BLACKBUTTE Quicksilver

PD-119

MONTHLY REPORT OF PURCHASES SUPPLIES, MAINTENANCE ITEMS AND REPAIRS UNDER PREFERENCE RATING ORDER P-56

NAME OF MINE OPERATOR, QUICKSILVER SYNDICATE, BLACKBUTTE, OREGON
MINE SERIAL NUMBER 33-6
PURCHASES MADE DURING MONTH OF September 1942

Electric Steel Foundry Co.
Ordered June 29th. Preference Rating Order P-56
Mine serial number 33-6, Rating A8
W.P.B. Allocation Code 8.10/4.10/5.00
as per copy of invoice attached 27.74

Western Steel Casting Co.
Ordered June 21st. 1942
Preference Rating Order P-56 June 29th. 1942
Mine Serial number 33-6 Rating A.8
W.P.B. Allocation code 8.10/4.10/5.00
July 16th. 1942 Advised them Earl K. Nixon wired saying that these should automatically receive A-1-C Rating provided a quota had been given to us.
2 Ore feed worms complete with flanges, alloy steel,
Invoiced at $57.00 over last order making total claimed - 301/00

DR Hamant bronze bushings for ore feeder 30# to replace some advanced by Hamant and have sufficent for repair stock,
Preference rating P56, Mine Serial Number 33-6
A-1-A, Priorities regulation No. 3,

Priorities regulation No. 10 allocation Classification system No. 8.10. $1.80 part charged to us on last repair bill, balance to be charged as used.

Certification 1,2,3,4,

Quicksilver Syndicate
[signature] Manager

ELECTRIC STEEL FOUNDRY COMPANY

2141 N. W. 25th Ave., Portland, Oregon

TELEPHONE
ATWATER 2141

PATTERNS IN OUR FOUNDRY OR STORAGE ARE AT THE OWNER'S RISK. DEFECTIVE CASTINGS REPLACED BUT NO ALLOWANCE MADE FOR WORK DONE ON THEM

FORM NO. 52

SOLD TO: Quicksilver Syndicate, Mack Butte, Oregon

SHIPPED TO:

VIA: "

DATE: Sept 30, 1942

OUR INVOICE NO.: Shipped Sept 16, 1942 82253

YOUR ORDER NO.: Ship In advice No 7423

TERMS: NET CASH

2 - ESC Alloy 12-P Bevel Gears 32-T	7.90 ea	15.80
2 - " " " " Pinions 16-T	5.65 ea	11.30
	Parcel Post	.84
		27.74

COPY

30 DAYS NET [illegible] FOLLOWING
(A) 25TH OF MONTH FOR INVOICES DATED FROM 1ST TO 15TH INCLUSIVE
(B) 10TH OF FOLLOWING MONTH FOR INVOICES DATED FROM 16TH TO END OF MONTH

[illegible] Manager

PD-119

MONTHLY REPORT OF PURCHASES SUPPLIES, MAINTENANCE ITEMS AND REPAIRS UNDER PREFERENCE RATING ORDER P-56

NAME OF MINE OPERATOR, QUICKSILVER SYNDICATE, BLACKBUTTE, OREGON
MINE SERIAL NUMBER 33-6.
PURCHASES MADE DURING MONTH OF April 1942

I. Purchases to which Rating A-8 has been applied during month.

Vitus Electric Works, 3 coils---		20.10
Graber-Gettys	2 T8 blocks	52.00
	2 T6 "	46.00
	2 ¼ swivels	10.80
	24 dl9 Sprayers	9.60

CERTIFICATION

The undersigned hereby certifies to the Office of Production Management, that he executed the foregoing statement on behalf of and by authority of the above named Mine Operator;

(1) the above named Mine Operator has, during the period covered by this report, complied with all the provisions of the Preference Rating Order P-56;

(2) during such period the Mine Operator's inventory of operating supplies and other material has not been greater than the minimum necessary for the efficent operation of his business, and the ratio of inventory (quantity) to current production has not exceeded the ratio of average year end inventory (quantity) to average production for the years 1938, 1939 and 1940;

(3) the facts stated herein are, to the best of his knowledge and belief, true and correct.

May 15th. 1942 Fred L. Mills Manager

Fred L. Mills

PD-119
(Rev. 12-1-41)

MONTHLY REPORT OF PURCHASES
Machinery, Supplies, Maintenance Items and Repairs under Preference Rating Order P-56

NAME OF MINE OPERATOR OR AUTHORIZED AGENT FOR SUCH OPERATOR QUICKSILVER SYNDICATE

ADDRESS FLORENCE, OREGON MINE SERIAL NO. 33-6

PURCHASES MADE IN MONTH OF March, 19 42.

(INSTRUCTION. - This report is to be filed with the Emergency Coordinator of Mines for your State, on or before the 10th day of the month following the month covered by this report. Group all orders for similar materials which were bought from the same supplier. Make as few separate entries as possible. However, purchases of the same material from different suppliers must be shown separately. In II, III, and IV, enter the authorization number - not to be confused with your mine serial number - which was issued to you by O.P.M., permitting the purchase of the material listed. Retain copies of all these reports in your files.)

I. PURCHASES TO WHICH RATING A-8 HAS BEEN APPLIED DURING MONTH:

Material Chrome-Vanadium Quantity 83# Supplier D.R. Hamant, Cottage Grove, Ore.

II. PURCHASES TO WHICH RATING A-3 HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

III. PURCHASES TO WHICH RATING A-1-c HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

IV. PURCHASES TO WHICH RATING A-1-a HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

CERTIFICATION

The undersigned hereby certifies to the Office of Production Management, that

(1) he executed the foregoing statement on behalf of and by authority of the above-named Mine Operator;
(2) the above-named Mine Operator has, during the period covered by this report, complied with all the provisions of Preference Rating Order P-56 and has applied Ratings only in accordance therewith;
(3) during such period the Mine Operator's inventory of operating supplies and other material has not been greater than the minimum necessary for the efficient operation of his business, and the ratio of inventory (quantity) to current production has not exceeded the ratio of average year-end inventory (quantity) to average production for the years 1938, 1939, and 1940;
(4) the facts stated herein are, to the best of his knowledge and belief, true and correct.

Apr. 17-1942	Fred L Wells	Secretary
(Date)	(Signature of Authorized Official)	(Title)

(Section 35 of the Criminal Code, 18 U.S.C. 80, makes it a criminal offense to make a false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.)

(This form may be reproduced; copies may be made large enough to allow necessary space to enter all purchases)

(Rev. 12-3-41)

MONTHLY REPORT OF PURCHASES
Machinery, Supplies, Maintenance Items and Repairs under Preference Rating Order P-56

NAME OF MINE OPERATOR OR AUTHORIZED AGENT FOR SUCH OPERATOR QUICKSILVER SYNDICATE

ADDRESS BLACKBUTTE, OREGON MINE SERIAL NO. 33-6

PURCHASES MADE IN MONTH OF March, 19 42,

(INSTRUCTION. - This report is to be filed with the Emergency Coordinator of Mines for your State, on or before the 10th day of the month following the month covered by this report. Group all orders for similar materials which were bought from the same supplier. Make as few separate entries as possible. However, purchases of the same material from different suppliers must be shown separately. In II, III, and IV, enter the authorization number - not to be confused with your mine serial number - which was issued to you by O.P.M., permitting the purchase of the material listed. Retain copies of all these reports in your files.)

I. PURCHASES TO WHICH RATING A-6 HAS BEEN APPLIED DURING MONTH:

Material Chrome-Vanadium Quantity 83# Supplier N.R.Hamant,Cottage Grove,Ore

II. PURCHASES TO WHICH RATING A-3 HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

III. PURCHASES TO WHICH RATING A-1-c HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

IV. PURCHASES TO WHICH RATING A-1-a HAS BEEN APPLIED DURING MONTH:

Material _____ Quantity _____ Supplier _____ O.P.M. Authorization No. _____

CERTIFICATION

The undersigned hereby certifies to the Office of Production Management, that

(1) he executed the foregoing statement on behalf of and by authority of the above-named Mine Operator;
(2) the above-named Mine Operator has, during the period covered by this report, complied with all the provisions of Preference Rating Order P-56 and has applied Ratings only in accordance therewith;
(3) during such period the Mine Operator's inventory of operating supplies and other material has not been greater than the minimum necessary for the efficient operation of his business, and the ratio of inventory (quantity) to current production has not exceeded the ratio of average year-end inventory (quantity) to average production for the years 1938, 1939, and 1940;
(4) the facts stated herein are, to the best of his knowledge and belief, true and correct.

Apr.17-1942	Fred L Wells	Secretary
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and a boarding-house.

History: Fifteen thousand feet of underground development work was very well done and a 40 ton Scott furnace built prior to nineteen hundred ten. Very little mining had been done as the price of quicksilver had never been above $45 per flask and the ore was of comparatively low grade. The mine was idle from 1910 until nineteen sixteen. In March, 1916 a New York concern took a lease and option on the mine and I was employed to operate it. The purchase price was $225,000. The Scott furnace was operated continuously until July, nineteen nineteen. From the beginning of that period until the end of the war the price of quicksilver on the open market averaged around $90 per flask. While the U. S. was in the War the Navy Dept. took 50% of the production at $106 per flask. After the end of the war the price gradually declined to $50 per flask. The optionees then relinquished the option and the mine shut down. The lease had been moderately profitable. The total mining and treatment cost during that period averaged $2.15 per ton. Wages were low and there are a number of natural conditions which aid in the making of low costs. The ore averaged 3½ pounds of quicksilver per ton.

The mine was idle until the spring of 1927 when the price of quicksilver had increased to $85 per flask. At that time the Ladd Estate, of Portland, which owned the mine, was being liquidated and Robt. M. Betts and I took an option on Black Butte on deferred payments at a price of $125,000. We assigned the option to two New York men who advanced funds to build the Gould Rotary Furnace. In 1928 the syndicate bought the mine outright for $100,000 and later in the year I sold my interest to Betts and relinquished the management to him.

The mine has operated continuously since we started its second

period of activity in the spring of 1927. The ore has averaged 3½ pounds of quicksilver per ton. During 1940 total costs of mining, treating and overhead averaged $2.72 per ton. The total production of the mine up to January 1st, 1941 has been 15,023 flasks. Low operating costs are possible. The excavations require no timbering except in manways and chutes. This feature with an average stoping width of 20 to 30 feet and dip of 60 degrees permit shrinkage stoping. Labor has always been cheaper than in larger mining communities. The employees are either family men who live on the place or men who drive from their homes in the nearby valley. Of the 24 present employees eight have worked there steadily since 1927. Transportation conditions are favorable. Diesel oil costs $2.00 a bbl. at the mine. Power is furnished by the Oregon-California Power Co. The ore dips with the slope of the hill. The apex of the ore is 1,500 feet above the furnace level. Consequently all mining is done by adit levels. The winters are mild. Usually there is no snow at the camp and no more than a foot on top of the mountain.

Geology: Black Butte is a "hogsback" 1,800 feet high, the backbone of which is a mile long. Its strike is North 67 degrees west and the sides slope 30 to 3 5 degrees from the apex. The entire butte is within the real estate owned by the corporation. It is composed chiefly of andesite in various conditions of alteration. A fault plane dipping 60 degrees to the Northeast coincides with the apex of the ridge. A 75 to 100 foot width of breccia along the fault and resulting from this movement became cemented together by a network of small ribs of limonite. These hard ribs resisted erosion thus sustaining the butte above the surrounding country. Evidently the ribs are pre-mineral as shown by their occasional impregnation by cinnabar. The outcrop of the breccia forms a bare and rugged contour on the ridge. The ore deposit is formed in this breccia.

The fault plane cuts through several ages of andesite. The upper 300 feet of the mine is in a flow breccia composed of a matrix of moderately altered andesite including fragments of andesite of different textures and conditions of alteration. This is the hardest ore in the mine and consequently the cinnabar is in ribs and veinlets rather than a dissemination as in the lower levels. Also the deposit is narrower in this upper stratum. Evidently this hard top material held back the mineralizing agencies forcing them to deposit in the more favorable strata below. The original discovery was a veinlet of cinnabar a quarter of an inch thick and two feet long at the apex of the hill. So far as is known that is the only mineral on the surface on the ridge. Probably little or none of the ore deposit has been lost by erosion. Under this negligible surface showing ore has been mined over a longitudinal distance of 1,400 feet and it is found in a level 1,500 feet below the apex.

Generally the main fault plane forms the footwall of the ore. But there are a number of other fault planes parallel to it and at varying distances from it, and in some places in the mine ore is mined in parallel stopes. Two basalt dikes cut through the hill in an east-west direction. They do not appear to have relation to the location of the ore as that was governed by the fault breccia, but they probably had a part in the origin of the material.

The ore which is being run at the present time comes from the west end of the Dennis Creek level (furnace level) which is 1,500 feet below the apex. This stope is 300 feet west of the most westerly stope in the upper levels. This ore is characteristic of the other levels: cinnabar disseminated in altered andesite with an occasional rib of solid cinnabar up to an inch thick. As no development has been done ahead of stoping it is not known if

this ore is on the same fault plane and connected with that on the 1,000 foot level 650 feet above.

Development: Fifteen thousand feet of development work had been done before the price of quicksilver justified any mining. This work consisted of cross-cuts and drifts on the 100, 200, 300, and 400 and 900 foot levels, All of these levels except the 100 were entered by cross-cuts from the surface. As the ore dips 60 degrees with the slope of the hill and the hill slopes 30 to 35 degrees the distance to the ore from the surface was relatively farther in each deeper cross-cut.

During the first period of operation the tramway headhouse was at the 400 foot level. Two cross-cuts were driven from the surface at the 500 foot level and 800 feet apart and found the ore on the usual dip of 60 degrees. In 1927, the beginning of the present operation, the tramway headhouse was moved down to the 900 foot level and a raise was driven from that level to the 500 foot level. Subsequently ore was stoped from the 900 foot level for a continuous distance on the strike of 1,400 feet. Such areas as are left unstoped were neglected on account of mining and transportation difficulties rather than grade of ore.

The 1,100 foot level found the ore but was on the right fault wall for only 250 feet. Stoping began over that length and gradually increased in length until it was 500 feet long when it reached the 900 foot level. Along the 900 foot level there is 900 lineal feet through the vein area where the deposit has been stoped through but has not been mined below the level.

In the upper part of the mine, where the levels are 100 feet apart, the fact that the ore was sometimes on one of the parallel walls and sometimes

on another presented no problem. Bur farther down the hill, where the cross-cuts were driven at 400, 200, and 650 foot intervals the distances are too great for the ore to be located by rule of thumb.

No definite rake of the ore has been established and the drift on the 1,100 foot level has not gone far enough east under the greater part of the vein area, and no cross-cutting has been done from that level. The Dennis Creek tunnel, from the furnace level 1,500 feet below the apex and 650 feet below the level above, was an ambitious piece of work the price of which might better have been spent in coming down at shorter intervals. Like the 1,100 foot level the exploration from this bottom level did not extend far enough east to be under the greater part of the deposit and there is only one cross-cut from it. Evidently it did not find the right wall. However, the ore which is being treated now is all coming from the end of the west drift on this level. It is characteristic of the ore above and while there is no development ahead of stoping it is good evidence that the deposit is not bottomed. There is cinnabar in altered andesite at the base of Bald Butte, a small neighboring hill, and no more than 200 feet from the west end of the Black Butte hill. This is 250 feet lower than the bottom level of the mine.

From the 900 foot level the ore has been stoped for a longitudinal distance of 1,400 feet. From the 1,100 level there is one stope which starts 250 feet long and lengthens to 500 feet on the 900 level. There is little doubt that the ore through the 1,400 foot distance along the 900 level extends down two hundred feet. There has been very little work done in that area which would have a possible tonnage of over 200,000 tons of 3 to 3½ pound ore. There is no geological change in evidence which might indicate that the ore would not extend down to the bottom level 850 feet below the 900 level.

Ore has been found there in minable quantities just as it is found in the upper parts of the mine 100 feet or more from the ore body. Here also the exploration has been inadequate as is shown on the horizontal plan attached.

The longitudinal possibilities of the deposit have not been determined. Cinnabar has been found low down on both ends of the butte.

Yours very truly,

(Signed) Earl B. Crane

Brewster, Wash.

Sept. 21st, 1941

BLACKBUTTE *ELKHEAD DISTRICT

Location: The Blackbutte-Elkhead district lies in Douglas and Lane counties, 15 miles south of Cottage Grove, the Elkhead properties lie in the Umpqua River drainage, the Blackbutte mine properties lie 5 miles east near the headwaters of the coast fork of the Willamette River, in T. 23 S., R. 3 E. Only the latter is included in this bulletin on northwestern Oregon, the Elkhead mine being discussed in the Douglas County bulletin, 14-C, vol.1, p.96 (1941), and by Wells and Waters (34:34-35).

Topography: This disctrict lies in the region of the divide bewteen the Willamette and Umpqua drainage known as the Calapooya Mountains, which may be considered as the link connecting the Coast and Cascade Ranges. It has a rugged topography, with sharp ridges, steep slopes, and valleys which are in part narrow, in part showing signs of maturity with widening bottoms. Elevations range from 1000 feet in the valleys to 3000 feet or more on the ridges.

Geology and ore deposits: The geology and structure of the area has been described by Wells and Waters (34-27) as follows:

sidered as a connecting link between the Cascades and Coast Range. The Blackbutte locality has the rugged topography characteristic of the foothills of the western Cascades, with sharp ridges, steep slopes, and narrow valleys. The Elkhead to the west of Blackbutte has surface features like the more mature Coast Range with rounded ridges and wider valleys. Drainage from Blackbutte is north to the Willamette. The Elkhead region drains westerly to the Umpqua. Elevations range from 1000 feet in the valleys to 3000 feet or more on the ridges.

General: The geology and structure of the district is described by Wells and Waters, 3:27, as follows:

"Formations: All the formations exposed in the Blackbutte-Elkhead area belong to the Tertiary system. The oldest and most extensive of these is the thick series of marine sandstones, shales, conglomerates, and intercalated basalt flows constituting the Umpqua formation. A thick series of amygdaloidal basalt flows lies at the base. Alternating beds of shale and sandstone typical of the Umpqua formation occur in the lower part. The higher sandstones become progressively arkosic and more sandy and thicker-bedded, and the shale decreases until the formation consists in its upper part of massive beds of arkosic sandstone, some of which are 100 feet or more thick, separated only by thin partings of shale. Locally, the thick sandstone layers are interbedded with well-assorted conglomerate, whose pebbles of quartz and siliceous volcanic rocks do not exceed 1 inch in diameter. Good exposures of the conglomerate occur in sec. 27, T. 23 S., R. 4 W.

"An angular unconformity separates the Umpqua formation from the volcanic conglomerate, pyroclastic rocks, and lavas of the Calapooya formation. Dikes, sills, and volcanic necks of basalt and diabase intrude both the Calapooya formation and the older rocks. A thin coat of volcanic ash or of river alluvium locally forms a surficial mantle.

MINE REPORT.

12/17/34.
CMP.

BLACK BUTTE QUICKSILVER MINE

LANE COUNTY?OREGON

TYPE: Quicksilver-Vein.

LOCATION: Twp 23 S,R 3 W,Lane County,Oregon. The nearest town is Cottage Grove on the So.Pac.R.R. 144 miles south of Portland. 628 miles north of San Francisco.

OWNERSHIP: Controled by the Ladd Estate.,Portland Oregon. Frederick H. Strong Mgr.,(1926). Proposed by O.F. Gloystein,3404 No.18th.St.,Tacoma,Washington.

PROPERTY: 1531 acres in Twp.23S.- R3W - Lane County, Oregon. All minerals,timber,and farming land are include and the property is owned in fee simple. 49,120,000 feet of standing timber is estimated(1926). Fir and cedar.Est.value $1.50 per FBM.

Three tunnels or adits;
400 foot level.
500 foot level.
900 foot level.

There is no data on the extent of these tunnels or the stopes except that 5683 tons was stoped in 1900 - 1901 and 26,479 tons was stoped 1916 - 1919. The 900 foot level has not developed pay ore but a little more drifting should do so.

There is an old furnace on the property which is probably usless.

Full set of camps,cottages,etc.
Old style tramway in poor condition.
Some mill and mining equipment.

EQUIPMENT: The property was apparently fully equipped when shut down in 1919 but the equipment is now old and out of date and much would have to be replaced.The following estimate was made in 1926 of the cost of rehabilitating the mine;

Preliminary Expenditures	$ 4,300.00
General development	36,000.00
Furnace and Tramway	19,500.00
Total	$ 59,800.00

HISTORY: Discovered in the late 90's. Developed to a limited degree and eqiupped with a 40 ton Scott furnace and single rope aerial tramway.

Taken over in 1899 by W.B.Dennis who carried on active development until 1908,opening up mew levels and driving approximately 15,000 feet of cross-cuts, drdfts and winzes. About 7000 tons of ore treated in altered Scott furnace. Primcipal development done on

the Black Butte vein. There are at least two other veins, the Sutherland and the Dennis Creek.

The property was taken under lease and bond, in 1916, by B.B.Lawrence of New York and associates, and was operated from June of that year to April 1919 under the supervision of E.B.Crane. During this period general surface repairs were made, 26,479 tons of ore was furnaced, and two adit run to cut the vein on the 500 foot level.

Consequent upon the cessation of hastilities in Europe and the fall in the price of quicksilver the property was closed and has since been idle, a watchman only being maintained.

DISCRIPTION:
GEOLOGY

The geology is covered by G.F.Becker, monograph No.13, USGS, 1888, "Quicksilver deposits of the Pacific Coast". The Black Butte deposit is in the most northerly developed part of the zone, extendind from the northern part of Chili through Mexico, California, Coast Range, to Southwestern Alaska.

The quicksilver occur almost entirely in rocks of volcanic origin.

The Black Butte mine is in the Calapooia Mts., which are made up entirely of volcanic rocks. The country rock at Black Butte is a greatly altered andesite and andesitic breccia intruded at places by a darker homogeneous rock, probably basalt. The princepal vein lies along the apex of Black Butte Mt., and for more than 1000 feet forms this apex. The vein outcrops for a distance of 3500 feet and at intervals in this distance rises boldly 30 to 50 feet above the northerly dipping slope of the mountain. The strike is relatively S.70°E., Dip 55° to 65° NE. The main vein is in a fault fracture. The discription of the vein and the fault in rather involved in the report but it appears that the vein where developed is in an upper badly fractured zone which is disappearing with depth to be replaced by a more definitly defined vein between fixed walls. this condition is developing on the 900 foot level and the grade of the ore in this new structure has not been determined. The size and the value of the mine is largely dependent on the ore in this new structure.

The ore is a fine-grained cinnabar which impregnates the country rock along and near the main fissure. Some seams of high grade cinnabar were said to occur in the stopes above the 300 foot level. these seams were up to 4 inches thick but only a few feet in extent, vertically and horizontally.

TOPOGRAPHY:

The elevation of the mine office is 1000 feet above sea level. Black Butte mountain rises rapidly from the plant, frequent slopes up to 35°, and attains an elevation of 2700 feet at the apex.

The mountain slopes are heavily wooded with Douglas fir, hemlock and cedar.

The mean annual temperature is about 52°, high 88°, low 19°.

Precipitation about 48 inches. The snow fall is light and only lasts for a short time.

DETAILS: The available tonnage of ore in the ore shoots now developed is estimated to be 16,000 tons with an average analysis of 0.322% mercury or 6.44 pounds per ton. This includes ore above the 500 foot level only. The extraction should be at least 85% so the available mercury would 5.47 pounds per ton.

The estimated costs are as follows;

Mining	$0.9075 per ton.
Crushing & Traming	.1340
Furnace, transportation, etc	.8580
Taxes and Ins.	.0290
Administration, etc	.4200
Total	$2.3485 per ton.

The price of mercury is quoted, Nov. 1934, 96¢ per pound. The price for the estimated ore would be;

5.47 X 96¢ = 525 or $5.25 per ton.

The total costs, of the ore treated in 1916-19 was $3.46, including mining, furnacing and marketing.

EQUIPMENT: There is probably very little equipment of value at the mine. The mining was all done by hand so hand tools may be at hand.

The is one small crusher, 15 inch jaw, at the mine.

The mill, furnace, shops and soforth would have to be built new or rebuilt.

Camps and dwellings etc are available and in fair condition.

PROPOSITION: Culver wrote, 3/16/34, Under can be purchased for $250,000.00. $75,000.00 worth of timber on the property.

REMARKS: The report sent in on this property is very well written and prepared but is quite technical. It is probably accurate. A map essential to the report was not included. This map shows the details of the property which are not written into the report.

The value of the mine is not proven by the report and there is nothing to indicate a value of $250,000.00. The large acreage may be desirable but the orebody must be proven before this acreage becomes valuable. The proven ore does not warrant the cost of rehabilitating the property.

This property could only be handled on a small cash payment after an extended period for examination and development and then the balance out of production.

Con[illegible]tion

CONCULSION: This is a propect only, which was over valued and over equipped by the owners.
Would only be attractive on very lenient terms.
If terms were attractive there would probably be some promotional value.

CMP.

12/17/34 - Report returned to O.F.Gloystein.Tacoma.

"Structure - Red Hill Anticline: The rocks of the Blackbutte-Elkhead area have been only slightly deformed. The principal structural feature of the area is an elongated anticlinal dome developed in the Umpqua formation. Its longer axis trends northeast and is indicated by the course of Red Hill. It is about 12 miles wide, and its limbs for the most part dip at angles between 10° and 18°. Near the Elkhead mine, however, the east limb of the anticline dips 30° to 50°.

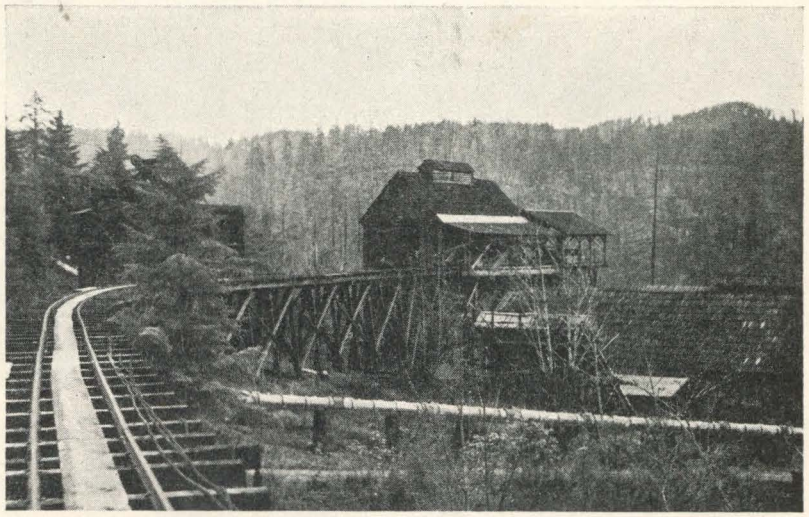
"The core of the anticline is made up of amygdaloidal lava, and the flanks and crest of shale and sandstone. Differential erosion of these rocks has caused the fold to be reflected in the topography. During the rise of the anticline differential movements occurred between the lavas and the sedimentary beds. Near the Elkhead mine, where the dips are relatively steep, these movements produced fractures in the tuffaceous member directly above the amygdaloidal lava, and these fractures served as paths for the ascending ore solutions. West of the junction of Adams and Elk Creeks the north limb of the fold is cut by a fault of small displacement.

"The Red Hill anticline plunges to the northeast and disappears beneath the lavas and sedimentary beds of the Calapooya formation. These rocks are not involved in the folding but lie on a surface eroded across the anticline."

The history and production of the area is largely that of the Blackbutte mine to be described later.

Black Butte Quicksilver

An Important Oregon Producer



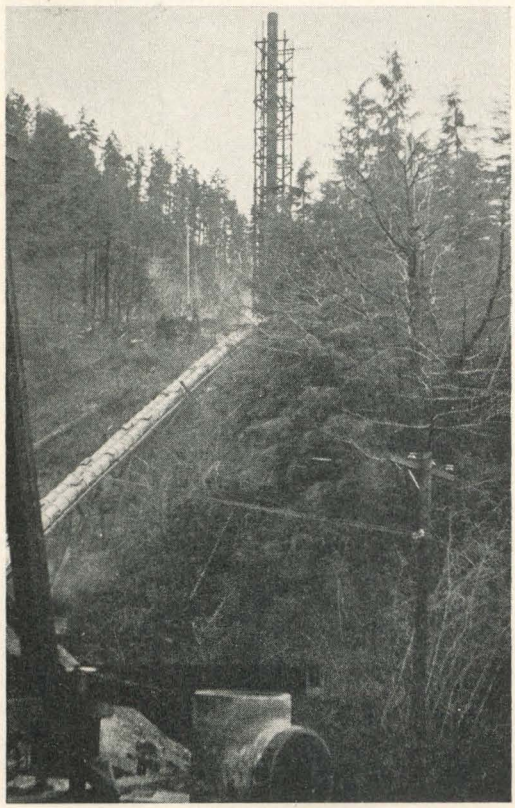
Black Butte mine plant, showing railroad from Dennis Creek tunnel, aerial tramway station beyond trestle and condensers just below building in right center. All illustrations from the Oregon Department of Geology and Mineral Industries.

PRODUCTION of quicksilver in the western states is an important phase of the mining industry, and of special interest to the nation, in view of the European war. Quicksilver is the base of mercuric fulminate, which is the best agent to detonate explosives, and also fulfills numerous other wartime and peacetime purposes. Oregon production has been stimulated sharply by the present international situation, and its advancing effect on price.

The Blackbutte mine of the Quick Silver Syndicate at Blackbutte, Ore., has to date produced more of the metal than any other mine in that state. Before describing this operation, however, it may be of value to briefly review the general status of the industry.

The United States at the present time produces approximately 20% of the entire world production of quicksilver. The other large producers are Spain and Italy, with minor production in Mexico, the U. S. S. R. and China. The other great industrial nations of the world, particularly Great Britain, France, Germany and Japan, produce practically none and consequently are dependent on imports of this material. Since quicksilver is essential both to industry and for military and medical purposes, it becomes relatively more important in time of war.

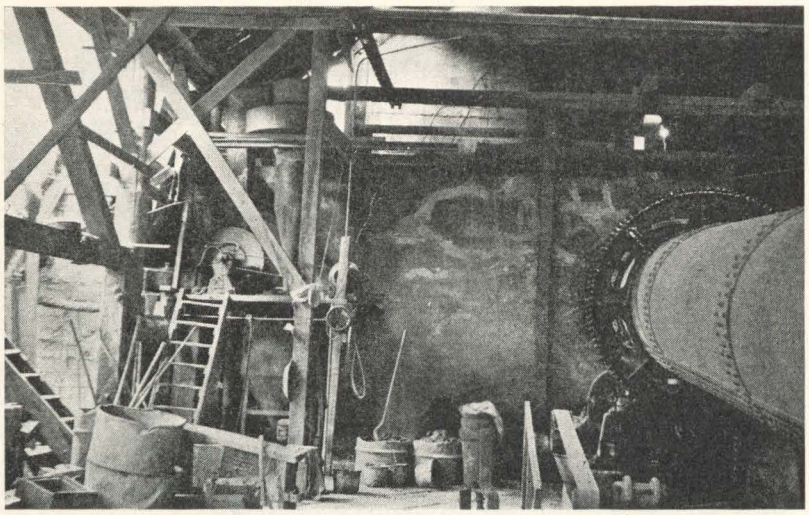
The industry in the United States during the past 30 years has had a varied degree of success, with production differing greatly from year to year. This has been due to the fact that various districts have occasionally overproduced heavily, and when this has happened in foreign countries it has resulted in depression of the American industry, since the United States is the major consumer.



Stack flue and stack at the Black Butte quicksilver plant. The stack flue consists of twin lines of 15-in. tile pipe, leading up the slope to the stack. An air injector at the base of the stack aids in inducing draft. Oil is used for fuel, with the rather high consumption of oil due to high moisture content of the ore and the fairly coarse kiln feed.

The industry of this country has been protected against foreign competition since 1922 by the tariff of 25c per lb., theoretically amounting to $19 per flask, but has largely lost this advantage through the devaluation of Italian and Spanish currencies. The necessity for Italy and possibly Spain to use more of their own production or to furnish more of it to other countries, may reduce foreign competition in this country and be of benefit to American producers. The United States ordinarily uses from 25,000 to 35,000 flasks per year but has been producing only about 50 to 60% domestically. The only period during which full requirements have been met within the country was during the World War when in 1917 36,159 flasks were produced, or 31% of world production.

During the past 10 years domestic production has shown a small increase, although it has not been steady or uniform. Operation of many mines has been intermittent and profits uncertain. At the moment numerous mines are shut down because of unfavorable price. The effect of the last World War was to



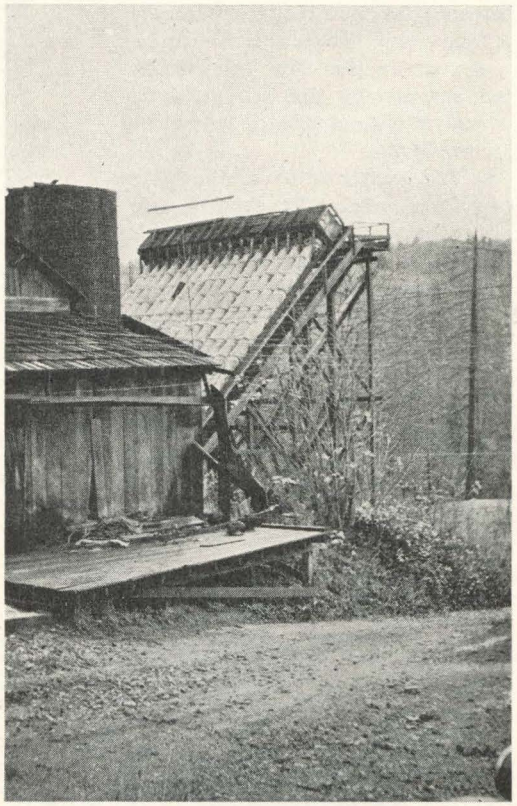
reopen numerous mines so as to balance production and consumption in this country.

The first discovery of quicksilver in Oregon was about 1865 and operation began on a small scale. The first findings were in southern Oregon, which is the general location of the Black Butte mine. This property was discovered shortly after 1890 but little work was done until W. B. Dennis took over the property in 1898 and operated it and the mill for 10 years. After a long idle period, the mine resumed operation from 1916 to 1919, and then remained idle until put into production by the present company in 1927. The present operators of the company are Frank Taylor, who is president and mill superintendent; Daniel J. Mills, vice-president and mine superintendent, and Fred L. Mills, secretary-treasurer. His daughter, Caroline Hunt, handles assay and payroll work. Robert M. Betts, now deceased, originally founded the organization.

In 1927 the company built a 4 by 60 ft. rotary furnace plant and started production. In 1929 another kiln of the same size was installed, with improvements in dust removal and condenser systems added. This unit has been operated only part of the time since it was put in, but the mill as a whole has operated steadily up to date.

Perhaps the outstanding thing about this mine is the fact that it has operated continuously despite the fact that it is a low-grade producer, recovery of quicksilver amounting to only 3 to 4 lbs. per ton of ore. Many mines with much higher recovery have been shut down at times during this period. The Black Butte mine has been able to operate under these conditions due to its system of management and to the fact that they employed an unusually large condenser system in treating the low-grade ore.

Above, original rotary kiln at Black Butte plant, showing the Sirocco dust collector mounted on platform at the left.



Inclined tile pipe condenser system at the Black Butte plant.

Gasoline locomotive bringing a train of ore cars to the reduction plant bins from the Dennis Creek tunnel.

Black Butte is located in Lane County in the district known as the Black Butte-Elk Head, which is at the head of the Willamette Valley near the junction of the Coast range and the Cascade range. The mine is situated above the valley floor on the side of Black Butte which rises 1,650 feet above the valley. They are now working from near the top of the hill at 1,600 ft. on down toward the recovery plant, with a tunnel about every 100 ft. of elevation. Until a short time ago, an aerial tram was used to bring the ore from one of the higher levels to the ore bin at the mill. This has now been aban-

doned and ore is brought down inside the mine to the Dennis Creek tunnel level and sent to the recovery plant, after crushing, on five-car trains powered by gasoline locomotives.

The underground mining is carried out by air drills supplied by a Sullivan air compressor and an Ingersoll-Rand compressor. A variety of types of drills are employed, being chiefly those made by Sullivan, Denver, Ingersoll-Rand and Cochise. The ore is blown with 35% special gelatin 1¼x 8 in. Giant powder, of which about one ton per month is required. The mine operates one shift with 18 men and the plant works two shifts with seven men. Ore production amounts to about 50 tons per day.

From the upper levels ore is brought down through the raises which are equipped with two Ingersoll-Rand air hoists, one assembled electric motor hoist and one gasoline engine hoist.

As the ore comes from the mine it is crushed by a Good Roads Machinery Co. crusher and a 12 x 20 Blake crusher. From the crushed ore bin it goes to the plant in one-ton cars, five to the train. The company has 20 ore cars, products of the Union Iron Works and of Joshua Hendy Co., and two gasoline locomotives made by the Milwaukee Locomotive Co., with Continental gas engines.

Although there is quite a lot of water in the mine, it is satisfactorily drained by tunnel ditches, and operations are possible all through the year. There is natural ventilation through all the various tunnels, and the temperature within ranges from 60 to 65 degrees all year.

It is believed that the mine holds enough ore for at least 10 or 12 years more of production.

The two Gould rotary furnaces in the plant, were made by the Mutual Engineering Co. of San Francisco. Ore from the 100-car ore bin drops to a conveyor belt and is carried into a screw conveyor which feeds the kiln. This system of feeding is employed since the ore contains much clay, which is apt to stick to the ordinary shaking feeder. The ore goes through the furnace in 45 minutes and the gas is driven off through the condensers. Since the plant was originally built, a Sirocco dust collector has been installed between the dust chamber and condenser to catch soot containing quicksilver. The furnaces are fired by fuel oil, brought to the mine by the Shell Oil Co.

When only one furnace is being operated, both condenser systems are hooked up to it, giving maximum recovery. The condensers are of 15-inch tile pipe, 20 ft. long and inclined at a 45 degree angle. There are 12 pipes in the original condenser and 16 in the newer one.

The calcined ore, as it comes from the furnace, drops to the slag pit from which it is hauled out and dumped.

The recovered quicksilver, contained in flasks holding 76 lbs. net, are shipped by truck to Portland, from where they go to New York by boat.

About all that can be salvaged from the old plant, Fischer said is the shell of the long rotary furnace used to vaporize the mercury from the ore. The vapor is then carried by pipe to condenser units where it forms again as quicksilver.

However, it will probably be worthwhile, Fischer added, to extract the mercury which has lodged in the foundations of the condenser units of the old mill.

Black Butte itself is a steep hill, about 1,600 ft. high, penetrated by tunnels all the way from the 100-foot level down to a depth of 1,650 ft. It has been worked extensively, with some 300,000 to 400,000 tons of ore extracted in past years. The length of all the tunnels within the mine is in excess of five miles.

Initial operations will center on the 1,100-ft. level, Fischer said, where the mine cars from the tunnel will dump the ore down a chute to a big bin. From the bin, trucks will transport the ore on down the hill and dump it down another chute to the mill. A second long chute at the 1,100-ft. level will be used to cascade wasted rock from the mine down a canyon.

Openings Inside Mine

Ore mined at higher levels in the mine will be passed down openings inside the mine to the ore cars on the 1,100-ft. level.

Work is nearly completed on the various chutes and bins. The old mine offices are being used temporarily by the new operators and one room has been converted to an assay office.

The mine's "power plant" is located near the entrance of the 1,100-ft. tunnel and consists of a giant, Swedish-built air compressor.

Three-inch air lines lead from there inside the mine. The compressed air is used not only to power the miners' drills but to run the locomotive which pulls the ore cars from the mine. The locomotive has a large tank for compressed air, which operates the pistons.

Fischer last week had two crews inside the mine, with the remainder of the men engaged in construction work. One of the mine crews was busy cleaning out cave-ins, mostly where ore has spilled down in the tunnel from old ore chutes. The other crew was test drilling, to determine the extent and richness of unmined deposits. Assays are made of samples obtained by drilling and these are charted as a guide to future production from the mine.

The new operators hope to get a boost in their exploration program shortly in the form of a Defense Minerals Exploration Administration loan. Fischer said application has been made for a $107,000 loan, and he expects an initial grant of $50,000 within a few weeks.

These loans, designed to encourage discovery of new deposits of critical metals, are on this basis: the operator puts up one-fourth of the cost and the government provides the other three-fourths. If the exploration work results in new discoveries, the loans are repaid from the resulting profits. Otherwise, the loan is written off.

Evaluated Number of Mines

Fischer, who gained his experience as a mining engineer in South America, says he evaluated a number of western mercury mines before settling on the Black Butte property as the one most likely to "turn into a large producer."

His company was organized specifically to acquire the Black Butte mine. The stock sale was underwritten by a New York investment house. The firm has leased the mine under an option which applies mining royalties toward the purchase price.

While most of the past deposits in the mine have been low-grade ore, averaging somewhere around three pounds of mercury per ton. Fischer says other factors offset the low-quality of the deposits.

In the first place, the crimson flecks of cinnabar, which contain the mercury, are diffused through large areas of the mine rather than confined to narrow veins. Not only are the mineralized deposits extensive, but they are also easily accessible, Fischer said, because of the number of levels at which tunnels penetrate the hill. There's no need for expensive hoisting operations to get the ore out of the mine.

Other factors contributing to low operating costs, he said, are the strong rock walls within the mine that practically eliminate the need for timbering, excellent ventilation, and gravity flow of water within the mine so pumping isn't necessary.

The U. S. Bureau of Mines conducted a wartime study of the Black Butte property, "blocking out" by drill tests approximately 76,000 tons of ore which hasn't yet been touched.

There's good reason to believe, this study indicated, that the one block of ore may actually approach 200,000 tons--almost a six year's reserve. In addition, Fischer is confident that present exploration work will turn up other new bodies of mercury-bearing ore.

Shortage Brought About

Although the mercury market has long been dominated by rich Spanish and Italian mines there is now a shortage of the metal, brought about by new uses.

The current price for a 76-pound flask of mercury is about $250

and there's a U. S. guaranteed price of $225. In recent months the price has been beyond $300 per flask and Fischer expects to see it go up there again.

With this kind of price, he says, three lbs. per ton of ore can be handled profitably at the Black Butte.

Fischer says he's fortunate in having the country's recognized mercury expert as his consulting engineer. This is Curt N. Schuette, the man who wrote Oregon's mining bulletin on quicksilver deposits within the state as well as federal Bureau of Mines studies on the country's quicksilver resources.

For his mining superintendent, Fischer has hired Herbert F. Larsen, who was superintendent of the big Sonoma Quicksilver Co. mine in California for 15 years. Larsen once was called to Spain as a consultant at the fabulous Almanden quicksilver mine, the world's richest. The Black Butte mine foreman, also from California, is John Johnson, also well-versed in quicksilver mining techniques.

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