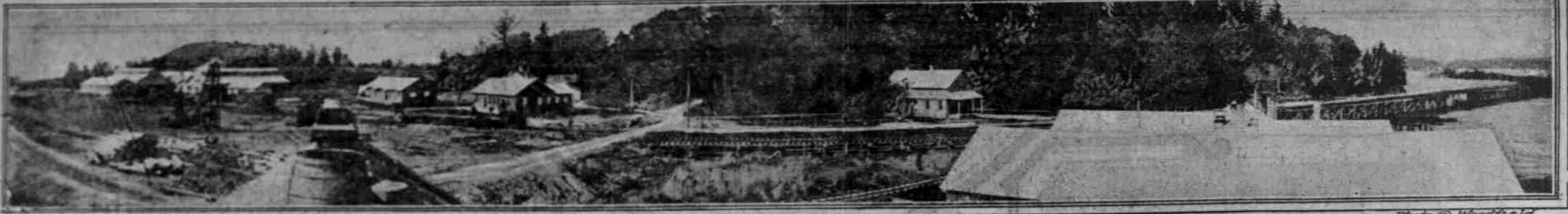


Depth of Channel at Mouth of Columbia River Now Nearly 31 Feet



Government Construction Headquarters, Columbia River North Jetty. Fort Canby.

Photo © Woodfield.

Greater Depth to Be Reached Soon by Jetty Operations

South Project Completed in 1912 at Total Cost of \$9,295,899—United States Army Engineers in Direct Charge of the Work.

The project for improving the channel across the bar at the mouth of the Columbia River was adopted by Congress in the river and harbor act of 1884. It was made by the United States Engineers with a view to providing a channel depth of 33 feet by the construction of a jetty of rubble-stone 4 1/2 miles long extending seaward from Point Adams, on the south side, to a point about three miles south of Cape Disappointment. The estimated cost was \$21,148,990.

The jetty was built by means of a double-track pile and timber trestle over which the rubble-stone was carried on cars and dumped into the ocean forming a mound of stone along the full length of the trestle. This mound of stone is what is known as the jetty proper. The greater part of the stone came on barges from Fisher quarry, above Vancouver, Wash. It was delivered over the receiving wharves and loaded onto the dumpcars at Fort Stevens.

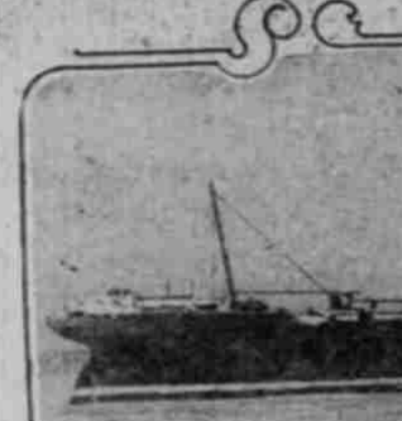
Early Work Successful. Operations on the 4 1/2 miles of jetty extended from 1885 to 1912. The total expended was about \$1,348,000, a saving of nearly \$1,950,000 over the estimate. A depth of 21 feet over the bar resulted from the work, but one foot more than was contemplated by the project. Nearly 233,600 tons of stone were used in the construction.

Shortly after such gratifying results were achieved the bar channel commenced to deteriorate and each succeeding year found less water in the channel, which continually shifted its position, until in 1902 the governing depth was only 23 to 25 feet.

These conditions aroused Congress to action, and in 1904 \$250,000 was appropriated for repairs to the tramway, rolling stock and plant. The act of 1907 appropriated \$100,000 and authorized continuing contract or contracts for materials and work not exceeding \$1,400,000.

Work has been carried on under this project, and, owing to the fact that Congress was more liberal in supplying funds than in former years, the south jetty extension was completed in 1912. It contains over 3,738,000 tons of stone and cost about \$3,974,000. At this time the channel had increased through sand dredging to a depth of about 31 feet.

Many difficulties attended the execution of the work. The principal trouble being caused by severe winter storms which necessitated the suspension of operations each year during four or five months, and oftentimes carried away long sections of the tramway, which had to be rebuilt the next season. The proposition of dredging piling in the bar is known best to contractors. In some instances it had to be abandoned and new trestles constructed along



Broadside View of US Dredge Chubook

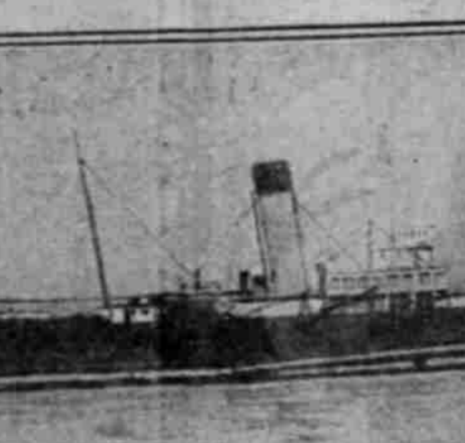
the outside edge of the embankment. Anticipating the importance of commencing construction on a north jetty, preliminary operations were started in 1912, and by the time operations were suspended on the south jetty, plans and estimates for the proposed work had been prepared and approved by the department. Receiving wharves, shops, quarters, tracks and storage facilities had been completed and everything placed in readiness to transfer the plant and equipment. This was accomplished sufficiently to allow the commencing of the trestle in September, 1914, and by February, 1916, the last piece of plant and even some of the houses intact had been loaded on barges and floated across the bar to Fort Canby and placed in their respective functions. The working force took up its abode at that historic place and created a settlement which today is almost a city within itself.

Portland and Astoria Help.

Congress did not provide funds as was expected in the Spring of 1914, and it was not until October 2 of that year that funds were appropriated for continuing the work. However, the Ports of Portland and Astoria banded to the rescue by contributing \$475,000 and \$25,000, respectively, with which the dumping of rock was continued until about August 10, all work being suspended between that date and October 15, \$1,200,000 having been allotted from the emergency river and harbor act of October 2. With these funds and \$1,000,000 allotted from the act of March 4, 1915, the plant worked to full capacity up to the middle of December, 1915, when the funds were again exhausted.

During construction on the south jetty stone was never received during the winter months, but active operations were in progress on the north jetty throughout the Winter of 1914-1915, and although some severe storms occurred during that Winter and also during the past two months, no material damage to the trestle resulted.

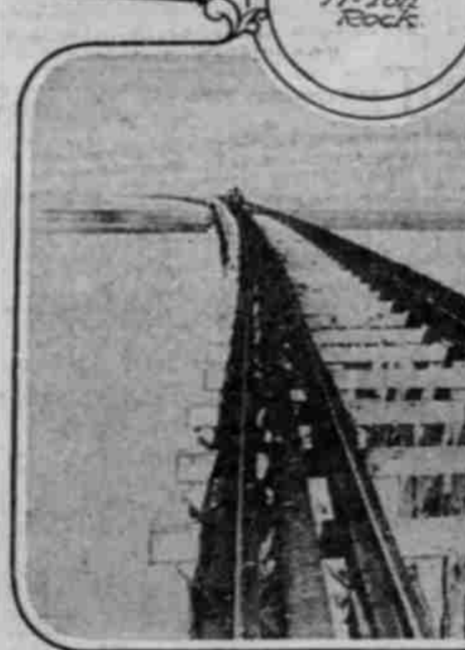
This fact is very encouraging to the United States engineers, after having to suspend work and experiencing the loss of more or less trestle each Winter during construction of the south jetty. It is, however, very discouraging not to have sufficient funds to carry the project to completion without interruption. The discontinuation of forces resulting from suspension



View of Track on North Jetty.

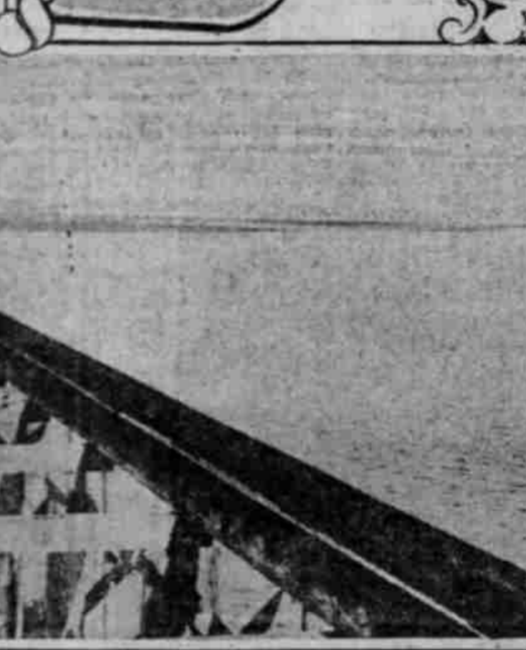
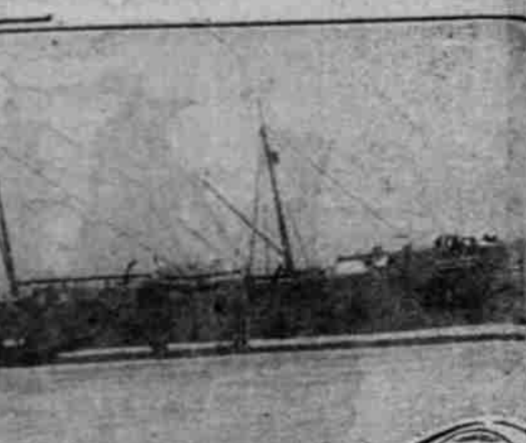


Hoisting 17-Ton Rock

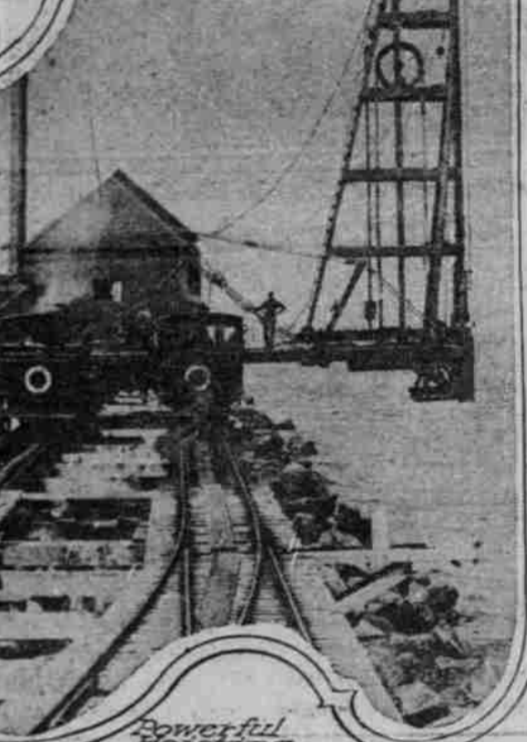


Powerful Hoisting Machine Used up Jetty Work

of work and reorganization on a proposition of such magnitude as this is a direct loss in efficiency, to say nothing of loss of time in completion, it is pointed out. The status of the work is about as follows: The north jetty tramway has been completed to its projected length (12,200 feet), and approximately 2,085,



tons of stone has been dumped in the jetty. This stone has been placed along the entire length of the trestle and it is thought the foundation thus provided will furnish support for the piling and insure its remaining intact until such time as operations can again be resumed.



There remains to be placed in the jetty nearly 1,000,000 tons of stone before the enclosure will be brought up to the required level and machinery for the construction of the jetty, formerly the commercial steamer "Mohawk," and later the Army transport Grant, was turned over to the Engineer Department and converted into a dredge, with two 20-inch pumps. She was first placed in commission on the bar in 1914, working from May to November. Experience demonstrated that her draft was too great to allow of effective dredging and she was laid up at the Government wharves until January, 1916, when a contract was made for removing her upper works and making repairs to boiler and machinery. These changes will result in a ship having less draft and free board and better adapted to the bar and weather conditions. Her dredging capacity, however, was still too small to make any appreciable effect on the bar and it was not until two additional 30-inch

Active Work Now Being Pushed on North Side Unit

Tramway 12,300 Feet Long Completed—To Provide for Continuous Operations More Funds Are Needed.

Table giving dredging results and costs for the Columbia River North Jetty from 1904 to 1915.

Period	Yards Dredged	Cost
May to November, 1904	3,245.00	281.00
September 10 to Dec. 31, 1904	1,884.00	171.00
May to June, 1911	212.00	12.00
July 1911 to July 2, 1912	48,070.00	1,100.00
June 15 to 27, 1912	48,070.00	1,100.00
July 1 to June 30, 1915	1,188,000.00	1,750,000.00
July 1 to November 30, 1915	1,265,000.00	1,750,000.00
Total	3,728,085.00	3,750,000.00

Forty-Foot Channel Is Goal.

The latest partial survey of the bar, made in November, showed a governing depth of 35 feet in the dredging area, an increase of about eight feet since the north jetty was started, and of 30 1/2 feet on the southerly entrance range.

The conditions were never more favorable for a permanent channel of 40 feet or more, but it is safe to predict that the river and harbor bill will not be reached before the very last of this session of Congress, and that no further work can be done until about March 31 at the earliest, and the legislation will place the bill in serious jeopardy. The whole Northwest is interested in a deep bar channel, which it is believed by the Army engineers can be accomplished only by completing the jetty. A campaign, it is urged, should be started by all shipping and commercial interests at once with a view to impressing upon the Congressional delegation the favorable indications for a permanent channel of 40 feet or more.

Congress should not lose the chance of taking advantage of these conditions and while they exist, further delay may result in the loss of the object for which so much money has already been spent. If the river and harbor bill fails, the Sundry Civil bill should carry an item providing sufficient funds to continue construction.

Volume of Coastwise Traffic Makes Steady Gain

Water Movement to California Ports Is Large but Northbound Trade Needs to Be Developed. Closer Relations Between Oregon Coast Points Urged—Alaska Trade Valuable.

By M. L. Kilbride. COASTWISE traffic from Portland is divided and considered in three divisions: Portland to Alaska, Portland to San Francisco, Portland to Oregon coast ports. The first division is almost unimportant, as Portland freight boats for Alaska go by rail to Seattle and thence by boat. Several attempts have been made to put on a direct steamer service, and have been abandoned in each instance by the failure to raise enough money to carry the project through. Lack of interest on the part of the shippers and inability to secure proper vessels to give frequent service were the main difficulties. As it now stands, the Portland merchant must about the freight between Portland and Seattle by an equal haul with the Seattle merchant.

The water traffic between Portland and California ports, such as San Francisco and the ports south, is carried on by steamer and steam schooners. There are three regular steam Frisco-Pacific lines and three regular steam Frisco-Portland lines. The first is the Oregon Coast Steamship Company, the second is the Oregon Coast Steamship Company and the third is the Oregon Coast Steamship Company. These lines carry cargo at about equal rates, both as to marine insurance and freight rates and give satisfactory service. The steam schooners are distinctly a Pacific Coast development and until recent months practically unheard of in the East. Since the opening of the Panama Canal and the outbreak of the war, however, the steam schooner has become a frequent visitor to United States Atlantic ports and some have even sailed as far from home as Scandinavia, London, India and other foreign ports. The steam schooner was first built to supply the demand for a comparatively fast lumber carrier capable of taking large cargoes and operating economically. These vessels carry the two great

River Transportation Is Great Factor for Portland

With Improvement of Channels in Columbia and Willamette Rivers, Bulk of Traffic of Interior Will Be Secured—City Entitled to Lowest Freight Rates.

By A. H. Devers. PORTLAND'S eventual hope lies in the development of her river transportation. This refers as much to the Willamette River as to the Columbia. The Willamette River has had some slight improvements, but there are wonderful possibilities inherent in this stream with development that would make it navigable at all seasons of the year to Eugene. Transportation on the Willamette, with reasonably fair landing facilities, and the locks open as they are now at Oregon City, means a great reduction in the already reasonable freight rates between the Willamette Valley and Portland. It means the centering of many industries at the head of navigation which are not possible in smaller places where there is a lack of facility for distributing the products from a central market and where there is a lack of labor. Many have wondered why factories go to large cities when conditions for labor are better in small cities, but it is due to the large cities' better distributing facilities, a greater home market, and to the fact that labor likes to be where the opportunities for employment all in the year round are better than they are in small places.

The Willamette has been given little attention, and because the possibilities of the Columbia are so much greater and the volume of traffic so much larger on that river and the territory so much greater, it must be plain to everyone that when the Columbia and the Snake through canalization are opened up for all-the-year-round navigation the development of Portland's industries are assured beyond a question.

Lower Freight Rates Urged. The location of Portland is such that it is entitled to the lowest freight rates from the interior of any large city on the Pacific Coast. These freight rates we do not now have nor will we ever get them until the Columbia and Snake are canalized and freight can be barged down from the uppermost reaches to Portland. With this improvement completed the bulk of freight will be carried by water, a thousand tons, it needs no imagination to perceive that freight rates to Portland will be made to pre-empt as a market for the products of the upper country. With the lowest freight rates to Portland would naturally come the lowest freight rates from Portland, and once we have such rates the development of industries will take care of itself. It behooves, therefore, every citizen of Portland who is interested in the growth of the city to work persistently and incessantly for the improvement of the rivers. Let us work together, first to improve the Columbia and then to organize the upper country to build good roads to the river, and once that is accomplished we must work on the Willamette. When the Columbia and the Snake are open to navigation all the year round the industries of Portland will not need developing—the facilities for distribution will make them come almost without further work on the part of our citizens.