

THE QUARTZBURG DISTRICT

The Quartzburg district is the next mining region south of the Greenhorn Mountain region. Waldemar Lindgren* gives the following general features of its geology:

General Features. Between the Middle and South forks of John Day river rises a complex of older rocks, culminating in the round-topped Dixie Butte, which attains an elevation of 7,700 feet. It is probably on all sides surrounded by Miocene lava flows. From the bare summit of Dixie Butte, one of the landmarks of the country near which the old California trail runs, heavily timbered ridges extend in all directions. The thick forests on the north side of Dixie Butte are said to be favorite haunts of elk and bear.

"The geological structure of this area is complicated, but in general the rocks consist of diorite, diabase, and other greenstones, together with serpentine, inclosing smaller areas of clay slates, the exact age of which is not known; they are, however, older than the accompanying intrusive rocks. The stage road to Prairie crosses the most easterly part of the area; imperfect exposures show diabase, porphyry, serpentine and siliceous clay slates. But immediately at the summit, toward Prairie, basalts and andesites begin and continue down to John Day valley. A beautiful view of the latter is obtained from this place. Between the scattered yellow pines of the park-like forest the bare volcanic slopes of the valley with its broad pastures and irrigated fields present an attractive picture, and across it toward the south rise the jagged, snow-flecked lava peaks of the Strawberry Range. On the easterly road, leading down to the valley from the summits by way of the sawmill and Spanish gulch, first clay slates and then 2 miles of serpentine are crossed before the lava again begins.

"Going up from Prairie to Quartzburg district, the road follows Dixie creek, with its extensive and not yet exhausted placer deposits. Two miles upstream the valley widens and the covering basalt and andesite give place to an old sedimentary rock, a massive argillite. Two miles farther up, at the road junction, a narrow canyon begins. at

QUARTZBURG AREA

Geography:

The Quartzburg Area is bounded on the south by the John Day River, on the east by the Grant County line, on the west by Bear Creek (just west of Prairie City), and on the north by the John Day Highway east of Dixie Mountain summit, and by the divide between the middle and main forks of the John Day to the west of the summit, with the exception of a small area north of the divide in sections 13, 14, 15, 23, and 24, which includes the headwaters of Ruby Creek. The Quartzburg district proper usually is limited to the drainage of Dixie Creek and its tributaries, including the Dixie Meadows property.

"Altitudes within the district range from about 3500 feet at Prairie City to 7400 feet at the top of Dixie Butte. . . . The district is reached by way of Prairie City . . . which lies on the John Day Highway, an excellent automobile road joining Ontario, on the Snake River, with Arlington, in the Columbia Valley. The former postoffice of Comer, about 6 miles north of Prairie City at the forks of Dixie Creek, has long since been abandoned.

"Heavy woods clothe most of the hillsides in the district, and much of it is embraced in the Whitman National Forest."

Geology:

"The dominant rocks of the district are meta-andesite, meta-diorite, and related volcanic rocks, including tuff, associated with which are small amounts of argillite. The correlation of these old sedimentary rocks must await detailed mapping, although the writers' impressions are favorable to Lindgren's (Op. pl. 64) correlation of them with the Carboniferous argillite series of Elkhorn Ridge.

"Intrusive into this series of volcanic and sedimentary rocks, and doubtless in large degree the cause of their intense alteration, is a considerable variety of plutonic rocks, among which gabbro, serpentine, and diorite are most prominent. Dikes of diorite porphyry, albited diorite, and metadiabase are associated with these plutonic rocks and are probably comagmatic with them.

"Most of these rocks are considerably sheared and altered--the volcanic rocks by the development of biotite and tourmaline, the intrusive rocks by the development of talc, biotite, uraninite, and tourmaline. Some of these alterations may have occurred during the later stages of consolidation of the basic intrusive rocks themselves. Others, however, seem to be attributable to a group of later intrusions represented by small stocks of quartz diorite and granodiorite that occur in the valley of Dixie Creek below the forks and near the head of Ruby Creek. The numerous dikes of quartz diorite porphyry, granodiorite porphyry, and quartz monzonite porphyry that occur in many places through the district may attest a much wider distribution of these silicic rocks at depth.

"These quartzose rocks are practically free from crushing and are relatively unaltered. For these reasons they are believed to be younger than the basic intrusive rocks of the district. The age of these intrusive rocks is not accurately known from local evidence, beyond the fact that they are

all definitely pre-Miocene. In the Strawberry Range, across the John Day River to the south, Jurassic rocks are intruded by quartz diorite. This supports Lindgren's assignment of the intrusions to a post-Jurassic age. The basic intrusions may be older than this, however. The pre-Miocene age of all the intrusions is fixed by the fact that the Columbia River lava, of Miocene age, rests on an eroded surface cut across all the plutonic rocks. Lindgren (Ol:596) believed the intrusive rocks to be of early Cretaceous age.

"The Columbia River lavas crop out along the north side of the valley of the South Fork of the John Day River at Prairie City and apparently completely surround the mineralized area of the Quartzburg district. They have, however, been removed by erosion from the mineralized area itself, most of which, if not at all, must once have been covered by them. No study was made of the details of the geology of the Columbia River lava, as the formation has no bearing on the geology of the mines.

"Although the regional distribution of the rocks of Eastern Oregon strongly suggests an eastward strike as dominating the structure of the pre-Tertiary rocks, few observations were made on the structure of the stratified rocks within the Quartzburg district. The local structure is accordingly uncertain. Observations were sufficient, however, to permit the statement that the dominant structural features of the district are those imposed by the igneous intrusions.

Ore Deposits:

"Two types of ore deposits have been recognized in the district: quartz-carbonate-sulphide fissure veins and a quartz-tourmaline-chalcopyrite replacement body. The fissure veins are valuable chiefly for their gold, although small amounts of copper and cobalt have been won from them; the replacement body has its potential value in copper. Mineralization has occurred in nearly all the pre-Tertiary rocks. Although the observations within the district were not thorough enough to be conclusive, the ore deposits are probably derived from the quartz diorite intrusions.

"The veins consist of quartz, ferriferous dolomite, and calcite as the chief gangue minerals and carry the metallic minerals, pyrite, arsenopyrite, glaucodot, cobaltite, native bismuth, bismuthinite, tetrahedrite, pyrrhotite, chalcopyrite, sphalerite, and galena. The pyrite and chalcopyrite are the most plentiful, but the cobaltiferous minerals glaucodot and cobaltite are found in several localities. Supergene minerals recognized include covellite and bornite, and the oxidation products malachite, jarosite, and limonite were seen.

"The quartz-tourmaline replacement body carries disseminated chalcopyrite, pyrite, cobaltite, hematite, bornite, and covellite."

Reference: Gilluly, Reed and Parks 33:85-88 (quoted)

History:

According to Parks and Swartley 16:272:

"The Dixie Creek placer mines were discovered in 1862, and soon after that date the quartz veins on the west fork were found and have been worked

intermittently at least since 1880. Lindgren states that the production to 1900 is not believed to have exceeded \$100,000, and the production since that time has been considerably less.

"No change of Lindgren's report of 1900, which is quoted below, is to be noted. Locally the gross production from the Dixie Creek placers is reported from \$600,000 to \$6,000,000. Probably the lesser amount approximates the truth".

"The Dixie Creek placer mines were discovered about 1862, and were reported rich, though no data as to production are at hand. Raymond's report for 1870 contains the statement that at that time there were 100 white men and 200 Chinamen employed, and that the fine, scaly gold was 860 fine. In 1873 the creek is reported as turned over to Chinese labor. In 1882 two small hydraulic plants were in operation, producing \$30,000 (Mint report). At the present time very little placer mining is done".
