

sums, while it is anticipated that holders of considerable blocks of vendors' shares will be unable to avail themselves of this arrangement, to the greater advantage of the other shareholders.—B.C. Review, London, Eng., Dec. 30.

The str. Willie Irving, which was wrecked on the Yukon River above Dawson in Nov. was so typical a boat that a description of her, which is condensed from Marine Engineering, will be of interest. She was built at Portland, Ore., boat & machinery being shipped to Skagway in knock-down shape in such form that the whole was safely transported over the White Pass, & the boat re-erected and launched at Lake Bennett. Her owner, Capt. E. W. Spencer, of Portland, after investigating the dangers of Miles Canyon & White Horse Rapids, decided to take her to Dawson. He was warned that it would mean destruction for the boat & death for the crew, but he had navigated on swift waters before & felt sure of himself & his boat. He knew there was sufficient depth of water, & that safety depended upon maintaining perfect control of the craft. After a few short runs on Lake Bennett & tributary waters to test her machinery & steering qualities, a start was made down the river with a load of passengers & freight for Dawson. The exciting run was made safely without causing a mishap, & he arrived at Dawson with passengers & cargo in fine condition. The receipts from freight & fares more than equalled the entire cost of boat & supplies. At Dawson Capt. Spencer was offered a price for the steamer, & as it represented a clear & quick profit on his enterprise he accepted. Her new owner made 10 trips between Dawson & White Horse Rapids during 4 months last season with receipts of \$127,668.00—an unusual amount for an 80 ft. steamer, even for river service, in a land of high prices. The boat proved to be a large carrier, stiff & speedy, & a close & easy handler in swift water. Her average time on the up river trip was 7 days. When it is considered that no piece or part of boat or machinery or outfit was so heavy that 2 men could not transport it over White Pass, or any timber or section over 24 ft. long, it will be apparent that the construction was peculiar. The upper works consisted of a single cabin the full length from the stem to stern, with pilothouse & Texas. The cabin floor or main deck was carried 20 ins. below the guard, this being necessary on account of the variable & violent winds that cause much trouble to navigators on Lake Bennett & tributary waters. Some of the details of construction follow: Keel, 1½ ins. by 8 ins., in 4 pieces, butted between frames; frames, 2½ ins. by 2½ ins., bent oak, set at 20 in. centres—when shipped these frames were held to form by wires instead of cleats, to lighten weight & lie together more

compactly: Floors of Oregon pine, 2½ ins. by 2½ ins., bolted to the frames, with 4 screw bolts in each frame: Centre keelson of three 1½ ins. by 8 ins. timbers set on edge & bolted through & through, making it as stiff as a solid stick: Side keelson of two 1¼ in. by 10 in. pieces set on edge, & bolted through like centre keelson: Centre keelson fastened with 2 bolts through each floor stick: Cylinder keelsons 4 pieces 4 ins. by 6 ins. by 20 ft. long: Stem of oak re-enforced with a knee of Oregon pine: Clamps & also sheer 1 in. by 8 ins. Oregon pine: Shelf, 2½ ins. by 2½ ins.: Bilge strakes 2½ ins. by 5 ins.: Cross keelsons 2½ ins. by 2½ ins. every 10 ft., set on top of fore & aft keelsons, with knee at each end bolted to bilge strake, clamp sheer & frame: Deck placed on a level with these cross keelsons; decking of 1 in. lumber laid athwartships, resting on stringers laid on the fore & aft keelsons: Bottom planking 1½ ins. by 12 ins.; Side planking 1 in. by 5 ins.: Transom 2 ins. by 12 ins.; Knees used to strengthen the frame & planking all butted between frames. The vessel is fitted with three balanced rudders. The entire skeleton of the hull was put up with carriage bolts when erecting it at the Portland boat yard. The holes were all drilled full size, but the bolts used were 1-16 ins. smaller in diameter than those put in at final erection, thus avoiding undue strain to the lumber & facilitating taking down. The total amount of lumber used in the completed boat was 8,800 ft., being principally choice Oregon pine, & the results have proven that it was all put where it did the most good. The engines were two 7 ins. by 28 ins. double ported, balanced piston valve, direct acting, stern wheel engines. They were installed with their auxiliary bearings built on to the steel wheel & engine beams. When constructed they were fitted & lined up complete in the builder's shop & run by steam pressure under approximately the same conditions as when installed in the boat. The wheel was 9 ft. 9 ins. dia., with buckets 9 ft. long & 13 ins. wide. There were 12 of these, each 1½ ins. thick. With 200 lbs. steam pressure & 36 engine revolutions a minute the boat attained a speed of about 12 miles an hour. The steel stern wheel shaft was 3¼ ins. dia., in 2 sections, the steel coupling forming also the central paddle wheel flange. Steam was raised in a water-tube boiler which was built for 250 lbs. maximum pressure per square inch. The boiler was fitted with an extra deep fire box for burning wood. Auxiliaries included an outside packed plunger steam boiler feed pump, such as is supplied for use with gritty water, also injector, test pump, sea cocks, bilge syphons, & an independent feed water heater, all arranged with special reference to the service for which the Willie Irving was

built. Another steamer, the Scotia, practically a duplicate of the Willie Irving, was completed last fall for Capt. Spencer at Portland, the machinery consisting of a pair of 7½ ins. by 28 ins. double ported balanced piston valve engines built on to steel wheel & engine beams. This new boat equals, & perhaps exceeds in general efficiency & speed the Willie Irving, & though she is a trifle heavier craft, her machinery represents an increase of about 18% in power. Her actual total weight, inclusive of cabin & upper works, is 59,000 lbs., being just 12,000 heavier than the Willie Irving, the hull measurements of the 2 boats being the same. The Scotia's paddle wheel is 10 ft. 3 ins. dia. outside of the buckets and 9 ft. 4 ins. long. Each of the 12 buckets is 12 ins. wide by 1½ ins. thick.

The Georgian Bay Trade.

In reference to the past season's trade, the Parry Sound Canadian says:—"It has been phenomenal, as far as traffic on the Canada Atlantic Ry. is concerned. From early in the spring, when navigation opened until its close, the boats have been steadily running on the lakes, connecting with the C.A.R. at Depot Harbor & giving employment to a large staff. It is estimated that 12,000,000 bush. of grain have been sent out of Depot Harbor this season, & the elevator now contains another 1,000,000 bush."

The Owen Sound Times says:—"The season of navigation just closed has been prosperous & successful beyond its predecessors in many respects. From a business standpoint it has been the most prosperous in years. Freight has been plentiful & rates high. Another feature for congratulation has been the comparatively few losses compared with last year. Particularly is this feature marked with respect to the local lines. In 1898 the Great Northern Transit Co. lost the steamers Pacific & Northern Belle by fire, & with its sister company, the North Shore Navigation Co., suffered several more or less serious accidents during the season. For 1899, \$100 will cover any injuries the steamers of the Northern Navigation Co. have sustained during the entire season. The C.P.R. fleet has also come through without serious mishap. With the exception of the damage resulting from the conflagration of the Athabasca, in Aug., nothing worth mentioning has happened. The Manitoba sprung her rudder & spent a day in Collingwood dry dock, but the damage was trifling & the trip to Collingwood did not put the big steamer behind in her runs. The Alberta came off clear. The City of Windsor ran on a shoal near Killarney & had to lay up a few days for repairs, but beyond this, had no mishap during the season. The year 1899 will certainly be remembered as one of exceptional freedom from disaster."

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