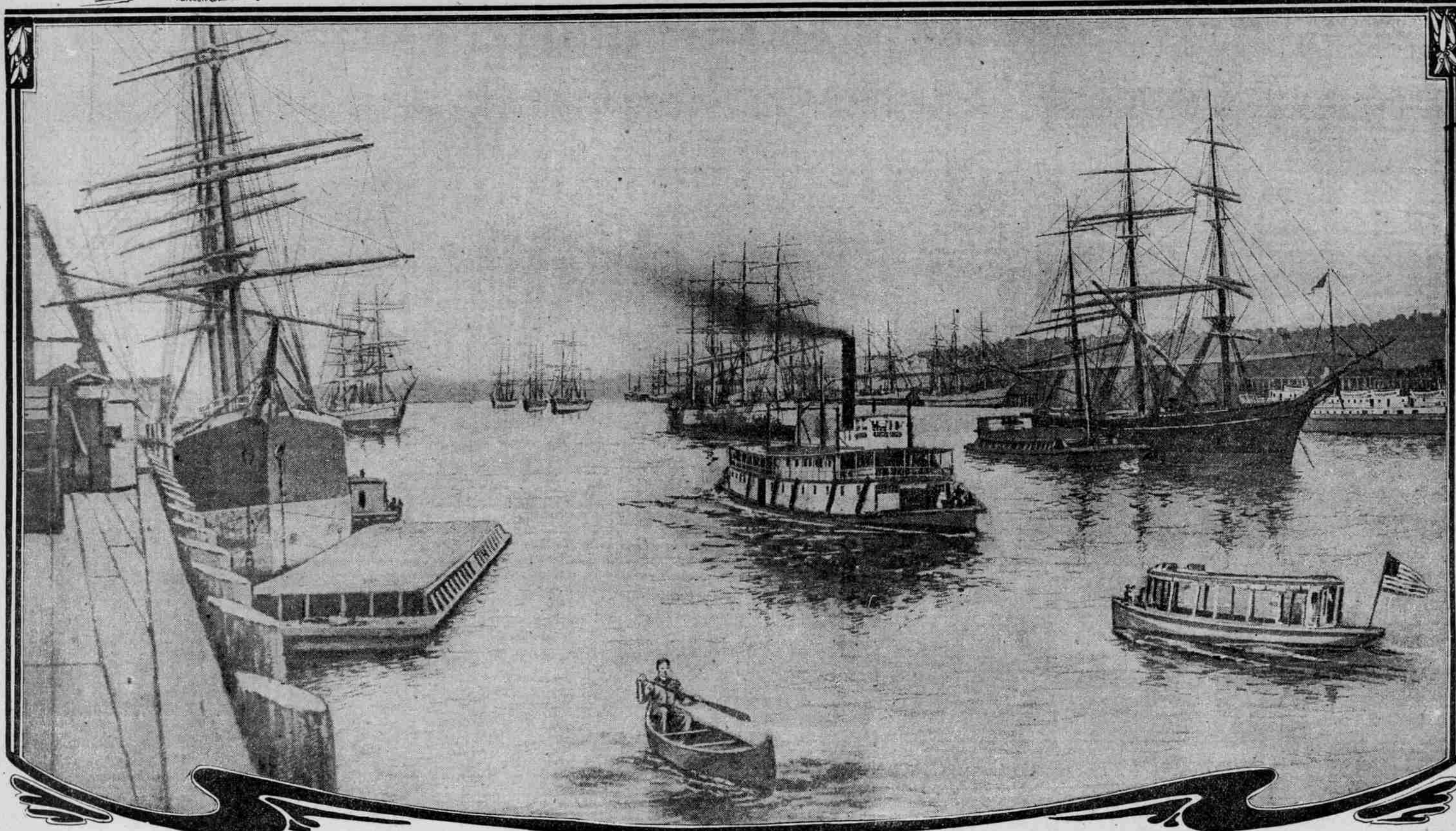


VIEW OF PORTLAND HARBOR

LOOKING NORTH FROM STEEL BRIDGE

City Has Only Fresh Water Haven On the Pacific Coast, and Is One of the Greatest Wheat Shipping Ports in the World



BETTERMENTS ON HARRIMAN LINES

Large Sums Expended for the Improvement of Oregon Railways During 1907--Heavier Rails Laid and Many Steel Bridges Built

By J. P. O'Brien, Manager Harriman Lines in Oregon.

While the general public has knowledge that some work is being done by railroads in the Northwest in bettering and improving their physical condition, and increasing their facilities for conducting the transportation business, it is not generally known to what extent such improvements have been carried on and are still being prosecuted on the lines of the Oregon Railroad & Navigation Company and the Southern Pacific Company's lines in Oregon. The object of this article, therefore, is to give a brief resume of this subject.

More or less work of this character has already been done on the Oregon Railroad & Navigation Company's lines, but it was not until April, 1904, when the reorganization of the Harriman lines took place, resulting in the merging of the lines in the Northwest and the placing of same under one management, that a definite plan of improvement as to tracks, bridges, equipment and facilities in general was adopted, permitting the use of heavier power and larger capacity cars made necessary by increased business, resultant from the marvelous development of the country contiguous to those lines.

With the general policy of improvement, there was also adopted and carried out, plans to surround the conducting of business, both passenger and freight, with all modern safety appliances. In pursuit of the above mentioned policy, the following work was done up to and including June 30, 1907, the end of the last fiscal year of the corporation:

Nearly Three Miles of Steel Bridge.

Bridges, with few exceptions, were of light iron or wooden construction, and to replace same sixty-seven new steel structures, aggregating 13,817 feet in length, and designed to carry the heaviest loads have been erected at a cost of \$2,317,774. This work has been done in the most substantial manner and without regard to cost. Bridge foundations are all of concrete sunk into bed-rock.

Almost Seven Miles of Trestle Filled

In all 4,249,919 cubic yards of filling has been done, eliminating 21,629 lineal feet of trestles, which involved an outlay of \$1,147,000. Where it was not possible to make the existing trestles stronger, they were replaced with new ones. To provide sufficient and substantial drainage for the water courses crossed by these filled trestles, cast iron and concrete arch culverts were used in all cases. To protect the roadbed from inundation and damage by waters \$300,000 was expended for rip-rapping and changing channels of dangerous streams.

Over 500 Miles of New Steel Rails.

A greater part of the roadbed was also of light construction and to remedy this 512 miles of light rail has been replaced by heavy steel rails varying in weight

from 75 to 90 pounds per yard, at a cost of \$2,138,245. Three hundred and eleven miles of main track have been fully ballasted at a cost of \$156,000, and 131 miles of embankments widened, costing \$39,000.

\$1,000,000 for Line Changes.

On certain sections, the lines are originally located where of such sharp curvature and abrupt gradient as to prohibit the operation of passenger trains at high speed, or locomotives from hauling their full capacity of freight. At such points extensive line changes have been made, which, briefly described, are as follows: Total length, 21 miles; line shortened 2,150 feet, curvature eliminated 1,728 degrees or about five whole circles, at an approximate cost of \$860,000. The most important of these changes is from Troutdale to Bonnevile, and the magnitude of this work is quickly observed by any traveler passing over this section of the road. Tunnels have been retimbered and enlarged to permit of the passage of larger equipment at an expense of \$13,000.

Electric Block Signals.

To reduce the liability of accidents to the minimum and to avoid delays to passenger trains, it is the intention to equip all main lines between Portland and Ashland, Huntington and Spokane, with the latest type of automatic electric block signals. At the present time this work is about one-half completed, and has entailed an expenditure thus far of \$442,000. It will, perhaps, be of interest to know that such signals require the expenditure of about \$120 a mile per annum for maintenance and operation.

Adoption of Oil as Fuel.

Owing to the difficulty in securing a suitable supply of wood and coal for locomotive use, and the gradually increasing price of same, also with a view of adding to the comfort of passengers, and avoiding the setting of fires along the right of way crude petroleum was adopted for fuel on the entire Southern Pacific lines in Oregon and on the Oregon Railroad & Navigation Company's lines between Portland and Umatilla, including branches. For this purpose, steel storage tanks and pumping plants have been constructed at numerous points, creating a storage capacity of 126,500 barrels, or 3,315,000 gallons. This improvement entailed an expenditure of \$288,000. In order to consume this oil, a remodeling of locomotive fireboxes was necessary which involved an additional expenditure of about \$50,000.

Enlargement of Albina Shops.

To provide adequate facilities for the prompt repairing and overhauling of equipment, it was necessary to enlarge the general shops at Albina, which required an appropriation of about \$400,000, made up as follows: New machine shop, \$100,000; 22-stall addition to round-house, \$56,500; new paint and coach repairing shop, \$45,000; new transfer table, \$23,000; new storehouse, \$15,000; air heating, water and sewer systems, \$27,000; traveling cranes, \$3,000; fire protection

etc., \$30,000; additional equipment and tools, \$66,000; electric power plant, \$15,500; new tracks, \$14,700. The division shops at La Grande were also enlarged and improved at an expense of \$396,000.

Many New Passenger Stations.

To provide for the large increase in passenger travel it was necessary to erect a number of new passenger stations, the most important of which were as follows: At Spokane, a substantial brick building with commodious platforms and train sheds was erected at a cost of \$85,000; a similar brick structure, but somewhat less pretentious, was built at Walla Walla at a cost of approximately \$22,000, exclusive of the cost of the ground. Thirty-eight new station buildings have been constructed at other points, involving an outlay of \$82,000. In addition to these, about \$75,000 will be spent to build passenger stations at Eugene, Albany, East Portland, Troutdale, Wilsona and Tekoa.

New Docks at Albina.

In September, 1905, the Oregon Railroad & Navigation Company's grain elevator and export docks at Albina were destroyed by fire. In their place new modern docks, equipped with the latest type of electrical contrivances for loading and unloading vessels have been erected at a cost of \$112,000.

To meet the demands of increasing traffic, \$1,700,000 has been expended for new equipment, divided as follows:

Cut-Off Lines Built.

In addition to the enormous sum disbursed for improvement to roadbed and rolling stock, considerable money has been expended in constructing cut-off lines which permit of better time and less haul on freight shipments and improve passenger schedules materially. A line has been built between Lafayette and the Yamhill division and St. Joseph on the West Side division of the Southern Pacific lines in Oregon, at an expense of \$60,000, for the purpose of bringing the Yamhill division in closer touch with McMinnville, the county seat, and also to avoid nine miles haul over the unproductive section between Lafayette and Whitson.

A connecting link has been constructed between the Woodburn-Springfield branch at Springfield and the main line at Springfield Junction, costing \$150,000, which lessens considerably the haul of freight originating on the branch and destined to points north and south of the junction on the main line. By its construction people living along the Springfield and Mohawk branches have been given passenger train service to Eugene, the principal jobbing center of the southern part of the Willamette Valley and the county seat of Lane County.

Another cut-off line, and probably the most important to Portland people, but upon which work has been temporarily suspended owing to the money stringency, is one from Beaverton, on the Southern Pacific West Side line, to Willamette, on the main line, a distance of 10.17 miles, which involves also the construction of a high bridge across the Willamette River near Milwaukie. The line will cost about \$200,000 when completed. This cut-off has been projected for the purpose of giving better time and shorter haul on products of the West Side division destined to California points and Eastern points, and also to provide better transportation facilities to the large industries on the Yamhill division between Portland and Oswego. The principal object of the construction of this new line, however, is to avoid the running of heavy laden trains up the steep grade through Fourth street, in the city of Portland.

Although not in the nature of a cut-off line, the extension of the Ilwaco Railroad, 12.5 miles up the Columbia River from Ilwaco, is a matter of considerable interest to the people of Portland who make it a practice to spend the summer season at North Beach, the cost of which extension will be approximately \$20,000. It was expected that the entire line would be completed by the

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FIFTY MILES OF NEW WATER MAIN LAID.

Records of the Portland Water Department show a net increase during 1907 of 50.93 miles of water mains, including 26.26 miles of main four inches or more in diameter and 30.42 miles of smaller size. Of the larger new mains there are 4.7 miles 12 inches and over in diameter, including 5,200 feet of 20-inch; 5,150 feet of 15-inch; 14,484 of 12-inch. The complete system of the Portland Water Department owned by the city, now consists of 267,488 miles of mains, of which 237,062 miles are four-inch and over, and 32,426 miles are smaller.

Under the present system all expenses of the water department are paid out of the water rents. At the last June election the charter was amended to provide for the laying of mains by direct assessment. This measure has been held invalid, because it was illegally initiated, but it is probable that the question will be again voted on during the present year.

end of the last summer season, but unforeseen difficulties encountered in drilling the 500-foot tunnel, together with the swampy nature of the country through which the line will run, has delayed the work.

The completion of this extension will avoid the vexatious delays heretofore experienced by boats running on tide schedules between Astoria and Ilwaco, and, while a definite schedule has not as yet been worked out, it is probable that that we will be able to inaugurate a daily round-trip service by daylight between Portland and the end of the new line, at which point commodious dockage facilities have been put in, will be inaugurated.

PORTLAND GRAIN EXPORTS INCREASE

Fleet Carrying Breadstuffs, Lumber and Other Oregon Products Shows Gain of 394,000 Tons, Net Tonnage, Over 1906.

By E. W. Wright.

IN NO other branch of industry were more satisfactory gains shown in 1907 than in Portland's shipping business. During the year there entered and cleared from this port 129 ocean-going vessels registering more than 1,700,000 tons, net, and with a carrying capacity of approximately 2,500,000 tons. While the number of vessels engaged in this trade was but 87 more than in 1906, the increased size of the steam and sail craft was sufficient to show an increase in net tonnage of 294,000 tons over that entering and clearing the year before, the carrying capacity being about 890,000 tons greater than that of the 1906 fleet. This fleet carried, foreign and coastwise, more than 175,000,000 feet of lumber and (flour included) approximately 18,000,000 bushels of wheat, in addition to thousands of tons of barley, oats, hay, fruit, fish and other products. It included in the foreign trade 84 steamships with a combined carrying capacity of 500,000 tons.

These steamships carried Oregon products to China, Japan, Siberia, Australia, South America, South Africa and Europe, and during the latter part of the year, for the first time on record at this port, had relegated the sailing vessels in the grain fleet to second place. The improved condition of the Columbia River was such that there was no lighterage, and no detention anywhere in the river between Portland and Astoria, although the average draft of the 1907 fleet was more than six inches greater than that of the 1906 fleet, two of the vessels which cleared drawing 35 feet of water, with drafts of 24 to 25 feet quite common.

As it was the wheat business which first brought Portland into prominence as a shipping port, that cereal still holds front rank as a factor in our over-sea traffic. With it, as with other branches of the marine business, there have been new records established in 1907. Not only was the average net tonnage of the vessels engaged in the trade the largest on record, but with December wheat shipments exclusive of flour, Portland broke all records for a single month's shipments from a North Pacific port, with exports of approximately 3,900,000 bushels of wheat.

Growth of 40 Years.

The wheat trade being the most prominent factor in the maritime growth of Portland, offers in its growth and development an accurate history of the growth and development of the entire shipping trade out of Portland. It is not yet 40 years since the first cargo of wheat was sent foreign from Portland, the pioneer vessel in the trade being the American bark Helen Angier, which was cleared by J. McCracken in April, 1869, with 28,543 bushels of the cereal. The American ship Adeline Elwood, dispatched six months later by Corbitt & Macleay, with 22,600 bushels of wheat, completed the fleet for the year. Three vessels were cleared in 1870 with cargoes totalling 71,268 bushels and in 1871 the

fleet included eight ships ranging in size from 309 tons to 87 tons register, the big ship of the fleet being the Montecorey Castle, which had the distinction of being the first metal ship to load at Portland. The fleet of 1872 included 37 vessels, two of which were of more than 1000 tons register. When it is recalled that even the diminutive craft of 25 years ago, were always subject to delays in getting up and down the river, as well as over the bar, and that lighterage was a necessity on nearly all of the largest vessels, the remarkable improvement in Portland's channel to the sea can be understood.

The appended figures showing the average cargo carried by the ten largest vessels loading wheat at Portland for a number of years since 1872, presents in a striking manner the increase in the size of the vessels loading at Portland.

While the average capacity of the ten largest vessels of the 1907 fleet was more than 60,000 bushels greater than that of five years ago, and more than 110,000 bushels greater than that of 15 years ago, there was no lighterage and there were no delays in 1907, while in 1892, before the Port of Portland began clearing out the channel, lighterage was a serious burden on shipping entering the port. With the appearance of larger ships there has been a steady decrease in the freight rates and as the producer pays the freight, it is thus quite apparent that every wheat producer in the Columbia basin has profited by the improvements made in the channel from Portland to the sea.

In the days of small slips and a poor channel in the river, shipowners were paid from 60 to 105 shillings a ton for carrying wheat to Europe, and 10 to 15 years ago 40 shillings was considered a normal rate. Last year, in spite of a temporary spurt caused by a booming wheat market in England and very heavy offerings in the Pacific Northwest, the average rate to Europe was only about 30 shillings and some vessels were secured at less than 25 shillings.

Differential is Removed.

In June, the International Sailing-shipowners' Union, which controls more than three-fourths of the available sail tonnage of the world, abolished the 20 cents per ton differential which was placed against this port four years ago. As a result, there has been a pronounced increase in the wheat shipments from this port, and with the completion of the North Bank road to this city, this increase will be still more noticeable.

The 1907 wheat crop in Oregon, Washington and Idaho was from 10,000,000 to 12,000,000 bushels greater than that of 1906, and as the proportion which will seek tidewater by way of Portland will also be larger than

that of 1906, the exports of this port for the remaining six months of the fiscal year will break all existing records, the practical accomplishment of wheat-growing in California has compelled the Californians to draw on Oregon and Washington for wheat and flour in large quantities, more than 1,200,000 bushels of wheat and 150,000 barrels of flour being sent to San Francisco and Port Los Angeles from Portland last year.

The remarkable gains which Portland made over all other Pacific Coast ports in the shipment of breadstuffs for the last calendar year are shown in the December bulletin of the Bureau of Statistics of the Department of Commerce and Labor. This official publication places the value of all breadstuffs shipped from Portland during the 11 months ending November 30, 1907, at \$10,526,234, compared with \$4,717,422 for the same period in 1906. The combined shipments from Seattle, Tacoma and Everett for the 11 months ending November 30, 1907, were \$18,951,178, compared with \$18,046,257 for the same period in 1906. The figures for the same periods in San Francisco were \$4,143,592 in 1907 and \$2,961,529 in 1906. It will thus be seen that while Portland showed a gain of something more than 129 per cent, in exports of breadstuffs, the three Puget Sound ports gained but a trifle more than 7 per cent, and San Francisco less than 5 per cent. In flour exports alone, Portland's gain over 1906 was nearly 129 per cent, compared with a gain of less than 10 per cent for the Puget Sound ports.

Maximum Not Reached.

While Portland's foreign lumber trade ran well up towards 100,000,000 feet, it fell a little short of the 1906 business. This was almost wholly due to the decline in the Oriental demand, which ceased almost as soon as orders absolutely necessary for repairing the ravages of war were filled. Toward the close of 1907 there were signs of a revival in the trade, and there is also an improvement in the California demand. These two great staples, wheat and lumber, form the base on which practically all of our foreign trade rests, and with both the possibilities for expansion are practically unlimited.

The completion of the North Bank road, with the extensions now building into the Clearwater country, and into the Willowa country, will increase the output of the Pacific Northwest several million bushels annually. Since the Condon branch of the O. R. & N. Co. was opened three years ago, the yield of the region traversed by that line has nearly trebled and has by no means reached its maximum of production.

A still greater area of good wheat land awaits the coming of a railroad in Central Oregon, and if this season's prices, which were the best ever secured during a "big crop" year, are maintained, there will be enormous increases in wheat acreage throughout Oregon, Washington and Idaho.