

ROGUE RIVER AND ITS TRIBUTARIES

Government Issues Interesting Data Concerning the Southern Oregon Streams—Rogue River Power Possibilities Are Given Good Boost.

The United States geological survey has issued a very interesting paper on surface water supply of the North Pacific coast in which much space is devoted to Rogue river and tributaries. Aside from some very complete tables the following descriptive matter is offered:

Rogue River Drainage Basin.

Description—Rogue river drains the southwestern corner of the state of Oregon, its basin extending from the extreme western part of Klamath county across Jackson and Josephine counties, and including the northern half of Curry county. On its north are the Rogue River mountains and on the east are the Cascades, while in the southern part of the area is a spur of the Siskiyou mountains. In all the basin comprises 5980 square miles.

The river is formed by three principal forks—the north, middle and south—which rise among the peaks of the Cascade range and unite near Prospect, in Jackson county. From this point the Rogue winds in a general westerly direction to the ocean, which it enters near the town of Gold Beach, in Curry county. In the lower half of its course the stream hugs closely the base of the Rogue River range, and its principal tributaries are from the south, as is shown by the following:

Principal Tributaries of Rogue River.

From the north and west—North fork, Elk creek, Stewart creek, Evans creek, Leland creek.

From the east and south—Middle fork, South fork, Big Butte creek (drainage area, 268 square miles); Little Butte creek (drainage area, 361 square miles); Bear creek (Stewart creek) (drainage area, 380 square miles); Applegate creek (drainage area, 606 square miles), Illinois river.

The North fork, or main stream, derives its water from springs, probably supplied from Crater lake, which lies to the east in the center of Crater Lake natural park at an elevation of 6240 feet above sea level. This lake occupies the crater of an ancient volcanic mountain, to which the name Mount Mazama has been applied. The lake has no visible outlet nor any other reaching the surface within a few miles. The walls inclosing the lake are made up

of alternating sheets of lava, dipping away from the lake practically in all directions, and are so porous as to afford an easy passage for much water. Springs are abundant and remarkable in size. Little and Big Butte creeks drain the southern portion of the Cascade forest reserve. Bear creek, formerly called Stewart creek, drains the famous fruit section of Rogue River valley; Applegate creek drains the Siskiyou mountains, and Illinois river the territory to the south of the main stream near the coast.

The drainage area is in general mountainous, elevations ranging from sea level at Gold Beach to 9760 feet at the summit of Mount McLaughlin (formerly known as Mount Pitt), a snowcapped peak dividing the drainage of Big Butte and Little Butte creeks. The general elevation of the mountain range at the headwaters of the Rogue is 6000 feet. Prospect is 3000 feet, Ashland is 1938 feet and Grants Pass 956 feet above the sea level.

The area is almost completely timbered, but the stand is not so heavy as on the area to the north drained by Umpqua river, as the precipitation is lighter. The mean annual rainfall at Gold Beach is 86 inches, at Grants Pass 33, at Ashland 27, on the headwaters of Illinois river 70, and at Crater Lake 100 inches. At the headwaters of the stream the greater part of the precipitation is rainfall during the winter months. As is usual in regions where the precipitation is sufficient for the production of crops without irrigation, development along this line is inconsiderable. Fish lake ditch, which diverts water from Little Butte creek, is the largest in operation. A number of little ditches are used to irrigate the narrow valley lands contiguous to the small streams. In this manner Ashland, Wagner and Applegate creeks are largely appropriated for irrigation.

It is realized, however, that the agricultural resources of this section of the country will not be utilized in the most economic manner until irrigation is practiced extensively. The valley lands in the vicinity of Medford along Bear creek are particularly adapted to fruit culture, and the Rogue River valley has become

justly famous for the excellent quality of apples, pears and other fruits raised there.

The streams of this area, like others draining the Cascade mountains, afford wonderful possibilities for water power development. At present the only important plants are those of the Rogue River Electric company at Gold Ray and at Prospect.

Stream measurements in this basin were begun in August, 1905. For the three and one-half years the highest run-off values are shown by the records for 1907. It is probable that the lowest values would have been found in 1905 if records for that year had been complete.

The following gauging stations have been maintained in this river basin:

Rogue river near Tolo (1905 to 1908).

The data obtained at this station are not favorable for very good results. The height of the water is affected in an irregular manner by a dam a short distance below, and as this dam is a temporary affair, made of brush, it is washed away, either wholly or in part, with every rise in the creek, even during irrigating seasons. For this reason it was necessary during 1907 and 1908 to develop four rating curves, and to interpolate a part of the records.

North fork of Rogue river at Prospect (1907 to 1908).

Little Butte creek, near Eagle Point (1907 to 1908).

Bear creek at Talent (1907 and 1908).

Applegate creek at Murphy (1907 and 1908).

Rogue river near Galice (1907).

North Fork of Rogue River at Prospect, Or.

This station was established July 17, 1907, just above the Rogue River Electric company's dam, one-half mile above Prospect, five miles above the junction with the South fork, and at the head of Rogue River gorge.

The fall of the river through this gorge is to be utilized by the company for development of water power. The data are valuable chiefly in connection with water-power development, but they furnish also some very useful information concerning the run-off from forested areas under the climatic conditions which exist in the southern portion of the Cascade range.

No equipment has yet been installed for making measurements during high water, and at low water the only point available is in a very narrow canyon, where the water is extremely turbulent and the veloci-

ties are most irregular. The gage located above the dam was read daily from July 17 to October 10, 1907, and once or twice a week during the first half of 1908, but the daily ratings during 1908 were made on an auxiliary gage at the observer's house. No estimates of flow are possible with the data at hand, but it is hoped that a permanent rating curve can later be developed to which these records of gage heights can be applied.

Rogue River Near Tolo, Or.

This station was established August 30, 1905. It is located at Gold Ray, the site of the Rogue River Electric company's power plant, 11 miles below Tolo, and just below the mouth of Bear creek.

The data obtained at this station have great value in connection with the use of the river for water-power development and its proposed use for extensive irrigation works, a number of large ditches being already under construction.

The station is located below the tail race of the power plant, at which a dam about 20 feet high forms a large forebay. The flow at the station is, therefore, irregular, depending upon the amount of water used through the turbines. The velocity of the water at the gaging station is quite swift, and the channel is not stable. It has been impossible to develop a permanent rating curve. The records, particularly those taken at low water, are not as accurate as could be desired.

Little Butte Creek Near Eagle Point.

Little Butte creek is formed near Lake Creek, in Jackson county, by the union of its North and South forks, the united waters flowing westward and joining Rogue river, about three miles east of Table Rock.

The gaging station was established July 13, 1907. It is located at Tronson & Guthrie's fruit ranch, one mile above Eagle Point, about two miles above the mouth of Antelope creek, and above the head of a ditch which diverts water for milling at Eagle Point.

A number of small ditches divert water from the stream above the station, so that the flow here obtained does not represent the natural run-off from the drainage area. The data are insufficient for an estimate of extreme values.

This stream is already used to a large extent for irrigation and additional developments are under way. It also furnishes municipal water supply for the city of Medford.

Bear creek, formerly known as Stewart creek, rises in the southeast-

ern part of Jackson county and flows northwestward to its junction with Rogue river near Tolo. Its entire drainage area comprises 380 square miles.

The gaging station was established July 11, 1907, at a highway bridge at Talent, 500 feet above the head of a power and irrigation canal which diverts water from the left bank, about one-half mile below the mouth of Wagner creek and one and one-half miles above the mouth of Anderson creek.

The stream is used largely for irrigation and the data obtained at this station are useful in that connection. Any increase of irrigation development from this stream will require the construction of storage reservoirs.

The conditions are not exceptionally favorable for good results. The bed of the stream is somewhat changeable and a new rating curve will have to be developed after each flood.

Applegate creek rises in the Siskiyou mountains in the northwestern part of Siskiyou county, California.

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flows northeastward into Jackson county, Oregon, for about 20 miles. This station was established July then turns to the northwest and unites with Rogue river about eight miles west of Grants Pass, in Josephine county. Its drainage area measures 606 square miles. This station was established July 22, 1907. It is located at Murphy, eight miles above the mouth of the creek and seven miles from Grants Pass.

\$150 AN ACRE—270 acres, foothill land, about 6 miles from Medford; there are about 85 acres on this place now planted to fruit, which includes about 26 acres in bearing. The bearing varieties are Newtown and Spitzenberg apples and Comice pears. There are 25 acres of Newtowns in their second year with peach fillers and about 6 acres of Newtowns just planted; also 20 acres of Jonathans and 10 acres of Bartlett and Anjou pears just planted. About 200 acres of first-class fruit land on the place. There are many springs on the place and considerable water could be developed for irrigation; two houses, good barn and other buildings. Would subdivide nicely. Easy terms.

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