A PUBLIC SPIRIT

George H. Atkinson’s Written Legacy

Transcribed and with a foreword by
Donald J. Sevetson
A Public Spirit:  
George H. Atkinson’s Written Legacy  
Selected, transcribed, and introduced by Donald J. Sevetson

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Our treasure lies in the beehive of our knowledge. We are perpetually on the way  
thither, being by nature [...] honey gatherers of the mind.  
Friedrich Nietzsche

The “Bee Tree”, an iconic ivy-covered tree that stood on the Pacific University campus  
for many years, was already old and hollow when pioneer Tabitha Brown arrived in  
Oregon in 1846. Mrs. Brown started a home for orphans that would grow into Pacific  
University. According to the Forest Grove News-Times, the tree was “said to have housed a swarm of bees who furnished the little old lady with honey which she sold to buy provisions for her orphan children.”
The Northwest Coast
A Booklet about the Railroad

Evidently encouraged by the reception of Atkinson’s earlier articles, Editor Harvey Scott of the Oregonian invited Atkinson to expound further on the subject. Over a period of two years George penned a series of lengthier commentaries on issues bearing on the northern transcontinental rail project. They are studded with information about engineering, geology, agriculture, politics, meteorology, insurance, ocean shipping, and the history of both the Northern Pacific and Central Pacific/Union Pacific Railroads.

The first appeared on Apr. 4, 1876 and the last on Aug. 13, 1878. Several of them were soon republished as a booklet, “The Northwest Coast,” the full text of which appears here. Sponsored by the Portland Board of Trade, it went through at least two printings, and, according to one source, was also translated into German and circulated among potential investors in Europe.

Two sections of the work are of special interest:

1. Atkinson offers an extensive, detailed criticism (185-192) of the political maneuverings of Oregon Senator John Mitchell. Mitchell, chair of the Senate Committee on Railroads, was blocking action on a bill to extend the time allotted to the Northern Pacific Railroad for its completion. Mitchell, who was trying to add to the project a line running from Umatilla, Oregon to Ogden, Utah, is described as serving the interests of a competitor, the Union Pacific Railroad.

2. Atkinson, who worked on the family farm in Vermont as a young man and majored in Chemistry at Dartmouth, adds a projection of the agricultural potential of the region, focusing especially on
A BOOKLET ABOUT THE RAILROAD

eastern Oregon and Washington. Geology, climate, crops and soil composition are discussed. His effort is to show that the new railroad, enhanced by branch lines, would bring growth and prosperity to regions that were then seen as little more than deserts.
The Northwest Coast

Source: Oregon Historical Society
THE NORTHWEST COAST

The Northwest Coast, including Oregon, Washington and Idaho. A series of articles upon the Northern Pacific Railroad in its relations to the basins of the Columbia and of Puget Sound—endorsed by the Portland Board of Trade. First published in the Oregonian, and in pamphlet form in 1878.

The statistical facts, collated with other arguments, carry their own force of reason to the thoughtful citizens of this section, and to the broad-minded statesmen of every section of our country. The hope is cherished that they will give some aid to secure the needed Congressional Legislation, and thus confer a common benefit upon this prospective empire of the Pacific Northwest, and upon our country.

THE NORTHWEST COAST – LAND GRANTS – VALUE OF LAND INCREASED

Railroads give actual value to lands. Even where fares and freights equal the old coach and wagon rates, the time saved is money to the farmer and the merchant. A trip of six days for a man and a team would be required to take a ton of wheat (33 bushels) 100 miles, at a cost of not less than $12, or $2 a day, which is equal to 36 cents per bushel. The car will put that wheat into market in half a day, and leave man and team at home to work. Six days of work on, say, six acres are worth $12, which sum is added to the value of the land, or to other land. This sum is equal to $2 per acre per years, or the interest of $20 per acre. If the land was worth $5 per acre without the railroad, it is worth $25 with it, counting merely the time saved. But if the railroad rate is one-half or one-third the wagon rate, as is usually the case, it will save enough to add a hundred per cent more to the original value of the land. The Willamette farmlands, near the railroad, within a hundred miles of Portland, have risen steadily in about those proportions. The lands
in the interior valleys of California have risen to a much higher value since their railroads came, although the rates of transportation are reported to be very high.

But the lands east of the mountains, far from river or railroad, have very little value, except for stock ranges. The finest wheat lands must remain untilled. Coal fields must remain undeveloped. Even minerals cannot be mined, except the precious metals in rich deposits, without railroads.

Mineral and coal regions, to a large extent, are valueless until cheap transportation is afforded. The coal of Wyoming, the copper and the coarser silver ores of Utah and Nevada, waited for the railroad car to give them value.

The original Union Pacific Railroad land grant was 12,077,981 91-100 acres. The sales to Dec. 31, 1875 were 1,193, 942 91-100 acres, for $5,336,044.02, at the average price of $4.47 per acre. An equal value, surely, was given to the same number of acres on the even sections retained by the government. The total value of the original land grant, at the minimum rates of $2.50 per acre, was $30,194,952.

The coal, iron, copper, silver, marble, lead, cinnabar, etc., long hid in the rugged mountains, but now brought into use, will far more than compensate for any poor lands.

The original number of acres of the land grant to the Central Pacific Railroad and the California & Oregon Railroad was 13, 222,400. If valued at $2.50 an acre, it makes the amount of the grant $33,056,000. It is fair to say that these two roads are giving almost the entire estimated value of $63,250,950 to these lands, and an equal sum to Government lands lying adjacent to them.

Millions of acres, lying outside the limits of these railroad grants, now have a market value impossible before the road was built. The Illinois Central Railroad added several hundred per cent to the real worth of the belt of land, sixty miles wide, along its track, enriching the people as well as the railroad corporation.
The route of the Northern Pacific Railroad is through a good belt of country. Its capacities for pasturage, for the cereal, for vegetables and fruits, have been proved. Soil and climate invite settlers. But these products cannot be transported to the markets of the world. It is useless to raise any for export. The lands lie idle, as they have done for a thousand years. The lumber of the mountains falls and decays, or is burned up. The coal beds are untouched. The minerals cannot be brought to use. The lands must remain unsold and unsurveyed for want of buyers. Complete the road from the Columbia to the Missouri, and this strip, 80 miles wide and 2,000 long, of 160,000 square miles, or 102,400,000 acres, will acquire a real worth, at one dollar per acre, of $102,400,000. At two dollars per acre it will be worth $204,800,000. At the Government price for even sections, $2.50 per acre, the whole amount will be worth $256,000,000, of which the Government will receive half, or $128,000,000, and the builders of the road the other half. That new value will be created by the road, and will become steadily available, to the Government and people. Without the road it cannot exist; without the road it never will exist.

FREIGHTS SAVED—Roads built on the basis of these land grants save certain sums in the cost of Government freights over these routes, which may be fairly added to the land values created by them. Senator Stewart, of Nevada, said that “the cost of the overland service, for the whole period, from the acquisition of our Pacific Coast possessions to the completion of the Pacific Railroad, was $8,000,000 per annum, and constantly increasing.” The editor of the Pacific Tourist adds: “Since the building of that road, say for seven years—1869 to 1876—the cash paid to railroad companies, for one-half charge of transportation per year, was about $1,200,000 per annum, or the sum of $8,400,000 for the whole time.” In 1876 it would have been over $14,000,000. The average for seven years, at $10,000,000 per year, would amount to more than $70,000,000. Thus, the total saving in seven years, to the United States Government, was $61,600,000. This is equal to the creation, or earning of $61,600,000 for the Government.

It is an item worthy of notice, that the Government paid the interest on the Pacific Railroad bonds during these seven years, an average
of $3,897,129 per year, or a total of $27,279,906. Deducting this sum from $61,600,000, there was a net profit, over all expenses, to the United States of $34,420,094. It is fair to estimate these savings as so much value added to the belt of country traversed by the road.

The writer quoted remarks that “these figures do not include vast amounts of incidental items, which would have been of incalculable trouble, or immense expense to the United States, such as the indemnities constantly being paid, by the United States, for the destruction of life and private property by Indians; also depredations of Indians on property in Government service; increased mail facilities and decreased mail expenses; prevention of Indian wars; the rapid sale of Government lands, and the energetic development of the mining interest of all the Territories.”

Honorable Henry Wilson, in a speech before the Senate, Thirty-seventh Congress, boldly said: “I give no grudging vote in giving away either money or land. I would sink $100,000,000 to build the road, and do it cheerfully, and I think I had done a great thing for my country.” (p.303)

The average transfer of through passengers, on the Pacific Railroad, per year, for four years, was 72,183, and of way passengers, 318,182. The average transfer of freight, for 1872 and 1875, was over three billions of pounds per year.

This power of transportation is a definite commercial value, created by the railroad. It is a commodity produced where none existed before, as real as the product of new grain fields, or new manufacturing. The only question is, whether such wealth producers are needed, or are in excess. When the New York Central Railroad was first proposed, farmers objected to the project as an injury to the freight business by wagons, and, in fact, to the business of raising horses. The one answer to all such objections is that two, and perhaps three, broad belts of the Continent, within our National limits, can be traversed by new railroads, and their resources developed by them, and in no other way can this ever be done.
A MILITARY NECESSITY—The Northern Pacific Railroad is truly a military necessity, in its sections, as the Union Pacific or Central Pacific Railroads were in their section.

It will annually save millions of dollars to the Government in freights alone.

It will quell Indian outbreaks so quickly and effectually, that they will be less and less likely to occur. Such outbreaks do not now happen, as formerly, in Nebraska, Wyoming, Utah and Nevada. Had the Northern Pacific Railroad been completed, the Black Hills War would have been speedily closed, and with less sacrifice of life. The present war with Chief Joseph’s band of Nez Perces could have been nipped in the bud if the Northern Pacific Railroad had been built.

A NATIONAL NECESSITY—The one Pacific Railroad is now developing a central tier of states across the Continent. More than any other agency, it lifted Nevada to this position. Utah would be the next State, but for the antagonism of Mormonism. Wyoming hastens to join the rank. Nebraska was ushered into the list while yet the Pacific Railroad was making its way through her prairies.

SOUND STATESMANSHP DEMANDS THE NORTHERN PACIFIC RAILROAD—The following items show the business of Utah in 1875: The value of imports was, in that year, $9,150,851; the value of farm products, $7,861,772; miscellaneous, $860,851; mineral products (mostly silver bullion), $6,145,211; manufactures, $2,805,000; making (exclusive of flour), $1,603,985; $17,310,000. The valuation of assessable property, according to the Auditor’s report on 1875, was $23,289,189.

On this property, the aggregate taxes, assessed in 1875, were $58,222.95. To the Pacific Railroad a large portion of this business and wealth is due.

The assessed value of property in California in 1864-5, when the Central Pacific Railroad was begun, was $180,484,949.85. The assessed value five years later, in 1869, when the overland railroad was done was $237,483,175.07. A gain of $56,998,225.22, or about 32 per cent, or 6.4 per cent per year. The assessed value in 1874-
five years later, was $611,495,197, a gain of $374,012,021.93, or about 150 per cent, in five years, or 31.6 per cent per year.

These values are as well sustained as any values are sustained in any other part of the country. Their vast increase is largely—mostly due to the Pacific Railroad.

It is not certain that the Northern Pacific Railroad will produce similar results as quickly; but the resources of the northern route are as vast, as varied, and more permanent; and they will ultimately be grandly developed.

Dakota, Montana, Idaho, Washington and Oregon wait for this road. It will stimulate all their energies. It will establish vigorous settlements. It will open new regions. It will unfold the hidden treasures of the soil, the mines, the forests, the river, the lakes and the ocean. It will hasten the immigrations, by giving confidence to the people that their labors and enterprise shall be rewarded.

**INCREASE OF POPULATION**—In 1860, the population of the Pacific slope, was 619,000. In 1870, it has doubled. In 1876, it had again increased 40 per cent.

It is safe to calculate upon six per cent increase annually on the completion of this road. Grant the present population of Oregon, Washington and Idaho to be 200,000—ten years at 6 per cent will add 158,874, or a total of 358,874. The increase may be double that amount, giving over a million of people to these three States, as they will then be, in twenty years.

It is the part of good statesmanship, to provide for the future welfare of our country, it would seem a present duty to establish this tier of States on our northern border from the lakes to the Pacific. In order to do this every hand and every voice ought to help on the building of this road.

The lands granted, if sold at $2.50 per acre minimum, will give that sum in value by the construction of this overland road. Thus the value of the grant being fairly earned, and in no sense a gift.
The Government and the people alike make a large profit by the subsidy. The builders do the same. It is like laying out a town site, and giving half the lots to settlers, who will build houses, and on them thus double or quadruple the value of the remaining lots.

A VALUABLE INVESTMENT—Land subsidies for transcontinental railroads are good investments for the people. They make one acre worth two, three and four, or a dozen acres of the same quality, which have no railroad facilities. The cry against such subsidies is absurd and misleading. To prevent such grants is to defraud the people. Its encouragement sets the wheels of industry in motion, employs laborers, feeds the hungry, opens new avenues for business, and adds to the National wealth.

The arguments which apply to the Northern Pacific Railroad apply with equal force to the Southern Pacific Railroad, or Texas Pacific Railroad.

Wilderness regions along that belt of highway will become rich States by thus opening the highway of commerce.

Similar reasons urge the building of cross-roads, like the P., D., & S.L. road, and the S & W.W.R.R., which will be of far more worth than any built in the Eastern States. If this increased value is given to regions traversed by railroads, which does not exist without them, it is fair and wise to give the builders a share in the wealth which they create.

The iron, the coal, the manufactories, the skilled and the unskilled labor of the country wait to be employed on such National enterprises.

ITS SOCIAL AND MORAL POWER—In the problem of a Nation’s life easy intercommunication is found to be an essential factor. Already our nation feels the vital force of the Union and Central Pacific. The heterogeneous population that presses into new regions, especially into those rich in the precious metals, and in mineral and agricultural resources as the electric chain, needs that constant connection with the whole body politic.
Interlace the Continent with railroads and you ensure the unity of the people, by the power of community of interest which must and will be quickly felt. No power acts with such force now to harmonize the North and the South, the East and the West. This force is needed along the Northern and Southern belts from the Atlantic to the Pacific.

**ITS ECONOMY OF FORCE AS A PROBLEM OF ENGINEERING**—It is a fixed principle of engineering that it is as easy to draw seven loaded cars and a level track, seventy feet, as it is to raise them one foot. The wear and tear of machinery of the track, combined with the strain of force required to draw such a load show the equivalent to be as seventy feet in length to one in height. On hearing this principle stated by an engineer, as it was new to me and the revelation of important results, I stated it to General Tilton, a well-known engineer of high standing, for explanation and verification. With the carefulness of a mathematician, he answered that it was nearly correct as the elements of the problem involved could be stated; that it was often discussed and affirmed by E.F. Johnson, Esq., consulting engineer of the Northern Pacific Railroad, the teacher of us all.

It is a working rule, which we can safely follow, he said. Moreover, when weights increase the equivalents increase. For example, fourteen loaded cars can be drawn one hundred and forty feet on a level track as easy and with as little wear and tear and strain as they can be lifted one foot, but the law of equivalents is not exactly the same for the higher numbers.

Do you mean, General, that it is as easy and economical to run a freight train of seven loaded cars around a mountain seventy miles as to lift it one mile high over that mountain? Yes, he replied. Is it as easy and as economical to draw a loaded train of 14 cars 140 miles on a level around a mountain as to lift them one mile high over it? Yes, he said, that is a practical fact. How would it be with 21 loaded cars? The General replied that the same law operates, yet the tests and figures have not been made to show how much it may be modified.

General, how do the two Pacific Railroad routes, via the Northern Pacific Railroad and the Union and Central Pacific Railroad, com-
pare as to gradients? Those of the Northern Pacific Railroad are far the lowest and easiest. For example, they (the Central Pacific Railroad) climb the Nevadas over 7,000 feet, descend into the valley of the Humboldt about 3,000, ascend again about 2,000 at Promontory Point, and 1,000 more at Coopers’; and they reach 8,200 above the sea at Sherman. The Northern Pacific Railroad runs through valleys from 1,000 to 3,000 feet, and at no point rises higher than 5,000 feet above sea level. It is the valley route across the Continent. This is the substance of a conversation with General Tilton, at Tacoma, four years ago, which is reported from memory, as I trust, accurately.

In conversation with Edwin F. Johnson, Esq., in Chicago, in October, 1868, who was then understood to be the engineer-in-chief of the Northern Pacific Railroad, he said that he began more than 30 years before, in Connecticut, and followed his business as an engineer through New York, Ohio, Michigan and farther West, constantly studying the face of the Continent and the laws of its climate, and that he found the isothermal line constantly veering Northward, and the surface of the country more level and better adapted for agriculture and a population. He added that the proposed route for the Northern Pacific Railroad, so far as the preliminary survey had been made, showed easy gradients compared with the Central route, and that the actual distance, by measure, to ocean waters, on Puget Sound, was about three hundred miles less than to ocean water at San Francisco, and that two hundred miles more were saved by easier gradients, making 500 miles gained by this route over the other of land travel, while the ocean route from Puget Sound to China, being on the arc of a great circle, is about 400 miles shorter than the route from San Francisco.

Having given this intelligent, inquisitive and venerable engineer many facts respecting the mildness of our North Pacific Coast climate, confirming his tentative observations and carefully formed theories—which testimony seemed very grateful to him—our interview of half an hour closed. It left the conviction in my own mind that every step in the progress of such a vast enterprise must be taken under the guidance, and subject to the most rigid and
accurate tests of engineering skill, and, when so made, its success will be assured with mathematical certainty.

On the subject of routes, W. Milnor Roberts. United States civil engineer and engineer-in-chief of the Northern Pacific Railroad in his special report of a reconnaissance of the route for the Northern Pacific Railroad, between Lake Superior and Puget Sound, in 1870, via the Columbia River, makes the following statements:

An examination of the profile of the Union Pacific and Central Pacific lines, between Omaha and Sacramento, a distance of 1775 miles, shows that there are four main summits: Sherman Summit, on the Black Hills, about 550 miles from Omaha, 8,235 feet above the sea; one on the Rocky Mountains, at Aspen Summit, about 935 miles from Omaha, 7,463 feet; one at Humboldt Mountain, about 1,245 miles from Omaha, 6,076; and another on the Sierra Nevada (only 105 miles from the western terminus of Sacramento), 7,062; whilst from a point West of Cheyenne to Wasatch, a continuous length of 450 miles, every portion of the road is more than 6,000 feet above the sea; being about 1,000 feet, on this long distance, higher than the highest summit on the Northern Pacific Railroad route, whilst, for the corresponding distance on the Northern Pacific route, the average elevation is under 3,000 feet, or 3,000 feet less than on the Union and Central line. The highest summit on the Northern Pacific line is about three thousand feet lower than the Sherman Summit, on the Union Pacific.

On the Union Pacific road the profile also shows that for nine hundred continuous miles, from Sidney westward, the road has an average height of over 5,000 feet, and the lowest spot on that distance is more than 4,000 feet above the sea; whereas on the Northern route only sixty miles, at most, are as high as 4,000 feet; and the corresponding distance of nine hundred miles, extending from the mouth of the Yellowstone to the Valley of Clark’s River, is, on an average, about 3,000 feet lower than the Union Pacific line. Then, allowing that 1,000 feet of elevation causes a decrease of temperature only three degrees, there is substantial reason for the circumstance, now
well authenticated, that the snows on the Northern route are much less troublesome than they are on the Union and Central route. At the same time, it should not be claimed that there will be no trouble from snow on the Northern line. The impress I wish to create is this: That a line can be so located, between the Valley of the Missouri and the mouth of the Columbia River, and to Puget Sound, that, for the greater portion of the distance, it will not encounter any serious trouble from snow; and that, in the passage of the Belt Range, between the Yellowstone and the upper Missouri, and the crossing of the Rocky Mountains, at Deer Lodge Pass, no greater obstacles from snow are likely to be met with than have already been encountered and overcome on roads in New England States and the States of New York.

The grades beyond the Missouri, along the valley of the Yellowstone, to near the Bozeman Pass, like those East, will undulate within the general limit of about forty feet per mile, although it may be deemed advisable, at a few points, for short distances, to run to a maximum of fifty-three feet per mile.

The height of the country, upon which the line is traced, may be approximately stated thus, beginning at Lake Superior, going westward:

<table>
<thead>
<tr>
<th>Miles</th>
<th>Ave. Height above Sea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duluth to Dakota valley</td>
<td>300</td>
</tr>
<tr>
<td>Yellowstone River</td>
<td>300</td>
</tr>
<tr>
<td>Along Yellowstone</td>
<td>400</td>
</tr>
<tr>
<td>Flathead Valley</td>
<td>300</td>
</tr>
<tr>
<td>Lewis or Snake River</td>
<td>200</td>
</tr>
<tr>
<td>Puget Sound</td>
<td>500</td>
</tr>
</tbody>
</table>

Lake Superior to Puget Sound, via Portland, 2,000 miles; direct line, 1775 miles.

The difference between direct and Columbia River route, 225 miles, is more than made up by its lower grades. Compare this
with the profits of the finished line of the Union and Central Pacific Roads. Properly, the comparison should be made from Chicago, the terminus on Lake Michigan, of the Omaha line. There are on that route, approximately, as follows

<table>
<thead>
<tr>
<th>Location</th>
<th>Miles</th>
<th>Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago to Omaha</td>
<td>500</td>
<td>1,000 ft.</td>
</tr>
<tr>
<td>Near Cheyenne</td>
<td>516</td>
<td>3,300 ft.</td>
</tr>
<tr>
<td>Coopers</td>
<td>87</td>
<td>7,300 ft.</td>
</tr>
<tr>
<td>Promontory Point</td>
<td>482</td>
<td>6,200 ft.</td>
</tr>
<tr>
<td>Humboldt</td>
<td>406</td>
<td>4,750 ft.</td>
</tr>
<tr>
<td>Reno</td>
<td>130</td>
<td>4,000 ft.</td>
</tr>
<tr>
<td>Auburn</td>
<td>45</td>
<td>4,400 ft.</td>
</tr>
<tr>
<td>Sacramento</td>
<td>39</td>
<td>300 ft.</td>
</tr>
<tr>
<td>San Francisco</td>
<td>135</td>
<td>50 ft.</td>
</tr>
<tr>
<td>Chicago to San Francisco</td>
<td>2,410</td>
<td></td>
</tr>
</tbody>
</table>

On the Northern Pacific line there need be but two principal summits, whilst on the other there are four, the lowest of which is about a thousand feet higher than the highest on the Northern route. If, therefore, the roads were the same length between the Pacific waters and the great lakes and navigable rivers East of the Rocky Mountains, the advantage would be largely in favor of the Northern route; but this actual distance is 410 miles less, and the equated distances for the ascents and descents in its favor will be very considerable in addition.

The last remark of the engineer, Mr. Roberts, doubtless applies to the gain of force and economy of low grades, which is equivalent, in the engineer’s mathematical estimate, to a definite number of miles. Engineer Johnson estimated 200 miles of gain for the whole route.

As an attesting fact, it is reported from one of the directors of the Central Pacific Railroad, that the cost of wear and tear of their railroad 200 miles over the Nevadas, including machinery and increase of force demanded, is equal to 1,100 miles of expense of the rest of their road on lower grades.
As another attesting fact, it is reported that the Reading Railroad, of four tracks for transporting coal 44 miles to market, was first constructed along the side of a hill, requiring a great force to carry the trains over such an elevation. On the estimate of their engineer, they found that the road-bed could be lowered about 32 feet, and the four tracks relaid at a cost of about $2,000,000, and the economy of force and wear and tear thus saved would be annually the interest on $1,000,000 above this extra cost. They decided to abandon the old road-bed and build a new one.

The facts and principles thus far adduced from the highest authority of engineers, show that the Northern Pacific Railroad runs through a series of valleys that extend, with but little interruption, across the Continent. Of the remarkable pass at Deer Lodge, well named the Gate of the Mountains, Mr. Roberts says: “The whole 40 miles from Deer Lodge City to the summit of the Rocky Mountains, by this route, can be built as cheaply as roads are built through prairie countries generally.”

A remarkable circumstance connected with this pass will convey a clear view of its particularly favorable character. Private parties engaged in gold mining in a gold field, which exists abundantly on both sides of the Rocky Mountains, have dug a ditch across this summit, which is only eighteen feet deep at the apex of the divide, through which they carry the water of ‘Divide Creek’, a tributary of the Missouri, across to the Pacific side, where it is used in gold-washing, and the waste water passes into the Pacific Ocean. This has justly been termed ‘highway robbery’.

**THE NORTHERN PACIFIC RAILROAD FIXED BY NATURE—**These principles and facts must control the Western end of the road. Its course down the Valley of the Columbia is by a natural law as fixed as the flow of the waters that cut this channel to the ocean. It is the natural route for the transportation of freights. If not built there at first, competition will ultimately compel it to this line, as the great transcontinental route for the Pacific and Asiatic traffic.

**THE CLIMATE FAVORS IT**—The temperate climate conserves the goods in transit. While torrid heats destroy 5 per cent, of the value
of teas in transit through them, this route, through a belt of such cool and even temperature, keeps all such goods in perfection. This is also true of fruits, grain, flour, and, doubtless, many other articles of merchandise. It is destined to be the most rapid, regular route for freight and passage across the Continent, as it has the easiest and lowest grades, and the fewest dangers of interruptions from snows and storms.

**THE LAW OF COMMERCE DICTATES THIS ROUTE**—The demands of its commerce, like that of all railroads, will direct its route through the most prolific part of the basin of the Columbia. The countries that have the largest annual harvests, or power of harvests, will naturally be traversed on its way to the sea. Judging from the contour of this upper basin of the Columbia, coming on its surveyed route by Pend d’Oreille Lake to near the mouth of the Lewis, or Snake River, it will cross that narrow stream; then skirt the foothills around to The Dalles; then through the Cascade Mountains to the Willamette; thence making one crossing, opposite Kalama, below the winter ice on the Columbia, and thence completing its connection with the terminus on Puget Sound. The charter expressly requires the line to be North of the 45th degree of latitude, to some point on Puget Sound, via “the valley of the Columbia River,” with a branch across the Cascade Mountains to Puget Sound. On this route it will easily drain the products of the richest agricultural counties of Eastern Oregon and Washington, viz: Stevens, Whitman, Columbia, Walla Walla, Umatilla and Wasco, and will secure its share of the vast and increasing trade of the Willamette Valley. It will largely assure the Oregon & California and the O.C. Railroad traffic, and thus our welfare. It will, indeed, lose half of the land grant for the distance passed in a State, but its gain in freights, and in the route will, no doubt, compensate for this loss. But, whatever may be the opinions and wishes of the different sections interested in this route, we can hardly doubt that the two elements that must, and will decide the question, will be the best grades, and the best and most steady supply of freights. These two laws hold with a force that controls such enterprises.

**WHEN AND HOW CAN THE ROAD BE BUILT?**—The whole Northwest is more interested in the fact of the completed road
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than in its route. Hope on this point was blighted when Messrs. Jay Cooke & Company failed. Its construction has, to some minds, seemed less and less probable during all four years of the panic.

**OBJECTIONS**—Thoughtful men question the possibility of securing funds to build it. Some have distrusted its Board of Directors, and charged its officials with wasting the funds of confiding bondholders. Some complain that its land grant is too large, and that it ought to be restored to the people.

**ANSWER TO OBJECTIONS**—It is very probable in the flush times of 1871-2, when there was every prospect of selling bonds enough to complete the road, that the expenditures for depots and rolling stock were in excess of the present need, yet they were probably in anticipation of its immediate future. When its bankruptcy occurred, the only legal course was to turn over its assets to its real creditors, who were its bondholders, and not its stockholders. But when this was first proposed, it was objected to by men in high position, even as lawyers, that its corporate life could not be transferred to its creditors, but that its 550 miles of completed road, and its lands earned by their construction, must be divided among its creditors, and that the enterprise must be given up as a failure. Already the sheriff was waiting in New York—hat in hand—to levy on the property and force the sale. But an inspection of their franchise and their rights under their charter led the prudent and hopeful members of the Board of Directors to resist doing this great wrong to their creditors. One plan was to exchange bonds for lands, at fair rates, which would satisfy the claims of those who chose this method. This was done, to some extent, without the wastage of legal seizure and forced transfer. But the comprehensive plan was to transfer the whole property, the completed road, the land subsidy already earned, the corporate life of the company, with its inchoate franchises, to the creditors. They were authorized to do this by virtue of Article VI of their charter, which (as amended by act of Congress, approved May 31, 1870) expressly authorizes and empowers the Northern Pacific Railroad Company to issue its bonds to aid in the construction and equipment of its road, and to secure such bonds by mortgage on its property of all kinds and descriptions, real,
personal, and mixed, including its franchise as a corporation. This last clause was construed to mean its corporate life.

Under this ruling by the court, the transfer of all its property and franchise was made by a legal sale to a third party, and by him to the bondholders, who became the preferred stockholders of the road, with all the rights and powers of the original stockholders to hold the property and complete the enterprise.

**CAUSE OF DELAY IN ITS CONSTRUCTION**—More than a year of diligent effort on the part of the directors was spent saving the Northern Pacific Railroad from overthrow and absolute annihilation, and in securing the creditors all the assets. This was, to all appearance, a transaction most creditable to the head and heart of the directors. The creditors had all their own property for their bonds, if they should choose to accept it. About $24,000,000 of bonds were given up for preferred stock. Some millions were exchanged for lands. Some bonds are still held back, yet provision is still made for their transfer for stock or lands.

**VALUE OF THE TWO SECTIONS ALREADY BUILT**—The 550 miles of road paid all current expenses and earned $300,000 more, as per report of 1876. Of this surplus the 105 miles of the Pacific division earned $60,000 over its expenses.

**NEW SECTIONS BUILT IN 1877**—During the last twelve months the directors have built 63 miles of road, connecting its Eastern division at Brainerd with the railroads at St. Paul, Minnesota, and 31 miles, connecting its Western terminus with the vast coal fields of the Puyallup Valley.

**ITS OWNERSHIP**—The whole line is owned by its present stockholders. It is free of debt, and is paying no interest – unless it be on the sections built this year – while its earnings are increasing annually.

**WHAT THE ROAD ASKS OF CONGRESS**—As the time of its franchise expires soon by limitation, it earnestly asks an extension of time to complete the through line.
THE ROAD NOT RESPONSIBLE FOR THE DELAY—The railroad was not responsible for the failure of Messrs. J. Cooke & Co., its financial agents. It has not been responsible for the panic and the business failures that have swept over the United States and Europe like a hurricane during the last four years. It is not responsible for the unsettled condition of politics or of the currency. It has done nothing to complicate the labor question, or lay unjust burdens on poor workingmen. It has earnestly desired the opportunity to go forward and employ thousands of the unemployed in completing its line from the Missouri to the Columbia and the Pacific.

IF GRANTED, THE GOVERNMENT AND PEOPLE WILL BE THE GAINERS—It asks no additional subsidy. It is content with the lands granted, most of which have yet no value, but to which its construction will give value. It expects to give the same value to an equal amount of contiguous Government land, which now has no appreciable value in any market in the world.

IT IS AN INVESTMENT TO CREATE VALUES WHERE NONE EXIST NOW—The road expects to earn its subsidy as it goes along, mile by mile and section by section. This is true of every railroad through an unsettled country. It thus does not claim or ask the subsidy as a gift, but only as an opportunity to confer an equal and even greater value upon the Government, for the trust thus long put in its keeping.

THE ROAD HAS BEEN A SUFFERER—It shared its measure of loss and suffering and delay, on account of the great failure, and the greater financial disasters that ensued, and the general disturbance of public affairs. All those things were unforeseen and beyond its control. They have caused the road an unavoidable loss of money and time. The money can be earned again for the completed road for its creditors, if Congress will merely grant an extension of time to do it. This privilege will not cost the Government a dollar. As a business principle it is not withheld, but promptly given by man to man in all the circles of commercial enterprise. To refuse it is like the old law of putting a debtor in jail in order to compel him to pay his debts. It is a demand for “money or the pound of flesh.” When understood, men will not do this unkindness. We must hope and
believe that Congress, urged by the voice of the people, will grant the Northern Pacific Railroad an extension of time to complete its road under the charter.

**ITS PLAN OF COMPLETION**—A plan has been proposed and earnestly advocated by several of its directors to hasten its completion by commencing next year on the Missouri, working Westward, and on the Columbia near the mouth of the Snake River, working Eastward as rapidly as possible until the two sections meet in Montana. In order to do this it is proposed that the company sell their lands at the Government land offices, get the minimum price of $2.50 per acre, give titles to purchasers, use the proceeds, with the prospective earnings of the roads, to build the line East and West, and also to give credit and a good sale to new bonds which may be issued to perfect the scheme. The object of the directors is ostensibly to build the roads, and not to speculate in the lands. For this object the subsidy is entrusted to them. They want settlements and steady business along the whole line.

This plan to put their lands in the common market with the even sections held by the Government will, no doubt, satisfy all the demands of the settlers, and win a just commendation from all the people. It is to be hoped that it will meet with the approbation of the entire Board, and be placed on their records and in the provisions of the bill for the extension of time.

**BRANCH ROAD TO PUGET SOUND**—Some objection has been made to their retention of the subsidy for the branch road from the Snake River, through the Yakima Valley, to Puget Sound. It is evident that such a branch is needed. The surveys show easy grades. The main valley and its affluents are rich in resources, and if allowed time, there is little doubt but that the Northern Pacific Railroad will ultimately build this road. But if not, let some other company do it.

**INTERCOMMUNICATION ESSENTIAL**—Rev. Dr. Field, a recent observer in Greece, where he is still, remarks that the interior of that country is less advanced than the capital. The great want is that of internal communication. “Greece is a country made by nature for commerce and agriculture, and if a few short railroads were opened
to connect the inland valleys with the sea, so that the farmers and peasants could send their produce to market, the exports of the country might be doubled. A line of one hundred miles would connect them with the railroad system of Europe. Such a road would give them new life.”

Dr. Field here reveals the secret also of their historic provincialism. It is intercommunication which makes a people one in interest and thought. The lack of the former defeats the latter. By quick and free intercommunication we become one people. Without it we are only a company of provinces, feebly bound together, apt to be jealous, and without enterprise. Every argument urges the completion of this direct means of intercourse and this bond of connection with the great body of our Nation.

**VIEWS OF THE DIRECTORS**—In a conversation with Captain J.C. Ainsworth, one of the directors of the Northern Pacific Railroad, he says distinctly that it is the judgment and purpose of some of the directors of the Northern Pacific Railroad, with whom he fully agrees in the plan to urge the sale of their lands in the Government land offices, at the minimum fixed price of $2.50 per acre, and to use the proceeds, with other funds, at once, to connect the Columbia and the Missouri Rivers by railroad, and thence to extend the road Westward, on the south side of the Columbia, to Portland, on the Willamette, and thence to Puget Sound.

**THE COLUMBIA RIVER AND ITS DISTRIBUTARIES—COMMERCIAL STATUS AND IMPORTANCE**—It is a maxim of commerce, both terrene and marine, that the wagon must meet the ship, and the ship the wagon. Facts illustrate this axiom from the earliest times to the present in all countries, whether goods have been moved to the sea by the long caravan of camels, as in Asia, or by the slow wains of Central and Northern Europe and America, reaching first the rivers and shallower bays, thence on light boats and barges to the ship; or whether, as in recent times, the vast and varied products of the country reach the sea by the swifter railroad trains. The exchange of the products of the sea must go inland by these return trains. This is the problem of transportation. This is the key to the busy hum of seaport cities. It is now the motive of railroad and steamship lines,
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as it was a few years since of canals and river steamboat companies. It is the chief question that enters into the merchant’s estimate of his profits, and into the farmer’s account of his income.

THE IMPORTANCE OF THE HIGHWAY—For example, when wheat sells in San Francisco at $2.25 per cental, and only at $2.10 per cental in Portland or Astoria, the difference is 15 cents per bushel against the farmer of Oregon or Washington. His loss is 15 per cent, as rated by the bushel, or 25 per cent, per 100 pounds. On 100 bushels he loses $15; on 1,000, $150; on 10,000, $1,500; on 100,000, $15,000; on 1,000,000 bushels, the community of farmers lose $150,000; and on 5,000,000 bushels, the estimated export of wheat the present year, their loss is $750,000. The commission merchants of the state lose a large per cent of profit in the transfer of business to the market below. Yet, the fact is established that ships can come from any port of Asia or Europe to the entrance of the Columbia River as easily, and as quickly, and as cheaply, as to the entrance of the Golden Gate.

OFF SHORE SOUNDINGS—The late off shore sounding by the United States Coast Survey steam cutter Hassler, Captain George W. Coffin commanding, which occupied two months, July and August, 1877, gives the following facts, which are kindly furnished from the official records:

1st—Extent of Survey—From Cape Disappointment Northward to Yoke Point Lighthouse, 26 ½ miles of coast line, and about 13 miles out to sea.

From Cape Disappointment Southward to False Tillamook Head, 31 ½ miles of coast line, and 15 miles out to sea.

Total square miles surveyed, 812.

Lines of soundings were 1 ½ miles apart by ship. Lines of soundings were traversed in to 9 feet by boats.

SOUTHERN SHEET—2nd—Ratio of increase of depth to distance off shore—Off North Channel, due West line, it is 5 fathoms to the
mile; off Port Adams, due West line, it is 5 fathoms to the mile; off Tillamook Head, due West line, it is 3 ½ fathoms to the mile; off False Tillamook Head, due West line, it is 5 ½ fathoms to the mile.

**NORTHERN SHEET**—Off Stout’s house due West line, it is 4 fathoms per mile; off point midway between Cape Disappointment lighthouse and Leadbetter’s Point, due West line, it is 3 ½ fathoms per mile; off Leadbetter’s Point, due West line, it is 3 ½ fathoms per mile; off Yoke Point lighthouse, Shoal water Bay, it is 3 ½ fathoms per mile. 3rd—Increase of depth to Seaward in a direction off the South channel (main ship channel) it is 4½ fathoms to one mile. 4th—Increase in depth to Southward. At 2 miles to seaward from Point Adams, West, is found 5 ½ fathoms; at 2 miles to Seaward from Grimes’ house, West, is found 11 fathoms; at 2 miles to Seaward from Tillamook Head, West, is found 30 fathoms; at 5 miles to seaward from midway between Tillamook and False Tillamook Head, West, 20 fathoms; at 2 miles to seaward from Falso Tillamook Head, West, is found 32 fathoms.

**CURRENTS**—5th—Outside of 4 or 6 miles are Coast currents parallel to the shore line, to the Southward in summer and Northward in winter, whose velocities are dependent on local winds, which, when strong, often reverse the current.

Inside of 5 or 6 miles the currents seem to be governed by the outflow and inflow of the Columbia River (South of Cape Disappointment). North of Cape Disappointment Shoalwater Bay affects the current in shore more than the Columbia River, Shoalwater Bay being of large area and almost dry and bare at low water. The inflow causes a strong set in shore to the Northward almost always; the outflow apparently not running down in shore, but joining the Coast current further outside. This is apparently due to the conformation of the land above the entrance to Shoalwater Bay.

**DISCOLORED WATER**—6th—The distance outside of the bar at which discolored water may be seen varies with circumstances. Good signs to the navigator are the strong tide rips met with off the bar, and to the Northward and Southward of it, sometimes as far as
10 or 15 miles, but rarely more than five or six miles to seaward of the bar.

PRECAUTION—7th—Vessels in doubt as to position would do well to keep outside of 25 fathoms in bad weather, fog, etc. The boats of the survey developed deep water between Tillamook Rock and the Head, and probably large vessels may pass through in case of necessity or to avoid other dangers, though the passage is not recommended.

INFERENCE—The Columbia River has probably cut a channel through this vast bed. Those official statements assure the navigator approaching the bar of his mode of safety, and furnish him many hints to find his position by the lead and by the currents, even if the land marks are hidden. If they are seen, his course is plain.

CHANNEL—The South channel averages a half mile in width, and 20 ½ feet at mean low water, and 5 fathoms at high water; with smooth, hard bottom, free from rocks, well buoyed and mainly direct, with few alterations of the ship’s course into the river channel. The shifting sand form the Clatsop Spit and Point Adams on the south side of the channel, and Sand Island and its spits, extending Westward on the north side of the channel, are broken and moved by tides and currents, which sweep through the channel, keeping it open in full measure of depth and width.

If the North channel grows shallower, which the last survey indicates, the south channel will doubtless deepen to the same extent.

DRAFT OF VESSELS—Vessels drawing 22 and 23 feet loaded, have passed and repassed the bar at high tide. Present surveys show that vessels drawing 21 feet of water can always, on half tide, come to Astoria, with a pilot, but better with a pilot and tug. Vessels drawing 17 feet can always pass and repass the channel to Portland, with a pilot.

TIDES—Tides rise from 6 to 10 feet on the bar, and from 6 to 10 feet at Astoria, and from 1 to 2 feet at Portland, 120 miles inland.
A Public Spirit

**RIVER AND HARBOR IMPROVEMENTS**—The United States, in accordance with its liberal policy, has kept efficient superintendents of survey and of lighthouses and buoys, and furnished these materials and erected these structures for the benefit of commerce for several years past. Of late, dredgers have been added, and fresh parties have been kept at work on coast and river. Charts have been made with more minute and accurate measurements. The river and adjacent ocean bed are becoming perfectly platted, so that when these maps and charts shall be issued to mariners from the Government office, the safety of navigation, with ordinary care, will be assured more definitely.

It is also reasonable to expect larger Government outlays and increased efficiency, to observe changes, to plant more buoys and shore signals, and to employ dredgers of more power and capacity, thus turning the vast body of river water into the deeper and thus deepening channel. We have no reason to think that the Columbia River will ever have less capacity of commerce, as furnished by nature, but more, as guided by skillful engineers, authorized and supported by the Government.

**DISASTERS ON THE BAR**—The facts of navigation above considered affect commercial insurance, but absolute wreck at the entrance of harbors is a greater terror to underwriters than the perils of the high seas. Report of such disaster renders the insurer timid and stamps a bad fame upon the entrance to harbor or river mouth. The evil reputation increases as it becomes current. An article published in the *Alta California*, March 19, 1873, from the pen of Captain William Tichenor, of Port Orford, and written in February, 1872 remarks: “On the Northwest Coast of the United States, between the Bay of San Francisco and Puget Sound, a distance measured by more than ten degrees of latitude, there is no harbor a vessel can enter in heavy Southern weather.”

He adds: “The Columbia River, latitude 46/12, longitude 124/00, has a barred harbor. Among others, I now recollect the loss of the *General Warren*, Captain Thompson, with 52 persons; the *Demarest*, of New York, Captain Collins, with 9; the *Virginia*, Captain Bird, with 10, and the Industry, with most of the officers
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and crew. Commodore Hudson, of the sloop-of-war Vincennes, told me, I think in 1852, that he had visited most of the ports on the globe, and that none presented such terrors to him as the entrance to the Columbia River. He lost the sloop-of-war Peacock there, I believe, in 1846 [July 18, 1841 is the correct date.] Captain Hudson had no pilot. The Shark was lost at the same time.”

[Captain Tichenor continues] The dread in which the bar was held by mariners in earlier years had, in a great measure, disappeared, under the influence of a better acquaintance with it, and by the aid of the thorough and efficient pilots engaged upon it. But it is not one of those dangers the familiarity with which will ever breed contempt. There is not much detention in getting to sea in the summer months, but during the heavy gales of winter, vessels dare not approach the bar, and are compelled to lie off and on, sometimes for weeks, waiting for the sea to run down. From 1812 to 1851 the Hudson Bay Company had navigated the Columbia. Some of their pilots had, in 1851, been in their employ on the bar and river for over thirty years.

The editor of the Alta remarks: “It is to be regretted that it is impossible to improve the entrance to the Columbia River which, inside the bar, has a large, deep and secure bay, and has a thousand miles of channel suitable for navigation by large river steamers. We say that improvement is an impossibility—at least it is improbable. The breakers are so fierce, and the sands at the bottom of the entrance so treacherous, that no breakwater could stand.

To complete this gloomy picture, the Alta published a list of disasters North of San Francisco, from the pen of T.B. Shannon, under the direction of the United States Treasury Department, from January 1, 1861 to December 31, 1869—nine years. Yet, in this list of 198 disasters, 110 were small coasting vessels, plying upon shore, and only three occurred on the Columbia River bar, viz.:

<table>
<thead>
<tr>
<th>Date</th>
<th>Vessel</th>
<th>Type of Event</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>May, 1861</td>
<td>Brig Woodpecker</td>
<td>stranded</td>
<td>$30,000</td>
</tr>
<tr>
<td>March, 1865</td>
<td>bark Industry</td>
<td>wrecked</td>
<td>$75,000</td>
</tr>
<tr>
<td>May, 1867</td>
<td>bark W.B. Scranton</td>
<td>wrecked</td>
<td>$225,000</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>$330,000</td>
</tr>
</tbody>
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This is a relative loss of only 1 ½ per cent, in nine years, or of one sixth of one per cent, for one year. But the impression made by such statements, massed together, is to damage the reputation of the Columbia River bar.

Hon. D.C. Ireland, Clerk of the Board of Pilot Commissioners, attests that only nine vessels have been wrecked at or near the Columbia River bar in the last twenty-five years. Five of these were coming in without a pilot, and the loss of the others was due to the loss of wind and the lack of a tug. Since the tugs have been put on there has been no loss, except the Architect, coming in without a pilot. These nine disasters, in about 12,500 crossings of the bar, during twenty-five years, is about .007, or 7-100 of one per cent.

Honorable Wm. Reid, Secretary of the Board of Trade of Portland, has compiled, among others, the following:

TESTIMONY OF MARINERS—Captain Maginn, when President of the New York Board of Pilots, was instructed to report his opinion as to the merits of the entrance to the Columbia River, compared with the entrance to New York. He says:

There is deep water on the bar, it having four and one-half fathoms without the addition of the tide, while New York Harbor has on the bar but four fathoms, without the addition of the tide, which is six feet. The bar in the Columbia is about half a mile across, while that of New York is three-quarters of a mile.

The channel of the bar at the mouth of the Columbia is about six thousand feet, while the channel of the bar at Sandy Hook is about six hundred feet, and shoals rapidly; the channel across the bar is straight at the Columbia; that at New York is crooked. In accessibility to the sea, the Columbia River is the best, as it is immediately at sea, and ships can get out of the sea into the harbor at once, and also get out at once into the high sea. The winds at the mouth of the Columbia are marked regular and steady, while the winds at New York are entirely variable, and cannot be calculated upon by the mariner for any time. The mouth of the Columbia is free of ice and great heat.
The San Francisco Commercial Herald of May 21, 1874 says: “The bar at the mouth of the Columbia River, Oregon, has been made the ground of a very unjust and unreasonable discrimination of rates of insurance on vessels bound into the river. The number of casualties that have occurred there is fewer than that of any other barred river known to commerce.”

OPINIONS OF GOVERNMENT OFFICIALS AND MASTERS OF VESSELS—The Commissioners of the General Land Office at Washington, in their annual report to Congress for 1870, at page 156: “By the use of a steam tug, in crossing the Columbia Bar, the entrance to the harbor is rendered as safe as that of the Golden Gate, or the Straits of Fuca.”

Captain G.W. Harris, of the United States revenue service, who has crossed the bar some thirty times, says: “The crossing of the bar at the mouth of the Columbia River, with the ordinary precautions, is as safe as the entrance to any bay or harbor in the United States.”

Captain Hughes, master of the British ship Montgomery Castle, 1,300 tons burden, says: “There is no more risk in entering and leaving the Columbia River then there is in coming into or leaving any port or harbor that I have ever visited.”

Captain D. Evans, of the British ship La Escocesa, who is well known, writing on the 13th of April, 1875, says: “I consider a vessel is as safe, with the use of a steam tug or pilot, in entering the Columbia River and going over the bar, as in going into any harbor in ordinary weather.”

Captain George White, writing on the 8th of May, 1875, says: “It is absurd to say that the Columbia River bar is a very dangerous entrance.”

Captain Francis Connor, now commanding the steamship G.W. Elder, has crossed the Columbia Bar more than one thousand times during the past fourteen years, without a serious accident.
PRESENT EXTENT OF THE COLUMBIA RIVER COMMERCE, AS SHOWN BY THE FLEET OF TWO YEARS—The report of the Board of Pilot Commissioners to the Legislative Assembly, at the ninth regular session—1876, gives:

<table>
<thead>
<tr>
<th></th>
<th>1874-75</th>
<th>1875-76</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total arrivals and tonnage</td>
<td>Vessels</td>
<td>Tonnage</td>
</tr>
<tr>
<td>Vessels</td>
<td>233</td>
<td>241</td>
</tr>
<tr>
<td>Tonnage</td>
<td>161,539</td>
<td>192,750</td>
</tr>
<tr>
<td>Total exports for 1874-75</td>
<td>Tons</td>
<td>Value</td>
</tr>
<tr>
<td>Tons</td>
<td>148,141</td>
<td>$4,392,272.26</td>
</tr>
<tr>
<td>Value</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total exports for 1875-76</td>
<td>Tons</td>
<td>Value</td>
</tr>
<tr>
<td>Tons</td>
<td>162,830</td>
<td>$7,453,318.01</td>
</tr>
</tbody>
</table>

PROPORTION ARRIVING IN BALLAST—The number of vessels arriving in ballast in 1874-75 was 71, and in 1875-76 it was 75—a total of 146, or about 33 per cent.

THE AVERAGE DRAFT OF VESSELS—The draft of incoming vessels varied from a small coasting schooner of 4 feet to an ocean steamer of 17 feet. The average draft of 474 vessels arriving was 12 feet. The draft of the entire fleet of vessels departing from the Columbia varied from 6 to 23 feet. The average draft of 474 vessels on departure was 14 ½ feet. The average draft of the whole grain fleet to Europe on departure was 18 feet. The average draft of 60 of that fleet loaded was 19 ½ feet. This draft of loaded vessels is declared by the largest European shippers, to indicate the tonnage of the most profitable ships for general commerce at the present time. For example, the British grain fleet going to the Black Sea is composed of this class of vessels, registering from 900 to 1,400 long tons, and drawing from 14 to 19 feet. It is found that the larger classes of ships, built twenty-five years ago, and carrying immense cargoes, have long delays in loading, with large risks of navigation and more difficulties to find markets.

These facts of practical experience both test and settle the question of the permanent commerce of the Columbia River. It has been supposed that the larger and deeper draft vessels were essential to the most profitable commerce, especially for long voyages, like those to Europe. It has been often said that when a larger population and more capital came to our Northwest, and productions became

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quadrupled for export, the Columbia River commerce must seek San Francisco in small vessels, and be transferred to larger ones, to be borne to its European markets, or else be transported by railroad to Puget Sound for the same purpose.

San Francisco shippers and merchants nourish this sentiment, and make a strong pressure to control the large and increasing exports of the Columbia River. The most absurd part of the scheme is that the same classes of vessels will transport this produce from the Golden Gate or De Fuca Straits to Europe that now transport it from the Columbia River to Europe. This double shipment—now partly in process—of produce from our ports to San Francisco, and thence to Europe and Asia, is a loss in freight which falls chiefly on our farmers, of $500,000 or $750,000 annually now. It is also a large loss to our business community, and thus to the enterprises which invite and encourage immigration. If we continue to export our raw material for food, wool, hides, iron and lumber, instead of adding home labor to make finished products for the world’s markets, as other communities do, we only get a profit on the mere work it requires to collect these raw materials for the use of laborers in other countries, while we thus exhaust virgin soil and nature’s resources, and rapidly diminish our own capital in building up this sort of commerce. This is bad enough, as starving fields and weed-covered prairies already show. But when we pay our neighbors below a bonus of a half to three quarters of a million dollars annually, for the privilege of letting our goods pass through their port under their California brand, thus discrediting our own productions in the world’s markets, and dishonoring our region and our climate in the view of the intelligent—since we can send off the whole from our own ports cheaper and in better order—we show a degree of folly which will be sure, soon, to bring us shame and greater loss; for every act of folly in business, as well as in morals, surely brings its reward in their own coin.

THE INTERESTS OF ALL CLASSES OF THE COMMUNITY ARE IDENTICAL AND NOT DIVERSE—Some division of sentiment has existed and been fostered, as if a city is a foe to the country, and that the country must watch and defend itself again mercantile frauds and overgrown monopolies. These prejudices confuse trade
by diverting it from its natural channels. They also taint and pervert legislation. We try various methods of relief. At one time we work hard for railroads as the sure means of general prosperity. Next we try schemes of immigration. But the former do not come on call, and the latter find little certainty of profitable business for their welcome, and so may turn back in disappointment and disgust.

**OUR PRESENT NEED**—Both the home born and the stranger want the solution of the commercial problems of the Columbia Valley and its tributaries. Is it, or is it not, an inviting home? Can we and our children, and many thousands and hundreds of thousands more of intelligent and industrious people, abide here, or come and make good homes here? Is all we make and all we bring destined annually to be drained off to pay for imports, or shall a fair part of our income circulate, like healthy blood, through our own body politic? In other words, have we a sure future in our vast Columbia basin, inclosing, as it does, the most of Oregon, Washington and Idaho, and a part of Montana—an area, according to the census, drained by the Columbia River of 250,000 to 300,000 square miles, or four times the area of all the New England States, whose products will drift as naturally to the Western seaboard as its waters flow to the Pacific. We know that the natural resources are as valuable and various to its area as vast and adapted to multiplied industries and mode of living. We know that its climate is health-giving and harvest-giving, having been attested by many of us for thirty years past, without failure.

We learned that immigrants, merchants, mechanics and farmers from Great Britain and France, both the almost exact analogue of our Northwestern Coast in climate and productions, discover the homelike similarity, and take enlarged views of its present and prospective development of resources and settlements. British capital comes here freely and confidently. British fleets rapidly absorb our commerce, and we are glad to see them come. British insurance companies already control the maritime part of this business, and much of that pertaining to fire risks. Already they have reduced the price of marine insurance to our ports to the same rate as to the Port of San Francisco, except the fraction of one-fourth of
one per cent extra charge on wheat shipment. Cargoes of flour and salmon are now insured at the same rates in British offices.

British wool-growers are moving from Australia and New Zealand to Eastern Oregon and Washington as the best country for this business. British woolen, flax, iron and leather manufacturers are sure to follow, and produce goods here, instead of wasting a rich margin of profit in the double transportation of the raw material home and the goods back. Facts and reasoning evince the certainty that the homes of industry, thrift and intelligence must and will be established all through the basin of the Columbia and its tributary valleys.

INTERCHANGE OF PRODUCTS—The union of all citizens, in city and country, to increase the means of cheap and easy intercommunication, in order to set all the wheels of business in motion, and to give all hands work in village shop and on country farm, on land, on river and on bay, will do much to inspire heart and hopes.

Whatever state and national legislation is needed to improve rivers, build railroads or canals, or redeem waste lands and increase the number and value of the homes of the people, by putting a value upon products that will induce production, ought, of course, to be secured by united votes and efforts, instead of being lost by partisan strife or selfish chicanery.

Much has been done already by men entrusted with legislative power. More can be done on land and river. If the cost of inviting commerce to our river be by a merely nominal price of pilotage and towage, at the cost of the State, it might be a saving of three-fourths of what we now waste on double freights and commissions.

If a few hundred thousands of dollars would clear out the shoals from the Columbia, Cowlitz, Chehalis, Willamette, Snake, Clearwater, Yakima, Spokane, Clark’s Fork, and build needed portages, or canals, the profit of one or two harvests would pay the cost, besides inviting thousands of settlers into these vast regions, and bringing those there now out of exile into fellowship with all other sections.
In the wide regions that railroads must do the business of transportation, united effort without delay could soon give us these facilities on a scale equal to local wants and transcontinental needs, freeing us from tribute to distant and hostile corporations.

**PROSPECT OF THE INCREASE OF OUR COMMERCE**—The average annual gain in the report of breadstuffs from the Columbia to all ports, by seasons, from 1868 to 1877, is 38 ½ per cent, counting eight seasons of shipment from the basis of amount reported in 1868-9.

It is reasonable to estimate the addition to the population of the Columbia basin this year at 25,000, a number equal to one-sixth of the present inhabitants. It is fair to count the gain to commerce one-sixth. At this rate the State Board of Pilot Commissioners may be able to report to the next Legislature, in 1878, the arrival of 550 vessels, with a tonnage of 410,000 tons, and an export of 360,000 tons, valued at $14,000,000, as the business of their two official years. The gain this year indicates more instead of less than those figures.

The gain in the Upper Columbia business—as per Oregon Steamship and Navigation Company apparent exhibit of growth, is a large per cent, in two years. Their plans with others promise more rapid and wider means of river commerce. We venture no estimate of the amount, but the drift of 200,000 or more bushels of wheat to the Western ocean per year, from the Upper Columbia, will not surprise those who watched the progress of the plow and the reaper there.

It is hardly needful to say, yet it is wrong to forget, that this problem of our commerce has factors, which enter into every home of the people; into every factory and store; into every social question; into every school and church of our wide-ranging settlements. It touches us daily, along or in the crowd, in the routine of business and on journeys. It inspires hope and shapes our plans. It is worthy of our thought, while its successes command our gratitude.

Confidence in this railroad revives. It is known that the company turned its assets over to the bondholders at the least cost and delay, giving them the full benefit of their mortgage. The act
shows a desire and purpose to complete the road. It stands now in the hands of the new or preferred stockholders—or former bondholders—free from debt, with 550 miles of road finished and furnished with rolling stock, machine shops, depots, and other means of work and progress. The Pacific division has paid all its running expenses, the salaries of its officers, and $30,000 of old debts, without calling for help from the East.

The Eastern division has paid the running expenses and $30,000 or more overplus. The company have also nearly the entire land subsidy for the whole distance completed. With such assets on which to effect new loans, there is hope to raise the funds and extend the road.

Besides these elements there are new factors in the problem. When the Union and Central Pacific were proposed, it was counted a wild scheme to build that long road over a trackless desert. The problem of fuel was not solved. It was not deemed solvable. The supply of water was supposed to depend upon artesian wells. The eminent State geologist of California at that time said: “I know the limited supply of wood and timber on the Sierra Nevadas, and the road must carry this more than a thousand miles for daily use. It is liable to wear out the track and the stock supplying its daily trains with power to run.” His thought or fear was that the transcontinental road could not be a success. Many other intelligent and thoughtful men shared his fears. A graver factor in the problem was, how to get way business, which is known to be the most important element in the success of every railroad, As the road progressed every one of these difficulties were removed. The Rocky Mountain coal fields, along and under the very track of the road, furnished the best of fuel for the present, and for the indefinite demands of the future. Streams and wells supply water abundantly. Wyoming, Utah and Nevada have unfolded marvelous mines of precious metals, and untold riches of agricultural and pastoral lands. The united road pays larger dividends, probably, than any other lines of equal length in the world. Similar factors are already solving some elements of the problem of the Northern Pacific Railroad. Hardly had the Pacific division connected the waters of the Columbia with those of Puget Sound, when the remarkable coal fields of Puyallup, 25
miles from Tacoma, were discovered. The coal has been tested by A. Campbell, Esq., of Portland, and by others in Washington Territory, Oregon, and California, and pronounced by them all equal to the Cumberland and Blossburg coals for all the use of their shops. One of them pronounces it the best for welding steel of any he has ever tried in thirty years’ experience.

President G.F. Whitworth, of the Washington Territory University, has examined the fields, and found the veins very numerous—scores of them—from one foot to three, five, and even seventeen feet of thickness. They are cut through by several mountain streams, which permit a series of self-draining shafts to be run at different levels into every vein, all above the shutes, while these are above the natural railroad cut or bed which the streams have made. The Puyallup Valley—a garden in itself—is level for twenty miles, leaving only from five to eight steeper gradients into the mountains. Several engineers of the Northern Pacific corps have declared the route easy to make, and capable of immense traffic. The outlet for coal into shutes on the bluff at Tacoma permits its shipment without rehandling. Professor Whitworth finds it a choice cooking coal, with a large per cent of fixed carbon, hard, compact, and not easily broken by handling, or disintegrated by the weather. Four hundred and ninety pounds of this coal, as tested by the Portland Gas Works, produced 2,250 feet of superior gas, and 400 pounds of coke. The best test of Nanaimo coal gave 2,000 feet of gas from 500 pounds of coal.

Besides the fact that Tacoma Bay is a safe harbor, inviting the largest vessels and fleets from all parts of the Pacific and of the world, so that every product of the region can at once be put into the currents of commerce, these beds of choicest coal, which are in so great demand for steam and mechanical purposes, will at once assure business at this Northwestern terminus of the road. Good and abundant coal is a factor which will ensure any railroad that terminates on tide water. These coal fields invite the completion of the Northern Pacific Railroad at the earliest possible moment. It will save the immense transportation of Sydney and other foreign coals to our Coast and a growing interior. It will save the great cost of transporting Pennsylvania and Maryland coals to this Coast. It
THE NORTHWEST COAST

will develop the iron industry, in foundries and furnaces, preventing the costly importation and transportation of this product. It will employ artisans and laborers, and build up the homes of an industrious population, and by reaction stimulate the fisheries, the shipbuilding, the agricultural and pastoral pursuits.

Another factor in the problem of the Northern Pacific Railroad is the food supply of this Northern region through which its survey is made. It is a known fact that the most productive and enduring wheat lands of our Continent lie between the Cascades and the Rocky Mountains. They have the largest proportions of the potash and phosphates which nurture the cereals. It has been stated by a well-known geologist that during the six distinctly noted volcanic overflows the ashes, which were carried largely by the prevailing winds eastward into the bays and lakes which formerly occupied the great interior basin, mingled with other sediment to form the deep deposits which now constitute the soils of those valleys and high prairie lands. It is easy to infer that the excess of alkali in spots results from the drainage of this substance from the hills. But the wheat harvests of Walla Walla, Whitman, Umatilla and Baker Counties prove the wonderful fertility of this region. Every year the crops seem to increase in value and amount. The hills and dry sage brush plains have rewarded the cultivator. It is known that every acre touched with water becomes luxuriant with cereals and fruits. The drippings and overflows of that long miners’ ditch constructed by the Chicago Company through Baker County has produced many oases in the hitherto dry plains. It is known that an ocean of aerial moisture floats over these regions from the vast Western ocean. It needs only a cooler to deposit the dews. Every field or blade of grass acts as a cooler.

The fields of winter grain, started by early rains or melting snows, provide the vegetation, which in summer deposits enough of this moisture to perfect their growth until the harvest. The deep plowing loosens the soil so as to absorb the air loaded with moisture, which grows cool enough to leave its moisture about the roots of the plant. Thus the lands that have for ages abounded in the bunch grass, which is now wasting away before the increase of flocks and herds,
can be restored by the plow, and the choice cereals, wheat, oats, barley and corn, with orchards about every farm house.

Thirty-five, forty, and even sixty-five bushels per acre of wheat are said to be frequently harvested in the counties named. Their need is not food, but transportation to market. Their cattle, and sheep, and wheat, and corn abound far beyond all the wants of their present population. It is claimed that two or three of those counties can produce as large a surplus for foreign markets as the whole Willamette Valley. This factor enters into the problem of the Northern Pacific Railroad. It opens a vast business of transportation from the interior to the ocean, and from our forests and coal fields a large return to supply the treeless interior. Every year also gives steadiness and surety to the mining of gold and silver, and other metals, in the Blue Mountains, as well as those of Montana. Unknown resources are as likely to appear along the Northern Pacific Railroad line, in its progress, as along the Union Pacific. The delay of construction has caused the intelligent to study the problem more intently, and to feel sure that home interests demand it more than ever. Worthless regions will have known values when it comes, and the finest visions promise to be realized by it.

FULL TEXT OF THE HOUSE BILL AS REPORTED BY THE COMMITTEE ON PACIFIC RAILROADS—In the House of Representatives, Feb. 5, 1878; read twice, recommitted, and ordered to be printed.

House Record 3066 Report no. 120. A bill to extend the time to construct and complete the Northern Pacific Railroad.

Mr. William W. Rice, from the Committee on Pacific Railroads, reported the following bill:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the grants, rights, privileges, corporate powers, and franchises, including the franchise to be a corporation, conferred upon the Northern Pacific Railroad Company by its charter, and the various joint resolutions of Congress amendatory thereof and supplementary thereto, be,
and the same are hereby confirmed, granted and continued to the said Northern Pacific Railroad Company as now reorganized; and ten years’ time from the passage of this act is hereby granted to said company for the construction and completion of its main line, subject to all the terms and conditions prescribed by said charter and joint resolutions, except as changed by this act; provided, however, and said extension of time is granted upon the following express conditions, namely:

First: That said company shall, within one year after the passage of this act, commence the work of constructing its main line at or near Umatilla, in the State of Oregon, or some suitable point between there and the mouth of the Snake River, as the said company shall determine, and shall complete not less than twenty-five miles of its road Easterly per year thereafter, and shall complete, in addition to the road already completed, at least one hundred miles of its main line within two years after the passage of this act, and at least one hundred miles of said main line each year thereafter, including in each said one hundred miles the twenty-five to be completed eastwardly, as aforesaid.

Second: The main line of said railroad between Portland and a point as far East as Umatilla, in the State of Oregon, shall be located and constructed on the South side of the Columbia River.

Third: Actual settlers on unsurveyed agricultural lands within the limits of the grant to said company, if said lands, when the Government surveys shall be extended over them, shall be found to be embraced in said grant; and actual settlers on any agricultural lands within the limits of said grants, who shall have settled thereon at a distance of one hundred miles or more beyond the completed portion of said road at either end; and actual settlers on any agricultural lands within the limits of said grant remaining unsold at the expiration of eight years from the completion and acceptance of the road opposite thereto; if said last mentioned lands shall be then surveyed by the Government, and if not, then within eight years after the Government surveys shall be extended over the same,
shall be entitled each to purchase from said company one quarter section, or a legal sub-division thereof, on which they have settled, at the price of two dollars and fifty cents per acre, excepting coal and iron lands within the right-of-way of said railroad; provided, however, that this section shall not apply to lands already earned by said company.

SEC. 2. That all the lands heretofore withdrawn for the branch line of said road, be, and the same are hereby restored to the public domain, to be disposed of as other public lands, except for the distance twenty miles North of the portion of said branch now constructed from Tacoma to Wilkeson, in Washington Territory. And the said company shall receive patents for a quantity of land equal to twenty sections per mile on each side of said constructed portion of said branch, such land to be selected from odd-numbered sections on each side of said constructed branch, but on the North side, not farther than twenty miles therefrom; but the said company may select and receive patents for lands to make up the deficiency in said quantity from any of the public lands within the limits of the grant for the main line.

SEC. 3. That where pre-emption or homestead claims were initiated, or private entries or locations were allowed, upon lands embraced in the grant to said company, prior to the receipt of the order of withdrawal at the respective district land offices, the lands embraced in such entry or location shall be patented to the parties entitled to the same, as if said grant had not been made, and, in the case of abandonment by them, shall be open to settlement by pre-emption or homestead only; but the said company shall be entitled to indemnity therefore, as now provided by law.

SEC. 4. That entries remaining unadjusted and suspended in the general land office, on account of an increase in price of the even sections within the limits of said grant, where the same were made or based upon settlement price prior to the receipt of orders of withdrawal of said lands at the district land offices, shall be relieved from such suspension and carried into patent; but nothing
in this act shall be construed to affect existing adjustments, or to authorize the refunding of any moneys received for such lands under existing laws.

SEC. 5. That the said company be, and is hereby authorized to issue its bonds from time to time, to aid in the construction and equipment of its road, and to secure the same by mortgages on the whole or any part or parts of its railroad and property and rights of property of all kinds and descriptions, with the rights, privileges and franchises thereto appertaining, including the franchise to be a corporation; and as proof and notice of their legal execution and effectual delivery, such mortgages shall be filed and recorded in the department of the interior.

SEC. 6. That in case any of the lands heretofore granted by Congress to aid in the construction of said railroad shall become forfeited to the United States, and be restored to the public domain, by reason of the failure of said company to perform the conditions herein set forth, or any of them, the actual settlers on such of said granted lands as shall not have been earned by said company, who shall have settled thereon under the provisions of this act, or by license from said company, shall each have the right to obtain title to such lands, not exceeding one quarter section, under the homestead or pre-emption laws, as if said grant had not been made.

SEC. 7. That when said company shall sell, or contract to sell, or shall convey, except by way of mortgage or deed of trust, to aid in the construction of its railroad, and of said granted lands, the lands so sold, contracted or conveyed, shall be subject to taxation, according to the laws of the State or Territory within which the same may be situated.

SEC. 8. That this act shall not be construed to affect existing property rights, except as hereinbefore expressly provided; and Congress may, at any time, having due regard for the rights of said Northern Pacific Railroad Company, add to, alter, amend, or repeal this act, or the charter and resolutions hereinbefore referred to, and may provide bylaw against unjust discriminations and excessive charges wherever the same shall be made by said company.
SEC. 9. That the said Northern Pacific Railroad Company shall file
with the Secretary of the Interior, within six months from the date
hereof, its assent to, and acceptance of, the provisions of this act,
or be forever debarred from taking or receiving any benefit from or
under the same.

REPORT ACCOMPANYING THE BILL—The Northern Pacific
Railroad Company was incorporated by act of Congress, approved
July 2, 1864.

By section 8 of that act it was required to complete its road by July 4,
1876. Joint resolution of the Senate and House of Representatives,
approved May 7, 1876, extended the time for the completion of the
road two years.

Joint resolution, approved July 1, 1868, and entitled “A joint
resolution extending the time for the completion of the Northern
Pacific Railroad”, amended section 8 of the original act by changing
the time for the completion of the road to July 4, 1877.

The company claim that joint resolution of May 7, 1876 applies
to section 8 of the act of July 2, 1864, as amended by the joint
resolution of July 1, 1868, and, consequently, that its time for
completing the road does not expire until July 4, 1879.

On the other hand, it is claimed that joint resolution of July 1, 1868,
although by its title extending the time for completing the road, in
effect, diminishes that time, and that it really expired at the date
fixed by that resolution, to wit, July 4, 1877.

The Department of the Interior is reported to have adopted the
more liberal construction, and to have assumed that the company
has the longer time for the completion of the road.

Equity and generous dealing seems to justify this conclusion, and,
in view of the impossibility of the completion of the road even
within the longer time, we do not deem it necessary to express an
opinion as to the technical effect of the foregoing resolutions. At all
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events, further time must be granted, or this great enterprise, as at presented organized, must be abandoned.

Up to 1873, the company was in default. It has constructed its main line to Bismarck, in the Territory of Dakota, a distance of 450 miles, and on the Pacific Coast, from Kalama, on the Columbia River, northerly to Tacoma, on Puget Sound, a distance of 105 miles. The financial disasters of 1873 suspended its operations, frustrated its resources and forced it into bankruptcy.

By joint resolution, approved May 31, 1870, Congress authorized the company to issue its bonds, and to secure them by a mortgage of its property. Under this authority the company had issued bonds to the amount of $29,199,400, and has secured the same by a first mortgage on all its property, including its franchises.

In 1875 this mortgage, the company being in default, was foreclosed, and all the property of the company passed into the hands of a committee appointed by the bondholders, for their benefit.

In the summer of 1875 the bondholders, all concurring, either actively or tacitly, adopted a plan for reorganizing the company; preferred stock was issued in exchange for the bonds, and in September of that year a Board of Directors was chosen, which was put in possession of the property of the old company covered by the mortgage.

The stockholders in the company thus reorganized, are between eight and nine thousand in number, and are scattered through more than half the States of the Union. Their money made the property they now seek to save and enhance. They ask no subsidy, no additional grant or privilege, only an extension of time in which to complete the enterprise in which their money is invested, and which has been delayed and hindered by causes over which they had no control, and which occurred by no fault or omission of theirs.

The question for the consideration of the committee is, whether the public interests require the completion of this road, on the route and terms provided in the act of 1864, in the same, or in a
greater, degree than at the time of its passage; and, if so, whether additional time should be granted to the company now engaged in the enterprise for its completion.

The arguments, pro and con, on the subject of National encouragement to transcontinental railroads are too familiar to require recapitulation. This discussion was ably and stoutly maintained on either side by statesmen whose intellectual strength and comprehension of the subject have left little or nothing to be added. The result was in favor of promoting, by public aid, the construction of Northern, Central and Southern roads from the Mississippi Valley to the Pacific Ocean.

In pursuance of this policy, thirteen years ago, 47,000,000 acres of public land were granted for the construction of the Northern road. Its route lies through a fertile country, rich in all physical characteristics necessary for the support of a vast and prosperous population. Its grades are easier than on most of the roads in the Eastern States, and where the line diverges from a straight course, to avoid impossible mountain ranges, it opens to settlement the fertile valleys of the rivers whose banks it follows.

Settlers have proceeded in the faith of its construction, and prosperous Territories, all along its route, are only waiting for the additional population, which its completion would speedily bring, to claim their places among the States.

The committee are of opinion that a due regard to the interests of these Territories, and of the hardy pioneers who have settled them, demands liberal action on the part of Congress to complete this road, to which, in a measure, the public faith was pledged; that the lands originally granted are held, as it were, in trust for the benefit of those settlers; and that, even if, strictissimi juris, advantage might be taken of the failure to meet the requirements of the charter in point of time, still, good policy, if not good faith, requires the waiver of that advantage and a reasonable extension of time to secure the accomplishment of this great national work.
It further appears that the present company is composed of those who have contributed whatever money has thus far gone into the work, and that nobody else proposes to undertake it.

It is operating at the present time nearly six hundred miles of road, in good condition and under excellent management.

<table>
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<tr>
<th>Year</th>
<th>Net Earnings</th>
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<td>1874</td>
<td>$22,876.49</td>
</tr>
<tr>
<td>1875</td>
<td>$152,140.00</td>
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<tr>
<td>1876</td>
<td>$202,062.31</td>
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<tr>
<td>1877</td>
<td>$392,698.47</td>
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Its property has actually cost about $20,000,000 in money. It is free from debt, and its directors are confident that they can complete the road upon the credit of this property and the land grant, if sufficient time is allowed them. The distance from Bismarck to the Columbia River is 1,205 miles, and the construction of the road for that distance gives a continuous route by rail and water from the Lakes to the Pacific Ocean.

The committee are of the opinion that, under the circumstances, the company is entitled to the favorable consideration of Congress, and that there is reasonable assurance that it will be able to finish the work during the next ten years.

By the original charter of the Northern Pacific Company, it was authorized to construct its road by two routes through Washington Territory, the upper being designated as the main line, and the lower as the branch line. By subsequent acts, these designations have been reversed, so that its main line now tends southwardly from Lake Pend d'Oreille to the Columbia River, and thence, through the valley of that river, to Portland, Oregon.

It is the desire of Oregon that the last division of the road should be constructed on the southerly side of the Columbia River, and the committee have so provided in the bill.

The company has changed the location of the branch line to one more southerly, and it is doubtful whether even the new location is practicable, owing to the difficulty of crossing the Cascade Moun-
tains, which divide the Territory, running northerly and southerly across almost its entire width. The representatives of Washington Territory oppose the grant for the construction of this branch, as keeping the lands tied up against settlement, and the committee, in deference to their wishes, report in favor of the restoration of the land, withdrawn on that branch, to the public domain, excepting about 793,000 acres, earned by construction of the road extending thirty-one miles easterly from Tacoma.

By this change of location more than 6,000,000 acres of land in Washington Territory, covered by the original locations, will be restored to the public domain.

A proposition was considered by the committee to declare forfeited by the Northern Pacific Company all lands in Washington Territory withdrawn for its branch line, and to grant an equal amount to the Portland, Salt Lake, and South Pass Company, a corporation of the State of Oregon, organized to construct a railroad from Portland, through the Columbia Valley, to Umatilla, and thence, by a southerly route, through eastern Oregon, from 450 miles, to the Union Pacific and Central Pacific at Ogden.

This seems to your committee to be a scheme to obtain from Congress an endowment for a new, independent road, and one which, if constructed, would be a rival road to that of the Northern Pacific.

These reasons, without passing upon its merits, seem sufficient to the committee to prevent its incorporation in a bill to promote and encourage the completion of the Northern Pacific Road, and they leave the lands restored to the public domain, by the discontinuance of the branch, unencumbered by any new appropriation.

While reporting in favor of extending the time within which the company may finish their road, the committee are greatly impressed by the necessity of withdrawing, as far as possible, all obstacles to the settlement of the lands covered by the grants to this company.

The marketable value of the lands will, of course, be enhanced as the work of construction progresses, and the company should be
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allowed some control of that enhancement, and some advantages therefrom.

At the same time, the public advantage to be derived from the early settlement of these lands should not be sacrificed.

The committee have, therefore, enlarged the rights and opportunities of actual settlers, while reserving to the company the control over the land already earned on the line of the finished road, and over the surveyed lands within the limits of one hundred miles from the progress of its construction.

All of which is respectfully submitted,

VIEWS OF THE MINORITY—To accompany the report of the Committee on the Pacific Railroad, on the bill extending the time to construction and complete the Northern Pacific Railroad:

The undersigned disagree to the report of the committee, and oppose the passage of a bill for a renewal of the grant of lands made by it, which is in substance and principle a new grant, to which we are opposed. Such grants are not now warranted in the public interest, and are condemned by the public judgment.

WM.R. MORRISON
J.K. LUTTRELL
G.M. LANDERS

Two telegrams and their resolutions from one of the directors, and the word of another, who was at the meeting April 25th, declare that they cannot build the road under the provisions of the bill, which passed the Senate April 23rd. It has been hoped that the House would amend this bill, and that the Senate would concur, and thus assure the road.

But this hope is fallacious. This bill cannot be reached in the House, and the proper House bill, if reached, is likely to be complicated and defeated by this Senate bill. But the point of chief trouble is that for four months the original Senate bill was held in the hands
of their Railroad Committee in order to enforce restrictions which the company could not accept. Mr. Mitchell said in the discussion of this bill in the Senate, April 22\textsuperscript{nd}: “And because I have during the last four months contended with all the zeal and energy I could command for terms that would induce, or, if you please, compel, the Northern Pacific Railroad Company to concede in this proposed legislation conditions which, as one of the representatives of the State of Oregon and the great Pacific Northwest, I regarded as but just to that section of our common country, and which conditions I did not then, and do not now, regard as materially embarrassing to that company, etc. Mr. Mitchell assumes with obvious propriety to represent in this question “the State of Oregon,” “the great Pacific Northwest,” and “that section of our common country. He was thus holden to his peers in the Senate to the argument upon that high and comprehensive trust. His just and eloquent exordium upon this “great life artery of the Continent,” was calculated to inspire further confidence in his zeal and his purpose to secure the early completion of the road.

The progress of the discussion shows that Senators were ready to aid the enterprise.

RESTRICTIONS—What conditions did he, as Chairman of the Railroad Committee, try to enforce upon the Northern Pacific Railroad during four long months? On page 5 of his speeches, April 22\textsuperscript{nd} and 23\textsuperscript{rd}, he says:

First—“Such provision as would compel at an early day the building of so much of their road as would be necessary to open up the monopoly-bound Columbia River to free navigation.”

Mr. Mitchell professes friendship for the Northern Pacific Railroad, as a National transcontinental road, shorter and of better grades than others; a road needed for interior commerce, needed to check the monopoly of the Union and Central Pacific Companies; needed by the struggling people of the Pacific States and Territories; needed for the commerce between Asia and Polynesia; needed for the sure growth of the great Northwest, etc. He sees and declares the necessity of this National road as others see it. He is not in any fog
at this point. He claims to represent its broad interests. He knows the original purpose of the Government in the survey of this route and its plan in the large grant of land to induce capital to build the road. He knows that $30,000,000 have been invested in it by ten thousand honest, confiding men and women, from twenty States, on their faith in this Government subsidy. He knows that a general bankruptcy, for which they were not responsible, has compelled those creditors to take the property of the unfinished road and become its stockholders. He knows they are compelled to ask for more time to complete the road, and that this is all they ask. He knows that they must do it to secure more funds. He knows that the measure as stated by Mr. Lamar—page 14—“Is demanded alike by justice, propriety and policy,” and that, as Mr. Lamar says, “there is objection to loading this bill with other conditions than those which provide for a simple extension of relief.”

He knows that their claim for more time was equitable, and that their investment on the previous pledges of the Government had given them vested rights in the whole original land grant for the road.

He knows that no act of these creditors has vitiated these vested rights, and that Congress cannot justly, and that probably it has no disposition to compel these people who have received little or no interest on their investment, to make a new and harder bargain.

He knows that they have never surrendered their franchises; that no quo warranto writ has been issued against them; and that by common law “the privileges and immunities, the estates and possessions of the corporation, when once vested in them, will be forever vested, without any new conveyance to new successions.”

He knows that the pioneer settlers from the great lakes to the Pacific Ocean, along this Northern route, have also made large investments on the pledges of the National Government in their original contract with the Northern Pacific Railroad Company.

He knows that these investments of the hardy, self-sacrificing founders of new Territories and States have in equity rights in the nature of contracts, which, on their part, are in progress of
fulfillment, and that they wait with intense anxiety along the whole line for the Government to fulfill its part.

He knows that the whole Nation will gain largely by this investment of its lands, which now have no value, but which will at once sell for cash if the road is assured. He knows that the Government expenses along the route will diminish, and Government receipts will increase millions annually, if the road is completed.

He knows that many millions ($50,000,000 or $60,000,000) must be borrowed by the Northern Pacific Railroad to proceed to finish their enterprise, and that capitalists in our own country, and more so now in Europe, are shy of American railroad bonds, and that it will be hard to place bonds of first-class railroads even in any market of the world; and that it will be impossible to place the bonds of any railroad that is cut down in its land franchises, and not allowed to sell its own lands—when earned—at market rates, and those lands are shaded by the indefinite claims of others.

Mr. Mitchell has a clear mind and sharp sight of the main issue in question.

**CASH TO COMPLETE THE ROAD THE FIRST GREAT NEED**—He has been aware, and he is now conscious, as appears by his own argument, that the chief object of the company is to get funds to complete the road. For this, they ask an extension of time on the original contract. The bankers to whom they apply demand time to complete the enterprise, and put it in condition to par interest before they will open their vaults and issue cash on the bond.

**LOSSES BY DELAY**—Mr. Mitchell knows that the pioneers in Dakota, Montana, Idaho, Washington and Oregon suffer great inconvenience and loss by every month’s delay of the road, and that its completion will add one hundred to three hundred per cent to the cash value of every acre of land in these States. The Union and Central Pacific Railroads have, as per statistics, added from one to four hundred per cent to the value of lands in States traversed by them. “The sales of the Union Pacific Railroad land grant, to December 31, 1875, were 1,193,942 acres, for $5,336,044, at the
average price of $4.47 per acre. An equal value, surely, was given to the same number of acres on the even sections retained by the government. The average price per acre of lands granted to and sold by the Central Pacific Railroad Company was $4.58 to January 30, 1875." Many of these lands had no cash value before the railroad was built.

**LOSSES BY RESTRICTING THE NORTHERN PACIFIC RAILROAD**—Oregon, Washington, Idaho, Montana and Dakota contain 546,271 square miles, which amount to 349,613,440 acres. Suppose they are worth one dollar per acre now, the Northern Pacific Railroad and its tributaries, which would traverse and tap them in all directions, would add one dollar to every acre, or three hundred and fifty millions to the whole.

The average value added by the other transcontinental line is four times as much, which, in this case, would amount to fourteen hundred millions. No one doubts that the Northern Pacific Railroad would add this sum to the property, if not the land, of these States, within five years after its completion.

**PROOF**—The assessed value of property in California alone rose from over $180,000,000, in 1864-5, when the Central Pacific Railroad was begun, to $237,483,175 in 1869, when the overland railroad was done. The assessed value in 1874-5, five years later, was $611,495,000, a gain of $374,012,000, or about 150 per cent, in five year, or 34.6 per cent per year.

If one State gained in assessed property value three hundred and seventy-four millions of dollars in five years after the completion of the overland road to it, and fifty-seven million in the previous five years, while waiting for its completion, it is fair to assume that the five Northern States, if traversed by the Northern Pacific Railroad, which contain three times the area of California, will gain three times that sum of assessed property value, which would amount to twelve hundred and ninety-three millions of dollars. This sum of assessed valuation falls short of the previously estimated land or property valuation only one hundred millions. We know that
assessments fall below real values more than one dollar in fourteen, which is the rate in this case.

**THE PUBLIC KNOWLEDGE OF THESE FACTS**—Senator Mitchell has reason to know, or keep in mind, all these facts, as the watchdog and sworn guardian of these great National interests, and the special representative, according to his own confession, of this “great Pacific Northwest.”

If, in the burden of his other duties, he has not had time to make these simple calculations, or even to read and note the published statements of them, yet the great and intensely anxious public, whose eye has been fixed on him as their representative in his place, at the head of the Senate Railroad Committee, has read them again and again, and weighed and measured them, having confidence in their Senator, have invested their homes and their money on the assurance of this overland road.

**THE PEOPLE ONLY WANT WHAT IS JUST AND FAIR**—As reasonable men, the people along this whole route would far rather grant an extension of time to the company on the original franchise and contract, as the bill for extension of time passed the Senate, in the session of 1876-1877—Senator Mitchell, himself, then favoring it than to lose this overland road, or than hinder it by restrictions to kill it. Reasonable settlers prefer to buy their lands of the company, at their market rates, varying with their quality and location, rather than get those lands as homesteads and thus be deprived of this transcontinental road. They can afford to buy and pay for the lands with the road. They cannot afford to take them and hold them as homesteads far on the route without the road. In this case most of the region must remain pasture ground.

**THE ISSUE**—In the face of all these facts and the collateral interests of the vast section of our common country which he represents, Senator Mitchell, as he says, tried for four months, in his place as the head of the Railroad Committee, “to compel the Northern Pacific Railroad to open up the monopoly-bound Columbia River to free navigation.”
In other words, they must agree to borrow $400,000, or perhaps $900,000, as engineers estimate, mortgaging their completed road, in order to build twenty miles of portage road to compete with a local yet rich portage transportation company. In other words, they must lose the entire grant of the overland road unless they will fight what he styles a local monopoly. Mr. Mitchell admits, page 9, that “there are obstructions to navigation at these two portages, which cannot be overcome except by the construction of a canal and locks, and that the General Government has commenced those at the Cascades, though a work of this character will require considerable time.” He knows that the Oregon Steamship Navigation Company can afford to take freight across their portages free, or so low as to break an opposition railroad portage company that has no continuous railroad line from tide water to the interior. He may know that the company cannot borrow money on this end, along the Columbia River, until their railroad connects this river with the Missouri. Yet he insists on forcing the Northern Pacific Railroad into conflict with a rich corporation.

They must fight with borrowed money and run the risk of losing both interest and principal. They must do it while depending on that hostile company to do the freighting for their own main line eastward from the Columbia River. Senator Mitchell, as he confesses, sought to force the local issue from December to April upon the Northern Pacific Railroad Company, which wasted time, and made capitalists more shy of the investment in their bonds, and so far defeated this great National overland road. He knew that if they could not afford to borrow money to build and run these opposition portage railroads, no other company could do it, and that the only possible way for the free navigation of the Columbia was by canal and locks.

SECOND ISSUE—By constraint he admits that after April 1st, he yielded his restriction of uniting the Salt Lake branch with the Northern Pacific Railroad, yet, insisted on complicating the two roads as a common road. Sections 8 and 9, with their numerous provisos, darken the prospects still more in the way of securing funds to complete the enterprise.
THE ESSENTIAL THINGS TO THE NORTHERN PACIFIC RAILROAD—A fixed purpose to have this road built, demanded that the bill be as Senator Lamar said (page 14) without ‘other conditions than those which provide for a simple extension of relief.’ This was Senator Morrill’s view (page 24). He thought the loss of eleven million acres a burden for the road, and the combination of roads another burden. Success required that every provision of the bill be made after its review and acceptance by vote of the directors. Success required the report early in the session.

Defeat of the enterprise is the logical result of months of delay; of lack of harmony with the Board of Directors; of new restrictions upon the grant and fruitless local hardships upon its construction. These have triggered it, and probably switched it off the track, entailing a deep disappointment and loss upon multitudes, and gain upon only a few.

Senator Mitchell had the courtesy to send me a copy of his speeches, April 22nd and 23rd, upon this Senate bill, and I have felt at liberty to note what have seemed to me the fatal restrictions upon the enterprise. Sharing the pain of this defeat with large numbers of the pioneers of Oregon and Washington, who have waited long in hope of this overland road, I submit these views, with the more cheerful ones of the past few months, to the public.

THE LABOR MARKET—The bankruptcies, from 1873 to 1878, stopped many home industries and crippled others. Laborers have been thrown out of employments and been compelled to use up their savings. Many, out of work and out of funds, have suffered. Families have suddenly been reduced to want, and some to beggary or starvation. No wonder that industrious men ask for work. They may not all see that the Civil War compelled the issue of two thousand millions of Government notes and bonds, which were called money, and taken as coin—though at a discount—and that this great increase of what seemed to be money, caused prices of goods, food, lands, flocks, herds, manufactories and ships to go up; which, in turn, bred excessive speculation, that has ended in bankruptcies and the stopping of work. Such has been the fact. He
may not see that these things always follow great wars. A few get rich, but the multitudes get poor by war. Yet, our country is rich in resources. It recovers rapidly. The Government can and will repay its debts.

**LABORERS HAVE JUST CLAIMS**—Government owes a debt to its own laborers. If it was a duty to protect the Nation for the sake of the people, it is no less a duty to protect the people for the sake of the Nation. If it is fair—and it is—to pay the Government bonds, according to contract, whether held at home or abroad, it is also fair to help the industries of the people, who must earn the money by their toil to redeem those bonds.

**LEGISLATION APT TO BE PARTIAL INSTEAD OF NATIONAL**—After the war the re-construction raised new and grave questions, difficult of solution. The passions of the hour gave occasion for ambitious partisans to mount the rostrum, and secure the confidence and suffrages of the people on the specious pleas of overflowing patriotism. When in power the partisan sacrifices the public interest to his private ambition.

While the State and National Legislatures have done many noble things to harmonize conflicting opinions and interests since the war, and all branches of Government have deservedly won the gratitude of thoughtful citizens, yet, they are open to criticism for neglecting to use the means within the province of legislation to revive the industries of the people.

**EFFECTIVE LEGISLATION**—A most effective system of finance is to open the way for the miner, the artisan, and the manufacturer to earn the money to pay the expenses and debts of the Government. Instead of this, little has been done for five years by Congress to start the iron furnaces of Pennsylvania, Ohio, Tennessee and Missouri, or develop their coal mines, or to restore the workmen to the shipyards of Maine and Massachusetts, or open new ones in Oregon and Washington. Upon the farmers and stock raisers, and cotton-planters, and lumbermen, and oil producers, has been laid the chief burden to furnish their raw products for foreign commerce, most of
A Public Spirit

which has been carried in foreign ships, and used to pay the supplies
and the interest of our debt abroad.

It is true that some manufacturers, of late, under the pressure of
sharp competition, have won their way into foreign markets with
their cotton fabrics, their machinery, their agricultural implements
and military equipments, and have turned the balance of trade in
our favor. But these triumphs of trade have not been gained by
the aid of Congress, but in spite of its party strifes and adverse or
uncertain legislation. The true policy in the United States, as in
England and in France, is to furnish manufactured goods, as well
as food, to Nations, and to carry these goods abroad and find or
develop markets for them.

England holds the trade of China, South America, Africa, Southern
Asia, and most of Polynesia for her manufactured goods.

The leading men of the South today assure us that “they are looking
for its future welfare, not to politics, but to industry.” A delegation
of them, headed by Senator Gordon, recently visited Boston to learn
more about the manufactures of New England. Some time ago the
cities of Charleston, Savannah, New Orleans, Galveston and others
designated General Gordon to represent the industrial interests of
the South in Europe, during the coming season, by presenting to
capitalists and others, who might be interested, the facts in regard
to its natural resources, with a view to investments for their better
cultivation and development.

“Speaking of the extension of foreign trade,” says the Boston
Advertiser, “especially with the countries nearest to us, it is always
to be remembered that the first condition of success is a prosperous
and vigorous home industry.”

HOME INDUSTRIES, NOT PARTISAN POLITICS, OF MOST
VALUE—The strife between the North and the South and the East
and the West is to be not which shall produce the most of the raw
materials to be manufactured and sold by other Nations, but which
shall imitate England in employing the labor of the people, and thus
reap the profits on both raw materials and finished goods. New and
quick routes of commerce must be opened and new markets for goods developed.

The Pacific States front the shores of populous Asia and Australia. We have the advantage of space and time, and immense but partially used resources to ultimately run a large share of that commerce.

**THE THREE OVERLAND RAILROADS NEEDED FOR THIS PURPOSE**—The eminent statesmen who projected them in 1853, and secured the act of Congress to make the surveys, foresaw their importance. The acts of incorporation of the Northern and Southern, requiring that American iron be used in their construction, aimed to employ American labor and promote our industries.

Those unfinished roads wait for Congress—in one case to merely extend the time of completion, and in the other to grant about one-sixth the aid extended to the Central and Union Pacific Railroads.

**AMOUNT OF LABOR AT ONCE EMPLOYED**—In the mere construction of the present transcontinental railroad “A total force of 20,000 to 25,000 workmen all along the lines, and 5,000 to 6,000 teams had been engaged in grading and laying out the track or getting out stone and timber. From 500 to 600 tons of materials were forwarded daily from either end of the lines. The Sierra Nevadas suddenly became alive with wood choppers, and at one place on the Truckee River twenty-five sawmills went into operation in one week. Upon one railroad 70 to 100 locomotives were in use at one time, constantly bringing materials and supplies. At one time there were 30 vessels *en route* from New York, via Cape Horn, with iron, locomotives, rails and rolling stock, destined for the Central Pacific Railroad.

The labor employed in building these roads has opened vastly larger fields of labor on the routes and at both ends. Labor employed increases its own opportunities. The completion of the Northern Pacific Railroad would employ many thousands of workmen on the routes, and as many thousands more of artisans in the mines and shops. All industries would revive and would increase.
The Texas Pacific would produce the same effects. Both are legitimate, reasonable enterprises, sure to enrich the builders, the States and the Nation, and to expand foreign trade, as they would build up our own industries.

The success of one line is proof of that of the other two, running at such distances North and South.

**THE FOLLY OF RESTRICTIONS**—Who can tell the evil of hindering the completion of either of these roads? We feel most keenly the defeat of the Northern Pacific Railroad.

Workingmen feel it in their pockets, at their tables, in their lack of power to provide comforts for their families. Pioneers have been waiting twenty years for these overland roads, and politicians, by their acts, coolly tell them that the time has not come for these roads to be built. Our Nation runs behind in the race with those who have fewer resources. Our artisans who ask for work are compelled to linger on street corners to get small jobs for the support of life. Shops are closed and fires die in the furnaces because, forsooth, Legislators spend their time in planning for new elections.

Shame on American statesmanship! Other nations mock us for our folly. Holding the key for the grandest progress across the Continent and on both oceans, the partisan neither uses it for the relief of his suffering countrymen nor for the honor of his country!

**POSSIBLE FORCES TO SECURE THE NORTHERN PACIFIC RAILROAD EXTENSION BILL IN THE NEXT SESSION OR IN THE NEXT CONGRESS**—The defeat of the Northern Pacific Railroad bill this session, says the Sacramento Record-Union, “diminishes its chances of becoming a law at the next session.” This would be true with the same conditions. But failure in one mode of a right cause turns true friends to another mode. Grant, for the sake of argument, that the Union Pacific and Central Pacific Railroad will try to stop every rival transcontinental railroad North or South of their line, or buy its controlling stock. If it wins its way, then the first step is to measure the force of that combined opposition. It is folly to blink such a fact. It is wisdom to count its full measure. If it is a
vested capital of $200,000,000, with a net income of $20,000,000—two hundred millions of dollars, with an annual income of twenty millions of dollars—opposing the Northern Pacific Railroad and the Texas Pacific Railroad, the friends of the two rival roads ought to keep that fact in sight.

**LARGEST FORCES CONFRONT THE VAST CAPITAL**—This wealth created and represented by one railroad is only a sign of what can be created by one or two or three other lines across the Continent. One store in a good location invites two or three or five others. They come and win their share of the trade and profits, and thus the village grows into a city. Suppose the first store fights the second and the two combine against the third, the contest will end in planting all three stores. If the present overland railroad develops business and pays better every year—which is the known fact—then the rival roads can, and will be built. The force of the existing line, however rich and mighty, points to a twofold or threefold force to be developed in the other lines. We can count that force at twice twelve hundred millions, that will be the real property in the market in ten years after the other two lines are built.

**CASH VALUE OF ONE OVERLAND ROAD**—The capital of the Union Pacific Railroad, in 1876, was $116,220,212. That of the Central Pacific Railroad, in 1876, was $140,440,188. Amount of both, $256,660,400.

The assessed value of property in California alone, in 1874-5, was $611,495,197.

Its value during five years after the overland railroad was done had risen over three hundred and seventy-four millions of dollars. This testimony from the assessors’ books is a good affidavit in the case. One hundred and fifty per cent gain in assessed property in California, in five years after the overland was completed, is an argument that will move capitalists to enter upon like enterprises. Thirty-one and three-fifths per cent per year will rouse the bankers, small and large, in our country and in Europe, to again secure the prize. Every man’s acre shares the gain. Small landholders in California are made rich by the overland railroad, who were
poor before its completion. Large landholders there have gained the wealth of princes, without effort on their part, simply by the completion of that railroad. San Francisco has more than doubled its population and its property valuation at the same cause. Sacramento has lifted itself up out of the swamps, dyked itself with high and solid lines of embankment against floods, and laid itself out with inviting homes for its increasing population of industrious artisans and merchants from the impulse given by the completion of this road. San Jose, Santa Cruz, Los Angeles, Marysville, Chico, and many other cities thrive and grow from the life imparted by this overland road and its branches.

**GAIN TO STATES AND TERRITORIES**—Other States, through which this road passes, have gained a large per cent by its completion. They have received millions from this enterprise without investing one dollar in it.

The productions of Utah, mineral, agricultural and miscellaneous, in 1875, amounted to $17,314,337. The increase of land cultivated in 1875, over 1874, was 60,250 acres. The Surveyor General reported lands sold in the year 1875, 49,956 acres.

The imports and exports of Utah, during 1875, were $9,150,851. The large business of that interior Territory is due almost entirely to the completion of the overland railroad.

Such facts apply to all the States and Territories on the line, and adjacent to the line, of the completed road. Nebraska, Kansas, Iowa and Missouri and Illinois have received like increase of property values. The unsold millions of acres of Government land on the line, and for hundreds of miles on either side have been made salable by that finished road.

**PRODUCTS MADE AVAILABLE**—The miscellaneous products of Utah consist of pig iron, iron ore, coke, fire clay, granite, ice, wool, tallow, hides, pelts, which, in 1875, amounted to 3,276,499 tons, worth $860,384. They represent similar classes of products developed in other States and Territories by the Union Pacific and Central Pacific Railroads.
These freights were moved and these goods were made marketable by means of the overland railroad and its connections. Such an interior commerce was impossible until that highway was opened. Such productions are impossible from the vast interior of our Continent without such transcontinental roads.

**UTAH MINERAL PRODUCTS, 1875**

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base bullion, tons</td>
<td>16,330</td>
<td>$4,082,500</td>
</tr>
<tr>
<td>Lead bullion, tons</td>
<td>44</td>
<td>4,400</td>
</tr>
<tr>
<td>Silver lead ore, tons</td>
<td>312</td>
<td>532,000</td>
</tr>
<tr>
<td>Copper bullion, tons</td>
<td>349</td>
<td>87,949</td>
</tr>
<tr>
<td>Silver bars</td>
<td></td>
<td>35,800</td>
</tr>
<tr>
<td>Gold dust</td>
<td></td>
<td>750,000</td>
</tr>
<tr>
<td>Ore on dumps at mine, smelters' tons</td>
<td>10,000</td>
<td></td>
</tr>
<tr>
<td>Tons</td>
<td>27,319</td>
<td>$6,145,21</td>
</tr>
</tbody>
</table>

These mineral values were, in fact, mostly created by the railroad, which transports the crude ores and base bullions to the smelters and then to market. The ores of Idaho, Montana, Dakota, Arizona and New Mexico lie buried and useless, waiting for the railroad cars and engines to put them into the life currents of business.

**UTAH MANUFACTURES IN 1875**

<table>
<thead>
<tr>
<th>Product</th>
<th>Quantity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroad tie, 200,000 at 50c.</td>
<td></td>
<td>$100,000</td>
</tr>
<tr>
<td>Lumber, M 8,000 at $45</td>
<td></td>
<td>360,000</td>
</tr>
<tr>
<td>Founder works, boiler, etc.</td>
<td></td>
<td>175,000</td>
</tr>
<tr>
<td>Boots and shoes</td>
<td></td>
<td>75,000</td>
</tr>
<tr>
<td>Leather</td>
<td></td>
<td>5,000</td>
</tr>
<tr>
<td>Lime, bushels, 100,000 at 40c</td>
<td></td>
<td>40,000</td>
</tr>
<tr>
<td>Soap</td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>Flour, pounds, 40,000,000 at 3c</td>
<td></td>
<td>1,200,000</td>
</tr>
<tr>
<td>Charcoal, bushels, 400,000 at 22c</td>
<td></td>
<td>88,000</td>
</tr>
</tbody>
</table>
Fire brick, M 500 at 80c  40,000
Building brick, 155,000 at 10c  155,000
Ale, porter and beer barrels, 15,914 at 15c  238,710
Cigars, M 375 at $65  24,375
Woolen goods  300,000
Total  $2,803,985

These products were mostly created by the influence of the overland railroad. They represent like products in ten other interior States and Territories, which must depend mostly on transcontinental railroads for their development. Of these seventeen millions of Utah productions in 1875, it is fair to set ten millions as the effect of the overland railroad. Multiply that gain by ten other such States and you have one hundred millions of yearly products waiting for such railroads.

The rise in the value of lands, and other real property, exceeds three hundred per cent, in ten years, as per the census tables in California. Count the gain one dollar per acre in Oregon, Washington, Idaho, Montana, Dakota, and the proposed Territory of Lincoln, as the result of the completed Northern Pacific Railroad, and count it as much in Western Texas, New Mexico and Arizona, in case of the completed Texas and Southern Pacific Railroad—the whole making an area of five hundred million acres—and that sum will at once be added to the permanent value of those states and of the Nation.

Unless both roads are built, those values cannot be created. This argument is effective now. In view of it the Central Pacific Railroad has pushed the construction of the Southern Pacific Railroad.

The Southern Pacific Railroad has

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authorized capital stock</td>
<td>$90,000,000</td>
</tr>
<tr>
<td>First mortgage bonds authorized</td>
<td>46,000,000</td>
</tr>
<tr>
<td>Twelve million acres land grant, valued at $2.50 per acre</td>
<td>30,000,000</td>
</tr>
<tr>
<td>Total</td>
<td>166,000,000</td>
</tr>
</tbody>
</table>
This immense preparation and outlay imply faith in a completed Southern overland railroad. The 500 miles built from San Francisco to Fort Yuma, on the Colorado, on the Western end, and about 450 miles Westward through Texas on the Eastern end, are proofs of a set purpose to complete that entire line. The strife of the two companies to secure special grants and advantages from Congress adds the evidence of their intense desire to win the greatest benefits from the enterprise. In fact, that transcontinental railroad has been a foregone conclusion in the minds of thinking observers of the facts.

THE SIGNS OF HOPE FOR THE NORTHERN PACIFIC RAILROAD—Its defeat in Congress, this year, was evidently due to its restrictions. But the public in the great Northwest, from the lakes to the Pacific, has become aroused to its importance and its danger. The press of Chicago and New York is awake on the subject. The plottings of its foes, in and out of Congress, are watched and exposed. The merits of its claims and the injustice of neglecting or denying them, are seen and felt by larger numbers in the House and Senate. Business men and capitalists in city and country in the North, and many in the South, from the Atlantic to the Pacific, are believed to favor the enterprise as an act of justice to its creditors and of necessity to the unity and welfare of the whole country.

Its certainty and value to Oregon are assured by the present narrow gauge railroads built and in process, and the plan of construction to transport the products of the smaller valleys of the interior Columbia basin to the river. These branch lines anticipate not only water carriage to the sea, but a trunk line of railroad to tide water. Otherwise, they would be idle three or four months every year while the upper Columbia is blocked in ice. Every railroad branch system implies a trunk line.

A CLEAR SIGN—The increase of business on its 600 miles of road; the quick sales of its lands in Dakota and Minnesota; the growth of settlements along its proposed route; the proofs of its vast resources of choice coal, lime and iron mines, and timber forests on and near Puget Sound, besides its agricultural lands, furnish evidence that it will pay expenses and the interest on the capital needed to finish it.
ITS NEED—More than all, it needs friends from Oregon and Washington in the House and Senate. Faith, hope, courage and diligence in a man who sees and feels its absolute necessity to our region can win the case. An open, earnest, broad-minded hearty plea in private and public, with untiring zeal, will secure the simple extension of time to the Northern Pacific Railroad Company to finish their road. Divided counsels, partisan efforts and doubtful restrictions, will defeat it in the future as in the past.

The late Oregon election hinged upon this question. Oregon has instructed her Representatives in the Legislature to send her ablest, truest, and most faithful citizen to the Senate, to work for the completion of the Northern Pacific Railroad as a National enterprise; and as an act of justice to the 10,000 creditors, who invested $30,000,000 in its good faith eight years ago, and who have received no interest on their investment, as an absolute necessity to the welfare of this great Northwest, and to thousands of hardy pioneer settlers, who have, with faith in the Government pledges to the road, invested themselves and their property in homes on this exposed frontier, and as a most efficient means of protection from Indian wars along this Northern belt of our country. The voice and vote of Oregon emphasize every one of these reasons at this moment.

THE BASIN OF THE COLUMBIA—The upper country gives signs of becoming a vast area of grain fields. The stock ranges, rich in bunch grass, are fast changing into richer fields of wheat, which check the hills and valleys like a carpet. It is a marvel that the high hills produce all the cereals as abundantly as the plains. Its solution is due to a two-fold fact. First, the soil of this whole interior of high prairies was once the bed of a system of lakes, as appears from the lectures of Professor Condon, and illustrated by many fossils of former lacustrine and tropical life found embedded therein. It is also attested by the wonderful system of drainage carried on for ages by the Columbia River and its affluents. Those waters have not only cleaved dykes of basalt, miles in length, and scores, and even hundreds of feet high, as with a knife, 3,500 feet down to tide water. Uncounted numbers of ravines, in all directions, indicate the extent and magnitude of the drainage, which has left its records on the
rounded hills and deep canyons. The volcanic overflows, traceable in the Cascade Mountains, that formed, on cooling, their basalt dykes and cliffs with their peculiar columnar crystallizations, added much to the mineral elements of the soil. Immense quantities of volcanic ashes doubtless were blown by winds, or carried by streams, into those ancient lakes, giving like valuable deposits.

Some of our rivers, as the Sandy, flowing from Mount Hood, and the Nisqually, flowing from Mount Rainier, are now often made milky white in summer by these volcanic ashes, loosened by heat from their beds under the ice, and borne down by the rains and melting snows. The Sandy has thus for a long time been forming some of the alluvial soils, like the Columbia Meadows. The soils of the Willamette Valley owe much of their power to these sources, which become more apparent as the higher prairies and hills are cleared and sown with wheat or set with orchards.

In like manner, these old volcanoes furnished the abundant mineral elements in the upper country, on which all the cereals feed and thrive, viz.: the potash, soda, lime, magnesia and phosphorus and silicic acids. The basalts are largely Feldspathic, which consists of silicia, alumina and potash and are easily disintegrated by frost, thus adding large annual increments to the soil.

These high table lands, under the plough, exhibit the finest tilth from one to twenty feet or more deep, and alike through the whole mass. Unlike the dark vegetable mold of the Mississippi basin, the soils of this Columbia basin are whiter and more highly charged with the alkalis and fixed acids.

Western farmers are astonished that such whitish lands there, and in the Willamette Valley, can produce the cereals; but they are more astonished to gather a harvest of thirty or sixty bushels of wheat per acre from these high tracts. It is also a surprise that the berry of all kinds of grain is so plump and large, and that the straw is so tall and strong. The wild rye grass of the Yakima Valley is like a withe for toughness. The bunch grass on the hillsides bends before the wind and bends back like a bow of steel. The willow and the poplar, and other soft woods, take on a kind of robust, oak-like strength.
The analysis of mineral elements required for grain, published by Professor P. Collier, of Vermont, suggests the reason, as was intimated in an article in the Commercial a few weeks ago. For example, the berry of wheat requires the following proportions: ash, 2.07%; potash, 31.1%; soda, 3.5%; magnesia, 12.2%; lime, 3.1%; oxide of iron, 0.7%; phosphoric acid, 46.2%; sulphuric acid, 2.4%; silicic acid, 1.7%; chlorine, 0.5%; or ten mineral elements, ranging upwards in the proportions of five-tenths of chlorine and seven-tenths of oxide of iron to thirty-one and one-tenth of potash and forty-six and two-tenths of phosphoric acid.

These are factors mathematically fixed. The soil which has these elements will produce wheat, other things being equal. Soils destitute or exhausted of them cannot bear wheat. Rye requires very nearly the same proportions of the same substance. Oats require about half of the proportions of the same, with the addition of forty-six and four-tenths of silicic acid. Barley requires about two-thirds the same as wheat, with twenty-seven and two-tenths of silicic acid, instead of 1.7, required by wheat. But wheat straw requires ash, 4.26%; potash, 11.5%; soda, 1.6%; magnesia, 2.1%; lime, 5.8%; oxide of iron, 0.7%; phosphoric acid, 5.3%; sulphuric, 2.5%; silicic acid, 69.1%; chlorine, 1.1%; that is, it demands the same mineral elements in the proportions, 0.7% of oxide of iron up to 69.1% of silicic acid, which gives the tube of straw its firm, glossy quality. E.L. Youmans remarks: “Silica is necessary to the growth of vegetations, and exists abundantly in many plants, particularly in the stalks of grains and grasses. It is this which communicates stiffness and strength to their stems, as the skeleton does to the bodies of animals. If there is a deficiency of soluble silica in the soil, the grain stalk will be weak, and liable to break down or lodge.”

We may suppose, by observing the growth of the grain in the upper country, that those soils contain these elements in abundance. This supposition is confirmed by their geologic origin. The final proof will be a qualitative and quantitative chemical analysis rigidly tested.

While these elements remain abundant in the soils, the cereals can be produced. Exhaust them by successive crops, as in Western New
York, and in many Western States, and crops will lose in quality and in quantity.

The second fact, which solves the problem of reclaiming this interior basin from mere pastures to farm lands, is that the invisible ocean of vapor, constantly borne inland from the Pacific over these high plains, can be cooled and deposited in the form of dews, mists and showers, so as to furnish all needed irrigation. The complaint was made for thirty years that they were practically deserts. It is only a few years since the plow has moved up the hillsides. Now, fields of wheat, oats, barley and rye wave luxuriantly by the side of dry bunch grass tracts, even on the higher ranges.

The plow proves to be the cooler. It opens the light, porous soil to the air, which enters it freely and parts with its heat and its moisture at the same moment to nourish the plants. The higher the hill, the quicker the cooling process occurs in still air, so that the night dews and mists water the plants there best every evening when the wind dies away.

Some persons have tried to explain the growth of grain on the upper plains by a sort of capillary attraction, drawing up the moisture. It has also been explained by electrical changes, caused by the telegraph. But whenever the plow is freely used, and the seed planted, though scores of miles away from the telegraph, the growth of grain and vegetable becomes luxuriant.

Orchards, groves and fields increase the cooling surfaces, giving more moisture and more summer showers in all that region that had been rainless. The practical benefit already is a larger variety of productions, and a grand harvest of cereals for home and foreign markets.

Granting that these two facts are true of the upper Columbia basin; that the soil abounds in the constituents to furnish various and most valuable harvests, and that the climate is favorable to their production, it is reasonable to expect a wider area of cultivation every year. The day of doubt is past. The experiment has been
made. The plow, the reaper and the wagon of this season must be duplicated the next, and so on while the markets demand supplies.

Forecasting the future, the country that can possibly be thus cultivated stretches from one range of mountains to the other, East and West, and from the high plains of Nevada into the British possessions.

It is reasonable to expect more springs from the hillsides and larger streams in the valleys with the increase of population. Instead of stock ranches and settlers’ cabins widely separated, we may look for farming communities and thriving villages in sight and not far from each other. Such is the process now in Umatilla, Walla Walla, Columbia and Stevens Counties.

The facilities for transportation furnished by the Oregon Steamship Navigation Company, and by the railway from Wallula to Walla Walla, completed by the skill and energy of Dr. D.S. Baker, will, perhaps, stimulate the early completion of a railroad from Umatilla to La Grande, and one from Dayton to the mouth of the Tucannon, on the Snake River. There is need of lumber and fuel all over that region. Every reason urges the completion of the Northern Pacific Railroad to the Columbia and the ocean waters, that the exchange of commodities on the Coast may be made at all seasons with those of the interior.

**INVISIBLE VAPOR**—Air absorbs and retains a certain amount of moisture, at a given temperature. Heat it one degree and it will hold more. Cool it a degree and it will hold less and deposits dew. A glass of ice water in summer will cool the surrounding air and form drops outside the glass. It has simply reduced the power of the air to suspend the vapor. Let the glass stand a few minutes and the drops will evaporate. Warmer air carries them off.

**TRADITIONAL FARMING**—The custom to hoe corn in New England three times rested on a scientific principle, but our fathers did not tell us boys forty years ago what it was. Perhaps they did not know, yet their common rule, that it did the corn good to stir the ground often, insured a good crop.
The older men now work their gardens as long as the hoe can touch the ground between the plants. The result is thrifty growth and the finest vegetables.

The stirred soil presents a larger cooling surface, which quickly tests a dew point in a still night, and waters the plants with a gentle mist. Science now unveils and extends the benefits of the old traditions.

**THE EXACT AMOUNT OF VAPOR IN THE AIR IS KNOWN**—Tables of figures show the weight of vapor that the air can sustain at the various degrees of temperature. This power of suspension increases from 2.13 grains at 32 degrees—the freezing point—to 18.84 grains at 100 degrees, a gain of 16.71 grains per cubic foot.

**WEIGHTS AND MEASURES OF AIR IN SUSPENSION**—A column of air 10 feet square, 1,000 feet high, if saturated at 32 degrees sustains 30 pounds of water, which equals four and five-sevenths standard United States gallons. At 5,000 feet—the base of Mount Hood—the same column, at 32 degrees, will sustain 197 pounds, equal to 23 and three-sevenths gallons. A column of saturated air covering an acre, 1,000 feet high, at 32 degrees, contains 13,068 pounds, or 1,568 gallons of water. The same column, 5,000 feet, holds 65,340 pounds, or 7,940 gallons.

**AMOUNT OF SUSPENSION IN OUR FOUR SEASONS**—**AVERAGE IN A WINTER SEASON**—Our average winter air, 39 degrees, saturated in a column ten feet square and 1,000 feet high holds up to 39 and three-sevenths pounds, or four and five-sevenths gallons of water. The same column 5,000 feet high holds up 197 pounds, or 23 and three-sevenths gallons. A column of saturated air at 39 degrees, covering an acre, 1,000 feet high, contains 17,175 pounds, which equals 2,061 gallons. This column, 5,000 feet high, contains 85,875 pounds, or 10,305 gallons.

**AMOUNT IN SPRING**—Western Oregon in spring averages 52 degrees. A column ten feet square and 1,000 feet high, saturated, holds 62 and five-sevenths pounds, or 7.5 gallons. At 5,000 feet—the highest of the lower clouds—it contains 313 pounds, or 37.5 gallons. Such a column, covering an acre, 1,000 feet high, contains
27,318 pounds, or 3,278 gallons. At 5,000 feet it contains 136,590 pounds, or 16,390 gallons.

**AMOUNT IN SUMMER**—Oregon air in summer averages 67 degrees, and if saturated, a column of it, 10 feet square and 1,000 feet high, suspends 104 pounds, or 12.5 gallons of water. At 5,000 feet, the column suspends 520 pounds, or 62.5 gallons. A column an acre in size, 1,000 feet high, holds up 45,702 pounds, or 5,484 gallons. The same, 5,000 feet high, holds up 227,510 pounds, or 27,420 gallons.

**AMOUNT IN AUTUMN**—Our air in autumn averages 53 degrees. A column of it saturated, 10 feet square, 1,000 feet high, suspends 65 pounds, or 7.8 gallons of water; and 5,000 feet high, it suspends 325 pounds, or 39 gallons. A column covering an acre, 1,000 feet high, suspends 28,314 pounds, or 3,398 gallons. The same column, 5,000 feet high, suspends 141,570 pounds, or 16,990 gallons.

**UPPER COLUMBIA BASIN**—We are not able to get the average temperatures for the four seasons in Eastern Washington and Washington, as the United States Signal Service is not yet extended thither, as it needs to be.

Assuming 70 degrees as the summer average of the upper Columbia basin, and assuming that the air, blowing constantly from the ocean by day, is well saturated with moisture—which everyone feels as he stands facing those sea winds—it holds 8.01 grains of watery vapor. A column of it 10 feet square and 1,000 feet high suspends 114.75 pounds, or 13.25 gallons. The same column, 5,000 feet high, or about the height of white clouds that hover near Mount Hood in summer, suspends 572 pounds, or 69 gallons of water. Such a column, covering an acre, 1,000 feet high, suspends 49,864 pounds, or 5,983 gallons. At 5,000 feet high it suspends 249,320 pounds, or 29,915 gallons.

Cool that air to 50 degrees—which is done, usually, every night all over Oregon and Washington, and it loses 3.91 grains per cubic foot, or almost half its vapor. Vegetation drinks it. Heavy dews cover the grass. Soils deeply plowed and broken up into fine tilth absorb it
and give abundant food to plants. Professor Brockleby remarks: “The air over the ocean is always saturated, and upon the Coasts, in equal latitudes, contains the greatest possible amount of vapor; but the quantity decreases as we advance inland, for the atmosphere of the plains of Oronoco, the steppes of Siberia, and the interior of New Holland is naturally dry.” But the interior of Oregon to the Rocky Mountains cannot be called very dry, as its vapor comes fresh with every sea breeze.

**OCEAN OF INVISIBLE VAPOR OVER US**—There is such an ocean of vapor covering all of Eastern Oregon and Washington, from the Humboldt to the Fraser River Valleys, and extending Westward to the Pacific, 5,000 feet deep from the bed of the Columbia, enclosing an area of over 300,000 square miles.

**FEARS OF LACK OF MOISTURE**—The climate east of the Cascades has been called dry and the land arid. The question of assured moisture in summer is often discussed and weighed by comparing seasons. The last was better than former years. Showers were common in Walla Walla and other lower valleys. But will showers increase and extend with cultivation? Will springs break out on the hillsides as the high prairies are plowed and filled?

**AN EXAMPLE OF RAIN WITHOUT CLOUD**—Standing in Dayton (WA), Columbia County, near the Touchet, July 12, 1877, at 5 o’clock A.M., as the sun rose before me, I noticed a fine rain falling from a cloudless sky and wetting the grass in Mr. Matzgar’s garden. Mr. Matzgar had noticed the same fact often. Its solution was, that the trees and grass and garden had cooled and compressed the column of air and deposited part of its vapor. As the sun rose higher in the clear sky the same moisture was re-absorbed by the re-expanding air, as a sponge takes up water and gives it out on pressure and re-absorbs it when the pressure is off. Cooling the air acts like pressing the sponge. Heat expands it and increases its capacity to hold vapor. Professor Brocklesby attests several instances of showers occurring when the sky was clear. This phenomena was several times observed by Humboldt; and Kametz says it happens in Germany twice or thrice a year.
NATURE’S IRRIGATION—Grant that an acre of air at 70 degrees and 1,000 feet high suspends 59.83 gallons of water, and when reduced to 50 degrees, on a still night, gives out about half its supply, or 2,900 gallons, sprinkling it in finest dew over every inch of the land, and you have an irrigating process superior to any number of streams or system of artesian wells. Suppose the column 5,000 feet high, the deposit at 50 degrees may be 14,500 gallons.

OBJECTION—Do you object that a far less amount seems to be deposited? Only approximates can be given. Air cools one degree every 243 feet high, about three degrees per 1,000 feet. This reduces the vapor. Every degree of heat, with the ascending sun, re-absorbs the moisture until all is gone that was not drunk up by the leaves and grass, or by the soil, and very soon the soil gives back what it received, unless its web of rootlets have drunk it up. If the soil is baked, never plowed, and never set in cereals, or shrubs, or trees, it gets very little good from its nightly drenching and, at the earliest sunrise, the blessing flies away to its treasure in the skies.

GOOD CULTIVATION GARNERS THE VAPOR ABOUT THE PLANT ROOTS—On the high hills of Columbia County, Washington Territory, wheat grew luxuriantly in July, 1877, while four feet distant the bunch grass was drying up. This was the first plowing for the wheat, while the other land had never been plowed. That upland soil has a fine mixture of the mineral elements or alkalies, and thus a spongy lightness, which easily absorbs vapor and gaseous foods. Hence its marvelous productive powers.

IT NEEDS THE PLOUGH, THE SEED AND THE TREE—Those high prairies, that now seem so dry in summer, need to be broken up, sown, set with shrubs and trees. The soil, once open and set with wheat, will absorb its full supply of moisture every cool night, which will carry its load of nutriment to rootlets, or drip away to form springs. Trees and shrubs also become coolers and deposit moisture.

FALLOW GROUND AN INJURY—Rotate crops, as in Great Britain, for best results. No fields need be left fallow for many years. Sown, or planted and tilled, they will increase the deposit of moisture and then assure the coolness and crops on other fields.
WHEAT IN ROWS LIKE CORN—If wheat or oats become too dry, as happens in the lower Walla Walla Valley, run the light plow or cultivator through the grain every three or four feet, leaving it in rows like corn. Do it once or twice in the summer.

The section harrow and clod crusher made by Messrs. Carter, in Albany, will make a fine, light tilth, that will absorb moisture. This process will give a larger product of wheat from the rows of grain than from the entire field, left crusted and dry.

EXAMPLES—A gentleman raised a fine field of corn two and one-half miles from Walla Walla, ten years ago, without a drop of rain. He simply plowed the land, planted the seed, and used the plow or cultivator between the rows. Two years ago, another farmer raised over 40 bushels per acre, of corn, back of The Dalles, without a drop of rain. His plow kept the ground loose and spongy, and it absorbed all needed moisture from the air.

In 1877, L. Patterson, of Hillsboro, planted three rows of new kinds of wheat in his garden two and one-half feet apart, dropping the seeds about eight inches apart in each row. From thirty to sixty stalks grew from each kernel, carrying as many heads, which had from fifty to one hundred grains each. The ground was kept light and spongy, and was always moist a half inch below the surface. The wide spaces gave room for the plants to feed and grow well. The stalks sprouted from the center stalk like a currant bush. This proves that every wheat plant must have room and a fine tilth to give the largest products. Mr. Patterson thinks four quarts enough to plant an acre. His field of wheat, a few rods distant, looked fair, but it was crusted over and dry and impervious to moisture, and thus in part a failure, as every field of grain, sowed broadcast and left to turn over, must be.

Rev. O. Dickinson had a field of wheat near Salem last year, which became so foul with wild oats that he ran the plow through every three feet to kill the oats, leaving rows of wheat three feet apart. The result was a larger crop of wheat than the entire field would have given. This year he proposes to cultivate some land on this plan,
using the Carter Excelsior Combined Section Harrow to break the clods and reduce the tilth between the rows.

**THIS PLAN IS APPLICABLE TO FLAT PRAIRIES**—The yellow patches of grain on some of the flat prairies of Marion, Linn and Lane Counties are an eyesore. It is stated that Linn County raised only half a crop in 1877, owing to late excessive rains, followed by hot, dry months. The ground baked and the plants were choked and stinted. Had farmers run their plows through the fields, about two or three feet apart, in June, as the soil began to crust over, and then followed in July with the cultivator, or section harrow and clod crusher, between the rows, the evidence is that they would have had a much larger crop. The plan is worth trying this year, as the continued rains may keep those lands soaked till late.

**THE PLAN APPLIED TO VINEYARDS**—The vineyard connected with the San Gabriel Mission, near Los Angeles, I am told, is cultivated of late entirely without irrigation. The plow, spade and hoe prove entirely sufficient to keep the ground moist and give an abundant crop.

**IT APPLIES TO DRY LAND ELSEWHERE**—A gentleman has raised fine fields of corn, ten miles south of Los Angeles, without a drop of rain, simply using the plow and the cultivator freely.

A Baker County farmer, I am told, plowed up the sage brush, outside of an old field, and raised seventy bushels of oats per acre, without rain. The soil is mineral, light and spongy. Once open, it absorbed moisture enough for fine growth and product.

The plains of Kansas were marked on the old maps, 40 years ago, as a part of the “Great American Desert.” The plow and cultivator have caused luxuriant fields of corn and wheat to replace those once parched lands.

**ITS EFFECT TO PRODUCE SPRINGS**—Rev. C. Eells and J.A. Perkins, of Colfax, noticed stock water on a side hill near the Touchet last fall, where ten years ago there was only a slight sign of moisture. A dozen farms have been opened ten miles around within
ten years. Others report springs since the hills have been cultivated where none existed before.

Suppose the rich bunch grass plains and those eaten off, which lie on the route from The Dalles to Umatilla, are plowed and sowed or drilled in wheat, the excess of moisture deposited will probably produce springs where none can now be found. Add trees and shrubs, and the result will at length become a certainty. Instead of depending on costly artesian wells, it is better to draw a water supply from the air.

**EFFECT ON THE STREAMS**—Doubtless the increased acreage now cultivated in the upper basin of the Columbia has added volume to the smaller streams. The limit of increase will not be reached so long as the plows and wheat fields and gardens and groves extend over those high hills and deep valleys. Grand and beautiful will be the panorama when the whole interior, not a treeless region, shall be dotted with farms, orchards and dwellings. The plow will hasten that day.

**DROUGHTS PREVENTED OR MODIFIED BY SUCH CULTIVATION**—A traveler sent a letter to one of the Puget Sound papers last year, describing his rough, dusty journey Northward from Southern California. One morning his stage started at 3 o’clock, and he found nothing to note but the ascent of a hill about 1,500 feet through a fog bank as many feet deep. As the sun rose, the same dry plains and hills greeted his eye on every side. That fog bank was Nature’s store house of water for the thirsty ground. The San Francisco Bulletin reported later fine fields of wheat in the upper counties without a drop of rain; but a wise use of plow and harrow opened the soil to absorb the invisible vapor. One farmer is reported to have planted wheat in rows and tilled it, raising as per his test over 60 bushels per acre. It is cheaper to raise 60 bushels on one acre than on four acres.

Probably a wise use of the plow in cultivating wheat, instead of the poppy, would have lessened the famine in the high plains of Hindostan last year, or have possibly prevented it. The Northern
Provinces of China may possibly be saved the same desolations by using horses and American plows instead of hoes and spades. Shallow cultivation gives too little cooling surface to the heated air of those high plains. It is certain that there is moisture enough in the air, but it must be cooled to the dew point in order to be used. The protection and assurance of crops every year is the deposit of invisible vapor suspended in the air.

**THE PUGET SOUND BASIN—SHORE LINE 2,000 MILES**—This network of deep land-locked bays, inlets and sounds, opening to the Pacific through the DeFuca and Georgian Straits, is the wonder of navigators and the joy of commerce. Fleets of lumber, coal, lime, vegetables, hops, grain, fish, oil, fruit, staves, hoops, furniture and furniture woods, water pipe and pump stocks, ship knees and spars, and the products of several other new industries, already glide through these ample water ways to the ocean and world marts.

Freights are cheaper from Puget Sound to Liverpool than from Lake Michigan to Liverpool. The harvests now annually gathered from the forests and mines, from fields and orchards, from rivers and sea waters, all are mere signs of vastly greater and more harvests yet to be gathered.

**LUMBER—MILLS**—The great mills are improving and increasing their machinery, using late inventions to economize force and perfect their lumber for the demands of builders and shipwrights, and other wood workers, while adding twenty to eighty per cent to their average daily product. This draws more ships to their wharves, loads them quicker and oftener, and sends them in search of new markets.

**COAL**—The Seattle mines of coal are a type of a vast series of veins which enriches this entire basin. These extend in sections Northward into British America, and Southward into the Columbia River, and along the foot hills and spurs to the Cascades and Coast Mountains into California. The Seattle Coal Company will export over a hundred thousand tons the present year of good domestic which is sold readily in San Francisco. The Seatco mines are
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sending an equally good domestic coal to Olympia, at lower rates on the Oregon & Transcontinental Narrow Gauge Railroad. A short side track from the Northern Pacific Railroad can put the same coal cheap into the Portland markets.

**LIME**—The San Juan and Orcas Island lime have already become known as choice brands in our markets, displacing those from Santa Cruz, as the latter did the Oahu lime 15 years ago. The Puyallup lime beds now bid fair to rival those of San Juan, as their hops do those of more Southern climes.

**COAL**—Coal, lime and iron beds near together and near the sea make blast furnaces and rolling mills and machine shops both possible and profitable. The same vegetation which produced the coal veins also formed the deposits of iron ore. Their common laboratory was in the vast morasses of the carbonaceous period. Finding the coal outcroppings, you may expect to find the iron ores nearby, and probably the lime rocks in some form. All these mines are found near Tacoma. The branch Northern Pacific Railroad, up the Puyallup Valley, now opens the coal and lime to market, and touches the outcroppings of iron ore that indicate both the quality and quantity needed for home use and export. Once developed, the savings in freights alone will furnish a large margin of profit for this home industry and a chance for export also to the vast marts of the Pacific Coast, worthy of the attention of the prudent capitalist and manufacturer.

**LUMBER**—During twenty-five years the mill companies of Puget Sound have been exporting their products of fir and cedar to all the markets of the Pacific, while many cargoes of their spars and ship knees have gone to the maritime ports of France and England. Their annual export now exceeds two hundred millions of feet of sawed lumber. Yet they have only penetrated the forests from one to three miles from the shores of bays and rivers, and only culled the timber so far. Single trees often make from 12,000 to 15,000 feet. Their average, as estimated, is 10,000 (feet) per tree, and 50 trees, or 500,000 feet, per acre. When cut close, as in Eastern forests, this amount, in many places, will be doubled. In the valleys, curly
maple, alder, ash, cedar and some other furniture and fine cabinet woods, are found for a growing market.

**FISH**—The waters of Puget Sound are the home of the salmon and salmon trout, the halibut, the herring, the rock and tom cod, the flounder, the sea perch and smelt, with other varieties of food fish, besides extensive clam beds and oyster beds. The dogfish and others are taken for oil. The fisheries have only just begun to enlist attention and capital, but they promise a large reward to enterprise.

**FRUIT**—The apple, pear, cherry, plum, and even the Isabella grape flourish on the shores and islands of this archipelago, while the currants, strawberries, raspberries and blackberries grow luxuriantly, and give large and delicious harvests for the reward of every faithful gardener.

**VEGETABLES**—The potato, turnip, tomato, beet, carrot, parsnip, squash, pumpkin, cabbage, cauliflower, celery and onion are raised easily and beyond home market demands. Nearness to the sea offers a profitable market for their exports.

**THE GRASSES**—Timothy, red and white clover, and orchard grass, blue grass, indeed, every variety tested thrives in this soil and climate, whether on lowland or highland.

**THE CEREALS**—The specimens of these were shown by Mr. Bush at the Centennial Exposition, for which he received a well deserved medal of honor. His fine exhibit can be matched by any careful farmer in any of the valleys of the Puget Sound basin, and on all the wooded plains that trend toward the hills and mountains, and on the islands and dyke lands of the Skagit and Swinomish flats. These latter often yield one hundred bushels of oats or barley per acre.

**THE SOILS**—It has been thought, at the first glance, that the only good lands are the river bottoms and tide flats, and that the light and more sandy bluffs and slopes, and forest-covered hills, will be worthless to the farmer after the lumbermen have culled their grand treasures of lumber. But look at the grass plots and gardens and orchards of Olympia, and the farm near by; or of Seattle, of
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Port Madison, or Port Gamble, or Port Ludlow, or Port Townsend, or Dungeness, or Coupeville, or Seabec, or any spot in Whatcom, or Snohomish, or Island, or Mason, or Kitsap, or King Counties, and you will see a luxuriant vegetation, a strength of tube and stock, a breadth of leaf, a rich coloring of flower, that give token of a soil and climate remarkably rich in all the mineral, vegetable, gaseous and vapor elements needed for garden and field, as well as forest.

The difficulty of clearing is more than matched by the cost of transportation from the distant though rich plains of the interior. The gain of nearness to the sea is found in the greater variety of products for use and export. The lack of alluvium and the deep, black mold of the low valleys is more than compensated by the richer mixture of the mineral, alkaline and silicious deposits in these upland soils. They will last longer, make better and stronger tubes, holding up the grain heads firmly, proof against rust and storm, and probably a surety against insect foes.

This soil, opened deeply by the plow, and often stirred deep in the summer afternoons, will absorb the air saturated with vapors, and furnish the finest irrigation to all sorts of plants, and yield the largest harvests. Nearly every city, village and hamlet of the Puget Sound basin are open doors to abounding resources from the Creator’s hand. The need is of thought, toil, patience and economy to enrich that whole region with homes and farms abounding in comforts, health, luxuries and wealth.

TRANSPORTATION—When the Northern Pacific Railroad shall be completed, opening the vast grain fields and pastures of the interior to the sea, and carrying inland the lumber, coal, iron and ocean commerce; and when the narrow gauge railroads, like the S. & W.W. R.R., and the O. & T.R.R., shall extend the exports and imports through all the valleys, there will be ample occasion for an increase of enterprise on land and sea.

WESTERN OREGON AND WASHINGTON—CLIMATE AVERAGE
Winter: 39 degrees; Spring: 52 degrees; Summer: 67 degrees; Fall: 53 degrees.
REMARKS GIVING PARTICULARS OF WIND, SEA, WEATHER, TRIM OF SHIP, KIND OF CARGO, ETC.—The weather since leaving Esquimalt has been favorable. Ship’s draft leaving Esquimalt,¹ forward 19 feet, 2 inches; aft 19 feet, 3 inches. Cargo consisting principally of produce. The coal received at Tacoma has been exposed to the weather for months, which, nevertheless, has done good work corresponding to the power exerted. I would recommend all steamship companies, or large corporations, to give it a fair trial and test. In order to do this, it is necessary to have a good grate surface and good draught. I would rather use this coal, from what I have seen of it, than any other on this Coast. The mine is new yet, and the coal not at any great depth, and I am positive it will improve rapidly as they go into the mine. [Editor: One page chart appears here, of consumption of coal on Pacific Mail Steamship Alaska, voyage from Port of Esquimalt to San Francisco, Oct. 21-24, 1878] I have tried all other kinds of coal, except Seattle, and that, I am informed from good authority, is very sooty; while, on the other hand, Puyallup coal makes no soot whatever—therefore, no sponging of tubes is necessary. I would say to all, try it, and I will substantiate my statement.”

Very Respectfully, (signed) John Stewart, Chief Engineer

¹Esquimalt is a port west of Victoria, B.C.