not quite as large as the Ermack, but of about the following dimensions: Length, 250 ft.; breadth, 50 ft.; draught of water, 18 to 20 ft.; fitted with 3 sets of triple expansion engines—twin screws astern, & 1 screw forward. Her duty would be to remain at Quebec during the winter, & prevent the "key" being formed at Cap Rouge. Every time the ice-bridge formed there she should cut it out, & thus prevent the formation of a mass of ice, which has already caused serious delay in the navigation of the St. Lawrence to Montreal. About April 1 every spring she should commence her annual cutting out of the ice all the way to Montreal, so that our first spring steamers may be scheduled to arrive in Montreal not later than April 10. If the "key" at Cap Rouge should form too thick for cutting through by our

MANITOBA

The Government Crop Bulletin issued Dec. 12th, 1899, gives the following statistics for the year:

CROPS.

ACRES.	AVERAGE YIELD.	TOTAL.
Wheat.....1,629,995	17.13 bus.	27,922,230 bus.
Oats.....575,136	38.80 "	22,318,378 "
Barley.....182,912	29.4 "	5,379,156 "
Potatoes...19,151	168.5 "	3,226,395 "

STOCK.

Beef Cattle exported during the year	12,000
Stockers exported.....	35,000
Total value dairy products.....	\$470,559 09

10,500 FARM LABORERS

Came from Eastern Canada to assist in the harvest fields of Manitoba in 1899—and the demand was not fully satisfied.

MANITOBA FARMERS ARE PROSPEROUS.

Farmers erected, last year, farm buildings valued at one and one-half million dollars.

MANITOBA LANDS—For sale by the Provincial Government. Over 1,600,000 acres of choice land in all parts of the Province are now offered at from \$2.00 to \$5.00 per acre. Payments extend over eight years. **Special Attention** is directed to 500,000 acres along the line of the Manitoba and Northwestern Railway at \$3.00 and \$3.50 per acre.

FREE HOMESTEADS are still available in many parts of the Province.

For full information, maps, etc., **FREE**, address J. A. DAVIDSON, Minister of Agriculture and Immigration, Winnipeg, Manitoba.
Or C. H. JEFFERYS, Manitoba Emigration Agt., Union Station, Toronto, Ont.

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