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sive dumps indicate considerable development work, and according to several local residents, the mine had a large output. During the 1930s ore was mined from open cuts north and south of the main shaft and treated in the mill at the Lookout mine (Logan and Franke, 1936, p. 270). Apparently the mine has been idle since.

The ore zone, which is as much as 8 feet thick, consists of quartz and mineralized schist. It strikes N. 30° W. and dips to the northeast. Country rock is slate and fine-grained chloritic schist. The ore contains free gold and auriferous pyrite. Ore mined in 1936 had a value of \$1.70 to \$3.50 per ton, and the concentrates averaged \$90 per ton (Logan and Franke, 1936, p. 270). The mine is developed by a main 350-foot inclined shaft that is partially open, two other open shafts 50 and 200 feet to the southeast, and several open cuts. No equipment remains at the mine, but a large mill building stands to the east at the junction of the roads to this property and the Lookout Mountain mine.

#### Gold Hill mine

Location: NW¼ sec. 32, T. 3 N., R. 13 E., M.D.M., 1 mile due west of Angels Camp and just north of State Highway 4. Ownership: Charles C. Crespi et al., Angels Camp, California.

This Mother Lode gold mine was originally worked during the early days of the gold rush when \$100,000 was recovered from surface pockets (Mining and Scientific Press, 7/9/92, p. 28). After lying idle for some years it was reopened about 1890 by the Gold Hill Mining Company and operated until sometime around 1902. During this operation considerable amounts of ore were mined and treated in a 20-stamp mill.

After 1902, the mine was mostly idle. In 1936 it was leased by the Belmont-Osborn Gold Mining Company (Logan and Franke, 1936, p. 242). This concern rehabilitated the main working entries and mined some ore, which was treated at the Belmont-Osborn mill half a mile to the northwest. Later several individuals prospected the upper workings in search of high-grade pockets. At present, intermittent surface prospecting work is being done on the property. One prospect hole some 400 feet west of the shaft collar is 20 feet wide and has exposed a 10-foot zone of parallel quartz stringers that contains abundant iron oxide and small amounts of free gold. Dump material is occasionally used as road fill.

The vein, which ranges from 10 to 30 feet in thickness, has a strike of about N. 35° W., and dips 60-70° NE. Country rock is chloritic amphibolite schist, dark massive fine-grained greenstone, and smaller amounts of phyllite and slate. The mine is developed by a steeply inclined 330-foot shaft with levels at 165 and 300 feet; and two adits, one a crosscut adit just to the west of the shaft, and a drift adit, the portal of which is some 200 yards southeast of the shaft. The shaft and the adit portals are open. There are more than 3000 feet of drifts (Logan and Franke, 1936, p. 242). A considerable amount of stoping was done southeast of the shaft. There are also numerous open cuts and prospect holes in the vicinity.

Except for several buildings, there is no equipment on the property.

#### Gold Knoll mine

Location: N½ sec. 32, T. 2 N., R. 12 E., M.D.M., 2½ miles northwest of Copperopolis. Ownership: Louis Cereghino et al., c/o Fred Seitz, 1540 Carol Avenue, Burlingame, California.

This gold mine was developed originally in 1925-27 by the Gold Knoll Mining Company (Logan and Franke, 1936, p. 260). During the 1930s it was operated by several concerns and individuals, including the Felix Mining Company, Alfred Meyers of San Francisco, and J. Betencourt and J. H. Bowie of Copperopolis. In 1942 and 1943 some work was done in the mine by R. A. Ford of Copperopolis, and in 1953 a small amount of gold was recovered from a mill cleanup by Mr. Ford and Joseph Paltor of Copperopolis.

There are two quartz veins on the property, approximately 200 feet apart, which are known as the main or west vein and the east or Miller vein. They strike north-westward, dip 45° NE., and range from a few feet to as much as 26 feet in thickness. The ore is mostly low grade, usually averaging a few dollars per ton, but the sulfide concentrate from the west vein was reported to have been valued as high as \$68.00 per ton (Logan and Franke, 1936, p. 260). Country rock in the vicinity of the veins is Mariposa slate with some green schist. Serpentine lies to the east.

The mine is developed by a 300-foot inclined shaft sunk on the west vein with levels at 50, 115, and 300 feet, and a crosscut adit which connects with the 50-foot level. The adit portal is 200 feet west of the shaft. Most of the workings are northwest of the shaft. There is a 1000-foot drift on the 300-foot level from which three crosscuts have been driven to the east vein. The ore was treated in a 10-stamp mill which remains on the property. It is equipped with amalgamation plates, two tables, and two vanners.

#### Gwin (Paloma) mine

Location: Secs. 21, 22, 27 and 28, T. 5 N., R. 11 E., M.D.M., in Rich Gulch 4 miles southwest of Mokelumne Hill and just north of the old town of Paloma. Ownership: Gwin Mine Development Company, c/o J. A. Levensaler, 519 California Street, San Francisco, California.

The Gwin mine was one of the most productive Mother Lode gold mines in Calaveras County. The value of its total output is unknown, but information obtained from old reports shows that it is somewhere between 6 and 7 million dollars, at the old price of gold. Except for small amounts of surface exploration and development work done in the 1920s and 1940s, the mine has been left idle since 1908.

One of the first gold-quartz mines to have been opened in California, the Gwin (initially known as the Paloma) was originally prospected in 1850 (Mining and Scientific Press, 4/23/98, p. 437). Soon afterward a 200-foot shaft was sunk, and some high-grade ore was encoun-

tered. Senator William Gwin purchased the property in 1867 and later obtained the adjoining Alexander and Smith claims, which were consolidated as the Gwin mine. In the early 1870s this was the most productive gold mine in the county, and one of the most productive in the State, the yield being as much as \$1,000 per day (Mining and Scientific Press, 5/23/74, p. 326). By 1877, the mine had been developed to an inclined depth of 1200 feet. In that year the so-called "main chimney" or North ore shoot was encountered, which yielded large quantities of ore between the 1200- and 1500-foot levels. The ore was treated in several stamp mills including one with 60 stamps and a chlorination works. The mine was shut down in 1882. The estimated value of the total output up to that date ranged from \$2,000,000 (Irelan, 1887, p. 32) to \$3,000,000 (Mining and Scientific Press, 9/14/95, p. 168).

In 1894 the newly organized Gwin Mine Development Company purchased the property and reopened the mine. The new vertical main shaft was sunk north of the old workings, and a new 40-stamp mill (that later was increased to 100 stamps) was erected. The mine was operated on a major scale until 1908. During this last operation, 984,442 tons of ore were mined and milled, which yielded approximately \$4,044,000 (Levensaler and Rohlfs, 1940).

Apparently some work was done on the property in 1927 as the Mineral Resources of the United States for that year reported a yield of 100 ounces of gold (Min. Res. of U.S., 1927, part I, p. 273). In 1941 the surface was prospected by Robert Gallagher of Valley Springs and in 1946 by John Folsom of Valley Springs.

The Gwin vein is in the same belt of Mariposa slate that contains the highly productive Mother Lode mines to the north in Amador County. This belt is approximately 2000 feet wide in the Gwin mine area. The following information on the geology of the deposit is extracted from the U. S. Geological Survey Mother Lode folio (Ransome, 1900, p. 8): "South of the Mokelumne River, the Gwin mine is situated in a belt of Mariposa slates which is directly continuous with the slates of the Kennedy and Argonaut mines. The Gwin vein strikes with the slates and is generally parallel with their cleavage. It is accompanied by stringers, and varies in width, but on the whole is entitled to be called a simple vein rather than a stringer lead. The vein minerals are quartz, pyrite, arsenopyrite, free gold, and a little chalcopryrite, galena, zinc blende, albite, sericite, and calcite. Galena and zinc blende, when present in small amount, are considered to indicate good ore. The arsenopyrite is in both large and small crystals. The former are particularly prized, as they inclose beautiful arborescent masses of crystallized gold. All the free gold in the ore is coarse, and is easily caught on the plates after passing a No. 16 screen on the mortars; the tailings are said to average only 12 cents per ton. If true, this indicates a saving of about 98 percent of the gold, which is a remarkably high average. Common pyrite is by far the most abundant sulphide in the ore. The average value of the ore is said

to run from \$5 to \$7 per ton. The slates near the vein are impregnated with sulphurets, but these sulphurets are not so rich as those in the vein and are said to contain a larger proportion of silver. A conglomerate similar to many such beds occurring in the Mariposa formation lies on the foot-wall side of the vein, and is said to carry gold up to 50 cents per ton, as shown by several assays. The ore shoot in the Gwin appears to be pyramidal in form and to be nearly vertical as far as exploited."

There are two veins, the East or main vein from which most of the gold was obtained, and a west vein. The main vein strikes N. 12° W. and dips 60°-75° NE. The two principal ore shoots on the main vein were the Old South and North ore shoots (see fig. 8). The Old South shoot extended from the surface to the 1200-foot main shaft level and was mined by the Gwin Mining Company. Its stopes averaged 250 feet in length, and it had a maximum width of 22 feet. The North shoot was the principal source of production for the operation of the Gwin Mine Development Company. Stopes were hundreds of feet long and as much as 40 feet wide. However, considerable amounts of extremely low-grade rock were mined to supply sufficient feed for the 100-stamp mill (Levensaler and Rohlfs, 1940).

Toward the end of the last operations, an exploratory drift was driven south on the 2400-foot level which encountered a new ore body about 1700 feet south of the crosscut from the main shaft. This was known as the New South ore shoot. It had a length of about 95 feet and was reported to have contained from 0.79 to 1.3 ounces of gold per ton.

The mine is developed by the 2533-foot vertical main shaft, the 1800-foot inclined south shaft, and several old shallow shafts (see fig. 8). There are more than 25,000 feet of underground workings. The 100-stamp mill used in the last operation was driven by water power and was equipped with Frue vanners (Tucker, 1916, p. 85). No equipment remains on the property.

#### Ilex (Anglo-Saxon, Tiger) mine

Location: SE¼ sec. 35, T. 6 N., R. 12 E., M.D.M., 6 miles northeast of Mokelumne Hill in the old Rich Gulch district. Ownership: W. W. Steele and Julius Podesta, Jackson, California.

This gold mine is a consolidation of the Anglo-Saxon and Tiger mines which were originally worked separately. Both were mined extensively in the 1850s and 1860s. In 1868, the Anglo-Saxon was reported to be developed by three shafts and was yielding gold ore worth \$40 per ton, and the Tiger had a 100-foot ore shoot that contained \$20 ore (Mining and Scientific Press, 3/28/68, p. 178). The Tiger continued to be worked during the 1870s and 1880s and the ore was treated in a 10-stamp mill. C. H. Livingston was the operator. Sometime between 1886 and 1888, the Ilex Gold Mining Company was organized and consolidated the properties. An extensive surface plant was constructed that included a head-frame 100 feet high, tramway, 40-stamp mill with Frue vanners, and a chlorination plant (Irelan, 1888, p. 135).

### 3.0 HISTORY

Gold was discovered in California at Sutters Mill in 1849. Within 6 months the luckier of the miners had already made their way upstream on the Mokelumne River to the source of the Placer Gold they were panning. This source was a point on the outcropping of the gold bearing rock vein known as the "Mother Lode". This rock vein, which has been mined to 6000' in depth in some locations, was formed millions of years ago by plate tectonic activity during the uplift period that formed the Sierra Nevada range. The gold, often accompanied by quartz, appears in vertical veins or "shoots" and appears frequently all along the hundreds of mile long "Mother Lode". The Mother Lode is dotted with famous "Gold Rush" towns in the western Sierra foothills traversed by the aptly named Highway 49.

According to the eminent Harvard Geologist Willard P. Fuller Jr., a Dr. Toland was making a noticeable ~~scratch on the surface of this vein as early as 1853 and gold claims were being staked out.~~<sup>2</sup> In 1867, William Gwin, California's first senator, consolidated some of the claims along this Rich Gulch area near the current town of Paloma, and financed a more industrious approach to this now proven lode using only hand tools and water power. Gwin's men sunk the South shaft at a 60° angle chasing the vein. By the time he reached the 1500 foot level he admitted to having removed more than 2.5 million dollars worth of gold (100,000 ounces at \$25 per ounce). This was in an era when a nickel would buy a decent dinner. By 1882 the inflow of water and the apparent diminution of the vein persuaded Gwin and Gwin Jr. to call it quits. Ironically, 800 feet further down, the richest prong of ore would later be found directly below Gwin's main shaft. Gwin's equipment was removed, the shaft filled with water and the valley was abandoned until 1893, when a prominent Engineer, F.F. Thomas, incorporated the Gwin Mine Development Co. and raised enough money to sink a new 2400 foot vertical shaft further North along the same vein outcropping. The magnitude of their efforts at a depth of over twice the height of the Empire State Building, at a time when Edison was still in diapers, can legitimately be called heroic. They were, however, doing it for the gold, of which there was actually 7 1/2 tons or 200,000 plus ounces of gold that were pulled out in this mining phase.

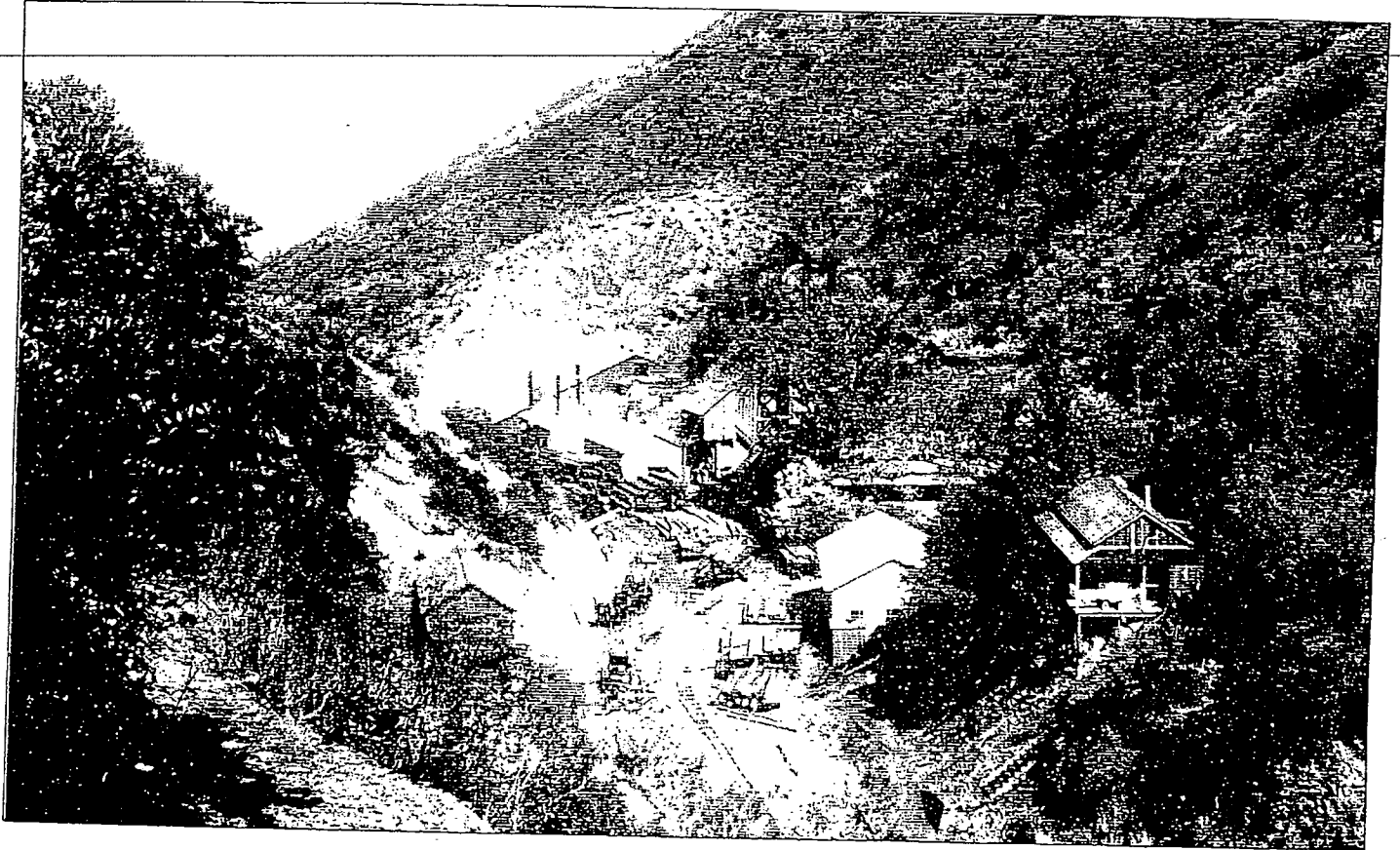
In another irony, the mine with too much water in an earlier mining phase now shut down due to the drought of '08. The water in the Mokelumne ditch stopped, the Pelton wheel stopped, the hoists stopped, and the stamp mill stopped. During this drought period a small staff continued to explore the then lower levels. They encountered and documented three separate high grade gold ore bodies. Their notes and maps exist today. When the drought was over the water company billed the mine for water it "would have delivered had there been water"- amazing. The directors, who had already taken out all of their more than adequate profits in excess dividends, refused to capitulate with the water company, refused to recapitalize the mine, and foolishly voted to cease operation over the strenuous objections of Thomas' site management who had discovered more gold ore areas. (See J.J. Crawford's report to the Board, 1908).

The mine was again allowed to fill with water and the shaft was capped. From its closing until now, the mine, the adjacent property and the mineral rights were held by various parties and shifted from one hand to another. Disputes arose, law suits ensued and stipulated judgments occurred. It was only recently, through diligent and careful effort that the ownership of the property, including both surface rights and mineral rights, was consolidated.

<sup>2</sup> The Gwin Mine at Paloma, W.P. Fuller, Jr, Jan. 1968

On September 9, 1996 the bulkhead was uncovered and an underwater camera probe was sent down the flooded shaft. The camera dropped unimpeded to the depth of 2,484 feet, exposing the still intact marvel of shaft Engineering and construction created over 100 years ago.

The mine has been well preserved by the fresh water all these years. No cave-ins or deterioration of the main shaft has occurred. The mine awaits dewatering and the installation of modern equipment and technology.



The Gwin Mine - North Shaft

Verde later achieved the distinction of being one of the richest mines ever to be owned by one family.

Thomas' next venture was to take over the abandoned Kennedy mine at Jackson, California, in 1885, and to form the Kennedy Mining and Milling Company. The Kennedy ultimately became one of the deepest and most successful of the Mother Lode mines. As soon as this operation was on its feet, the able engineer was called to the Central mine in the Broken Hills district of Australia, to assist in solving their metallurgical difficulties and to supervise deep, large-scale development.

But Thomas saw the Mother Lode of California as his chosen area, and returned to Jackson in 1893 to try to make a mine out of the old Gwin property. He enlisted a younger mine operator, David McClure, who was a close friend and associate of Herbert Hoover, to be his second in command. Thomas and McClure then proceeded to lay out one of the most up-to-date operations to be seen on the Lode. A vertical shaft, the second of its kind in any major Mother Lode mine, was sunk 1400 feet to the former Gwin workings. This shaft, collared right in the draw near the old Alexander incline, was started on May 1st, 1894. The Mining & Scientific Press reported as follows:

"The Gwin Co. erected a complete water power hoisting plant and the shops in the summer of 1894. Sinking was steadily prosecuted for two years, until the 1000-foot level was reached. Drifts were run at the 700 and 1000-foot levels . . . a well-boring machine was used to sink a prospect hole in advance of the shaft work and down past the old drifts. It encountered the north prolongation of the orebody vein at 1195 feet. This bore was sunk to the 1300-foot (vertical) level and happily just escaped the old drifts enough to ensure safety in sinking the shaft down near them. The shaft was then continued to the 1400-foot level and the work of opening up the orebody began on the 1200, 1300, and 1400-foot levels, where the vein in a great many places was over 20 feet in width of milling rock."

So certain was Thomas of the reliability of his information of the ore on the old Gwin 1500 level, and of the probable vertical continuity of this "ore chimney," that he contracted for the erection of a 40-stamp mill in August of 1896, while just cutting the 1300 station and yet to open up the vein in the new workings. Right on schedule, the mill was started up in January, 1897, with most pleasant results. By April, 1900, some 171,748 tons of quartz had been milled, to produce a total of \$702,000 in gold bullion, and substantial monthly dividends were already being paid to the fortunate owners of Gwin Company stock.

The initial headframe used for sinking the shaft and for the first few years of the mine's operation was constructed of wood timbers, with the water-powered hoist on the east side of the draw. Early in the new century a large, well-engineered steel headframe replaced the older one, and a faster hoist, also water-powered, with steam standby facilities, was installed in a new building across the ravine to the west. The 40-stamp mill was enlarged in 1899 to accommodate a total of 100 stamps, with improved Frue vanners for concentrating the sulphides. Early in the Thomas-McClure period of operation a compressor was placed down on the Mokelumne River, powered by a 19-foot Pelton wheel run by the discharge water from the hoist and mill wheels, under a head of 380 feet. The compressed air was piped back up to the mine. This permitted the introduction of the latest air-



F. F. THOMAS

Enterprising engineer who made over the abandoned Gwin mine into one of the leading gold operations on the Lode. — Photograph loaned by F. F. Thomas, Jr.

operated underground equipment, some of which was designed and built by the Demarest iron works at Altaville. A second compressor was added later.

The Gwin mine became known as one of the best-managed on the Mother Lode. It was not, as it had been in the Gwin period, a high-grade mine. On the contrary, the 984,442 tons of quartz run through the mill during the years 1897-1908 averaged only about \$3.55 in gold per ton. But Thomas and McClure held the total mining and milling expenses down to about \$2.40 a ton, thus making a substantial operating profit, most of which was promptly paid out to the stockholders. The mining fraternity was sufficiently impressed with this operation that the American Institute of Mining and Metallurgical Engineers routed their historic western field trip in 1899 by way of Gwinmine. A well-attended banquet was held in the brand new mill extension, following a trip through the mine and mill, and the after-dinner talks, by F. J. Solinsky, F. F. Thomas and David McClure were well received by the visiting AIME'ers.

D. C. Demarest, proprietor and manager of the foundry at Altaville, often went over to Paloma. "I always

considered that my frequent visits to the Gwin mine returned me good profits besides the commercial ones that came from the machinery orders I secured. Mr. Thomas had a brilliant mind stored with wide knowledge of subjects other than those of his profession. Mr. McClure was very interesting with his accounts of far-flung travels. The many hours that I spent with these two men at the Gwin gave me a lot of real pleasure at the time, and left lasting memories of some of the most satisfying experiences of my lifetime."

"Through the Thomas-McClure period, the Gwin mine was 'home' to these two mining men, although the family of Mr. Thomas resided in Berkeley. Their living quarters were in the so-called cottage, a two-story structure, within a stone's throw of the North shaft. Their office facilities were on the ground floor of the cottage, which was occupied mainly with a large office room containing the bookkeeper's desk,\* the timekeeping cards and tags, the draftsman's table and the private desks of Mr. Thomas and Mr. McClure. The room was served with electric fans in summer and with a huge fireplace in winter. There were no walls to give the "bosses" privacy—they were in sight of and accessible to every employee, as he came to the office to get his tag and to record his time, at the beginning and the end of each shift. Even in the boarding house where Thomas and McClure took their meals regularly, their table was in the same big dining room with the men. However, on occasions when guests were there, they were served after the men had finished their meal.

"On the upper floor of the cottage, there were comfortable room accommodations with baths that served Thomas and McClure and their frequent visitors. During the hot season, when the ditch water supply was ample, liberal use was made of sprinklers to keep the cottage surroundings green and shady and cool. Regularly timed pilgrimages were made to this inviting 'home' by a legion of friends, among whom were wealthy and distinguished men."<sup>7</sup>

Demarest goes on to say that "All of the mine 'bosses' along the Mother Lode were adept at reducing ore samples to their metallic contents by water concentration, in a gold pan or a horn, which latter was a smooth-surfaced spoon-shaped receptacle made from a cow's horn. And they were experts at estimating—from the showings in the pan or horn—the free-gold value per ton of the ore." Mr. Thomas' son describes his father, "the 'old man' of the camp, moving about everywhere, observing everything. Impatiently waiting for samples from underground when something special was expected from one of the faces. Patiently horning out a portion of the sample, as soon as the assayer had it ground, because he was too impatient to await the assay—his estimate per ton usually confirmed within a matter of cents by the assay completed hours later."<sup>8</sup>

Young Thomas, who would visit the mine on his vacations, later recorded his boyhood impressions. He "especially admired Mr. Genochio, the senior engineer at the North shaft, and his smooth and loving handling of the water-powered hoisting machinery. There was a fascination in hearing the surge of water in the Pelton wheel beneath the floor when the power was applied, and in watching the two great reels, wound in opposite directions revolving as one, the empty skip in its descent

\*Genial Ben Johnston, bookkeeper and storyteller supreme.

helping with the lift. Or at the change of shift, in observing a knot of fresh men in dry yellow slickers stepping onto the double-decker and promptly disappearing, and, after an interval, in seeing a load of tired men from the relieved shift, step off the cage arriving in the other compartment, their oilskins dripping as they hurried to the change house.

"Everywhere it was noise, noise, noise. The intermittent noise of the rock-crusher chewing up each skipload of freshly-hoisted ore. The noise of the crushed ore as it was released through the chute into the one-mule ore car, which trammed it to the mill and dumped it into the bunkers. The thud of the trip-hammer in the blacksmith shop and the clang of the smith's hammer on anvil, beating time for the song of white-hot drills being re-sharpened. The Brunnehilde cry from the sawmill, as the ends of the great timbers were 'framed' for the sets required underground.

"The deafening roar of the mill. Awakened at night by the sudden deafening silence whenever the mill was stopped for any reason. Good-looking Ernest Taylor, presiding genius at the mill. The jiggle and slow revolution of the belts of the concentrators. Sacking the sulphurets for shipment to the smelter at Selby.



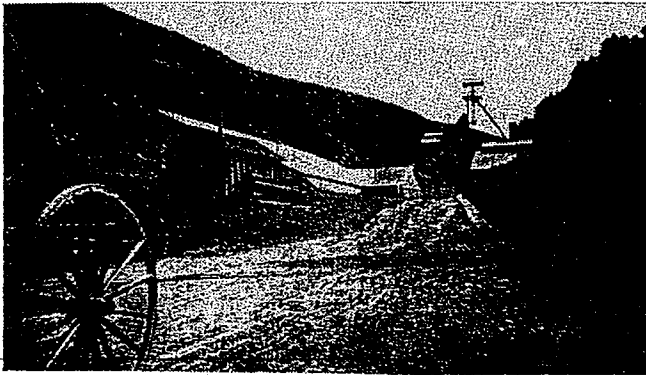
THE GWIN MILL — 1899

The old 40-stamp section is on the right and the new 60-stamp extension on the left. Power was supplied by Pelton wheels, under approximately 390 feet of head, from the Mokelumne ditch. — Courtesy of the California Division of Mines.

"The milling was a continuous process, but clean-up, across the road in the retort house, was a monthly event, rifles, revolvers and guards on every hand. Amalgam, removed from the plates below the mill batteries, was cooked in a retort, just the right amount to vaporize the quicksilver (most of which was then condensed and recaptured in a trap) and to melt the gold into a brick—in good months there might be two bricks.

"When the brick had cooled it was weighed and marked for source and fineness, ready to go as bullion to Wells, Fargo & Co. at Valley Springs for shipment to the Mint or other outlet. Its transportation to Valley Springs was quite a ceremony. This was one of the jobs of David McClure, Number Two Man in the camp. Armed to the teeth, in a two-horse buggy, he made such speed as the condition of the road permitted. With armed guards on horseback, two outriders some distance ahead, and two a similar distance behind, he would have been no pushover for bandits.

"The horse-drawn stage, making its daily trip, Jack-



MIDDLE BAR ROAD BELOW THE GWIN MINE

Photograph taken in May, 1908, by Jeffrey Schweitzer.

son to Valley Springs and return. Toiling up the gulch in the morning. Tooling down the gulch in the late afternoon, pulling up at the post office (Gwinmine) with a flourish and with the spirit notably wanting in the morning's uphill grind. Importantly throwing out the mail sack, and discharging any passengers who might have come up from Lodi on the narrow-gauge. Driver and passengers with their dusters sensibly buttoned up to their chins.

"Hours in the assay office. Watching Will-yum, the assayer, pulverize and quarter the samples. Watching his careful admixture of pulverized ore and litharge for the flux. Observing at intervals the scorification of the several 'runs' in the white-hot coke, each in a separate crucible. Watching the slag being hammered out of the lead buttons. Each button as it was hammered into a neat cube and then placed in its own small cupel. Each cupel as it was put into the muffle furnace by means of tongs, and later removed, nothing now left of the dull, dice-size lead cube but a pinhead of bright yellow gold. The weighing of this residual pinhead. What a tiny object for so large a balance! Encased in glass and kept level by delicate adjustment, the balance was operated by manipulating brass knurls on the outside. How much would the pinhead weigh? What a 'whale of a difference' its weight could make, and to what a host of people!"

As the mine became deeper—the North shaft had been put down to the 2400-foot level, and an inclined winze to the 2800-foot level, the Gwin thus becoming one of the deepest mines in the west at that time—the ore became more erratic and lower in grade. During the final two years, bullion receipts were insufficient to cover the increased costs. In 1908, an important new orebody, high in grade, was discovered some 1600 feet south of the shaft, on the 2400 level.

One August day that year, as Thomas and McClure were busily engaged at the drafting table in the mine office, enthusiastically planning the proposed deeper operations to develop and mine the new south orebody, the telephone rang. It was the San Francisco office calling with the orders to close the mine down.<sup>9</sup>

Demarest tells his version of the background of this final decision. "I believe I was one of the very few outsiders who knew the circumstances that led to the closing down of the Gwin mine operations in 1908. First, a serious shortage of water supply from the ditch system had curtailed the milling operations and so had impaired

the financial position of the company. Then, exploratory work . . . had depleted the treasury of cash and had incurred some indebtedness. However, these explorations had encountered the orebody of the south shoot. The company believed that the newly-found ore would put the mine again on a dividend-paying basis without calling upon the stockholders for financial assistance, provided that the outstanding indebtedness could be allowed to remain until profits were again forthcoming.

"The refusal of the largest creditor (Ike Foorman) to accede to a proposal of such nature—in view of the fact that over a long period of years he had been paid regularly a monthly sum in excess of \$2000 for the Gwin water supply, which had provided the bulk of his business revenue—so incensed one of the principal stockholders, director and a wealthy man, that he hurriedly called a meeting of the directors, Thomas and McClure being absent (at the mine), and had a resolution passed that gave the men at the mine orders to 'pull the pumps and let the mine fill with water.'"<sup>10</sup>

More than \$3,500,000 in gold was produced by the Gwin Mine Development Company, bringing the total production to about \$6,000,000. Over these years, directly and indirectly, the mine supplied a good livelihood for many Calaverans.

The fortunes of Paloma have been the fortunes of the Gwin mine. So, with the final closing of the mine, the town dropped off rapidly and only a few families, those with land to ranch or who could find jobs nearby, stayed on. The endless teams with timbers for the mines, the constant coming and going of the day and night shifts, and the incessant activity of a lively mining town soon

"Mr. F. F. Thomas, Jr., in a personal communication to the editor, points out that the Demarest version is not an entirely accurate one. The company dividend policy was extremely liberal and the mine operators found themselves very short of working capital at the same time that the prolonged water shortage crippled mill capacity. To aggravate the situation still further, waste-dump space had been filled up and low-grade development rock was run through the mill, partly to get rid of it as tailings downstream. This consumed valuable mill time that might have been used on better ore.

"I do not doubt," Mr. Thomas adds, that two of the largest stockholders and directors "may have conferred with Mr. J. J. Crawford, secretary of the company, and communicated to the management at the mine their strong conviction to that effect. But I cannot believe that it was a real 'meeting' of the Board in a legal sense without my father (president of the company) and David McClure, or that it represented a decision of the Board of Directors officially or as such. My information has been so definitely to the effect that it was only a temporary expedient on account of the impossibility of operating the mill and plant, the ditch practically having gone dry. . . . At the critical time surely Thomas and McClure would have attended any regular or special Directors' meeting on so serious a step." Furthermore, mining engineer W. E. Downs had tabulated ore reserves, still remaining, that could have supplied the mill for a year or two more, even without the new south orebody. But, unfortunately, when a deep and wet mine like the Gwin is shut down, a temporary expedient soon becomes a permanent situation.