

## UPPER BURNT RIVER AREA

### Geography:

The upper Burnt River Area includes the districts formerly called by the various names of Hereford, Bull Run, Unity, and Bridgeport. The area embraces the drainage of Upper Burnt River from the gorge above Durkee where it ties in with the Lower Burnt River area, to a line about half way between Whitney and Unity (China creek) where it connects with the extension of the Green-

horn area. It also includes all of Baker county south and west of Unity.

### Geology:

The eastern part of the area is chiefly argillite with some limestone and old lavas. Most of the western part is covered with recent lavas with frequent "islands" of older rock seen here and there. Burnt river and its various tributaries

have river gravels, sand and clay in them with much gold-bearing gravel. Most of this area has never been geologically mapped and therefore no detailed information is given.

#### BUCKHORN CLAIM (Gold)

Upper Burnt River Area

Owner: Edward Bates, Baker, Oregon.

Location: Is 18 miles south of Baker. Located by Edward Bates about 10 years ago. In high mountain area; country rock is slate and limestone; vein bearing northeast and southwest; width 2 feet. Water is scarce; timber can be obtained nearby.

Informant: Prescott.

#### BULL RUN MINE (Gold, Quartz)

Upper Burnt River Area

Owners: Frank McCulloch, Ed Sullivan, and O. O. Baisley. Baisley's address Unity, Oregon.

61 miles SW. on John Day highway from Baker. Consists of 8 unpatented lode claims. Located in 1910 in high mountains. Country rock, andesite; vein bearing NW. and SE., width 6 feet., property length 6,000 feet. Past production \$10,000. Water from tunnels ample; power generated at the mine by Diesel plant; timber on claims; developed with 1,200 feet of tunnels, three shafts, one 50 feet deep, one 40 feet and one 30 feet. Forester rod mill, flotation, concentrator. Mine is now idle owing to litigation.

Informant: Prescott.

#### BUSTER PLACER (Gold, Asbestos)

Upper Burnt River Area

Owner: Bob Cameron, Baker, Oregon.

On Pine creek 35 miles SW. on John Day highway from shipping point, Baker. Located 2 years ago. There has been no production but there is a good showing of the mineral asbestos. Being further prospected at this time.

Informant: Prescott.

#### BUTTERCUP MINES, INC. (Placer, Quartz, Asbestos)

Upper Burnt River Area

##### Placer Claims:

Operating Company: Buttercup Mines, Inc., address Bridgeport, Oregon. C. F. Glaspell, Pres., N. E. Lewis, Nampa, Idaho, Vice-pres., Gladys L. Glaspell, Sec.-Treas. Incorporated under laws of

Oregon for \$60,000. Stock fully paid, 4 stockholders.

Location: Immediately below old dredge ground in Burnt River canyon in secs. 16 and 17, T. 12 S., R. 41 E. W. M.

Area: Consolidated group of 700 acres, the majority being placer ground including high bars. Placer ground includes area left by previous dredge, which includes small channel and bank bars.

History: No yardage figures available but reported to have produced between \$30,000 and \$60,000 from one or two cuts by intermittent sluicing and dredge cuts.

Equipment:  $\frac{3}{8}$ -yard dragline combination with  $\frac{1}{2}$ -cubic yard bucket. Portable washer on skids with stated capacity of 600 to 750 yards on 2-shift day of 10-hour shift. Complete blacksmith shop and residence.

Geology: Steep canyon topography. Country rock serpentine, limestone and various greenstones of "Burnt River Schist" series. Gravel unusually fine in present pit, but dredge tailings show large amount of medium size boulders and angular slough from steep canyon sides. Gold is typical reconcentration type from ancient high channel bars—rather small with fineness running between 800 and 850. The coarser gold which is sometimes found appears to be of greater average fineness.

Development: Working in Burnt river with portable land washer with "double deck" sluice box. At first used Ainaly bowl which was discarded in favor of sluices. Have 250 feet of pit stripped of 15-foot overburden with 10 to 12 feet of gravel exposed. The overburden has not been tested. Expected to get \$60,000 from 2 parallel cuts although the ground has not been systematically tested. Property lacks sufficient exploration.

##### Quartz Claims:

One tunnel at bottom of hill east of houses, extends N. 25 degrees E. for 150 feet (then caved) in dark pencil slate with occasional highly carboniferous layers. The "blow out" on hill above is simply a gossan composed essentially of quartz stringer fragments in a matrix of hematite with minor amounts of limonite and country rock. Several bull quartz veins cut the schists northeasterly from above point. North of the "pit" there are numerous quartz veinlets in the north wall of

the canyon. They vary in width up to 2 feet, but none of them shows any continuity. They are seldom more than 30 or 40 feet long and play out or pinch out into the country rock, which at this locality is limestone. There is no mineralization of the country rock and no sulphides to be seen anywhere.

#### Asbestos Claims:

Location: East half of sec. 17, west half of sec. 16, T. 12 S., R. 41 E. W. M.

Area: 7 unpatented claims.

History: Located in July, 1937.

Geology: North shaft 25 feet deep in tuffaceous pencil schists. Pit No. 1 at 40 feet crosscut on top of ridge at elevation 4,050 feet, shows the following section: Footwall of fine grained laminated chlorite schist striking N. 75 degrees E. dipping 35 degrees S. One to 3 feet of tremolite vein consisting of tremolite, asbestos slip fiber up to 6 inches long, 20 per cent. Soapstone massive up to 8 inches thick, 5 per cent. Platy impure brittle tremolite with only small amounts of fiber, 75 per cent. Hanging wall consists of 3 feet of shattered and broken serpentine, chlorite, talc, and tremolite, then 6 feet at least of highly altered greenish rock cut by numerous stringers and veinlets of quartz, calcite, magnesite and cross fiber tremolite not over 1/2 inch thick. This vein extends for 30 feet in the exposures but depth is unknown. Similar but less extensive "ore" appears in wide veins in cuts for several hundred feet to the south. A cross vein running east and west from pits 3 to 5 also appears.

Origin: The "greenstone intrusion", as it is called locally, is a dike trending more or less northerly and southerly, across the predominately north 45 degrees E. structures of the slates and schists. The dike is generally dense and massive with individual phenocrysts seldom larger than 2 mm. Gray-green pyroxenes present but not common. Jointing is usually fairly coarse but becomes finer and grades into well defined schistosity to the south where it disappears. The asbestos is very evidently derived from this intrusion. The prospect at a juniper thicket several hundred feet to the southeast of the dike shows faulted and laminated talc-tremolite schists with no fiber.

Informant: A. V. Q. and J. E. A., 37.

### DRY HORSESHOE PLACER

#### Upper Burnt River Area

Owner: Jack Conners, 9/16 share, with other small owners. Bridgeport, Oregon.

Location: SE. 1/4 sec. 3 and NE. 1/4 sec. 10, T. 12 S., R. 41 E. W. M.

Area: 4 claims, 20 acres each.

History: Work started in 1934 with total production about 100 ounces of gold. Old workings were made to some extent many years ago.

Equipment: 1,200 feet of track, 2 mine cars, 2 small gasoline engines, pump, blacksmith equipment, etc.

Development: Main tunnel 1,000 feet, 200 feet of drift. Shaft 125 feet to tunnel level. Total of 300 feet of incline. All of tunnel about 10 to 15 feet above bedrock.

Geology: Slate and limestone bedrock. Boulders up to very large size. Gravel is sub-rounded to sub-angular, often flat. Composed of argillite, limestone, slate, schists, greenstone. Matrix only 15 per cent to 20 per cent of coarse and fine gravel. Gold is coarse with a little fine above, but not above 7 feet from bedrock. 90 per cent is found on bedrock. A few pieces of gold up to \$4 have been found but usually they average from \$.05 to \$.50. The gold is 875 fine. There is no clay. The bedrock is very jagged, rough, and grooved.

Present operation understood to have been abandoned in December, 1938.

Informant: J. E. A., 38.

### ELLIOT & GOLD NUGGETT PLACERS

#### Upper Burnt River Area

Owners: L. B. Jackson and W. B. Pattison, Hereford, Oregon.

Location: Mouth of Pine creek above present highway, sec. 26, T. 12 S., R. 39 E.

Area: 300 acres under lease.

History: Gouged and prospected for many years but past machine operations usually failed due to high overhead costs. Humphries Construction Co. (Denver) tested the ground, but available yardage was too small for them to handle so sub-leased the property to the present operators. Sub-lessors began operations in spring of 1937, moving 28,000 yards of gravel and about 14,000 yards of stripping. About \$15,000 in bullion shipped in 1937. Previous production unavailable. Operated April to December.

Equipment: 1 Insley  $\frac{1}{2}$ -yard combination shovel and dragline. Gravel washing plant: Fines to sump; pumped to sluice boxes 50 feet long and 14 inches wide. 25 feet of Hungarian type riffles of 3.16 inch by 2 inches angle iron. Water is pumped from Burnt river with 4-inch centrifugal pump throwing 300 to 350 gallons per minute to washing plant.

Geology: Elevation 3,500 feet. Gulch operation mining alluvial fan from Pine creek. Rolling country. False bedrock of sandy clay hardpan, dark colored with "burnt" appearance. True bedrock (probably lava) has never been tested in this locality. Gravel size: 50 per cent 6 inches to 3 feet in diameter. Gold: rather coarse, no nuggets, with fineness of 850. Probable source is reconcentration of higher terrace gravels of Pine creek. Bench gravels above creek near washing plant are being dry-placered by four men who are taking out about \$50 per day with hand-riffle blower.

Development: Humphries Construction Company completely tested pitted entire area, averaging about 50 cents for 280,000 yards of gravel. Present operators sank enough pits to check Humphries' results. Operation recovery bears out accuracy of original sampling.

Approximate costs: 20-25 cents per yard, work in 2 shifts. 500 yards capacity in 24 hours. Plenty of 15 cents to 20 cents ground—too low for present type of operation. Approximately 250,000 yards still to be mined. Probable life is one more season after the present one. Apparently a successful dry land mechanical operation.

Informant: A. V. Q., 38

#### HIGH BAR PLACER

Upper Burnt River Area

Owners: John Wyant, Hereford; W. E. Mecker, Salem; Dr. C. O. Boyer, Portland.

Location: West side of Pine creek, workings at elevation of 4,500 feet; 300 feet above Pine creek, in sec. 15 and the north half of 22, T. 12 S., R. 39 E.

Area: 160 acres owned jointly. 80 acres adjoining to the west owned by John Wyant, Jr.

History: Located in 1916 and 1917. Worked in 1935 by Charles Silbaugh, Pendleton. Gulches from this placer worked in early days.

Equipment: Dragline carried gravel to the edge of the flat where it was shoveled by bulldozer through grizzly to bin. Huelsdonk dry concentrator 6 feet wide and 30 feet long run by Mack truck

engine. There were also on the property a small 5 foot testing mechanical blower concentrator, and two 12-foot Stebbins dry concentrators.

Geology: Gold is said to be very fine. The gravel composed of large boulders of lava, quartz and schist with large amounts of flat small pieces often very hard packed and may require blasting. The gravel is at least 10 feet thick, the bottom not seen. It lies on bedrock lavas dipping gently southward. Almost no test pitting has been done.

Informant: Mrs. J. Wyant, via J. E. A.

#### JAMES DRENNEN PLACER (Small Hydraulic)

Upper Burnt River District

Press reports of July, 1938, stated that this placer on Clarks creek near Bridgeport had a good season with ample water for piping, using two reservoirs. Property worked each spring season for several years, during short season.

#### LOG CABIN MINE (Gold, Silver, Nickel)

Upper Burnt River Area

R. J. Cartile located March, 1937, a group of 3 lode claims, in high mountain area; country rock, porphyry, granite, greenstone; vein bearing N. and S.; width 6 feet, length about 400 feet. Water ample from Amelia creek; power from gas engine; timber on claims. Claims are being prospected at present. There are 60 feet of tunnels; one mile from Orion mine and 6 miles from Unity postoffice.

Informant: Prescott.

#### NANCY JOE MINE (Gold)

Upper Burnt River Area

Owners: Mike Hoff and S. B. Larsen, Baker, Oregon. On Cow creek, 36 miles SW, on John Day highway from Baker. Located 23 years ago by Andy Groves and consists of 2 lode claims. High mountain area; country rock serpentine and slate; vein bearing NE. and SW; width 30 inches. Water is ample; timber on claims; no power. Claim now idle; several hundred feet of tunnels.

Informant: Prescott.

#### NOBODY'S DREAM (Gold)

Upper Burnt River Area

Owners: Mike Hoff and S. B. Larsen, Baker, Oregon, relocated a year ago, as the former owner, Andy Groves, was deceased.

On Cow creek, 36 miles SW, on John Day highway from Baker. Located 25 years ago and consists of 4 claims. In operation at times since located.

Informant: Prescott.

## OREGON MINING COMPANY

Upper Burnt River Area

Owners: Main office, 1926 Second Ave., Seattle, Washington; J. E. Angle, Pres.; J. R. Angle, Supt.; A. B. Love, Vice-pres.; C. B. Walker, Secy.; incorporated 9/21 37.

Location: Sec. 3 and 9, T. 12 S., R. 41 E.

Area: Bed of Burnt River in the canyon from a point in sec. 3, southwest (upstream) nearly to point where river enters the canyon below Bridgeport. Comprises 12 or 14 placer claims and 80 acres of deeded ground.

History: Property was worked in a small way but never has been dredged before. Dredge started about November 1, 1938.

Equipment: "Universal" gas dragline with 14-yard dipper, floating washing plant, Kirk-Hillman airplane placer drill for testing, and caisson shaft sinking outfit, acetylene and electric welding outfits.

Equipment of the Dredge: 70 feet stacker with hand winch, 8 banks on each side of the dredge of 24 inch riffles 20 feet long, Trommel 20 feet long, 5 feet in diameter, one-half inch holes, Waukesha 40 h. p. gasoline engine, Main 8 inch pump run by Buda 60 h. p. gasoline engine, Also, 4 inch pump. The boat is of wood and measures 49 by 28 feet, 3 feet depth.

Geology: Bedrock mostly schist with a few ribs of limestone crossing the river. It is possible to dig to the bedrock with bucket at all places. River flats are from 200 to 400 feet wide, averaging about 300. The gravel averages 25 feet in depth. Boulders are seldom more than 250 pounds in weight. Gold lies mostly within 5 feet of the bedrock, 50 per cent being upon the bedrock. It is very coarse. The fineness is 850. There is no clay and no false bedrock. The ground was tested by 50 to 60 drill holes and averages 35 cents a yard. Seven test pits were put down with a caisson and checked the drilling.

Informant: J. E. A., 38.

## PURPLE SAGE (Placer)

Upper Burnt River Area

Owner: Norma Huntington, Hereford, Oregon.

On Pine creek, 35 miles SW. on John Day highway from Baker. Located 14 years ago and has been a moderate producer ever since. Consists of 180 acres placer ground, recorded in Baker county. Ref. Prescott

## RECORD MINE (Gold Quartz)

Upper Burnt River Area

Old name: Whited Mining Co.

Owner: Whited Brothers.

Present operator: Record Gold Mining Co., Fred N. Nicholson, Pres., Seattle, Wn.; L. T. Kramer, Secy., Enumclaw, Wn.; W. C. Fellows, Mgr., Baker, Oregon. Operated under lease.

Location: 5½ miles SW. of Unity in sec. 11, T. 14 S., R. 46 E.

Area: 15 full-sized unpatented quartz claims and 80 acres deeded.

History: Previous to 1933, 10-stamp mill, water power 4 spring months, operated by Whited Mining Co.

Equipment: Mine—340 cubic foot C. P. Diesel compressor, Leadville 1,500-pound tugger hoist, D-G drills, D-6 sharpener, blacksmith shop, board-in house, bunk house, assay laboratory.

Mill equipment and flow sheet: Four cylinder 240 HP Diesel electric generator 440 volt; ore goes from crude ore bin, 75 ton capacity, to gyratory crusher (20 ton per hour capacity), to Traylor vibrating screen (¾ inch) oversize to Wheeling jaw-crusher, undersize to conveyor to fine-ore bin to 6 feet by 6 feet Traylor ball mill 125 ton capacity. First amalgamation between ball mill and Dorr-24 inch Duplex classifier, second amalgamation overflow from classifier, pulp thence to emulsifier, elevated by Wilfley sand pump to 2-SW Eng. rougher cells, concentrates to cleaner cells, cleaner tails back to circuit at head of classifier and Wilfley table receive splits of tails for recovery test. Final tails pumped up canyon for storage, concentrates to thickener, to Oliver filter, dryer (S. W. Engineering Co.).

Recovery: 94 per cent combined amalgamation and concentration.

Production: Old, \$40,000 in bullion high-grade and concentrates. Since 1933: bullion \$50,000, conc. \$10,000, high grade \$3,000.

Geology: Vein on winding contact of granite and serpentine. Strike N. 45 degrees W. dip vertical, chalcopyrite (small amount) gold 900 fine, balance iron-stained quartz, average width 5 feet, average value \$10. Cross vein 30 feet wide (\$3.00). Mill test \$2.35 recovery, also 10-16-foot parallel vein running \$3.00.

Development: 4 levels all adits, No. 4, 1,400 feet, No. 3, 800 feet, No. 2, 1,000 feet, No. 1, 200 feet.

New winze 120 feet below No. 4 level. Raises connect No. 4 with No. 3 and No. 2, also 500 feet of crosscuts.

Ore Reserves: Most ore extracted above No. 4. Ore in winze 3-5 feet of \$15 average. Deeper development needed to prove ore indicated in winze and exploration on additional levels. Additional pumping and other mine equipment required.

Costs: Reported at \$5.00 per ton mining and milling.

Informant: W. C. Fellows, for assay, values, costs, etc. (A. V. Quine)

Ref. Lorain, 38:41

#### WALL STREET GROUP (Gold)

##### Upper Burnt River Area

Owner: S. G. Larsen, Baker, Oregon.

On Pine creek 33 miles over John Day highway from Baker. Recently located. High mountains; country rock serpentine and porphyry; vein bearing NE. and SW.; width 7 feet. Water ample, timber on claims; no power. Several hundred feet of tunnels. Claim is idle at present.

Informant: Prescott.

#### JOHN WYANT PLACERS

##### Upper Burnt River Area

Owner: John Wyant, Hereford, Oregon.

Location: 3½ miles above highway in Pine creek in secs. 10, 3, 2, T. 12 S., R. 39 E., sec 35, T. 11 S.

Area: 12,000 feet along Pine creek.

History: Yardage moved unknown but \$20,000 produced since 1908.

Equipment: No equipment except sluice boxes, small inclined shaft with rails and small pump and windlass. One "splash" dam.

Geology: Elevation at house 4,325 feet. Gulch operation entirely. Bedrock varies from "shaly" basalt to conglomerate and rhyolitic beds. Boulders 10 per cent to 20 per cent, maximum size 2 feet in diameter. 75 per cent of gold in nuggets, fineness 838-846. In a nugget with quartz, the quartz shows a high degree of minute fracturing and shearing, partly iron stained. Argillite belt reported to cut through canyon above, and all gulches reported to head in shale and argillites so that probable source of coarse gold is pocket type with the less coarse gold being washed down from old high channels.

Water: Scarce. Watershed small with little snow storage. Uses rain runoff as it comes. Bedrock drifting in wintertime using bedrock water which flows all year round. "Splash" dam used for ground sluicing in spring, which begins about 1st of March and ends July 15th to 30th. Operation handicapped by flat bedrock grade and lack of ample water.

Development: Tested ground gives estimate of 1,000,000 yards averaging \$1 per yard, including overburden. Depth to bedrock average 16½ feet. Pay gravel best in first yard above bedrock. Bedrock yardage \$5 or more per yard.

Informant: A. V. Q.

#### YELLOW MINERALS (Placer)

##### Upper Burnt River Area

Owner: Ralph Russell, Baker, Oregon.

Placer claim on Pine creek, 33 miles south over John Day highway to shipping point, Baker. Located several years ago and has been a producer almost continuously since. Now being operated. Consists of 2 placer claims.

Informant: Prescott.

### VIRTUE AREA

#### Geography:

The Virtue area embraces the drainage south of the lower Powder River and east of the Baker Valley divide, as far east as Five Mile Creek. The Virtue District proper, one of the oldest in Eastern Oregon, is situated about 7 miles directly east of Baker and is about 12 miles in length from north to south and varies in width from 3 to 6 miles. It occupies the southern part of T. 8 S., practically all of T. 9 S., and the northern part of T. 10 S., all in R. 41 E.

It covers a region of low arid hills rising in the great bend of Powder River. The elevation ranges from 3,400 to 5,000 feet. The hills rise rather

abruptly from Baker valley and, east of the summit, slope gently eastward toward the lower Powder River valley. Most of the drainage is toward the latter. Within these hills is Virtue flat, a sage-covered depression extending 8 miles east and west and 2 miles north and south. The water supply is very scant, the only stream being Ruckle Creek in the extreme eastern part of the district. Good roads from Baker City reach various parts of the district.

#### Geology:

The geology is similar in the main essentials to that of the other mining sections of eastern Ore-

gon (see Gilluly, 37), in that the ore deposits are the result of an intrusion into older flows and sediments. Obscured as it is by the covering of hillside wash, basalt, and lake beds laid down since the time of the intrusion and only partially removed, makes field investigation difficult.

The intrusion exposed over but a limited area in the northern part of the district is a greenish-gray diorite, grading into gabbro. This diorite is probably a local development of a granodiorite intrusion. By this we mean that the intrusion in stopping its way into the older greenstones and argillites has incorporated so much of these older rocks that its acidic nature has been so modified on this upper part as to become sufficiently basic to be called a diorite or gabbro. Erosion has exposed nothing but the diorite, but there are many things which evidence that underneath this modified exterior it will shade into granodiorite at depth.

The argillites and greenstones into which the intrusion came have been much mashed and altered by regional metamorphism, doubtless both before and during the time of the intrusion. Of the older rocks greenstones predominate in the northern part of the district, while argillites are the chief older rocks in the southern part. They doubtless continue underneath their basalt covering many miles to the south and west. Thin basalt flows are found on the tops of the elevations and on much of the hillsides. In Virtue Flat lake bed materials exist to considerable depths.

At different times during the intrusion the diorites were fractured as well as roof of sediments and flows. Into these fractures was injected the dikes which grade from basic to acidic, the latter from granodiorite-porphphyry to aplite. After the dikes had been formed, later fractures were filled with gold-bearing quartz deposited in them by hot ascending waters coming from the intrusion itself. Since the intrusion apparently is roughly circular, it is to be expected that there would be no parallel vein system. The quartz veins strike in many directions and individual veins are not traceable for long distances. Most of the deposits are normal, simple, quartz veins containing very small amounts of sulphides. The free gold is coarse and contains but little silver. Very rich pockets were frequently found. The total production of the district is about two and one-half millions.

#### BATES (EDWARD) CLAIMS (Gold, Silver)

Virtue District

Owners: Alma Williams, Baker, Oregon.

Two unpatented lode claims, 9½ miles from Baker were located in 1936. The country rock is greenstone and argillite; vein bears easterly and westerly, width 8 feet. Water, scarce; timber, none. Power from Eastern Oregon Light & Power Co. No mining equipment; there are 400 feet of tunnel and a shaft 45 feet deep.

Informant: Prescott, 37.

#### BENGAL AND PROVIDER CLAIMS (Gold, Tungsten)

Virtue District

Owners: Milo Wuton and Aline Williams, Baker, Oregon.

Located 17 miles from Baker. Consists of 2 lode claims, first located about 30 years ago. In a hilly country; the country rock is porphyry and granite; vein bears north and south, 3 feet wide. Claims are now idle. There are 1,000 feet of tunnels.

Informant: Prescott, 37.

#### BRAZOS MINE (Gold)

Virtue District

"The Brazos mine, in sec. 11, T. 10 S., R. 41 E., was inaccessible in 1930. Considerable work has been done on the property, including the sinking of a 600-foot shaft and driving several drifts, but for many years prior to 1930 the mine had been inactive.

"The mine is developed in black argillite of the Elkhorn Ridge argillite, most of it considerably crushed. The vein, whose outcrops are obscure, strikes northwest and dips southwest at flat angles. The hanging wall is a clay seam; the footwall is also definite. The vein averages from 3 to 4 feet in thickness and is composed of soft black argillite containing little nodules of quartz, which rarely constitute continuous veins. Lindgren believed the discontinuity of the quartz to be due to movements on the vein. All the quartz seams and nodules contain gold, some of it coarse. The pay shoot was said to extend for 400 feet along the vein. The ore was of low grade."

Press reports of August 15, 1938, state that the mine had been leased by Albert Geiser and W. C. Fudge, the owners, to Ray Johnson of Baker, Oregon, and the workings had been unwatered and that sampling was in progress by Nevada interests.

Ref. Lindgren, 01:726

Parks & Swartley, 16:43

Gilluly, Reed, & Park, 33:79

Gilluly, 37:100 (quoted)

**CARROLL B. PROSPECT (Gold)**

Virtue District

"The Carroll B. Prospect consists of 10 claims in SE. 1/4 sec. 3, T. 10 S., R. 41 E., which are controlled by S. J. Niblack. The developments consist of a shaft, from which at least one drift, which is partly accessible, has been turned and two adits, each several hundred feet long, on other parts of the property. The predominant country rock is greenstone and cherty argillite of the Elkhorn Ridge argillite, with some gabbro. The quartz vein on which most of the work has been done is 1 to 2 feet thick where exposed in the drift near the shaft. In the other two adits nothing was observed but the greenstone country rock."

Ref. Gilluly, Reed, & Park, 33:78  
Gilluly, 37:100 (quoted)

**CHICAGO-VIRTUE PROSPECT (Gold)**

Virtue District

"The Chicago-Virtue Prospect, locally called the "Barry property", is in sec. 35, T. 9 S., R. 41 E., just south of Virtue Flat. The property was idle in 1930, and apparently little work had been done there for many years.

"The property has been developed by a steeply inclined shaft 86 feet deep, from which a short drift has been run 30 feet below the collar and a crosscut and drift aggregating 250 feet at the bottom of the shaft. No production has been reported.

"The country rock is cherty argillite belonging to the Elkhorn Ridge argillite. The work has been directed to the development of a vein that strikes east and dips 65 degrees S. The vein contains quartz, locally vuggy, elsewhere brecciated, which ranges in thickness from a knife edge to almost a foot. The vein follows a slickensided surface. Nothing is known of the assay value of this quartz."

Ref. Parks & Swartley, 16:53  
Gilluly, Reed, & Park, 33:78  
Gilluly, 37:99 (quoted)

**CLIFF MINE (Gold, Tungsten)**

Virtue District

Owners: Milo and Henry Newton, Baker, Oregon.

Location: 1 mile north of Flagstaff about 5 miles NE. of Baker.

Area: 1 claim.

History: Originally owned by John Bradbury. Developed originally as gold prospect. Tungsten noted in the ore in 1916. Property was leased to F. S. Baillie in 1916 who released the property to

W. E. King who opened and sampled lower workings. Workings are in very poor shape at present and practically inaccessible.

No equipment. Buildings torn down and moved away.

Geology: Country rock is altered diorite capped with Columbia River basalt. Vein where seen on surface consists of brecciated quartz with oxidized vein filling cemented somewhat with calcite. Elevation around 3,600 feet. Accessible all year around. Power within a mile. No timber. Small amount of water to be pumped when mine is in operation.

Development: 225 feet shaft almost vertical; 40-foot level, drift 285 north with 60-foot raise to the surface at 125 feet from shaft. 100-foot level, 140 feet south, with 25-foot up raise; 150-foot level with caved drift south unknown distance. At 200-foot level 25-foot drift north.

Metallurgy: Free milling ore. 135 tons mine run said to have been milled in old Virtue mill. Reported to have netted \$13.55 per ton. Tungsten reported but no definite knowledge obtainable. Vein on surface is 3 feet wide and reported to extend to bottom of shaft.

Informant: A. V. Q.

Ref. Lindgren, 01:725  
Parks & Swartley, 16:56  
Gilluly, Reed, & Park, 33:77  
Gilluly, 37:98

**CYCLONE GROUP (Gold)**

Virtue District

Owner: Molly N. Harpham, Baker, Oregon.

The mine is 7 miles east of Baker. It was located 40 years ago and consists of three unpatented lode claims. The country rock is greenstone; vein bearing northwest and southeast; width 2 feet. Water is scarce; timber not available; power from Eastern Oregon Light & Power Company nearby. The mine is now being operated with a small mill and 5 men.

Informant: Prescott, 37.

**EMMA MINE (Gold)**

Virtue District

Owners: Carl W. Hupke and Walter G. Brown, Baker, Oregon.

The mine is 8 miles of Baker. It was located 40 years ago and consists of a group of 4 unpatented lode claims. The mine is in a hilly area and the country rock is argillite; vein bearing northeast and southwest, width 2 to 5 feet. Mineral is gold.



Water is ample from well; timber can be obtained from mountains 10 miles away; power from Eastern Oregon Light & Power Company nearby. Mine is now idle with no equipment. Developed with 3,000 feet of tunnels, several raises and stopes. Was equipped with a 20-stamp mill in 1905; operated several years; has past production of \$250,000. Closed on account of disagreement in eastern company.

Informant: Prescott.

EVENING STAR CLAIMS (Gold)  
Virtue District

Owner: E. C. Rea, Baker, Oregon.

The mine is 14 miles east of Baker, Oregon. First located 50 years ago and consists of two unpatented claims. In a hilly area, the country rock is argillite; vein bearing northwest and southeast; width two feet. Mineral is gold. Water is scarce; power can be purchased from Eastern Oregon Light & Power Company close by. Mine is now idle, with no surface equipment. There are 700 feet of tunnels and a 75-foot shaft.

Informant: Prescott, 37.

FLAGSTAFF MINE (Gold)  
Virtue District

"Location: The Flagstaff mine, owned by J. L. Layden, is in sec. 5, T. 9 S., R. 41 E., on the crest of the divide between Virtue Flat and Baker valley, at an altitude of 3,900 feet. It is less than half a mile from the Baker-Richmond Highway and about 7 miles from Baker.

"Development and production: The mine was actively worked in the years preceding 1898 and has been developed by an inclined shaft 760 feet deep, with levels at 265, 365, and 565 feet. The workings aggregate about 6,000 feet. The only reported production since 1898 was in 1923, when a small output was made incidental to development. The total production of the mine is probably not more than \$100,000.

"Geology: The country rock of the mine consists chiefly of coarse sheared gabbro and quartz-bearing hornblende diorite, both containing much actinolite and some epidote, cut by dikes of biotite-quartz diorite and hornblende-quartz diorite. The two principal rock varieties appear to grade into each other, but in view of their petrographic differences, this is probably due to later metamorphism rather than to an original heterogeneity of a single intrusive mass.

"The biotite-quartz diorite and hornblende-quartz diorite dikes have been recognized only in the mine workings, where exposures are insufficient to demonstrate their attitudes. They are cut by and are clearly older than the mineralized shear zones of the mine.

"The ore deposit consists of several sheared and brecciated zones and veins. They range in strike from N 45 degrees E. to north and dip steeply, averaging 65 degrees, either east or west.

"The faults and veins are arranged in a frayed pattern. The main vein, in whose footwall the incline is sunk, flattens from a dip of about 75 degrees in the upper workings to about 55 degrees on the 565-foot level. The drifts on the three levels, from this shaft trend successively more northward on the lower levels, although they start on what is almost certainly the same vein at the shaft. Inasmuch as the dips of these principal veins are all southeastward, the necessary conclusion from this arrangement is that a number of branch veins must joint the main vein \* \* \*. The raises and manways of the mine were all inaccessible, owing to defective timbers, so that it was impossible to pass from one level to another except at the main shaft. The "horsetail" arrangement of the veins suggests torsion about a steeply inclined axis.

"The faults through the gabbro and diorite are all accompanied by great masses of clay gouge. Some of this gouge is probably due to comminution of the country rock by friction, but much of it is hydrothermal rather than mechanical in origin, as is shown by the association of zeolites with the clays.

"Within these masses of gouge are extremely irregular brecciated lenses of quartz. These masses locally range from a knife edge to more than a foot in thickness in a few feet of strike length. The maximum thickness of quartz observed in any one stringer was 1½ feet, although in one place, where the shear zone is over 20 feet wide, several lenses whose aggregate thickness is about 4 feet are present. The shear zones themselves are irregular; they probably average about 3 feet in thickness.

"In some places the quartz is massive and coarse crystalline, in others vuggy, and in still others sheeted and brecciated. Gold is present in the quartz but according to Mr. Layden occurs also in the gouge, though in less amount. No sulphides were observed during this survey, but tetrahedrite.

stignite, and scheelite have been recorded from the mine by Lindgren.

"The principal minerals of the altered rock are a clay mineral, sericite, calcite, serpentine, and a zeolite related to chabazite. Locally the wall rock is silicified, but more commonly it is altered to clay.

"No assay samples were collected, but Lindgren reports average values of \$16 to the ton in the quartz. According to Mr. Layden, large quantities of the gouge-like material will assay \$5 to the ton, on the basis of gold at \$20.67 an ounce. The largest stopes in the mine occur at the junctions of fissures. Here the shear zones are wider and commonly have more quartz, with higher gold assays.

"The lowest accessible level, the 560-foot, is seemingly less well mineralized than the higher levels. The exposed shear zones are narrower and carry less quartz. Mr. Layden believes that the future of the property is dependent on large-scale mining of the gouge-like material with its relatively low gold tenor of \$5 to the ton \* \* \*.

"The water level in the mine is just below the 560-foot level, about 420 feet vertically below the outcrop and not far above the level of Baker valley."

Ref. Lindgren, 01:724  
Swartley, 14:130  
Parks & Swartley, 16:93  
Grant & Cady, 14:152  
Gilluly, Reed, & Park, 33:74 (quoted)  
Gilluly, 37:96

#### FOSTER (R. S.) CLAIMS Black Bird Claim (Diatomite)

Virtue District

Owner: R. S. Foster, Baker, Oregon.

Location:  $\frac{1}{4}$  mile SW. of Virtue Road in sec. 33, T. 9 S., R. 41 E., 1 mile W. of Black Lode Claim.

Consists of 1 unpatented placer claim of 20 acres. Some development work on this diatomite was done 25 years ago by Sylvester and Potts. The diatomite shows a thickness of at least 7 feet which is probably much more as it is visible up and down the hillside for at least 25 feet. It is both pure light gray and less pure yellow tinged. Its lateral extent has not been demonstrated.

The property is located  $3\frac{1}{2}$  miles from the railroad siding. There is no timber on the property and little or no water.

Informant: J. E. A., 38.

#### FOSTER, (R. S.) CLAIM

Black Lode Claim (Gold)

Virtue District

Owner: R. S. Foster, Baker, Oregon.

Location:  $\frac{1}{4}$  mile due south of Last Chance Claim, sec. 3, T. 10 S., R. 41 E.

Area: 1 claim running north 60 degrees W.

Geology: Country rock composed of banded lenticular cherts, interbedded with shale, more or less replaced and impregnated with manganite and other manganese oxides. Considerable clay-like and soap stone-like material as well as light yellow limonite stains, accompanies the ore. Ore can be sorted 30 to 45 per cent  $MnO_2$ . Mill run would be very low.

Chert strikes N. 60 degrees W., dips 60 degrees S. Ore apparently has similar attitude and is at least 4 feet wide being exposed for 20 feet with a depth of at least 5 feet. Some of the shale interbeds partially replaced to give a black manganiferous shale. The ore is somewhat faulted and displaced.

Development: Several small open cuts and one cut about 20 feet long have been made but with the one exception nothing but float is exposed in any of these cuts.

At a point 100 feet north of the SW. corner post near the bottom of the gulch an inclined tunnel trending southwest and sloping 35 degrees has been driven on a quartz vein 1 to  $2\frac{1}{2}$  feet wide for a distance of 200 feet. This persistent vein was sampled but showed no values of importance.

There is no timber on the property and little or no water. The railroad is 3 miles distant by dirt road.

Informant: J. E. A., 38.

#### FRIDAY MINE INC. (Gold)

Virtue District

(East portion of Columbia-Friday ground)

Walter Fellows, Sam Anderson, and Kenneth E. Grabner of Baker, incorporators. Capitalization, \$25,000. Consists of one patented mine claim located 10 miles east of Baker just east of Hidden Treasure near the Baker-Cornucopia Highway. The property was explored to 200 feet depth 30 years ago but has been idle since until recently opened by the corporation. One 50-ton car of ore was shipped to the smelter. Closed Sept., 1938.

Informant: Press report, Aug.-Sept., 1938.

Ref. Lindgren, 01:725  
Gilluly, 37:100

## HIDDEN TREASURE MINE (Gold)

Virtue District

Owners: Mike Hoff and Miles Rombough, Baker, Oregon.

Location: 10 miles east of Baker, ¼ mile north of highway.

Area: 4 claims and 1 millsite.

Production since 1933: \$24,000. No past history.

Equipment: 3 jackhammers, hoist, compressor, blower, generator, and assay office.

Geology: Rolling topography. Country rock is altered and highly-sheared greenstone, overlain by faulted lake beds. Elevation 3,500 feet. No timber; no water. Little snowfall. Vein is in highly-altered greenstones, dipping at about 60 degrees. Vein minerals: gold, silver, stibnite, and pyrites (small amount). Stains of manganese apparently indicate presence of high-grade ore, as does also the presence of stibnite. Mineralization spotty with no definite series known to operators.

Development: Shaft: 138 feet at 60-degree angle. No. 1 level at 55 feet with drift SE. 170 feet with winze down 30 feet; drift NW. 35 feet. No. 2 level: at 80 feet NW. drift 100 feet. winze at 38 feet. No. 3 level at 138 feet. SE. drift 100 feet to connect with No. 1 winze. NW. dip 48 feet.

Metallurgy: The ore is relatively soft and broken occurring sometimes as brecciated masses and sometimes as elongated kidneys. No mill on the property as the ore mined is still of the shipping grade only. Average value of shipping grade is about \$65.

Fire caused a loss of \$12,000 at the Hidden Treasure mine in the Virtue District near Baker, Oregon, on July 21, 1938. A cyanide pilot plant was just ready to be put into operation when the fire occurred, started when gasoline was spilled and ignited by a miner's lamp, which in turn caused two boxes of dynamite to explode. Surface buildings and equipment reported to be a total loss. Reconstruction work started immediately. First shipment from the rehabilitated mine was made early in September.

Informant: A. V. Q., 38.

Ref. Gilluly, 37:100

## INDEPENDENT No. 1 (Gold)

Virtue District

Owner: Mabel A. Griffith, Baker, Oregon.

Property is 12 miles east of Baker and consists of 6 unpatented lode claims. Located 25 years ago by George Cullen. In a hilly area; the country rock

is greenstone; vein bearing northwest and southeast; width 3 feet. Mineral is gold. Water is scarce; power from Eastern Oregon Light & Power Company nearby; timber not available; no tools or equipment.

Informant: Prescott, 37.

## INDEPENDENT NUMBER 2 (Gold)

Virtue District

Owner: Mrs. Sadie Cullen, Baker, Oregon.

Property is 12 miles east of Baker. Consists of two unpatented claims located 25 years ago by George Cullen. In a hilly area; the country rock is greenstone; vein bearing northwest and southeast, width 5 feet. Mineral is gold. Water is scarce; power from the Eastern Oregon Light & Power Company nearby; no timber; assessment work is kept up.

Informant: Prescott, 37.

## KOEHLER MINE (Antimony)

Virtue District

Owner: Dr. A. Koehler, Baker, Oregon.

According to Prescott, consists of 6 claims including the Dandy Jim group of two claims.

"The Koehler mine is on the west slope of the range of hills lying south of the Flagstaff mine. The workings were inaccessible at the time of this survey. According to Parks and Swartley (16:137) the mine yielded antimony and gold beginning late in 1915. The vein is reported to be well defined, with a maximum width of about 10 feet. Stibnite is distributed through the whole width of the vein, but massive stibnite occurred near the hanging wall in lenses that were 2 feet thick. Some of these lenses yielded ore that was shipped direct; other ore was brought up to grade by sorting. Several carloads carrying over 50 per cent of antimony were shipped in 1915, and the receipts from these sales are reported to have been about \$15,000."

Ref. Gilluly, Reed, & Parks, 33:76

Gilluly, 37:97 (quoted)

## LAST CHANCE CLAIM (Gold)

Virtue District

Owners: Robert Palmer and Hugh Denham, Baker, Oregon.

Operator: Leased to W. M. Payton, Box 186, Route 2, Baker.

Location: In sec. 2, T. 10 S., R. 41 E., W. M. About 3½ miles northeast of the station of Encina on the railroad and highway No. 30, at a point 7 miles southeast of Baker.

History: No previous production, although considerable prospecting work has been done in former years.

Equipment: One small cabin and hand winch.

Geology: The property lies on a rolling upland which is covered with water-worn boulders from lake beds. At the mine the bedrock is a silicified and oxidized and almost unrecognizable argillite. It is highly crushed and faulted. The vein consists of about 6 to 10 inches of white quartz partly in place and partly scattered through a 4-foot zone of limonitic clay and gouge. Both footwall and hanging wall are distinct and clean, the former striking N. 80 degrees E. dipping 60 degrees S., and the latter striking east and dipping 85 degrees to the S. The quartz is nearest the hanging wall where the highest values are also said to lie. The ore is free milling and at the surface is said to have run 60 cents, rising until at the present depth of 40 feet the last assay gave \$5.60. The ore shoot, however, seems to be rather narrow, as values disappear in either direction along the vein when tested by short lateral drifts.

Development: Located on the vein are two shafts about 40 feet deep and 30 feet apart with short drifts from them at various levels. An old tunnel was dug from a point about 200 feet to the east (downhill) but never reached the shoot.

Informant: Mrs. W. M. Payton, via J. E. A., 38.

**NITZLANDER RANCH (Gold, Manganese,  
Copper)**

Virtue District

Owner: Randolph Nitzlander, Pleasant Valley, Oregon.

The property is one mile from Pleasant Valley. The Ranch (960 acres) and one lode claim of 20 acres were deeded to Nitzlander 30 years ago. Located in hilly area. The country rock is greenstone and lime; vein bearing northeast and southwest, width 5 feet, length unknown. Vein is quartz. There has been no development done.

Informant: Prescott, 37.

**NORWOOD MINE (Gold)**

Virtue District

"The Norwood mine, in sec. 8, T. 9 S., R. 41 E., about 2 miles north of the Virtue, was caved and inaccessible in 1930. The property has been described as embracing two lode claims. The country rock is greenstone cut by several quartz and calcite veins, mostly rather small, and shows considerable post-mineral brecciation. The largest vein dips

steeply, strikes west, and averages about 2 feet in width. A small mill was installed in 1913, but no production has been reported. Little or no work has been done for many years at this property."

Ref. Swartley, 14:131

Grant & Cady, 14:152

Parks & Swartley, 16:174

Gilluly, Reed, & Park, 33:76

Gilluly, 37:98 (quoted)

**OREGON TRAIL MINE (Gold)**

Virtue District

Owner: J. E. Caldwell, Baker, Oregon.

Property is 7 miles east of Baker. It was located 4 years ago and consists of 6 unpatented claims. Lies in a hilly area; the country rock is granite, footwall is lime; vein bearing northwest and southeast, width is 2 feet. Mineral is gold. Water is scarce; power can be purchased from Eastern Oregon Light & Power Company nearby. Further prospecting is being carried on. The vein is persistent and good values are found.

Informant: Prescott, 37.

**PAT MINE (Gold)**

Virtue District

Owner: J. E. Caldwell, Baker, Oregon.

Lessor: E. H. Hanson, Spokane, Washington.

Early 1938 press reports state that this group of seven unpatented claims adjoining the Virtue Mine was being sampled and equipment was being assembled. Vein strikes NW.-SE., width 3 feet, greenstone walls.

**RACHEL CONSOLIDATED QUARTZ CLAIMS  
(Gold)**

Virtue District

Owner: Harry H. Waggoner, Baker, Oregon.

Located in secs. 7 and 8, T. 9 S., R. 41 E., 93 acres patented lands. Width of vein 1 to 3 feet. Production claimed \$150,000. Developed 800 feet on incline at 200-foot intervals with 3,000 feet of development. All building and equipment gone. Geology similar to other properties in the district.

**VIRTUE MINE (Gold)**

Virtue District

Owner: Virtue Mines Development Co. Oregon corporation; Wm. Wendt, Pres., M. Beswell, Secy., Baker, Oregon; capitalization, \$1,250,000 common, \$250,000 preferred.

In 1938 a corporate group secured the property under terms and made plans for the development and operation of the property but the present status of this arrangement are not known. There has

been no important change in the conditions since the following report was written in 1930.

"Location: The Virtue mine, which has given its name to the district and has hitherto been the greatest producer in it, is situated in sec. 21, T. 9 S., R. 41 E., at the foot of the hills bounding Virtue Flat on the south. It is about 3 miles south of the Baker-Richland highway and about 12 miles by road from Baker.

"History and production: The veins worked in the Virtue mine, according to Lindgren, were discovered in 1862 by tracing up the rich placers in the gulch below. For the next 10 years the mine was known as the Rucker or Union Mine and was very actively worked. Between 1871 and 1878 it was worked almost continuously, largely by Brown & Virtue. In 1878 it was sold to Grayson & Co., of San Francisco, who worked it in a more or less satisfactory way until 1884. It was then idle until 1893, when work was resumed and continued until 1898 with excellent results. After a short period of idleness the mine was sold to the Consolidated Virtue Mine Co., of Montreal, Canada, which also owned the adjoining Collateral mine. The upper parts of the mine were worked for a short time, and the mine was again closed August 1, 1899. The property has not since been worked except for a brief interval in 1906-7, when a little ore was extracted above the drainage level and about \$1,500 was obtained from ore on the dump. The total production has been about \$2,200,000.

"At the time of this survey the mine was almost entirely inaccessible except for a mill-tunnel level and a few stopes above it, so that little can be added to the description of Lindgren.

"Development: The mine is developed by three tunnels, the lowest, or mill level, about 300 feet below the outcrop. From the lowest tunnel a vertical shaft was sunk 800 feet and crosscuts were made to the vein every 100 feet. The levels extend 200 to 400 feet north of the shaft and 800 to 900 feet south of it. Development work aggregates not less than 10,000 feet.

"Geology: The country rock is strongly sheared greenstone, highly chloritic and somewhat serpentinous. It was regarded by Lindgren as an altered volcanic tuff or breccia, and some of it may be of this origin, but most of it is believed to be a strongly sheared gabbro. Specimens collected in the crosscut on the mill level show all gradations between a chloritic schist whose origin it would

be impossible to determine from the specimen itself and a brecciated and chloritized rock that is clearly derived from the brecciation of a gabbro. Accordingly it is considered likely that other rocks in the mine whose mottled schistose character at first suggests their origin as tuffs are also sheared gabbro. It is clear that sheared gabbro forms most of the rounded hill south of the mine.

"Eight veins, of which the Virtue, Collateral, and Chicago have been the most productive, have been cut in the mine workings. The Chicago and Collateral were formerly the basis for independent mines, but all are now owned by one company. They are subparallel and strike N. 20 degrees to 45 degrees W. They dip northeast above the mill level but steepen downward and dip southwest in the lower workings of the mine.

"The veins range in thickness from 6 inches to 12 feet and average about 14 inches. They are filled with white coarsely crystalline quartz and subordinate calcite. Vugs are common. Free gold, coarse and partly crystalline, with the unusual fineness of 0.940, is reported by Lindgren. The only sulphides observed were pyrite and chalcopryrite, both of which are sparingly present. The veins are locally brecciated and banded parallel to the walls, and these places are reported to have been richest. Veinlets of calcite, quartz, and pyrite occur in the country rock bordering the veins. Lindgren reports that the richest ore occurred near the surface. Average returns of \$20 to the ton were obtained in 1870, of \$40 in 1873, of \$24 in 1875, and from \$15 to \$16 between 1893 and 1898.

"The pay shoot is said to have been cut off between the seventh and eighth levels at a brecciated zone below which the vein was of very low grade. Warm water was encountered in the lower levels and stands in the shaft to a point a short distance below the mill level, considerably above the valley. This was interpreted by Lindgren, doubtless correctly, as an ascending column of underground circulation. A fault separates the Tertiary beds of Virtue Flat from the pre-Tertiary rocks to the southwest, and it seems that this fault may well have afforded a channel for the warm water from the deeper levels. Gouge, sealing the fault above, may account for the height of the water level in the mine."

Ref. Lindgren, 01:722  
Swartley, 14:130  
Grant & Cady, 14:150  
Parks & Swartley, 16:229  
Gilluly, Reed, & Park, 33:72  
Gilluly, 37:94 (quoted)

## WHITE SWAN MINE (Gold)

Virtue District

"The White Swan mine is situated at the foot of the hills south of Virtue Flat, in sec. 25, T. 9 S., R. 41 E. It is about 5 miles from the Baker-Richland highway and about 14 miles from Baker by road.

"According to Lindgren (01:725) the White Swan deposit was discovered in the early days by following up the rich placers of the gulch below. The mine was vigorously operated about 1890 but was closed in 1897. It was reopened about 1900 and operated by Letson Balliet until 1903, when it was again closed. Lindgren estimated the total production at not less than \$200,000, on the basis of Mint reports of output in 1891 as \$72,000 and in 1892 as \$72,642.

"In 1930 the mine was being reopened by a Washington syndicate, with E. McNaughton as manager, but at the time of visit very little of the old workings were accessible.

"The mine was developed by a nearly vertical shaft 300 feet deep, from which four levels were turned. About 2,000 feet of development work has been done.

"The country rock is argillite, consisting of dark carbonaceous argillite with interbedded layers of

chert and greenstone. The greenstone represents altered volcanic sediments. Intrusive into this argillite formation are several narrow dikes of diorite porphyry. The general strike of the formation is westward.

"Several narrow veins are exposed in the vicinity of the mine. All trend generally west, but there is no consistent parallelism observable, although most dip steeply south. The exposed veins reach thicknesses of 1 to 1½ feet, but more common widths are a few inches. No information is available regarding the thickness of the White Swan vein in the old workings.

"The only minerals observed in the veins were quartz, sericite, and calcite, with a little limonite to attest the former presence of sulphides, which, however, must have been sparse."

In September, 1935, White Swan Gold, Inc., had spent \$175,000 in development, rehabilitation, in mine and mill equipment and in operation with a production of \$30,000. The mine was shut down in September, 1937.

Ref. Lindgren, 01:725  
Swartley, 14:131  
Gilluly, Reed, & Park, 33:77  
Gilluly, 37:98 (quoted)  
Lorain, 38:26

## UNION COUNTY

(Camp Carson, Medical Springs and Upper Eagle Creek)

Broadly speaking, the main geographical feature of the country is the Grande Ronde valley which lies between the Blue Mountains on the west and the Wallowas on the east. Most of the area is in this large basin, with drainage of the Grande Ronde River north and east to the Snake. U. S. Highway 30, the route of the Old Oregon Trail, crosses the country northeast and southwest, as does the main line of the Union Pacific Railroad. The attractive city of La Grande, with a population of over 8,000, is the county seat and center of trade.

Mining districts are in the southern part close to Baker and Wallowa Counties, and the economic geology is the same as that described under those counties. Much of northern Union county is covered by Columbia River basalts.

The properties listed are in three districts, namely, Camp Carson, Medical Springs, and the upper part of Eagle Creek. Many more mining properties than those mentioned are known, but no Department investigation of them could be

made. The only information available is that given by Lindgren in 1900. A list of properties is given at the end of this chapter.

The Camp Carson District near the headwaters of the Grande Ronde River is about 20 miles in an air line north of Sumpter, but is usually reached either from La Grande or North Powder. It is in the northwestern extension of the Elkhorn range in a timbered region and is a part of Lindgren's Bald Mountain batholith.

Placer deposits have been and are being worked below Camp Carson, although the cemented nature of some of the gravels has caused difficulties. In addition quartz veins containing sulphides have been prospected.

The Medical Springs District is about 18 miles northeast of Baker over a good road. This is an old district which has been prospected from time to time since early days. Country rock is a siliceous greenstone of probable Permian age, exposed by erosion of overlying Columbia River basalts.