

Henry E. Reed.

LOUISIANA PURCHASE EXPOSITION, ST. LOUIS, 1904

The Mineral Resources of Oregon

By J. H. FISK, M. E.

Oregon, the Sportsman's Paradise

By A. E. GEBHARDT



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LEWIS AND CLARK

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FOR THE

STATE OF OREGON

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LEWIS AND CLARK'S EXPLORATION

Its National Achievement



William Clark

CAPTAINS MERIWETHER LEWIS and WILLAM CLARK were the first Americans who reached the Pacific Ocean overland. They headed an expedition sent out by President Thomas Jefferson in 1803, which reached the mouth of the Columbia River in 1805. The Pacific West will celebrate at Portland in 1905 the CENTENARY OF THIS NATIONAL EVENT with an American-Pacific Exposition and Oriental Fair.

The discovery of the Great River of the West by Captain Robert Gray in 1792 and the expedition of Lewis and Clark in 1803-6, added to our National domain a region

equaling in extent the whole of the States of the Union east of the Mississippi and north of the Ohio and Potomac rivers. It is a region destined to be the seat of a population of twenty millions within this century.

The original "Oregon Country" now contains three of the States of the Union—Oregon, Washington, and Idaho—and very extensive parts of Montana and Wyoming. It was the acquisition of this region that GAVE THE UNITED STATES ITS FIRST FOOTING ON THE PACIFIC OCEAN and opened the way to our great continental development. In political importance the acquisition of the Oregon Country stands among the greatest events in our National history.

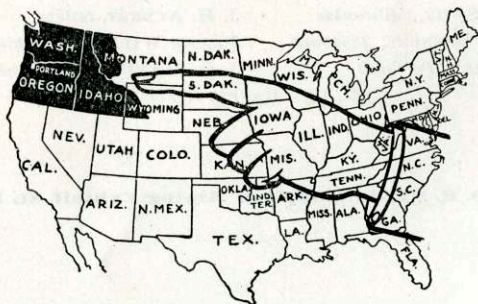
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BUREAU OF PUBLICITY

LEWIS AND CLARK FAIR

PORTLAND, OREGON. U. S. A.

THE ORIGINAL "OREGON COUNTRY."



LEWIS AND CLARK WON IT FOR THE U. S. IN 1805.

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GEOGRAPHY OF OREGON.

THE CASCADE Mountains begin in the upper part of British Columbia, following the Coast line through the States of Oregon and Washington, and disappearing in Northern California. The snow line is reached at a lower elevation than in Switzerland, and, unlike the Alps, the greater mountains rise nearer the sea, fourteen, fifteen, and eighteen thousand feet in height, tempering the climate in summer, and sheltering us from the cold waves of the North in winter. Mount Baker and Mount Tacoma, in Washington, and Mount Hood, in Oregon, radiant with eternal snow, are far more beautiful than Mount Blanc or the Matterhorn. The glaciers on Mount Tacoma equal those of Switzerland, and add to the sublimity of the scene.

There is probably no other country on earth where, on the same parallel of latitude, and at the same elevation, there are such great differences in climate, soil, and vegetation, as on the east and west sides of the Cascade Mountains. On the east we find the climate and productions similar to those of Illinois and Iowa, except that the climate is milder in winter, and cooler in summer; while on the western side of the range, and not fifty miles away, the country is thickly studded with the finest forest trees, abounds in vegetation, and has a continuous rainfall. The climate is mild in winter, and temperate in summer. On the foothills and in the valleys the deep green of the Douglas fir, extending for hundreds of miles, contrasts with the pure white of the everlasting snow-capped mountains.

The Coast Range system begins in Oregon just south of the Columbia River, and follows the coast line; it is much lower than the Cascade Range, attaining an elevation of only from three to five thousand feet. At the foot of this range and far to the east, is the Willamette River, which flows north through the rich Willamette Valley, and empties into the Columbia River twelve miles north of Portland.

But the great mineral and gold producing district is to be found in the Cascade Range of mountains, and yet, for all the numerous mining camps found here, it has hardly been prospected. Hundreds of thousands of acres have never had a pick stuck into the ground or hardly been visited by a white man.

The scenery and beauties of the Cascade Mountains surpass my powers of discription, with their numerous waterfalls, their ideal summer resorts, with their flowing thermal springs; the caves of Southern Oregon extending for miles underground, with their stalactites and stalagmites; Crater Lake, majestic Mount Hood, and Mount Jefferson; the gorges of the Snake and the Columbia River canyons, the forests, streams, and meadows. The writer has seen many of the beauties and wonders of the world: the towering peaks of the Andes, the burning Mauna Loa, the avalanches of the Arctic, the Heights of the Bosphorus, and the Golden Horn; the vine-clad castles on the hills of the Rhine; the Bay of Naples with its villas; but none of these are more royal than the Cascade Mountains.

GEOLOGY.

The geology of Oregon is interesting and unique, although a United States survey has been made of but a small portion of it, extending over the Sumpter and Bohemia mining districts, and they are not as full and complete as they should be. Certainly no place in the world affords so great an opportunity for geological research as these Cascade Mountains. On the Little North Fork of the Santiam River the strata will be found well delineated upon the mountain sides, which were once the floors of ancient oceans. These strata stretch out into the vista of unrecorded history beyond the infinite abyss of time.

When the west shore line of the continent lay east of what is now known as the Cascade Mountains, and nearly all of what is Oregon and Washington were submerged, the mud flats that afterwards became the auriferous shales of the present Cascades, accumulated upon the ocean bottom to a great depth. In process of time the Cascade region and its westerly lying foothills began to emerge from the ocean, but so slowly that for many centuries it remained comparatively low and flat. During this period the Pliocene rivers were born and their erosion commenced. With their many branches and ramifications they presented much the appearance of a wide-spread oak whose branches traversed a region so broad and flat that in pursuing their devious courses they doubled on themselves and ran for long distances in various directions, meandering slowly through the great champlain, forming islands, side-channel bayous, deltas, and lagoons on their long journey to the ocean. Thus it was that the fluviate system which so puzzles the savants and scientists of the present day to decipher, was plotted out. These rivers entered upon the work of eroding channels for themselves.

The watersheds tributary to them were extensive, covering all of Eastern Oregon and most of the country now drained by the Columbia and Willamette rivers.

Gradually, as the country crust continued to be forced up and the grade became steeper and steeper, the current was accelerated, and the erosive power augmented, while the increased depth also tended to straighten the channels of these rivers, causing them to forsake portions of their former beds to seek more direct routes to the sea.

These ancient streams were not only the wearing out and transporting power, but all this material was barren, no gold having been ejected from its primary source—the depth of the earth. There was no need of it, no animal having yet been created to appreciate its many uses. The inhabitants of our globe down to and far into the Cenozoic Age got along very well without it. The ichthyosaurus, the megatherium, and the sauruaes that wallowed in the aquatic seas were of a non-commercial and a non-hoarding disposition. However, a notable event was about to happen in the progress of things terrestrial. Man was soon to appear on the scene of action, and Nature, anticipating the necessities and desires of this animal, made preparations for bringing up a portion of the auriferous metal from the molten interior of the earth and placing it within his reach. To this end she managed a little before his advent, geologically speaking, to inject into the slates and schists, already tilted up, numerous gold-bearing quartz veins, besides making a considerable change in the igneous rocks, impregnating them more or less with the royal metal from the hydrothermal rocks.

THE NEOCENE RIVERS OF OREGON.

The geological observer cannot fail to notice that the gold-bearing gravel of the Neocene rivers of Oregon, Washington, and Idaho, with their watersheds, formed a mountain range as distinct as those of to-day, and that its first summit in general coincided with the corresponding modern divide, which observation proves that the grade of the remaining Neocene gravel channels are, to a certain extent, determined by the direction in which they flowed. The slopes of the Cascades, as well as the Blue Mountains, have been considerably increased since the time when the Neocene rivers flowed over the surface. It seems probable, from the study of the grade curves and the remains of the channels, that the surface of the mountains has been deformed during the uplifts, the most notable deformations having been caused by the



Quartz Mill.

subsidence of portions of the great valleys adjacent to the Columbia and Willamette rivers.

These ancient gold-bearing river channels, which are mostly buried in a mass of debris of volcanic material, are not only peculiar to Oregon, but to California as well. A large part of the Blue Mountains and the eastern slope of the Cascades are capped with masses of volcanic material under which are buried these old channels. The experienced miner can determine at once channel-washed gold of these rivers from that which has been much later eroded from the quartz veins and porphyry rocks. The gold is rough and craggy, and bears no resemblance to the smooth and flaky appearance of the former, and as the topography of Oregon has been nearly in its present form for the last two geological periods, what we call the buried or dead rivers, are the gulches and canyons of the present Cascade Mountains which were sealed up about the close of the Pliocene epoch of the Tertiary period. This is notably the case east of the Cascade Mountains, and along the John Day and Des Chutes rivers, which have been much distorted, and during the uplifts left many of these buried branches on the summit of the Blue Mountains. The rivers, when once changed, had to gather their waters together again, and in the hundreds of thousands of years that have elapsed these streams have eroded their new channels some places to the extent of thousands of feet.

GOLD MINING.

Following the discovery of gold on the Pacific Coast, and the immigration of 1849 and 1850 to California, led to the early advent of placer mining on Klamath and Rogue rivers, in Southern Oregon.

It was prosecuted with great energy and vigor for many years, or as late as 1860, when subsequent prospecting of the more northern part of Oregon and Idaho, then Washington Territory, led to many discoveries of placer gold, which was mined in the well-known camps of Oro Fino, Florence, and Elk City, in Washington Territory, and in Baker and Grant counties, in Eastern Oregon. All of this has since passed into history. As these camps became almost exhausted, the want of transportation caused the mining industry to lag for a number of years, but since the advent of the railroad great attention has been paid to quartz mining, working over the ground whence these camps drew their supply of gold. But the purpose of this pamphlet is to call attention to the mining industry as it exists to-day.

It is a well-known fact that the City of Portland, which has

a population of 120,000, owes its origin and prosperity to the early mining in the State, and to-day is being largely maintained by the more recent quartz mining, which every year seems to open up new sources of wealth in the great and undeveloped Cascade Mountains, which extend through the whole length of the State, and, after a lapse of fifty years, the many hydraulic mines in the southern and eastern part of the State are not yet showing any diminution in their production of the precious metals.

QUARTZ AND PLACER MINING.

The development now going on in the different quartz mining districts of our State surpasses anything heretofore known. These districts are now found to be rich in a vast quantity of mineral wealth of great variety, and a large amount of Eastern capital is invested in the quartz mines of Blue River, Gold Hill, in Josephine County, Bohemia District, in Lane County, and the Santiam District, in Linn County. Each of these districts have very large and extensive mines with about fifty quartz mills in operation.

The following is a list of some of the producing mines in Southern Oregon: Ajax, Cramer and Palmer, Gopher, Vulcan, Yellow Horn, Eureka, Rising Star, Mountain Lion, Braden, Bill Nye, Golden Wedge, Golden Standard, Hemmesley Mine, Mule Mine, Oregon Belle, Mayflower, Greenback, Granite Hill, Shorty Hope, Copper Stain, Wymer, Old Channel, Galice Consolidated, Sterling, Lucky Boy, Oregon Security, Black Butte Quicksilver Mine, Almeda, Le Roy, Millionaire, Baby Mine, Williamsburg, Uncle Sam, Great Northern, Blue River, Gold Mine, Gold Hill, Nickel Mine, Chromate of Iron Mine, Poor Man's Mine, Treasury Mine, and Badger Mine.

In the eastern part of the State, in Malheur, Grant, Baker, and Union counties, some of the greatest mines are located, and here, also, much Eastern capital is invested. There are a large number of quartz mills, besides a great deal of placer mining. The following is a partial list of some of the producing mines of this section: Alamo, Baisley Elkhorn, Belcher, Big Four, Blue Bird, Chloride, Copperopolis, Cougar, Cracker Jack, Cracker Oregon, Cracker Summit, Del Monte, Dixie Meadows, Emma, Eureka and Excelsior, Flagstaff, Golden Wizard, Gold Hill, Gold Ridge, Great Northern, Highland, I X L, Jay Gould, La Bellevue, Magnolia, Maid of Erin, Mammoth, Maxwell, May Queen, Midway, Monumental, Octo, Ohio, Oregon Monarch, Oro, Owl and Elephant, Security, Snow Creek, Standard Consolidated, Uncle Dan, White Swan, Yankee Boy.

I will not attempt to describe any particular mine in detail, as I have but a limited space, but sufficient to say, that at one time,

they were all prospects the same as thousands of others are to-day.

Gold has never been found in a pure state, but always alloyed with silver. Silver has never been found absolutely pure, but always alloyed more or less with gold. Several metals resemble gold, but gold resembles no metal, and the only metal of a yellow color. The purest gold ever found in the United States, to my knowledge, was found in Montana, .980 fine. Oregon gold averages .820 fine.

Gold dust found in the Cascades, especially the western slope and on Snake River, has evidently been eroded from the porphyry, or allied rocks, which was the first flow of the Cascade Mountains about the close of the Cretaceous period. Everywhere we find this character of rock it contains traces of gold, and in places runs up to several dollars per ton. This rock may be properly called the acid lava.

The erosion of this character of rock is evidently what has set free the very fine flour gold dust which is found quite abundantly along the bars of Snake River. On these bars, and in some places 2,000 feet above the river, this flour gold is mined to a considerable extent and saved by being washed over burlap tables. It is so fine that it takes fifty colors to make a cent in one pan of dirt. In some places the bars of the rivers are replenished by the spring freshets. I know of one bar in particular which has been washed over every year after the spring freshet, producing as much gold the last year as it did the first. The work has been done over and over by the Chinese, who make from one to three dollars per day per man by rockers.

The gold is associated with the black iron sands which comprise about two per cent of the sand washed. This black sand is largely composed of chromate of iron, and, in other places, of magnetic iron and carbonate of iron. The same character of sand at the mouth of the Columbia and Yaquina rivers is not worth more than ten cents per ton in gold, which goes to show that this must have been transported from the far interior by the rivers. Much of the sand on the ocean beach near Yaquina Bay is a brownish red, lustre vitreous, inclining to resinous, and is doubtless monazite, which is abundant in some parts of the State. In the old town of Florence, Idaho, monazite is quite extensive in the gold washings, but has more of a yellowish to a resinous appearance, and is very heavy. It was used by the miners in early days to adulterate the fine gold dust of that camp, which was similar in color to the gold.

The black sand found on the ocean beach near the mouth of



Placer Mining.

Rogue River, or Gold Beach, is almost wholly titanite of iron, and is not attracted by the magnet. It is quite heavy, and the gold being so much finer, makes it extremely difficult to separate, and many machines have been invented for this purpose, but all have failed to make a complete and profitable separation.

The annual production of gold in this State at the present time is not less than six million dollars, a part of which might be attributed to the placer mines in operation, whereas the Government only gives us credit for about one million eight hundred thousand.

The renewed activity in the search for and the development of these sources of wealth is due to many causes. It is apparent that under the present economic conditions, that though all other products may fall in price from overproduction, the production of gold cannot be overdone. The low price of labor, the extension of steam transportation, and the highly improved methods of production and treatment of ores, are important factors in the development of the mining industry. When Kustall first announced his process of treating base ores by the chlorination method, about thirty years ago, it was claimed that the ores must be worth at least \$25 per ton to make this process profitable. This method has now been improved upon so that to-day base ores worth not more than five dollars per ton can be worked to advantage.

Many of the quartz mills running on free milling ore twenty-five or thirty years ago, estimated their loss to be \$10 per ton, whereas the loss to-day on free milling ore need not be over sixty cents per ton.

Base ores running two dollars in gold, ten per cent in copper, three or four ounces in silver, and two or three per cent in lead, are abundant in the Cascade Range.

While this section, particularly on the Santiam River and its branches, has long been known as a great mineral region, until recently the broken and mountainous condition of the country, and an absence of trails suitable even for a pack animal, have precluded the possibility of a thorough examination by mining men. In past years many attempts have been made to reduce the ores by different methods, but, owing to the fact that the work was undertaken by inexperienced operators, it has, in every instance, proved a failure. During the past five years, however, a more thorough examination has been prosecuted with renewed energy and vigor, in consequence of which large deposits of what may be called low grade concentrating ores have been revealed. In many of the claims much high grade ore has also been found, demonstrating

beyond a doubt that this section is destined to become one of the greatest mineral producing sections of the State of Oregon, since, added to its vast productiveness, no better location and facilities for the transportation and reduction of ores could be desired.

In my judgment none of these veins are contact veins. They appear to be enclosed in porphyry rocks, and are more in the nature of a segregation of ore bodies of large dimensions; and yet in their course and strike they have the appearance of fissure veins. As to their size and dimensions, a conclusion can be only speculative beyond sight. Their continuity seems perfect in crossing the creeks and country all in one general direction, and I cannot doubt their permanency at great depth.

There are three kinds of mineral veins—veins of segregation, veins of infiltration and great fissure veins. Of these three, one graduates into the other in such manner that it is often difficult to distinguish the difference, but for all practical purposes I shall call them segregated veins. The ore is chalcocite, with occasional bunches of bornite, carrying silver and gold.

I see no reason why this section of the country should not produce hundreds of tons of concentrated ore per day, worth \$40 per ton. The waterfalls of the various streams of these mountains emptying into the Willamette and its tributaries are too numerous to mention. There are sufficient, not only for transporting lumber by flume, but to furnish, when harnessed, all the electric power of the State. The whole of the Cascade Mountains is thickly covered with timber of great variety, which is unsurpassed in any part of the world. The lumbering of this section forms the principal business of the Corvallis & Eastern Railroad. The abundance of this timber greatly facilitates the development of the mining industry, which in many other States is retarded by its absence.

As an illustration of the value of the low grade ore previously referred to, I might mention the Almeda Company, which has a ledge of this character, one hundred feet wide, and with over five hundred feet of backings, showing more than one million tons of ore in sight, at an average value of \$12 per ton in all metals. A smelter is in process of erection on this mine, which is only one of the many now being opened up. The Connor Creek mine and the Virtue mine of Eastern Oregon have been steady producers for the past thirty years.

The mining interests of Oregon are now beginning to grow, and will continue to grow until the mining industry will be of paramount importance in this State, engaging the attention of a great

number of people and calling for the employment of many skilled superintendents of knowledge.

Mining is decried by many. For what reason? I make this as an assertion that for every dollar lost in mining there are a thousand lost in other industries. For the benefit of those who are uninformed as to the growth of the mineral industry in the United States, I would respectfully refer the following statistics:

In 1880 our total mineral production amounted to \$367,000,000. In 1890 it was \$619,000,000, and in 1900 it was \$1,070,000,000.

In 1880 the gold production of America had more than doubled, from \$36,000,000 a year to \$79,000,000.

During the year 1901 the precious metal mines of the United States added to our permanent wealth 3,805,500 fine ounces of gold, valued at \$78,666,700; 55,214,000 fine ounces of silver, commercial value, \$33,128,400, with a coinage value of \$71,387,800.

In 1902 the gold production of the United States reached the enormous amount of \$87,710,189. In 1903 it was \$74,425,340. Thus in three years adding to the permanent wealth of the Nation, in gold alone, \$240,802,229.

The production of silver has nearly doubled, from \$39,000,000 to \$74,500,000.

The production of coal has almost quadrupled, from 64,000,000 tons to 241,000,000.

Petroleum has already tripled, from 1,100,000 gallons to 2,661 000 gallons, and the production of copper has gained ten-fold, from 27,000 tons to 2,700,000.

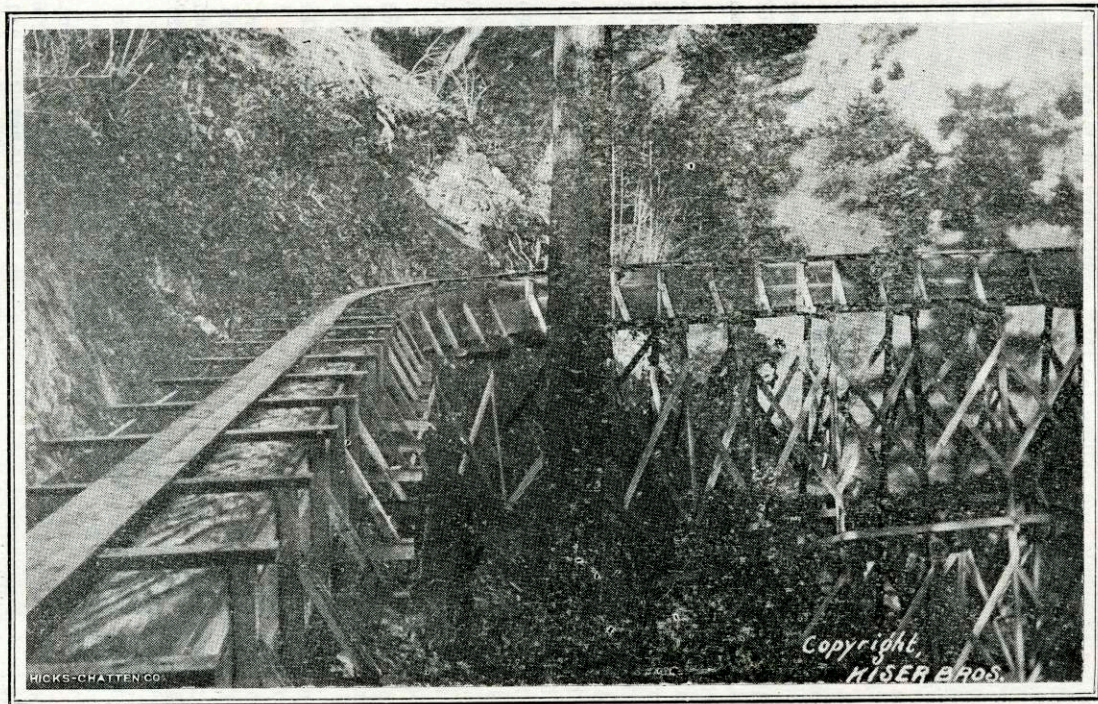
In 1899, for the first time, the coal production of the United States exceeded in quantity that of Great Britain. The superiority has been maintained for three successive years.

During 1901 the United States production was greater than the amount of coal produced in Great Britain and all her colonies.

In 1900 the United States produced 589,455,535 tons of copper. Of this amount Montana is credited with 254,460,713 tons; Michigan 144,227,340 tons; Arizona, 115,403,846 tons; California, 27,639,987 tons; Utah, 18,504,726 tons; Eastern and Southern States, 6,918,122, and all of the others with 15,536,850 tons.

Another point that I wish to make is that the Interstate Commerce report for 1901 is as follows:

	Tons.	Per Cent.
Products of agriculture	56,102,838	10.76
Products of animals	15,145,297	2.91
Products of mines	269,372,556	51.91
Product of forest	60,844,933	11.67



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A Mining Flume.

Product of manufactures	71,681,178	13.75
Merchandise	21,687,693	4.16
Miscellaneous	26,493,338	5.08

While the agricultural product of the country may be greater than the mineral, yet, when we consider permanent, substantial gain, the latter is far superior. At the end of a year the agricultural product is consumed, and has disappeared from the face of the earth; but it is a peculiarly gratifying feature of the mining industry that it is constantly adding to the permanent stock of man's possessions and the wealth of the world.

MINING AS A RISK.

What in life is not a risk? Mercantile pursuits, manufacturing industries, business propositions of all kinds involve large risks. The slightest movement is a risk, and the farmer takes the greatest chances of all. He bets on the rain and the European market; on the weather six months ahead; on the likelihood of demands for his crops; yet men are not dissuaded from any of the ordinary pursuits of life by the element of risk. All art, navigation and discoveries are a risk, but they are also the power that moves the world along to a nobler and higher field of progress.

It may be interesting to know that the country of Cornwall, in England, is only a mere speck, forming a triangle on a base of forty miles, and of which not more than a hundredth part has proved of any value. Yet, for almost a thousand years the mines of Cornwall have supplied the world with metals and minerals, and the whole district, if tucked away in a corner of Oregon, would be hard to find.

COMMERCIAL PRODUCTS OF OREGON

COAL.

Oregon is not surpassed by any State in the Union in its commercial products. She has been considered one of the coal-producing States of the Pacific Coast, but no systematic effort has been made to find the geological distribution of the coal-bearing rocks. When topographical surveys have been made over the whole State it will be possible to show definitely the extent of these coal fields. So far as known, they lie mostly west of the Cascade Range, and north of the Rogue River. The recent discovery of coal near

Heppner, in Morrow County, will prove, beyond doubt, one of the most extensive coal deposits yet found in the State, and gives a coke with a beautiful metallic lustre. The following is an average analysis taken from what is called the Conser Tunnel:

Per cent moisture	2.84
Per cent volatile and combustible matter.....	37.97
Per cent fixed carbon	56.29
Per cent ash	3.00
	<hr/> 100.00

This coal carries some hetchatite, and, in this section, the rocks contain a great deal of asphaltum and gilsonite, and I should say, is a promising field for prospecting for oil. The coal is of the same age and of the same geological variety as that found in Curry County, on the south fork of the Coquille River. It is higher topographically, but lower geologically, than the Coos Bay coal fields, which are the largest and most extensive yet found in the State. They are located on the border of Coos Bay, and embrace about one hundred square miles. They have been largely worked, and have supplied the San Francisco market for the last fifty years.

This coal is classed with the lignite variety of the Tertiary period. Much of the undeveloped condition of the Coast Range Mountains is due to the heavy growth of vegetation, fallen trees, and the abundance of moisture that lingers there, even in the summer time, and the coal itself only crops out on the surface along the lines of rapid erosion, as on the Nehalem River, in Clatsop and Columbia counties, where a good quality is found.

IRON ORES IN OREGON.

Few States in the Union contain more iron ores than Oregon, but, notwithstanding this, little effort has ever been made to develop iron where it has been known to exist. The large quantity that is yearly consumed in building houses, bridges, etc., and the high prices we have to pay for it are due to the fact that our supply has been imported from distant sources, subject to heavy freight and other charges, compelling dealers to keep a large and graded stock on hand. The use of iron in erecting fire-proof buildings; the demand for quartz mills, water and gas pipes, and for railroads, is increasing year by year, keeping pace with the expansion of the several branches of industry, until the requirements will be so great that the raw material scattered so abundantly throughout our State is bound to be utilized.

The consumption of pig iron in Oregon during the past year has been nearly 10,000 tons, and the price about \$30 per ton; of the other kinds three times as much. Our annual expenditure on account of this item has amounted to a large sum. A company was formed in 1866 at Oswego, seven miles above Portland, and has been conducted with varied success ever since, smelting pig iron, iron pipe, etc. Up to this date it has produced some 200,000 tons, and is now manufacturing iron pipe. As the iron was found to contain a small percentage of phosphorous, it precluded the manufacture of steel. On Scappoose Creek, about twenty miles north of Portland, a large bed of iron is known to exist, which is said to be about two hundred feet thick, and heavily overlaid with shell marle.

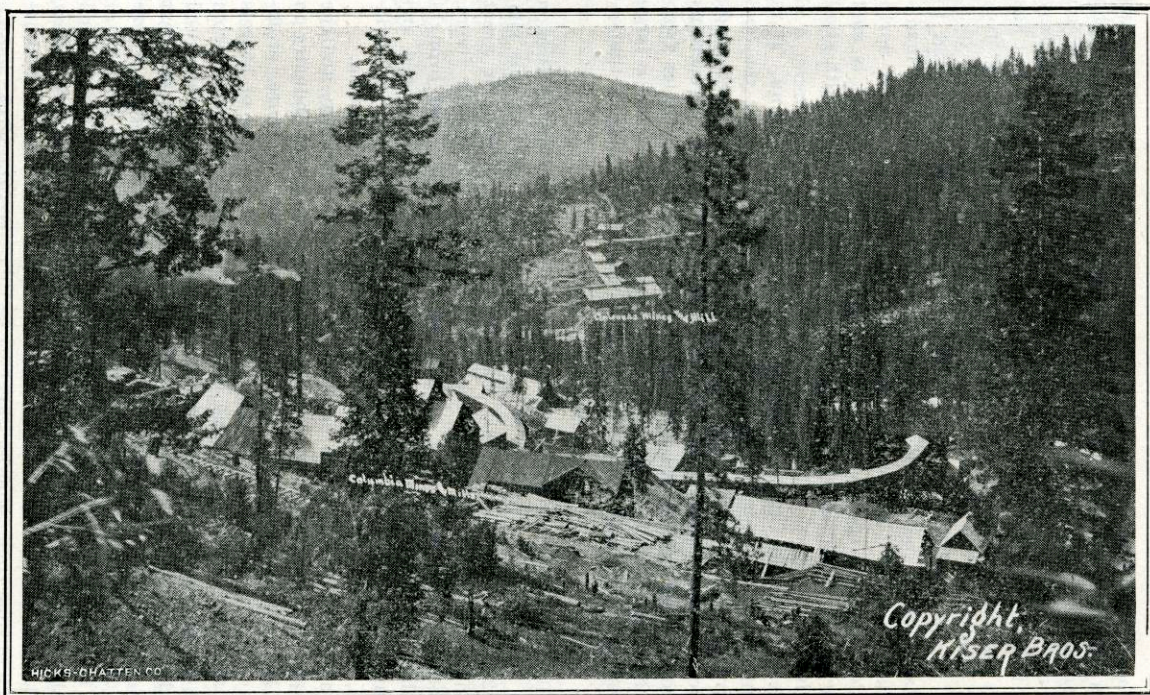
Near Columbia City iron ore of a good quality is found. It is about thirty feet thick, with shell marle overlying it, and the coal of great thickness underlying it. No attempt has ever been made to determine the quantity or quality of either, though there seems to be a promising outlook for future development. Six miles from the Northern Pacific Railroad station Scappoose Creek has a large waterfall, and there is an abundance of the best quality of timber.

CEMENT MATERIAL.

All of the Portland cement formerly used in the State of Oregon was imported from Europe at great expense, and sold in this city at \$2.50 and \$3.00 per barrel. Calcareous clays are found in great abundance on the banks of the Columbia and Willamette rivers, especially shell marle. A carload of this material was brought to this city about twenty-six years ago, where it was burned and ground in a crude manner and used to cement several brick buildings, and to-day may be seen in a perfect state of preservation.

The consumption of this material in Oregon is immense, and the demand is increasing year by year. Perhaps no other industry in our State promises better results, and certainly no more profitable investment of capital could be desired. Thousands of barrels are annually consumed in the Government works, and aside from that a large amount is used in the construction of sidewalks and buildings, the former alone requiring 10,000 barrels within the past year, all of which was imported from the State of California, where the demand exceeds the supply by 700 barrels per day.

While we have an abundance of this material in the central and southern parts of the State, it will never be practical for cement works because it is at the mercy of a railroad, but a great abundance of lime rock could be imported to this city from Orcas Island,



Quartz Mill.

in Puget Sound, at an expense of not more than two dollars per ton, should the shell marle found here prove to be not sufficiently rich in lime.

An abundance of clay can be found at many points along the Willamette and Columbia rivers, and delivered at almost any point desired at an expense not greater than fifty cents per ton on barges, so that the scheme seems feasible and practical from a financial standpoint.

COPPER.

Copper ores exist in great abundance in many parts of the State of Oregon, not only in the Cascade Mountains, but also in the Blue Mountains on the Salmon River.

The principal gold-bearing ores of the Cascade Mountains are copper. In the Little North Fork of the Santiam River, in Marion County, there are a dozen or more companies operating on good concentrating copper ore, some of the samples going as high as \$100 per ton in gold.

In the Waldo District, in Josephine County, is found the most distinct copper-bearing ore in the State. The greatest amount of development work done on any property in this district has been done by the Waldo Smelter Company. They are said to have large quantities of ore blocked out awaiting better transportation facilities. The Pacific Railway Company have surveyed the right-of-way from Grants Pass, in Oregon, to Eureka, in California, and while the smelter is now being erected for the reduction of the ore, no shipments have yet been made.

ROOFING SLATE.

Along the bed of the Rogue River has been found for many miles roofing slate in great abundance, which strata were formed under the influence of heat and pressure, and has resulted in the crystallization of fine argillaceous schist or slate, which is hard and smooth in surface, and does not absorb water.

No attempt has ever been made to utilize this for building purposes, which would be an enterprise worthy the investment of capital. It is sufficient to say that there is evidently enough of this slate to roof the whole Pacific Coast.

QUICKSILVER OR CINNABAR.

The Black Butte quicksilver district is about four miles long, and two miles wide, and lies on the northern slope of the Calapooia Mountains, near the head of the Coast Fork of the Willamette

River, in the southern part of Lane County. The elevation at the apex of Black Butte Mountain, the highest peak in the district, is 2,750 feet above the level of the sea.

The entire district is owned by two companies. A private company of Portland, Oregon, controls about one thousand acres, including the Bald Butte and Cinnabar Butte Mines. The Black Butte Quicksilver Company, a Washington State corporation, together with its allied interests, control practically the balance of the district. Some five years ago this company acquired the mine. A Scott continuous furnace, having a capacity of fifty tons per day, was installed, together with other surface improvements. Subsequently the control of the corporation passed into other hands, under whose management over twelve thousand feet of underground work has been accomplished.

The Black Butte Mine is admirably placed for economic mining. Situated at a moderate altitude, mining operations, both above and below ground, are unhindered throughout the year. An ample supply of water, abundance of water power, unlimited timber for fuel, wide veins and soft rock, are some of the favorable factors. The erosions that left Black Butte Mountain standing abruptly 1,750 feet above the valley at its base, have made it possible to reach the veins of its fissure system to a depth of 1,600 feet by comparatively short drifts, thus affording natural drainage, and the opportunity for gravity haulage of the ore. Over two thousand feet of "backs," on the dip of the vein, may thus be explored at a minimum cost before it will become necessary to install any pumping or hoisting machinery. It would seem that Nature has afforded every possible factor for cheap production. The average cost of quicksilver ore mined and treated in California, as shown by the published reports of the principal mining companies, ranges from \$3.00 to \$4.80 per ton; the average cost of production at the Black Butte Mine has been \$1.40 per ton; these figures include charges of every kind, such as mining, transport of ore, treatment, flasks, and delivery at railway station of marketable metal, excepting pro rata charges for development work, interest of capital invested, and deterioration of value. The management estimates that with increased handling the ore on a large scale, the above production cost can be appreciably reduced.

MARBLE.

Marble quarries of great extent are found within six miles of Roseburg, in Douglas County, but the development work has been exclusively confined to home consumption, as the expense of trans-

portation excludes it from the Portland market. The article is variegated, running through the whole series of colors from white to black. The supply is apparently inexhaustible. It is also found in large quantities in Wallowa County, in Eastern Oregon, and in many other parts of the State.

WOLFRAMITE OR TUNGSTEN.

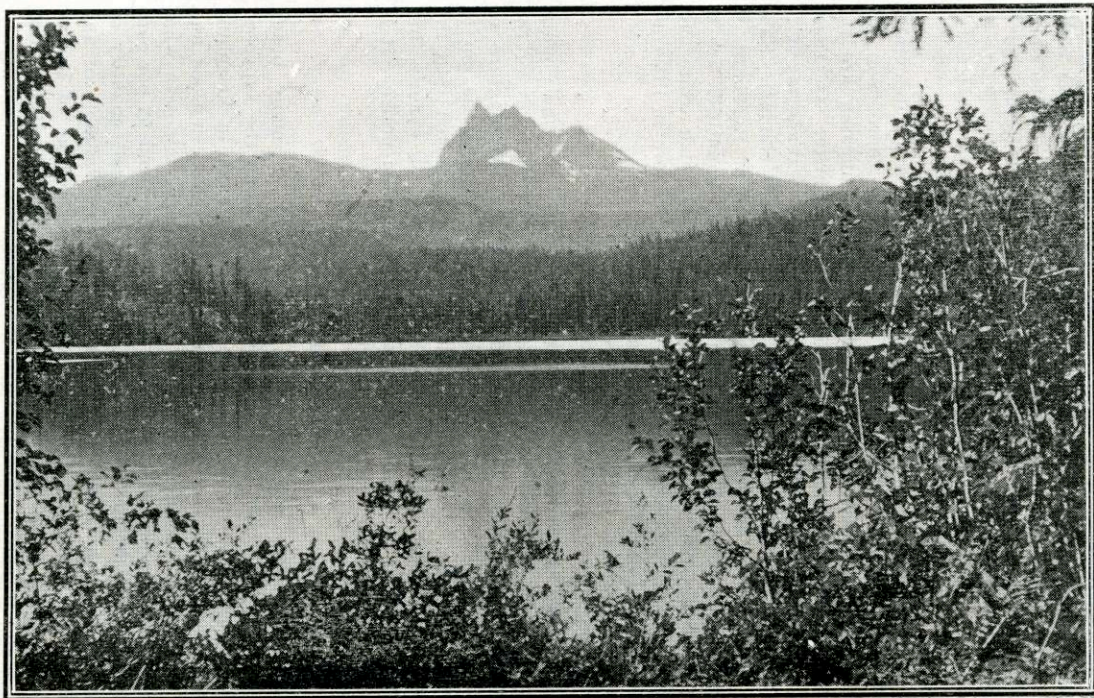
It is dark gray or greenish gray mineral, and is a sub-metallic substance, and only within the past few years has there been any considerable demand for it. The sources of tungsten are the three minerals: Scheelite, wolframite, and hubnerite. Of these ores, the one that can be used the most largely in rendering it to the metal or ferro-alloy is scheelite, a tungstate of calcium. Samples of scheelite have been brought me from near Roseburg, in Douglas County, and I have no doubt that large quantities are to be had in that district. It is a very heavy yellowish white substance, with an adamantine to vitreous lustre. There is little demand on this Coast for it at the present time.

BUILDING STONE.

Granite and sandstone in great variety are found in Lane County, and in several counties of the Coast Range. From many of the samples I have seen, I am confident that the manufacture of grindstones would be an investment worthy of capital as, up to the present time, all of this article has been imported into the State. Most of the so-called granite found here is cyanite, but very valuable as a building stone, and takes a high polish. It is found in Union, Linn, and Lane counties.

PLATINUM.

Platinum occurs associated with placer gold, in many beach mines along the Coast, and, in places, extends along the supposed platinum belt between the Galice and Waldo districts, in Josephine County, and notably on what is termed Gold Beach, in Coos and Curry counties. It has been saved from the placer mines in what is called the Madden Mine for many years, and is about 52 per cent platinum, with 30 per cent irodoamine, and a small quantity of rhodium and ruthenium. This metal is the most valuable of any platinum now found on account of its high percentage of irodoamine, which is much used in the Welsbach burners. It has also been found in some other parts of the State, and in Washington, associated with pyroxene.



Marion Lake.

KAOLIN.

Clays in great variety are found in almost every part of the State, and are extensively manufactured into firebrick, tiles, and hollow building blocks. The Pacific Pottery Company, of Portland, capitalized for about \$50,000, is largely engaged in the manufacture of stoneware, for which they find a ready sale.

CHROMATE OF IRON.

This is mined extensively in Curry County. Cargoes have been shipped to the San Francisco market, thence to Europe, for reduction for various uses. It is also found at Riddle Station, in Douglas County, but of limited amount.

SIENNA.

Is found of good quality, and in various colors, at Walker, about two miles north of Cottage Grove. It has been much used for painting buildings and fences, but has not yet been treated properly for the market, owing to deficient milling capacity.

NICKEL.

A considerable amount of this ore is found near Riddle Station, in Douglas County, on the Oregon & California Railroad, about twenty miles below Roseburg. Several carloads were shipped East for reduction. The ore is genthite, which is a magnesite of nickel. The deposit seems to be extensive, and contains some high grade ore. Some large sales have been made.

BEAUXITE.

This is found in good quality, and quite extensively, in Clackamas County, on Clackamas River, near Oregon City. The article is pure hydrosilicates of alumina, and the deposit is estimated to be eighty feet thick, but covered with a large thickness of ferruginous clay. This article runs as high as 60 per cent in aluminum oxide.

STEATITE OR SOAPSTONE.

Has been found in great abundance and variety both in Eastern and Western Oregon. Some of it is of very superior quality, transparent to opaque; useful for the manufacture of slate pencils, cooking griddles, and many other things.

METALLIC BISMUTH.

Extensive deposits of a very superior quality of metallic bismuth have just been discovered in Douglas County, but the mines have not yet been opened.

FIRECLAY.

An extensive body of fireclay is found in Clatsop County, near the ocean beach. It is a good refractory clay, and has a considerable percentage of uncombined silica, with 18 to 20 per cent of alumina, and seems to lie in strata. In its natural state it is quite hard and solidified. A sample of the clay, when submitted to a white heat, and then thrown into cold water, is unaffected. It contains a small percentage of iron, sufficient to give it a pink color when converted into a firebrick. I should think the article was suitable, in every way, for the manufacture of firebrick, crucibles, muffles, etc. As yet it has not been utilized for these purposes, but promises a very extensive industry as the material, in large quantities, is shipped here from Europe to supply our demand.

MOLYBDENITE.

Is found in extensive bodies in Union County, in Eastern Oregon, and there appears to be two separate and distinct deposits in that district. Up to date only small shipments have been made, owing to lack of transportation facilities, but extensive shipments are to be made from Union County this coming summer. Small deposits are also to be found in Douglas County, and in the southern part of the State.

INFUSORIAL EARTH AND TRIPOLI.

Is found in several parts of the State in extensive beds in Tillamook, Morrow, Wheeler, and Malheur counties, and especially along the Des Chutes River, and is many feet in thickness. It has only been used locally, no shipments ever having been made out of the State. Some of the samples appear to be well adapted to the manufacture of Sapolio.

DIAMONDS.

At old Umatilla landing, in Umatilla County, where I was in business in 1870, a miner brought me a perfect bort or carbonado, said to be taken from his placer claim in Malheur County. The stone had a rounded form with a few small cavities dark in color, but showing some yellow. Its weight was $2\frac{1}{2}$ carats. I had no reason to doubt his statement, as I knew him to be a miner from whom I had purchased some \$1,600 worth of gold dust, but, to my knowledge, no systematic search has ever been made for these stones.

CRYOLITE.

A rather impure quality of cryolite is found across the Columbia River in Stephens County, Washington, and several shipments have

been made to Eastern manufacturers of glassware. In Harney and Lake counties, in Oregon, a far superior quality is found, but no attempt has been made to utilize it, owing to lack of transportation facilities.

COBALT.

There is only one well defined ledge of cobalt in this state. This ledge also carries large values in gold. It is located in the Quartzburg Mining District, in Grant County, Oregon. The Standard Consolidated Mines Company secured control of this ledge, and incorporated the same for \$5,000,000.

Samples of cobalt bloom have been brought me from different parts of the State, but no investigation of the same has ever taken place.

BORAX.

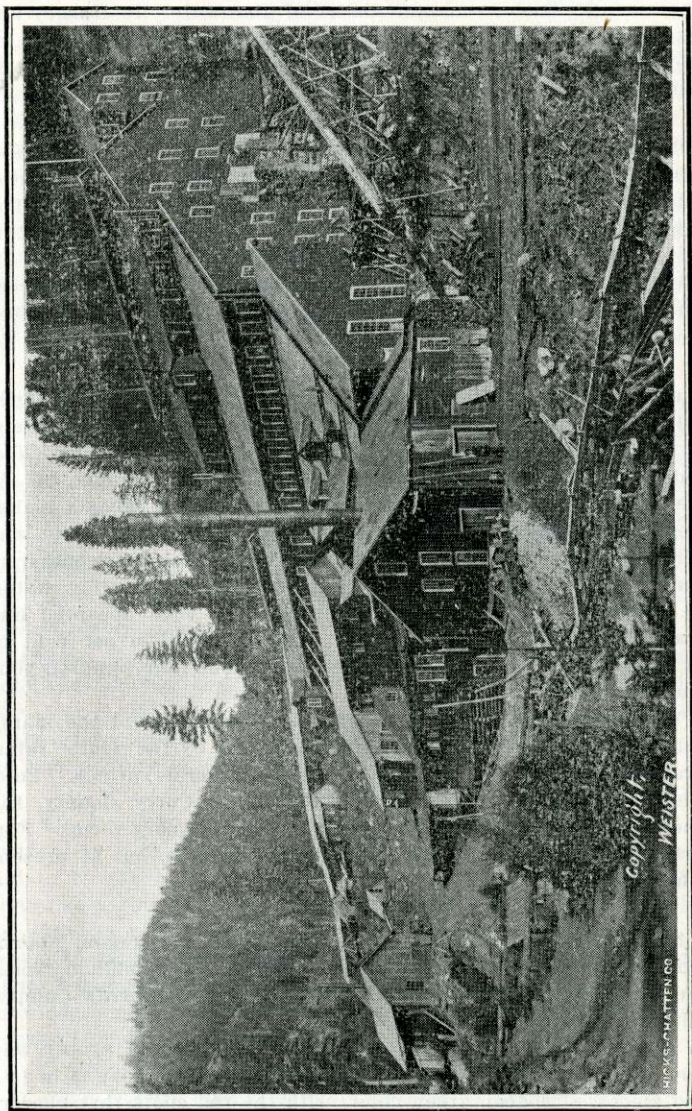
Large deposits of borate of soda are found in the marsh lands in Harney County, covering an extent of 10,000 acres. Perhaps not over 250 acres of it are rich enough to pay for working. The product is shipped to Winnemucca, Nevada, a distance of 150 miles. This soda borate is covered with a layer of salt six inches thick. It is composed of sodium carbonate, sodium sulphate, and sodium chloride, along with the borax. During the hot weather in summer the material is shoveled up, dissolved in boiling water, and sulphuric acid is added. The solution is then decanted and boracic acid precipitated from the liquid. About 20 per cent of the raw material is borax, and the yield about four hundred tons annually.

The Rose Valley Borax Company owns the richest of the marsh lands, and the deposits are renewed each year by the winter rains. Borax is supposed to be produced from mineral springs. Colemanite occurs five miles north of Checto, in Curry County, the mineral being in compact layers, and in concretionary forms. Formerly this material was shipped to San Francisco, but at present nothing is being done.

MISCELLANEOUS.

There are many other rare minerals found in Oregon, among them being vivianite, pumice stone, spodumene, vanadium, soda, nitre, pitch blende, and uranium. Near Heppner, in Morrow County, opals are to be found.

A discovery of true bloodstone (heliotrope or moss agate) was made near Hood River, in Wasco County. The heliotrope is in fair sized pieces, of a deep green color, with the red spots that characterize this variety, making specimens as fine as those from India.



Quartz Mill.

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WEISER

HICKS-CHATTEN CO

Water agates are found in abundance in the vicinity of Yaquina River.

It is probable that no part of the United States abounds in so many mineral springs as in Oregon. Waters of great variety, both hot and cold, carry soluble sulphates of sodas and chlorides.

I regret that I am unable to furnish more accurate data in regard to those mineral products found in the State as to quality, quantity, and locality where they are found, and the feasibility of their transportation. It is hoped that in the near future the State will provide means for this purpose so that foreign investors may be informed of these great sources of wealth which are so eagerly sought after.

PROSPECTORS.

For the past thousand years it has been the first duty of the miner to explore the surface of a country for minerals and metals. They are not only a necessity, but an actual measure of civilization, for it cannot be denied that the country that possesses the greatest weight of manufactured metal has attained a corresponding degree of civilization and influence in the world.

To the prospector we owe much. He throws the niceties of life to the winds and strikes out into the solitude of the mountains, where nothing but hardships await him. He bakes his bread in a frying pan, and broils his bacon on the end of a stick. His bed is made of fir boughs, and he sleeps with no protection but his revolver. He is a born speculator, and takes long chances, but whether his home is in the log cabin or the hovel, he is a bee and not a drone in the hive of human industry—the kind of man that makes the world move, and many such are to be found among our millionaires and statesmen.

I knew Alvinza Hayward when it was said his credit was not worth a fifty pound sack of flour. One year from that time his income from his mine was \$1,000 per day. He died a multi-millionaire. In the early '60's Senator George Hearst and myself prospected in the northern part of Idaho and Eastern Washington on a diet of bread and bacon, using saddle blankets for our beds, and saddles for our pillows, on the dry hard ground, and often found in the morning that rattlesnakes had been our sleeping companions. Hearst was a good and great man, and died a multi-millionaire from his mines. Such men can be counted by the hundred.

Few people have any idea of what the development of a great mine means. The first step is the building of a wagon road to the

mine by the nearest route. The next requisite is the building of a sawmill in order to build sheds, barns, stables, boarding and bunk houses, residences, and a schoolhouse.

A mail route, post-office and store must be established, and the storekeeper reaps a rich harvest, as he handles all the cash and checks. It means an immense mill with great machinery for the reduction and treatment of the ore, adding millions to the national wealth, and converting a howling wilderness into a thriving settlement that will endure perhaps for hundreds of years.

My purpose in this pamphlet has not been to speak particularly of any one mining district, but of the whole State in general. Very few of the old residents of Oregon can comprehend the importance of our mineral industry. Take, for instance, the mining district about Baker City and the leading mines there. The majority of our people have not the remotest idea of its magnitude. It means more to Oregon than the best three banks in the State. I know that many will consider this statement wild, extravagant, and visionary, but, nevertheless, it is true, to say nothing of the other mining camps of the State. I have often called the attention of the miners and prospectors to those parts of our State which are but little known except, perhaps, from the straggling prospectors of early days, who had but little scientific knowledge of the country over which they traveled beyond the quartz veins and their outcroppings. I allude to that portion of our State which was supposed to be covered with a basalt lava along the central part of the Cascade Mountains, but the several visits which I have made in that section have convinced me that such was not the case, but that we have there a very great and valuable mining country. As we ascend the western slope of these mountains the basalt lava is met with, which covers a considerable portion of the country, but as we continue east the rocks begin to change. As we leave the basalt rocks we first encounter the sandstones and argillites and andersite porphyry, the latter being the true mineral-bearing rock of the country. Continuing east the same rocks again appear in reversed order. This is evidence to me that this region is not wholly covered with basalt rocks, but rather two eruptions, an eastern and western, occurring at the same time, or at different periods, the western perhaps later, as the tufa is lighter on the western slope than on the eastern. There seems to be quite a scope of country between the two eruptions which is pierced by the basalt rocks appearing in the midst of the stratified rocks like islands in the sea. The plutonic rocks in many places are folded and are phronolites or clinkstones of the country.

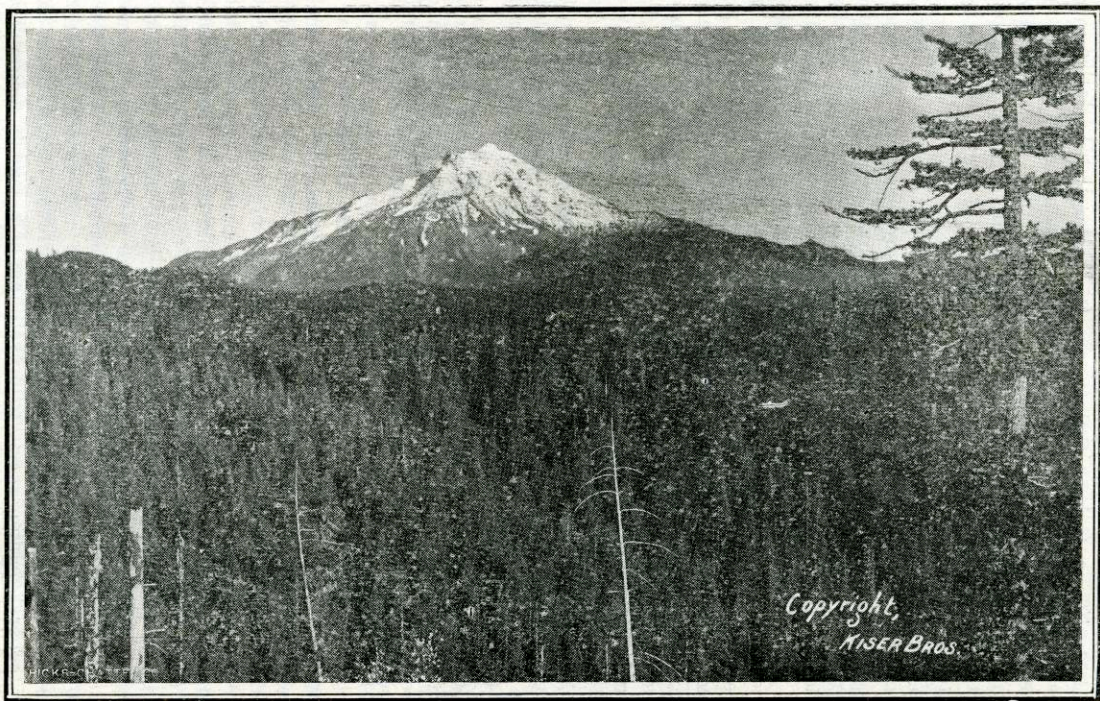
Extending along this range of mountains from Mount Jefferson to Gold Hill, in Jackson County, are the regions where the future great mining operations of Oregon will be conducted. The present development in Clackamas County, Santiam, Blue River, and Bohemia all indicate it, and to-day we are hardly on the threshold of the future discoveries and developments of this part of the State.

When the topographical map of this section is completed, it will be of immense value. It will be on standard sheets on the scale of one hundred miles, with contour lines one hundred, fifty, and twenty-five feet apart, as determined by the ruggedness of the region surveyed. It will show the slopes and heights of the hills and mountains, grade of the streams, and configuration of the valleys, roads, trails, cabins, and township corner lines. The sheets will be the size of an ordinary newspaper, and cover an area of about four hundred square miles. The mining man can locate his property on the map with reference to elevation, distance from mountain peaks, waterfalls, streams, and towns. He can determine the length of roads or trails, and grade and location of mills and smelters, and the feasibility of constructing roads. The old cabins and excavations of the early prospectors can still be seen in this part of the State, which shows that gold in considerable quantities must have been taken out; but the cabins and the sluice boxes were all abandoned in search of richer fields.

Gold is found in nearly all the ravines and hillsides, doubtless coming from the porphyry dykes and veins. The porphyry found here is the same as the perphylyte of Nevada, which was found by Wadsworth to be altered andersite.

REDUCTION AND TREATMENT OF ORES.

Mining, like any other business, must be conducted on the basis of a safe and legitimate enterprise. One false move is more detrimental to the mining interests in our State than all other failures, and there should be more stringent laws passed protecting the mining industry. In Oregon most of the mining has been poorly done by men without the necessary means or the requisite knowledge. In order to maintain the supply of gold, mining should not be trusted to inexperienced managers. The overstocking of mines and scattering the stock all around the community in small lots, has, no doubt, in a general way, crippled the mining industry. In this connection there is another factor worthy of consideration. The general opinion seems to prevail that if a man is a graduate of Heidelberg, in the Old Country, or even of some of the schools



Mt. Jefferson.

in this country, that he knows all about the Western mines, and his opinion is often taken in preference to that of one who has had thirty or forty years actual mining experience, though, no doubt, some of them are competent.

The special need of Oregon to-day is a more thorough examination and report of the mines of the State. Oregon has now passed the transitory stage of her existence as a gold-producing State, and her future mining will take new forms and methods which will be stable, and the results are as sure as are her mountain chains, which hold her mineral wealth.

Virtually all we know about mining has been gained in the last fifty years. The progress has been greater than it has in a thousand years previous. Practically the first method of quartz mining was started on the Comstock vein in Nevada in a very crude manner. I believe the first one erected was square sticks of timber raised in slots by cams, and simply shod with iron. Those who have lived through these years cannot help marking the wonderful improvements in the machinery and the reduction and treatment of ores.

The fact that the mountains are filled with machinery that is lying in idleness argues nothing against the value of the lodes or veins for which they were erected. Because the ore is rebellious, it does not follow that the gold is not there, as assays and tests by other methods give good value. No man should erect a mill with the expectation that he has a freemilling gold mine, for, as sure as the grass grows and water runs down hill, he will find that, as soon as he has mined his ore below water, he will have sulphurets, or what is called rebellious ore. The truth is that wealth lies in the rebellious ores themselves, which are rebellious in no sense other than that the gold which they contain cannot be extracted by any known freemilling process any more than roast beef can be transformed into chicken soup. One great error many are subject to is in getting a mill at great expense before they are sure of having a mine to work. They may have one or two hundred tons of ore on the dump, and have a burning desire to get the money out of it to help the thing along, and without properly calculating the cost, invariably get in debt for the mill, and, after running a short time, find that their ore had never been fairly sampled, or that they had estimated its value per ton too high, or lost half the gold by improper milling, and the result is a failure.

Many men who have had but little experience about a mill think the crushing and milling of ores is a very simple affair, and

can be done by any novice who has seen it, but this is a great error, as there is a great deal about a mill that can only be learned by experience. First, the character of ore, and how it should be treated; setting of the stamps; the size of the screen used, and the treating and cleaning of the plates for amalgamation, and the blanketing of his boxes. The determination of the value of his tailings. Above all, the amalgamating of his ores in the battery. I have seen some inexperienced mill men pour a pint of quicksilver into the battery when a few pennyweights would have been all that was needed. In one instance I had brought to me about \$150 worth of gold taken as the result of fifteen tons of ore, an average of \$10 per ton. Samples of the tailings from the same ore I found to be worth \$50 per ton, and the operator of the mill really supposed he knew all about his business. But, as I have previously stated, the real value of the mine lies in the value of its sulphurets, which are bound to be encountered as depth is obtained. Consequently the ore is a concentrating proposition; for this reason many have abandoned their mill because it failed to produce any gold from its sulphurets, when all that is required is a concentrator for the saving of the sulphurets.

Most of these ores can be treated on the ground by the cyanide process, and made to pay handsomely, but where the facilities for transportation are convenient, they may be shipped to a smelter and they are invariably worth several hundred dollars per ton. There are an abundance of these mines all through the Cascade Mountains, which could be made to produce hundreds of tons of concentrates per day, and yet many of these claims are held by annual representation by men who are not able to work them themselves, neither will they allow others the privilege of doing so without a large cash payment on the mine before it is properly developed. There are many points in these mountains, which, if properly worked, could keep a smelter busy turning out base bullion.

WHERE HARD TIMES ARE UNKNOWN.

It is not generally known that Oregon possesses one class of people to whom "hard times" are unknown, and who are unacquainted with want.

Of course, we have all heard more or less of the Blue Mountains, but principally as the home of the black bear and the cougar, little thinking that they are also the home of hundreds of happy people for whose peaceful lot many in the city would gladly exchange all their holdings.

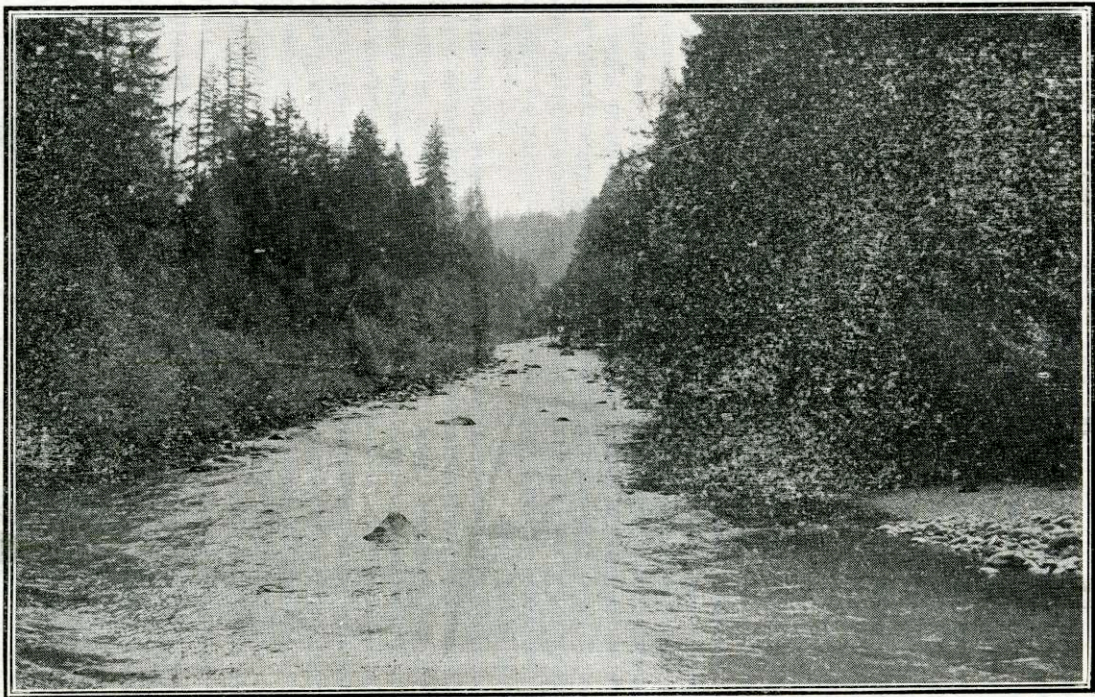
If you look upon the map of Oregon you will find that a large part of our State is composed of the Cascade and Blue Mountain ranges, and that many places in these mountains can be cultivated, and good crops grown. The climate compares favorably with that of Illinois and Iowa, the soil is of the richest, and all kinds of cereals grow in abundance.

In 1893, when the hard times were on and the banks were failing all over the country, and business was virtually suspended, while Coxey's army of idlers was on its way to Washington City I was called to Eastern Oregon to examine a mining property, and took a trip through a large section of this country lying between Baker City and Prineville, through Canyon City, John Day, Granite Creek, and out to Pilot Knob, in Umatilla County. I found this country rather thickly settled with what you might call the mining ranchers, men who picked their locations with regard to timber, water, and, chief of all, to banks of gold-bearing gravel, which is more or less distributed throughout this region.

Having chosen this favorable locality for his ranch, he settles down to stay, little caring how the rest of the world wags. I know of many men who have been in these mountains twenty-five years or more, who have raised their families there, and who are not only contented and happy, but rich, some having as high as \$30,000 in the bank.

Generally the mining claim is within a mile or more of the ranch, and from this they take the wealth deposited by Nature as a provision against hard times. Mining operations begin in March when the water commences to run. This is often brought a mile or more in a ditch, thence in iron pipes to the claim. When the sluices are set in the spring the piping begins, and mining is continued for two or three months, night and day. As the water falls they commence to clean up the bed rock and sluices, the results often being from two to six thousand dollars. The flume boxes and riffles are then taken up and laid away for the next year's use. However, they are not wholly dependent upon the result of their mining operations, as they can always sell a few head of cattle.

After the mining operations are completed, the gardening and ranching occupies the balance of the year. When the hay is cut and the log barn full to provide for the stock during the winter, a four-horse team is rigged up and started for Walla Walla or Pendleton to get the winter's supply of goods, and all is made snug for winter, and ten feet of snow fall, which is gladly welcomed, as it means plenty of water for mining purposes. The roads are generally kept broken, however, and a twenty-mile ride in a bob-



Santiam River—Fishing Stream.

sleigh to a dance or a wedding is no unusual occurrence. Their tri-weekly mail brings them their school books, papers, and periodicals of all kinds, as well as merchandise in a small way. I have seen a boy, twelve years of age, mount a beautiful mare and ride thirty miles to a railroad station on an errand, and return in seven hours time, neither horse nor rider the worse for the trip.

The ranch houses are comfortable, though not of the latest architectural design, and, for the most part, constructed of logs, chinked with clay, but they are warm and comfortable. There is always a large stone chimney with a fireplace big enough to roll in a four-foot backlog, and you may be sure that the fire does not go out from fall until spring, and often not the whole year 'round. Over the fireplace, in forked sticks nailed to the logs, hangs the rifle and the shotgun. To be sure, the furniture is rude, consisting of but little more than a bootjack and a cradle, the latter constructed of a shoebox with rockers nailed to the bottom of it. Also big easy chairs, made from rude material, but very comfortable. This is, of course, only the primitive start, as, when the claims pay, and their bank account mounts up, they have as good as anybody. There are many young men and women in these mountains who have seldom been out of them, yet they are as bright and smart as city boys and girls, and in many respects will double discount them, as, for instance, in health and beauty. The women are all good cooks and splendid housekeepers. They have abundance of genuine cream, and give the skim milk to the hogs. They are great rustlers, generous, hospitable, and always ready to assist their neighbors and newcomers. They know nothing about city life, and care less. They are the most independent, the happiest, and most contented people on earth, and know nothing of hard times.

Their politics and religion are of the highest order, and they are well informed on the questions of the day. They know all about the map of Asia, and the war in the Orient. Taxes, wood, insurance, and water bills do not bother them. Neither does the dairy commission, the State Board of Health, or microbes in the water, and many of them have a very snug bank account to their credit, running up into the thousands. I know of three in particular, who stuck to their claims until they had \$60,000 each, then sold them for \$40,000 and retired. There is still enough left in these claims to make a dozen men rich.

Among these ranch miners are some old fossils, indolent and worthless. I once employed one of them to drive me a distance of twenty-five miles into Baker City. I asked a man how long he

thought it would take me to make the trip, and he said that if I took a pint bottle of whiskey along he would drive me in about four hours, or, if I did not, we would be ten hours on the road. Needless to say I took the whiskey along and made the trip on time. It was the first time I ever realized the motive power of whiskey.

There is room enough in these mountains yet—enough unoccupied mining claims for 40,000 people, who well may be envied their independence and freedom.

CONCLUSION.

In the foregoing I have merely endeavored to point out to the prospective investor the material advantages of Oregon as a desirable place of residence, and a profitable field for the investment of capital. I am well aware that it is not as full and complete as it might have been had space permitted my taking up in detail the products of the various mining districts, including the different methods of ore treatment, reduction, etc., but have only made such statements as would lead any one to see its advantages on the basis of a permanent and legitimate business enterprise.

FISH AND GAME IN OREGON.

By A. E. Gebhardt, Secretary Oregon Fish and Game Association.

No other region in the United States, and perhaps no other country in the world, presents to the lover of outdoor sports so many and such varied attractions as the Pacific Northwest, and this is particularly true of Oregon. With its snow-capped mountains towering above evergreen forests, vast areas of which are still an almost primeval wilderness, with its majestic rivers and lovely mountain streams, it is a veritable paradise to one who can enjoy the sublime and beautiful in Nature. And where will you find a true sportsman who is indifferent to the glories of natural scenery? Who that has a heart and soul can ever forget the ecstatic joy that has filled his soul when, in the excitement of the chase, he has been suddenly brought face to face with some awe-inspiring, soul-uplifting scene? At his feet, perhaps, a great canyon with a roaring stream in its depths; yonder a magnificent waterfall, a glittering sheet thundering over a precipice hundreds of feet high, and boiling in white foam at its base; and far in the distance great stretches of snow-capped

mountain ranges and vast forests of fir and pine, and spruce and hemlock, through which a mighty river winds its course to the sea.

If you are a hunter and take delight in the search for large game, come with me to the Blue Mountains of Eastern Oregon, or to the beautiful valleys of the Rogue and Umpqua rivers, in the southeastern portion of the State. There, in forests as dense and wild as any in America, you will find the bear, the deer, and the elk in numbers, and you may have an opportunity to try your aim (and, perhaps, test your courage) on some prowling cougar, himself in quest of game.

If you prefer upland birds, you can have sport to your heart's content in pursuit of the latest addition to the list of American game birds, the Chinese pheasant, found in abundance in the great valley of the Willamette stretching for nearly four hundred miles from north to south, in the western portion of the State. No bird can try your patience more or deceive you oftener than he; but when you have bagged him, you have not only a bird of graceful outlines and most gorgeous plumage, but one whose flesh will satisfy the most epicurean taste.

In this valley, and in all the valleys and foothills of the State, you will also find the native pheasant, or grouse, the partridge, and the quail. They are also abundant in Eastern Oregon, especially in the Blue Mountain region, where, in addition, you will find the prairie chicken and the sagehen.

As for waterfowl, you will find them on every bay, lake, and stream in the State. But, if you want to see them in such numbers as have never before gladdened your eyes, a trip to their breeding grounds in the Klamath Lake Region in Southern Oregon will be a revelation to you. There you will find great areas of water—thousands of acres—literally covered with ducks, geese, swans, snipe, plovers, pelicans, and other aquatic fowl. There hundreds of thousands of these waterfowl nest and rear their young every year. It is unquestionably one of the most wonderful breeding-grounds for aquatic birds in America, and is well worthy of a visit.

If you are a disciple of Izaak Walton you will find Oregon a paradise indeed, for its numerous mountain streams, wild torrents hurrying down from their elevated sources, and now and then resting in still pools, with waters cold and clear, are the haunts of the lusty trout, the grayling, and other game fishes; while the great rivers, at certain seasons of the year literally teem with salmon, smelt, shad, bass, and many other varieties of fish.

The "cut-throat" is our native trout, and may be found in nearly all of our streams; but, if you are particular as to the



species you want, Nature has here lavishly provided a good variety for you. In the Williamson, Mackenzie, Des Chutes, and Upper Clackamas rivers you will find the Dolly Varden trout, whose size, beauty, and gamey qualities are well known. In these and other streams, in various portions of the State, you will also find the Eastern Brook trout, the Loch Leven, and Rainbow trout, more than a million fry of which species have, within the last four or five years, been planted by the Oregon Fish and Game Association. This is an organization of sportsmen, with a membership of over four hundred, whose objects are "to assist in the protection and propagation of fish and game in the State of Oregon; to foster a true spirit of sportsmanship, and to promote acquaintance and good-fellowship among its members."

Experienced anglers, some of whom have fished in the best streams in Europe and America, and who have visited the Klamath Lake Region, in Southern Oregon, are loud in their praises of its excellence. Indeed, it would be difficult to find better fishing grounds anywhere for trout and other game fish than Pelican Bay, on Klamath Lake, and the streams which flow into it, or along the Rogue, Umpqua, and Mackenzie rivers. In this respect, the picturesque Wallowa Lake, in the northeastern corner of the State, and the numerous trout streams in the Blue Mountain region, such as Umatilla River, and Meacham, Birch, and McKay creeks, are a close second.

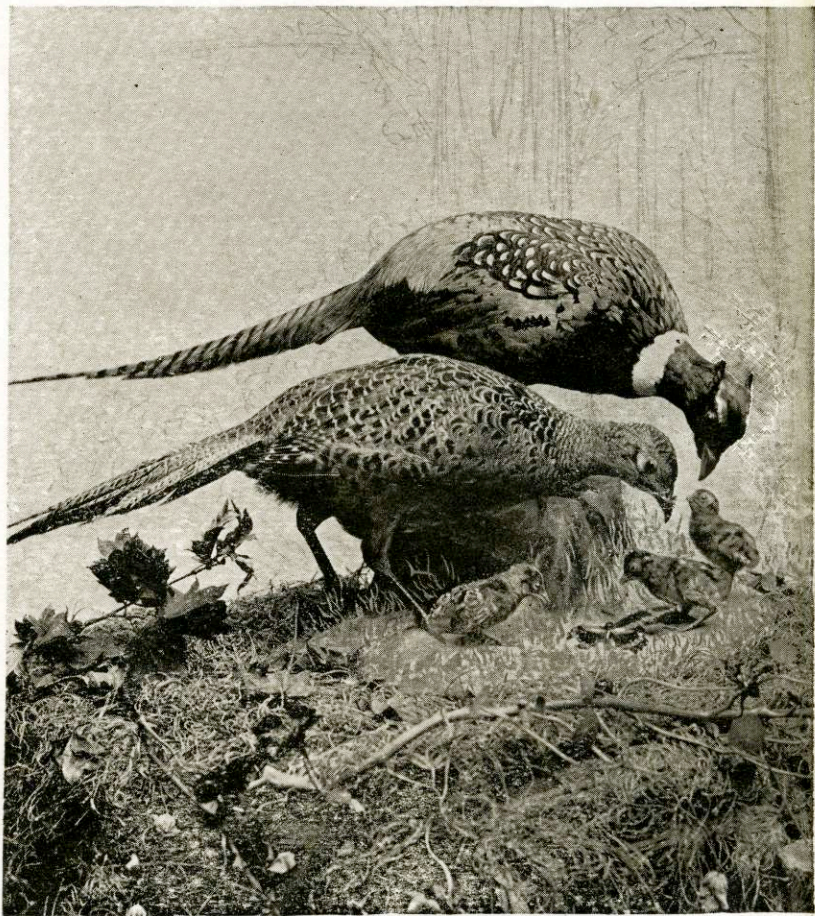
The Trask, Siletz, Tillamook, Necanicum, Nestucca, and Yaquina—all of them Coast streams—also afford most excellent trout and salmon fishing; and at Yaquina Bay, one of the most beautiful sheets of water on the entire Coast, you can, in season, have royal sport in fishing for that finest of large game fishes, the salmon. There you will also find a variety of salt water fishes, such as the kelp, flounder, and rock cod. There are also places along the Columbia and Willamette rivers which afford excellent sport in fishing for steelheads and other salmon, and salmon trout, with hook and line. Your achievements as an angler are far from complete, and you have still much to anticipate, if you have never caught a good sized salmon in that manner. Your spoonhook is whirling in the swift current, suddenly you feel a tremendous jerk, the next instant a steel-gray object leaps high out of the water and lashes it into foam. You have hooked a salmon. But hooking a salmon and landing one are very different feats, as you will fully realize after a little experience. Many times before you land him, if, indeed, you are fortunate enough to do so at all,

you will be wondering whether you will pull him out of the water or whether he will pull you into it.

Much has been done in Oregon during the last four or five years in the matter of fish and game protection and propagation and the good work is still going on. Our fish and game laws will compare very favorably with those of any other State. The trout laws are excellent, as an examination of the following abstract of some of their provisions will show. In Oregon it is unlawful to fish for any trout by any means whatever, except with hook and line; or to take, catch, kill, or have in possession any trout, char, or salmon less than five inches in length; or to take, kill, or capture more than 125 trout in one day; or to take, catch, kill, or have in salmon trout in any other than tide waters during said months; or before sunrise; or to sell, offer for sale, or have in possession for sale or exchange, any species of trout at any time.

It is also unlawful to explode, or cause to be exploded, any giant powder, dynamite, or other explosive, or to place, cast, or pass any sawdust, gas, lime, or other poisonous or deleterious substance in any of the waters of this State. Dynamiting trout or other game fish is punishable by a fine of not less than \$1,000, and imprisonment in the penitentiary.

To the lover of Nature, and of healthful, invigorating sport, Oregon bids a hearty welcome.



"Oregon's Most Famous Game Bird."