

PORTLAND HOTELS OFFER THE BEST OF ACCOMMODATIONS TO TOURISTS



PORTLAND
5th and Broadway



ROSENBLATT,
10th and Alder



NORTONIA, 11th and Washington



IMPERIAL
7th and Washington



OREGON ANNEX
Park near Oak



DANMOORE,
14th and
Washington



LENOX
3rd and Main



CALUMET, Park, Bet Alder and Broadway

FAMOUS FOR WATER SUPPLY

Portland Is Widely Known for Sparkling Bull Run, that Has Its Source in Snows of Cascade Mountains

By Dr. C. H. Rafferty, Member of the Water Board.

ABOUT 23 years ago a few public-spirited citizens concluded that in order for Portland to become a great city the one needful thing was a good, pure and wholesome water supply. The leading men in this enterprise were the late Henry Failing, W. S. Ladd, H. W. Corbett, C. H. Lewis and nine other prominent citizens, all of whom except Dr. W. E. Smith and L. Therkelsen, are deceased. This and an open river to the sea were the two essentials for a great commercial city. These men undertook the two problems with an earnestness that developed the city water system to practical completion, and through their influence did much toward initiating laws favorable to deepening the ship channel from Portland to the ocean.

The first thing necessary to secure an adequate water supply was to obtain an act of the State Legislature authorizing a bond issue of \$2,000,000 to accomplish this most desirable undertaking. This was done, and authority given to 15 of Portland's foremost citizens to execute the work. The next step and of greatest importance was to obtain an abundant supply of pure and wholesome water. This was required by the act authorizing the bond issue, and creating the Water Committee. After due consideration of the available sources of water, the committee reported to the city council, recommending to Portland, and completing the analysis of a number of mountain streams, Bull Run River seemed to be the ideal, and to follow all that was required in purity and necessary elevation to gravitate the water into the distributing system of the city. The chemical analysis, given by alkali and Reese, analytical chemists of the State Assay Office of San Francisco, of water taken from the Bull Run River at intervals between November 11 and 16, 1917, during which period the stream rose two feet because of heavy rains, will attest conclusively to the character of the water. The analysis gives the total fixed ingredients as follows:

	Pure in Grams	100,000 per Gal.
Silica	.50	.50
Oxide of iron and aluminum	.08	.08
Calcium carbonate	.27	.27
Magnesium carbonate	.17	.17
Chlorides, sulphates and carbonates of alkalis	.40	.40
Organic matter	1.00	1.00
Totals	2.70	2.70

The organic matter, in form of suspended vegetable substance, is the only ingredient that could possibly have any deleterious effect, and the proportion of that is so exceedingly small and the movement of the water so rapid that it does not have time to undergo decomposition, and no harm could possibly arise from it. Microscopical examination of the sediment and chemical tests of the water show the absence of deleterious organic matter. To sum up, the water ranks among the best on record, and exceedingly well adapted for domestic use.

Upon this favorable showing the committee undertook the work with confidence and without remuneration except such as would be derived by them indirectly by having as good, if not the best, water on earth. The undertaking was so laudable and the securities so substantial that the bonds sold at a premium of \$225,000, notwithstanding the financial disturbance of 1893, during which the most important part of the work was under construction.

It was predicted at the time by some of our most efficient business men that water would not run through the conduit from Bull Run to Mount Taber. But our chief engineer, Colonel Isaac Smith, said it would, and the committee believed him. In 1895, when the water was first turned into the conduit, it was about seven hours before it began to empty its contents into gatehouse No. 1, and when it did the 24-inch exit was running to its full capacity, delivering from 1,500,000 to 2,000,000 gallons more than was originally intended. This was a very gratifying result to the Water Committee, but seemingly no surprise to the efficient corps of engineers.

The main source of the water supply of Portland is Bull Run Lake, situated in the Cascade Mountains at an elevation of 3200 feet above sea level. The lake is about three miles long, nearly a mile wide and very deep. It lies seven miles northwest of Mount Hood. The deep canyon of the Sandy River prevents the discolored waters from the glaciers of that mountain stream from running into the lake. It is supplied entirely from unfailing springs in the steep, rocky slopes surrounding it on all sides, fed by water from melting snow and rain. The only outlet from the lake is under an immense mass of shattered basalt, which fills the canyon at its northwest end. From the base of this natural dam, 350 feet below the surface of the lake, the water gushes forth and forms Bull Run River, a tributary of the Sandy, which empties into the Columbia below Troutdale. It is in this lake that nature has located one of the greatest possibilities of Portland's future water supply. Nearly all large cities have to construct these reservoirs by artificial means at a cost of many millions of dollars, in order to have proper reserve in times of greatest demand. In estimating the capacity of this natural resource I find it contains 6,000,000,000 gallons of water, figures that at first thought would seem very greatly exaggerated. Estimating that this lake will average 100 feet in depth, the above figures will be found a conservative calculation.

This will be a valuable reserve to draw from when Portland has increased in population so that it will consume the maximum flow of the Bull Run River. Were there no other source of supply this lake alone would keep the present conduit running at full capacity for six years. The Bull Run River flows through a rocky canyon for about 20 miles, along which a vast amount of water could be stored by artificial means for future use. Money and engineering will do all this at the proper time, and be a problem for future generations to solve. The available water supply, when the proposed new conduit is done and in operation, will deliver water to 800,000 people, allowing 150 gallons a day per capita. However, should the city adopt the meter system to all consumers, the amount of daily consumption would be about 50 per cent less and the supply for double the above population.

The President of the United States, through authority from Congress, has set apart 22 square miles of land under the title of the Bull Run timber reserve, which embraces the entire watershed de-

scribed above. The United States will not sell land in this reserve, nor permit timber to be removed from it, nor allow sheep or cattle to be pastured thereon. So long as these laws remain unchanged, the water supply of Portland cannot be injured unless by forest fires.

The contemplated additions to the present water supply will consist of another conduit 24 miles long, and reservoirs with sufficient capacity to more than double the amount in those that are now in service. The second pipe line will, in connection with the one now in use, bring into the city about 70,000,000 gallons daily, the minimum flow of Bull Run River, at its lowest stage. In the construction of the second pipe line the engineering difficulties will not be so great, as previous surveys and the right-of-way work will be largely eliminated. When the present conduit was constructed, the intake at the headworks was planned so that another one might be extended from it, and the three steel bridges carrying the conduit across Bull Run and Sandy Rivers were built to carry another pipe. In securing rights of way and in the grading and making rock cuts, provision was made for a second conduit, with gatehouses of ample size and capacity to receive and deliver the amount of water that will go into the distributing system. Transportation facilities are greatly improved by grading and surfacing the public highways, and the railroad to Gresham will aid materially in expediting the work. It has been found that where the present pipe line passes through clay soil it is subject to corrosive action, either from electrolysis or the decomposition of vegetable matter or both, and this condition will be largely overcome in the new one. Thorough drainage, grounding of stray currents, and insulation by silicious gravel, will largely correct this.

The increase in Portland's water supply will necessitate a corresponding improvement in the distributing system. Larger mains will become an important factor in delivering water for domestic purposes and the extinguishing of fires. A great many of the outlying districts have not an adequate supply for all purposes, due mainly to the city taking over small private water systems, which are becoming less efficient for domestic purposes as well as for fighting fire. All these suburban districts will have to be supplied with mains that will carry a volume of water equal to their wants, and save their property from destructive conflagration. There is a large area of the city, especially on the East Side, in which the elevation is too high for the low service and too low for the high. There will be improvement in this condition by the establishment of intermediate reservoirs that will equalize the pressure in these particular localities, improving the distributing system very greatly.

There is one thing that I want to call special attention to, and that is the annual liability of fire in the Bull Run forest reserve. During the 16 years that I have been connected with the water service, this has been the cause of more uneasiness and vigilance than all other problems of this department. The condition that exists on this reserve at the present time is similar to a vast sponge, which the water percolates through, and accounts for the purity and clearness of the water. Should fire ever rage through this country and denude it of timber and undergrowth, this delicious water will be gone forever and instead impure, silt-laden water will come into the city that will require boiling before it can be used with safety. Therefore, it is very essential that every fisherman, hunter and all pleasure seekers who go upon this preserve during the Summer should fully understand the importance of extinguishing campfires.

There is no city in the United States today that has a better health record than Portland, due in a great measure to her water supply. Typhoid fever, the most dreaded of all diseases, almost entirely disappeared after the substitution of Bull Run water for that of the Willamette River. Wherever this dreadful malady is found within the corporate limits, it comes from some other source than the water. Very few people realize their immunity from disease in Portland. And my opinion is that if there was a substitution of water for other liquid refreshments, there would be still greater freedom from bodily life. While we are enjoying this special privilege of living in a healthful city, we must be ever mindful that predatory interests are on the alert to take from us this, the greatest boon given to mankind—pure water.

In concluding this article I wish to appeal to every good citizen to guard this public utility with care, so that posterity will enjoy the sparkling water that we are favored with. Be ever mindful that this water is for health, life and comfort and consider it your duty, to do what you can to preserve it in its present purity. Also instill the same principle in your descendants, so that future generations will be blessed with the same delicious water we are. As a citizen of Portland I feel as though I have not lived in vain if I have been instrumental in the least in the development of Portland's water system. It is the pride of my life.

"WHAT THE FAIRIES FOUND ON THE MOUNTAIN HIGH"

The Fairies were frolicking, full of play,
All over Fairyland one Summer day;
Laughing and jumping from flower to flower,
Full of the joy of the passing hour.

Each little Fairy had golden wings,
The daintiest, prettiest little things;
Had beautiful hair and eyes of blue,
And each little Fairy's heart was true.

The Queen was the prettiest of them all,
A wee dainty creature, not large nor tall;
And she carried a wand in one pretty hand,
To show that she ruled all Fairyland.

Upon her head was a crown of gold,
Studded with jewels of wondrous old,
That flashed and gleamed and cast their light,
To all of her subjects' great delight.

All the day long had the Fairies played,
And the sun in the West began to fade;
So, tired at last, they crowded around
The good little Queen that they had crowned.

Said the good little Queen to her fairies sweet:
"What would you like, little fairies, to eat?
Just wish for the thing that you like best,
And I, little fairies, will do the rest."

Then there was trouble in Fairyland,
For each little fairy raised her hand
And shouted aloud at the top of her voice
For the food to eat that was her choice.

"I want Pan-Cakes," one fairy said,
Another one wanted some home-made Bread;
Still another yelled "Give me Cake."
One cried "Muffins, like good Cooks make."

"Waffles for me," shrilled one little sprite.
"Soft Gingerbread" was another's delight.
"Wheat Hearts Mush," screamed the smallest one there,
"I'm very little and that's my share."

Then the good little Queen, with a smile on her face,
Said: "Come, right now, for I know a place,
High on a mountain, away in the East,
Where we can all enjoy our feast."

Then to the Olympics the Fairies flew,
To a place on the summit that no mortal knew,
Where the treasures are kept for the Fairy Queen,
Hidden from mortals—all unseen.

"The Famous Four" are the greatest of all,
Listen well and their names I'll call:
"Olympic Cake and Pastry," "Olympic Wheat Hearts,"
"Olympic Pan-Cake," that's better than tarts.

And, last of all, "Olympic Patent Family Flour,"
That's good for everybody and good every hour;
And the Fairies' eyes grew big and wide
As they saw great piles on every side.

The Queen waved her wand and in less than a minute
Those little fairies were strictly in it,
For out of Olympic Products there came
Every goody each fairy could name.

And after the feast, that very night,
The Queen gave to mortals, to their delight,
The wonderful "Famous Four" of worth.
The fairies' gift to the people of earth.