

A press report from Vancouver, published in Canadian Railway and Marine World for November, stated that the White Pass and Yukon Route would start a direct passenger steamship service between Vancouver and Skagway, Alaska, using vessels which would be built at a cost of about \$1,000,000 each. The President, O. L. Dickeson, left for England in November to consult with the directors, and will probably return early in January, when a definite announcement may be expected. There appears to be no doubt that the service referred to will be established.

The two vessels under construction at Dumbarton, Scotland, for the C.P.R. British Columbia coast service, are proceeding rapidly, and it is expected that both of them will be launched next spring, and that they will arrive on the coast towards the end of the year, by way of the Panama Canal. They will be equipped with the latest Parsons geared turbines, by which it is claimed the greatest efficiency is obtained from both the turbine and the propeller. It is stated that these vessels will be the fastest in service on the coast, the contract speed being 22½ knots an hour.

The Pacific Coast Steamship Co., which operates a weekly steamship service into Vancouver, has communicated with the

Marine Department at Ottawa, protesting against the compulsory payment of pilotage dues. It states that the amount paid is in excess of \$4,000 a year for services which are not used nor required, as all its captains are fully qualified to pilot vessels in and out of all harbors on the Pacific coast. If it is considered desirable to maintain a system of compulsory pilotage dues, it is suggested that a flat rate of \$200 a vessel a year be paid, and that the Dominion Government authorize the local pilotage authority to make such flat rates in its discretion.

In our last issue a complete denial was given to the rumor that the Canadian Northern Ry. had placed orders in Glasgow, Scotland, for two steamships for a Pacific coast service, but notwithstanding this, the Victoria Colonist of Nov. 4, contained a cablegram from Glasgow, dated Nov. 3, to the effect that orders had been given to the Fairfield Shipbuilding Co. by the Canadian Northern Ry. for the construction of two turbine vessels to steam 20 knots. It also stated that the orders were given by D. B. Hanna, Vice President, Canadian Northern Ry., Toronto. On enquiry at the Canadian Northern Ry. offices, we have been informed that Mr. Hanna has placed no such orders, nor does he know of any such orders having been placed.

Raising Wrecked Atlantic Liners by Compressed Air.

The use of compressed air in raising and repairing sunken vessels has been employed very extensively, either in floating caissons, or "camels," attached to the ship, or by converting part of the ship itself into a pneumatic caisson. An exceptionally important piece of work done in the latter manner was the raising of the Canadian Northern Steamships, Ltd., Atlantic liner Royal George in the St. Lawrence River. A specially interesting feature of this work was that the hull when raised was repaired under air pressure while floating in the river (instead of going into drydock). By this means the vessel was enabled to take cargo and cross the Atlantic to have permanent repairs made at its home port.

The Royal George is 545 ft. long and 60 ft. beam, with a registered tonnage of 12,000 tons; it is driven by triple screws and steam turbines, developing a total of 18,000 h.p. and giving a speed of about 20 knots. On Nov. 6, 1912, while on its last voyage of the season to Montreal (before the closing of the river by ice) it went ashore at high tide about nine miles below Quebec. Passengers and cargo were discharged and attempts made to pump out the flooded compartments of the hull. The following description of the salvage work as finally accomplished is condensed from an article by R. G. Skerrett:

After nearly two weeks it was recognized that the usual salvage procedure would not answer, and W. W. Wotherspoon was summoned from his work on a nearby wreck, the stranded collier Gladstone. Upon this he was using compressed air, and the underwriters decided to have him try the same method upon the Royal George.

The pumps were removed and the hatches to the damaged compartments sealed by air tight plates. Air locks were secured to circular passageways in the hatch covers, and connections also made by pipe between the air compressors and the injured holds. In three days this work was completed.

It was necessary to provide against the pressure of a head of water of 23 ft., and the deck overlying the compartment was not equal to a bursting stress of this magnitude. Worse still, the deck planking did not rest upon a solid steel deck, and there was risk of blowing out the calking between

the planks, which would mean failure. To meet the situation, hot pitch was poured into all the deck seams, the deck covered with a number of layers of tar paper, and over these placed a course of spruce flooring. Then this pressure deck was braced by shores reaching to the deck above, so as to distribute the stress when the holds should be filled with compressed air. In brief, it turned the flooded cargo spaces into caissons, and then all was in readiness for the expulsion of the water by forcing in the air under pressure. The compressors started at 10 p.m. of Nov. 22, and 15 minutes later the forward cargo space was dry.

An internal examination of the injured holds showed that nearly 40% of the ship's bottom was damaged, but it also demonstrated that the salvage method was equal to the demands to be placed upon it. The next afternoon, two hours before high tide, the water was blown out from the flooded compartments and the vessel floated clear.

Then came the question of repairing the badly damaged hull. The nearest drydock was at Montreal, 140 miles away, and the river's closed season was drawing near. Besides the liability of having the ship held for months, there was the prospect of heavy dock charges, independently of the cost of repairs. The question was how could the Royal George be made ready for sea without going into drydock? Mr. Wotherspoon answered this in a unique and satisfactory manner.

The ship was anchored in deep water, and into the damaged spaces men were sent through the air locks, the compartments being held substantially drained by reason of the compressed air within them. Beginning at the uppermost point of the rents in the hull, the men roughly sealed these openings by covering them with heavy planking calked with mud and oakum, the water receding as the pudge boards reached downward and finally covered the openings. This sealing was but temporary, and effective only so long as the air pressure was maintained. Before the vessel could proceed seaward it would be necessary to cover the damaged bottom from without with steel plates made water tight.

From within the hull, flexible templates

of wood were made of each needed patch, and upon these were marked the places for bolt holes, the same positions being indicated upon the inner surface of the vessel's plating. The templates were sent up through the air locks and guided the steel workers in forming the steel patch plates and in boring the threaded bolt holes. Into these holes tap bolts were screwed. In the meantime, slightly larger holes were drilled around each wound in the hull, and made tight with wooden plugs from within.

A weighted platform was swung under the ship directly beneath the rents to be mended, and a diver took his place upon this submerged platform. When each patch was ready, with its tap bolts in place, it was lowered to the diver, who directed it into position, the men inside withdrawing the wooden plugs so that the bolts could enter their proper holes. Then nuts and washers, with plenty of red lead, were placed upon the bolts and screwed well home in order to make the patch plate snug and water tight.

With this done, the temporary inside pudge boards were removed, and the ragged edges of the damaged hull were cut away by means of oxy acetylene torches. In this manner all of the repairs were effected, and the total damage covered an area of 700 sq. ft. The Royal George left the St. Lawrence for Halifax, and on the way encountered heavy weather, but the repairs proved quite equal to the stress placed upon them. At Halifax, because of the novelty of the work and to satisfy the insurance people, the liner was docked for a brief examination. Everything being found in excellent shape, the Royal George loaded with cargo and returned to England without further mishap.

Another somewhat similar work was done by Mr. Wotherspoon early this year. The transatlantic steamship Uranium, 5,180 tons, went ashore at Chebucto Head, N.S., on Jan. 12, and after being floated was taken to Halifax for repair. The drydock, however, was occupied by another steamer, and would not be available until March. To avoid the delay, the rents in the hull were patched while the damaged compartments were filled with compressed air, the ship being practically a floating caisson. Men entered the air locks and made templates for the patch plates and bolt holes, and drilled the necessary holes. The plates (with tap bolts inserted) were lowered outside the hull, and guided into place by a diver standing on a submerged platform; the bolts were entered into the proper holes, and nuts and washers applied by the men on the inside. The ship was then able to proceed to New York.

Sight Tests in the Mercantile Marine Service.—The British Board of Trade has modified its standard of sight tests required of candidates for certificates of competency from Jan. 1, 1914. Under the new standard a candidate will only be required to possess normal vision when using both eyes together, or, at his option, either eye separately. It has also decided that a candidate who already holds a certificate of competency of any grade and who presents himself for a higher certificate shall not be required to undergo any color test, and officers who hold certificates of competency, presenting themselves voluntarily for sight tests, should be confined to the form vision tests.

The Bronson Co., Ottawa, which owns, among other properties and franchises, the charter of the Quinze and Blanche River Ry., is applying to the Dominion Parliament for authority to borrow additional sums for the development of its several undertakings.