

Bend's Electrical Development and Power Possibilities are Notable

Town Has Modern Electrical Plant Capable of Serving a Community of 25000 Inhabitants---Unlimited Power Supply Close at Hand Assured

Mr. T. H. Foley, writer of this article, as resident manager of the Bend Water, Light & Power Co., is directly responsible for the conduct of the company's extensive service and is intimately familiar not only with what has been accomplished locally in electrical development, but also with what it is expected to accomplish.

Much has been written about the waterpower possibilities of the Deschutes river, but the old story is always an interesting one to all who are concerned with the development of the Central Oregon country. This remarkable river is capable of furnishing almost unlimited power as it makes its descent from its source in the Cascade mountains to the Columbia river. The average fall of the river from Benham Falls, 12 miles above Bend, to the Columbia, a distance of 163 miles, is 25 feet to the mile, and the year-round uniformity of the flow has long been regarded as phenomenal.

With all the tremendous power in this river, but little of it has yet been harnessed and put to work turning the wheels of commerce. At Bend the greatest development has been made, three dams being built and one having been in use for nearly three years now transforming the energy of the stream into electrical current. During the past year this project has been enlarged and its capacity increased, giving the town a power plant that has been declared to be the best in the Northwest for a small city.

This dam, the property of The Bend Water, Light & Power Co., is capable of developing a total of 2000 horsepower but is prepared at present to develop only 1100 horsepower. On May 1 was completed the new power plant of the company, a permanent structure constructed and equipped at a cost of \$45,000. The old plant is retained as an auxiliary, and should it be necessary from any cause to shut down the new plant, this auxiliary can be put to use in a few minutes, assuring the town electrical current for lighting and power at all times. The capacity of the new plant is greater than the old and it is built so that the future development of the town and country can readily be cared for by the installation of a second generator. In

fact, there is nothing to prevent a speedy increase up to the full capacity which the river affords at this point.

The Old and New Plants.

In this connection a somewhat detailed statement of the equipment of both the old and new plants may not be out of place.

In the old plant, now the auxiliary as stated above, there is a General

- A word concerning the make-up of the Bend Water, Light & Power Co. may be of interest, indicating as it does the substantial nature of Bend's backing in this important field. Early in December the Central Oregon Power Co., an Illinois corporation, with capital of \$200,000, purchased the Bend Water, Light & Power Co. from The Bend Company. The president and principal backer of the C. O. P. Co. is Charles A. Brown of Chicago, who has been intimately connected with electric power development, as a power through the Middle West, since electricity became of commercial importance. Kempster B. Miller, also of Chicago, is general manager and is also extensively interested financially. He is a partner of the firm of McMen & Miller, consulting engineers, among whose notable accomplishments was the entire reconstruction of the Home telephone system in San Francisco after the fire, a job entailing the expenditure of over \$7,000,000. The policy of the company thus far in Bend has demonstrated that it is its intention to give the town the best possible service and that it is counting on a big future business. While exact figures are not obtainable, it is safe to estimate that the local investment already is in excess of \$150,000.

Electric Company belted type alternator of late design, a Lefel turbine of the New American type, a Woodward governor and a mercury arc rectifier system.

In the new plant there is a 425 horsepower turbine, built in the shops of the S. Morgan Smith Co.; a direct connected generator exciter and switchboard, furnished by the General Electric Company, delivering for consumption 250 kilowatts, and a Woodward water turbine governor. The alternator or generator, operating at 2300 volts, is directly connected to the main shaft, to which also is the exciter belted. The exciter is designed to carry a slight overload when the alternator is fairly loaded.

In addition to the plant machinery, the generator room contains remote control of the motor driven pump for the city water service and a series are rectifier set for the magnetic city street lamps.

The new power house substructure is of reinforced slab concrete construction. The excavation has been completed for the half of the substructure unbuild. Construction of it will be behind a gravity bulkhead already in place which shuts off the water from the excavation. The plant was in operation 30 days after the substructure was finished.

The superstructure of the building is constructed of locally made brick.

Consumption of Power.

The increase in the capacity of the power plant came as a result of the demand for electric current here. Long before the new plant was ready the old equipment was being taxed. In no other town, perhaps, the size of Bend, is there such a large consumption. The average has been found to be 70 to 100 kilowatts for each 1000 of population, but in Bend it runs up close to 150 kilowatts per 1000. The field of consumption has been largely extended during the last year, especially for domestic purposes. The housewives have found out, for one thing, that it is possible for them to do their cooking by electricity and have had ranges installed, there now being a number of these in operation here. Such small apparatus, too, as percolators, toasters, water heaters, irons and the like are now used quite extensively.

In the line of manufactures, electricity is being used almost entirely as motive power and the possibilities in this direction are tremendous. The surplus power being developed makes it possible for current to be furnished to manufacturers at a low rate, thus making this a town preeminently adapted to manufacturing enterprises. Every effort is being made in this connection to attract manufacturing establishments.

When regarding Bend's broader power possibilities, it also should be kept in mind that the town's electrical resources, from water power development, are in no wise restricted to the dams immediately adjacent to town. For within twelve miles of Bend are what are undoubtedly the finest power-development possibilities existing in all Oregon. Greatest among these may be numbered Benham Falls, where the river drops 110 feet in a distance of 4000 feet. The Bend Water, Light & Power Company, for instance, owns 240 acres at Benham Falls, and 50 acres at Lava Falls; even the partial development of this power, irrespective of development of other properties, would equip Bend with more power than is consumed in the entire city of Seattle.

Among the local industries which have found electric power to be the cheapest and best power are the following: Bend Milling & Warehouse Co.,

four mill, 50 horsepower. Bend Water, Light & Power Co., city water pump, 40 horsepower. Miller Lumber Company, planer mill, 35 horsepower. Central Oregon Ice & Cold Storage Co. and Pioneer Cream Company, ice plant and creamery, 28 horsepower. O'Donnell Bros., meat market and cold storage, 8 1/2 horsepower. Bend Steam Laundry, 8 horsepower. Bend Bulletin, printing, 5 1/2 horsepower. Orcutt Bros., woodworking plant, 5 horsepower. Chas. Boyd, meat market, 3 horsepower.

This is a little less than 200 horsepower that is being consumed by manufacturers, whereas the present

plant is able to deliver 700 horsepower and can readily develop 400 horsepower more for manufacturing purposes.

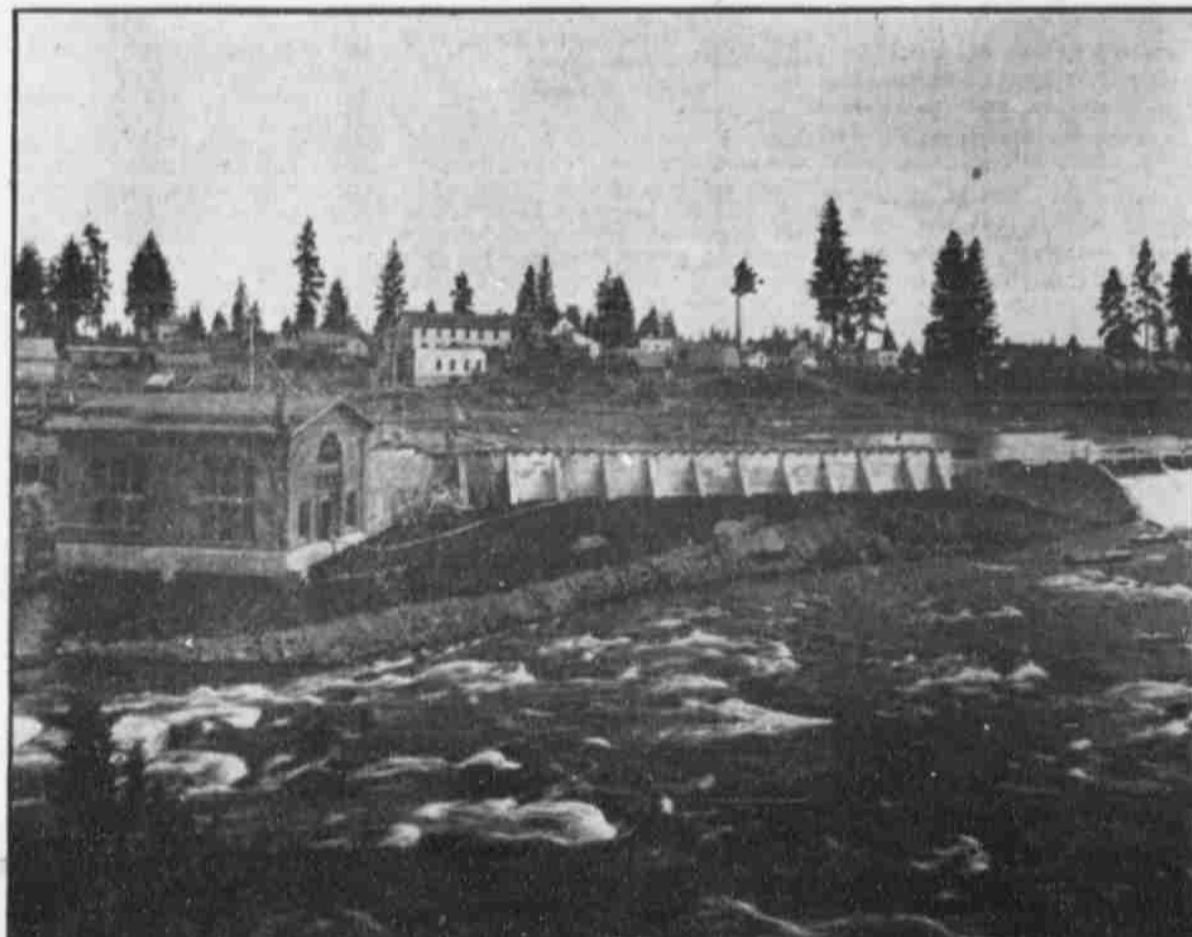
City Lighting System.

Extensions have been made during the year of the light wires to all the residence parts of Bend, there being now about four miles of pole lines. Deschutes, Center and Wiestoria additions have been supplied with lighting facilities and lines also carried across the river into Kenwood. In the distribution system as well as the generating, an effort has been made to have first class equipment. The transformers are all practically new and the poles

throughout the four miles of lines in sound condition.

The street lighting of Bend is by means of 15 General Electric luminous arcs, each of 1600 candlepower, and 14 incandescent Mazda lamps of 100 watts each. The incandescents, introduced for street lighting here some months ago, have been found to provide a good cheap method of lighting those portions of the residence districts not requiring arcs. The arc lamps are believed to be the most powerful used for street lighting in any town in the Northwest. Portland has the same kind of arcs, but they are of only 700 candlepower.

WATER POWER DEVELOPMENT.



Modern Concrete Power Plant at Bend.



\$150,000 Dam One Mile Below Bend.

DESCHUTES HORSEPOWER COMPARED WITH OTHER STREAMS.

Table comparing Deschutes horsepower with other streams: Niagara Falls—400,000; Deschutes—1,000,000; Willamette and Tributaries—500,000; Columbia at Celilo—475,000; Rogue—200,000.

J. N. TEAL SAYS PANAMA CANAL WILL MEAN MUCH TO CENTRAL OREGON

Mr. J. N. Teal of Portland, writer of this article, is acknowledged to be the leading expert in the Northwest on transportation matters, and as counsel for the transportation committee of the Portland Chamber of Commerce and in other capacities has been a close student of the probable effects upon this territory of the Panama Canal.

What will the Panama Canal mean to Central Oregon?

The answer will be found in applying certain obvious facts to existing conditions. Productions and markets are the two great factors in the problem, and the probable effect of the canal upon the latter is the chief one to be considered.

The productions of Central Oregon consist largely of grain of different kinds, lumber, wool, livestock, etc. The ultimate markets for these products lie both to the east and west, but it is largely in the east and Europe we must look for consumers.

According to the last census there are between the Mississippi river and the Atlantic ocean about 62 million people and in the states bordering the Atlantic and the Gulf of Mexico

40 million of the above mentioned population live.

Lumber Markets Now Limited.

It is necessary but to refer to the teeming millions of Great Britain and Europe. These people, to a very great extent, depend upon the United States and other parts of the world for food supplies and raw materials. It will be noted our products are largely low grade commodities in the movement of which the freight rate is a most important factor. It is because of this fact that markets for our products both as to area and population are limited and no remedy for this can well be found except through a lessened cost movement. Any lumberman would testify as to the extreme difficulty now found in marketing low grades of lumber even at cost, and as every log contains a percentage of low grade product, both production and profits are limited by inability to reach market. This also leads to a great waste of raw material. Even on the better grades, the Missouri river marks to a large extent the eastern boundary of our markets, although some lumber is sold east of the river. In marketing fruit like conditions largely prevail. Indeed for the reasons above given the result stated on market limitations necessarily follows.

Where are we to look for relief? Only through some instrumentality that will naturally enlarge our markets. This instrumentality will be found in the Panama Canal.

Canal Will Cut Rates.

It should be borne in mind that transportation units are not measured in miles but in cost. Water transportation is still the cheapest form. Keeping in mind the basic factors of production, markets and cost of transportation, we can better understand what the Panama Canal means to Central Oregon. From Portland to New York via Magellan the distance is 14,364 miles, via Panama 5943, the difference saved 8421 miles. To Liverpool via Magellan the distance is 14,784 miles, via Panama 8679, distance saved 6105 miles. To other European countries the distance saved would be about the same.

It will be noted that about 40 per cent of the distance is eliminated. This means an enormous saving in expense of transportation of every kind—fuel, supplies, interest, use of vessel, etc.—as well as carrying costs affecting the commodity itself. This saving will necessarily be reflected in the rate. Instead of a voyage of uncertain duration of three to six months to Liverpool, there will be a certain delivery covering a time of from four to six weeks. The rate on wheat should be lessened by from 8 to 10 cents a bushel. This means just that much more money in the pockets of the farmer. It means bringing into productive use a very much increased area, as well as increased profit on that now being produced. The same situation applies to the movement of our products to Atlantic coast points. Our lumber

interests will certainly have this market open to them on a large percentage of their product. Indeed, one could go through the entire list and in each instance show the beneficial effect the opening of the canal will have upon the marketing of substantially all of our products. It is indeed difficult to measure accurately the probable effect of the opening this new highway of commerce will have on our development.

Immigrants Will Come.

Briefly adverting to immigration, it is certain, with lines of steamers in operation from Atlantic ports to Pacific Coast ports, there will be a large movement of people to this coast. In my opinion the difficulty will lie not in securing immigration but in keeping out the undesirable class.

Central Oregon offers a most attractive field for the homeseeker and the worker. It has the land at reasonable prices, the climate, and will have satisfactory transportation facilities. In the near future the lumber industry in parts of Central Oregon will be an important one, employing many people. The European is accustomed to intensive farming and in some sections irrigation has been practiced for centuries. Therefore, they will be able to grapple successfully with the farming conditions of the central Oregon section.

I have had time to take up but a few of the salient features. It is because I believe in the possibilities and potential wealth of Central Oregon I have taken the interest I have in trying to see that every opportunity is provided for its full, complete and comprehensive development, and, in a measure, to prepare in advance

Still More Water Power Utilized by Local Plants

The construction of the North canal dam, in the minds of many, was simply an undertaking to divert water from the Deschutes for irrigation purposes. The dam and the canal leading from it were to relieve the Central Oregon canal and carry water to reclaim additional acres in the great area northeast of Bend. The contract under which it was built disclosed no other purpose and when it was finished it was written of and talked about as merely another step in the development work of the Central Oregon Irrigation Company. So much more money had been spent in an irrigation project, so much water was diverted, so many more acres of fertile land could now be opened for entry.

To John Steidl and Thomas Tweet, however, it was only the beginning of a story of electrical development and power, for here was created a waterfall 34 feet high, the power rights of which they owned, and with the dam

for what is certain to come.

Considering the facts, carefully and conservatively, it would seem the opening of the Panama Canal will necessarily exercise a vital and potent influence on the commercial, industrial and social development of Central Oregon.

built there remained to be made only a small outlay to produce electric power. Little drops of water go to make the ocean, but it is the big drops that make power possible and here was a big drop of practically the whole Deschutes river ready for the turbines of the future. And right at hand were ideal factory sites high above the river and adjoining the railway lines. Here then were materials for more chapters to the story and, Messrs. Steidl & Tweet have begun to write them.

As stated above, the North canal dam is 34 feet high. About 200 feet below the dam on the eastern side of the river coffer work has been done to provide foundations for a power house. From the dam a flume is being built to carry the water to its drop of 33 feet to the turbines. Here according to the plans for the first unit of the undertaking will be developed 408-horsepower, enough for any immediate need but only a small fraction of the amount which will be produced by the complete development of the project. At this point alone a minimum of 5000 horsepower can be produced while by carrying the flume some 700 feet farther down the river an additional drop of 17

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