



Quarterly Bulletin of the Calaveras County Historical Society  
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## Deep Gold Mining At Angels Camp

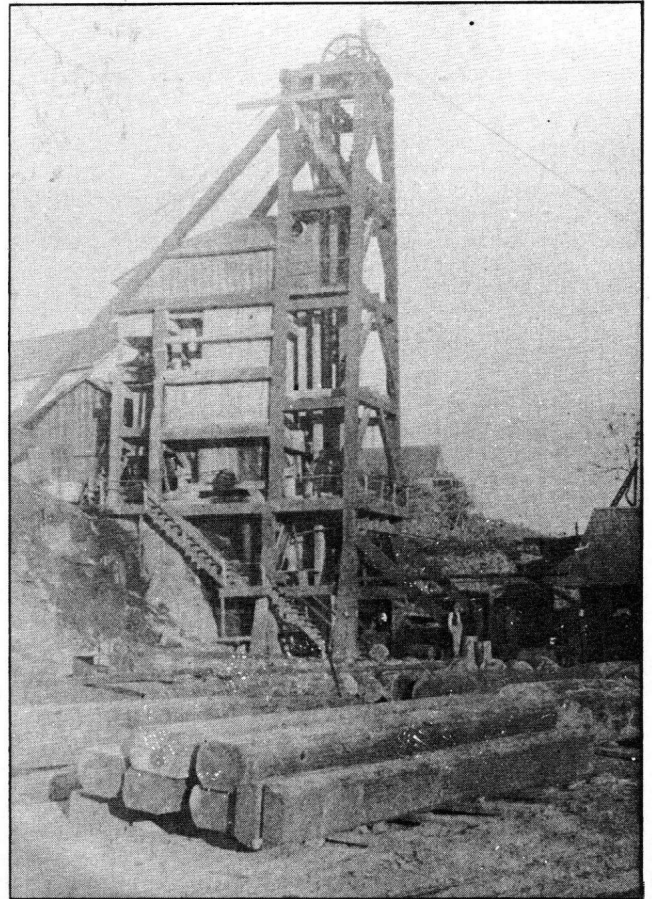
By Edward C. Leonard

Editor's Note - In our October, 1968, issue, Ed Leonard described in his article, "Early Quartz Mining in Angels Camp," the discovery of gold in veins in that area, and the rush of claim-staking in 1855. He traced the early operations of the many small gold mines along the Davis-Winter and Boulder veins, and their development into the major mines in the district. These included the Sultana, Angels, Lightner, Utica, and Stickle on the Davis-Winger vein and the Madison and Gold Cliff mines on the Boulder vein.

Mr. Leonard, next, in the January, 1971, "Las Calaveras", described how the gold ore which was mined at these different operations was processed in the many stamp mills in Angels Camp to extract the gold. Particular emphasis was placed on the large and complex operation comprising the Utica Mining Company, including the Stickle, Madison, and Gold Cliff mills, and the Chlorination and Blanket plants.

Now, local historian Leonard delves into some of the features of the actual underground mining, which, over the years produced millions of tons of gold-bearing ore from the great underground stopes hundreds of feet and more below the streets of the city of Angels Camp. Ed actually knew many of the miners, and, as a young man, had himself worked for a short time underground, so he well knows whereof he speaks. He points out that a combination of several factors were necessary for the successful operation of these mines, with their large amounts of low-grade ore and unusually difficult mining conditions. First, men with determination, perseverance, and wealth, such as Bovee, William Maltman, James V. Coleman, J. G. Eastland, Alex Chambers, Robert Leeper, Charles Lane, Alvinza Hayward, Walter S. Hobart, and Captain William A. Nevills were needed. Then, a cheap fuel for power (cordwood), an abundant supply of water for power and milling, an available supply of poles for mine timbers, and transportation of these to the mines, and fuel capable of intense heat (charcoal).

Some of the men who contributed to the development of these mines who are not mentioned in Mr. Leonard's previous articles are J. G. Eastland, who was interested in the Sultana and the Lightner; George Fox, the superintendent of the Angels mine in the 1880's; William Morehead, who was superintendent of the Crystal mine when it was developed to a great depth; Alex Chambers, the promoter of the Lightner; superintendent Bayless C. Clark; Woodson Gerrard, superintendent of the Gold Cliff before



**The Stickle Shaft**

This large headframe was located just south of the Forty-niner Chevrolet Garage. After the consolidation of the Stickle with the Utica and the abandonment of the two old Utica shafts, the Stickle and the Cross shafts became the two working entries into the mine.

Annetta Cosgrove Chapman Collection

its acquisition by the Utica Mining Company; L. W. Shinn; Fred Martin; and A. C. Wilson, who became superintendent of the Utica when Charles Lane went to Alaska.

We have always been fascinated by Mr. Leonard's detailed knowledge of the Angels mines, and we are now pleased to refer readers to his interesting descriptions. A short glossary is added at the conclusion of the article, to help those unfamiliar with some of the terms used. Production figures, wages and costs should be considered in light of the fact that inflation has raised today's figures to more than ten times those during the boom days at Angels. These were the years 1887-1920.

## The Lodes And The Orebodies

I have described in an earlier article the origin of these great gold-bearing quartz veins in the Jurassic period of geological history, and the exposure of the tops of these veins after the erosion of as much as two miles of rocks overlying the veins. Geologists tell us that this all happened from 60,000,000 to 200,000,000 years ago.

The main lode, known as the Davis-Winter vein, consisted of a complex zone of schist, slate, talc, and many stringers of quartz. There was some free gold, and huge quantities of gold-bearing sulphides occurred in the vein. The free gold often occurred in "pockets" (small bunches.) The "Mountain Echo" of December 19, 1889, reported that H. S. Messer and Sons had taken "several hundred" in pockets from the Harris mine. The Stickle was producing free gold and pockets beginning in 1886, and this continued until the orebody was cut off by the talc vein. From 1893 to 1897, the Utica Company reported the recovery of many small pockets. The Angels Mining Company took a \$100,000 pocket from the Crystal vein in 1910.

Most of the gold values, however, came from relatively low-grade vein material. For example, the Sultana Company reported the vein 15 feet wide. The California Division of Mines reports the total gold production of the Sultana Mine as \$200,000.00.

The Angels mine described the orebody as consisting of two veins 20 feet wide, with values from \$2.00 to \$10.00 a ton, and with concentrates running from \$38.00 to \$67.00 per ton. The California Division of Mines gives the Angels mine's production as \$3,250,000.

The Lightner Company reported a vein of from 8" to 16' in the first hundred feet. Then the vein began to get wider until it was nearly 100 feet wide. It was cut by the talc vein 100 to 200 feet thick, dipping between 70 degrees and 80 degrees to the northeast, between the 500 and 600 foot levels. Below the talc, the vein divided into three distinct zones, and became 120 feet wide. Some 600,000 tons of ore produced \$3,000,000.

When the new Lightner vertical shaft reached a depth of 345 feet, a crosscut was run back to the orebody in an attempt to draw off the ore left around the old shaft by J. H. Farrell. It was not successful. Another attempt was made by General Huddleston, and it also did not succeed.

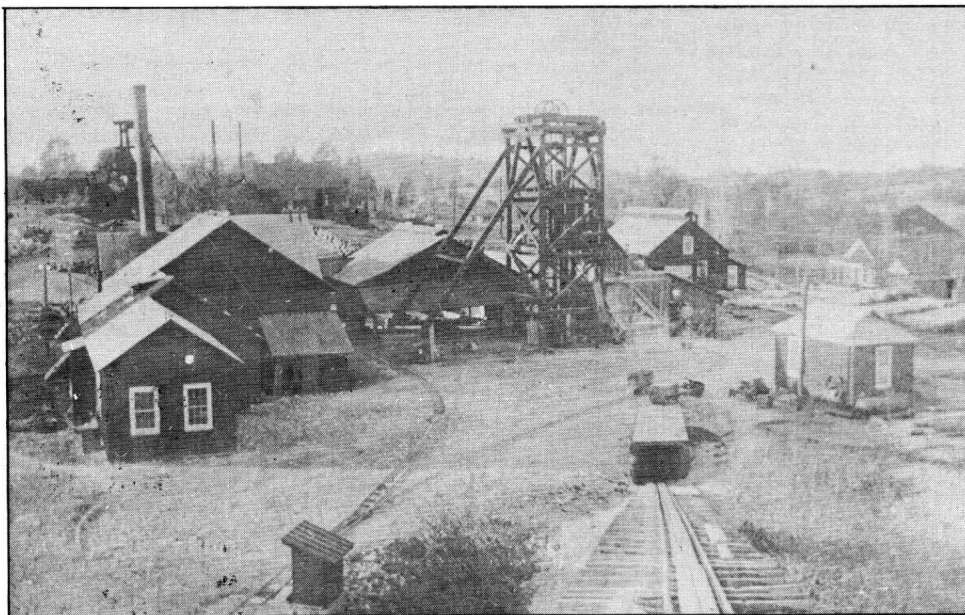
The Utica vein, near the surface, was of very low grade, and averaged 17 feet wide. At 200 feet there was a gain in width and values. At 300 feet the orebody was 30 feet wide, and increased in value to \$4.00 per ton. The 400 foot level encountered a massive deposit of sulphides. At the 600 foot level, the vein was 60 feet wide.

The Stickle vein varied from 25 to 27 feet in width on the 200 foot and 300 foot level, producing an average of \$7.00 per ton of ore. The Stickle also encountered massive sulphide deposits on the 400 foot level, where the vein was 20 feet wide. A crosscut to the east, 122 feet south of the Stickle shaft, struck a new vein 15 feet wide. This was known as the Bonanza vein. It carried free gold and produced many pockets of pure gold. On this vein, also, a vast flow of water was encountered. In a report written in 1894 it was stated that the ore ran from \$3.00 to \$60.00 per ton, and that the sulphides had values of \$40 to \$70 per ton. A drift north of the Cross shaft on the 683 foot level encountered two ledges, the western 60' to 90' wide, and the eastern 20' to 30' wide. The talc vein cut off the east vein at 580 feet in the North Utica shaft, and 888 feet in the Stickle shaft, and that vein has never been found below the talc. The western vein passed around and under the talc and continued almost vertical to the 2750 foot level, where a strong fault zone caused it to dip to the east down to the 3050 foot level (the bottom of the mine). Recovery values ranged from \$1.07 to \$3.06 per ton for the years 1898 to 1918. The gross recovery of gold from the combined Utica-Stickle mines from 1887 until 1918 was \$13,635,747.67.

The veins and orebodies described above were all on the Davis-Winter Lode, and in actuality were all one zone of mineralization. A second zone, the Boulder Lode, lay to the west, and more closely lined up with the main Mother Lode zone. The Gold Cliff and the Madison were the principal mines on this lode.

The Gold Cliff vein, operated by Dolan and Cogswell in an open cut 100 feet long and 80 to 90 feet deep, was producing \$5.00 to \$8.00 ore in 1881.

In 1888 Charles Nickerson and Nathan Neils reported that the Gold Cliff vein was 30' wide, and that the open cut, 275 feet long and 160 feet below the surface, was producing \$4.00 rock. In 1891, Charles Lane, W. E. Shap-her, and Woodson Gerrard reported that the vein in the open cut, 60 feet wide, was producing ore at \$1.50 per ton and containing 2% sulphides with a value of \$55.00 per ton, after concentrating. The Utica Mining Company began sinking the shaft and mining in 1899, and stopped

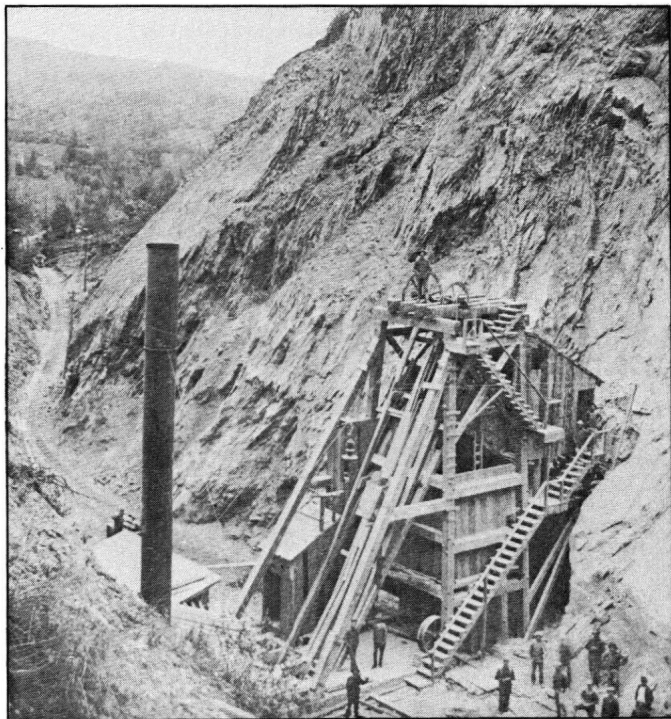


### The Angels Mine

A good view of the headframe and surface plant of this mine. The skipway in the foreground was used to haul the ore up to the mill. The Sultana's headframe and buildings can just be seen behind the Angels' stack.

Loaned by Earle Edmiston





### The Gold Cliff Shaft

This was a rather unique installation, in the deep open-cut on the vein, just west of the town of Angels Camp.

Courtesy of Earle Edmiston

in 1920. They mined 1,439,165 tons of ore from the Gold Cliff during that period, with a gross recovery of \$2,834,-227.49.

During 1891, A. J. and T. M. Lane, at the Madison mine, reported a 400 foot drift with a ledge 20 to 27 feet wide and a value of \$2.50 per ton, and a content of 20% sulphurets valued at \$55.00 per ton. From 1896 to 1898, the Utica Mining Company milled 130,000 tons of ore at the Madison. The California Division of Mines gives a total production of \$1,000,000.00.

Both the Davis-Winter and the Boulder veins encountered faults. The fault in the Gold Cliff mine occurred between the 1500 and 1600 foot levels. The vein was displaced to the east a considerable distance. The fault zone in the Stickle mine was encountered at the 2750 foot level, and changed the dip of the lode from nearly vertical to an easterly dip.

### The Mine Shafts

The most important feature of an underground mine is the shaft. This is the vertical or inclined opening into the mine, through which the miners come and go, and through which supplies are lowered into the mine, and ore and waste rock hoisted out.

The first shafts, which were used for prospecting and small mining operations, were of a single compartment. The Utica Mining Company, in the '80's, found it necessary

to partition the north shaft of the Utica from the 300 foot level down, due to increased pressures on the timbers, and thus, about this time, the two-compartment shaft came into general use in the Angels district. In 1896, the Utica Mining Company and the Lightner Mining Company sunk shafts with three compartments. In 1899, the Gold Cliff shaft was sunk as a three-compartment shaft, and in 1910, the Lightner sunk its new shaft with three compartments.

Two of the three compartments were used, often with counter-balanced skips, to hoist ore and bail water. The third compartment contained a ladderway, and was used for pump lines, air and water lines, and electric power facilities.

The shafts were continued in depth as the ore was stoped. They were generally sunk deeper by the miners and muckers, regular employees of the company. However, in 1891, F. C. Halstead, James Murray, Jack Doubt, and Charles Smith contracted to deepen the south shaft of the Utica by 300 feet.

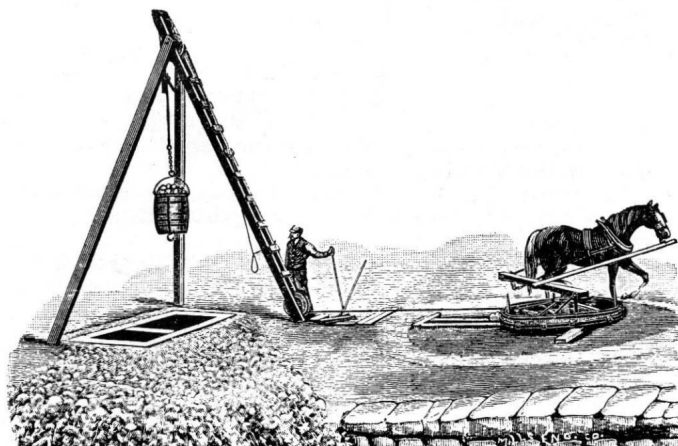
Large gallow frames or headframes were built over the collar of each shaft. They exceeded fifty feet in height, and huge sheave wheels on the top were used to carry the steel hoisting cables from the power hoist to the cages and skips. Buildings at the shaft housed the hoist, the steam boiler, the air compressors, and the blacksmith shop.

The shafts were kept dewatered by either pumping or hoisting the water in special skips designed with bottom ports for rapid filling. Later some of the skip-hoisting of water was replaced by pumping (when electric power became available.)

The Gold Cliff averaged 90,000 gallons of water a day, and was pumped from the 900 foot level. This mine made very little water below that point.

The Stickle mine pumped and hoisted an average of 655,000 gallons per day: 40% hoisted from Stickle shaft; 40% to 50% from bottom of Cross shaft; and 10% to 20% from the winze. The Stickle skip-hoisted in 700 gallon skips. The Cross shaft used a 1600 gallon skip. The Angels mine used a 54 cubic foot skip (400 gallon) which was built by Thomas Fullen and Cyrus Conde.

The Sultana shaft was extended under several managements, and reached a depth of 700 feet. Of the Angels mine shafts, the Maltman was put down to depth of 650 feet; the Potter shaft was sunk to 850 feet, and on this level, a 200-



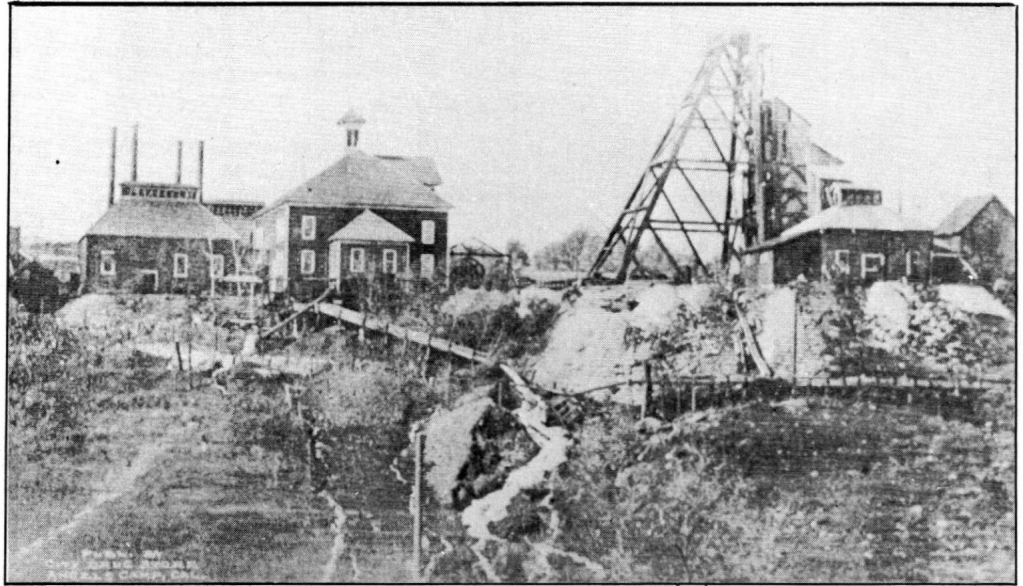
### The Whim

This was a more practical hoisting system than the hand windlass, but still left much to be desired.

### The Cross Shaft

This shaft was activated in 1896 and became the main shaft for the Utica mine. It was located on top of the hill, east of the present Town Hall, on Raspberry Lane.

Loaned by Earle Edmiston



foot winze was sunk from a drift about 1910. When the Crystal mine was purchased from the Fair heirs, the Crystal shaft reached a depth of 620 feet.

The old Lightner inclined shaft, which followed down the vein, reached a depth of 1050 feet. The new vertical Lightner shaft, sunk in the hanging wall, was 900 feet deep. It was started in October, 1910. The first 100 feet were sunk and timbered by hand in 40 days. In December, the old electric hoist, compressor, and gallows frame were moved to the new location. Then machine drilling of the ground began. Twelve men, working three eight-hour shifts, sank and timbered 117 feet during the next month. The shaft timbers were spaced at first only two feet apart, then four feet, and finally six feet apart, as the ground became more solid. The cost of sinking this 900 foot shaft was as follows:

Labor	
Timber	\$15.70 per foot
Explosives	4.65 " "
Supplies and Candles	2.12 " "
Electrical power	1.72 " "
Miscellaneous	1.68 " "
Supervision	.63 " "
	1.71 " "
	<hr/>
Total	\$28.21 " "

At today's wages and prices, a similar shaft would cost between \$300 and \$400 per foot.

The North shaft of the Utica was sunk to a depth of 580 feet, and the South shaft reached a depth of 850 feet. These were abandoned in 1903.

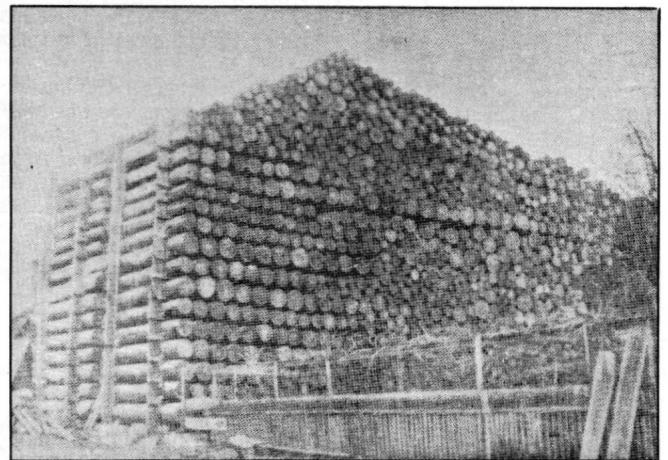
The Stickle shaft reached a total depth of 888 feet. It was retimbered to enable the mine to have two exits. The Stickle shaft was used for hoisting water, and for the transfer of mine timbers.

The second exit and main working shaft of the Utica-Stickle mine was the Cross shaft, which was begun in the fall of 1896. It was sunk to a vertical depth of 1312 feet; then a drift 950 feet long, following the vein north westerly, was run. A vertical winze was then sunk from this drift to the 2750 foot level. From this level a crosscut 270 feet long was run to the east to the vein. An inclined winze then followed the vein down to the 3050 foot level, the deepest level in the Angels district.

On the 1500 foot level a crosscut was run to reach the bottom of the Gold Cliff mine. A bulkhead with valves was placed in this crosscut so that each mine could be unwatered independently. Another crosscut at the 2300 foot level was run to the Gold Cliff ledge.

Three crosscuts at lower levels were run to the Gold Cliff ledge. These crosscuts proved that the Gold Cliff ledge was continuous and was approaching the Utica ledge, downwards. This was so because the Gold Cliff, in the foot-wall of the main Utica vein, had a gentler dip.

The cost for sinking the Cross shaft was estimated at \$30.00 per foot. Three shifts of miners, using Burleigh drills, sank the shaft 70 feet in the first month. Then, in November, 1896, a gallows frame was erected, and a \$30,000 Pelton-driven water-power hoist installed. From December, 1896, to August, 1897, nine hundred feet of the shaft was completed.

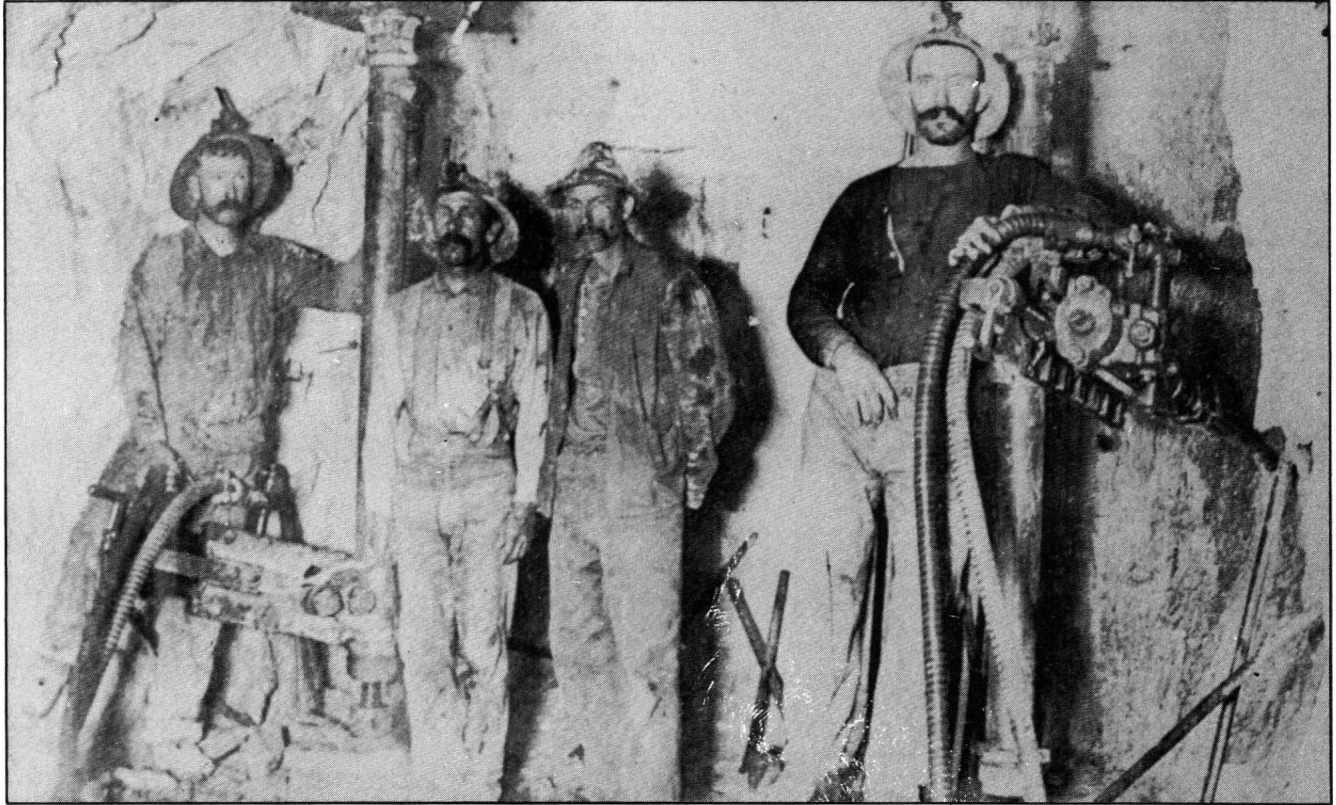


### Timbers

An immense amount of timber was used in the underground working of the Angels Camp mines, to hold the "heavy ground."

Loaned by Earle Edmiston





### Underground Miners

These two "machine-men" are standing by their Burleigh drills, down in the Lightner mine. The two men

in the center are their helpers, called "chuck-tenders."

From the Society's Files

The Gold Cliff shaft on an incline was sunk to a depth of 1900 feet, equal to a vertical depth of 1372 feet. From a drift on this level, a 50-foot winze was sunk. This shaft was connected by a cross-cut to the winze of the Cross shaft 100 feet below the collar.

The Madison shaft, which was described as being very irregular, was between 600 feet and 900 feet deep, with drifting 1000 feet to the north and 500 feet to the south, on various levels.

## Mining

The miners worked a ten-hour day, seven days a week, a situation difficult to visualize today. Men working in and about the mines were paid a daily wage, generally once a week.

Entering the mine by being lowered in a cage down the shaft, the miners would get off at stations that were cut at each operating level. At each station, there were bins and chutes provided for loading the ore into the skips to be hoisted to the surface. The skips were loaded and dispatched by skip tenders, who were paid \$3.00 a day. On long hauls, mules were used to pull the cars in the Stickle and Gold Cliff mines.

Muckers were paid \$2.50 per day. They shoveled the broken ore into the mine cars. The miners operated the Burleigh rock drills, and blasted the ore down. They started on one level, and worked upward, stoping the ore to the

next level. They were paid \$3.50 per day. The timbermen followed behind the miners, putting in timbers to prevent caving. They also received \$3.00 per day. The engineers, on top, who operated the hoisting engines, were paid \$3.00 per day.

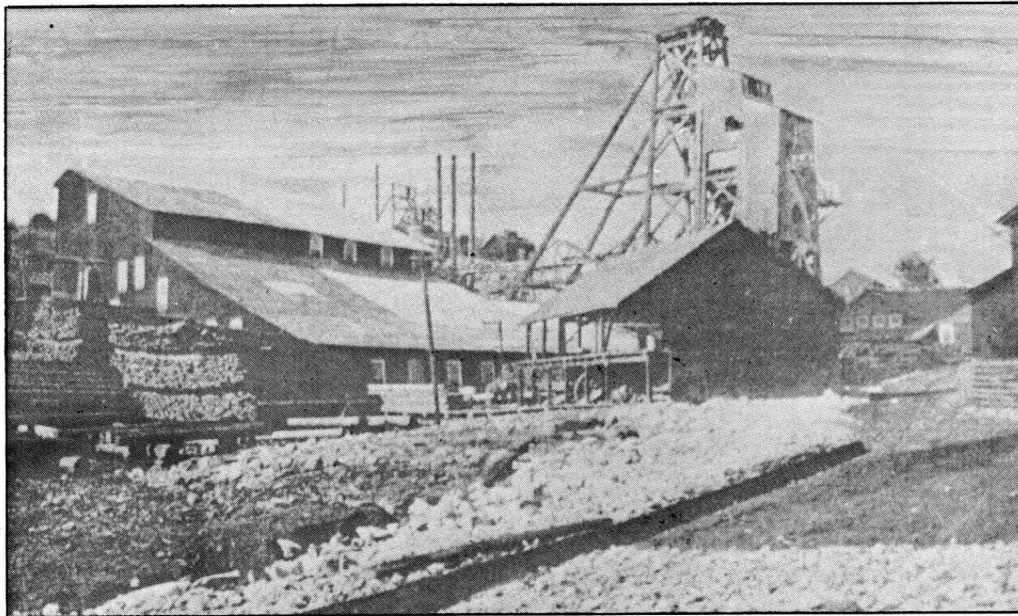
Some of the first miners were Cornish, commonly called Cousin Jacks by their fellow miners, whence the term double-jack and single-jack drilling. A single-jack miner drilled by running and turning the drill with one hand, while striking the drill steel with a light hammer with the other hand. In double-jack drilling, a heavy hammer was used by one miner while the other held and turned the steel. Often the latter would use a single jack to tap the steel, between the blows of the heavy hammer.

During most of the mining at Angels, the miners came from Italy or the Balkan states. The Italians were commonly called Dagoes, and those from the Balkan countries were grouped as Austrians.

Communication between the hoist engineers and the men working underground were by bell signals.

### California Mine Bell Signals - Basic Bell Signals

- 1 bell - to hoist
- 1 bell - to stop if in motion
- 1 bell - to release skip
- 2 bells - to lower
- 3 bells - man on - run slow
- 7 bells - accident
- 3 - 2 - 1 - ready to shoot in shaft



### Lightner Mine

The headframe and mine and mill buildings of this well-known Angels Camp mine, from a postcard view.

Courtesy of Earle Edmiston

Mines usually added special signals to the list, including those to designate the various levels. The bell was located near the hoist engineer, and a light cable was extended down to each shaft level. Most bells consisted of a triangle of drill steel, which was struck by a steel striker. A depth indicator, a part of the hoist, was marked for each level. The hoist engineer watched this indicator and knew where the skips were in the shaft at all times.

The miners' candles provided illumination for all underground work. The point on the hook of the candlestick provided for the placing of the light in any position. When the new Lightner shaft was complete in 1911, a report on the cost of sinking included the item, Supplies and Candles - \$1.72 per foot. Candles were later supplanted by oil lamps in many mines.

## Water And Power

Previous to 1866, a number of shafts were sunk on the ledge to depths not exceeding 100 feet. Hand drilling, picks, and gads were used and black powder was the explosive. The ore was raised in a bucket, using a windlass. Two men operated the windlass, with wages of \$3.00 per day. Drilling was done by hand, either single-jack or double-jack.

William Maltman erected a hoisting works on the Maltman mine in 1866. This was the first attempt at deep mining. From this time on, the windlass was superseded by the horse driven whim. The last record available shows the Dr. Hill mine using a whim in 1887. In 1884, Robert Leeper paid \$150.00 for a whim rope and bucket. The whim buckets were larger than the windlass buckets.

Hand drilling was still in use. Dynamite, made of nitroglycerine discovered by Alfred B. Noble in 1866, was introduced in the mines by 1868, under the trade name of Giant Powder.

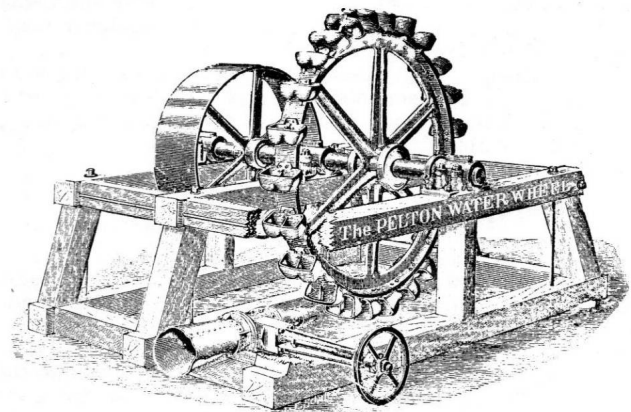
During the early 1880's, the steam-power hoisting engines came into use. Four-foot wood, at \$3.00 per cord, was used for fuel. Burleigh drills, using compressed air for power, replaced the old method of hand drilling, and the skip replaced the bucket.

Water was an essential factor in the mining operations. The Union Water Company, organized on May 3, 1854,

bought the Calaveras Water Company, which had been organized on November 1, 1856, and in 1881 built the Union Reservoir for storage.

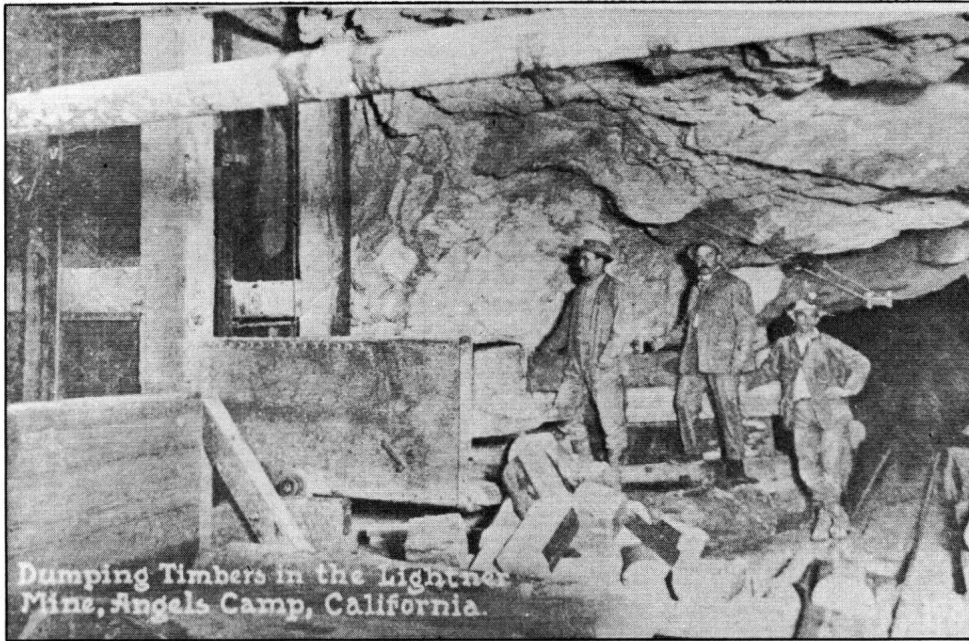
Summer water shortages often caused the mines to close from late summer until the fall rains, because of the use of water-powered hoists and other water-run machinery. For this reason, the Utica Mining Company purchased the holdings of the Union Water Company in 1887. They built the storage reservoir in Silver Valley (now Lake Alpine) in 1889, and brought the first water under pressure to run four Pelton water wheels, including the Stickle hoist.

Ross Reservoir for local storage was built in 1890. This was enlarged in 1892 when there was a water shortage. Another water shortage in 1898 caused all the mines to close from September until December. In 1896, a Pelton wheel



### The Pelton Wheel

The early water wheels were of the overshot design, using large amounts of relatively low pressure water. Then it was found that by using a small quantity of water at a high pressure on an undershot wheel, a much more efficient power source, with a far higher rate of revolution, was obtained. This view shows a typical Pelton wheel installation, with the high-pressure nozzle in the foreground.



Dumping Timbers in the Lightner Mine, Angels Camp, California.

### Underground In The Lightner

A view of a typical shaft station, where timbermen are getting timbers for their work on that level.

was installed for power on the new Cross shaft. This Pelton-driven water-power hoist on the Cross shaft was continued until the Utica operations were concluded.

Electric power from the Standard Electric Company (now part of PG&E) plant on the Mokelumne River near Mokelumne Hill, and the Utica powerhouse near Murphys, was available in 1899, and subsequently several steam power hoists were converted to electrical power.

## Caving Ground And Timbering

The stopes in the Utica on the 200 and 300 foot levels began caving in 1886, as soon as the ore was removed. Serious caving began in the Stickle in 1888. Both mines quarried rock from the surface to fill the open spaces.

In 1889, water from the Maltman shaft broke into the Potter shaft, filling it up to the 200 foot level. All miners escaped unhurt.

During December, of 1889, the big cave in the Utica started at the 300 foot level, and continued to the surface. It was estimated that 50,000 to 60,000 tons of rock had fallen. Sixteen of the nineteen men of the timber crew were killed.

During 1896, great pressures on the Stickle shaft made it begin to fail, and it was retimbered from top to bottom in 1897. During 1898, water from the Angels mine seeped into the Lightner, causing a big fault gouge slide that required a month to clean up and repair.

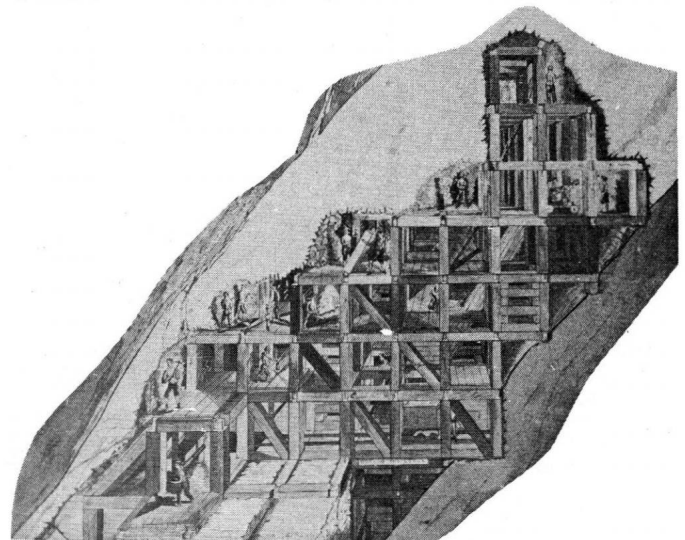
In 1899, a big cave on the 300 foot level of the Lightner entrapped three men, two of whom were killed. The Lightner shaft showed signs of great pressure in 1903, and the first 300 feet of the shaft were retimbered.

Extensive use of timbers retained most of the caving ground. Caves of smaller extent occurred frequently. The miners called this type of ground "heavy," meaning that much timber was required to hold it.

In the early days on the Comstock Lode in Nevada, the Ophir mine was compelled to stop mining when the stopes got too big for simple timbers to be used to hold back the heavy ground. Philip Deidesheimer, a German, operating a quartz mine in El Dorado County, California, was called

to solve the problem. His solution was to fill the entire excavation with square sets of timber. Square sets consist of short square timbers, four to six feet long, mortised and tenoned at the ends so that they can be put together in a series of interlocking cribs built up in a continuous row or block to any height or width, filling the whole chamber as the ore is removed. This system was used in the Angels mines.

The forest between Murphys and the Big Trees was well adapted to furnish the poles required to frame these sets. These poles were cut from 14 to 20 feet long, with a small diameter of 14" on one end, and a large diameter

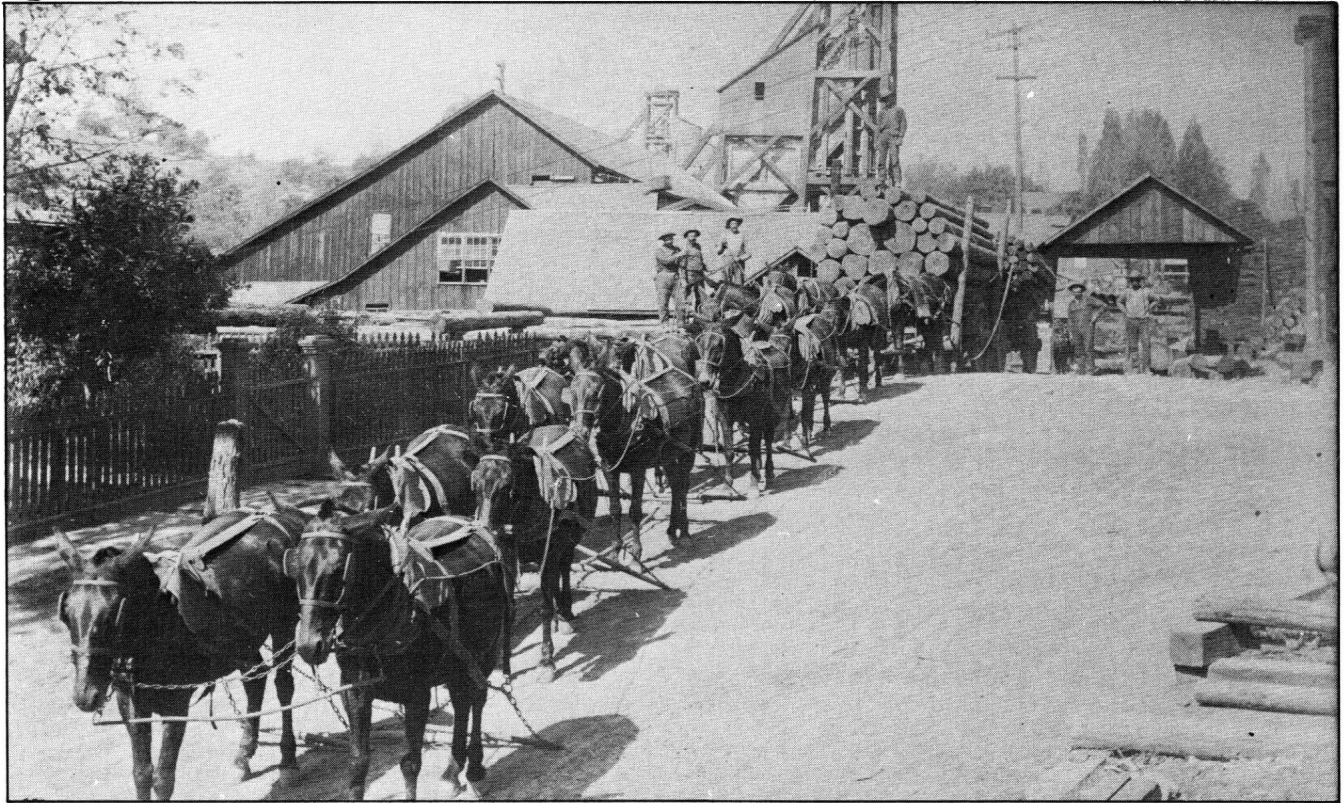


### Square-set Timbering

An artist's depiction of a square-set stope. The ore is the light-colored material. The footwall and the hanging wall are dark.

From the Society's Files





### Timbers For The Utica

A load of mine poles arrives at the North Shaft of the Utica Mining Company.

Annetta Cosgrove Chapman Collection

not to exceed 30" on the large end. They were delivered to the mines at a cost of 25¢ up.

They were delivered during the summer months when the road was passable, and yarded. The timber framers, using small mills, cut them into lengths and framed the necessary tenons and mortises. Nate McKay was in charge of the Utica mill located between the Utica South shaft and the Stickle shaft.

The timbers were cut on private property until 1902, when it became necessary to buy them off Government property. During May of 1902, C. V. Gottschalk, judge of the Superior Court of Calaveras County, gave a bill of sale to Richard Raggio for 3000 mine poles or timbers to be cut on the W1/2 of SW1/4 of Sec. 31, Township 5N and Range 15E, also a bill of sale to Thomas Moran for 2300 mine poles or timbers to be cut in Sec. 11, T5N., R.13E.

The poles were delivered to the mines by jerk line teams, each pulling two wagons. These poles were stacked near the shafts. The following men drove these teams: George Avery's two 12-animal teams were driven by Billy Moody and Bob Ross. E. Todd drove Price Williams' team of 12 mules and two horses. Moran and Dorroh's four 12-animal teams were driven by Dan Wright, E. Wright, Ben Inks, and John Jones. The Jones brothers, Bob, John, and Ben, each drove a 14-animal team. The Raggio brothers, Dick, Ernest, and Joe, had three 12-animal teams and one mule team consisting of 12 mules and two horses. Jack Asberry, Joe Schacten, Dan Black, Charlie Williams, Gus Winkler, George Crosby, Talbot, Jim Burney, Alex Smith, Emil Lombardi, were some of the Raggio Brothers drivers.

In 1894, Matt Manuel bought the Moran and Dorroh teams. The Manuel drivers were Bob Jones, Bill Jones, Ed True, Jim Gray, John James, Jim Inks, Charlie Ross, Bob Ross, Zip Espinosa, Emil Lombardi, Vic Marchal and Gay Willit.

The mule skinnners often changed employers, some having driven for several. These men made it possible for the Angels mines to operate, as this was the only means of transportation of the large quantities of mine timbers required.

### Underground Accidents

The Angels mines, and in particular, the Utica and Stickle, had a reputation as dangerous mines in which to work. During the operation of all the Angels mines, there was a tremendous toll of killed and injured. The list of accidents below are primarily from the Utica and Stickle mines. After 1902, the accident rate was less severe.

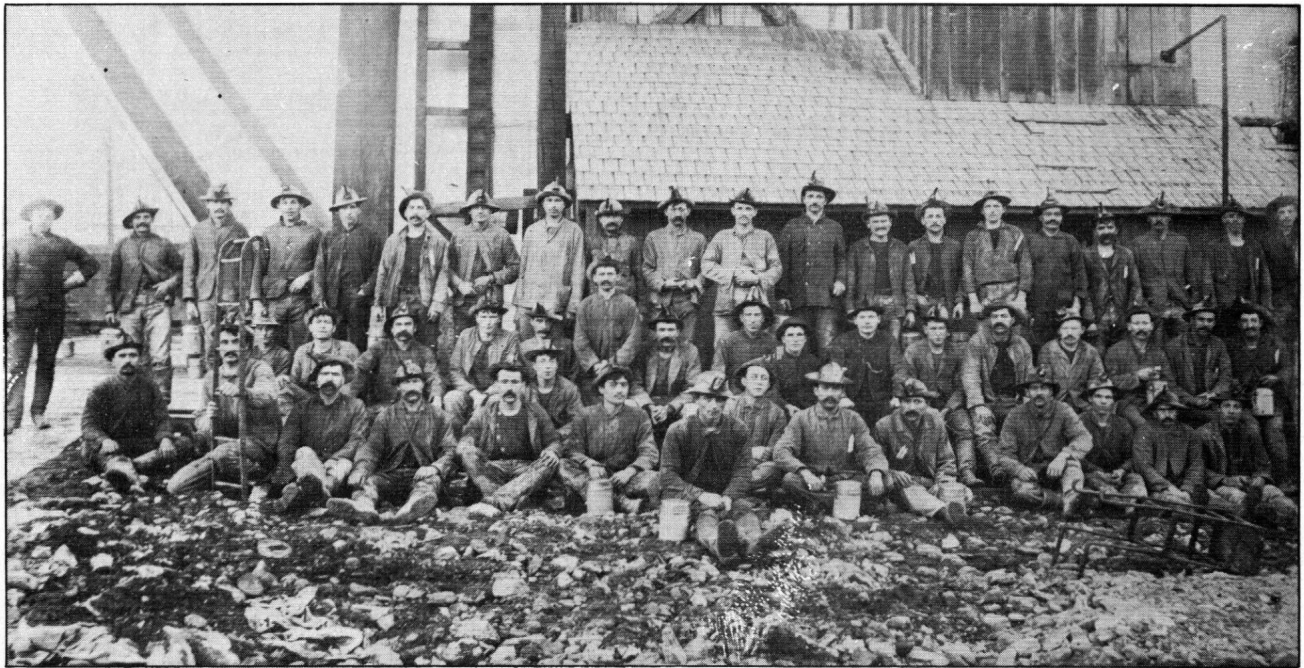
In January, 1886, a miner received severe injuries by being caved on. On July 1 of that same year, Mr. James Lane, brother of Charles Lane, was killed by an explosion that smashed the engine and destroyed the building.

December, 1886, the Stickle mine hired horse and buckboard to take an injured miner home.

January, 1887, the Stickle hired buckboard to take an injured miner to George Tryon's Hotel (Angels Hotel.)

March, 1887, Joseph Perola was killed in the Utica by falling rock and timbers.

May 30, 1887, the Stickle mine hired horse and cart



### Underground Shift At The Utica Mine

These fifty men were on one shift at the Cross Shaft. Several hundred men were employed by the Utica

Mining Company at the various shafts, mills, and associated operations.

Annetta Cosgrove Chapman Collection

twice to haul injured miners.

December 11, 1889, superintendent Charles Lane, mine foreman Charles Lillie, and timber boss George Williams, found threatening conditions in an 80 foot stope on the 300-foot level in the Utica. On December 12, timber boss George Williams, with a family of four children, and a crew consisting of Tom Knucky, who also had four children; J. Bray, Nick Cuich (or Susich), B. Segarley, (or Segale), Peter Perini, Thomas Bertrow, John Tobocco, Carlo Lusetti (or Visetti), Paul Owlovich, John Bioletto, C. A. Pollard, Joseph Curnow, John Martin, James Casey, Daniel Danielson, Mitchel Brondwich, William Vincent, August Anderson, and Thomas Corwin, went into the mine to reinforce the falling timbers. August Anderson left to get a shovel. Thomas Corwin received head injuries, and Daniel Danielson slight injury, escaped when timbers began to crack. The remainder were killed. The caving continued until Tuesday, when it reached the surface. Within a year, all but four bodies were recovered. The remains of these were recovered many years later.

January 7, 1891 - a skip containing Dan Danielson, Bruce Carter, William Case, Thomas Rentzrich, David McCann, Peter Tuslip, Sebastian Ferazzo, John Demera, and P. Cupich, was ascending the shaft when within about 80 feet from the surface the hoisting cable parted, and the skip dropped to the bottom of the shaft below the 530 foot level. All were killed.

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January, 1895, Tom Corwin received head injuries by falling rock.

August, 1897, an overturned oil can started a fire in the Stickle at the 800 foot level, and trapped three men. One was rescued, the other two were killed.

March 1, 1898, McDonald received a severe foot injury in the Utica mine.

April, 1899, Jean Lassen lost three toes when a rock fell from the roof of a stope in the Stickle.

April, 1899, A. Granda was killed at the Utica mine in a strange manner. He was climbing a ladder with sticks of dynamite which were ready to fire. One of the fuses took fire from his lamp, and he was blown to pieces.

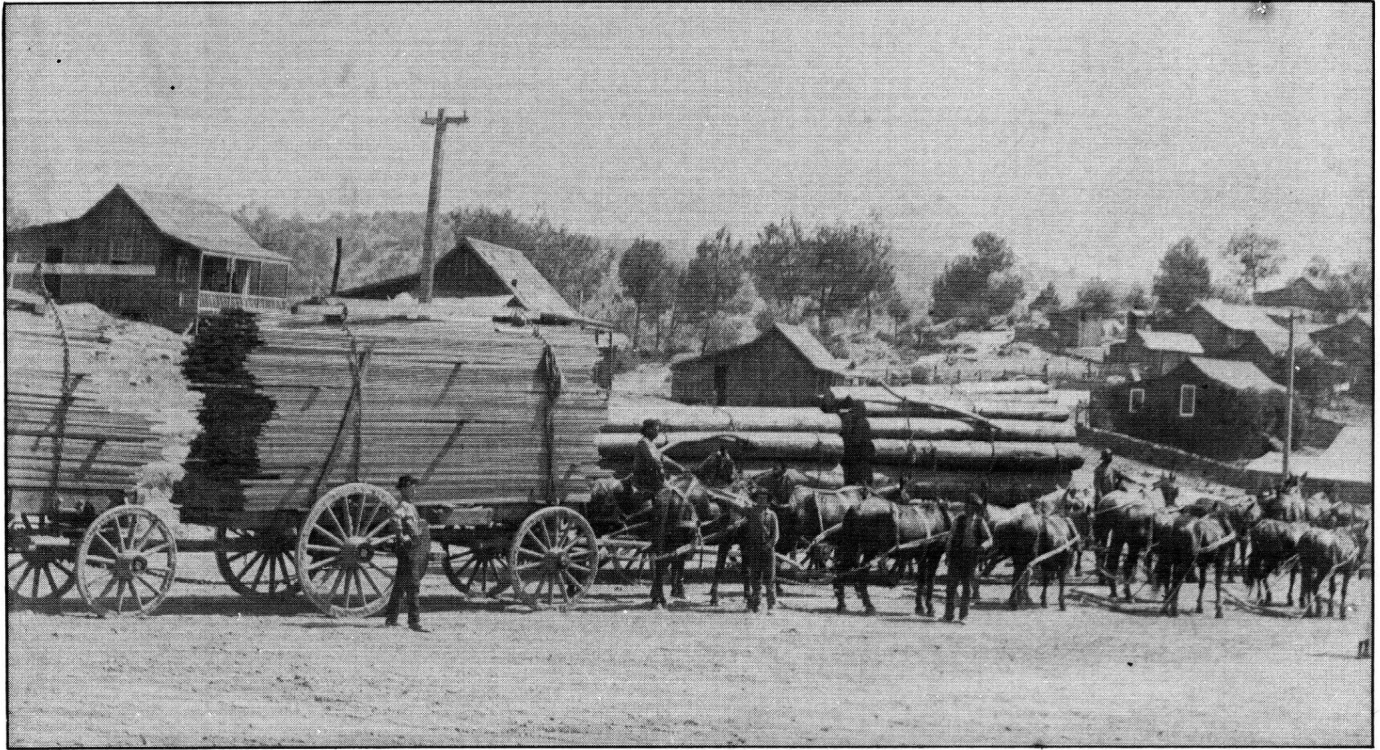
May 24, 1902, Bozo Obilvich was killed in the Stickle by falling rock from a blast.

## Unions And Strikes

The Miners Protective Union (A.F. of L.) was organized January 10, 1885. The Union was organized for the purpose of procuring better underground working conditions. The original members were as follows: L. J. Fowler, Chairman; Thomas F. Laird, secretary; with the following members: George A. Carlow, Paul Derin, H. M. Stephens, Santine Navone, Robert Kean, D. Stephens, Frank Gospodnilch, Joseph Hocking, Charles G. Daniels, George W. Class, Angelo Botto, James F. Bennett, Edward D. Taylor, G. Peerdle, Peter Quester, A. Devan, J. C. Rasberry and Andrew Swensen. During 1904 Bill Reed was president, and Charles Hammond was secretary.

Dangerous working conditions and lack of facilities to care for the injured caused the miners to go on strike in 1894. The first act of violence was on February 4 when the miners blew up the boarding house with a charge of dynamite.





### Teams Arriving At Angels Camp

The dressed lumber on the wagons in the foreground, some 12,834 board feet, then valued at \$409.48, was used for construction of the Cosgrove

Hotel. A load of mine poles may be seen behind the team in front.

Annetta Cosgrove Chapman Collection

mite. The sheriff's office in San Andreas appointed ten special deputies armed with Winchester rifles to protect the mines. They patrolled in squads of five both day and night. Lights were erected to illuminate the property at night. A Vigilance Committee of 600 people in Angels Camp was organized to drive objectionable characters from Angels Camp. Later, as a result of the strike, the Utica Company built a two-story building, with wards to care for eight patients on each floor, and appointed Dr. Dorroh as physician in charge.

During May of 1907, the miners demanded an eight-hour day, and by a vote of 400 to 20 approved a strike. At this time the miners were working ten hours a day on a seven-day week basis. The strike included the Utica Company, and the Angels and Lightner mines.

The Utica Company pulled all the motors, pumps, and mules out of its properties. They put gates on the mine and hired 29 men to guard the property. The Lightner started up on an open shop basis in July. Coleman, of the Angels, in August offered a nine-hour day underground and a ten-hour and 12-hour day for top men, and an open shop. This was refused by the union. The miners by a vote of 64 to 24 accepted a nine-hour day in September. The management of the mines conceded 15 minutes a day to the miners as claimed in their rights.

### Charcoal

The use of charcoal was an important factor in the mines. Tool sharpening, all welding, and retorting of bullion required a constant supply.

During May of 1885, Antonio Signoraster advertised for charcoal burners to burn 400 bushels of charcoal at 12 1/2¢ a bushel. Other burners were: Wilbur Riley at the Potato Patch; Tom Russell near the Red Apple; and Andy Martin and Ed Shannon near Avery. The Utica Mining Company bought the total product of the Ed Shannon pits during the entire period of activity.

Charcoal was made by digging a pit and piling wood in stacks on it. Then it was covered with earth and set on fire. All non-carbonaceous elements in the wood were passed off as vapors, some of the carbon was utilized as fuel, and the remaining carbon was converted into charcoal.

Charcoal yields a larger amount of heat in proportion to its volume than wood will yield. It has a further advantage in being smokeless. The burners controlled the burning process by the use of small vents in the earth covering. They judged the progress in burning by the color of the vapor passed off.

### Glossary

Cage and skip - These are enclosed "vehicles" that are used in the shafts for hoisting ore, raising and lowering miners, and delivering equipment and supplies to them.

Caving - A miner's term for the falling of loosened rock underground into a mining opening. A "cave" is the pile of debris resulting from such a fall. Caving is one of the most dangerous aspects of underground mining.

Concentrates - By milling the ore, the sulphides become a concentrate, which can be further processed to recover the gold contained in it.



**Dip** - This word is used to describe the angle that a vein, fault, or other geologic structure makes with the horizontal.

**Drift and Crosscut** - On each level, "tunnels" go out into the solid rock. Those that follow the vein are called drifts, and those that are more or less at right angles to the vein are crosscuts.

**Fault** - A crack in the ground or solid rock, along which some movement has taken place. Gouge is the crushed material on a fault resulting from this movement. Most veins are formed along faults.

**Footwall and Hanging wall** - These represent the edges of the vein and the country rock beyond. As one stands upright in an inclined vein, the hanging wall is overhead, and the footwall below.

**Free Gold** - This refers to the occurrence of native gold in a vein, as opposed to the gold occurring "locked up" in the sulphide or sulphuret minerals.

**Level** - A mine is divided into levels, generally about 100 feet apart (vertically) on which the miners go out from the shaft to mine.

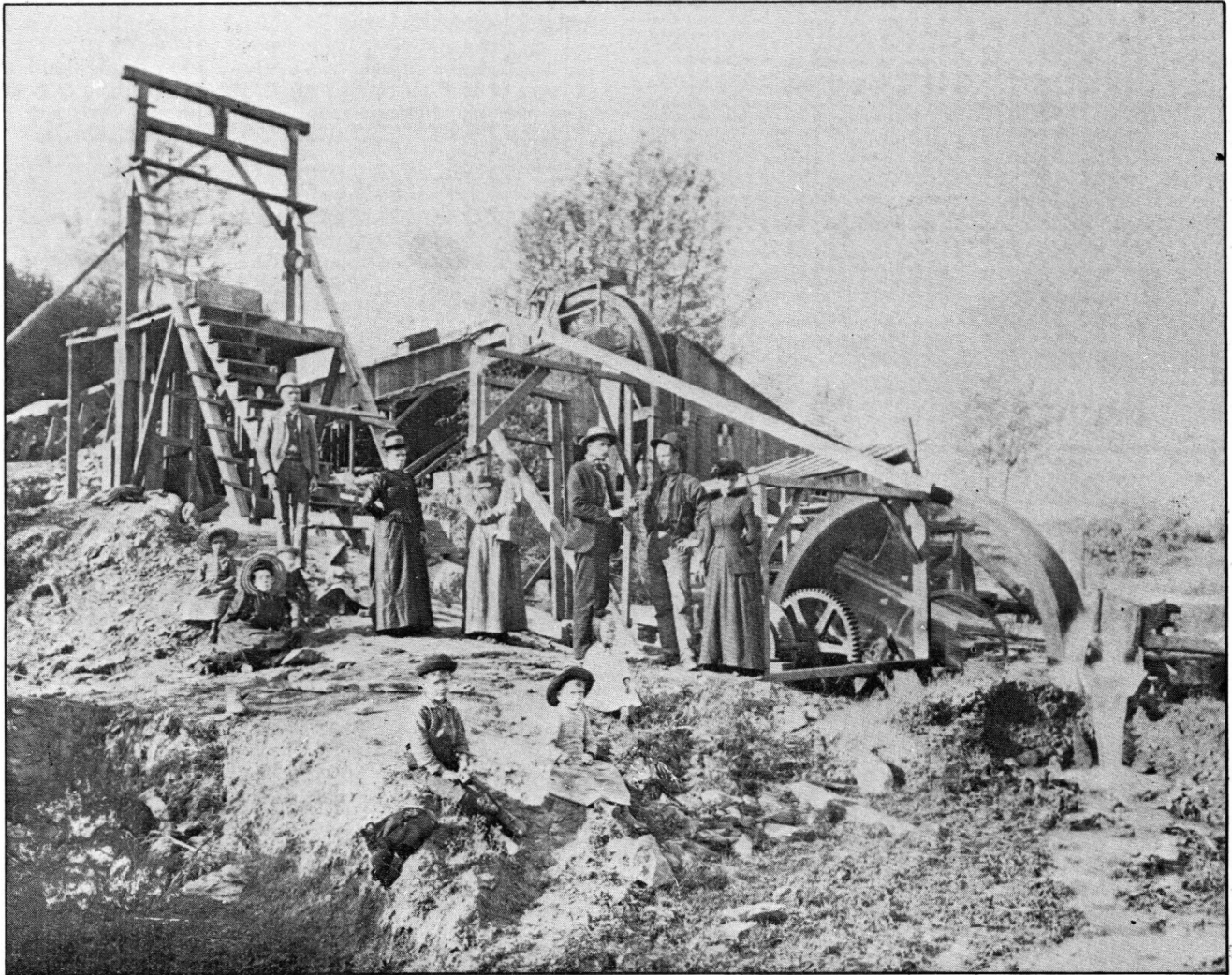
**Lode, ledge, and vein** - These terms are often used interchangeably for the geologic structures that carry the ore. Lode frequently has a more inclusive connotation, such as in Mother Lode.

**Orebody** - The portion of the vein that carries enough gold (or other metal) in the ore to make it worth while mining is called the orebody.

**Stopes** - From the drifts, miners "raise" up into the vein, mining or stoping out the ore, up to the next level. These openings are called stopes.

**Talc** - In the Angels mining district, a large body of talc or soapstone cut off or changed the course of the gold-bearing veins. Most of the best ore was found above this body of talc.

**Winze** - Sometimes shafts are "sunk" from underground. These are known as winzes.



### Maltman Mine

The Maltman family and friends pose for a photograph during construction of the gallows frame and hoist house at their shaft. This property later became part

of the Angels mine. Note the overshot water wheel in the background, used to power the large flywheel and hoist in the right foreground.

Courtesy of Earle Edmiston

## Officers Of Calaveras County Historical Society

San Andreas, California

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The Calaveras County Historical Society, a non-profit corporation, meets on the fourth Thursday of each month at the Grange Hall in San Andreas - except for dinner meetings which are held each quarter at different places in the county.

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### Editorial Staff Additions

The editor was pleased to receive several applications for assistant editor of "Las Calaveras." As a result, two of these applicants, Ida Long and Macie Taylor, have joined the staff. We hope that with their welcome help, we will be able to improve both the content and the appearance of the bulletin.

### New Members

We welcome these newcomers to the Society

Mr. E. Allen Nutter, Pebble Beach  
Mr. and Mrs. Richard T. Stephens, Stockton  
Mr. and Mrs. John Haley, Concord  
Mr. James A. Castle, Angels Camp  
Mr. and Mrs. William Tardif, Murphys  
Mr. and Mrs. E. L. Casey, Valley Springs  
Mr. Carl T. Carver, Glennville  
Mr. and Mrs. Jack T. Dayen, San Andreas  
Mr. Charles Goodell, San Andreas  
Mrs. Lloyd Kroh, Stockton  
Mrs. Helen Stevenot Ordway, Gilroy  
Mrs. Margaret Kenfield, Murphys

### Mark Twain's Jumping Frog Story

Copies of a reprint edition of the 1903 edition of this classic are available from our Secretary, at \$1.25 plus 20¢ tax and postage.

## Chronicles Of San Andreas

Dr. R. Coke Wood and the Old Timers Museum have published, posthumously, Emmett Joy's "Chronicles of San Andreas, the Town that Rose from a Golden Channel."

The manuscript was edited by Ellen H. Ladd and illustrations were supplied by the Calaveras County Museum, George Poore, and "Las Calaveras." It is attractively printed on a light sepia textured paper, of 52 pages, with 20 photographs. It is on sale throughout the county for \$2.25. Persons desiring to purchase a copy but who are unable to find it displayed, may write directly to the Old Timers Museum, Murphys, Calif., enclosing \$2.50 to cover tax and mailing.

## Knight's Ferry's Golden Past

Another very worthwhile addition to a collection of pamphlets on local history is John F. Criswell's "Knight's Ferry's Golden Past," a privately printed 64 page volume on the history of that picturesque town on the Stanislaus River. It is illustrated with 48 photographs and drawings, and may be obtained from Mr. Criswell, P.O. Box Eye, Knights Ferry, Calif. 95361, for \$2.75 including tax and postage.

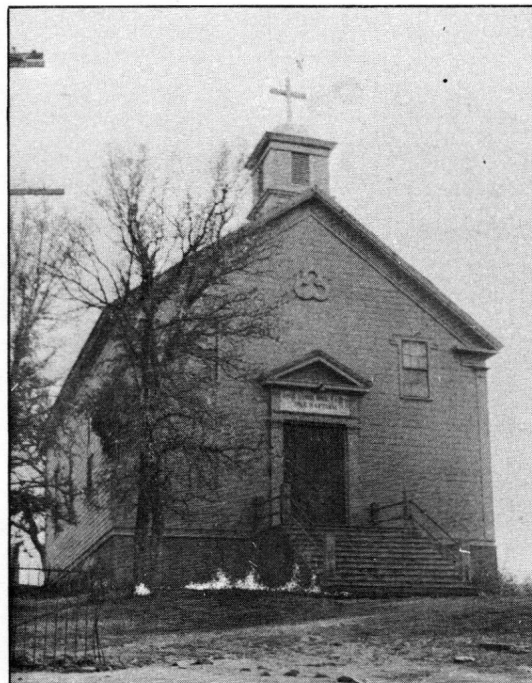
## Necrology

Addison Carley

Charles Hale

Hattie Gianelli

Oliver Wyllie



St. Andrews Church, San Andreas

Quite unintentionally, we used a picture of the St. Thomas Aquinas church in Mokelumne Hill for the San Andreas church, in our last issue. Mrs. Eva Soracco kindly supplied this picture, so that we could correct our mistake.