

Conversion of an Ocean Steel Dredge into a Freight Steamship at Levis, Que.

An interesting operation in marine work was carried out recently by the National Shipbuilding Co., of Goderich, Ont., at its St. Lawrence dock, Levis, Que. Having undertaken to convert an ocean going steel dredge into a freighter for French shipowners, a quick delivery being specially called for, and there being

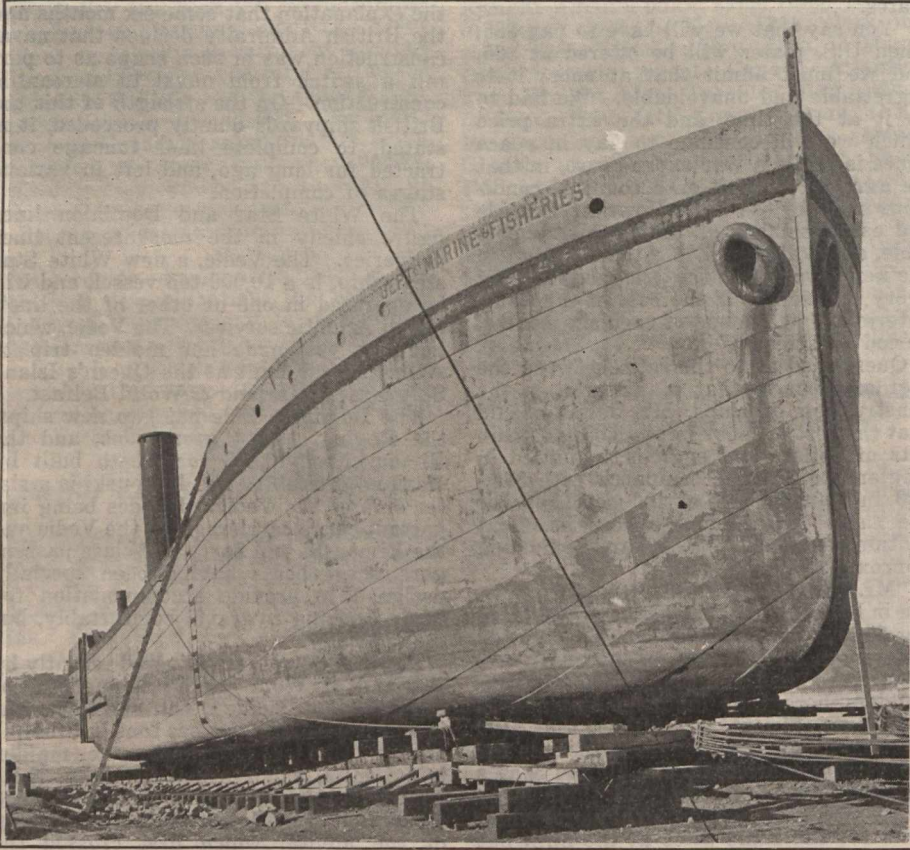
required in a modern shipyard. Owing to the impossibility of securing the necessary machinery and appliances for a regular marine railway in the limited time available, it was decided to use greased ways, instead of the usual steel rollers. The grade of the slipway was fixed at 4%, and it was found that if ad-

of the slip, however, was subsequently reduced to 485 ft., as the bow of the ship was allowed to overhang the cradle by 23 ft.

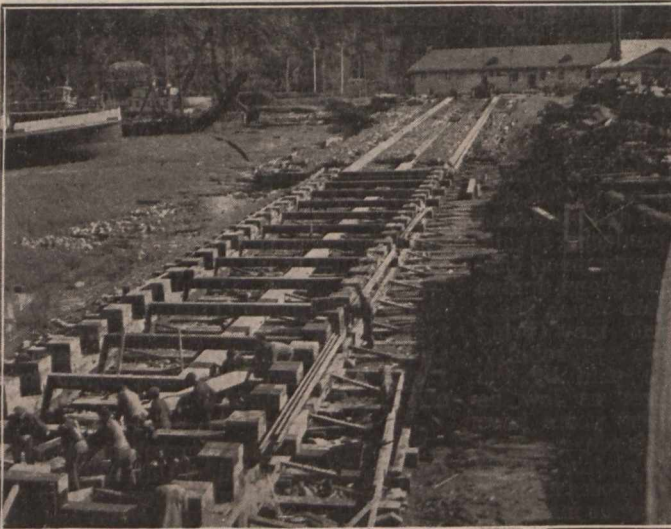
The site selected for the operations contained a wharf of sufficient width to allow of the upper portion of the slip being excavated for a length of 225 ft., the material with which the wharf had been filled originally being shale debris from the adjoining cliffs, provided a good foundation for the ways. Beyond the wharf, soundings taken in the river showed from 4 to 5 ft. of mud and blue clay overlying the rock, and although it would have been preferable to have carried the foundation of the ways down to rock, it was realized that as work could only be carried on during low tide, it would require the remainder of the season to clear the site, consequently the mud only was removed and the cross timbers laid on the blue clay, which on closer inspection proved quite suitable for a solid foundation.

The cross timbers, 12 x 12 in. x 40 ft. long, of B.C. fir, were laid at 4 ft. centers, the next course above being composed of longitudinals, and above this cross timbers again, the whole cribwork being filled in with rock and shale from the wharf excavation. The standing ways were constructed of two 12 x 12 in. oak baulks bolted together with 1 in. bolts at 5 ft. centers, the bolts also passing through the 6 x 15 in. oak guides fixed on the outside of the ways and projecting 3 in. above the surface of same to hold the sliding ways in position.

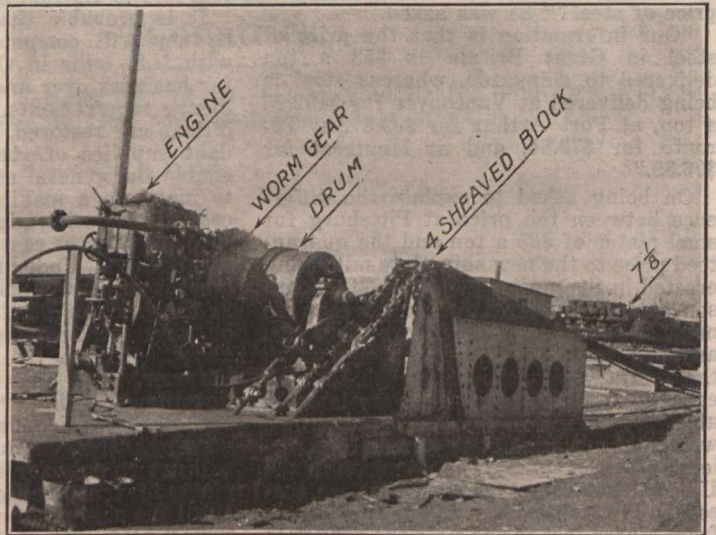
A center way was also provided for a certain distance, to carry the stern of the vessel where the engines and boilers were situated, and where the lines of the hull did not allow of it being supported on the side ways. The sliding ways carrying the cradle, 210 ft. long, were also of oak, a center way 75 ft. long being also provided to carry the stern of the vessel where the greatest weight was concen-



Dredge Galveston, being hauled up the marine railway.



Construction of the cradle at low tide, for hauling up the Dredge Galveston.



Hauling apparatus, engine, worm gear, drum, 4-sheaved block, $\frac{7}{8}$ -in cables.

no drydock available in which to carry out the work, the company decided to bring the vessel out of the water on a marine railway.

A site having been selected on the St. Lawrence River opposite Quebec, active operations were commenced on the construction of the slipway, together with all the necessary shops and buildings re-

vantage was taken of the highest tides for floating the vessel on to the cradle, a total vertical lift of 11 ft. would be sufficient to ensure the stern being above high water mark for the balance of the season. This lift, on a 4% grade, fixed the hauling distance as 275 ft. and the length of the slip at 508 ft. (viz., length of ship 233 ft., plus haul 275 ft.). The length

trated. Timbers 12 x 12 in. x 24 ft. long were laid across the sliding ways at 10 ft. centers, with short blocks in between, so that the vessel would be supported by blocking at 5 ft. centers throughout the length of the cradle. This blocking was carried up to a height of 4 ft. above the standing ways at the after end of the cradle and 2½ ft. at the forward end,