

these heights being fixed by the draught of the vessel fore and aft and the estimated elevation of the tide on the day fixed for the hauling operation. A margin of 2 ft. was allowed between tide and draught for clearance and vagaries of tides, which were found to vary considerably from the tide tables when the wind was in certain directions.

During the construction of the slipway a large gang was employed cutting away and removing all parts of the vessel not required in the reconstruction; the engines and boilers, however, remained in position, and the total weight when placed on the cradle was approximately 1,000 tons, the dimensions of the vessel being 233 ft. between perpendiculars and 39 ft. beam.

A somewhat difficult problem to solve was the pull required to overcome the initial inertia on greased ways on a 4% grade, though it was considered that once this inertia was overcome the coefficient of friction would not be higher than .10, which, on the 4% grade, represented a total pull of about 140 tons. This diffi-

a fourth one being fixed on the centre line 23 ft. forward of the cradle for locating the position of the bows.

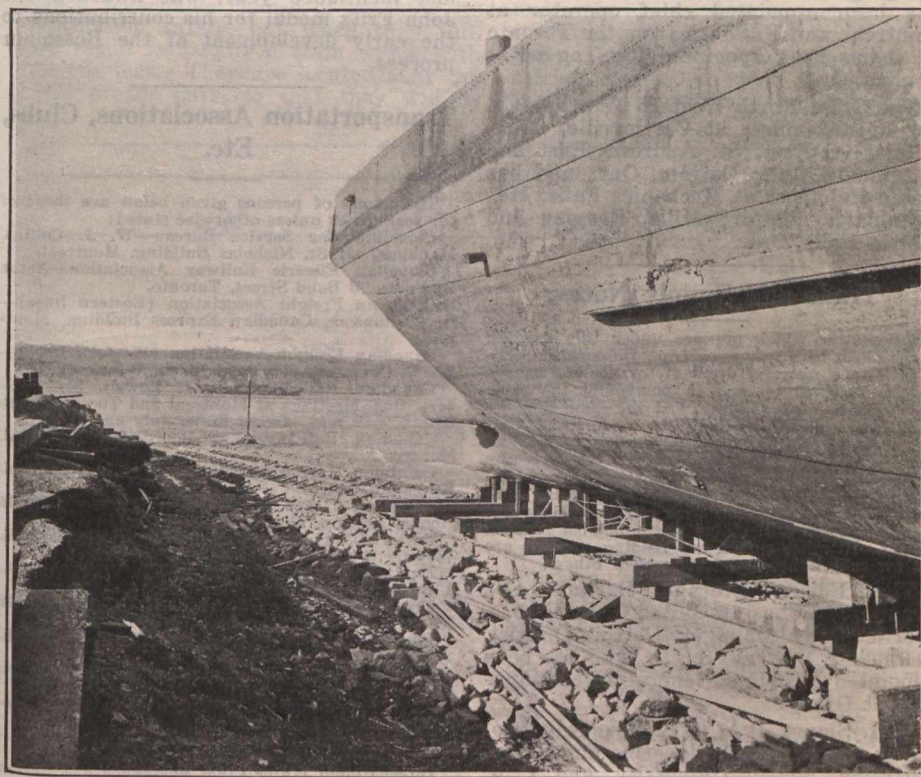
The high tide, occurring at night, made the operation a more difficult one. The vessel was warped into position by cables attached to the wharf on one side and to an anchor and tug on the other, and at 8 p.m. (high tide) was over the submerged cradle, at 8.45 the bows had settled on the blocks at the forward end, and at 9 p.m. the hauling winch commenced to pull on the cradle. As almost the entire weight of the vessel was still water borne, the initial inertia was small and easily overcome, and the cradle moved forward up the ways, with the vessel gradually settling down on same until entirely supported. During this operation very great care had to be exercised in manipulating the mooring cables at the stern, which was subsequently found to have settled within a few inches of the center of the blocks. The cradle steadily mounted the ways, with its huge burden, until the entire hull became visible, looking in the dim light like some monster of the deep

ing loft stores, offices, etc., had been installed and the vessel brought out of the water. The operations here described were carried out under the direction of D. A. Andrus, the company's Manager and Engineer at Levis.

The Gulf of St. Lawrence Shipping & Trading Co., Ltd., the incorporation of which, with \$3,000,000 capital and office at 147 Mountain Hill, Quebec, Que., has been announced previously, is reported to have been granted a subsidy by the Dominion Government for a steamship service during the navigation season, for 5 years, to 1923, at \$70,000 a year, to operate 4 vessels to the west shore of Newfoundland, making four trips a month, and one trip to Gaspé, Prince Edward Island and Pictou, and one between Pictou and Magdalen Islands, on a semi-weekly schedule. One steamship, *Guide*, was operated at the end of the past season, and it is said that arrangements are being made for the chartering or purchasing of other vessels for service in the spring. The company intends doing a general trading business, in addition to carrying on a passenger, mail and freight service. The officers are: President, C. A. Barnard, K.C., Montreal, a director of Canada Steamship Lines, Ltd., and President, Davie Shipbuilding & Repairing Co., Lauzon, Que.; Vice President, A. E. Doucet, Quebec, formerly District Engineer, National Transcontinental Ry.; Secretary-Treasurer, H. P. Hamel, Quebec; Marine Superintendent, Capt. J. S. Bernier, Arctic explorer; General Manager, J. de S. Bosse.

Steamship Corinthian Wrecked.—Canadian Pacific Ocean Services' s.s. *Corinthian*, outward bound from St. John, N.B., from Glasgow, Scotland, with general cargo, on Dec. 14, struck on Bolsons Ledge, commonly known as the north-west ledge, Brier Island, at the entrance to the Bay of Fundy, and became a total loss. The crew of 86 were rescued, Dec. 15, by the Dominion Government s.s. *Aberdeen* and patrol s.s. *Festubert*. The weather at the time of the casualty was reported as dense fog with a heavy sea running. The master reported that when he left the vessel, the holds were full of water, and that it was impossible to save anything. She was built at Belfast, Ireland, by Workman, Clark & Co., in 1900, for the Allan Line, and was 445 ft. long, with a gross tonnage of 7,332. Included in the cargo was 120,000 bush. of wheat. An enquiry was held at St. John, N.B., Dec. 20, when it was reported that the court had decided that the loss was due to indifferent seamanship, and suspended the certificate of the master, Capt. Tannock, for three months, and that of chief officer Simpson for six months.

Dry Dock for Vancouver.—It is reported that a company is about to apply to the Dominion Government under the Drydock Subsidy Act, for a subsidy for the construction of a first class drydock at Vancouver. The report states that the interests concerned in the proposed company, include the Wm. Lyall Shipbuilding Co. and the Pacific Construction Co., both of which carried out wooden shipbuilding contracts for the British Government, through the Imperial Munitions Board, and are now building wooden steamships for the French Government. So far as the Pacific Construction Co. is concerned, Stuart Cameron, Vice President, is reported to have stated, Dec. 13, that this is an old story revamped, that the company has no plans in this connection whatever, and though it has been asked to



Dredge Galveston, in yard, after having been hauled up the marine railway.

culty, however, was successfully overcome in the manner described later on in this article. The hauling engine and drum were bolted down to a heavy concrete foundation, weighing approximately 150 tons, and also anchored back to same with 1½ in. steel rods. Two 2½ in. steel cables were attached to the rear end of the cradle, and passed forward beneath same to the forward end, where they were shackled to two heavy 4 sheaved steel blocks; ¾ in. steel cables were reaved over 3 sheaves in each block, making a 7 part line on either side, extending to similar blocks fixed in front of the winding drum, the distance between the blocks being 313 ft., each cable being 2,500 ft. long. The cradle was erected in position at the lower end of the ways and weighted with rails and rock; 3 timber uprights bolted on one side of same 50 ft. apart and exactly 19½ ft. from the centre line, acted as guides for bringing the vessel into correct position,

rising from the sea with the water dripping from its sides. The total distance of 275 ft. was covered in 40 minutes, at a mean speed of approximately 7 ft. a minute, and the vessel was high and dry in position adjacent to the shops all ready for reconstruction work. No camber had been given to the ways, but there was no settlement, neither was anything displaced or broken.

In the accompanying illustrations the vessel is shown stripped of bulwarks, bridge deck and all top hamper down to the main deck. The alterations and reconstruction call for increasing the moulded depth by 8 ft., remodelling the stern, new bottom for half the length of the vessel, construction of cargo holds, crew quarters, etc., providing masts, booms, deck winches and all fittings necessary for relaunching completely ready for sea. Within 2½ months of taking possession of the site the necessary machine shops, carpenter shops, mould-