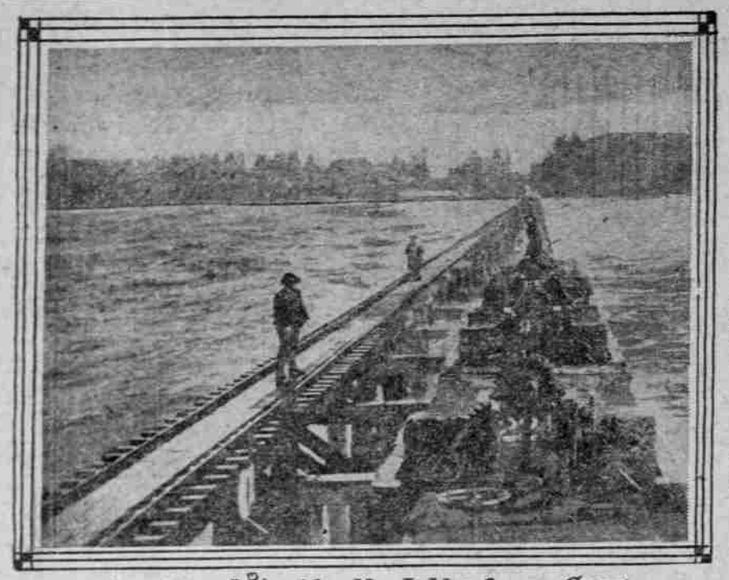
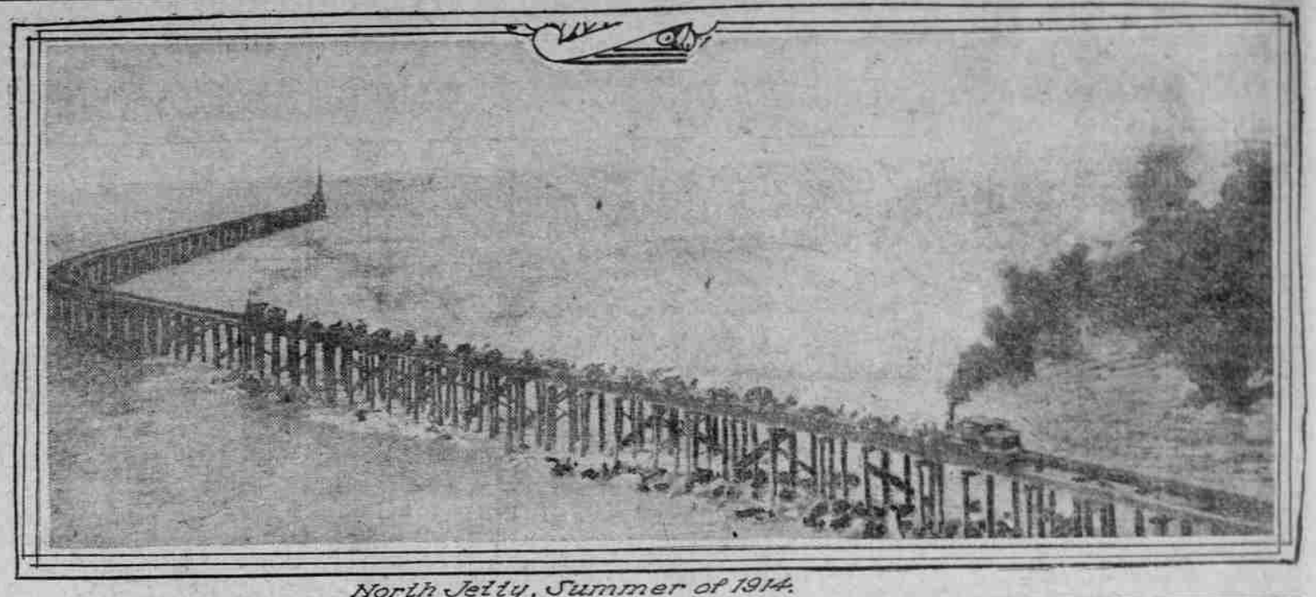
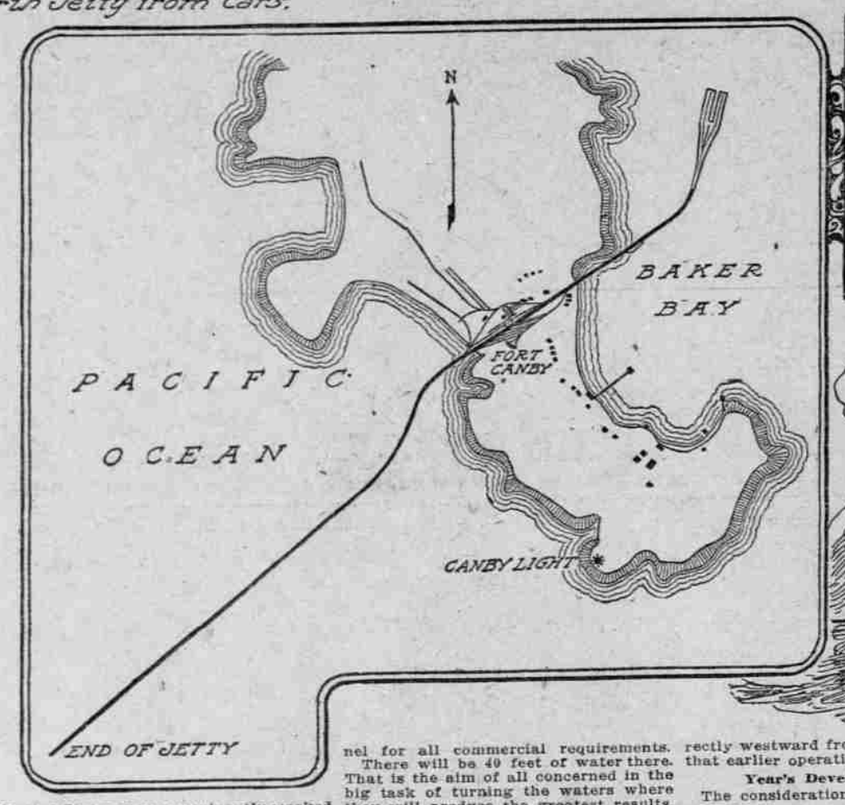
STRIDES MADE IN CHANNEL WORK AT ENTRANCE OF COLUMBIA

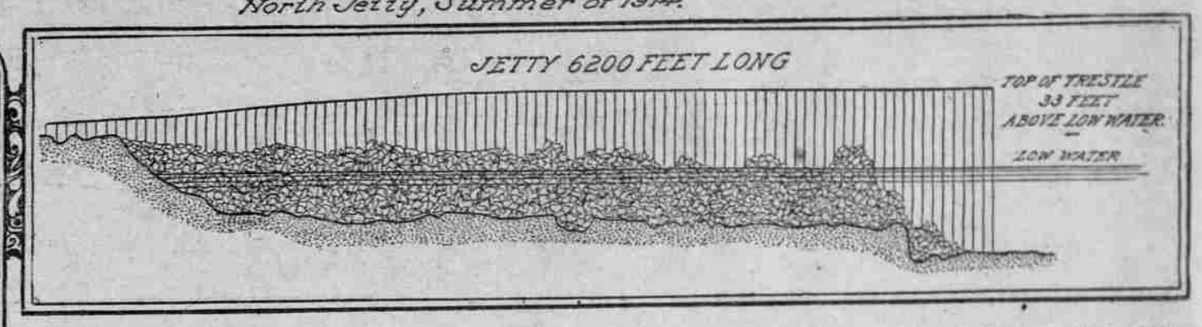


Placing Rock in North Jetty from Cars.



North Jetty, Summer of 1914.





JETTY construction and dredging are mastering conditions at the entrance to the Columbia River, yet not to the extent of opposing nature, and the result is a channel leading to the southwest, wide and well defined, where more than 30 feet of water is found at low tide that is more than a quarter of a mile in width.

Changes have been gradual but continuous for the past few years, and with the completion of the south jetty there, the present channel cut through has probably shown the greatest improvement during the past year. Meanwhile the north jetty has been extended seaward from its base at Cape Disappointment, and that is credited with having an influence already. As the Columbia River has found a natural outlet toward the southwest it has brought about a scouring, without artificial aid other than the jetties, that is widening and deepening the new route, so for 2800 feet from the outer end of the south jetty there is no less than 24 feet of water. For 3200 feet from the jetty no less than 26 feet of water has been found by careful survey completed by Government engineers early in December. Data obtained from soundings made then and compared with the September survey clearly point to a pronounced movement to the northwest, so that the 26-foot contour has been cut away fully 500 feet by the constantly moving sands.

Steamers fully laden with grain, lumber and general cargo for offshore destinations have been piloted from the river during all seasons without difficulty, and some without regard to tides. Also night navigation has been generally adopted, so that conditions that have been regarded in some quarters as a barrier in years gone by have vanished, and there are no vessels plying to Pacific Coast ports that cannot be accommodated in the Columbia River.

Navigation Aids Complete.

Co-operation between the Government engineers, directing the improvement there, and the Bureau of Lighthouses has increased the number and efficiency of navigation aids until today it is said there is no harbor in the United States more prominently marked for day and night navigation than the entrance to the mighty stream. As increased shipping, changes in the bar channel and experience of masters warrants the installation of other and more modern equipment for the guidance of navigators, no delays are experienced in their establishment. So in every way the mouth of the Columbia has advanced until there is no longer a question as to the maintenance of a safe and adequate channel for all commercial requirements.

There will be 40 feet of water there. That is the aim of all concerned in the big task of turning the waters where they will produce the greatest results. By next season it is probable that dredging operations will be confined to the south channel, instead of digging being carried on to the northward, as the movement of shifting sand in that direction is steadily working toward the north jetty. With a suitable dredge operated in the south road, it is felt that a channel 3000 to 4000 feet wide and at least 35 feet deep could be realized in less time than a suitable road could be dredged leading directly westward from the river, a route that earlier operations favored.

Year's Development Big.

The consideration on which is based vast developments undertaken by municipalities, corporations and individuals, especially along the Lower Columbia River, is the successful manifestation on the part of the United States authorities to improve and maintain conditions insuring safe navigation over the bar.

Since the completion of the south jetty during the Summer of 1913, a decided increase in the depth of the channel over the bar has prevailed, but permanent results are expected upon the completion of the north jetty, the construction of which is under way and is being continued during the Winter.

Preliminary preparations for north jetty work, such as the laying out of tracks, the installation of water supply, the erection of buildings and the assembly of plant, were begun early in the year of 1912, while construction of the south jetty was in progress, and carried to such a stage of completion that buildings and track facilities were ready to receive the plant made available by the completion of the south jetty the Fall of 1913.

The transfer of the plant consisting of piledrivers, locomotives, cars, shop equipment, material of all kinds and even buildings between the site of the completed work at Fort Stevens and the proposed work at Fort Canby, was carried on from the time rock receipts were discontinued on the south jetty until its resumption on the north jetty. Barges with towboats furnished the transportation of this plant and equipment across the mouth of the river. During the five months in which this moving was in progress over 60 large barge loads were handled, meaning that a barge was loaded on the south side of the river, towed across, and unloaded on the north side of the river approximately every two days while this portion of the work was in progress.

Construction of the trestle, from which rock is placed in the jetty, was commenced at Fort Canby in September, 1913, and carried to a point about 1000 feet out to sea by December the same year, when extension of the trestle was discontinued for the Winter. It was necessary to place about 5000 tons of rock at the point where the trestle crosses the ocean beach to prevent the unusual scour of that year from loosening the bottoms of the piling in that portion of the trestle.

North Jetty Pushed.

On February 2, 1914, daily rock deliveries were begun and extensions to the trestle were made during the Spring as weather permitted. Facilities for the handling and transportation of rock were gradually improved and perfected as the Spring advanced so that by June, 1914, an average daily delivery of 4800 tons of rock was being received and placed in the jetty. This is about 800 tons greater average daily delivery than had been reached during the construction of the south jetty, During this period the trestle had been carried 5600 feet out to sea, although only a portion of the rock required to complete this length of jetty had been placed.

On July 10, 1914, the daily rock delivery was reduced to about 2800 tons and on August 10 the receipt of rock was discontinued on account of the lack of funds.

The passage of the rivers and harbors bill enabled the resumption of work October 12, and since then a daily rock delivery of about 4000 tons has been received and placed in the jetty. This rate of work is at present in progress. Since the resumption of work in October the trestle has been extended 600 feet, or to a point 6200 feet out to sea from the high water line. The north jetty now contains over 750,000 tons of rock, practically all of which was placed in 1914.

The camp or base from which the north jetty construction is carried on is located at Fort Canby and is completely equipped for the work in hand.

Large docks have been built on Bakers Bay to receive the rock to be used in the jetty. On these docks are 11 derricks, each with a working capacity of about 500 tons of rock per day of eight hours. The necessary power plant to furnish steam for these derricks, as well as the necessary trackage to handle cars at each derrick, has been provided. In addition to this, coal bunkers of 230 tons capacity, have been built on the dock approach to supply coal to the locomotives engaged in the transportation of rock from the docks to the jetty.

Rock in the sizes and quantities specified by the United States is quarried at Fishers Landing and delivered at the Fort Canby docks on large barges. This rock is transferred from the barges to cars, weighed, hauled out on the trestle and placed in the jetty by the Government.

The camp establishment is an independent construction unit, having its own water supply, sewage disposal, a light, heat and power plant, machine, car and blacksmith shops, roundhouses, mess and bunkhouses, office building, hospital, storehouses and various other buildings necessary to utilize the plant required in the execution of the work. Ten miles of narrow gauge track is maintained and in use. A portion of the equipment in daily use is 11 locomotives, 215 dump cars, 14 flat cars, 2 double-track revolving piledrivers, 2 double track tender cars, a locomotive crane, and several derricks, skid piledrivers and hoisting engines.

Progress of the north jetty construction satisfactory to all concerned can be expected during the year, provided that Congress sees fit to appropriate the necessary funds for carrying on the work.

Big Gain Made in Portland's Water Shipments

Since Opening of Panama Canal Ocean Traffic of Columbia River District Shows Increase of 3000 to 9000 Tons a Month—Large Steamship Companies Establish Agencies Here.

FROM an average of not more than 3000 tons a month in 1913, shipments received at Portland from New York via the Panama Canal since its opening have more than doubled, cargo receipts in September being 7863 tons, in October 6214 tons and November 8676 tons, while the December receipts are equally as large as for November. The regular eastbound movement to New York was considerably less than westbound shipments in 1913, but with the canal being thrown open to traffic 1642 tons went that way in September, 2142 tons in October and 2755 tons in November, with December's total showing an encouraging increase over the preceding month.

Such gains, made in the face of heavy commercial obstacles that were productive of the European war, have proven more encouraging than any strides made in maritime business, because they prove the value of the canal in the development of Pacific Coast trade and are taken as conclusive evidence that estimates of tremendous advantages to be reaped by virtue of the construction of the great waterway were not wrong, and simply did not materialize through the intervention of war.

But even the most pessimistic have been compelled to face the fact that without any European business worth mentioning, as compared with the volume that must be carried via that route, the project has been justified if nothing more was produced than the advantage to shippers and consumers alike in the American field.

Canal Trade Grows.

In advance of the opening of the canal authorities were quoted as having selected Portland as a Pacific Coast harbor that would benefit the most from the trade that would accrue. It was not assumed from the forecast that this port would reap greater returns in the number of tons discharged or loaded on its docks, or that the financial gains would be in excess of those at harbors to the north and south, but that the percentage of advancement and development would lead.

In a measure the flattering situation is rapidly forming. At Portland and along the river are obtainable many commodities the canal trade demands. Not alone through calls from the Atlantic Coast of the United States, but from abroad as well, and in cargoes dispatched for New York numerous shipments have been so routed as the best means of getting them across the Atlantic to England, France, Holland and other countries.

Oregon apples, salmon from Alaska and the Columbia River, tallow, hides, hops, prunes, onions and all manner of edibles and manufacturing necessities in smaller quantities have moved; also lumber and flour. The absence of a direct line from Portland to European ports, due to the withdrawal of British and German interests from the field during the war, has made it necessary to route cargo via American ports when parcel consignments only were to move, except certain products sent on liners by way of Oriental ports to London and other cities, and full loads on tramp steamers.

From Portland the American-Hawaiian Steamship Company has maintained a five-day service most of the time following the restoration of its schedule when the canal was ready, and at present it has been extended to a 10-day service, the same as to other Northwest cities, because certain vessels are to be diverted so as to load sugar cargoes in the Hawaiian Islands for New York, crossing to that group from Los Angeles and San Francisco and returning through the canal. Portland is placed in touch with New York, Boston, Philadelphia and Charleston direct and liners of that flag sent here already include the Oregonian, Washingtonian, Ohioan, Georgian, Montanan, Nebraskan, Kentuckian, Honolulan, Iowan, Panaman, Isthmian and Pennsylvanian. The company inaugurated fruit shipments under refrigeration from Portland December 10, with the sailing of the Ohioan, and hereafter that will be a regular service, though not as frequent as for general cargo.

In the fleet of W. R. Grace & Company, in the intracoast trade, the liners Santa Catalina, Santa Cecilia, Santa Clara and Santa Cruz are operated on regular schedule, with several steamers chartered for special cargoes or to make limited voyages so as to eliminate congestion. All ply through the canal and each of the liners discharges an average of about 2000 tons of cargo here every trip. The company has plans under consideration for increasing the number of carriers engaged in the Atlantic-Pacific line and some steps may be taken in that direction this year.

The Boston-Pacific fleet, with the steamers Atlantic, Pacific and Coronal, has invaded the Portland field and, while a new venture, is backed by substantial Boston capital that will augment transportation facilities during the year so there will be several steamers plying over the route permanently.

Indirectly, Portland receives cargo handled by the Luckenbach fleet, the Arrow line and that of Sudden & Christenson, consignments being transshipped at San Francisco, in addition to which is freight delivered on independent vessels.

Cereal Exports Big.

At present the bulk of the tonnage from this city going through the Canal is wheat, flour, oats and barley, destined for England and the Continent. The war demand has caused cereal exports to assume unprecedented proportions in that direction and more grain has been sold at tidewater than there was tonnage in sight to transport it. Grain and flour that formerly went to the Orient will follow the Canal route this season. Over 40 full cargoes have already moved to Europe and more than 50 additional shipments will be sent by the time the cereal year ends. For a time, owing to the war, freights went up, due to the withdrawal and loss of numerous ships and the fact conditions at sea, where belligerent naval vessels held forth, prompted owners to hold merchant ships safely in port. But with the elimination of reason for such fears about the Pacific and Atlantic, more ships were sent to sea and when owners proved to their satisfaction that the Canal made it possible for steamers to complete voyages between Europe and the Pacific in half the time and at much less expense, the desire for engagements and availability of more tonnage naturally lowered rates, a condition that had been foreseen by students of Canal problems.

In yet another direction Portland's trade is growing fast along the west coast of South America, as well as in Central America. W. R. Grace & Company have the steamers Cacique, Colusa and Cuzco in regular trade between Portland and ports as far south as Valparaiso and Antofogasta, with several under charter in handling lumber cargoes to the Canal zone and to various west coast ports. The company also maintains a fleet between New York and the west coast of South America, and in the future a system is looked for that will permit Oregon products to reach any South American coast city.

European cargo being moved here at present is handled on steamers of the Harrison line, Maple Leaf line, East Asiatic fleet and the Royal Mail, also in a few sailing vessels. The Harrison line steamers load at London, Glasgow and Liverpool regularly, touching at other British ports when inducements offer. The East Asiatic vessels load at Copenhagen, Gothenburg and Christiania, while the Royal Mail loads principally at London and plys via Oriental ports, the other lines using the Canal. The Royal Mail plans the operation of another fleet direct from Europe through the Canal to the Coast, but as with several other British corporations, the war has temporarily deterred placing them in effect. The Maple Leaf vessels steam to the Coast from Avonmouth and Swansea through the Canal and touching at Santa Rosalia.

Coast Fleet Increased.

In the coast trade one of the principal departures during the past year was the operation of the steamers Thomas L. Wand, J. B. Stetson and Quinault in the Alaskan trade, from which Portland reaped many benefits and it is intended to resume this year with larger carriers. Backers of the undertaking are sanguine that it has become a permanent adjunct to the maritime advantages of this harbor. In the Oregon-California trade the early operation of the new liners Great Northern and Northern Pacific, of the North Bank line, will add a finishing touch to a passenger fleet that compares with any on the Coast. Regular and independent vessels are so dispatched from Portland that the average departures are close to one each day.

The movement of freight, which has grown steadily for the past few years, is believed to have reached its high-the point. That is particularly true in grain, as approximately 6,500,000 bushels of wheat and 500,000 barrels of flour are drawn annually from Portland by California cities and the exchange of other products is regular, though activity looked for this year will no doubt draw more heavily on the lumber output of Oregon than during the period just closed. Manufactured articles are in greater demand, due to the establishment of more industries to some extent, also a heavier patronage of water lines.

Portland's Future Roseate.

Few in touch with the marts of the world, shipping routes and the financial pulse looked for a rush through the Canal during 1914. Foundations were laid for new steamship fleets with the expectation that the project would be finished so that certain vessels could use it during the late Summer or early Fall and the Spring of 1915 was set as a mark when it might be indicated what strength the combined foreign and American fleets would assume. To some extent that has been changed, but a prolongation of the European combat will not force a complete abandonment of steamship enterprises and will not hold back many longer, as a readjustment of conditions is rapidly manifesting itself. There is a spirit prevalent among steamship operators that the United States is not dependent to such an extent on European tonnage and capital as might be supposed because of the temporary effects of the war, and there is a determination to lend every effort this year to enhance the value and importance of the Coast-toCoast trade, at the same time expand in foreign commerce with American-built ships and those of foreign construction that have been given American registry during the past few months.

Portland holds a key position in that connection, for centered about it are timber, grain and other interests which are sought alike for domestic purposes and not the least of advantages here is the fact a vessel can load a general cargo to contain the principal products without leaving the river until ready to proceed on her journey.

Portland's Interurban Lines Aggregate 360 Miles

Three Separate Systems Operated by Southern Pacific, North Bank and Portland Railway, Light & Power Company—Rapid Development in Districts Served Is Noted—New Lines Are Planned.

PORTLAND is the radiating center for more than 360 miles of electric interurban railways. Only three or four cities in the United States have more miles of electric railways directly tributary than has Portland.

Three separate and distinct interurban systems are operating out of this city. They are the Oregon Electric and United Railways, which are respective units of the North Bank and allied steam roads; the Portland, Eugene & Eastern, which is a subsidiary of the Southern Pacific, and the electric lines of the Portland Railway, Light & Power Company.

The Oregon Electric operates 146.6 miles of railway, the United Railways 27.8 miles, the Portland, Eugene & Eastern approximately 100 miles, and the Portland Railway, Light & Power Company approximately 82.5 miles.

Within the present year approximately 40 miles of additional electric mileage will be brought under operation and bring much additional tributary territory into direct rail communication and connection with the city.

New Work Under Way.

The Portland Railway, Light & Power Company is prosecuting with vigor its construction work on the Willamette Valley Southern line between Oregon City and Mount Angel. Grading has been completed and rails have been laid over a greater part of the distance. This line is approximately 25 miles long. It passes through a rich and productive territory and taps a wealthy farming district that heretofore has been without rail connection.

This project originally was launched as an independent enterprise, but recently the Portland Railway interests arranged to guarantee the bonds and adequate finances were procured to complete it. The new road and the Portland Railway will have common terminals at Oregon City and will interchange traffic there. It is possible that eventually through service between Portland and Mount Angel will be inaugurated.

Negotiations also are under way between the promoters of the Portland & Oregon City Railway that may admit an independent interurban line into the family of electric carriers that now serve to give Portland close association with the adjacent outside districts.

The Oregon Electric has contemplated for some time extending its trackage into McMinnville. Surveys have been completed and terminals have been secured. Actual construction work has been postponed, but may be taken up with the present year. Present plans provide for a connection with existing trackage at Tualatin. The proposed line is about 25 miles long.

The Portland, Eugene & Eastern now is operating over the first unit of its system. This service was inaugurated within the year just closed. Train service is in effect over two routes between Portland and McMinnville. One route is via Hillsboro and Forest Grove, over what originally was known as the "West Side" lines, while the other route is via Oswego, Sherwood and Newberg, commonly called the Jefferson-street line. Both routes have a common terminal in Portland over Fourth street. The electric trains enter the Union Depot in this city.

P., E. & E. Plans Big.

The Southern Pacific, which owns the Portland, Eugene & Eastern property, has its steam service on that part of the system now electrified. Officials of the steam road, however, retain jurisdiction over the electric lines.

Well-prepared plans provide for further extensive construction work and development by the Portland, Eugene & Eastern. It is proposed to extend the electric service to Eugene and to build a new main electric line on the east bank of the river between New Era and Salem. A bridge is to be built at New Era, connecting with the present electric line operating through Oswego. Further plans provide for the electrification of virtually all the Southern Pacific branch lines between Portland and Eugene, excepting the main line used for California traffic. The company acquired, a few years ago, the property of the Salem, Falls City & Western Railway, operating between Salem, Dallas and Blackrock. However, pending adjustment of financial conditions, this work will not be attempted. When it is completed, though, it will bring about 200 additional miles of trackage into electric conection with Portland.

The Oregon Electric is the pioneer of the electric carriers in the Willamette Valley. It first built its lines south into Salem and southwest into Hillsboro and Forest Grove. Later it extended its Salem line into Albany and Eugene. It now operates successfully over all this trackage. Its Portland-Eugene distance is 122 miles. Between Portland and Forest Grove the distance is 27.4 miles, but for 8.2 miles —between Portland and Garden Home —the Eugene and the Forest Grove trains operate over a common set of tracks.

Rich Districts Developed.

The United Railways are owned and operated by the same capital that controls the Oregon Electric. This road operates between Portland and Wilkesboro, 25 miles west of the city. It is intended eventually to be extended to Bay City and Tillamook, but plans for the next few years do not include this project.

The Portland Railway, Light & Power Company, which operates the city lines in Portland, also has an interurban system extending into various neighboring towns and hamlets. The longest and most important line extends to Casadero, on the Clackamas River, 36.5 miles southeast of Portland. It taps a rich agricultural and timber section. Other branches extend to Bull Run, 31 miles, and to Troutdale, 10.5 miles.

The same company has a line between Portland and Oregon City, a distance of 15 miles, giving it a network of electric interurban properties that are a material factor in the development of the territory surrounding the city. Vancouver, Wash., also is served by this company.

Numerous minor independent interurban projects have been proposed in various parts of the state within the last few years, and it is probable that several of them will develop into material form as soon as financial conditions make expenditures possible.

Completion of the interstate bridge between Portland and Vancouver, Wash., will bring the southwestern part of Washington into connection with this city. That part of Washington naturally is tributary to Portland, but inadequate transportation facilities have proved a barrier against the development of this trade. Tentative arrangements already have been made for through car service between Portland and Vancouver following completion of the bridge. A number of important districts in Southwestern Washington are awaiting development, and electric railway projects are proposed to provide it.

With the certain extension of existing lines and the construction of new ones, the position of Portland as the electric hub of the Northwest will become more secure.

It is predicted that many steam roads now in operation eventually will be transformed into electric carriers or that they will build electric auxiliaries.

The opposition of the steam lines to their electric competitors long since has been overcome. For it has been proved that the electric is not a competitor, but an actual aid and stimulant to the business of the steam systems. The electrics build up the territory that they serve. They come into direct and almost personal contact with the people.

The trade that has been developed in this manner in the Portland district in the last few years is enormous. Railroad officials estimate that the benefit that accrues to a city through development of electric lines is worth many times the benefits that follow construction of a transcontinental line.

Portland business men consider themselves extremely fortunate because they have the advantage of so much electric mileage.

DOMESTIC GOODS SHIPPED FROM PORTLAND BY WATER.

With the exception of wheat, lumber, oats and barley, material gains were made in nearly all important items of domestic shipments from Portland during the past year. Among the largest gains were the shipments of canned fruit, dried fruit, canned salmon, condensed milk, flour, hardware, hops, iron and steel, paper, potatoes, rice and general merchandise. Commodities and amounts in tons dispatched from Portland during the past five years are shown as follows:

	1914.	1913.	1912	1911.	1910.
Barley, bushels	41,958	848,409	600,522	.....	2,104
Canned fruit, cases	80,788	68,769	18,428	.....	.....
Canned Salmon, cases	131,066	24,822	80,454	71,381	19,267
Coal, tons	1,328	1,310	.....	.....	.....
Condensed milk, cases	65,939	60,050	59,541	.....	.....
Dried fruit, cases	182,052	163,955	56,595	.....	.....
Flour, barrels	485,264	431,788	364,549	339,673	280,439
Grain bags, bales	1,178	.....	.....	.....	.....
Hardware, tons	11,115	3,954	3,895	3,298	1,612
Hay, tons	1,353	1,306	1,086	.....	.....
Hides, tons	392	1,256	1,472	2,340	1,416
Hops, bales	3,248	704	344	106	.....
Iron and steel, tons	2,593	1,879	1,866	2,089	2,001
Liquor, packages	5,619	2,133	808	3,122	4,223
Lumber, feet	198,933,420	228,997,117	169,453,612	126,165,187	80,561,485
Machinery, tons	569	495	524	586	278
Merchandise, tons	47,494	30,587	23,038	26,295	23,715
Millfeed, tons	19,193	24,269	18,014	13,824	3,136
Oats, bushels	551,807	733,102	342,233	173,792	112,492
Paper, tons	18,094	17,769	16,271	15,717	10,782
Potatoes, sacks	43,172	12,990	17,093	12,072	3,388
Rice, sacks	10,040	8,504	1,960	115	100
Shingles, bundles	8,472	15,140	17,862	.....	.....
Staves & Shooks, tons	2,125	2,247	1,564	2,366	1,370
Wheat, bushels	5,081,125	7,141,169	4,822,282	3,143,762	3,568,484
Wool, bales	739	2,432	6,383	5,963	.....