

STATE OF CALIFORNIA  
DEPARTMENT OF NATURAL RESOURCES  
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DIVISION OF MINES  
FERRY BUILDING, SAN FRANCISCO

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State Mineralogist

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Vol. 38

January, 1942

No. 1

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CALIFORNIA JOURNAL  
OF  
MINES AND GEOLOGY



QUARTERLY CHAPTER  
OF  
STATE MINERALOGIST'S REPORT XXXVIII

STATE DIVISION OF MINES  
FERRY BUILDING, SAN FRANCISCO  
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*Ruby Mine* was being operated in 1941 by C. L. Best, Caterpillar Tractor Company, San Leandro, with L. L. Huelsdonk, Goodyears Bar, in charge. Including a lease on the Mott property, there are 1150 acres, of which 300 are patented, in secs. 10, 11, 14, 15, T. 19 N., R. 10 E. The mine is reached by 15 miles of road from Downieville, mostly steep mountain road, dirt surface.

The Bald Mountain Extension channel, one of the oldest Tertiary channels, branches from the Bald Mountain channel at a point north of Forest. Bald Mountain channel is the same as the Ruby and City-of-Six channels. The last two named are simply continuations of the

Bald Mountain channel to the north. The Bald Mountain Extension channel was worked in the Ruby mine in the 90's from an adit level driven from the side of the mountain on which the town of Forest is located. Present work is on the opposite side of the mountain. An old adit level (portal elevation 4707 ft.) was utilized for a distance of 1800 ft. Work beyond that point is new. The adit is in the Tightner formation for 3320 ft., then in serpentine for 520 ft., then in gabbro and schist for 610 ft., then passes into a second belt of serpentine. A point in the adit is 1850 ft. south of the common corner of secs. 10,



FIG. 11. Ruby Mine, surface plant

11, 14, 15, T. 19 N., R. 10 E. The contact of the second belt of serpentine and the gabbro-schist is 200 ft. east of the point in the adit just described. The adit then continues in a general southeasterly direction to a point where a raise was put up to the intervolcanic channel. Distance from the portal to this raise is 5850 ft. and the raise is 109 ft. high. From the top of the raise 400 ft. of drifting was done in a southerly direction on the channel and 4000 ft. in north and northeasterly directions on the channel. From this point the channel winds considerably, and 700 ft. more of driving will be needed to connect with the Larry shaft, of which the collar elevation is 5163 ft. and the bottom elevation is 4954 ft. Several thousand feet of additional exploratory work have been driven on the channel, and a connection for air, involving 3000 ft. of work, has been made to the Golden Bear shaft.

The intervolcanic channel that is being worked is 200 ft. lower than the Bald Mountain Extension channel and cut off the Bald Mountain Extension channel. - Apparently much of the gold in the intervolcanic channel was derived from the older channel. The intervolcanic channel

varies from 60 ft. to 160 ft. in width and is breasted to a height of 6 ft. to 8 ft. Channels are capped by as much as 900 ft. of lava, which is mostly andesite, but basalt is found on top of the andesite in places. Large boulders are stored underground. The finer gravel is moved by slusher scrapers to raise-chutes and hauled in trains by storage battery locomotives to the washing plant at the portal of the main adit level. Timbering comprises stulls and caps specially designed with a mortise and tenon and handled by one man.

In the summer of 1941, the crew comprised 18 men, and 80 to 100 tons of gravel were treated per day, but when the crew was 43 men, 200 tons were treated per day and a maximum of 250 tons was reached. The reason for the small crew in 1941 was that many men had left to

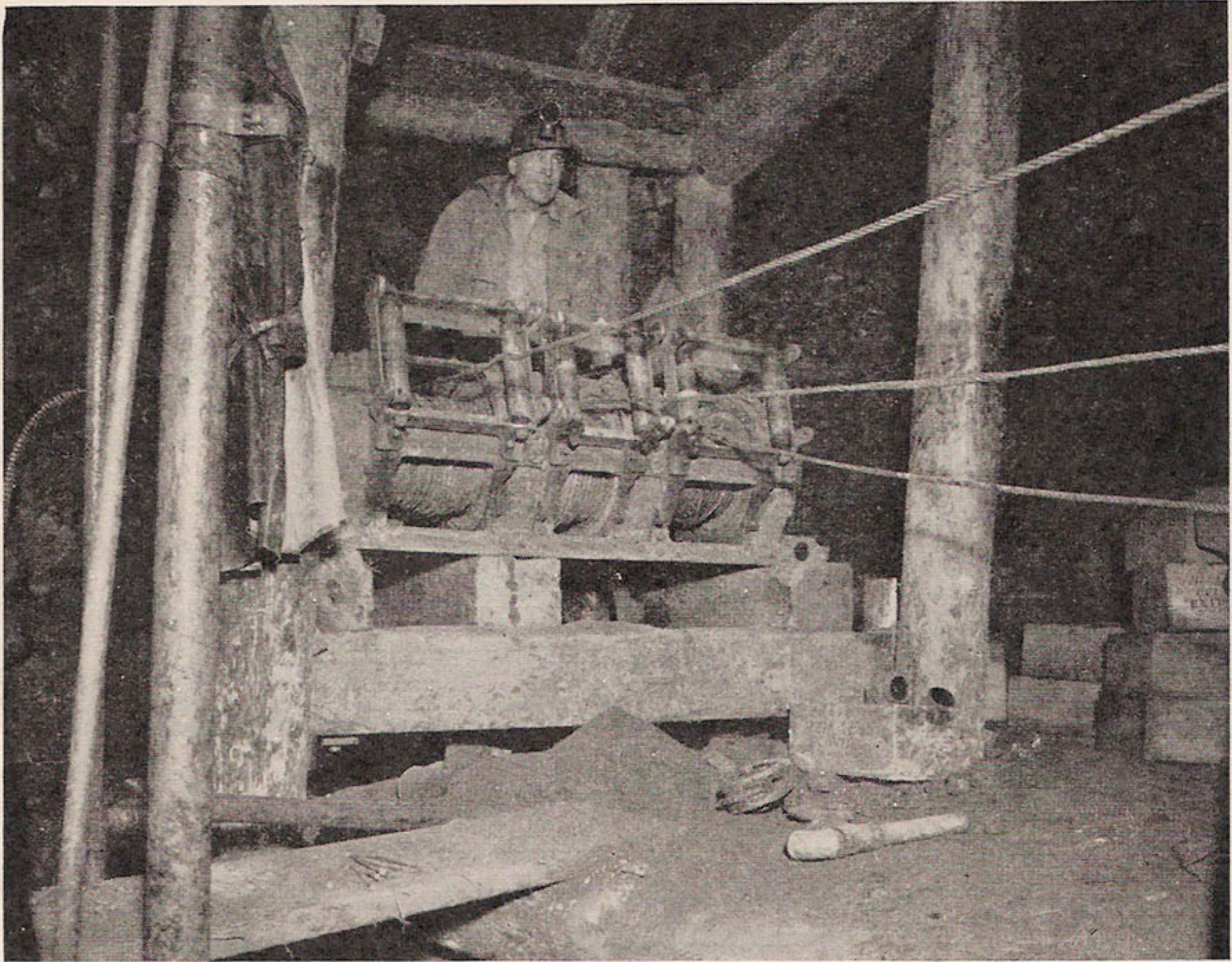


FIG. 12. Ruby Mine, underground slusher hoist. *Photo by courtesy L. L. Huelsdonk*

engage in defense activities. Gravel passes from storage bin over Hungarian riffles of alloy steel 50 inches wide by  $1\frac{1}{4}$  inches deep; then to a vibrating screen, which is a double screen. The upper screen is of 2-inch square openings, and rods are one-half-inch diameter. The screen which is below is four-mesh of No. 12 wire. Undersize goes to a six-unit Huelsdonk table 20 ft. long by 7 ft. wide. The washing plant will treat 500 tons of gravel per 24 hours. The screen mentioned above is vibrated by an eccentric and 20-hp. motor with a  $3\frac{3}{4}$ -inch stroke at the rate of 200 vibrations per minute. Undersize goes to the Huelsdonk table mentioned above, which is vibrated with a  $\frac{3}{4}$ -inch to 1-inch stroke at a rate of 200 vibrations per minute. The end of

the table farthest from the vibrating screen is set three-quarters of an inch lower than the end near the screen. Recovery amounting to 10% to 20% of the total is made on this table as fine gold. The remainder is made on the first riffle and the screen about equally divided. Steel bars are placed across the screen to hold it down and these have a tendency to act as riffles. Below the screen additional riffles are provided in the sluice that carries away the oversize, but little gold is recovered from these. Nuggets as big as 52.33 oz. valued at \$1,758 have been recovered. C. L. Best is saving all nuggets above \$100 in value for exhibit purposes and in 1941 had a collection of 123 that had been recovered since 1937. Gold is 940 to 950 in fineness.

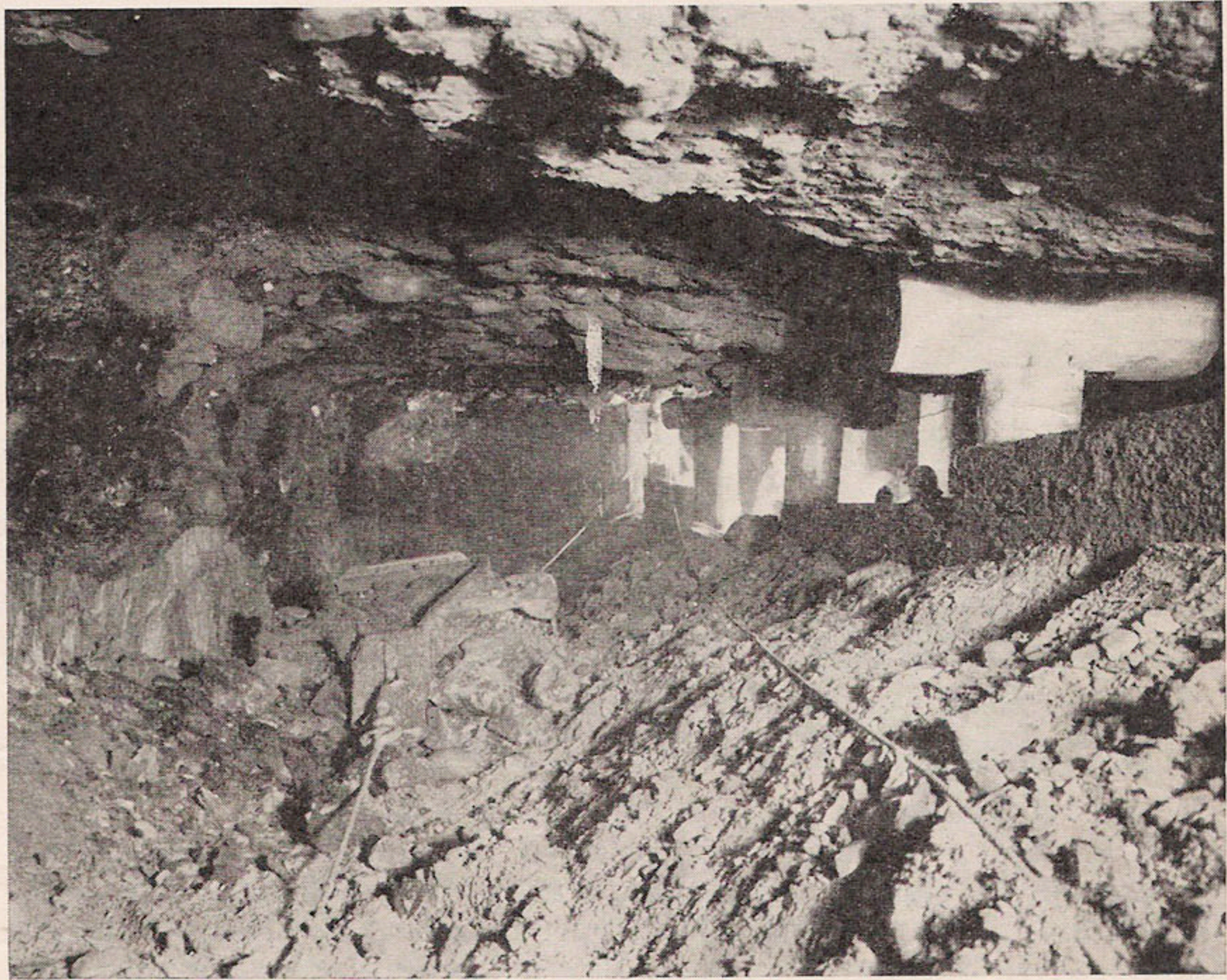


FIG. 13. Ruby Mine, timbering. Slusher scraper at left.  
*Photo by courtesy L. L. Huelsdonk*

Most of the tailing is stacked on the property by means of a belt conveyor.

The second serpentine belt mentioned above is 490 ft. wide, then the workings pass into the Blue Canyon slate, which is the bedrock of the channel being worked. On the contact of the second serpentine belt and the Blue Canyon formation is a fault called the Independence, on which is a 6-ft. quartz vein. Another quartz vein 4 ft. in width was cut 110 ft. farther ahead in the adit in the Blue Canyon formation. A third vein known as the Wolf vein strikes north and dips 65° W. It is 6 inches to 12-ft. in width. This vein was worked in the years 1935, 1936, and 1937 to a depth of 200 ft. below the main adit level.

Drifts were run north on the 200-ft. level for 600 ft. and the ore was stoped through to the main adit level. This work on the quartz vein had been discontinued and the workings are now full of water. Ore was treated in a stamp mill of 30 tons daily capacity, and treatment was amalgamation on plates followed by tables and flotation. The quartz averaged \$5.80 per ton in the mill but additional gold was recovered as high-grade. This vein is in the Tightner formation and was found at a distance of 2120 ft. from the portal of the main adit.

Camp facilities are provided for a crew of 40 men, and the property is well equipped with repair shops, drill sharpeners, air compressors, and other modern machinery. Electric power is supplied by Pacific Gas and Electric Company.

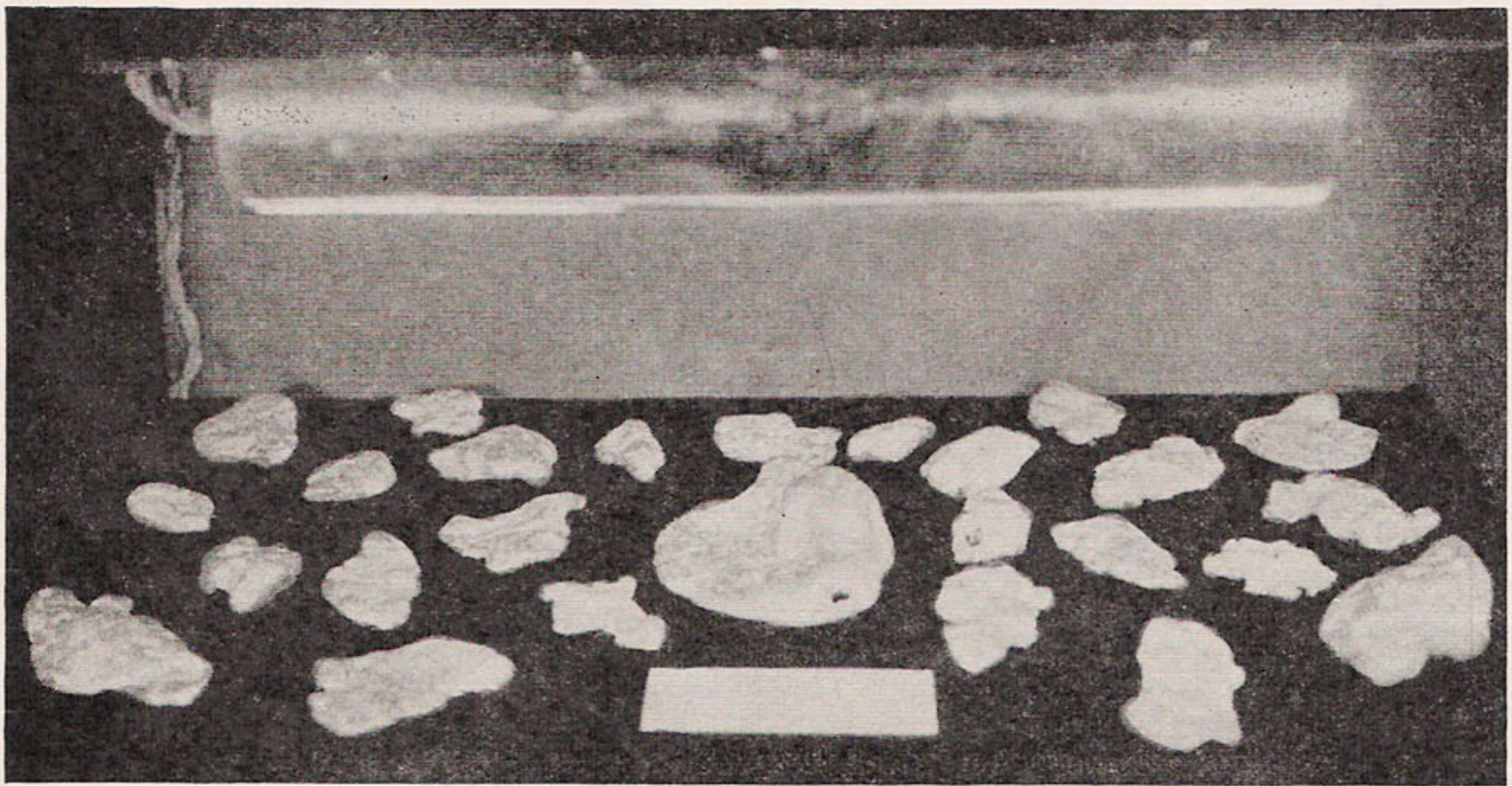


FIG. 14. Gold Nuggets, value \$7,000, from the Ruby Mine. Mined in 1938 and displayed at the State Fair. *Photo by Walter W. Bradley*