APPENDIX A

It is said that short runs were made in March and June, 1918, and that small cleanups were made.—*C. A. Logan.*]

Black Hawk Mine (Aberdeen Tunnel Company). Owner, Theo. C. Dorsey, Grass Valley. Under option to Union Hill Mines Company, Crocker Building, San Francisco.

Location: Grass Valley District, Sec. 25, T. 16 N., R. 8 E., 2 miles east of Grass Valley. Elevation 2800'.

The Black Hawk mine was operated in early days by Smith and Canfield, and was purchased by the present owner in 1894. There are two claims, the Black Hawk (1500' x 400') which was patented by the Gold Point Company and then deeded to the Black Hawk, and the Rip Van Winkle fraction, a total area of about 18 acres, covering a length of 1500' along the lode. The Black Hawk veins which occur in the area of amphibolitic schists lying south and east of the Idaho-Maryland serpentine, belong to the Idaho-Maryland-Brunswick vein system. The vein upon which most of the work has been done is supposed to be the western extension of the Brunswick lode.

The vein filling consists of quartz carrying free gold and pyrite. Some fine 'specimens' have been taken from the oxidized zone above the Pike tunnel. The strike of the vein is N. 70° W., the dip 35° to 40° S., and the average width about 2 feet. Two tunnels have been driven on this property; the Pike tunnel which is a crosscut adit 620' in length cutting the vein 130' below the outcrop and the Aberdeen tunnel 1265' in length giving 450' of backs on the vein. The Pike tunnel was continued into the footwall a distance of 150' through a kaolinized zone, but no other veins were encountered. A drift was run 240' west of the Pike tunnel, in which a number of small irregular ore shoots were encountered, and a winze was sunk 35' west of the tunnel to a depth of 835 feet. No drifting was done to the east. The only development work done on the Aberdeen tunnel level was a drift which was run 40' west on the vein; at the present time this tunnel is inaccessible. While several tons of ore, which have been crushed as samples, have varied in value from $12 to $25 per ton, most of the stoping has consisted in following rich stringers and seams containing specimen ore. A 5-stamp mill is now being installed on the property. (No ore has been milled since the above was written, and the property was idle in September, 1918.)

Black Prince. (See Mountaineer.)

Bluebell Group. Owner, J. H. Von Schroeder, San Rafael.

Location: Washington District, Secs. 12 and 13, T. 17 N., R. 11 E., 5 miles east of Washington.

There are two claims, the Bluebell and Sunset. The property has been idle for a number of years.

Water was obtained from the North Bloomfield ditch at a cost of 10¢ per miner's inch per 24 hours under 310′ head at the mill. This water was then used again to run the compressors 400 feet below. The mine is equipped with a 12″ x 12″ Norwalk 2-stage compressor of 500 cu. ft. capacity; a Smith Vail 150 cu. ft. compressor, blacksmith shop, tools, drills, cars, etc.; a 20-stamp Risdon mill with 1300-lb. stamps, 2 Wilfley and 1 Johnson concentrator, bunkhouse and other buildings.

The total operating cost, including mining, milling and development was given by Manager Wrampelmeier as $5 in 1915, but the cost of stoping and milling was only $1.32 per ton owing to cheap power and timber. Drifting cost $4 per foot, which included labor, supplies and power. The cost of handling freight from Nevada City is $20 per ton, and due to the condition of the roads in winter all hauling has to be done during the summer months.

(The operating company gave up its option without doing any new work and the mine was idle in September, 1918.)

Ethel Mine. Owner, Ethel Gold Mining Company, 241 Sansome street, San Francisco.

Location: Washington Mining District, Secs. 34 and 35, T. 18 N., R. 11 E., 2 miles east of Gaston and 7 miles northeast of Washington.
Bibliography: Cal. State Min. Bur. Repts. XII, page 189; XIII, page 242.

This mine was idle in 1914 and inquiry at the San Francisco office failed to elicit any information regarding the property.

Eureka Consolidated. (See under Copper.)

Eureka Consolidated Mine (Roannaise). Owner, Gold Point Consolidated Mines, Inc.,* 1007 Crocker Building, San Francisco.

Location: Grass Valley District, east of Grass Valley. Elevation 2500′.
Bibliography: Ross Brown and Raymond Repts. from 1867–1877.

The Eureka mine was located in 1851, and the outcrop of low-grade gold quartz was worked at intervals until 1857. In that year the mine was purchased by Fricot and others, but the ore taken from the surface yielded only $4 per ton, and the mine was worked at a loss until 1863. In that year a vertical shaft was sunk to a depth of 100′, at which point ore averaging $28 per ton was encountered. Between the 100′ and 200′ levels the ore averaged $37, and from there on to the 600′ level it increased in value to $50 per ton over an average width of 3 feet. The mine was sold to the Eureka Company October 1, 1865, for $400,000. The production prior to this time is unknown, but for ten years, from

*Since the above was written this property has passed into the possession of the Idaho-Maryland Mines Company, Hobart Bldg., San Francisco.

APPENDIX B

BEAN'S

HISTORY AND DIRECTORY

—OF—

NEVADA COUNTY,

CALIFORNIA.

CONTAINING A COMPLETE HISTORY OF THE COUNTY, WITH SKETCHES OF THE VARIOUS TOWNS AND MINING CAMPS, THE NAMES AND OCCUPATION OF RESIDENTS; ALSO, FULL STATISTICS OF MINING AND ALL OTHER INDUSTRIAL RESOURCES.

COMPILED BY EDWIN F. BEAN.

NEVADA.
PRINTED AT THE DAILY GAZETTE BOOK AND JOB OFFICE,
1867.

an immense amount of first-class ore has been taken out. The gross yield of the mine for 1866 amounted to $596,053, the dividends during the same period being at the rate of $30,000 per month, or $360,000 for the year. With sulphurets on hand unworked and with expenditures for machinery and improvements about the mine, the figures show actual dividends paid by the Eureka in 1866 amounting to $432,000, or $32,000 over the purchase money. A one-fortieth interest sold in 1866 for $17,500. The mill has crushed on an average one thousand tons of quartz per month during the present year, and the monthly dividends have averaged $30,000. The monthly expenses of running the Eureka, not including repairs of machinery, etc., are $18,000. Working at the present time about one hundred and sixty men. A new incline shaft was recently commenced, which will be completed during the present season, and which will greatly facilitate the working of this extraordinary mine. The shaft is being raised from the three hundred foot level, and is being sunk from the surface at the same time. There are eighteen hundred feet in the claims. The owners of the Eureka, the best gold mine we have heard of in modern times, are J. B. Dickinson, Thomas Hope and Benjamin Silliman, of New York, Edwin Hull, W. H. V. Cronise, John C. Winans, Milton Bulkley, James Freeborn, A. J. Pope, Robert F. Morrow, N. J. Hall, George W. Beaver, L. S. Adams, and Francis Berton, of San Francisco, William Watt, Robert Watt, J. Fricot, A. Pralus and S. Ripert, of Grass Valley.

The Idaho Company's claims, consisting of thirty-one hundred feet on the vein, begin at the east line of the Eureka, on the left bank of Wolf creek. At the west line of the Idaho the lode crosses the creek and runs into a spur of the ridge dividing Little and Middle Wolf creeks, and thence into the main ridge. The lode has been distinctly traced for about one thousand feet, and can afterward only be traced by the country formation. Located in 1863. A law suit prevented the development of the mine for more than a year. Late in the fall of 1864 the company commenced sinking a shaft on the creek, near the line of the Eureka, and developed a large vein of quartz, twenty inches in thickness, which increased as depth was attained. This was merely a prospect shaft. Under the superintendency of Edward Coleman the plant for the permanent shaft and machinery were made on the south side of the creek thirty feet above vertically south from the croppings. This shaft was sunk to a perpendicular depth of almost one hundred and thirty feet, and a level was run almost twenty feet toward the lode, which has not yet been struck. The company stopped work when winter set in, but will resume operations this season. They will undoubtedly find a large vein, as the croppings immediately opposite the shaft are two feet in width, showing free gold. The Idaho is owned by Thomas Findley, M. P. O'Conner, Edward Coleman, Wm. Young, Capt. L. W. Coe, and others.

The Maryland claims begin at the east line of the Idaho, running two thousand feet on the lode. A chimney of the Eureka appears on these claims, at which point the company have sunk a shaft forty-five feet deep, and have also made surface excavations. The lode in the Maryland claims only crops out for about two hundred feet, and then disappears. Owned by R. A. Fisher, E. W. Maslin and S. P. Dorsey.

Beyond the Maryland, on the line of the Eureka, is the Grass Valley Consolidated Company's mine, more generally known as the O'Connor, a history of which will be found under the head of "Union Hill."

The strength of the Gold Hill vein and its well known richness in former times, encourage explorations in depth and extent, with the reasonable expectation that the mine will at an early day resume its place as a dividend paying mine. There are now reserves standing in the stopes of about eight hundred tons of ore, and it is reputed that a considerable amount of good ore remains available also in the upper workings, which may swell the reserves to one thousand or twelve hundred tons. Meanwhile the incline is being sunk under the present management.

Union Hill.

This hill is two miles east of Grass Valley, and is separated from Howard Hill, with which it is parallel, by Middle Wolf creek. The Hill was made a matter of record January 30, 1851. The first and chief location on the eastern end of Union Hill ledge, was made by Dr. McMurtry, David Brooks, G. W. Woodward, and others, who afterward purchased several other claims. The company erected a Mexican arastra mill, and took out enough rock to defray all expenses. The mine was badly managed, as nearly all other mines were at that time. With heavy expenses and no experience in quartz mining, the company became involved. Judgments were obtained, executions were issued, and the mine was sold on April 6th, 1854, to Dr. Wm. McCormick, H. Hannah, and others. But little work was done on the mine beyond enough to hold it under the mining laws. Dr. McCormick, in 1865, became sole owner, selling interests the same year to Geo. D. Roberts, Thomas Findley and John Gashwilder, who are now the owners of the property. The latter part of 1865 the company put up hoisting and pumping works, and in the winter of 1866 sunk an inclined shaft one hundred and ten feet, and during the summer run drifts at that depth about seven hundred feet, two hundred feet west and five hundred feet east, the lode varying in width from one to six feet, averaging about two and one-half feet in width, the rock paying from $12 to $80 per ton by mill process. In June and July of the same year the company built a twenty-stamp mill, which was kept running during the day time, from August 1st, the mine not being sufficiently opened to run the mill day and night. In September last they started the incline and sunk eighty feet deeper, and the tunnels were run on the lode east and west about one hundred and fifty feet each way, the rock being richer and the ledge wider—averaging nearly three feet. The company, at this time, were making preparations to run the mill day and night. When the severe winter set in they were obliged, on account of water and some of the machinery giving way, to temporarily abandon the mine about February 1st, 1867, until spring. They have now resumed operations at the mine and will run a drain tunnel, connecting with the upper level, which will take off all surface water and save the mine from being filled with water another winter. The average pitch of the ledge, which runs in slate, is at an angle of fifty degrees. The lowest perpendicular depth attained has been about one hundred and thirty feet. The company own three thousand feet on the ledge, with all its dips, angles and variations; in addition to which they own three hundred square claims; and they also own Wolf creek, for mining purposes, the entire length of their claims. They have on their claims, besides the engine for running the mill, one 12-inch engine for pumping and an 8-inch engine for hoisting, and two pumps, one eight inch and the other fourteen inch, plunger and bucket. The machinery erected and attached to the mine cost about $40,000. The proceeds from this mine since starting the mill until work was suspended last winter, by water, were $74,413 41.

Near the summit of Union Hill, and running in a northwesterly and southeasterly direction, is the mine of the Grass Valley Consolidated Mining Company, now solely owned by Col. William O'Connor Sidney. This lode runs in hornblende, dipping westerly with an average inclination of about fifty degrees. The claim embraces twenty-five hundred feet on the vein, including, of course, all the dips, angles and variations of the lode. This is an early location, and was known at different periods as the McGrann, and the Murphy and the Bulger ledge. Colonel Sidney purchased the mine in January, 1866, from George D. Roberts, who had bought it from the original owners. A number of years ago the ledge was superficially worked by its locators, paying from $13 to $36 per ton, the rock having been crushed at the Gold Hill, the Lady Franklin and Laton & Son's mills. A tunnel was started about seven years since, and was run a distance of five hundred and twelve feet, where the vein, which was here narrow, was struck at a perpendicular depth of one hundred and twelve feet from the surface. In October of last year, an inclined shaft was started on the summit of the hill, at a distance of about five hundred feet northwesterly from the end of the tunnel. The incline is twelve feet by five in the clear, is splendidly timbered throughout, having a double track, and affording ample room for a large pump. The shaft pitches at an angle of fifty-five degrees, not varying the least in the inclination from the head to its present terminus, which is about one hundred and eighty-six feet from the surface. At the foot of the incline, where a splendid looking ledge was exposed, the water came in with discouraging rapidity, and having no pumping facilities, work was temporarily abandoned. That no time should be lost, the labor of cleaning out the old tunnel, referred to above, was commenced. The tunnel, as already stated, had reached a distance of five hundred and twelve feet, under the old ownership, when the owners, who, by the way, were poor men and unable to thoroughly work the mine, became discouraged. Under the present management work was recently resumed at the end of the tunnel, the needed repairs were made, and upon putting in the first set of timbers, the ledge, showing a width of ten inches and looking very well, was discovered. The vein has been followed in this drift about four hundred feet in a southeasterly direction, the lode increasing in width and improving in the character of the ore as the work has progressed. A drift, started by the original owners, had been run about one hundred and eighty feet in a northwesterly direction from the head of the tunnel, and along this drift are several "chutes," from which the crushings already spoken of were taken. The northwest drift has been connected with the incline shaft, leaving the vein exposed for a distance of about nine hundred feet. The lode for the entire distance will average about two feet and one-half in width, showing generally a good character of quartz, and in the southeast drift is presented an excellent quality of ore, strongly resembling the Eureka rock, and strengthening the long accepted belief among practical miners that this is really the Eureka vein. The rock in the southeast drift is liberally filled with fine sulphurets, a portion of which sulphurets will yield at the rate of $420 to the ton. The vertical depth of the present level will not average more than eighty feet. The work of sinking for another level, to a depth of one hundred and fifty feet below the present one, was commenced a few weeks since, and will probably be completed before this work reaches the public. Drifts will of course be run on the lode on this level for the entire length of the Consolidated Company's claims. A splendid 10-stamp mill, which can be increased

five stamps when occasion requires, and extensive hoisting and pumping machinery have been erected within the past few months at an expense of $20,000. In the first level an immense amount of quartz, which could only be roughly estimated at thousands upon thousands of tons, is exposed—enough to keep a large, first-class quartz mill crushing for years. The second level, when thoroughly opened, will undoubtedly reveal another splendid body of quartz. Colonel Sidney has expended a large sum of money in purchasing this mine, erecting machinery, sinking shafts and doing what our miners call "dead work," but we believe that he is in possession of a first-class quartz mine, which will soon prove itself such. Dan. Collins is superintendent of the Grass Valley Consolidated Mining Company.

The Pike Tunnel Company have one thousand and eight hundred feet on their claims. Located in 1862. Tunnel in a distance of one thousand feet, and the lode drifted on for one hundred and fifty feet, showing an average two foot ledge in width. Incorporated August 4th, 1865. Owned by E. Caldwell, Frank G. Beatty, J. Newman, Nathan & Hoffman, and others.

On the same hill are the claims of the Burdett Company, concerning which we can candidly say nothing of a favorable character, hence we prefer to dismiss the Burdett with the simple remark that it was sold for an enormous sum in the East, about two years ago, and the general impression is that the mine sold for every dollar it was worth.

Howard Hill.

This hill lies opposite Union Hill, on the south of Middle Wolf Creek, the western end being but a short distance east of Grass Valley, and it is a gravel, cement and quartz deposit. The first mine on the east end of Howard Hill is the Town Talk (gravel claim) which has paid handsomely in the past.

East of this are the Independent claims, which have paid well as gravel diggings, and through which runs a quartz lode, on which the Independent Company claims two thousand feet. Incorporated December 10th, 1864. Owned by B. Nathan, H. Hoffman, J. Newman, Frank G. Beatty, H. Robitscheck and E. Caldwell.

Traversing the hill easterly we next come to the Lucky Mining Company's works, situated on the company's ledge, the Cambridge. This location consists of about fifteen hundred and fifty feet. The vein, which was reached through a four hundred foot tunnel in 1862, runs in an northeasterly and southwesterly direction. In 1865 an incline shaft was sunk, and hoisting works were erected at a cost of $9,000. In 1866 a 15-stamp mill was erected at an expense of $13,000. The total amount of quartz taken from this mine has been 10,800 tons, and within the past two years the mine has turned out ninety-six hundred tons. About forty men are employed in the works. The company reduce about seven hundred and eighty tons of ore per month, at a monthly expense of $4,500. The inclined shaft, to which we have above referred, is down two hundred and seventy-five feet, the vertical depth being about two hundred and forty feet. In the lower level the lode averages three and a half feet in width. The Lucky is owned by Dr. E. A. Tompkins, D. E. Osborn, W. P. Goldsmith, M. Williams, E. Nutall, W. R. Taylor, and Major Topliff, of Grass Valley, and H. McCormick, of Nevada. W. R. Taylor, superintendent.

Adjoining the Lucky on the east is the Cambridge mine, in which the former company first discovered their ledge. The Cambridge, this being the name of the lode running through both claims, was discovered in 1852. The Cambridge Company own sixteen hundred feet on the lode under the quartz laws of Nevada county

of 1852. Prior to 1865, up to which period this mine was but superficially worked, and without the aid of machinery, fifteen hundred tons of quartz were extracted and crushed, showing an average yield of $25 per ton. The mine was sold to the present owners in February, 1866, at the rate of $5,000 a one-sixteenth interest. Since the change of owners the mine has been systematically and successfully worked. An inclined shaft has been sunk one hundred feet on the vein, at which point drifts were extended on the lode, easterly and westerly, for a distance of about six hundred feet, showing an average width of vein of twenty inches. The shaft is now going down for another level, one hundred feet deeper than the present one, and at a point now reached by this shaft, a splendid three-foot ledge shows itself. During the past year a substantial 10-stamp mill, together with pumping and hoisting works, have been put up at an expense of $22,000. Since December, 1866, (making allowance for stoppage by water, in February of the present year,) up to the present, about twelve hundred and fifty tons of rock have been taken from the mine. The mill is now crushing seventy-five tons of rock per week. The quartz has averaged $20 per ton. Lowest vertical depth from which crushings have been obtained, about one hundred and seventy feet. Working at present forty-seven men in the mine and mill. The Cambridge Mining Company was incorporated in April, 1867, with a capital stock of $256,000, divided into two hundred and fifty-six shares. Trustees, D. W. C. Rice, William Blanding, W. H. V. Cronise, W. E. Dean, Milton Bulkley and W. B. Cummings.

The Oxford, consisting of eight hundred feet, and owned by Thomas Loyd and others, all of Grass Valley, runs parallel with the Cambridge. In these claims a tunnel is now piercing the hill for the lode.

South of the Cambridge, on the summit of Howard Hill, is the ledge of the Frankfort Quartz Mining Company, consisting of two thousand feet. Located in July, 1862. Lowest perpendicular depth reached on the vein, through a tunnel, seventy feet. Now in with another tunnel five hundred and twenty-five feet, which will be continued sixty feet further to strike the lode. This will tap the vein at a vertical depth of two hundred feet from the surface. About two hundred tons of rock have been crushed, including croppings, showing an average yield of $14 to the ton. Work will be vigorously prosecuted in this mine during the present season. Owners, J. J. Dorsey, G. D. McLean, J. M. C. Walker, William Hobby and Charles T. Duval.

Ophir Hill.

This mining locality, one of the most generally known quartz sections in Nevada county, lies about one mile east of Grass Valley; and the principal lode, the Ophir Hill, which is now owned by the Empire Mining Company, was located by George D. Roberts and others in 1850. The vein runs in greenstone, in a northwesterly and southeasterly direction, dipping westerly with an incline of 30 degrees. The ledge was purchased by Woodbury, Park and others, in 1851, who owned a quartz mill where the Sebastopol mill now stands. Ophir Hill yielded liberally, but, owing to mismanagement, its owners failed in 1852. A short time after, this mine was sold at auction to John R. Rush, who bought one-half the concern, the remaining half being purchased by the Empire Mining Company. They built their first mill on Wolf Creek, in the winter of 1851 and '52, a short time before purchasing the Ophir Hill mine. Rush sold his interest in the mine for $12,000, to his late partners, on May 4th, 1854. The Empire Company worked the mine with gratifying success from 1852 to 1864, during which time it yielded over $1,000,000; and

APPENDIX C

GOLD IN QUARTZ

The Legendary Idaho Maryland Mine

JACK CLARK

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Shaft. A passageway leading from the surface into underground workings, through which mining operations are conducted. A shaft may be "vertical" or "inclined."

Sheave Wheel. A large diameter wheel with grooved rim which guides the hoisting rope into the shaft, and is located on top of the headframe.

Shift. The length of time a miner works in one day; the regular work period for all miners, such as the day shift or night shift.

Shift Boss. A man who is in direct supervision of men working in a specific section of a mine.

Shrinkage Stope. A method of stoping which utilizes part of the broken ore to remain in the stope for the miners to work off of to drill subsequent rounds.

Sink. To excavate downward, such as in a shaft or winze, by drilling and blasting.

Skip. A self-dumping conveyance for hoisting ore or waste rock, which slides between guides in a vertical shaft, or on wheels and runs on tracks in an incline shaft or winze. The bail is attached to the lower portion of the skip in order that it may dump automatically.

Skip Tender. One who controls operation in a shaft or winze by loading and unloading men and supplies and loading rock for hoisting.

Slide. Two 1" by 12" boards positioned side by side along the footwall timber of a raise, in which a slide bucket operates to hoist drills, steel and timber for raising and stoping operations.

Slime. Ore reduced to a very fine powder and held in suspension in water so as to form a kind of thin mud.

Slusher. A mechanical drag shovel used to move ore or waste underground.

Spit. The end of safety fuse is slit open to expose the powder train prior to ignition. The powder gives a spitting sound when lit; thus the term "spit" evolved.

Spitter. A hot-wire igniter for lighting blasting fuse.

Square Set. A specific set of timbers used for support in underground mining.

Station. An excavation adjacent to a shaft or winze on each of the levels to provide sufficient room to load and unload men and materials.

Stamp Mill. A mill in which the ore is pulverized to 30-40 mesh by means of heavy stamps.

Steel. Steel drill rod for drilling holes for explosive charges.

Stench. A warning system by which methyl mercaptin can be injected into the underground compressed-air system to immediately alert underground personnel, in the event of a fire or other dire emergency.

Stope. An underground excavation along a vein from which ore is being, or has been, extracted, as distinguished from other excavations such as drifts, raises or winzes.

Stringer. A narrow vein of irregular filament of mineral traversing a rock mass of different materials.

CHAPTER 1: EUREKA MINE

he Eureka, Idaho and Maryland mines were originally separate mines with one vein in common. This vein was marked by a conspicuous outcrop of white quartz on the Eureka claim. It was less pronounced on the surface as it entered the Idaho ground, and could be traced on the surface for only a short distance east of the Idaho shaft. A rich ore shoot within the Eureka mine was later found to extend into each of the other two mines, and thus became known as the "Eureka-Idaho-Maryland ore shoot."

Had it not been for the Eureka mine and the discovery of this remarkable ore shoot, the Idaho and Maryland mines likely would not have been developed. Although the Eureka mine did not become a part of the Idaho Maryland until 1919, it seems logical to begin this history with the Eureka mine.

This mine was situated on the north side of Wolf Creek on what was known as Eureka Hill, about one and one-quarter miles east of Grass Valley. It was located on February 7, 1851, and was one of the earliest quartz locations in this district. The ledge was recorded in rectangular claims, which measured 30 by 40 feet, and extended for 1800 feet. The mine was first worked at intervals by Bertrand L. Lamarque, George D. Roberts and William Chollar. The quartz close to the surface was low grade and could not be mined at a profit, so in 1857 Roberts and Chollar sold their interest to Lamarque; he in turn sold his holdings to Jules Fricot, Sidouin Ripert and Alphonse Pralus that same year.

In 1858 five thousand tons of quartz were taken from above the drain tunnel level, which was 30 feet below the surface. The yield was less than ten dollars per ton and did not pay expenses. Commencing in 1863 a perpendicular shaft was sunk to a depth of 100 feet, where a short crosscut exposed the vein. Drifts and stopes were started on this level as soon as possible. The shaft continued downward another hundred feet during 1864. In both levels the vein was found to be large and exceedingly rich, increasing in width and quality of ore as the vein was worked downward. At 50 feet from the surface the quartz ran $15 per ton, and increased to $28 at 100 feet, and averaged $37 between the 100- and 200-foot levels. The Eureka vein ran nearly east and west, and dipped to the south at an angle of 78°, averaging three feet in width.

Seventy men were employed on the surface and underground. Mark Bennallack was the underground superintendent. Sufficient gold was removed from these two levels to pay for the installation of a 20-stamp mill, hoisting works, and pumping unit, all at the expense of $60,000, as well as paying good dividends to the three partners. Fricot and company lacked the capital to develop the mine properly. On October 1, 1865, the property was sold to a group of investors for $400,000, at which time the Eureka Gold Mining Co. was incorporated. The new owners were J. B. Dickerson, Thomas Hope and Benjamin Silliman of New York; Edwin Hull, W. H. Cronise, John C. Winans, Milton Buckly, James Freeborn, A. J. Hope, Robert F. Morrow, N. J. Hall, George W. Beaver, L. S. Adams and Francis Berton of San Francisco; William Watt, Robert Watt, Jules Fricot, Alphonse Pralus and Sidouin Ripert of Grass Valley.

The Eureka Gold Mining Co. took over control of the mine on October 1, 1865, and under the management of superintendent William Watt, the mine began producing ore right away. The vein on the 100- and 200-foot levels was three to four feet in width, and drifting and stoping were accelerated in very good ore. An incline winze was started, and soon the 300-foot level was opened for exploration. The work force was steadily increased to 120 men, including both surface and underground operations. During the first year of operation the new company milled 11,460 tons of ore with a yield of $50 per ton. This gave a total value of $531,431, of which $380,000 was paid in the form of dividends to the 20 partners.

In the fall of 1866 a four-compartment shaft was started 170 feet west of the original shaft. This incline measured 5 by 20 feet, and was

designed to develop the vein in depth. There were two compartments for hoisting ore and men, one for shaft sinking, and one for the Cornish pump rods. Each compartment had a hoist powered by steam. The hoists had flat steel ropes with winding wheels. The safety cages operated on wooden guides, and were designed to hold one tram wagon at a time. The shaft was raised from the 300-foot level while being sunk from the surface at the same time.

Twice within the first two years of operation the mill could not keep up with production, and ore was hauled to the Sebastopol mill in Boston Ravine to be milled. This caused additional expense, as in those days horses and wagons were the only available means of hauling rock. Thanks to the richness of the Eureka ore shoot, the mine quickly took its place as the leading gold quartz mine in California. Some even reported the Eureka to be the leading gold-producing mine in the world.

Eureka Stamp Mill

The mill was built in 1864 and contained twenty stamps, each weighing 850 pounds and dropping 60 times a minute from ten inches. Ten stamps were added in 1867, each weighing 700 pounds and dropping 68 times a minute from ten inches. The ore that was fed to the batteries was crushed to two inches in a Varney rock breaker. Water was fed into each mortar box, forcing the pulverized quartz through a 40-mesh brass wire screen, then over copper aprons covered with wool or cotton blankets. The blankets were constantly washed out into tanks to collect the free gold and sulphurets caught by the blankets. The blankets were found to catch 90 percent of all gold saved by the mill.

The blanket sands were treated in three Atwood amalgamators, which consisted of level troughs with quicksilver at the bottom; and over the troughs were horizontal revolving cylinders with projecting spikes which stirred up the quicksilver and pulp as the latter passed over the trough. The skimmings from these were ground in two Knox pans. The sands from the amalgamators were passed over Hunter Eureka rubbers, a table provided with oscillating rubbers suspended over an amalgamated copper surface with mercurial riffles, and designed to catch particles of amalgam that might otherwise escape. The labor required to run the mill for each 24 hours was: four rock breakers, four feeders of stamps, four blanket washers, two engineers and one amalgamator.

The sulphurets were processed by a chlorination process under the supervision of G. Fred Deetkin. In general this chlorination process

separated the gold from the concentrates by first roasting the sulphurets. They were placed in an oven and brought to a red heat and retained in that condition for six hours, or until the smell of sulphur disappeared. The sulphurets were sprinkled with water after they had cooled, and then placed into wooden boxes, so constructed that chlorine gas could be introduced at the bottom and made to rise all through the mass. The boxes were kept closely covered, and chloride of gold, which is soluble in water, was formed. Water was introduced after four or five hours and chloride of gold was dissolved by the water. The solution was then drawn off into glass vessels in which iron sheets were placed. The chlorine united with the iron, and the gold fell out as a purplish brown powder to the bottom of the vessel.

Underground Operations—1868-1869

In 1868 underground operations continued in excellent ore, and new ground was opened by drifts driven east and west on both the 300- and 400-foot levels. The vein maintained its width, ranging from three to four feet, with good mineralization. Sulphurets were about 1½ percent of the quartz, containing mainly iron pyrites, and some chalcopyrite, lead and zinc. The footwall consisted of a soft serpentine, and the hanging wall a diabase dike. From October 1, 1865, until September 31, 1868, there were 33,319 tons of ore milled, with a return of $1,558,701. During that period $670,000 had been paid out in the form of dividends.

Underground foreman Mark Bennallack fell down the Eureka shaft a distance of 200 feet and was killed instantly. The accident occurred on March 20, 1868. His brother Frank Bennallack was killed by a cave-in at the Eureka mine about a year earlier.

The Eureka vein dipped 78°, therefore the stopes and raises were very steep. Often the rock would wedge together so as to form a bridge. A large void would then occur when the ore was pulled from the chutes below. A miner who attempted to dislodge the rock from underneath exposed himself to severe injury. The company then secured a small artillery piece, which weighed about 250 pounds. The small cannon was taken underground and would be aimed at the bridged area through a chute opening. The black powder was ignited remotely and an iron projectile was fired into the obstruction, causing the broken rock to fall. The projectile was retrieved and reused. This operation proved very satisfactory.

he was finished in one location, he would be sent to another to drill. A few trusted men on each shift were assigned to load and blast the drill holes, then remove the broken rock on the subsequent shift. This change was made to limit access to specimen rock in order to reduce the temptation to high-grade any gold.

On May 10, 1869, the Miners' League called a strike at the Empire mine. The purpose of the strike was to prevent the continued use of giant powder in all mines of the district. The union claimed giant powder caused headaches and was injurious to the miner's health. In addition, the Miners' League asked that the pay for surface workers, muckers and trammers be increased from $2.50 to $3.00 per day.

The strike was ill advised, for giant powder had been used to a great advantage for over eight months before the Miners' League decided to strike. Although health reasons were cited, it was generally accepted that the introduction of single-hand drilling and the exclusion of miners from specimen rock were the underlying reasons for the action.

The Empire mine was forced to suspend operations when the League members refused to report for work and threatened new miners hired to take their places. After four weeks, Captain S. W. Lee, superintendent of the Empire mine and mill, announced that the mine would reopen using black powder for blasting in place of giant powder. A large group of miners, consisting of new men along with regular miners, reported to work. The union felt that it had conquered the giant powder issue, but the strike and threats continued. The League contended that only the original work force should be rehired. The strike was very unpopular with the business people due to their revenue losses.

The strike did not spread to the Eureka and Idaho mines, even though giant powder was in use. Within two months the strike ended, after the miners began returning to work on their own. It was only a short while until single-hand drilling and giant powder were used in all mines.

Underground—1870

The Eureka mine reached its maximum production in 1870 with the ore coming from the 300-, 400- and 500-foot levels, which were the heart of the Eureka ore shoot. The mill was running all 30 stamps on a 24 hour basis. There were 20,562 tons of ore milled, valued at $661,893, a yield of $31.75 per ton. A total of $400,000 was paid in dividends during 1870, the largest amount in any 12 month period.

upon, but again was low grade. The 500-foot level had been in good ore until the split in the vein occurred.

In July 1873 a prospecting shaft measuring four by eight feet was started on the surface, about 200 feet back from the Eureka west boundary line. A well defined quartz vein that measured two feet in width, including the goudge, was followed. The dip and general characteristics of the quartz appeared to be the same as that of the north split found on the 500-foot level. The prospect shaft was sunk to a depth of 105 feet before it was stopped. Nothing of value was discovered. A shaft was also sunk 53 feet in depth on the Roanaise claim in search of a new ore body, but again it was disappointing.

During the years 1872–1874, the main thrust of development was to find a new ore shoot to extend the life of the mine. The shaft-sinking operation was stopped at 1,250 feet, because the grade of quartz was too low to warrant any further development.

During these three years the ore production dropped significantly. The additional distance and time to hoist rock from the lower levels reduced the amount of ore produced daily. The reduction of ore resulted in cutting back the milling operations. The mill had been operating 30 stamps and running 24 hours a day up until the first part of 1871. From that point on the stamps in use were reduced to 10 to 15 on a daily basis.

The rake of the Eureka ore shoot was nearly horizontal, beginning at a depth of 100 feet and ending at a depth of 600 to 700 feet. The ore shoot was worked for a length of approximately 1,600 feet.

Additional properties were acquired in hopes of discovering another ore body. The adjacent Whiting ground was acquired and the Mobile and Roanaise claims were purchased. The price, plus perfecting titles, amounted to $302,706.

At a distance of 1,000 feet west of the Eureka shaft the vein was lost, and considerable exploratory work, including crosscutting in the Roanaise and Morehouse claims, failed to find the westward continuation of the ore shoot. This fact, in conjunction with the poor showing of the mine below the 600-foot level, caused a suspension of work on June 23, 1877.

The Eureka mine was the leading gold-producing quartz mine in the United States for a period of six consecutive years, 1866 through 1871. The total production of the Eureka mine is estimated to have been $5,700,000, with dividends in the amount of $2,094,000.

CHAPTER 2: IDAHO MINE – PART I

he Idaho mine was situated about a mile and a half east of downtown Grass Valley. The ledge was first discovered in the bed of Wolf Creek during an early period of placer mining. The claim was not recorded until May 9, 1863, after the rich strike was made in the adjoining Eureka mine. The claim filing included the names of Thomas J. Pegg, Alfred B. Dibble, William S. Byrne, Henry D. Cady, James B. Mason, George D. McLean, Alexander B. Brady, S. D. Leavitte, Joseph O'Keefe, P. Lyda, C. Pralus, Myer Cohen, Alphonse Pralus, C. Chabreaux, George W. Dixon, Edwin W. Maslin, F. Braumburt, James K. Byrne, William Young, William Loutzenheiser, Thomas Findley, Peter Johnston, C. C. Clark, E. Fellers, John Weber, Jacob Moris, Miles P. O'Connor, Jules Fricot, Sidouin Ripert, Charles Verdelais and Frank G. Beatty.

Little attention was given to working this claim at first, other than the yearly assessment work necessary to hold the claim. The quartz taken from the vein during this work proved to be quite low grade. The vein was narrow, therefore no effort was made to proceed any further. Early in 1865 work commenced in a systematic manner with the intent of following the outcropping as far as possible. This proved very disappointing, as the vein could not be traced for more than 175 feet.

In the spring of 1865 a prospecting hole was sunk close to the north bank of Wolf Creek, where the quartz improved enough in character that the company felt justified in commencing work on a large scale. Then a 12" pumping unit and an 8" hoisting engine were set in place. On July 5,

1865, a perpendicular shaft, 4½ by 9 feet in size was started on the south side of Wolf Creek, about 290 feet from the western boundary line.

This shaft was located so as to intersect the ledge 150 feet from the surface. It was sunk to a depth of 120 feet, where a crosscut was driven into the footwall. A small vein was struck 8 feet from the shaft, but as it was only a few inches in size and showed no gold or mineral, the vein was passed by and the crosscut continued another 50 feet. The small vein later proved to be the main Eureka-Idaho vein.

Up until this time the copartnership company had expended $19,496.50. Some of the members were unable to pay their share of expenses, so it was decided to close the work until sufficient capital could be obtained. In March 1866 all work was stopped, and the mine remained closed for about 18 months.

New Company Formed—1867

In September 1867 John and Edward Coleman, having just sold the North Star mine, bought out the original group of owners. They organized the Idaho Quartz Mining Co. with a capital stock of $310,000, divided into 3,100 shares, each representing one foot on the ledge. The elected officers were John C. Coleman, president; William Young, vice president; Miles P. O'Connor, secretary; Thomas Findley, treasurer; and Edward Coleman, superintendent. Each officer, with the exception of the Coleman brothers, was from the original group.

Work commenced again in sinking the shaft. At about 140 feet from the surface the fissure was struck, but there was no quartz present. There were only a few inches of clay matter where the ledge should have been. The shaft was continued to 300 feet from the surface without meeting any encouragement. At this point a drift was driven west, and at 108 feet from the shaft the ledge widened, showing considerable gold. The first 20 tons of ore yielded $29 per ton.

After a few months of successful exploration a decision was made to erect a stamp mill, which was completed in October 1868. There were 763 tons of ore milled that same year, yielding $13,978 from the newly completed mill, plus $31,557 from outside mills. The expenditures for the first 15 months (which included all equipment, buildings and mining operations) amounted to $69,098. The full amount of money paid by the stockholders for the development of the mine since incorporation amounted to $38,550. This was the last time assessments to stockholders were necessary.

After striking the ore shoot on the 300-foot level the shaft was continued downward and levels were established at 100-foot intervals. The quartz widened to two feet or more, with considerable mineral and free gold showing. There was no question that the vein and ore shoot in the Eureka and Idaho mines were one and the same. The footwall formation was serpentine, and the hanging wall consisted of a diabase dike. The vein strikes north 77° west and has an average dip of 70° southwest in the upper levels.

The horizontal length of the ore shoot ranged close to 300 feet before the vein pinched out. This made it necessary to continue sinking the shaft and to develop additional levels to keep ahead of stoping operations. At the same time, greater hoisting capability was badly needed. This was achieved by removing the Cornish pump column from the shaft and replacing it with three Stoddard steam pumps. A new hoist with a 10" cylinder and a 16" stroke was set in place, and the pump compartment was then used for hoisting ore.

By the beginning of 1870 the Idaho vertical shaft had progressed to below the 600-foot level, by which time it was necessary to retimber much of the upper 300 feet. It was quickly learned that the dryness of the air in the mine accelerated timber decay. In addition, the serpentine in the footwall caused timber damage through the pressure exerted against the timbers by swelling ground. The number of men working on the surface and underground totaled 101, each receiving $3 per day for a 10-hour shift, with the exception of 12 men who received $2.50 per day.

New Shaft Commenced—1871

By 1871 greater hoisting capacity was badly needed to keep up with the underground production, so a new shaft was commenced 150 feet east of the vertical shaft. It measured 6½ by 20 feet inside of the timbers, and was divided into four compartments, two for hoisting ore and men, one for pumping, and one for sinking. In order to save time and to take advantage of gravity, the shaft was worked mostly from underground by both sinking and raising.

By the end of 1872 the new shaft had advanced to the 400-foot level, with only a small working raise between the 500- and 400-foot levels. A series of working raises was run, one in line with the other, from one level to the next, all the way to the surface. These raises were then enlarged to the dimensions of the shaft and timbered accordingly. Much of the shaft was timbered through stoped-out ground. The rock from the new shaft

meet the mine's future needs. The reservoir, water rights and labor costs amounted to $12,114.

The Idaho Quartz Mining Company purchased the rights to the Schofield Mining Company's claim for $25,000. This claim was adjacent to the Idaho claim, and was bought to preclude conflict and need for legal action in the future.

Underground Operations—1873

The new shaft was opened in 1873 for hoisting both ore and waste rock, and for lowering men and supplies. The shaft continued downward, and by the end of 1873 it was advanced 35 feet below the 700-foot level. Advancement in the lower section was slower, because during the sinking operation the rock had to be shoveled into tubs. Above the 600-foot level, raises were used for shaft excavation, and the rock was caught in chutes. The old vertical shaft was sunk to the 800-foot level, where it was stopped and abandoned for hoisting purposes.

The underground operations were progressing well. The Idaho ore shoot was raking eastward in a fairly flat plane on both the 600- and 700-foot levels, therefore a greater amount of ore was able to be mined on these two levels. The Idaho mine had an excellent year, and established itself solidly as the leading quartz mine in California, and one of the most productive gold mines in the state. During 1873 there were 27,624 tons of ore milled with a gold value of $1,024,591. The dividends for the year amounted to 220 percent on the capital stock, which amounted to $682,000.

Nevada County Narrow Gauge Railroad

Businessmen of Nevada City and Grass Valley recognized the advantages of a railroad connection with Sacramento and San Francisco. A bill was submitted to the state legislature and was approved on March 25, 1874, for a railroad between Nevada City and Colfax. This would connect with the Central Pacific Railroad.

A company was formed with officers as follows: John C. Coleman, president; Thaddeus W. Sigourney, vice president; George Fletcher, secretary; J. H. Bates, chief engineer; Edward Coleman, James M. Lakenan, Niles Searls and Richard W. Tully, directors.

A contract to construct the railroad was awarded on December 4, 1874, to Moses Findley Beatty, who sublet it to Turton and Knox. The work commenced in February 1875, and was completed from Colfax to

Grass Valley in April 1876, and trains began running between the two towns. The railroad was completed to Nevada City May 20, 1876. A large procession, headed by a military band, met the incoming train in Nevada City, to the delight of a jubilant crowd of people. Judge Niles Searls delivered the congratulatory address.

The Coleman brothers' interest in having a railroad was the same as other businessmen; however, they also needed to transport large quantities of wood to operate the steam boilers at the mine. The hoists, compressors, pumps, crusher and the mill all relied on steam power. Close to 35 cords of wood were burned daily to keep the mine operating.

The Empire, North Star and other mines in the district also consumed large quantities of wood in their boilers. The result was that trees were quickly becoming scarce in this area. The Coleman brothers had bought stands of timber in the Chicago Park and Peardale areas and needed the railroad to haul wood to the mine. The Colemans were large contributors to the Nevada County Narrow Gauge Railroad.

Change in Management—1875

In 1875 Edward Coleman replaced his brother as president, and John Coleman replaced Thomas Findley as company treasurer. Findley had been suspended earlier when it was discovered that a sum of $32,490.88 was missing from the company account. By order of the trustees, a compromise was reached whereby the company agreed to accept 10 percent of the indebtedness in lieu of the full amount. Eventually $9,500 was repaid. No dividends were paid during November, and only $3 per share was paid in December because of the embezzlement.

The collar of the pump shaft and surface pump equipment were in close proximity of the large wooden hoist and mill buildings. There was concern that in the event of a fire at either building, the pumping capability could be seriously affected. To guard against this potential loss, a fireproof structure made of brick was built over the shaft collar and pump machinery.

Since the mine started, all drilling operations had been done by hand. Following the introduction of giant powder in 1869, small diameter steel drilling rods came into use, and "single jacking" produced great savings in time and money. In 1875 the company purchased five Burleigh rock drills, one of which was used in shaft sinking, and four in drifts. These drills were operated by compressed air, the compressor being located on the surface and the air conveyed underground through a

milling capabilities. An energetic program was undertaken to achieve these three improvements.

A National Duplex type air compressor was installed alongside the same type already in service. These were both equipped with a Myer's cutoff, and were located within the large hoist building. Each compressor was powered by an 18" diameter engine with a 42" stroke. The additional compressed air was needed to run the air-operated hoist on the 1000-foot level and several new Ingersoll drills.

When the decision was made not to sink the shaft below the 1000-foot level, the sinking compartment became available for hoisting ore. This compartment was converted by adding a safety cage for hoisting cars, thus increasing hoisting by nearly one-third. Two new boilers were added to power the additional hoist and air compressor. This made a total of four boilers, each 50 inches in diameter and 16 feet long. These were all placed in a newly constructed building covered with corrugated iron as a fire prevention measure.

The capacity of the mill was increased to 135 tons per day by the addition of another 15 stamps, bringing the total to 50 stamps, each weighing 850 pounds. The stamps were also increased from 65 drops to 72 drops per minute. To meet the power demand, an 18" diameter steam engine with a 42" stroke was added. Two second-hand boilers were placed in a newly constructed building, along with the two original boilers. These four boilers were 50 inches in diameter and 16 feet long. This building was covered by corrugated iron, just like the boiler room for the hoisting works.

The power to operate the milling, pumping, hoisting, and compressed air needs of the mine was supplied by a total of eight large steam engines and their associated boilers. Approximately 25 cords of wood were consumed daily to keep boilers operating to meet power demands.

The blacksmith shop adjoining the hoisting works was one of the busiest operations in the mine. The six forges were in constant use to keep up with sharpening picks and drill steel. The machine shop section was well equipped with such machines as a lathe, planer and drill presses to make the mine self-supporting for equipment repair.

The Idaho mill was considered among the most up-to-date in the gold mining industry. The ore was first crushed to 2" size by two Varney rock breakers, then fed into the batteries of stamps. The 50 stamps pulverized the rock to a fineness to go through a 40-mesh screen. From

1000-foot level. A crosscut was run in the footwall on the 1000-foot level to explore a quartz stringer, but nothing of value was found.

All of the ore had been mined from the 600-foot level and above by the end of 1879. During the year 32,370 tons of quartz was milled, and of this 1,225 tons came from the 700-foot level, 8,937 tons from the 800-foot level, 6,718 tons from the 900, and 10,302 tons from the 1000-foot level. This quartz yielded 27,160 ounces of bullion with a value of $499,380. The entire product of the mine since the year 1869 was $5,699,742, and the dividends, 124 in number, had totaled $2,703,200.

The Idaho mine remained the richest and most famous mine in the state. Its surface plant and equipment ranked among the best in the mining industry. No other gold mine had paid dividends so regularly and so well.

Underground—1880

The above-normal rainfall during April 1880 caused considerable flooding for the first time in the mine's history. Surface runoff water, entering the old workings of the Eureka mine, flowed into the upper workings of the Idaho mine and continued on down and finally ended up in the bottom of the Canyon shaft. The water filled up in this shaft and flooded the 1200- and 1100-foot levels. Previously, water from the Eureka mine was always caught by the pumps on the 700- and 800-foot levels of the pump shaft. In this instance, however, the amount of water was too great for the pumps to handle. The mill and underground operations were suspended until the water was pumped out.

As the mine attained greater depth, so were costs increased proportionately. First the pumps were found to be inadequate to handle the winter rains and still keep up with the daily mine water accumulation. Larger pumps were installed on the 700-foot level to take care of the Eureka mine water as an interim measure. The pump shaft needed timber repair in several areas, so it was deemed best to install a steam capstan to assist in this work. This consisted of two 8" steam engines, with drum and all appendages necessary for its safe and efficient working.

The air circulation in the Canyon shaft at the 1100- and 1200-foot levels became inadequate. A large exhaust fan was then installed in the air shaft near the surface to increase the volume and velocity of fresh air. The exhaust fan was operated by a small Pelton wheel, fed by high-pressure water taken from the pipeline supplying water to the mill. The pump and

tion of 1884. Dividends were commensurately lower. Although the grade of ore and dividends might drop off, the mine had always bounced back and responded with dividends to the satisfaction of its stockholders.

Year 1886

In June 1886 the Idaho Quartz Mining Co. declared its 200th monthly dividend. In over 17½ years, only seven monthly dividends had been missed. A record of this kind is deserving of more than passing notice, as no other gold mine on the North American continent had ever paid this number of dividends. Since 1869 the mine had produced over eight million dollars, with dividends exceeding $3,750,000. The rich ore shoot was the main reason for such lucrative monthly dividends, but intelligent management also played an important role. The Coleman brothers were always progressive, maintaining the mine and equipment in first-class condition, while at the same time modernizing operations as required.

The ore shoot continued in its easterly rake at about 40°, and it appeared very likely that it would ultimately cross over into the Maryland ground. With each successive level driven, the ore shoot veered to the east, away from the Canyon shaft. It was decided to continue sinking the shaft in hopes of discovering another ore shoot, or a new vein system.

The year was very profitable, with little need for major repairs, or for new equipment. There were 29,244 tons of ore milled with a value of $547,570. Dividends to the stockholders amounted to $263,500.

The Idaho milling process was designed to extract as much free gold and concentrates from the ore as possible. Concentrates were subjected to four separate concentrations; even so, a small percentage of fine gold still encased in the sulphurets escaped in the tailings.

Shortly after the milling operations had begun in the early 1870s, the company agreed to allow two separate groups to rework the mill tailings on a share basis. Over the years the work performed was beneficial to both the company and the men doing the work. Neither process recovered a lot of gold, but it was additional profit that otherwise would be lost.

Year 1887

In 1887 the mine had reached a depth of 2,790 feet on the incline, or a vertical depth of 1,790 feet from the surface. It became necessary to place additional bell cranks ("bobs") underground to reduce the space

Empire mines, so the water company opted to deliver the bulk of the water to the Empire mine. Their rationale was that the Idaho mine had firewood with which to keep its reserve steam-powered machinery going, while the Empire had none. The water company was able to clear its ditches, and within a week the water flow was back to normal.

On March 8 the Idaho Quartz Mining Co. brought suit against the Maryland Gold Quartz Mining Co. to determine the boundary line between the two mines. The question of the boundary had never been in dispute before, since the line was supposed to have been settled 20 years earlier. The line had been established then in conformity to what was considered to be the lode line.

The recent underground surveys, however, demonstrated that the true course of the lode was on a line of surface croppings some 400 feet to the north. The outcropping had always been regarded as another vein upon which the Maryland company also had a location, paralleling a portion of the Idaho location. The Maryland company had previously done work upon the outcropping on the presumption that it was a parallel vein. In regard to it, there had been no previous contention between the two companies.

In the suit brought by the Idaho company, it was assumed that the vein in the cropping was not a parallel vein, but the true course of what had been known as the Eureka-Idaho lode. If this were to be established, and the boundary line fixed in accordance with the complaint of the Idaho company, then a line drawn perpendicularly from the surface down to the lower workings of the Idaho mine would, at a depth of 1,500 feet, cut into the Maryland ground about 200 feet. At that depth the vein was strong and the ore quite rich.

In May 1890 the vein formation widened out to 12 feet when the Canyon shaft reached the 1700-foot level. The quartz showed free gold and there were wide bands of sulphurets that also showed free gold. This was first thought to be the apex of another ore shoot, but the vein quickly narrowed as drifts were started on both sides of the shaft. Considerable good ore was taken where the shaft penetrated this area, along with stoping close to the shaft.

Mining continued in the Canyon shaft and in the 1400-, 1500- and 1600-foot levels, but the drifts were stopped when the Idaho end line was reached. The Eureka-Idaho vein was rich in gold values on all three levels where it entered the adjoining Maryland ground.

Considerable dead work was done during the year, which included sinking and drifting. The Canyon shaft was advanced downward to a depth of 2,080 feet vertically below the surface. This measured 3,000 on the incline along the dip of the vein. The 1800-foot level was driven 195 feet east of the shaft, but the vein was too narrow for profitable mining. The 1900-foot level was driven 460 feet to the east of the shaft, and again the vein was too narrow to mine. The amount of waste rock generated from development work in the lower mine workings cut into the time for hoisting ore. This in turn reduced production during the year.

The compromise agreement in 1890 allowed the Idaho company to begin drifting and stoping for an additional 100 feet on three levels. This was very important to the company, as it added some time to the life of the mine. There was no other ore in sight than from these three levels.

Good ore continued to be taken from the 1400-, 1500- and 1600-foot levels. The tonnage milled during the year was only 16,759 tons, but the yield figure of $314,037 reflected a good grade of ore mined. The dividend was only $10,250, the lowest since the mine began in 1869. Reflected in the dividends was the difference in the cost of development work in the lower part of the mine below the 1600-foot level. Above the 1600-foot level the development costs were offset due to the development rock being hoisted as ore, whereas below the ore shoot the rock was hoisted as waste and there was no return to offset the development costs.

Year 1892

The company accelerated the development work in 1892, because finding a new source of mill rock became critical. The lower mine workings of the Canyon shaft area below the 1600-foot level had been disappointing. The available known ore in the mine was quickly being depleted.

The east drift on the 2000-foot level was driven 195 feet from the Canyon shaft, and the west drift was driven 350 feet from the Canyon shaft. The vein was very weak and the assay values low. The vein in the lower workings contained a greater amount of sulphurets than was found within the ore shoot above.

Much of the ore mined during the year came from the area between the original Idaho boundary line and the compromise line agreed upon in 1890, involving the 1400-, 1500- and 1600-foot levels. In addition, ore came from remnants of stopes on these three levels. All ore possibilities had been exhausted by the end of the year. The ore milled during the

CHAPTER 4: MARYLAND MINE

The Maryland mining claim was located in June 1865 by Samuel Packwood Dorsey, the local Wells, Fargo Express agent. The claim measured 2,000 feet by 600 feet, and its western boundary adjoined the eastern boundary of the Idaho claim. Although there was no visible evidence of any quartz outcropping along this claim, Samuel Dorsey indicated that he could follow the course of the Eureka-Idaho vein by the plant life on the surface. He adopted the name Maryland from his family's longtime association with the state of Maryland.

No work was done until 1880, when the Maryland Quartz Mining Co. was formed, with incorporation following on May 13, 1880. The directors named were Samuel P. Dorsey, John C. Coleman, Edward Coleman, Samuel Bethel and Stephen Moore. The elected officers were Samuel Dorsey, president; John C. Coleman, treasurer; and Samuel Bethel, secretary. The amount of capital stock was ten million dollars, divided into 100,000 shares with a par value of $100 each.

The early history of the Maryland mine is limited. In 1880 and 1881 a tunnel was driven 675 feet to the vein, and then drifts were run short distances on the vein, both east and west. A hoisting works was erected about 3,000 feet east of the Idaho shaft, and a shaft sunk to a depth of 350 feet. The Maryland shaft intersected the drain tunnel at 150 feet below the surface. The shaft was located close to the western boundary of the Maryland claim, and a very short distance from the east end line of

the Idaho claim. The collar of the shaft was at an elevation 220 feet higher than the collar of the Idaho shaft. The extension of this shaft would intersect the Eureka-Idaho ore shoot at a very advantageous location. During the long years of inactivity by the Maryland Gold Quartz Mining Co., the neighboring Idaho mine was producing millions from the Eureka-Idaho ore shoot. Samuel Dorsey repeatedly refused the most tempting offers for his property. He preferred to hold and prospect the mine, believing that in time he could find a vein as good as that of the Idaho.

As the Idaho mine workings came close to the Maryland claim, the Maryland company found itself in a unique position, knowing that the rich Eureka-Idaho ore shoot was extending into its property. It also found itself in an awkward position, knowing that the capital necessary to sink a shaft another 1,400 feet (to intersect the pay shoot) was well beyond their means.

Sale of the Idaho Mine—1893

By the early spring of 1893 the Idaho mine had reached the compromise line agreed upon by the two companies in 1890. No other ore bodies had been discovered to sustain further operations. Therefore, the Coleman brothers felt it would not be easy to sell their mine to another company. The Maryland company would be the logical buyer because of the rich Idaho ore entering its property on three levels. The Coleman brothers had previously been on the Maryland board of directors, and they knew all to well that this company had little capital and was not in a position to purchase the Idaho mine. The Coleman brothers had made their fortunes, and retirement was looking very good to both of them. Edward Coleman, who had served as superintendent since 1875, resigned his position in April 1893. Eugene C. Creller was elected to fill his vacancy.

Negotiations soon followed between the two companies. An agreement was reached whereby the Idaho mine would be sold to the Maryland Gold Quartz Mining Co. for the sum of $85,000. The price was very reasonable, with easy payments.

The stipulations in the agreement were as follows: the Idaho Quartz Mining Co. agreed to sell, and the Maryland Gold Quartz Mining Co. agreed to buy, everything connected with the property known as the Idaho mine. This consisted of the hoisting works, shop buildings, mill, water rights, ditches, pipelines, reservoirs, and all land and mineral

of the headframe. The ram was 6½ inches in diameter and operated by high-pressure water. A single valve was used for both up and down movement. The structure was constructed of heavy framed timbers, anchored to a concrete foundation and extended high in the air. A car of waste rock was positioned on a platform at the waste tramway trestle and elevated 30 feet to a higher trestle. This provided a considerable amount of additional area in which to dump waste rock.

A Westinghouse dynamo with a 60-light capacity was installed on the surface. It provided lighting for all buildings and specific yard areas. The underground activity was well organized by the end of the year. The mine was producing good ore. The production amounted to $258,220, from which monthly payments were made toward the mine purchase.

Near Catastrophe—1894

In January 1894, when full management was about to be turned over to the Maryland company, the hoisting works and other equipment were severely damaged by fire, causing a work stoppage and allowing the lower mine workings to fill with water. This large conflagration ignited at approximately 9:30 p.m. on the evening of January 9, 1894—a fire that could have been the worst in the history of this district.

The fire started from a defective flue in the dry building. The flames spread so rapidly that nothing could be done to stop their progress. The shaft collar, headframe, air compressors, hoists and pumping equipment were all housed within a very large wooden structure. The blacksmith shop was also attached. Within a short time the entire complex was engulfed in flames.

Immediately upon noticing the flames, the hoistman blew the mine whistle to summon the Grass Valley volunteer fire department. Townspeople knew all too well the meaning when hearing a mine whistle at unusual hours, and they were quick to investigate. They saw a bright red glow, visible throughout Grass Valley. Hundreds of people quickly lined the Nevada County Narrow Gauge railroad tracks across from the mine, awaiting word of the fate of the men working underground.

The night shift, comprising 61 miners, was underground when the fire occurred. The shaft collar, from which the miners had descended about six hours earlier, was completely surrounded by intense heat, flame and poisonous gasses. Also, the normal flow of fresh air for the underground workings was through the shaft. The air continued downward, making its way throughout the workings, before exhausting through the

Miners Underground When the Fire Started in 1894

Bastian, Jack	Hogan, James	Paul, Charles
Bastian, James	Hooper, Harry	Paul, William
Bone, William	Hurley, Jerry	Peterson, P. F.
Bracy, Edward	Jaecks, Robert	Polkinghorn, Jack
Buckley, Mike	James, James	Polkinghorn, Richard
Burns, Buts	Jenkins, Alfred	Richards, John
Burns, William	Jennings, Thomas	Rodgers, Thomas
Carter, George	Jones, Frank	Ryan, Richard
Carter, Richard	Jones, Robert Jr.	Shoemaker, Harry
Cole, William	Juliff, James	Stevens, William
Conley, Richard	Ledwich, James	Stevens, William H.
Coombs, Jacob	Madden, William	Temby, William Jr.
Cornish, William	May, T.	Thomas, Charles
Davidson, James	McCurry, William	Thompson, George
Dixon, Joseph	McGrath, Joseph	Trezise, James
Farnham, Forrest	McGregor, Charles	Tribilcox, John
Gill, Frank	Mitchell, Thomas	Uren, Stephen
Hall, Thomas	Moyle, William	Wasley, Samuel
Hayes, James	Painter, Thomas	Williams, John K.
Hicks, Richard	Partridge, Samuel	Williams, Thomas
	Pascoe, Edwin	

down the faces of those present, as one by one the miners reached the surface.

Shift boss Forrest Farnham had waited until all men had gone ahead before he ascended the ladder. Each man was fatigued as a result of the long arduous climb. No one was injured, although several confessed that they had been frightened upon first hearing the news of the fire.

The large mill building was saved through the heroic efforts of the firemen and many townspeople who worked to suppress the fire. It was necessary to shut down the Pelton wheel that operated the dynamo, in order to conserve water for fire fighting. By 1:30 a.m. all that was left of much of the surface works was a smoldering mass of ruins.

Damage Assessment—1894

The next morning the damage was assessed and the loss was estimated to be $100,000. The insurance coverage for the entire surface works amounted to only $32,000. The headframe and all hoisting equipment were completely destroyed. The large Cornish pump received major

damage, but was repairable. The shaft timbers had burned down the shaft for a distance of 20 feet. It was fortunate that the fire had burned so hot, and atmospheric conditions were just right for the smoke to rise and not be drawn down the shaft. The dry building and blacksmith shop were completely destroyed.

Management's main concern was how much of the mine would fill with water before pumping could resume. The cost to pump from the lower levels would be high if these workings were to become flooded. The smaller Cornish pumps in the vertical pump shaft were unharmed and continued raising water from the 1000-foot level and above at a steady four strokes per minute.

Superintendent Creller announced that the removal of the debris would begin immediately, in preparation for the erection of new buildings and installing new equipment. Priority was given to repairing the Cornish pump, in order to begin removing water from the lower levels. The timbers were replaced at the shaft collar and for several sets down the shaft.

Beginning of the Dorsey Era—1894

The Maryland company took full possession of the Idaho Maryland mine on February 1, 1894. The following management changes were made: Samuel Dorsey, president and superintendent; Victor Dorsey, assistant superintendent; Forrest Farnham, foreman; and John Carter, head timberman. Eugene Creller, who had been superintendent during the transition period, tendered his resignation.

To guard against a catastrophic fire in the future, Samuel Dorsey had a series of water standpipes installed. These were equipped with hoses, and appropriately positioned near each building. A hydraulic monitor was also installed on the hill above the mill and was connected to a high-pressure line. This "little giant" was capable of deluging all buildings with a tremendous stream of water.

Just as soon as the new hoisting equipment and Cornish pump became operational, the flooded levels and stopes, down to and including the 1600-foot level were pumped free of water. The water in the Canyon shaft was pumped down a short distance below the 1600-foot level, and the water was held at that point.

Mining resumed as quickly as possible on the three levels where it had been interrupted. Some good ore was found that lasted throughout the year. The Maryland company wasn't as fortunate as its two predeces-

sors, for the Eureka-Idaho-Maryland ore shoot extended only about 200 feet into the Maryland beyond the compromise line. The vein narrowed after leaving the ore shoot and became unprofitable to mine.

The gold production for the partial year of 1894 was $193,182. The employment was considerably less than the previous years, with only 90 men underground and 23 on the surface.

Dorsey Vein

Just when the main vein was about to give out, the Dorsey vein was discovered in the footwall. The quartz appeared very strong, with good ribboned sulfides and a fairly good grade of ore.

At a point approximately 2,000 feet east of the Canyon shaft on the 1600-foot level, a winze was started on the new vein. The Dorsey winze proved to be another link to the already complicated underground movement of ore. This involved maintaining three hoisting works, two of which were underground. It also meant tramming the ore long distances.

Victor Dorsey Fatality—1895

A distressing accident occurred on November 5, 1895, through which death invaded the family of Samuel Dorsey, principal owner of the mine. His son Victor had gone with foreman Forrest Farnham and specimen boss William McCurry to the bottom of the Dorsey winze, below the 1600-foot level. They had just finished their inspection of the vein, and all but Victor had moved away from the face of the incline; as he started to walk away, some rock fell from the hanging wall, striking him on the back.

Farnham, McCurry and two miners quickly removed the rock and brought the injured man to the surface. Dorsey was treated by his brother-in-law, Dr. W. I. Howard, before being placed on a mattress in a horse-drawn express wagon and transported to his home. He died shortly after, from crushing injuries to his chest and rib cage. He was also treated by Dr. George O. Willis, but the two physicians were unable to save his life.

During the year 1895 raises and stoping continued on the Dorsey vein and also on remnants of the main vein on the 1500- and 1600-foot levels. Sinking continued in the Dorsey winze to explore the vein it its downward dip. The total production for the year amounted to $247,600.

Year 1896

Going into the year 1896 the company was faced with considerable

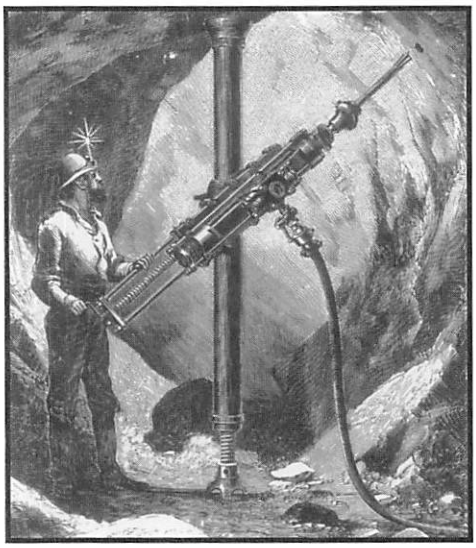
workings of the mine. The request was made by Louis Dorsey, son of Samuel.

Those involved in the inspection were Charles Stocks, formerly foreman of the North Star mine; William F. Englebright, mining engineer and superintendent of the South Yuba Water Co.; Charles A. Brockington, superintendent of WYOD (Work Your Own Diggings) mine; George W. Starr, general manager, Empire mine; Robert Walker, superintendent, Gold Hill Mining Co.; and Samuel Alderman, mining and civil engineer.

A report signed by the men named above was given to Louis Dorsey on February 14, 1901. The following is quoted from their sworn statement:

> "We, the undersigned, have made a personal inspection of the Idaho Maryland Mine, Grass Valley Mining District, and in our judgement the ledge we saw in the east incline or Dorsey shaft, and the levels from the shaft, is a continuation of the Eureka-Idaho-Maryland pay shoot of quartz, on its eastward and downward strike, in the regular fissure, and of good size, viz, two to four feet, and appears to be of good quality."

In February 1901 the Idaho Maryland mine closed and was allowed to fill with water. There were several immediate causes for the closing: lack of capital to develop the mine, cost of triple handling of ore, high milling costs owing to sporadic flow of ore to the mill, and poor condition of underground workings. This ended 44 years of continuous mining of gold at this location.



A Phoenix Rock Drill in 1894 cost as little as $100 for a 2" model to as much as $235 for a 3⅝" drill. It was guaranteed "to drill more feet of holes for the same money expended in labor and repairs than any other machine."

the Empire and North Star mines, and could not believe the Idaho Maryland would be without ore bodies below the 2000-foot level to which it had been worked. They pointed out that the Empire and North Star had found profitable ore in much greater depths.

MacBoyle received his first option, from the South Idaho Consolidated Mining Co., on June 1, 1915. The second option was granted on July 3, 1915, from the Gold Point Gold Mining Co. The third option was granted by Frederick Snook, consisting of the Black Hawk mine and several adjacent mining claims.

To further his plan, MacBoyle formed a syndicate to acquire and develop the Union Hill mine, the members of which were himself, McNear, Oliver, Snook, and Roy H. Elliott. The Union Hill mine was in operation at that time, with Frederick McNear as president. Later, Gold Point Consolidated Mines Inc. was formed to take over the interests of the syndicate and purchase additional properties.

The main thrust of the organization was to reopen the Idaho Maryland mine, but financing a venture of that magnitude was well beyond the ability of the new corporation. It was wartime and raising capital was very hard to achieve.

During the year 1917 the Metals Exploration Co., with offices at 120 Broadway, New York, acquired a controlling interest in Gold Point Consolidated Mines Incorporated. Harry Payne Whitney was president of Metals Exploration, and Bulkely Wells was vice president. Wells was elected president of Gold Point, replacing Frederick McNear. The new directorate included Bulkely Wells, Rufus Thayer, and John Crossen, in addition to MacBoyle, McNear, Oliver and Elliott.

After many months of negotiations, one by one, properties were leased with options to buy. These included the Eureka, Roanaise, South Idaho, Black Hawk, Union Hill, Gold Point, and Idaho Maryland mines, and several other mining claims. The land involved extended over two miles in length on the Eureka-Idaho-Maryland lode, and embraced an extensive vein system, the greater part of which was in virgin ground. The last property to be added was the Idaho Maryland, which was purchased on December 20, 1919, from the estate of Samuel P. Dorsey and the Dorsey family for $187,692.50. By this time, in excess of one million dollars had been expended in acquisition of the entire holdings.

After careful study, a plan evolved for the development of the combined properties, at an estimated cost of another one million dollars. In

order to secure this amount of capital, an agreement was entered into in 1919 with the Metals Exploration Co. by which it acquired controlling interest in the combined properties and advanced the funds necessary to equip, reopen, develop, and bring the project to a self-supporting basis. In return, they received bonds and notes equal in amount to the money advanced by them. In addition, one share of stock was given as a bonus for each dollar invested.

The name of the new venture was Idaho Maryland Mines Co. The officers and directors were Bulkely Wells, president; Roy H. Elliott, vice president; and Errol MacBoyle, consulting engineer. Frederick McNear, Rufus Thayer and Robert Anderson were also directors. John A. Fulton was appointed general manager.

The Union Hill mine, showing mill and waste dumps.

development program had been put in place that included drifting on the Lucky Cambridge vein on the 600-foot level, drifting on the Gold Point vein on the 800-foot level, and crosscutting on the 300-foot level to intersect the Georgia vein.

Shaft pockets were installed for the 1200-foot level and a crosscut was extended. Short drifts were started on four veins cut by the crosscut. New rock drills were purchased in preparation for working the new faces.

The underground work came to a halt on June 13, 1919, when the miners of the district called a general strike of all mines. Two weeks had passed before the strike was settled, and by that time water in the Union Hill mine had risen to the 600-foot level.

The new development work had not proven encouraging, therefore a decision was made to allow the mine to continue to fill with water. Operations were permanently suspended, and all employees terminated. The Metals Exploration Co. had expended $45,797 on development work within a five-month period with no return.

The strike was settled by the mining companies agreeing to grant a 10 percent wage increase to every employee who had worked three months, to pay one-half the time the men were out on strike, and to establish a butcher shop to sell meat to miners at a reduced price. This settlement became effective on June 30, and the agreement was for 12 months. The new daily wage scale was: miners $4.40, muckers $3.85, laborers $3.85, and shaft men $4.85.

Rebuilding the Surface Plant—1919

The first priority following the decision to reopen the Idaho shaft was to rebuild the surface plant. Fortunately, the Union Hill plant had become available, and that mine's entire surface works was dismantled and moved to the Idaho Maryland mine site. A changeover from water power to electricity was made at that time. A bank of three Westinghouse transformers, 4,000 volts, 200 kva capacity each, were installed on the surface. This was ample electricity to supply both the surface and underground power needs.

The 74-foot wooden headframe was erected at the shaft collar, and a new 75-ton capacity ore and waste bin constructed in the upper portion to accommodate self-dumping skips.

The Union Hill hoist was transformed from waterpower to an electric drive with herringbone gears, and a 150 hp variable-speed motor was added. The drums were modified to provide greater braking capacity.

was abandoned in 1924. A raise was to be put up from the 2000-foot level to mine the vein, but this work did not happen.

All work on company account was stopped in other areas of the mine to concentrate on exploring the Dorsey footwall veins. Priority was given to developing the newly discovered No. 1900 vein. During 1928 it was developed for 700 feet on the 1900-foot level. Two raises were put up on the vein for a distance of 180 feet each. At a point 75 feet above the 1900-foot level an intermediate drift was driven 300 feet.

In both drifts and raises this vein ranged in width from 5 to 10 feet, with 3 to 8 feet of ribbon quartz containing iron pyrite, chalcopyrite, galena and visible gold nearly every round. Heavy specimen gold was found at frequent intervals in the course of the development work.

At a point 30 feet above the 1900-foot level in No. 1 raise, the No. 1900 vein was cut off by a large fault dipping 70° to 80° south. This was the same fault encountered in the Yonker group's intermediate level, above and 100 feet to the west. The raise was continued up through the fault, and at 60 feet above the level the quartz came back in. The vein widened with each subsequent round, showing heavier gold and galena.

Progress in opening the Dorsey footwall veins had been slower than anticipated, due to the faulted and broken zones resulting from crossings and intersections. Much of the work was done at a point where the No. 1950 (or hanging-wall) vein, the so-called No. 89 vein, and the fault and Dorsey footwall veins approached one another on their upward courses. It became necessary to heavily timber all the drifts and raises, and consequently progress had been slowed.

Tributers Operations—1928

During the year the number of tributers or leasers was reduced to twelve men. The work was confined to the development and stoping of the Morehouse vein.

The Stambaugh miners concentrated on stoping the Morehouse vein on the 2300-foot level in No. 45 winze. The stoping widths ranged between 6 and 10 feet. Heavy gold was found in the quartz stringers much of the time, and specimen gold occasionally. The mill runs showed a recovered value of $12 to $14 per ton, even with a large amount of waste rock included. The two stopes produced well and kept five stamps in continuous operation.

The William Harvey group continued stoping on the Morehouse vein on the 2350-foot level. The vein was well mineralized and ranged

throughout, with iron pyrites, galena and chalcopyrite showing fine gold nearly every round. Specimen gold was present periodically on all four levels and in the raises.

All of the development rock from the drifts and raises on the No. 1900 vein had to be sent to the mill as ore. There was no place underground to sort out the waste, and the rock was too good to send to the waste dump. There was at least 50 percent waste dilution. Two stopes were opened on the 1900-foot level to send better grade of ore to the mill.

Development on the 1500-foot level west of the main shaft discovered the Morehouse vein. This lined up well with the Morehouse workings on the 2000-foot level. The vein carried two feet of quartz and heavy specimen gold at the point of discovery. The Morehouse vein was believed to be one of the main fissures of the area.

It became necessary to rebuild the wooden headframe, due to its age and weakened condition. It had been used at the Union Hill mine, then dismantled in 1920 and moved to the Idaho shaft by the Metals Exploration Co. Many timbers showed damage from cracking and dry rot.

Underground mining was discontinued for nearly a month, beginning in the latter part of September, while the headframe repairs were underway. The underground pumps were operated daily during the shutdown to keep the lower levels free of water. The pumpmen and a small crew of timbermen had to use the shaft ladderway to reach the 1000-foot level. The men were then able to be lowered down the Canyon shaft to the 2000-foot level.

Milling Operations—1929

The stamp mill operated at capacity and could not handle any increased production from the ore already blocked out on the No. 1900 vein. A decision had to be made whether to build a larger facility by adding 20 more stamps, or to build a more costly mill by introducing a ball mill and flotation process.

Because of its complexity, several metallurgists were brought in to test the ore to determine the best milling process to follow. Exhaustive studies and tests were conducted. The results attained by these metallurgists were unsatisfactory. A decision was made to try classification and gravity concentration before deciding to install either flotation or cyanide treatment.

Several changes were made in the mill to increase the efficiency of

the metallurgical treatment. A classifier and dewatering cones were added to the flow sheet. The sand product from the classifier was sent to the Deister Plate tables and the middlings from these tables were pumped to the Frue vanners. The slimes from the classifier were also pumped to the Frue vanners. It was hoped that the double treatment would lower the tailing loss and result in saving a larger percentage of sulphides, especially the very high-grade sulphide slimes.

The concentrates had an average gross value of $160.00 per ton, or $1.95 per ton milled, which were the highest grade concentrates produced in recent years. The concentrates showed a marked increase in value after the No. 1900 vein ore was milled.

There were 17,241 tons milled during 1929, with a recovery of $155,876 for an average of $9.04 per ton. The average tailing loss was $2 per ton, showing a gross value over $11 per ton milled. This was a remarkable showing, considering there was 227 lineal feet of crosscut waste included in the rock milled.

Worker's Compensation Insurance—1930

The California Inspection Rating Bureau increased the worker's compensation rate for the mining industry from $4.95 to $10.50 per $100.00 of payroll. This was a tremendous increase in overhead cost. In order to reduce this high cost, the corporate directors opted to self-insure for worker's compensation insurance.

The California Accident Commission granted the corporation permission to insure itself up to $5,000. A required $50,000 surety bond, to be in force for ten years beyond the life of the mine, was secured from Fidelity and Casualty Co. A reserve fund for paying workers' claims and expenses was established. A contract was signed with Dr. Carl P. Jones of Grass Valley for medical and hospital care for injured employees.

The corporation also obtained a policy with Lloyds of London, insuring the company against excess liability for worker's compensation caused by an accident or catastrophe in excess of $5,000 and up to $200,000.

During 1930 the company paid a $241,000 obligation bond owed to the Harry Paine Whitney estate. As a consequence of this move, all notes, bonds, etc. of the operating subsidiaries were now entirely owned by the holding corporation. This included 72 percent of the stock of the Idaho Maryland Mines Co., 99 percent of the Brunswick Consolidated Gold Mining Co. and 100 percent of the Morehouse mine.

Bullion Mine—1934

Considerable work was carried out on the surface. Several men were hired to find the apex of the Bullion vein. A series of prospect shafts and trench excavations were dug over an area of considerable acreage. At least three shafts were equipped with windlass arrangements for working to a depth of 40 to 50 feet. Two other shafts were sent down for depths of 100 and 150 feet. These were equipped with compressed-air tuggers for hoisting. The payroll was increased temporarily to 104 employees.

Underground production during 1934 came from the 300-foot level, 800-foot level, and the north drift on the 1500-foot level. A ramp was constructed at the Idaho Maryland mine for trucks hauling Bullion ore to dump into the crusher building ore bins.

Management Simplified—1935

Great strides were made during 1935 in several areas of operation. Production was increased in both mines, milling facilities upgraded, and corporate management simplified.

Errol MacBoyle was appointed to the U.S. Bureau of Mines Advisory Board by Secretary of Interior Harold Ickes. Mr. and Mrs. MacBoyle flew to Washington D.C. in his low-wing Vulte monoplane to attend the meeting. The plane was piloted by Latham A. "Slim" Perrett.

On July 16, 1935, the Idaho Maryland Consolidated Mines, Inc. merged with its operating company, Idaho Maryland Mines Co. This move simplified the corporate organization under which properties were owned an operated, resulting in a more economical and efficient organization.

The name of the corporation was changed to Idaho Maryland Mines Corporation, and it was incorporated under the laws of the state of Nevada. The outstanding 1,739,432 shares continued to represent the assets of the corporation. The remaining shares of the Idaho Maryland Mines Co. stock were converted into shares of the consolidated corporation on the basis of one-fifth share of new stock for one share of the old.

In compliance with the California Mine Safety orders, mine employees were given first-aid training at the Veterans Memorial building in Grass Valley. Over 480 attended the classes during a three-week period. The training was conducted by Emory Smith from the U.S. Bureau of Mines office in Berkeley.

Surface Improvements—1935

Surface improvements of the Idaho Maryland plant continued during the year. The headframe and several of the corrugated covered buildings were painted with an aluminum-colored paint to prevent rusting.

A 20-foot by 66-foot engineering office was built adjoining the main office building. The area beneath the engineering office was designed to be open on one side to accommodate eight car stalls for office personnel. A 10-foot-square concrete vault for protection of mine maps was constructed on the south side of the building, with a connection to the engineering room. The main office was renovated at the same time, to provide greater space for the executive offices and bookkeeping department.

The company contracted with the Fire Protection Engineering Co. to install sprinkler systems. This included the office buildings, the Idaho Maryland mill and the Brunswick mill. These were installed in conformance with specifications of the Board of Fire Underwriters. The main consideration to install these systems was for fire protection, and to guard against shut down and subsequent loss of production. The reduction in fire insurance premiums was also an incentive.

A new 45-foot by 50-foot automotive service and repair garage was built, complete with work benches and floor pits to service the modern fleet of pickups, trucks and construction equipment.

A power shovel was purchased for construction of a new proposed reservoir and other construction jobs. The shop mechanics constructed a boom to be used in place of the shovel bucket for unloading and stacking lumber.

Two garages for employees' cars were constructed on the flat area adjacent to Wolf Creek. The additional 35 spaces were badly needed for the men on the afternoon shift.

Underground Development—1935

Development in the Idaho Maryland during 1935 consisted mainly of extending the limits of the No. 3 and No. 13 ore bodies above the 1000-foot level. Blocks of ground on the No. 3 vein were prepared for future stoping. The limits of the No. 3 ore body had not as yet been defined, and exploration work continued with satisfactory results.

The Branner Newsome experimental boring drill holed through on the 600-foot level in July. Increased air circulation occurred immediately in all workings above the 1000-foot level following the connection. The

the ranches were retained by the corporation. One of the considerations of this transaction was that the company would have use of MacBoyle's plane for transportation of bullion, company officials, and injured employees in the event of emergencies.

The John H. Hansen ranch property, located between the Idaho Maryland mine surface workings and East Bennett road, was acquired for the mill expansion of a new proposed cyanide-leaching plant.

The capacity of the tailings-impounding lake was increased by adding ten feet of waste rock to the height of the dam.

A suggestion contest on subjects of safety and efficiency was established for employees of the Idaho Maryland, Brunswick, Bullion and Forbestown mines. The contest was inaugurated April 1 and continued to December 30. Substantial awards were handed out to winners in various categories at the end of each three-month period.

The men showed continued interest in the contest, with over 70 miners entering suggestions, some more than once. Many ideas were accompanied by diagrams, sketches and drawings. Assistant general manager Bert Crase presented the awards. The judges were MacBoyle, Crase, Edwin Oliver and Harry Field.

In December Bert Crase addressed a letter to all employees explaining a profit-sharing plan adopted by the board of directors to reward employees by letting them share in the company profits.

It was explained that each time the corporation declared a stock dividend, the directors would set aside an amount equal to the dividend on 150,000 shares of stock. This amount would then be placed in a fund for distribution to the employees on December 15 of each year. They would be paid in units of four, five or six, based upon length of service.

Idaho Maryland Underground—1936

The Round Hole shaft was completed in March 1936. It terminated adjacent to the Mitchell crosscut on the 1000-foot level. The shaft was 1,125 feet deep, with stations cut on the 600-, 850- and 1000-foot levels. The shaft included a 40-foot sump below the 1000-foot level. This type of shaft was the first of its kind in the world.

The company purchased a large bus, and the men working in the far eastern part of the mine, above the 1500-foot level, were bussed from the dry building up to the Round Hole shaft. They were lowered down this shaft in a double-decked cage to their respective levels. At the end of the

shift these men were transported to the 1000-foot level shaft station by man-train and hoisted to the surface through the Idaho shaft.

The completion of the Round Hole shaft provided a much needed second exit, better ventilation, enhanced movement of timber and supplies, and allowed miners to arrive at their work places sooner. The new shaft provided natural air circulation to the whole eastern portion of the mine through the Round Hole shaft, then down through the mine workings to the 2000-foot level. The air then made its way to the Idaho shaft, where it was exhausted to the surface.

The No. 13 crosscut on the 1000-foot level was started in January 1934. It was run parallel to the No. 3 vein and in firm ground 75 feet in the footwall. The purpose of the development was to explore the eastern continuation of the No. 3 vein by crosscutting back to the vein. This was to avoid expensive timbering and maintenance costs in heavy ground adjacent to the faults along the No. 3 vein.

A separate crosscut, driven back to the No. 3 vein from the No. 13 crosscut, proved the No. 3 vein to be too narrow for mining. The decision was made to continue driving No. 13 crosscut and turning it in a southerly direction, toward the New Brunswick mine. The crosscut was driven over 2,700 feet before being stopped in 1936

Several trunk surveys were run during 1936. An elevation tie between the No. 13 crosscut on the 1000-foot level of the Idaho Maryland and the No. 30 drift on the 1200-foot level of the New Brunswick mine was run to permit possible connection between the two mines. New traverses were carried from the surface down the Round Hole shaft to the 1000-foot level and down the 201 winze and No. 3 raise to the 2000-foot level. Based upon these surveys, full confidence was gained in the correlation of the surface and underground positions of both mines.

A new winze was started on the 2000-foot level, 300 feet southeast of the No. 45 winze. The winze followed the Morehouse vein on an incline of about 40°. This winze was driven to explore the intersection of the Morehouse and Idaho vein systems.

Brunswick Underground—1936

No. 1 winze was started on the No. 1 vein on the 1300-foot level with the intent of opening up the 1450- and 1600-foot levels without interfering with the shaft-sinking operations.

The No. 1 crosscut on the 1300-foot level cut the No. 5 vein and No. 16 vein, where good values were found on the No. 16 vein. The No.

undignified to compel men to strip, as they had to do at the mine. This system was practiced at nearly all of the mines.

Deputy state mineralogist John F. Bongard, mine investigator for the U.S. Bureau of Mines, testified that he and U.S. Secret Service agent Charles B. Rick had been investigating illegal gold transactions throughout northern California. He stated that two men from Nevada County had been convicted as part of an illegal gold-buying ring. He indicated that high-grading was widespread, ranging from $400,000 to $500,000 each year. He estimated the yearly amount of high-grading from the Idaho Maryland and Brunswick mines to be $250,000.

General manager Bert Crase testified that his primary reason for closing the Old Brunswick was due to high-grading problems. He explained that sacks of high-grade were often found on the dump, where they had been tossed by miners coming from the shaft to the dry. The drain tunnel was also used to remove gold from the mine.

Following the hearing, trial examiner McNally forwarded the hearing transcript to the National Labor Relations Board for its review and ruling.

Development—1937

The results of exploration and development work during 1937 were very satisfactory. During the year 27,078 feet of new headings were driven, and 25,878 linear feet of diamond drilling was done. This work resulted in proving the lateral and downward extensions of known ore bodies, and partial development of new veins and ore bodies, both in the Idaho Maryland and Brunswick workings.

Development in the Idaho unit was of two types: the gold-bearing quartz veins, and gold-bearing mineralized diabase dikes. There were 69,391 tons of quartz developed and 103,572 tons of the diabase type. Production of quartz ore was 54 percent from the No. 3 vein, 19 percent from the No. 13 vein, 7 percent from No. 2 vein, and 5 percent from No. 5 vein. New ore was developed in these veins in nearly the same ratio to the total developed.

Production of mineralized diabase ore was 58 percent from No. 22 vein, 25 percent from No. 23 vein, and 18 percent from No. 15 vein. Nearly one half of the ore of this type developed during the year was in the No. 22 vein. The ore reserve at the end of the year was 301,356 tons of quartz, and 93,075 tons of mineralized diabase.

Development headings continued on various veins between the

The Idaho Maryland Mines Corp. signed a new contract for the Mine Workers Protective League after the time limit for the appeal expired. This landmark case was very important to all gold mining companies. Had the ruling not been overturned it would most likely have adversely affected all gold mining companies in the U.S.

Surface Damage—1938

The unusually harsh winter caused considerable damage at the New Brunswick mine. On March 9 strong winds uplifted and partially flattened three of the long garages for employees. The garages were completely open on one side, allowing the wind to enter the structures and lift them off the ground. Several of the miners' cars received damage to windshields and roofs. Several sections of the trestle that supported the tailings flume between the Idaho Maryland mill and the tailings lake were blown down by February winds.

During 1938 the corporation paid off the mortgage on the only piece of property on which there was any encumbrance. Several small surface parcels were purchased, in which the mineral rights were already owned. The surface properties of the company at this point comprised a solid block of 2,180 acres, or about 3.3 square miles.

Underground Operations—1938

The dolly compartment in the Idaho shaft was opened from the surface to the 1000-foot level. The shaft crew rearranged the air and water lines, and installed heavy rails for the gondola.

A single-drum hoist, previously used during construction of the Hoover Dam, was purchased and installed in the hoist room. An 84-inch-diameter sheave wheel was installed atop the headframe to carry the one-inch cable for the gondola. The dolly hoist was used for transporting men, equipment and supplies. This permitted maximum time for hoisting ore by the main hoist.

For several years the ultimate objective had been to connect the Idaho Maryland and New Brunswick mines together underground. Finally, in 1938 development funding became available and the 8,000-foot-long project was started. Work began by drifting east on the No. 1 vein near the No. 30 winze on the Idaho Maryland 2000-foot level. Because of the 230-foot elevation difference at the collars of both shafts, the connection was engineered to occur near the New Brunswick shaft on the 2300-foot level.

During the year 331,406 tons of ore were produced by the Grass Valley operations. Of this total, 113,259 tons were hoisted through the Idaho shaft and 218,147 tons through the two Brunswick shafts. Of the year's tonnage, 231,501 tons were from stoping operations, and 99,905 were from development. There were 20,576 tons of custom ore from the Grass Valley Bullion property, and 70,446 tons from the Forbestown operation. The gross custom revenue was $47,987.

The combined value of the Grass Valley and Forbestown production was $4,616,647, with a tailing loss of $170,827. The tailing loss was 41 cents per ton. The recovered value of company production before mint charges was $4,148,306 from Grass Valley operations, and $297,518 from Forbestown, for a total of $4,445,820. The recovered value of Idaho Maryland-Brunswick ore was $12.46 per ton, and $4.22 for Forbestown ore.

The total income from the sale of gold bullion, including custom milling, was $4,555,374. The total expenses, including development, compensation insurance, property insurance, social security insurance, taxes, mine management overhead, repairs to the plant and equipment, were $2,845,681. The profit on mine operations before depletion, depreciation and federal taxes, after absorbing the operational loss on Forbestown for the year, was $1,665,163.

Bullion Mine—1938

Mining in the Bullion mine took an upswing during 1938, when good ore was found on the 2200-foot level. Small particles of gold were present quite often. The mine was producing an average of 70 tons of ore a day. Howard Dennis was the mine superintendent, and Phil Folck was mine foreman.

The corporation's relationship with the Grass Valley Bullion Mines remained the same, advances being secured by deed of trust on properties, certain blocks of stock, and other guarantees. Advances during the year totaled approximately $72,000, largely to pay maturing property payments. Those payments remaining amounted to about $63,000, payable within two years. No advances were necessary during the last three years, because the mine was on a self-sustaining basis.

The Empire Star Mines Co. appealed the ruling of Judge A. St. Sure in favor of the Grass Valley Bullion Mines Co. relative to ownership of the Galena vein and its extra-lateral rights. The U.S. District Court of Appeals reversed St. Sure's decision and ruled in favor of Empire Star

drill steels were used over and over. Therefore, the miner needed only one set of steel to drill his round. Each jackbit could be sharpened four times before it was discarded.

The jackbits were annealed in a furnace and then sharpened on a hot mill. They were reheated to 1,800 degrees in a Lindberg rotary electric furnace. From there the bits were tempered by quenching momentarily in lukewarm water before being immersed in a warm fish-oil solution. The jackbits were sized, strung on racks and sent underground for reuse.

Costly curtailment of mining and milling operations had occurred in past years because of heavy snowfalls clogging the Cascade ditch and cutting off water flow to the mine reservoir.

During 1939 the large Loma Rica reservoir was constructed to alleviate the above problem. This 13-million-gallon reservoir had sufficient water storage to meet all water needs, especially in the event of a water outage. A large power shovel was used to dig the reservoir, and mine personnel were used in all phases of construction. The reservoir was constructed at a cost of $30,258.

The reservoir served the Old Brunswick, New Brunswick and Idaho Maryland mines. It also provided water to the Loma Rica Rancho. A rock walkway extended out over the water to a glass-enclosed gazebo. Railings protected the walkway that also encircled the gazebo. The valves controlling the various pipelines were located beneath the gazebo floor.

Underground Development—1939

Active development of known ore bodies, and exploration for new ore continued through 1939, resulting in 42,356 linear feet (8 miles) of new headings driven. This was an increase of 29 percent over the 1938 footage and was in keeping with a 24 percent increase in tonnage of ore mined. In addition, there were 29,255 lineal feet drilled by diamond core-drills.

The major unusual expenditure for the year was for sinking the New Brunswick shaft from the 1500-foot level to the 2400-foot level, and concurrently extending the 2000-foot level of the Idaho Maryland to connect with the vertical shaft at the New Brunswick 2300-foot level.

One half of the total footage of new headings in the Idaho Maryland was driven on or below the 2000-foot level. This reflected the general opinion that new ore would have to come from the downward extension of veins numbered 1, 2, 3, 4 and 5.

To explore these extensions it was necessary to dewater and retimber

The two mechanics said they were under the impression that they had clearance to work on both the east and west sheave wheels, which would have affected both shaft compartments. There was an obvious misunderstanding between the mechanics and the hoist engineer. This tragedy could have been prevented had the two work assignments been scheduled at separate times.

Production—1939

The average daily tonnage of ore milled during 1939 was 1,435 tons. Of this total, the Brunswick was the greatest contributor, with a daily estimate of about 1,000 tons. Of these, 675 tons were milled at the New Brunswick mill, and the remainder trucked to the Idaho Maryland mill. The Idaho Maryland production was 360 tons. The Bullion mine maintained a constant average of about 75 tons per day, which was milled in the stamp mill.

Tonnage of ore milled was by far the largest in the history of the company—410,411 tons, or nearly 25 percent more than in 1938. Fairly large quantities of relatively low-grade ore and more ore from both mines were milled. As a consequence of dilution from these two causes, the average grade of ore milled during the year was lower than in 1938, but the drop in grade was largely offset in increased tonnage milled. In spite of the large increase of tonnage hoisted from the Brunswick shafts, the average grade of ore from that mine was 26 cents higher that in 1938.

The Idaho Maryland mine contributed 119,611 tons, and the Brunswick mine 290,800 tons. Thirty percent of the 1939 ore production came from development headings, the remainder came from stoping. The stamp mill treated 23,813 tons of ore from the Bullion mine and 288 tons of concentrates, from which $36,550 was received.

There were 115,001 ounces of gold recovered. This represented an average of $10.19 per ton, with a tailing loss of 38 cents per ton. The total income from the sale of bullion, including custom milling, was $4,153,597. The total operating cost was $2,694,619. Profit before deductions for taxes, depreciation and depletion was $1,454,420, with net earnings totaling $955,172. This was equivalent to 53 cents per share of 1,780,781 shares outstanding.

According to government reports the Idaho Maryland Mines Corp. had the largest gold production of any quartz mine in California during 1939. The corporation was the second largest gold mine in the United

States, being exceeded only by the Homestake Mining Co. in South Dakota.

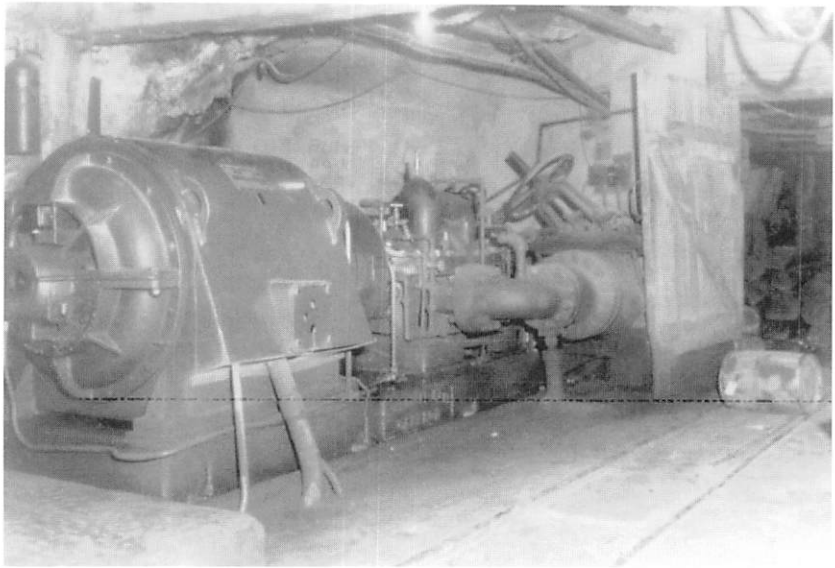
Harmonious employer-employee relations existed during the year. In December the Mine Workers Protective League agreed to accept the same collective bargaining agreement for the coming year, ending December 31, 1940. Labor turnover was less than two percent a month during 1939. The number of employees increased from 781 to 831. A Christmas bonus was paid in December. Payments ranged from $10 to $50, based on the employee's time with the company.

Bullion Mine—1939

The relationship with Grass Valley Bullion Mines Co. remained the same, except to the favorable extent that throughout the year it operated on a profitable basis, and paid property payments out of its earnings. In the past the Idaho Maryland Mines Corp. had loaned money for this purpose.

In March 1939 the Idaho Maryland Mines Corp. purchased the $61,569.82 judgment against the Grass Valley Bullion Mines Co. in favor of the Empire Star Mines Corp., Ltd. The corporation took assignment of the judgment in order to protect the deed of trust covering its past advancements to Bullion Mines. Payments totaling $28,000 were collected during the year, leaving a balance of $33,569.82 due on the judgment as of December 31, 1939. Mining continued at the Bullion mine, with a daily ore production of approximately 75 tons.

1000-foot head pump at the 1300-foot level of New Brunswick.



CHAPTER 12: MODERNIZING NEW BRUNSWICK MINE

The greater shaft depth and anticipated increase in ore production meant increasing the headframe size and hoisting capability. Then in May 1940 the company embarked upon a modernization of the New Brunswick surface plant. A 1,000 hp Ottumwa double-drum hoist was purchased from Los Angeles Metropolitan Water District. This hoist had been used during construction of the Parker Dam on the Colorado River.

The hoist had eight-foot-diameter drums with a 60-inch face capable of holding 4,800 feet of 1⅜-inch cable. A 600 hp Nordberg single-drum hoist was also purchased from the same water district for use with the dolly compartment. This drum was eight feet in diameter with a 60-inch face that held 3,800 feet of 1⅜-inch cable.

All of the cement piers, foundations and drum pits were completed and the large hoists set in place during the summer months. Concrete floors were poured and an all-steel building, 56-feet by 60-feet by 15-feet high, was constructed over the hoists. The new hoist room was located north of the three-compartment shaft, whereas the regularly-used hoist was located on the south side.

The two-story dry building was enlarged to accommodate 400 miners comfortably, instead of the earlier crowded limit of 275 men. The new addition provided ample showers and lavatories, and greater heater and boiler space. The two-story structure separated the miners' clothes so

that underground "diggers" were on the bottom floor, and street clothes were on the upper floor. The new addition also provided office space and change rooms for the mine superintendent, foreman, shift bosses and engineers.

Two new 425 cu. ft. Ingersoll-Rand air compressors were installed to meet the anticipated increase in production and demand for compressed air. The new compressors were set in close proximity to the two already in use, and the building was enlarged.

The Cahill Construction Co. of San Francisco was awarded a contract in August 1940 to build a new 135-foot-tall steel headframe. Government priority for steel, caused by a sudden increase in prewar military contracts, delayed the start of the construction. National defense needs took precedence over private industry for all available steel. The headframe project was postponed several times before it was decided to delay the work until the following spring.

Advantage was taken during the steel delay to construct concrete footings for the long support girders on the north side of the headframe. One was positioned in the mill building, which required several modifications, and the other was located just east of the mill building.

A new crushing plant was built, containing an Alloy 15" by 38" roller-bearing jaw crusher and a Traylor three-foot gyratory reduction crusher. The ore was fed from the ore bin to the crusher plant by a 30" belt conveyor leading to a Robins vibrating screen, where the undersized rock was separated. A picking-belt located ahead of the crushers was sized for two men to remove the waste rock into a large waste bin below. A water spray and dust collection system was provided for dust control. The new crusher plant began operation in August 1940.

A large substation located just west of the mine was constructed by Pacific Gas and Electric Co. crews to provide additional power required for the surface changes.

Underground—1940

On January 3, 1940, the long drift driven from the Idaho Maryland "holed through" on the New Brunswick 2300-foot level near the shaft. The engineering was so accurate that the connection was essentially perfect.

The connection was of vital importance for the operation of both mines. A second exit was provided for the deeper workings of both mines. Natural air circulation was greatly increased, with fresh air de-

Christmas Eve 1940 at the 2000-foot level station in the Idaho Maryland mine. Approximately forty members from the California Cornish Gold Mining Singers and the Grass Valley Carol Choir participated, under the leadership of Harold George.

The program was broadcast live over San Francisco radio station KGO and the National Broadcasting Co. network. The importance of the broadcast can be estimated from the fact that NBC donated the broadcast time. Scores of favorable letters received locally and by many NBC stations showed the success of the Christmas Eve concert.

Arrangements for the broadcast and program were carried out by the Grass Valley Chamber of Commerce, under the direction of secretary Edith Scott and president William L. Goggin.

Production—1940

For the second consecutive year, according to figures reported by the U.S. Bureau of Mines, the Idaho Maryland Mines Corp. was the leading gold producer in California, and the second in the nation. This achievement represented output from the Idaho Maryland, Brunswick and Bullion mines. The Brunswick mine became the largest tonnage producer of any gold mine in the state, with approximately 1,000 tons of ore milled daily.

It is interesting to note that since Errol MacBoyle took over this mine in 1925, over two million tons of ore had been produced, with a value of approximately $28,000,000. This tonnage, and developed ore reserves, were developed as a consequence of successful exploration, conducted under a program through which the owners' capital was subject to a relatively high risk of loss. The development program was conducted under the guidance of a competent staff, and backed by the ardent faith of management.

The total tonnage of ore from the two mines was 406,707 tons. The recovered value of company production, before the mint charges, was $4,549,932, with a head value of $4,732,211, resulting in a tailing loss of $182,720, or 44.3 cents per ton. The average recovery of company ore was $11.19 per ton.

Bullion Mine—1940

The Bullion mine continued its daily production of between 70 to 80 tons of ore per day. Exploration followed the Bullion vein to a depth approaching 2,700 feet. The vein ranged from five to six feet in width. To

The 19-day-old strike ended abruptly on May 19, 1941, when over 400 striking AFL members voted almost unanimously to end the strike. The return to work was made with absolutely no concessions on the part of management. All men returned to work under the Mine Workers Protective League contract which had become effective May 3.

The company's payroll had reached over 1,000 employees when the strike occurred, but the world crisis began to have an adverse affect upon the corporation from that time on. War had begun in Europe in 1939 and, although the U.S. had remained officially neutral, it was providing arms to Great Britain and Russia under a lend-lease agreement. In 1940 United States policy shifted from neutrality to "preparedness." The Selective Service Act was enacted to build up the nation's military. Defense plants began building ships, tanks and airplanes, along with a multitude of other war materials. Government priorities were quickly placed on steel, explosives and other products needed for the preparedness effort.

Many men took advantage of their time off during the strike to seek higher paying jobs in shipyards, defense work in Hawaii or in other manufacturing plants. The mine payroll was reduced by at least 60 men within a very short time, most of whom sought work in defense plants, but others entered the armed forces by enlistment or the draft.

Brunswick Headframe—1941

Construction of the 135-foot-high New Brunswick headframe took place during the early summer months of 1941. The new structure was able to be erected over the existing 85-foot headframe, because of its greater width and height. This allowed production to continue with a miniumum of interruption. The Old Brunswick shaft was used to raise and lower men during the changeover from one headframe to the other. Ore was also hoisted through the Old Brunswick shaft and trucked to the Idaho Maryland for milling.

The completion of the New Brunswick headframe, crusher plant, hoists and new compressors, at a cost of $135,000, gave the corporation one of the finest and most efficient mining plants in the U.S.

The 4" by 4" wooden guides in the three compartments of the New Brunswick shaft were replaced by 4" by 8" guides, to compensate for the increased hoisting speed. These were made of straight-grained knot-free Port Orford cedar, and each section measured 37½ feet in length. They were transported to the Brunswick spur track on two railroad flatcars, with one end on one car and the other end on a second car.

The new speed for hoisting men was established at 1,080 feet per minute. The speed for hoisting rock was 1,250 fpm. Each hoist was equipped with a Lilly controlled-braking system that automatically locked the brakes in the event of a power failure, or if the maximum hoisting speed was exceeded.

A limit switch was located 100 feet below the shaft collar in each compartment, which activated an audible alarm to warn the hoistman that the cage was nearing the surface. An override switch was located in each hoisting compartment on the headframe that required the hoistman to physically open the switch to allow the skip to pass by that point. The hoist brakes locked automatically in the event that the override switch was not activated. This was a safety protection to prevent the skip from being pulled up into the sheave wheel and cause major damage.

Communication between the hoistman and the person on a cage was by a bell system. A list of the designated bell signals for each level was posted at each shaft station, along with a set of standard signals established by the California Division of Industrial Safety.

A "call bell" signal system, separate from the shaft signals, was present on each station for use by persons wishing to come to the surface or to go from one level to another. Each station had a telephone that was connected directly to the hoist room, which was used to report an underground emergency.

Unfortunate Fatality—1941

On September 11, 1941, William F. Weiss was engaged in barring down loose rock in a stope on the 900-foot level of the Brunswick mine. He accidentally fell into a chute, causing loose rock to fall around and partially cover him. His partner, Frank Giovanetti, immediately summoned help from miners working close by. They had begun pulling rock away from Weiss when additional loose rock slid down the footwall and engulfed the trapped man.

William Weiss died of suffocation before the men were able to free him from the chute. His body was brought to the surface and taken in charge by Coroner Andy M. Holmes. A rock had struck Frank Giovanetti's shoulder when the second rush of rock occurred, and he was taken to Jones Hospital by the Hooper-Weaver ambulance. His injury was not serious.

On December 7, 1941, the United States was drawn into World War II when Japan attacked Pearl Harbor. This was the beginning of an

accelerated loss of manpower from the mines to the armed services and defense industries. Over 200 men had already left the two mines during the previous eight months.

The Grass Valley Carol Choir, under the direction of Harold George, once again sang Cornish carols from the Idaho Maryland 2000-foot level shaft station on Christmas Eve 1941. The program was recorded and then broadcast by radio station KNX. This was the second consecutive year that the choir presented their program from underground. Arrangements were made by William Goggin and the Grass Valley Chamber of Commerce.

Concluding a 10-day legal call for bids for the purchase of the Bullion mine, the Idaho Maryland Mines Corp. was the successful bidder. The purchase was consummated on December 26, 1941. The corporation had operated the Bullion mine for several years previously and already owned a considerable amount of its stock.

A Christmas bonus was paid to employees for the third consecutive year, and for the third year in a row the corporation was the largest lode gold producer in California. Once again, it was second in the nation, outranked only by South Dakota's Homestake mine. A total of 263,769 tons of ore was milled, yielding 113,973 ounces of gold, for an average recovery of $15.20 per ton. The net profit for the year was $1,008,315, with a dividend of 56 cents per share.

Completion of the Modernization Program—1942

The Brunswick mill was placed back in operation during the first week in January 1942, after being closed since the previous May. The mill was completely rebuilt inside during the shutdown, to accommodate one of the large new girders. The mill equipment was rearranged to correspond to the flow sheet. The 20-stamp mill section was removed to make way for the large ore bin foundation.

Construction of the large concrete ore bin within the confines of the new headframe began during April 1942. It was circular in design, and was divided into two sections, the larger portion for ore and the smaller for waste rock. The structure rose 90 feet above ground level, and the interior was lined with heavy steel rails to protect the concrete from wear. A large chute and diversion gate were located between the automatic skip-dumping rails on the headframe and the two bins. This was to direct the ore or waste to the proper storage bin. The large concrete storage bin,

often referred to as the "silo" because of its unique shape, was completed in mid-June.

The corporation sought to include strategic or essential minerals in its production, and pursued a diligent search for tungsten in the Union Hill veins within the Brunswick mine, but no profitable deposits were discovered. The corporation also took an option on a quicksilver property near San Jose in the New Almaden district. A fair grade of cinnabar ore was found at the surface, but the deposit was too shallow and lost its commercial value, so the option was dropped.

The exodus of miners and other key personnel increased dramatically following the Pearl Harbor attack. This affected the underground production and the selection of ore to be mined. Government restrictions on the purchase of pipe, rail, drill steel, explosives and mining equipment also had a great impact upon the gold mining industry. The company's low priority-rating was a major concern in obtaining materials.

The management policy always had been to maintain an even grade of ore to be milled at both mines by mixing the lower grade of rock with the better grade of ore. This made it possible to keep tonnage high by including the marginal grade rock while still making a profit. The life of the mine was also extended by this practice. Now, in 1942, the company was being forced to mine only the higher grade ore to offset the decline in production.

The newly discovered No. 23 vein, located on the far eastern end of the Idaho Maryland 2000-foot level, revealed great potential. The vein was narrow, but showed free gold quite consistently. A winze was started and then stopped after about 35-40 feet in depth, because of the shortage of miners. The author operated the hoist during the sinking operation. The area was quite a distance beyond fresh air, and had very little air circulation. The area was warm and had a distinctive odor, thus was referred to as the "Rose Garden."

The New Brunswick shaft-sinking operation was stopped early in the year at a depth of 3,470 feet, far short of the goal of 5,000 feet. Many of the development headings in both mines had to be suspended, and the miners were transferred to work in stopes to keep production flowing.

Government Mine Closure—1942

On October 8, 1942, the War Production Board issued Limitation Order L-208 which closed down all major gold mines. This order required gold mines to stop breaking rock on October 15, and also stop all

milling of previously broken rock within 60 days. A minimum number of employees was permitted to remain for pumping water and for essential mine maintenance.

The War Manpower Commission followed with its order forbidding the employment of the jobless miners without government approval. The same order required every man laid off to register with the nearest U.S. Employment Service office for work in the strategic mining industry, which included copper, zinc or molybdenum mining. Latitude was extended to the miner to request placement at a mine of his choice.

Prior to the issuance of L-208, the Idaho Maryland Mines Corp. payroll had been reduced from 800 employees in December 1941 to just 212 on October 8, 1942. The average age of the remaining employees was 47.7 years, and 43 of the underground workers were 50 years or older.

The local economy was greatly affected during the latter part of 1941 and all of 1942, because of the miners and their families who moved away. The closing of the mines made the situation even worse, for it meant additional loss of revenue. This was partially offset by employment becoming available at Camp Beale, near Marysville, and DeWitt General Hospital at Auburn. The Lava Cap mine outside of Nevada City was given a strategic mineral classification by the War Production Board because of the silver it produced along with its gold. The Lava Cap was able to continue working, and in turn was helpful to the local economy.

The Grass Valley Carol Choir, directed by Harold George, sang eight Christmas carols from the Idaho Maryland's 2000-foot level on Christmas Eve, and once again the performance was recorded and broadcast by radio station KNX.

The year 1942 was a hectic year for Idaho Maryland Mines Corp., and that fact was reflected in production records. There was a 700 percent drop in net earnings, from a high of $1,008,315 in 1941 to $147,975 in 1942, with dividends suspended in February. Production tonnage in 1942 was 144,639 tons of ore (against 263,769 in 1941). The average recovery in 1942 was $12.96 per ton, compared with $15.20 in the previous year. On the good side, three new ore bodies were discovered during the year. Idaho Maryland Mines Corp. slipped to fourth place in the state from being the leading gold producer in California during the previous three years.

There now was a housing shortage in Grass Valley and Nevada City caused by an influx of people working at Camp Beale and at DeWitt Hospital in Auburn. This condition had a deleterious effect on obtaining miners and other workers for mine employment.

Hiring men to work underground was gradual. Only 40 employees had been hired during the war, and by early September 1945, after Japan had surrendered, the total work force had reached just over 100 men. The lack of qualified miners and timbermen continued to plague the company. Many who applied for work did not stay long before quitting.

A small sawmill was constructed in the fall of 1945, located south of the Idaho Maryland mill, near East Bennett road. The elevated rockfill roadway entering the property from south provided a substantial dam for a log pond. The sawmill was capable of furnishing timber for mine use, and lumber for sale.

During the latter part of 1945 men began to be discharged from military service, and the cutback in defense contracts freed men to return to mining. By the end of 1945 the company was able to hire many new employees, bringing the payroll to 241 men.

Most of the men were placed in the Brunswick mine, where mill rock was readily available. Timber crews were put to work on the 1000- and 2000-foot levels in the Idaho Maryland to recapture the drifts that sustained major caving during the long shutdown. Incidentally, due to the type of swelling ground, only experienced miners and timbermen, used to that type of mining, were chosen to work in the Idaho Maryland. During 1945 there were 2,368 feet of new development headings advanced, and 543 feet of caved workings recaptured.

In 1945 there were 66,034 tons of ore produced, yielding a value of $9.77 per ton. There were 62,928 tons of ore treated in the Brunswick mill, and 3,096 tons were treated in the Idaho Maryland mill.

Errol MacBoyle Regains Control—1946

A compromise agreement was reached on January 22, 1946, between MacBoyle and the board of directors of the Grass Valley Memorial Hospital Association to end a dispute over the hospital board's influence in mine affairs. The agreement was based on the decision to operate the mine in such a manner as to make it serve the best interest of the hospital during the life of the mine.

The hospital directors granted MacBoyle a proxy on 375,000 shares of Idaho Maryland stock which he had allocated to the hospital but for

land, particularly in heavy ground. This method called for opening and stoping, from level to level, blocks of ore approximately 25 feet in length. This type eliminated a large portion of stope repair work required by the previous 100-foot-long stopes. The 25-foot blocks could be mined more rapidly, allowing that section then to be abandoned.

Brunswick Underground—1946

To compensate for the loss of the higher grade of ore from the Idaho Maryland and for the inflationary costs, it was incumbent on management to increase the tonnage of the lower grade Brunswick ore. Geologist Glenn Waterman developed a contract system for miners working in stopes, whereby they were paid extra for the amount of ore produced. The price paid varied, based upon the width of the quartz vein. This system greatly reduced the amount of waste, and cleaner ore was shipped to the mill. The result was a marked lowering of operating costs, and just as significant, the miners were happy with the increased take-home pay.

During 1946, a new method of stoping evolved. Short sublevels were driven at intervals of 20 to 30 feet along the dip of the vein. These sublevels, and ore stoped above them, were scraped to adjacent raises by slusher buckets. There were 6,552 feet of these sublevels driven during the year. This type of stope mining aided materially in maintaining a high production, while at the same time enabling management to determine the profitable and nonprofitable portions of the vein.

A high priority was given to exploring the Brunswick mine in depth, and the 3280-foot level was the logical place to begin. This provided 980 vertical feet of virgin ground below the 2300-foot level where the various Brunswick veins could be cut and a determination made of their size and values. The 3280-foot level was also within the pumping limit for raising water to the 2300-foot level with a 1,000 foot-head pump.

The shaft station, ore and waste pockets, and a sump had been completed previously. The level was established as a main haulage-way, with a 30-pound rail, a seven-foot by eight-foot cross section, and 1½-ton ore cars. The No. 2 crosscut had been previously driven 181 feet, and a priority was given to continue this crosscut in its northerly direction to cut the Brunswick and Idaho Maryland vein systems.

Sand-Slime Backfilling Stopes—1946

One of the principal improvements in the Brunswick mine during 1946 was the design and installation of equipment for filling mined-out

stopes with mill tailings. Under the pressure of postwar costs, the back-filling by waste rock became increasingly expensive. The less costly sand-slime filling was perfected and used successfully. This method was not entirely new, but was modified to suit the mine conditions.

A large 24-foot by 20-foot steel tank was constructed near the mill and shaft collar, in which the tailings-sand was prepared. Measured amounts of sand and water were mixed together by means of an impeller, assisted by air jets. The pulp was held at a density of 74 percent solids and conveyed underground through a common two-inch pipe.

The stopes to be backfilled were prepared by sealing off the chutes with light timbers and caulking small openings with burlap or excelsior. Drainage of water was through a perforated close-colander wrapped in burlap, locally referred to as a "mousetrap." The tailings were distributed evenly within the stope, and in about three to four days the water was sufficiently drained to where a person could walk on the surface. The stope was filled in incremental pours.

The sandfill operation had many advantages: **a)** the solution was conveyed directly to the stope location by gravity flow; **b)** only two or three men were required for the operation; **c)** pillars left during the mining phase were able to be removed during the sandfilling phase; and **d)** this was a good means of disposing of mill tailings.

Over 5,400 tons of sand were placed underground during 1946, with a capacity of 200 tons of tailings distributed per shift. Assistant manager Roland "Dusty" Farmin and mill superintendent Richard Krebs were responsible for the design and perfecting of the sand-slime system. Mine superintendent John C. "Buck" O'Donnell was instrumental in the design of the perforated colander and stope preparations.

Production—1946

Operations during the year showed encouraging improvement over the previous year. The outlook for the future was quite promising. The number of employees increased from 241 in January to over 400 by the end of the year. During the year 185,943 tons of ore were produced. This represented 70.8 percent of the 263,768 tons of ore produced in 1941, with less than one half the work force.

There were 166,663 tons of ore treated in the Brunswick mill, and 19,310 tons in the Idaho Maryland mill. The gross value of $1,459,070, before mint charges of $5,994, left a net return of $1,453,076, or $7.81

per ton. In addition, a net income was received from the cleanup operation of the three mills by an outside contractor.

From non-mining operations a net income of $121,484 was realized. This sum represented earnings from sawmill operations, sales of old equipment, scrap, rentals, and a refund of 1944 income taxes. After the operating expenses of $1,415,661, there were administration expenses, depletion, depreciation, and patent-investigation, totaling $174,245, so that the overall operations resulted in a loss of $1,310 for 1946.

The sawmill sawed 9,015,000 board feet of lumber during the year, of which 7,706,000 bd. ft. were sold and 1,309,000 bd. ft. consumed by mining operations. Because of the earnings realized by operation of the small mill, a larger and more complete sawmill was built during the year, with a capacity of 40,000 bd. ft. per shift. This plant went into operation in mid-December.

Shortage of Miners—1947

Stoping in the Brunswick mine during 1947 continued on several of the veins from the 490-foot level down to and including the 1600-foot level. The No. 16 vein provided good ore on each level. The values were better than average, and the vein produced many nice pockets of specimen gold. There were numerous areas in the Brunswick mine where stoping operations could begin, had the manpower been available.

The lack of skilled miners during the postwar era presented a large problem for management, and seasonal work compounded this problem even more. The timber industry had begun to flourish, and many miners quit the mines during the summer months to fall timber, and then returned to the mine during the off-season. This became a great disruption to mine operations.

The No. 16 vein on the Brunswick 1300-foot level entered a large black slate formation. The vein broke up into numerous quartz stringers that ranged in size from mere seams to 1½ inches in width. Free gold could be found throughout the quartz, ranging in value from eight to ten dollars per ton.

The stoping first began as a normal shrinkage stope, with a raise and several Arizona-style chutes beneath the stope, from which ore was drawn down. The slate rock did not fragment well when blasted, and some of the rocks were too large to go through the chute openings. The motorman then had to blast the oversize rock into smaller pieces by using mud to secure a half-stick of dynamite against the rock.

Production

During 1948 the company produced 192,058 tons of ore, which was 21,547 tons less than the previous year. The Idaho Maryland mine accounted for 18,444 tons, and the Brunswick mine furnished 173,614 tons of the above production. The net value of bullion delivered to the mint was $1,705,311, of which there were 45,598 ounces of gold and 13,334 ounces of silver. The value per ton was $8.88.

The mining operations showed a loss of $16,094 for the year. Depreciation, depletion and amortization of patents amounted to $163,593, making the total loss $183,688.

The sawmill operations lost money also, due to the lack of suitable logs. A total of 3,961,000 board feet of lumber was cut in 1948, down considerably from the 12,201,546 bd. ft. cut in 1947. The estimated loss in the sawmill operations, before depreciation, was $26,481.

Brunswick Underground—1949

Entering 1949 there was a great need to reduce costs. This resulted in a reduction of company personnel, and the leasing out of a large portion of the Brunswick mine. The company began removing all the broken ore in the various stopes before turning the area over to the leasing parties.

George Bird was given a lease on the No. 1 vein on the 490-foot level of the Old Brunswick mine. Sam Veale was given a lease on all levels from the 580-foot level down to and including the 1200-foot level. Dan Henry was given a lease on the levels from the 1200-foot level down to and including the 1600-foot level. The leaseholders furnished their own labor, insurance and explosives. The company provided the tools, timber, hoisting and milling. The lessees received one half of the value of gold produced in their area.

The company reserved the black slates area on the 1300-foot level, No. 16 vein, for the company account. The company also maintained all areas of the mine below the 1600-foot level, including the 2700-foot level of the Idaho Maryland. On the 3280-foot level the No. 25 drift was extended, but stopped at 261 feet, and the No. 25 drift east was stopped at 520 feet. The No. 3 drift was also extended, and stopped at 528 feet. The "H" fault intersected the No. 3 drift at 361 feet and mineralized diabase appeared at 503 feet.

The 3280-foot level was 980 feet below the nearest New Brunswick level, without any emergency exit other than by the shaft. The mine workings near the end of the long crosscut had to rely on a series of large

Production—1949

There were 7,674 linear feet of development headings driven during 1949, and 10,214 feet of diamond-drill holes drilled. Production figures for 1949 show a total of 210,152 tons of ore treated in the two mills, with 172,313 tons going to the Brunswick mill and 37,938 passing through the Idaho Maryland mill. From this tonnage 61,544 ounces of gold and 15,827 ounces of silver were produced. Metallurgical recovery was 95.6 percent of the gold. The company received $10.27 per ton milled.

Mining operations yielded earnings of $132,019 before depletion and depreciation, but after all other charges. Depletion and depreciation charges amounted to $207,269 for mining operations. A loss of $75,520 was shown after all these charges were added.

Sawmill Operations—1949

The Idaho Maryland's sawmill, capable of producing 40,000 board feet per day, was placed in operation in May 1949 under a lease agreement with Orris Donohaugh. A crew of eighteen men was employed. The 10,000 feet/per/day sawmill at the New Brunswick was leased to Mario and Lawrence Personeni.

The operations of the sawmills yielded earnings of $45,685 before depreciation, but after all other charges. Depreciation charges amounted to $31,380, thereby showing a $13,795 profit.

Brunswick Operations—1950

The wooden headframe at the Old Brunswick shaft began to weaken from dry rot and age, so replacement became necessary. A new steel headframe and an ore bin were erected. Ore hoisted through the Old Brunswick shaft from the 900-foot level continued to be trucked to the Idaho mill.

Some changes were made in the Brunswick mill to remove and treat the slime fractions separately. These included installation of a trommel screen, a classifier, and a bank of flotation cells.

The three leases in the Brunswick continued, with the George Bird lease working on the 490-foot level. Sam Veale and his crew were working from the 580-foot level down to and including the 1100-foot level. Dan Henry and his men were working from the 1100-foot level down to and including the 1600-foot level. All three leases were producing good ore.

Management's policy during the year was to mine the available ore of a higher value, and leave the lower grade ore. It was theorized that should the price of gold be increased, or if American gold were to be released to a free market, the corporation would be in a position to go back and mine the marginal grade of ore.

Production—1951

There were 262 men employed by the Idaho Maryland Mines Corp. at the end of the year. An average of 500 tons of ore was being milled each day, with most of it being processed in the New Brunswick mill. The Idaho Maryland mill operated on a part-time basis.

During 1951 there were 141,853 tons of ore milled, resulting in a recovery of 52,228 ounces of gold and 14,225 ounces of silver. The average recovery per ton of ore milled was $12.67. The proceeds from the gold ore amounted to $1,797,538. At the end of 1951 an estimated 70,000 tons of broken ore had accumulated in shrinkage stopes. Approximately 48,000 tons of this ore was mined in 1951.

Rentals amounting to $38,960 were received from lessees of the two sawmills owned by the corporation. After depreciation and other charges the net income was $31,384. Until now, with the exception of 1946 (the first year of operation), the sawmills had shown a consistent loss.

The Nation's Need for Tungsten—1952

When the Korean War started, the government announced a program to stimulate production of strategic and critical materials within the United States. In 1951 and 1952 the General Services Administration began a purchase program for tungsten. Producers could sell either on the open market or to the government. The purchase program was to run until 1958, or until a supply of three million units was attained, whichever came first.

Small amounts of scheelite were often found in certain quartz veins in the Brunswick mine, and in the course of mining and milling the gold ore this important metal was being lost. Management became aware that this loss could add up to several thousands of dollars each year.

Western Machinery Co. was hired to study the milling process and determine if there would be a way to save the tungsten without interrupting the gold circuit. Western Machinery's Harold Minardi recommended treating the full mill tails separately to recover the tungsten. In the meantime, the Idaho Maryland company's consulting geologist, Carlton

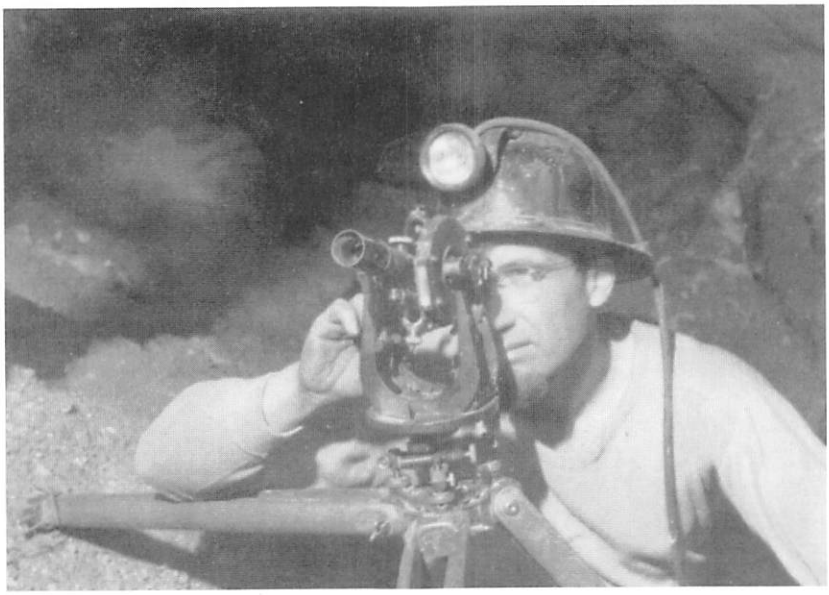
Engineering lines were given to run the No. 8 crosscut in a position for the raise to begin. The cutout for the hoist, ore chute and raise were laid out subsequent to completion of the crosscut.

On July 30, 1952, the Idaho Maryland Mines Corp. and the Mine Workers Protective League signed a new wage agreement granting a raise of 15 cents per hour to all employees, retroactive to July 1.

All leases in the two mines were discontinued in September 1952. The company's costs had become to high to continue the lease program. Even though the leaseholders paid for their own wages, insurance and blasting powder, the company's costs for hoisting, milling, steel, timber, etc., had risen to a point where the program was unprofitable.

Revenue from mining operations and sawmill rental amounted to $1,429,937 for the year. Expenses amounted to $1,492,148, leaving an operating loss of $62,211 for 1952. The total loss for the year was $222,406, when depletion and depreciation was taken into account. There were 138,418 tons of ore milled for a return of $1,394,315. This represented a yield of 39,730 ounces of gold and 11,942 ounces of silver, for an average recovery of $10.07 per ton. During the year, 6,225 lineal feet of drifts, crosscuts and raises were driven, and 12,173 feet of diamond-drilling completed.

Grayden Beechel operating a Deitz surveying instrument underground.



ing the year. All of the marketable timber on the mining properties was sold, bringing in $96,000. In addition to the above, the corporation was able to sell 177,500 shares of capital stock for a dollar a share at private sales. It was only as a result of these sales that the corporation was able to continue operations.

During 1954 there were 88,632 tons of ore produced, in comparison to 153,634 tons in 1953. All of the ore was hoisted through the New Brunswick shaft and milled in the Brunswick mill. The yield was 17,969 ounces of gold and 4,786 ounces of silver. Bullion with a net value of $394,886 was delivered to the mint, and concentrates with a value of $193,346 went to the American Smelting and Refining Co. in Selby, making a total amount of $558,232. In 1953 these values had been $1,088,048. The recovery in 1954 was $6.64 per ton milled, compared to $7.04 per ton in 1953.

The lower output during 1954 was partially due to the reduction of the work force from 193 to 114 men. Another factor was that, in several instances, miners were called upon to work on heavy caves on the 2000-foot level, west of No. 30 winze on the main haulage level.

The Corporation's Financial Worries—1955

In January 1955 preparations were underway to sink a winze on the 3280-foot level, where several sample sacks of high-grade gold had been gathered while driving the No. 25 drift. An area had been enlarged to set a hoist, and 40 feet of rope-raise run up above the level. Ore and waste bins were completed, and the actual sinking operations were about to begin when the operation was stopped.

The development money was limited, going into the year 1955. Aside from the tungsten exploration, all development work was run in the lower levels of both mines. Beginning in January, a drift was driven 250 feet on the No. 16 vein (more often referred to as the Morehouse vein). This drift was located on the 2000-foot level of the Idaho Maryland, close to the No. 45 winze. Two raises were also run up on the No. 16 vein. The other development headings were on the 2800- and 2830-foot levels off the No. 60 winze. The No. 1 winze on the 2830-foot level was sunk on the No. 52 vein for a distance of 70 feet before it was stopped.

A drastic cutback in employees was made in February 1955, when 48 personnel were terminated. This left a total of only 60 employees, including both surface and underground workers. By the early part of May all

development work was stopped, with the exception of work involving the tungsten exploration. Mining turned to stoping whatever higher grade quartz was available.

Tungsten Mining—1955

The strong showing of scheelite on the Brunswick's 900-foot level, along with the high percentage of tungstic oxide processed in the pilot plant, helped the corporation obtain a government grant for exploration of tungsten. An exploratory project contract was procured in January 1955 from the Defense Minerals Exploration Administration. Under terms of the contract, the government agreed to reimburse the Idaho Maryland Mines Corp. for 75 percent of all expenses incurred in the exploration of tungsten. The government's participation was limited to $50,885, repayable by the corporation solely out of the gross proceeds from production of tungsten, at varying rates (limited to five percent of such proceeds).

During the period of January 20 to September 30, 1955, a significant body of scheelite ore was discovered, containing about 9,000 units of tungstic oxide. This ore shoot marked the first time in the history of the Brunswick mine that a tungsten ore body had been discovered, explored and specifically set up as a unit reserve for economic extraction of scheelite.

Previous disclosures of scheelite had been made in the gold-quartz veins of the Brunswick mine. Some attempts had been made in the past to prove out tungsten ore to justify a tungsten program. Great amounts of tungsten were allowed to be lost during milling of gold ore. This loss was at least partially justified by the requirements of gold production and the lack of proper concentration equipment needed to recover the tungsten economically.

The initial tungsten findings on the 900-foot level were in the No. 19 and No. 45 veins, but crosscutting southward from the No. 45 vein discovered the No. 46 vein. This vein, at its initial penetration, showed a body of quartz and scheelite with an average thickness of seven inches. Approximately 25 percent of the mass was scheelite. Quartz stringers were abundant in the face on both sides of the vein, showing scatterings of scheelite. The face increased in scheelite amounts as the drift was advanced.

Upon entering a scheelite-bearing drift after the miner had scaled and thoroughly wet down the vein, a person was in for a treat. When all

Minerals Exploration Administration for tungsten exploration of the ore body extending from the 700-foot level down to the 1100-foot level. The tungsten ore body in the Brunswick mine was situated within close proximity to the Union Hill mine, which had been full of water since its closing in 1919. This would become a concern in the coming year.

The mining and milling of gold ore was discontinued as of December 27, 1955, and all operations turned to the production of tungsten. Only a substantial increase in the price of gold would make it profitable to return to gold mining. The cost of steel, explosives and supplies used in mining had risen to a point where gold mining was no longer profitable. Unlike other businesses, there was no way to pass the increased cost on to the consumer. The price of gold was fixed at $35 an ounce, and it was sold directly to the U.S. Mint in San Francisco.

Production of gold ore in 1955 dropped significantly to 28,905 tons per year, from 88,892 tons the year before, and the grade of ore dropped to an unprofitable average of $6.32, from the only slightly better $6.64 in 1954. Operations of mine for the year resulted in a loss of $217,987 before depletion and depreciation. Income from the sales of land, equipment and timber, less non-operating expense, amounted to $143,071, reducing the net loss before depletion and depreciation to $74,516. Depletion and depreciation was $98,013, for a net loss of $23,497.

The Year of Retrenchment—1956

The year 1956 began with a general retrenchment of underground operations, beginning in the lower levels of both mines. A small crew of men began removing all trolley motors, ore cars, mucking machines, drills, hoses, slushers, etc., from all levels below the 2000-foot level, including the 3280-foot level. All pumps were left in place, and the pumping continued. The levels connecting with the No. 45 winze in the Idaho Maryland had no connection with any other underground location, therefore the No. 45 winze was allowed to fill with water after all equipment and pumps had been removed.

Now that gold mining had ceased, the future of the mine focused entirely on the production of tungsten. The exploration continued in search of scheelite on the 900-, 1000- and 1100-foot levels. At the same time, a fair grade of strategic mineral was being mined. The tungsten mill was finally completed on March 1, 1956, resulting in a very high extraction of tungsten concentrate. This mill was set up partly in conjunction with the gold-processing equipment, and had a capacity of 75 tons in 24

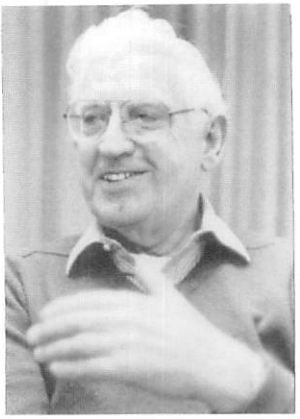
land was on the crest of a hill overlooking the Nevada County golf course on the north, the city of Grass Valley on the west, and the Idaho Maryland mine on the south. Much of the credit behind this transaction can be given to Malcolm Hammill, who was the mine's surface superintendent and also served as chairman of the Grass Valley Memorial Hospital Association. Thanks to a $200,000 gift from the late Errol MacBoyle and the land donated by the Idaho Maryland Mines Corp. and the sale of debenture notes by the Citizens Hospital Committee, the Sierra Nevada Memorial Hospital was built.

Max Bechhold, manager of the mines, resigned on June 15, 1956, to administer the estate of his newly deceased brother, Sigfried Bechhold, who had married MacBoyle's widow, Glendolyn, in 1950. Safety engineer Jack Clark was appointed superintendent in charge of operations on June 15.

On September 25, 1956, orders were received from the board of directors to cease nearly all tungsten production, abandon the Idaho shaft, and to allow both mines to fill with water, up to and including the Brunswick 1450-foot level. This action was taken to reduce the number of employees to an absolute minimum consistent with the above program. The raise on the 1100-foot level was to be continued. If the government loans were approved, then men could be hired when and where necessary.

Subsequent to the decision to allow the lower levels of both mines to fill with water, the surface plant of the Idaho Maryland mine was sold to the Oro Lumber Co. The sale included the mill, cyanide plant, headframe, hoists, compressors and several buildings. The Oro Lumber Co., (also known as GPB) operators were Robert Graham, Gladys Perkins and Ed Brunning. This same company had purchased the sawmill.

All mining had been curtailed with the exception of the single raise being run on the 1100-foot level. There were great hopes that money would be forthcoming from the government to dewater the Union Hill mine and continue additional tungsten exploration in the Brunswick mine. However, word was received in December that the requested grant applications had been turned down. In addition, the California Division of Industrial Safety ordered the corporation to cease mining in close proximity to the Union Hill mine, due to the danger of flooding the Brunswick. The Brunswick mine was forced to close, leaving only a skeleton crew of men to remove all saleable equipment from the under-



About the Author

Jack Clark is descended from Nevada County pioneers on both sides of his family. His mother's grandfather came across the plains with a wagon train, and his father's family arrived in 1863. Jack was born in 1920 and began work as a mucker at the Idaho Maryland mine on January 9, 1941. Two months later he was promoted to the position of First Aid Attendant, and was in charge of safety and first-aid equipment above and below ground at (simultaneously) the Idaho Maryland mine, the Old and New Brunswick mines, and the Bullion mine.

During World War II, when gold mines were closed by government order, he served in the U.S. Navy Reserve and Marine Corps as a Pharmacist Mate in the South Pacific. He returned to the mine on November 3, 1945, five months after it reopened. He worked in the New Brunswick shop for 3½ years and then was given the job of Safety Engineer. Clark's last mine position was as underground superintendent from July to November 1956, when the mine ceased operations.

No one but Jack Clark could have written this book, for no other person had his unique access to operations above and below ground. As Clark says in the Preface, "In that period I acquired considerable knowledge of the operations and underground geology. With this background and my interest in mining, I felt compelled to research the mine's history and record a factual account of this famous gold producer and the men who were an important part of it."

APPENDIX D

which down to 400 feet is 45°, then becoming 60°, and finally at 600 feet 70°, was located early and has been worked with varying success for a long time, the upper levels containing some good ore shoots. For the last seven years the mine has been extensively prospected, and some good bunches of ore have recently been found in the lowest level. The mine is developed by a shaft 700 feet deep on the incline, and drifts extending 300 feet toward the west. The vein is contained in a chloritic schist derived by dynamo-metamorphic processes from a porphyrite-breccia, and intersects the strike of the schist at an acute angle. There are usually two well-defined walls, 2 to 4 feet apart. The space between the walls is only locally wholly filled with massive quartz, being generally occupied by soft chloritic schists, extensively altered by hydrothermal processes; the schists are either parallel to the walls or, as is frequently the case, broken and irregular; they contain streaks and ramified veins of massive quartz (fig. 29), which sometimes increase in thickness and occupy the whole space between the walls. East of the shaft the vein closes down to a mere seam. Free gold is rarely visible in the quartz, and the sulphurets, which generally are rich, consist of pyrite, chalcopyrite, and galena.

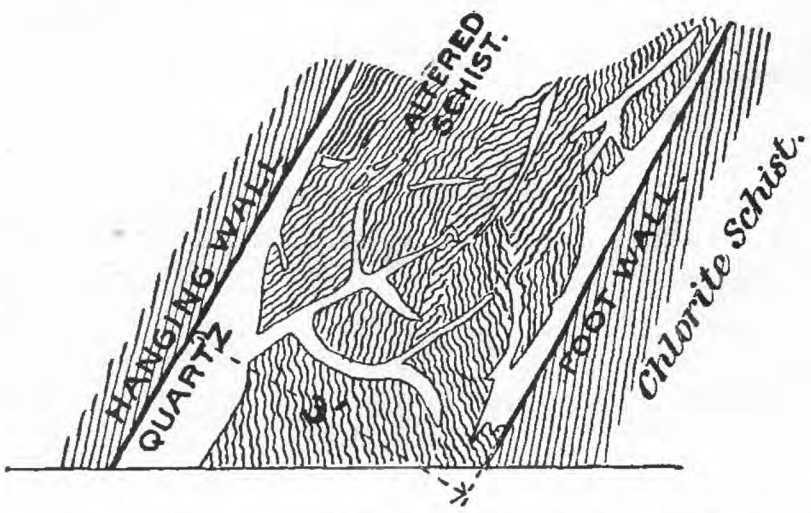


FIG. 29.—Cross section of the Brunswick vein, on 700-foot level.

The Gold Point is a vein parallel with and south of the Brunswick. The heavy croppings, dipping 70° S., can be traced for over 2,000 feet. It is opened by a tunnel from Wolf Creek connecting with inclines from above. To the west of the tunnel the vein is very heavy and contains large masses of low-grade ore. The country rock is a schistose porphyritic breccia, less chloritic than that of the Brunswick.

The Union vein, the croppings of which are visible in places on the north bank of Wolf Creek, is one of the earliest-located veins in Grass Valley. The ore was worked with an arrastra up to 1854. In 1865 mill and hoisting works were erected, and the mine was worked with profit until 1870. The total product is given as $250,000. From January 1 to August 1, 1869, the mine produced 7,200 tons, yielding $75,569, or about $10 per ton. The vein, which is continued in schistose porphyritic breccia, dips 50° S. and has been developed by a shaft 268 feet deep on the incline. The width is said to be considerable, averaging 3½ feet. The extent of the stopes is shown on fig. 30, taken from

Raymond's Report for 1869-70. The gold is 822 fine. Galena is said to predominate in the sulphurets.

The Cambridge vein is located on the south side of Wolf Creek. The Lucky and the Cambridge mines were located on this vein and worked extensively about 1865 to 1868. The Lucky mine, on the west, had a 15-stamp mill and was exploited by a shaft 400 feet deep on the incline, 10,000 tons of ore being extracted from 1865 to 1867. The Cambridge, adjoining on the east, was opened by a shaft 200 feet deep, and a 10-stamp mill was erected on the property; 75 tons of ore per week were crushed for a long time, averaging $20 per ton (Bean's Directory). The vein lies in chloritic schist, dips 50° SW., and is generally wide, averaging 2 to 3 feet. According to Professor Silliman, free gold is rarely visible in the ore. If these reports are correct, this vein, as well as the Union, may be rendered productive again. The gold is from 817 to 820 fine.

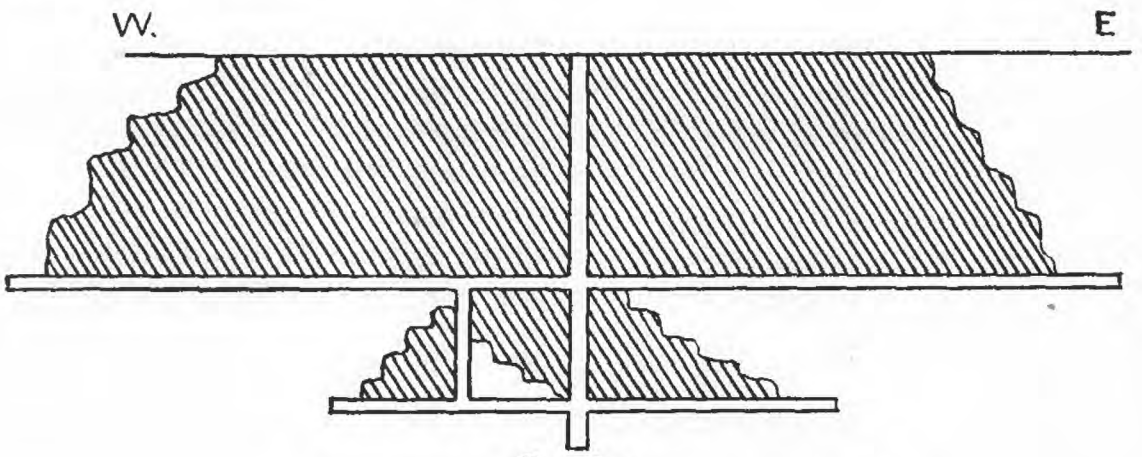


FIG. 30.—Longitudinal section, Union Hill mine, showing areas stoped.

The Francfort vein, about 800 feet south of the Cambridge, is said to have produced some good ore from the croppings.

THE CROWN POINT VEIN.

This deposit, located on the south side of Wolf Creek, half a mile east of the center of the city, has been worked at intervals since 1886. The production is stated to have been $130,000, of which $80,000 was found in one bunch of ore with much coarse gold. The shaft is 400 feet deep on the incline, with levels extending east and west, only the upper two levels being accessible in 1894. The vein, which strikes northwest and dips 70° to 80° N., lies in serpentine or serpentinized porphyrites, the width of quartz and vein matter varying from a few inches to 4 feet. There are considerable amounts of magnesic and calcic carbonates produced from the serpentine by thermal alteration. A thin sheet of quartz, still adhering to the foot wall near the shaft in the drift, shows beautiful polish, with nearly horizontal striation; in

APPENDIX E

a depth of 1900 ft. on the incline. A new vertical shaft was sunk 1000 ft. on the Scotia claim on the west side of town, this giving the same depth as the 1650-ft. level of the Golden Center. Connections were made from this shaft to the old 1100-ft. and 1650-ft. levels. The old mill was used (20 stamps and flotation) until June, 1938, when a new mill was put in operation near the vertical shaft, which is about ½ mile northwest of the old one. Most of the work has been done on the Church Hill and Dromedary veins. The latter, striking north and northwest, branches and the west branch is called the Rock Roche.

Several hundred feet has been drifted on each, the Church Hill being more extensively prospected on the strike and the Dromedary on the dip. The former ranges from a stringer to several feet in width. The veins are in general similar to others in adjoining mines and are worked with small stopes with 2 air drills in each. Work is being done on a number of levels from 700-ft. level down. Stoping has been started on the 1650-ft. level on Dromedary vein, and on the 1900-ft. level on Church Hill vein. A crew of 140 men are employed and 150 tons of ore is produced daily. An Eimco loader, Mancha trammer and mules are in use for handling ore underground.

A double-drum 150 h.p. hoist is operated at the new vertical shaft, and the old hoist is kept in commission at the incline. Three Ingersoll Rand compressors supply air through the new shaft.

Ore hoisted to the headframe passes through a gyratory crusher, Telsmith crusher, and set of rolls which reduce it to ¼ inch and it goes by belt conveyor to the mill bins. Final crushing is done by an Edinger ball mill (made at a local foundry) run by a 100-h.p. electric motor. Pulp passes through a jig, which saves coarse gold; thence to a Dorr classifier, and four size-11-S Standard square Fagergren flotation cells. Reagents used include Zanthates Z6 and B23, Aerofloats 15 and 242, $CuSO_4$, lead acetate, Na_2S, soda ash, alum and lime. Flotation concentrate is filtered and cyanided in a 5-ton plant. Flotation tailing passes over a Deister table.

Golden Gate Group, 1400 ft. north of the Idaho Maryland, contains a group of 5 veins in serpentine including the Alpha and Kentucky veins, which were worked in early days. From 1877 to 1881 the Alpha paid $20 to $30 a ton down to a depth of 120 ft. from a vein reported 20 inches to 24 inches thick. The Kentucky produced ore that yielded from $17 to $26 a ton, from a vein 6 inches to 18 inches wide. This vein had 2 ft. of "cabby" rock on the hanging wall, with 4 ft. of low-grade ore above it. In 1873 it produced $5000 from 300 tons of ore. In 1877 a lot of 16 tons yielded $421.10. The shaft was about 250 ft. deep in 1873, and only 150 ft. of drifts had been run. Work continued on such a small scale for 25 years, off and on, with a depth of only 300 ft. reached on the dip of vein.

Later the Golden Gate Company sank an inclined shaft 1020 ft. and drove a total of 3315 ft. of drifts, 485 ft. of cross-cuts, 420 ft. of raises and 160 ft. of winzes. There was a good mine plant and a 10-stamp mill. From 1909 to 1915 inclusive, about 8000 tons of ore was mined and milled, most of which is stated to have yielded $6.40 a ton. The concentrate was less than 1% of ore and was low grade, containing only about $45 to $50 a ton in gold.

h.p. synchronous motor. Mill and other equipment are housed in good buildings covered with galvanized iron.

Hot Water Mine is at Graniteville, 28 miles northeast of Nevada City, at an elevation of 5000 ft. Betty Anne Gold Mining Corporation, Sacramento, (incorporated 1931, lapsed 1935) is reported to have done some work and still to own the ground. Baker, Casey and Walther are the present lessees, with Thomas E. Casey in charge.

The headframe and mill at the old shaft were burned late in 1938. This shaft was 120 ft. deep with a number of short drifts. A new shaft has been started about 1000 ft. northwest of the old one and was 58 ft. deep on an angle of 45° on June 12, 1940. The workings, inaccessible because of pump trouble at the time of visit, are said to include also a drift 30 ft. north and 100 ft. south at 50 ft. depth. The vein varies in width from layers of quartz 10 inches wide on each wall in the shaft, to a total of 3 ft. to 4 ft. according to Casey, in the drift and sump. Both walls are granodiorite and the ore is inclined to vary greatly in value, assays ranging from $14 to $500 a ton. An ore shoot 70 ft. long is claimed. Only a small amount of ore is crushed yearly most of the work being done in summer and fall.

The mill at the new shaft consists of a grizzley, rock breaker, 5 medium weight stamps and 8-ft. plate for amalgamation. Power for mill is supplied by a Buick automobile engine and a Dodge engine is used for hoisting.

Water for power is taken from Poorman Creek through ½ mile of pipe to the old shaft where a Pelton wheel operates a 30-kilowatt 500-volt electric generator. A power line 1000 ft. long runs thence to the new shaft. A 1½-inch centrifugal pump, operated by a 5-h.p. motor, runs 8 hours out of 24 to keep the shaft dry. From 4 to 6 men are employed.

IDAHO MARYLAND MINES CORPORATION

By H. M. Wolflin, *Assistant Manager*

In 1935, the Idaho Maryland Mines Company and Idaho Maryland Consolidated Mines, Inc. were consolidated into one corporation known as Idaho Maryland Mines Corporation and since then the combined holdings, including Brunswick and Idaho Maryland Mines have been operated as a single unit with Edwin Oliver, President, Errol MacBoyle, Executive Vice President and Albert Crase, General Manager of the consolidated corporation.

Earlier history of the several increments of the Idaho Maryland holdings has been covered by the following State Mining Bureau publications.

"Mines and Mineral Resources of Nevada County"—1918

"Report XXVI of the State Mineralogist"—1930

From 1930 to 1940 inclusive, development and operations proceeded systematically and smoothly with the production of 2,186,381 tons of ore from which bullion and concentrates to the gross value of $26,767,574 were extracted and sold. Dividends of $5,723,965 were paid.

During the eleven-year period covered by these notes a new method was used to sink an Idaho #2 (round) shaft to a point below the 1000-

foot (vertical) level. This shaft was put down by a large core-drill which was developed on the property. The drill made a hole 5 feet in diameter more than 1000 feet in depth. The cost of sinking the single compartment in this way was well under the cost of conventional methods of sinking. The New Brunswick shaft was sunk from the 1400-foot level to a point near the 3300-foot level and at the end of 1940 sinking operations were being continued, although no development of importance had been undertaken below the 1600-foot level. The Old Brunswick shaft was extended to the 1100-foot (vertical) level. The 2000-level of the Idaho was connected with the 2300-level of the New Brunswick shaft and the entire property was being operated as one mine. The Idaho 30 winze was sunk from the 2000-level to a point below the 2700-level (vertical). The Idaho 45 winze on the Morehouse vein was sunk 800 feet (on the incline) below the 2000-level. Sinking operations were being continued. During the eleven-year period 228,901 linear feet (43¼ miles) of new headings were driven, in addition to 270,380 cubic feet of rock excavation and 130,921 feet (24¾ miles) of diamond drilling. The number of employees had increased until about 950 were working at the end of 1940.

During the period the Idaho 20-stamp mill operated steadily. Ore-treatment capacity was increased by the construction of a new mill near the main Idaho shaft where two Marcy mills with flotation equipment, a cyanide plant for the treatment of concentrates and sand were capable of treating 700 tons in 24 hours. At the New Brunswick mill capacity was increased to slightly more than 600 tons in 24 hours through the installation of a Marcy mill, a re-grind mill and other equipment.

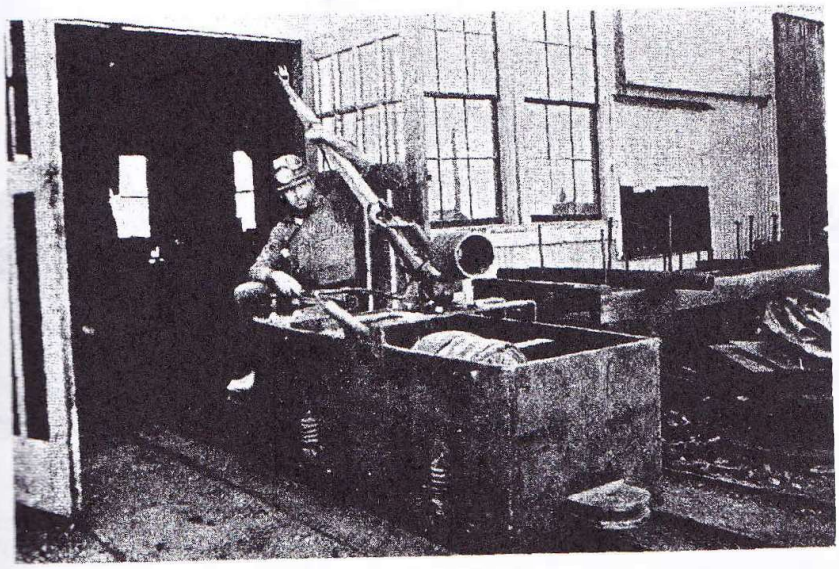
At the end of 1940 steel was on the ground for the installation of a new 135-foot headframe at the New Brunswick shaft. An Ottumwa double-drum hoist with a 1000-horsepower motor, capable of operating 6-ton skips to 4800 feet vertically, was being installed on the surface as was a 600-horsepower Norberg man and material hoist with a single 8-foot drum.

The sustained effort at underground development had resulted in the opening of more than 40 veins which have produced commercial ore. In fact about half of that number continue to produce steadily. Although these veins vary in width from a few inches to thirty feet much of the stoped ore has come from veins of from 10 inches to 40 inches in width, most of which dip in excess of 40°.

Idaho Maryland Mines Corporation. The accompanying article, prepared by Hugh M. Wolflin, assistant manager, does not give due credit to the human factor that helps make mines. The lifting of the Idaho Maryland Mines from the status of a disappointing 'has-been' to the position of leading gold producer of California in 10 years has been due to local initiative and to the skill of local miners and engineers. It is one of the best achievements of this generation of California gold miners, as it involved simultaneously the working of properties that had baffled some of the best known engineers, the gathering of capital under the handicap of debt and the failure of these predecessors, and the building up of a competent organization sufficiently motive-minded to anticipate necessary steps. It is to be regretted that the staff could

not be persuaded to prepare for publication the detailed satement which these mines warrant.

The great Eureka-Idaho-Maryland ore shoot lay nearly horizontal in the Eureka mine, beginning at a depth of 100 ft. and stopping between 600 ft. and 700 feet deep. It was worked for 1600 ft. in length in the Eureka and for 4000 ft. in the Idaho and Maryland. The pitch of the ore zone was so flat toward the east that in 5600 ft. on the strike it reached only to the 1900-ft. level. The eastward extension of work on this vein complex has furnished the ore mined since 1930. The general appearance of the mine in 1930 was described in our 1930 report. The eastern limit of this productive area has since been carried about 500 ft. farther, and the ore mined since from the Idaho-Maryland veins has come from this length of about 1500 feet, and from above the 2000-ft. level. Stoping is now going on in this



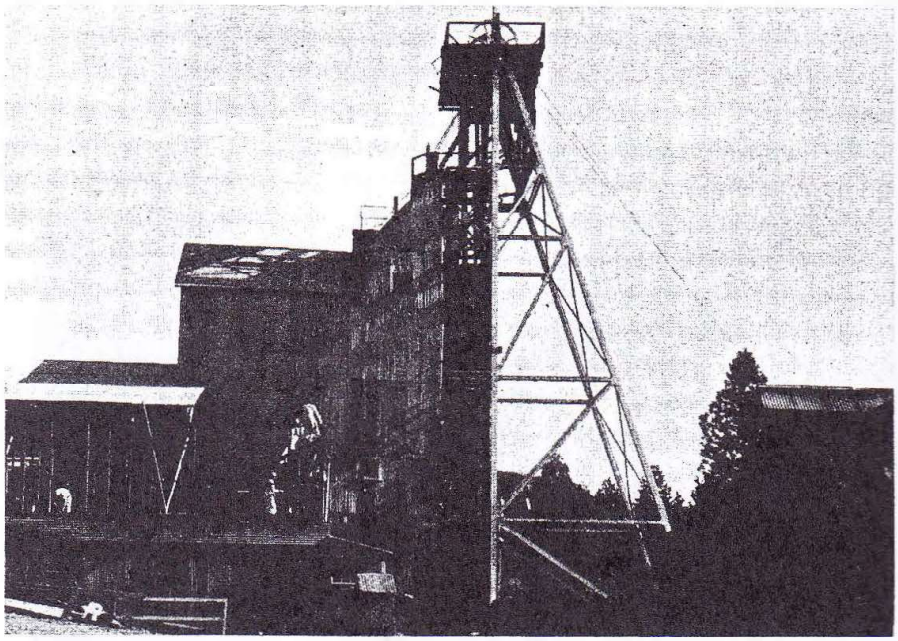
Electric trolley locomotive, Idaho-Maryland Mines. These are built in the mine shop for $300 each. *Photo by courtesy of Albert Crase*

section between the 750-ft. and 2000-ft. levels. Ore shoots vary from 400 ft. to 1000 ft. in length. Methods of mining depend on conditions of veins and walls, which vary widely because of the great number of veins worked. There is no uniform method of drilling and blasting. Ingersoll Rand drilling equipment is used. Hot milled detachable bits and SCR 120 drilling machines are used for stoping. Extra gelatin powder, 30% and 40% is used for blasting.

It is 7000 feet from the main Idaho Maryland shaft to New Brunswick shaft. The 2000-ft level of the Idaho (446+ ft. above sea-level) has been connected with the 2300-ft. level of Brunswick through a crosscut. Idaho No. 2 shaft, a round single-compartment untimbered shaft for handling men and materials and for ventilation was sunk with the Newsom drilling machine, a core drill evolved at this mine, as this was the first shaft of the kind ever sunk. It is vertical, 5 ft. in diameter and no explosives were used in sinking it so the walls are

much firmer than in ordinary shafts. This shaft is between the two above named.

Generally speaking, no drastic changes appear to have been made in interpreting the geologic conditions covered in past reports. Albert Crase regards the Idaho Maryland vein system as one that has been interrupted in strike by a series of three small faults, not sufficient



Headframe and ore bins Brunswick Mine, Grass Valley

in throw to separate the segments. The hanging wall is diabase which has generally been in the form of a dike 20 ft. to 30 ft. thick. The footwall is serpentine. The veins seen by the writer varied in thickness from 6 inches to 12 feet, and Wolflin mentions some 30 ft. wide. In the Idaho and Maryland old workings, Lindgren gave the dip as 55° to 73° S. and strike N. 77° W. The dip is flatter and strike near west in some places.

The geology of the Idaho-Maryland section of these holdings is entirely different from that of the Empire and North Star which are in granodiorite (quartz monzonite) in the deeper levels. The Idaho Maryland is north of the large fault along the north side of the granodiorite, and so far as known granodiorite has not yet been found in any of that mine's workings. The nature of the walls makes it expensive to maintain the openings that would be needed for blocking out large ore reserves.

Eimco-Finlay loaders and electric haulage with 120-volt direct-current trolley locomotives and a few storage battery locomotives are used throughout the mine, the trolley trammers being made at the mine machine shop for about $300 each. Hand-cranked air drills with regular long steel are used for sinking and drifting.

The Brunswick veins occur in amphibolite schist. The vein principally worked by previous operators strikes N. 50° W. and dips from 40° to 70° SW. Work in the new shaft had reached 1347 ft. before the present company took charge. At present a number of veins are being stoped between the 490-ft. and 1300-ft. levels, and development is going on below 1400-ft. level.

Milling.

In 1939 the combined plants handled 434,514 tons of ore and concentrate, and in 1940 a total of 432,024 tons, of which about 25,000 tons annually came from the Grass Valley Bullion Mine and from small mines for which custom work was done. In 1940, there was a total of 293,005 tons of ore hoisted from the Brunswick shafts, and 113,702 tons from the Idaho shaft, but much of the Brunswick ore is brought to the Idaho mill for crushing, and separate figures for value of ore from the two mines are not given out. The average recovery value of company ore in 1940 was $11.19 a ton and tailing loss was 44.8¢ a ton.

Ironclad Mine. In SE¼ sec. 26, T. 16 N., R. 7 E., 5½ miles west of Grass Valley, near Rough and Ready. It was located in 1877 and small lots of good ore were mined yearly for several years. This ore, according to contemporary reports, yielded $20 to $42 a ton. The first shaft

Core sections (5 ft. diameter) from Newsome shaft-boring machine at Brunswick Mine of Idaho-Maryland Group. *Photo by Walter W. Bradley*

was sunk to a depth of 380 ft. but is now caved. The vein in it was reported 16 inches wide near the top and 2 ft. or more below, and average yield to 1879 was $35 a ton. A 5-stamp mill was on the claim at that time.

In later years a shaft was sunk 50 ft. on a vein from 8 inches to 12 inches wide and in 1907 and 1911, the last years in which work was

APPENDIX F

CALIFORNIA GOLD AND THE HIGHGRADERS

True Stories of the Mines and the Miners

F.D. CALHOON

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CHAPTER XXIX

THE LAST HIGHGRADE

The deep quartz mines closed in the mid 1950's. Rising costs stopped any thought of reopening the hydraulic placer mines. With few minor exceptions, organized gold mining ceased in California.

But strangely, highgrade appeared from time to time. The Postscript of this book tells of two ex-miners attempting to smuggle stolen gold into Mexico. That was almost ten years after the closing of the mine they took it from. This, the final chapter will tell of the last large cache of highgrade to come to light. This was in 1971. It was no longer considered illegal. The owner of the land on which it was found could, and did, dispose of a part of it at the Mint in San Francisco.

The story is long, and somewhat involved. But if the reader has come this far, he will be intrigued with the story of Bill and Marian Ghidotti.

In 1925, the two graduated from high school. Within a month, they were married.

Bill was a big, bumbling, Italian boy whose grandparents migrated to the mining towns of California, straight from a farming district of Italy. They opened a boarding house for single miners in Nevada City. In time, that graduated into a small hotel.

Bill was not interested in catering to the public. He had his eyes on that new two-ton Mack truck that the P.G. & E. Company had just sent to Grass Valley to replace the five teams and wagons which previously hauled materials to company

building and repair sites.

Dan Stewart, the local superintendent, looked over Bill's application. Of course, he already knew Bill. His school record showed that he could at least read and write. He was big, he had a wife to support. He probably would be willing to follow orders and was anxious enough to keep his job to refrain from looking for a shady spot to sleep away the long hot afternoons. Steward gave him a trial.

His first job was to dig holes in the hard-baked red clay to set power poles. He worked hard, and was soon promoted to be an apprentice lineman.

That was not the direction in which he wanted to be advanced. He still had his eye on that truck. He also had learned how to work his way within the organization. His fingers suddenly became all thumbs. He could never learn to use the climbing irons correctly. After his second fall, Stewart took him off the lineman crew. He gave Bill every dirty job in the system to test his staying power.

Bill did the jobs without complaint. Eventually, he was given the job as helper on the truck. At the end of two years, a second truck was sent up from Sacramento and Bill moved behind the wheel of the old Mack. His boyhood dreams had come true. Trucks were still new in the mountain towns. He became the hero of the small boys, replacing the engineer of the Nevada County Narrow Gauge Railroad.

Meanwhile, Marian, who was known as Marian Thomas [after Saint Thomas, a last name given to her by the nuns at St. Mary's Convent, because she was delivered to them from a garbage can at the ripe old age of not more than ten hours] put her training in the commercial school at the convent to good use.

She got a job in the County offices. That

lasted until the Depression came along in 1929. Meanwhile, she and Bill were a few dollars ahead. They made a down payment on the run-down house they were renting. With prices of building materials falling like rocks off Glacier Point in Yosemite and with Bill's job secure because the mines were already expanding, they began to remodel the house.

Given the chance, Marian turned out to be a woman who knew what other women wanted in housing. Shortly, she also proved herself to be a near genius in handling money. The net profit was five hundred dollars on the first house.

Immediately, she placed an option on five more houses, moved into one, and began to remodel.

Rumors were now circulating that Roosevelt was about to double the price of gold. The deep quartz mines exploded with activity. The second house netted two thousand dollars. She ran that two thousand into a quarter of a million before the War intervened and stopped the influx into the mining towns.

Meanwhile, Bill did not relax. She would not let him. He continued to drive a truck for the P. G. & E. Company. Each day after work and each Sunday after early Mass, he did the heavy work on her remodeling projects.

Then they moved into a house with a very large rear yard. Bill was allowed to drive his truck home at the end of each day. He always managed to have the truck loaded with discarded power poles at quitting time. Of course, he unloaded the good dried wood in his own back yard. In time he accumulated enough to start a firewood business on the side.

Marian saw the great demand during the war years for construction and the building of war-time housing. She reasoned correctly that many of the war workers would choose to remain in California. They would be joined by their friends

from the East, and from the South; and by the soldiers and sailors who had been stationed on the Pacific Coast or had passed through on their way to, or on their way back from, the Pacific war zones.

On either side of Highway 20 on Washington Ridge above Nevada City, were thousands of acres of timber land which had been cut over 30 to 50 years before. In that area, ponderosa pine and Douglass fir trees make a remarkable growth of nearly a half inch in diameter each year. Now the "small stuff" which had not been disturbed, made logs twenty to thirty inches in diameter. They bought ten sections, all of which had only a downhill pull to a mill in Nevada City.

They then bought the old saw mill which had been standing idle all through the Depression. They sold most of the old machinery for junk and equipped the mill with the best and most modern saws, carriages, and planers that were to be had.

Bill quit the P.G. & E. Company and his beloved trucks. He supervised the mill. Marian gave up the remodeling and became the business manager.

They made money from the start. Lumber which sold for $10 to $15 per thousand board feet before the Depression, now brought $30 to $50, at the mill. They made nothing but money.

When the war ended, Marian saw that once the pipeline filled by lumber from the great mills in the Northwest, competition would once again enter the lumber business. She sold the mill and the timber land for a million dollars and began to think about retiring.

They had a small ranch a few miles below Nevada City on Deer Creek. Bill was not particularly interested, but she loved animals. Especially, she loved to ride and to raise good horses. The land which surrounded them was already being split up into five and ten acre home

sites. Fences crossed the trails where she had ridden before. She moved to where she could ride free in God's great outdoors.

They found a ranch in the foothills of the Ruby Mountains in Nevada, fifty miles south and east of Winnamucca. The "home ranch" was not large, but there were 10,000 acres of open range land surrounding them.

Marian was not through placing her furniture when a man from southern California dropped by. He wanted to buy her ranch.

She told him that it was not for sale.

His reply was: "Well, my old daddy always told me that almost everything could be had if the price was right. I know from the county records that you paid a hundred thousand for this place. I'm ready to give you a twenty-five thousand dollar profit and pay your moving expenses to anywhere you want to go. You have to agree with me that a 25% profit for the use of your money for only a few months is much better than most investments."

"No thanks," she said, "it's still not for sale."

"Thirty thousand?" He asked.

She shook her head.

"Forty?" He offered.

She still said, "No." But he caught a gleam of interest in her eyes.

He rose from the table where she had served him a cup of coffee. He walked to the door. He turned the knob; then hesitated.

"Name your price."

She did not blink. But her lips did compress into a straight line.

"Seventy five," she said without a quiver in her voice.

He rose to the bait. "Fifty. And you can live here until June first of next year."

"Sold," she said, and reached out with a firm

handshake. Then she added, "Mister, in this country, this is better than any contract ever written. And you damned well better be able to deliver. Cash in the bank on January first. You can't put that up, you can back out right now. Otherwise, stay clear of this country."

He grinned broadly. "Mrs. Ghidotti, you drive a hard bargain. I'll go you one better. I'll write you a check right now for the entire amount. It's good, and that makes us even. Your handshake, and my cash. How could any two people make a more binding deal?"

"Just one thing more. Suppose your husband refuses to sign the deed?"

A cold hard gleam came into her eyes. "Bill's a good man around machinery, and things like that. But I handle the business affairs in this family."

He nodded, but said nothing.

She smiled and motioned him to return to the table. "I think a deal like this calls for something stronger than coffee. Name your poison, as they still say in this country. Then tell me why you were so all-fired hot on getting this particular ranch. Find a gold mine out back of the corrals?"

"No," he said. "No gold mine. Something better for me. I've enjoyed doing business with you. Never saw a woman quite like you before. But I still have to be sure. Let me write that check. You take it and I'll tell you."

A look of anger crossed her face. "You don't trust me?"

"Sure I do. But I know only a few men I would trust in a deal like this. Just a little precaution."

He handed her the check.

"Three days ago, I found that Bing Crosby bought the ranch next to yours, to the south. He's got a bunch of boys. Little wild sometimes,

but he'll tame them. I've got three girls about their ages. Thought it might do some good if the bunch of them got together up here on the long summer evenings. Never can tell what might happen."

She grinned at him. "Well, I'll be damned! A hundred and fifty thousand match-making investment. Biggest gamble I ever heard of."

He only laughed. "Not so big. Maybe ten percent of my next picture. And anyway, as long as Bing owns that property down there, I can always get my money back from some star struck sucker.

It was her turn to laugh. "You suckered me before I had a chance to find out about Crosby."

"Well," he said, "you win some, and you lose some."

So, the Ghidottis returned to Nevada County. They deposited the check, and began to look for another investment. As usual, everything they touched turned to gold. Within the year, they found one which made the fifty percent profit on the ranch look like a month-old bag of potato chips.

Earl MacBoyle of the Idaho-Maryland Mine died in 1948. His widow had no idea of how to manage money or property. The mine closed, but not before she ran up a large deficit. She searched for help.

What she found was a handsome, articulate, stock and bond salesman. He saw in her, a wealthy widow. A "plump goose" just waiting to be plucked. He married her and took over her affairs.

During the following three years, he sold all the MacBoyle liquid assets. He borrowed heavily from the banks, pledging the Idaho-Maryland Mine and all its holdings as security. Then he failed to make any of the payments as they came due.

The banks foreclosed. All the mineral

rights, all the buildings, all the unsold machinery, and all the 1,200 acres of the mine owned land; all of it lying within two miles of the city center of Grass Valley, went under the hammer at a sheriff's sale. The minimum bid was set at $50,000.

Marian Ghidotti drew the $50,000.00 from the Nevada Ranch Sale. She gave Bill the cash and told him to flash the roll of bills as he made the first bid. If anyone wished to make a higher bid, they did not admit it. Bill could bid higher than anyone else who knew the value of the property being sold. Just as Marian had reasoned, they got the Idaho-Maryland Mine.

Did they get a BUY? Let the reader decide. Within three years the government removed the restrictions on the price of gold. The owner could seek the highest market. Immediately, Bill was offered a million dollars in cash for the mineral rights alone. Marian would not let him sell.

At the same time, the value of good subdivision land close to Grass Valley and Nevada City climbed to a minimum of $5,000.00 per acre.

But this is the story of gold and the highgraders.

The State Highway Department decided that a "freeway" must be built through Grass Valley and on through Nevada City. Midas touched the Ghidottis on the shoulder once again. Freeways call for great amounts of concrete. Concrete requires gravel or crushed rock. Good gravel was ten miles away on Greenhorn Creek. Excellent, already broken, hard rock lay in great heaps in the waste dumps of the closed mines. Bill sold the waste dump at the Brunswick Mine. 200,000 tons at 15 cents per ton. (Later the 500,000 tons at the Idaho brought 20 cents.)

The aggregate company placed a crusher by the Brunswick dump. A large power shovel fed the rock

into the rock breaker.

To be sure that nothing was disturbed other than the rock, Bill hired a 24-hour watchman to live on the property.

At the end of two weeks of crushing, the watchman came to Bill on Sunday evening. He showed Bill several pieces of quartz shot full of gold. He told the story of how he found it. The story would have been unbelievable anywhere but in the Nevada County gold country.

During the afternoon before the watchman's visit, a man drove up to the Brunswick dump in a fancy new car. He introduced himself and said that before the mines closed, he had worked in that mine. Today, he had brought his family up from Sacramento to show the kids where he had worked underground.

He noticed right away that the power shovel was working in a location of the dump where he had a personal interest, because a year before the mine closed, he was working on a stoping crew on the 3,000 foot level. They shot down a big bunch of highgrade. They had been told that the mine was to close the following month. They figured that the gold would only go to pay off some of the mine's bank debts. It would be a shame to let that happen.

They filled a half dozen powder boxes with the highgrade and held it until the ore bin at the shaft was empty, then marked the next car to be loaded with waste rock. One of the miners suddenly got sick and had to ride the car to the surface. He watched to see where that car was dumped, then took cross bearings and gave each of the other three a crudely drawn map.

The ex-miner told the watchman that according to the map, he knew that the power shovel was getting close to where their treasure was buried. He couldn't do anything about it. The watchman might just as well pick up an extra few month's

salary.

He did better than that. He knew that Bill would give him a "cut" of what might be recovered. So, here he was, suggesting that the next 5,000 tons of the rock be put over a sorting belt on its way to the crusher.

When asked if he got all of the $50,000.00 they had paid for the mining property, Bill only smiled. To his friends, he said, "I can't talk about things like that. Marian has to write a big enough check to the IRS as things stand now."

In a way, he was right. But he did not send the gold to the Mint. He kept all those beautiful pieces of rock to show to prospective buyers, if and when he decided to sell the mineral rights.[1]

When the gold reaches the Mint, (if it ever does) the last of the highgrade in large amounts will have left the Gold Country of California.

Hereafter, the gold flowing from the mining country will be in the form of currency brought to the hills by the people anxious to escape the cities. They have discovered that the country lying between 1,000 and 3,000 feet above sea level, the elevation where most of the gold was found, and the elevation lying above the smog and the fog of the Great Valleys and below the snows of the high country, is ideal for retirement living. It is also closer to more and to better recreational activities than almost any other place in the United States.

It has been more than 140 years since the

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[1]In researching for the stories of the highgraders, the writer asked Bill if he knew of any good ones. He said, "Come with me." He took me to his study and told me to pick up the two-quart fruit jar. I did. But it was so heavy that I had to use two hands. He need not draw me a picture. I knew what was there. So he told me the story of the Brunswick gold.

first gold was taken from the hills of California. During the next 140 years, the amount of gold brought back to the hills by retired couples and by men and women who work in the Central Valleys but commute to the hospitality of the hills, will far exceed the value of all the treasure taken by all the miners since James Marshall picked up that first piece of yellow metal from the mill race at Coloma.[2]

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[2]Bill Ghidotti died in the early 1970's. When the estate was settled, Marian with her one-half of the community property, plus all but a small amount he willed to some of his nieces and nephews in Italy, now had sufficient cash and other assets to become the principal stock holder (more than 50%) in the GOLD COUNTRY BANK in Glenwood. [Now the West American Bank.]

Upon Marian's death in the early 1980's, a few charities received some cash. The remainder was placed in a trust fund to send deserving students from the Nevada Union High School, through college.

Currently, one boy and one girl from each graduating class of the Nevada Union High School is guaranteed an education in his or her chosen field. At last report, there were 10 students in either a medical school or in a school of veterinary medicine, at the University of California at Davis. Another 10 are in four or five year courses. All their expenses are paid.