the Central Western Oregon division is first encountered at the Santiam district. This district is reached from Albany, the county seat of Linn County, situated on the line of the Southern Pacific Railroad 80 miles south from Portland. At this city are ample banking facilities, excellent newspapers, hotels and commercial houses, carrying all lines of miners' supplies. The City of Lebanon is situated at the terminus of a branch railway running in the direction of the mines, to which wagon roads extend.

The Santiam district lies in the foothills of the Western slope of the Cascades, and west from Mount Jefferson. The town of Anidam is located centrally in the district, which is in townships 11 and 12, south, ranges 5 and 6, east. The elevation is about 2000 feet. The country is heavily timbered with the finest hemlock, cedar, sugar pine, red fir, etc., all useful for mine timbering and structural purposes. The formation is chiefly porphyry, slates and quartzite. The veins of quartz are strong and well defined, some of them traceable by outcrop for 10 miles. The values lies in free-milling gold ores, generally associated with silver. In some localities the ores carry lead, zinc and copper, but always associated with gold, which constitutes the chief product, averaging in ores heretofore milled $5 to $12 per ton in gold. With depth it is probable base ores will be encountered, requiring concentration, possibly smelting. Many claims have been located, of which fully 50 are being developed by annual "assessment" work, and a few more rapidly, as means of the owners admit. There is one 20-stamp and one 10-stamp mill in the district, and two more projected for next Summer.

Large quantities of gold have been taken from placers in the gulches heading in the ranges where quartz is found, and are still being worked in several localities. The dust is of high grade and fine. No hydraulics have been introduced.

The dense growth of timber is a serious impediment to placer mining, as the trees grow "as thick as they can stand," and often are 300 feet in height. The district is reached by rail from Albany to Gates, 40 miles; thence by fair mountain road, 20 miles to the mines.

Development in Blue River District.

Eugene, the county seat of Lane County, south from Portland 122 miles and on the line of the Southern Pacific, is the supply and departure point for Blue River mines. This city has banking establishments, good hotels and mercantile houses for all needs, as well as some of the oldest and best local newspapers in the state.

This district lies in Lane, just inside the line dividing Lane from Linn. The principal mines lie in an uplift known as Gold Hill, which is on the western slope of the Cascades, and about 20 miles due west of the Three Sisters. Public surveys have not been extended over this tract. The country is mountainous, elevation some 4500 feet, cut by deep canyons and heavily timbered with fir, larch, cedar, etc. The formation consists chiefly of porphyry, with some syenite and occasional showing of granite. The mineral veins cut the formations as true fissures, and so far as developed carry their values in free gold. Beautiful specimens of wire and shot gold are frequently found here. The veins are of quartz from three to 30 feet thick and yield from $6 to $7 in free gold. A small percentage of silver runs with the gold, and there are local limited showings of lead and copper. The percentage of iron—sulphurets—is very low. The greatest amount of development done is on the Lucky Boy claim, and a 15-stamp mill is running on ore from it; battery and plate amalgamations. Another mill is being erected in the district.

The mines are reached from Eugene by stage to Blue River postoffice, a distance of 45 miles, thence by good wagon road six miles. Hundreds of mining claims have been taken up in this camp, all showing free gold on the surface, but general development must be slow, unless the struggling prospectors have help for grub and efficient tools.

Bohemia Is Oregon's Cripple Creek.

Take the train again at Eugene and get off at Cottage Grove. This town is improving, has good, enterprising newspapers, commercial houses and hotels, furnishing fair accommodations. Until recently, it was a hamlet of no pretense. Now, it is of importance as a supply and departure point for the Bohemia district and Black Butte. A good livery stable is kept here, a necessary convenience for the locality, and will be until the promised railroad to the mines is built.

The Bohemia mining district, of 15 or more miles square, is a very interesting and very promising locality. The inevitable romance attends its early days. It is exceedingly rough, mountains, gored by canyons of great depth, and covered with timber that seems aspiring to reach the sun. It is a wild, awe-inspiring country. Its elevation is about 7000 feet, but peaks rise higher. It is 38 miles southeast from Cottage Grove, by wagon road, though a railroad connecting with the Southern Pacific at this town is being surveyed. Its completion would be of great benefit to the miners and to the State of Oregon. Mines make markets. Mines mean money. A telephone line, just completed, connects the camp with Cottage Grove and the rest of the world.

Bohemia district lies in the Calapooia Mountains, partly in Lane and partly in Douglas; it laps over the range into Douglas. Two wagon roads lead to it. Over 3000 mining locations have been made in it. The formation is eruptive and volcanic, and the section has been greatly disturbed and broken. In places lava flows have been buried by a later sheet of brecciated matter to a depth of 50 feet or more. The section is geologically new; its present condition is of relatively late formation. The veins are numerous and heavily mineralized, as is usual in much broken localities, and some surprisingly rich ores have been found. The veins cut the ridges in parallel groups, and can in some instances be traced for three miles across ridges and valleys or gorges. Cross veins intersect these, and the general formation, which is of andesite, an eruptive rock. The valuable ores, as usual, occur in pipes or chutes, and carry free gold, pyrites, copper, lead and sometimes a little zinc. The upper zones of ores of some of the mines have been successfully and very profitably worked by the free-milling process, but it is probable that they will become base or refractory with considerable depth, and require smelting. Great depth has not been attained, less than 500 feet, but the depth so far shows general increase of values and strength of veins.

The most extensive workings have been on the Helena, Musick, Champion, Noonday, Vesuvius and Star. The Helena mine has 10 stamps, with concentrators; the Musick, 10 stamps and concentrators; the Noonday, 20 stamps and concentrators; the Champion, 10 stamps; the Stocks & Harlow, five stamps, and the George Long two stamps.

Very great energy is being displayed in this great district, ad prospects are being rapidly developed into mines. The veins lie in very precipitous mountains, and can be worked to great depth by tunneling. The district covers townships 22 and 23 S., R. 1 E., and Townships 22 and 23 S., R. 2 E., W. M. The Willamette Meridian extends through it.

Black Butte Cinnabar Mines.

The Black Butte cinnabar mines are situated on the north side of the Calapooia, in the southern part of Lane County, about two miles from the Douglas County line, on the west fork of the Coast Fork of the Willamette River, in township 23 S., R. 3 W. They are reached by an excellent wagon road, on water grade, from Cottage Grove, 16 miles, and about 38 miles due south from Eugene. The elevation of the mines is about 2750 feet above sea level, and 1700 feet above the general level of the Upper Willamette Valley. The general formation is sandstone and rhyolite. The ore occurs in a contact between sandstone for hanging wall and a rhyolite foot wall. Originally, the rock now constituting the country was a sandstone. Subsequently, a rhyolite dike cut through and upturned a portion of the sandstone, forming a fissure between the two at the plane of contact, the sandstone being altered along this line. This fissuring has been filled by the fractured rhyolite and sandstone along the line of contact, and calcite and some dolomite, mainly by calcite; the original rocks are much altered and brecciated along the line of fissuring. The lode is about 200 feet wide, which by secondary action has been further altered, and the valuable ores are found along the planes of contact, between these older and later formations in the original fissuring. The mineral is in the form of sulphide of mercury, known as cinnabar.

About 2000 feet of underground development work has been done in the last two years. A wire rope tram of 3000 feet of two-inch cable connects the present workings with the reduction works, which consists of a furnace having a daily capacity of 40 tons of ore.

The surroundings of this mine and plant are very attractive, and pretty cottages and well-kept grounds add greatly to the environment. It is the property of the Black Butte Quicksilver Mining Company, of Seattle, W. B. Dennis, manager.

SOUTHERN OREGON MINES.

Gravel Deposits 5 to 50 Feet Deep and Quartz of Great Value.

A few miles south from Cottage Grove the summit of the Calapooia Range, the line between Lane and Douglas Counties and demarcation of Central-Western and Southern Oregon mining sections, is reached. No organized mining districts are known and localities must be designated by reference to supply points for each as they are found on the line of the railway.

Roseburg, county seat of Douglas, is situated among the rolling hills which characterize the greater part of the county, distant south from Portland 198 miles. Here is the United States Local Land Office of Roseburg land district. A portion of Bohemia district laps over the Calapooias into this country, but with this exception but little mining business is done in the northern portion of the county. No mines of importance are tributary to Roseburg.

Riddles, a growing town on the line of the railroad, 26 miles south of Roseburg, is a point of considerable importance as a supply-point for neighboring mines, particularly the placers lying to the east, on Coffee Creek and its tributaries. On Cow, Ash and Bollenbaugh Creeks the farmers engage in washing gold out of their lands during the rainy days of Winter. For nine months of each year they cultivate their land and for three months they work at the edges for the "gold there is in them." And it is said to be a very profitable business. On Cow Creek, 15 miles from Riddles, several placers, one having a gravel bed 50 feet deep, are being operated by hydraulics under 160-foot head with excellent results.

Three miles west from Riddles is a group of claims producing nickel. They occur in a range or mountain locally known as "Old Piney," having an altitude of 3500 feet. The formation is an eruptive magnesian rock technically known as saxonite. A series of veins intersect this mass, which covers an area exceeding 1200 acres. Since the formation of the ore veins a subsequent movement has tilted them from their original position and they now lie at a dip of about 20 degrees from horizontal. Apparently the hanging wall has been eroded, leaving great ore bodies exposed as a blanket. The ores are in form of a silicate of nickel and magnesia, averaging about 4½ per cent, and the veins vary from 18 inches to 80 feet in width, the gangue being silica in various forms. Cretaceous sandstones, altered slates and serpentine comprise the general structure of the county.

East of Riddles 35 miles, on the head of Elk Creek, the Rainbow Company has five claims on copper and gold-bearing veins, of eight, five and 30 feet, respectively; the ores going about 10 per cent of metal. Elevation, 3500 feet; formation, andersite, feldsite and schists. Numerous other claims are being developed in that neighborhood.

Glendale, south from Riddles 35 miles by rail, is near the southern line of Douglas County, which follows the summit of the transverse range of the Rogue River Mountains. The mines tributary to Leland consist chiefly of placers. On Tennessee Gulch, 12 miles northeast, are about a dozen placers, one well equipped, the others on a small scale. On Ball Run, a tributary of Quines Creek, are several, getting coarse gold. Eight miles farther up in the mountains, and on Hogem and Starveout, are numerous others; three hydraulics on Hogem. On Stewart are two fairly extensive hydraulic mines. Six miles farther up, on White Horse Creek, is another group, and 10 miles still farther, cinnabar float has been found on the hillsides and in stream beds. The veins which threw off the float have not been found.

On Quines Creek, 12 miles northeast from Glendale, is the old Union quartz mine, recently taken over by a California company. The veins lie in contact, run parallel, carry free gold and pyrites; formation, diabese and serpentine; elevation, 2500 feet.

On the headwaters of Stewart Creek and above the placers on that stream, is a group of quartz claims known as the Green Mountain. They are reached by wagon road of 22 miles, from Glendale. A considerable amount of work has been done on these mines, and profits realized. The quartz vein is large, carries free gold and sulphurets, has a strike nearly due north and dip 60 degrees east. The hanging wall of slate, footwall of porphyry. A depth of 200 feet has been reached. A small stamp mill is on the property. Elevation, 4500 feet.

Northwest from Glendale seven miles, on Cow Creek, are the Victory hydraulic placers, with very extensive workings. Four to five giants are kept steadily in operation during the water season. The Southern Pacific Railroad passes through this property and the operations in the mines can be seen from the car windows. The gravel deposits are extensive and from five to 50 feet deep. Just below this are the Fuller, Dewey and Valk placers; and about three miles below the Victory, at what is known as Railroad Camp B, is another hydraulic placer, to be seen from the car windows.

On the headwaters of Shively Creek, a tributary of the South Umpqua River, some rich placers, producing heavy gold, have recently been discovered, and a hydraulic plant is being installed to work them. Lying near the line, in Josephine County, are the Gold Bug and Benton groups of quartz mines, but telegraph, postal and commercial relations are had with Glendale.

Excellent hotels are maintained at Glendale, and fair commercial establishments. Being in a picturesque, healthful mountain region, the charm of Summer resort is added to the attraction of the mines.

JOSEPHINE COUNTY.

Hundreds of Miles of Placers Ramify the Mountain Ranges.

A detailed description of the mining industry of Josephine County would be like reporting the resources of a commonwealth. There are hundreds upon hundreds of miles of placer mines ramifying the mountain ranges. Some of them are of marvelous formation, of vast depth, and a few are being operated on a large scale and with modern contrivances. What follows in the way of description, like what precedes it, is greatly abbreviated, and is in no case consciously exaggerated. Very much is omitted.

The exalted bed of an ancient and mighty river, now filled with prodigious deposits of fossils, auriferous gravels and sand, covered with rich soil and the vegetation of centuries climaxed in trees 200 feet high, and paralleled in part by a great mineralized zone, which has been barely touched, is one of the mysteries of this wonderful country. Strength for the ordinary avocation of life falters in the presence of the work which is to despoil the gravel hills and rob the mountains of their golden stores.

Mount Reuben, terminating in a summit somewhat higher than the surrounding elevations, is a part of the general uplift where the Rogue River Range intersects or joins the Coast Range. It is situated just south of the line between Douglas and Josephine. Romantic history here also has its wonderful tales to tell, including the discovery of the Gold Bug mines.

Mount Reuben: This locality is as one just discovered. The genuine quartz prospector was late in coming, but found a virgin country for exploration. The mountain is seamed with veins and the results so far attained are satisfactory and encouraging.

The Gold Bug group, before referred to, lies on the western slope of the hill, 18 miles by wagon road from Glendale. The general formation of the county here is hornblende andesite. The veins of quartz property and a cyanide plant being installed for treatment of the sulphurets. Altitude of mines, 3000 feet.

The Benton group lies one-half mile due west of the Gold Bug at an elevation of 2600 feet. A serpentine dike traverses the country here and this group lies in a magnesium trap. Workings nearly 500 feet deep, walls well defined, dipping uniformly 70 degrees east.

The California group joins the Gold Bug on the east in the same character of formation, and has a two-stamp mill.

Farther around the mountain, to the southeast, some two miles from the Benton, is the Ajax of four claims; formation schists and porphyry. Two parallel veins of quartz, about 400 feet apart and from two to 18 feet wide, return gold averaging $6 per ton. A two-stamp mill is on the property.

From the Ajax west of south three miles is the Copperstain, a group of four claims. Here an incline shaft follows the vein 320 feet. A Tremain mill is to be supplanted by the orthodox stamp.

Adjoining the Copperstain on the southwest is the John Lewis property, consisting of a group of claims which are being developed systematically.

Adjoining the Gold Bug on the northwest is the Ramesey group of six claims. A tunnel cuts the principal vein at a depth of 500 feet. It is well defined and shows 11 feet of ore. An upraise is being made to the surface. The ore is similar in character to that of other mines in the district.

Across Whisky Creek, which runs at the base of Reuben and on the eastern slope of the opposite mountain, are four claims, known as the Palmer and Kramer. A cross-cut tunnel cuts the vein 200 feet deep. This vein is strong, has four feet of high-grade ore carrying free gold and tellurine.

On the northeast slope of Reuben three miles from the Gold Bug, and on the wagon road from Glendale, is the New Hope group of seven claims. The formation is porphyry and schists. The veins run northeast, and are intersected by an iron dike nearly at right angles. This locality is intersected by veins running at various courses and from one to 16 feet in width, approximating stockweeks. A cross-cut tunnel is to open the principal ore chute at a depth of 210 feet.

The foregoing details are summarized to show that this very newly discovered quartz zone is receiving active attention. Many unmentioned prospects in this mountain are being exploited.

Leland, another point on the Southern Pacific Railroad, 276 miles south from Portland, is the departure point for the upper or northern portion of the immense placer fields of Josephine County, and some important quartz mines are being operated in the adjacent county.

Ten miles east from Leland, by good road, is a quartz mine generally known as the Greenback. The property consists of seven contiguous claims, which are latterly known as the Victor, Jr. They lie in a spur of St. Peter's Mountain The general formation is metamorphic trap. The strike of the veins is nearly due east and west. A serpentine belt or dike, striking north and south, intersects this entire section, and the veins abutting it, as against a wall, cease entirely. The veins are in true fissures, averaging three and a half feet, dip 40 degrees north, at an elevation of 2800 feet. The depth attained on the Greenback vein is 700 feet; ores free and in sulphurets. A 15-stamp mill is kept in full operation, and 25 stamps are to be added. The property is reputed to be paying handsomely with ores averaging $18 per ton. Telephone connection with Leland.

In this locality many other properties are being developed, several giving excellent promise of future mines. A two-stamp mill at the foot of the mountain does sample and custom work.

Placer claims of various areas, depths, deposits and methods of working are tributary to Leland, but rely on Grant's Pass for large supplies and local bank facilities. Grave Creek and Wolf Creek, flowing from the North and East, unite near Leland. The beds and banks of these streams above and below the point of junction and the beds and banks of their tributary streams and gulches form an almost continuous chain of placer mines. In the aggregate these auriferous gravel beds cover a large area of country. A short description of one modern plant must suffice.

The Columbia Mines Company, an Oregon Corporation, has an extensive property and up-to-date plant thereon, on Grave Creek, eight miles from Leland by wagon road of easy grade—a delightful Summer drive. This plant has, it is claimed, the largest hydraulic gravel elevator ever constructed A half-tone cut from a photograph of this elevator, with description of its construction and operation, appears on another page of this paper. It is locally called the Hampton elevator, Professor Hampton having, in its construction, made improvements on the original device of another by adjustment of numerous parts on closely calculated scientific principles.

The holdings of this company cover an area of about 2500 acres. Water is supplied the giants and elevator through 23 miles of ditches, all four feet wide on the bottom, seven on the top and three feet deep. When the plant is in full operation 4000 inches of water are brought to the mine under head, or pressure, of from 1 foot to 1000 feet, as the various needs require. The impact of a stream of water under a presure of 700 feet through a six-inch nozzle is terrific. It is very like that of a solid bar of iron moving almost like a cannon shot. When such a stream is diverted upward through a pipe constructed properly, everything that will enter the pipe must pass through it and to a height determinable by the calculations of the engineer.

The ground is piped in the usual way into sluices fitted with riffles, where the gold is saved. The tailings—rocks, gravel and earth—fall from the tail of the sluice into the pit at the base of the elevator, where the uprushing stream of the elevator forces all the mass up the pipe to the desired elevation for "dumping."

A small stream of water drives a Pelton wheel and dynamo, which furnish arc and incandescent lights to the workings, office and residence and quarters for employes. Telephone lines connect the office with distant points on the ditches and surrounding camps and with Portland. It is an ideal plant.

Eight miles above the plant of the Columbia Mines Company is an ancient channel following, or lying in, the summit of a low range of foothills. This old channel is the bed of a prehistoric river, and now lies at an elevation of nearly 200 feet above the bed of Grave Creek. It has been traced at this point for nearly a

THE MUSICK MINE, BOHEMIA DISTRICT, PROPERTY OF THE HELENA CONSOLIDATED MINING CO.

organization with permanent rooms in this city.

A 5-stamp custom quartz mill is located here. The elevation above sea level is about 1000 feet.

Gold in Timber-Clad Hills.

Placers and quartz mines extend from within a mile of the town into the mountains and gorges of the Rogue River, Coast and Siskiyou ranges, all clothed with fir, cedar, pine and oak. The product of the placers has been enormous in the past and continues to be very large; the exact amount is not ascertainable.

Quartz mining has received scant attention until very recently. Heavy plant growth has been a hindrance, though available timber is of great importance to a mine when opened. The discovery of one quartz mine serves as a finger board on the road to others; so the opening of mines aids the prospector in his search for others in the same locality. Somewhere in these hills lie the veins that fed the rough, quartz-bearing dust into the placers.

West from Grant's Pass, 25 miles by wagon road, and rising abruptly from the south bank of Rogue River is Peavine Mountain. Apparently this mountain at one time joined Mount Rueben as a range or chain, and the accumulated waters cut through this formation, carving out the canyon through which Rogue River now gets its outlet to the sea. Intersecting Peavine on its eastern slope, in a nearly north and south course, and continuing on through the mountainous country is an immense lode or zone, something over 200 feet wide, made up of a series of highly mineralized veins, lying parallel, carrying gold, silver, copper, iron and various other metals. This lode was first discovered where the Rogue River had cut it to a depth of over 1000 feet. From this point it has been traced south 20 miles, and north 15 miles, to and beyond the Victory placers on Cow Creek, and through the Cow Creek range. It is surprising that very little exploration has been made upon this remarkable lode. Only one company is now actively and earnestly at work on it, and this is being done at a point on Rogue River. It is generally known as the Big Yank ledge.

Prehistoric River.

A great river surpassing Rogue River 50 fold or more once flowed northward through this country. It was a mile or more in width, and has been traced at intervals of its course. Rogue River has cut through it at the mouth of Galice Creek, and from this point northerly for a distance of 25 miles or more this old channel holds its course through the mountains, and cut across by the present streams of Rogue River, Grave Creek and Cow Creek. The northern end so far as traced passes into the placers of the Victory Company on Cow Creek in Douglas County. South from the mouth of Galice Creek the old river bed passes through the Brigg's Creek placer district, on across the lower Illinois River to the Waldo placers on the west fork of the Illinois, a distance of 45 miles. In its southerly course it has been cut across by Brigg's Creek, Illinois River, Josephine Creek and the west fork of the Illinois. On its course south this old stream appears again in Northern California. Wherever encountered the gravelly bed of this prehistoric stream has been found rich in gold, and considerable quantities of platinum have been found in it. A very small portion of the bed of this ancient river has been opened in Oregon. The general elevation of its bed above those of the present streams is about 400 feet, and where modern streams have cut it their beds or banks have been rich in gold.

Peavine Mountain has many quartz veins; several projects being opened; ores, free-milling gold. The output of some of these claims is being reduced by the old arrastras—mule power.

Copper Vein Nearly a Mile Long.

A copper vein, 15 miles northwest from Grant's Pass, 15 feet wide and 5000 feet long, is being prospected; and in the southwest portion of the county is an extensive section of country which extends into California.

The ancient placer towns of Waldo, Kerby, Althouse and Browntown are in this locality. Energetic work is in progress here on big copper prospects, all of which carry well in gold. Croppings appear in nearly every hill, and the surface showings are excellent. This country is reached from Grant's Pass by daily stage through Kerby and Waldo to Crescent City, Cal. A daily stage also connects Kerby with Browntown, a distance of 13 miles. Telephone lines connect Grant's Pass with Waldo, Selma, Kerby, Shelby Creek and Crescent City.

South from Grant's Pass is Williams Valley, a garden spot of orchards, alfalfa fields and flowers, 10 miles by three miles It is surounded by imposing mountains. Looking up from the valley one sees holes ranged in the mountain sides above like pigeon-holes in a concave desk, apparently almost in reach. These are mouths of tunnels, opening to quartz veins of copper and gold. The ores are of high grade and extensive operations are being pushed. Three of these mines have a 5-stamp mill each, and another mine is procuring a mill. The formation is limestone and porphyry.

A wonderfully beautiful and massive mountain of purest marble overlooks this valley. This hill has all the variegated marbles in colors and tints, and from purest white to onyx-like black. It is unappropriated and almost untouched.

On Baldy Mountain, southeast, and four miles from Grant's Pass, is the Jewett quartz mine of free gold, and calaverite, in a large vein. It has a 5-stamp mill.

Placers exist on Jump-off-Joe, Louse and Jones Creek. The Dry Diggings are within three miles of Grant's Pass, and cover 100 acres. There are extensive placers in the Williams Valley country, and on Oscar Creek, the latter noted for big nuggets.

Two properties merit special mention as typical of the formation and methods of operation in this county; one lying east and the other west of Grant's Pass. On Louse Creek, eight miles northeast, by good road, is a group of placer and quartz claims known as the Granite Hill property, where 800 acres have been covered under one title. The entire tract is covered by splendid timber, and to murder those trees, even in the pursuit of gold, seems a sacrilege and a crime. The elevation of the tract is 2200 feet. The middle, north and south forks of the creek converge at one point, and the placer claims are laid here, extending up each fork and below the junction. Just below this junction a movement of the earth, or slide from the adjacent mountain on the north, long ago, filled the former channel of the stream, forming a huge basin, which has been filled with gravel and subsequent soil to a depth of 50 feet, so that an area of 60 acres has been formed in what formerly was a mountain gorge. Prospect shafts sunk at various points show the gravels rich in gold, reputed to average 75 cents per yard of the entire deposit.

To open this bed of gravel and gain a tailings dump in the canyon below, a tunnel which will tap the bedrock under the gravel at its lowest point is being run. It requires 1400 feet of tunneling, which will be utilized by placing sluice boxes firmly on its bottom, this conveying away the washings of the gravel deposits above to the canyon below. The body of the slide is of material too compact to be removed. The total pay gravel area of this property is fully 250 acres, the average depth being 25 feet. A few acres of the upper deposit have been worked profitably, 6½ acres returning $60,000 in dust.

An excellent feature here is the absence of large bowlders. Water for the hydraulic pipes and giants is brought eight miles by ditch, which are to be, or ought to be, enlarged.

Five quartz veins cut the mountain sides above the placers. They are from one to 15 feet wide and carry free milling ore. The ores from these claims was formerly worked by four arrastras. The mules, being of the slow-gaited variety, were turned out, the arrastras abandoned and a 5-stamp mill now reduces the product of the mines, which have been opened in some 1200 feet of workings. The owners are R. A. Booth, J. O. Booth and C. L. Magnum, of Grant's Pass.

Several lesser properties lie below on this creek, one of which is using the Ruble elevator.

Galice Creek and Blue Gravel Placers.

Here chronic geologist and practical miner can find mental and bodily sustenance; the one in these marvelous mines, the other at Manager Harvey's unpretentious but ample board. The property lies on Galice Creek, 25 miles northwest from Grant's Pass. The deposit lies in a section of the bed of the ancient river before mentioned, which parallels Galice Creek at this point. The bed of the old stream, which is the bedrock of the placers, is about 450 feet higher than the bed of the present stream. This bedrock consists principally of shales and slates, with occasional thin strata of sandstone, all with strata upturned and in places much contorted and twisted. On extensive areas of this old river bed, recently made clean by the placer washings, the polishing, rippling action of prehistoric waters is distinctly visible. At one place a sheer fall in the old river of 20 feet appears, disclosed by recent removal of the filling of gravel and sand, which had hidden it for centuries. The width of this channel is supposed to be from one-half mile to one mile; but at this point, though thousands of feet have been uncovered, the western rim has not been reached. The workings have been carried on from the east side—nearest Galice Creek—and the bedrock, or river-bed, is still "pitching into the hill," indicating that the center of the channel has not been reached. This old channel was filled with the gravels, rocks and sands of long ago, and with them the gold. It is a marvelous deposit, in places exceeding 200 feet in depth. Its course is due magnetic north. The placer claims laid along it, and now owned by one company, extend for a continuous distance of four miles. The general elevation is 1500 feet. Of these mining claims 960 acres have been patented and 600 acres are held under the usual possessory title. Seven small tributaries of Galice Creek have cut through this deposit and down through the bed of the older stream, enriching Galice Creek with the gold which made men rich and that creek famous in the early days of placer mining here.

At 12 points along the eastern rim of this old channel, and within the four miles mentioned, the several original owners worked into the deposit, and the amount of gold obtained was very great, but the depth of the banks became so great that operations with divided supplies of water became impracticable. More water was indispensable, but various owners could never agree on means of getting it, so titles finally were concentrated in J. R. Harvey and his Chicago associates. During the year past Mr. Harvey has improved the water supply and consolidated the workings so that three giants with 6-inch nozzles and under a head of 500 feet are thundering day and night against walls of auriferous gravels and sand over 175 feet deep, and which persistently stand vertical till knocked down in slabs of 10,000 tons each. It is a thrilling, awe-inspiring sight to look from the verge of a vertical wall of 200 feet, down upon the human atoms as they direct the hill-destroying streams below. The giants are set on the bedrock and the water applied at the base of the bank, and as the lower stratum is washed out the upper ground breaks for want of support and slides into the pit to be washed away.

These great beds are composed chiefly of gravel from two to three inches in diameter, graduating into pebbles, grit and sand, lying in alternating layers or masses of quartz sand very compact, but not cemented. The deposit is practically free from bowlders, cement and clay, a remarkable condition. A peculiar feature of this deposit consists of numerous large bowlders distributed irregularly through the mass and of perfect form but so completely decomposed as to crumble at the touch and dissolve in the water more easily than does the material which surrounds them Manifestly, it was a sluggish stream that made this deposit.

The gold runs from fine dust to nuggets of $20—occasionally pieces are found which weigh $100. An abundance of timber of great height has grown upon and covered this deposit, and a saw mill comprises part of the plant. Water is supplied through 20 miles of ditches 5 feet wide at the bottom, 7½ feet at the top and 2½ feet deep. The climate is the ideal one of Southern Oregon.

The Big Yank ledge, mentioned elsewhere, at this point parallels the old channel and its deposit, lying to the west at a distance of less than one-fourth of a mile.

The Dry Diggings Hydraulic placers, three miles east of Grant's Pass, have been operated for 30 years with scant supplies of water and during short seasons. The property covers 400 acres and is noted for production of coarse gold and big nuggets. Preparations are being made to increase the water supply by pumping into reservoirs from the adjacent stream, and to enlarge the ditches. A mammoth vein was uncovered by these placer workings and lay unappropriated until November last. It is 200 feet wide, evenly mineralized, and preliminary tests show an average of $5 per ton in free gold and pyrites. A mill run is to be made of ore taken entirely across the vein. Its strike is nearly due north, dip not definitely ascertained.

JACKSON COUNTY.

Work Near Gold Hill Retarded by Insufficient Water Supply.

Gold Hill is a growing town on the Rogue River, 313 miles south from Portland by rail. It is immediately surrounded by a rolling country, the foothills of the mountain ranges. It is ably represented by a good weekly newspaper. Two quartz mills are maintained here for custom work. There are two well-stocked livery stables. The hotels, three in number, are not quite good enough to meet the demands. Miners, like other experienced men, prefer comfortable quarters and pretty good food. Even in rude cabins the American gold miner usually manages to have good provisions, and on necessity is a good cook. One of these, on placing before his guests a splendid dinner of bean soup, brook trout, grouse, potatoes, lettuce, tomatoes, biscuits and ideal coffee, all elegantly prepared in the ample fireplace of his log cabin and served smoking hot, declared that "it is better to have good food on one's table than napkins and silverware." Good hotels are useful adjuncts to all important mining camps.

Development of placers tributary to Gold Hill has been retarded by insufficient water supply; and this district has suffered somewhat from ill-founded repute that the quartz veins are "pockety." The pocket hunter is no true miner. Vegetation and soil cover the hills wherein lie the quartz veins. The pocket hunter methodically "pot-holes" the hillsides. He digs a system of holes in the soil to the rock and pans the dirt, noting the presence and quantity of gold dust taken from each hole. Finding by this means a channel or flow of gold in the soil, he follows it, pot-holing as he goes, until he locates or reaches the source in the quartz vein up on the hillside. He sinks on the vein here and often secures several hundred dollars' worth of very rich free gold quartz, which he crushes in a mortar or in a dolly, and pans out the gold; or takes it to the custom mill for reduction. It is a fascinating business. But when depth is attained, compelling the use of candles for light, or windlass for hoisting, the work becomes slow and tiresome. Nothing but the biggest of prospects holds him. Ores yielding less than $100 to the ton do not pay for this style of mining. Twenty-dollar ore is useless to him, so if the rich streak from which erosion fed the hillside doesn't hold out, or the vein "pinches," as all pay bodies do, this anomalous miner goes to another point on the same or a neighboring hill for renewal of prospecting for pockets. A great deal of this kind of mining has been done in this

THE HELENA MINE, BOHEMIA DISTRICT, PROPERTY OF THE HELENA CONSOLIDATED MINING CO.