B St. looking South towards the Courthouse from the front of the ECV Hall.
That is the International Hotel at the corner of Union and B, across from Pipers

Julia's Unequivocal Nevada Klampout

#37

COMSTOCK

clamper year 6021

Historic Mine and Mill Sites of the Comstock

Historical Research Courtesy of the

THE COMSTOCK FOUNDATION

RESTORING THE LEGACY OF A NATION

Brought to you by

Julia C. Bulette Chapter 1864, E Clampus Vitus

Researched and interpreted by

Envisioned by
Noble Grand Humbug Kevin Breckenridge

Long Valley section by Jeffrey D. Johnson XNGH,
Clamphistorian at Chapter 1864

Dedicated to
Halverson, Small and Hessken

2016 c.e.

2016 Junk Dedicated to Carl Small

XNGH

Karl Small leads the parade

Long Valley

Long Valley creek drains the North slope of the Flowery Range and the East Slope of the Virginia Range. The topography consists of dissecting tertiary volcanic deposits with elevations ranging from 4,400 to 7,000 feet. An open pinion/juniper woodland (*pinus monophylla, juniperous osteosperma*) abides with *artemisia tridentata, purshia tridentata, chrysothamnous and prunus andersonii* shrubs in between. *Populous fremontii* and *salix species.* clutter the creek bottom near springs and seeps.

Ethnographically the area is near the Washoe and Paiute border. They hunted deer and bighorn sheep in the area and gathered pine nuts. It has been suggested that marl clay was mined for pipes from the associated deposits to Chalk Mountain and local tobacco gathered.

Cottonwood Springs

The first buildings at the springs along with a garden and corral were recorded in 1866. This was the location of Chalk House or Chalk Hills Ranch. BBQs, gazebos and a dam do not survive from 1973 when the area was a camping and picnicking spot. Stratified cultural deposits remain.

Lagomarsino Petroglyphs

The largest petroglyph site in Nevada is located at the lower end of Long Valley Creek. Named for the owner of the ranch nearby, the petroglyphs are along the rimrock and most boulders within a square 1/4 mile. Some 10,000 years of curvilinear scribblings are featured. No one knows what they mean. Some perchance are graphic equations taught by some prehistoric professor.

Lousetown.

The most famous of the settlements in Northern Storey County was the small community on both sides of the road named Lousetown. Lousetown was active in the 1860s as a freight stop on the Virginia Truckee Toll road and boasted saloons, freight yards, blacksmith shops, and overnight accommodations for teamsters. An Ice Lake was built to harvest ice for Virginia City. Nevada's first horse race track was here, where many famous races were held during the boom days of Virginia City and the track also boasted a bar, clubhouse, boarding house, outbuildings and corrals.

This track also helped Theodore Winters, to become a famous horse breeder. Due to the elevation of the track, about 6,400 feet, the horses raised in Washoe Valley raced much better than those animals who had been brought to Nevada from their low-elevation training grounds in California. The City of Winters Ca. was named for Theodore and the home he built on land he bought from the Mormons in 1857 still stands South of Washoe City. He ran for Nevada Governor in 1890 as a Democrat.

Washington City

The town was founded on Feb. 29, 1864, as Red Mountain City on the old toll road. The name Washington Hill rhyolite is here given to the extrusive dome of devitrified rhyolitic glass and perlite in and immediately southwest of Washington Hill. The rock is light gray and highly flow-banded. Sparse phenocrysts of sodic plagioclase and biotite are set in a groundmass of rhyolitic glass that is entirely devitrified in the main mass at Washington Hill, possibly as a result of slow cooling in so large a body after its initial solidification. The devitrified groundmass contains radiating feathery aggregates of crystals that transgress the flowbanding, which indicates that they formed after the rock had ceased to move. This is the rock I have in my driveway. The smaller mass to the southwest of Washington Hill is also largely devitrified but contains small areas of fresh perlite along the southeast side and near the center.

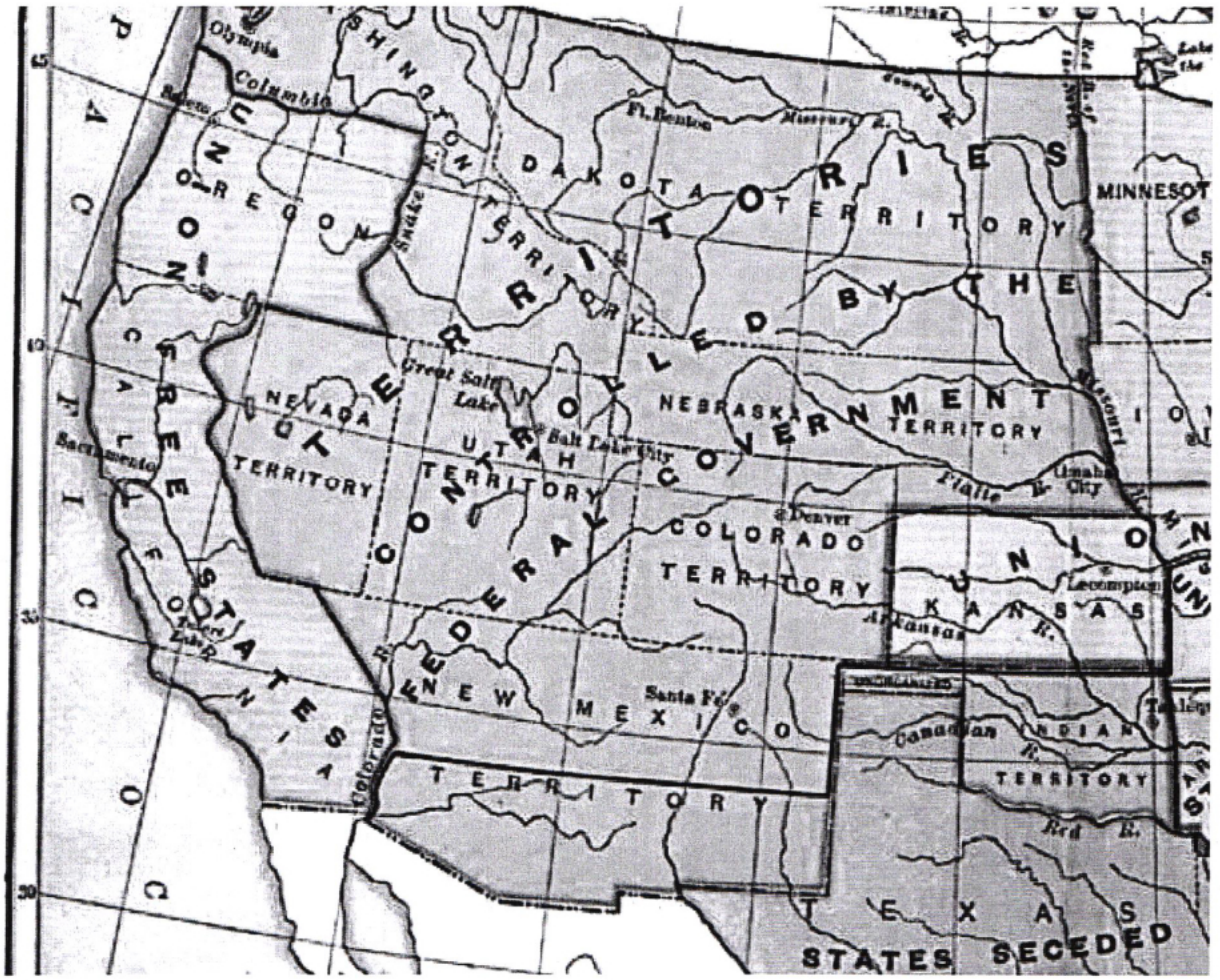
The Virginia Truckee Toll Road

The easiest, shortest, route from civilization to the Comstock was through Long Valley to Sturtevant's Station on the Overland trail near Lockwood. Messrs. Baldwin and Tritle proposed the first toll road through the area in 1866. In 1867 a railroad was surveyed but economic forces in Washoe and Eagle Valleys stifled that project. A narrow gauge railroad was proposed again in 1877 but was never begun. This toll road is still passable today from Lockwood to Gieger grade. The roads that crisscross the area that seem to have no purpose are old woodcutter roads. While the lumber from the great Sierra forests were used for homes, mines and infrastructure, virtually every stick of wood and some of the stumps were picked clean from every hill and vale within 80 miles for the fuel starved mining industry, homes and tents.

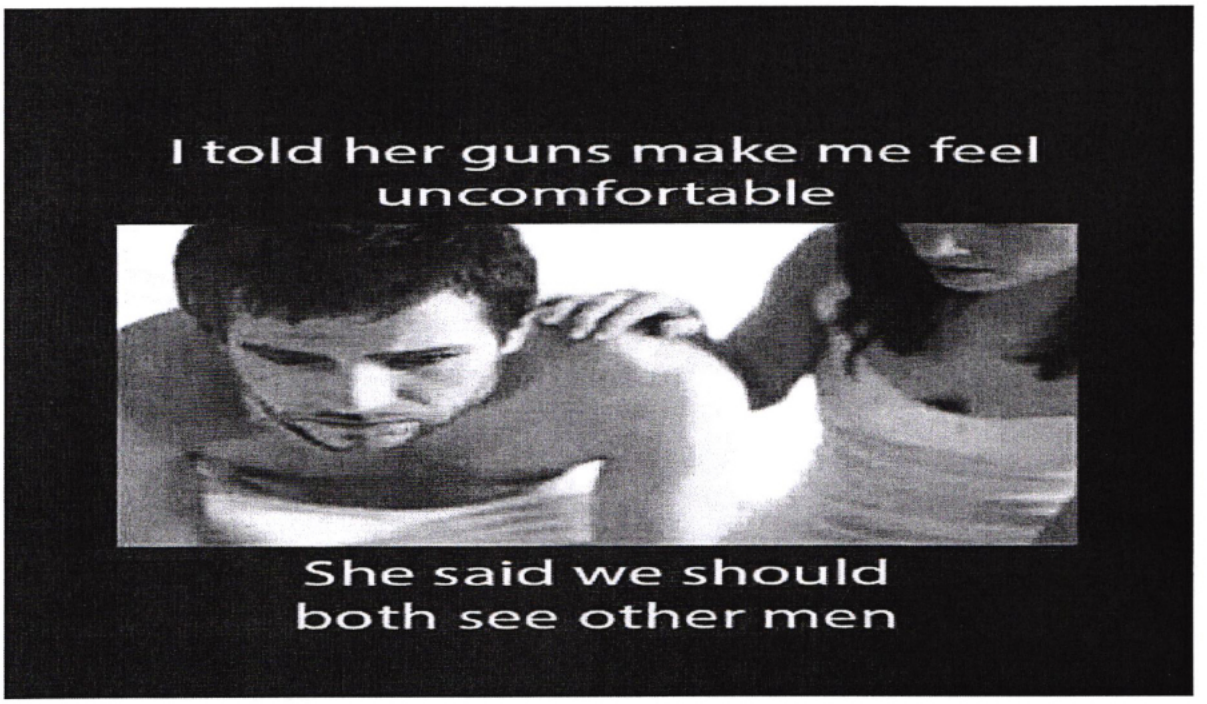
Woodcutters at Lake Bigler

Happy Valley

George Lockwood bought the Lagomarsino Ranch on the Truckee in 1916. In the 1960s Joe Conforte ran a brothel named Happy Valley. Bill Raggio probably ran him out of there in 1968 and the name was changed to Lockwood. Lockwood is now the home of our local trash.



Nevada looks funny in 1861



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Sparks Tribune 7/28/16

Nevada State Journal 2/16/1968

Blasts in the Past

1980 GENO OLIVER, STAR CITY-UNIONVILLE
1981 SKIP PENNINGTON+, MANHATTEN
1982 BILL KENNEDY, KENNEDY
1983 JIM CRONN+, PINEGROVE
1984 GEORGE COURSON, LEADVILLE
1985 DOUG WALLING, BERLIN
1986 DAVID WOOD, ROCHESTER
1987 JOE LEPORI, AURORA
1988 BILL SAWYER+, SULPHUR
1989 MIKE MILLER, MILLER'S STATION
1990 RED BEACH+, SHAMROCK
1991 BOB RODGERS, COMO
1992 RON WALSH, SEVEN TROUGHS
1993 DANNY COSTELLO, THE REAL NATIONAL
1994 JIM GROWS+, DESERT WELLS
1995 DANIEL BOWERS, HIGH ROCK CANYON
1996 PETER VAN ALSTYNE+, FAIRVIEW
1997 EDDY GONZALES, GRANTSVILLE
1998 JOHN DORNSTAUDER, HUMBOLDT CITY
1999 KEN MOSER, BELMONT
2000 VAL COLLIER+, PEPPER SPRINGS
2001 CHUCK MURRAY, NIGHTENGALE
2002 MARC BEBOUT, NEW PASS MINE
2003 AL NICHOLSON, lONE
2004 RON THORNTON, FLETCHER STATION
2005 J D PATERSON, APPLEGATE-LASSEN TRAIL
2006 WALT SIMMEROTH, NEVADA CENTRAL R. W.
2007 JEFF JOHNSON, ADELAIDE
2008 OWEN RICHIE+, TYBO
2009 KARL SMALL,+ DUN GLEN
2010 DAN WESTON, KINGSTON
2011 RUSS BREAM, SMOKE CREEK
2012 JESS DAVIS, FREMONT'S CASTLE
2013 CLIFF McCAIN, KNOTT CREEK
2014 BOB STRANSKY, JARBIDGE
2015 TIM PIERCE, WHISKEY FLAT
2016 KEVIN BRECKENRIDGE, COMSTOCK

+"Gone to Silver Hills"

Donovan Mill

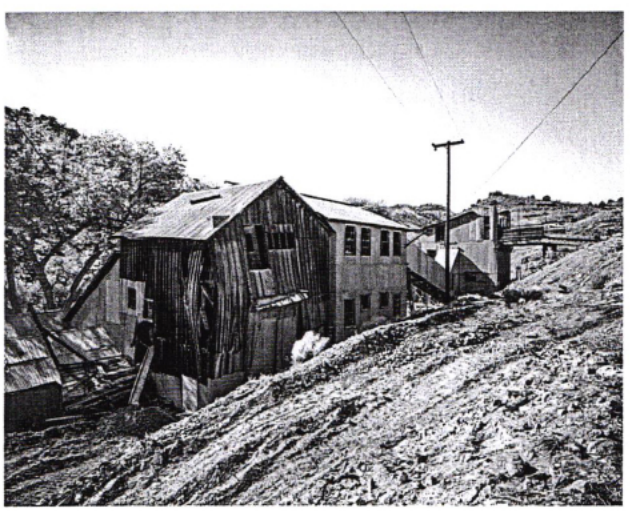
The history of the Donovan Mill in Silver City, Nevada is significant to the history of the Comstock and the evolution of milling technologies, predominately revolutionizing ore processing by replacing mercury with the use of cyanide. Robert Spude, mining historian, researched the Donovan Mill and is writing an essay for the Foundation. Information on the History of the Donovan Mill: Robert L. Spude, "Donovan Mill History," 2015, draft ms. copy in Comstock Foundation files.

The mill site began as the Kelsey Mill in 1861. Melville Kelsey and S.W. Collins built a 15-stamp mill at the location of the future Donovan Mill site. During this time, Silver City was a booming mill town with several mills operating in the 1860's and 1870's, particularly in the American Ravine area, as seen in this John C. Scripture image depicting the Bacon Mill, Trench Mill, and the Kelsey Mill. The Kelsey Mill is shown in the middle left side of image. Behind the mills are the trestles that transported wood from the V&T Railroad to the mills.

Ore from the famed Gold & Curry and Yellow Jacket Mine were milled at the Kelsey Mill. The Kelsey Mill was dismantled shortly after 1877, during the decline of ore production on the Comstock. The V&T connection to Silver City was removed in 1880. According to Spude's research, the population of Silver City was 921 in 1870, 601 in 1880, and by 1883 200. The next era in the history of the Donovan Mill is the Dazet Mill, information to follow – stay tuned to the Foundation's Facebook Series on the History of the Donovan Mill in Silver City, Nevada.

In 1890, Jean Dazet and Felix Lacrouts built the Dazet Mill with five stamps at the location where the Kelsey Mill once stood. Dazet funded the construction and Lacrouts constructed and operated the mill. Lacrouts and his partner Napoleon Landry were working the Lacrouts mine at that time just, west of Silver City. In 1892, the mill capacity increased to ten stamps. These ten stamps, of the Virginia and Truckee Foundry in Carson City, are still in the mill today. The life of the Dazet Mill under Lacrouts was short and Dazet leased the mill in 1893 and 1894. In 1895, Professor Jackson of UNR school of mines built his cyanide plant next to the Dazet Mill and purchased the Dazet tailings. In 1898, Dazet sold the mill to Professor Jackson and left the area. Under Professor Jackson, – the mill entered the next era in the history of the Donovan Mill – a nationally significant era for mining. Lacrouts fell ill and passed in Silver City in 1905.

Locating an image of the Dazet Mill has been challenging. Below is another image of the Kelsey Mill in the foreground from the J. Curtis Collection. The second photo is from the Mark Twain Collection with gable roof of the Dazet Mill peeking out among the slanted roofs of the Donovan Mill. The third image was taken by Preservationist Photographer, Jeremy Blakeslee in 2015.



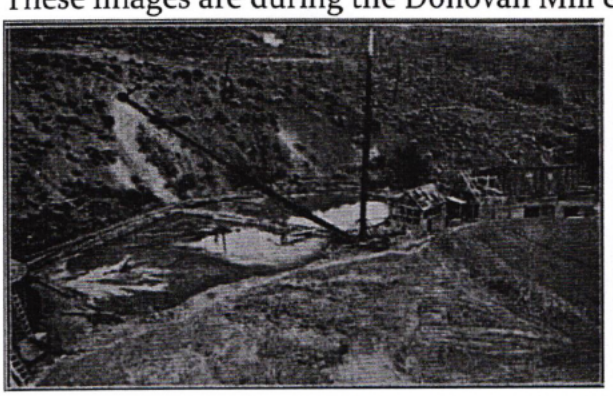
In 1895, Professor Robery Dyas Jackson of the University of Nevada's school of mines started a cyanide plant near the Dazet Mill. He later purchased the mill from Dazet. Many of Professor Jackson's students 'cut their teeth' in metallurgy in Silver City as well at Jackson's other cyanide plant in Washoe Valley, the Willow Glen. Both plants provided Jackson and his students opportunities for field application and experimentation with the new cyanide process.

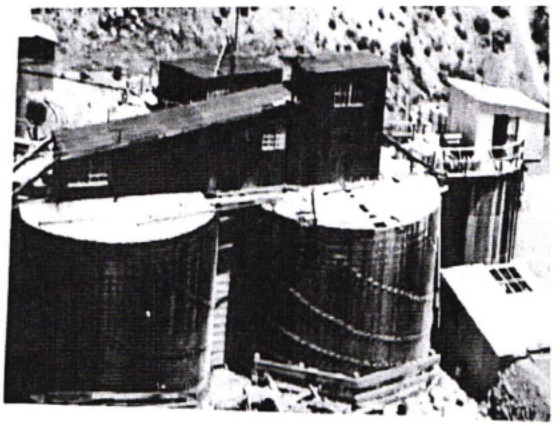
The cyanide process began 1887 in Glasgow, Scotland when John MacArthur and the Forrest brothers discovered the cyanide process. They patented the process in the United States in 1889. However, the process started down a path to failure in the US, but experimentation continued and it was perfected over the following two decades. Professor Jackson contributed to this perfection with his pioneering work in Silver City and Washoe Valley. His methods included use of a vacuum system and a cloth filter, oxygen, and a lime base. He patented various mechanical devices such as the vacuum filter, settling tanks, and agitators. His cyanide plants were the first successful plants in the US, making the Donovan Mill a nationally significant site, adding to the Comstock's

contributions in the history of mining technologies. Reworking tailings was common in the late 1800's and into the early 1900's. The technological revolution associated with the use of cyanide contributed to the advancement to reprocessing tailings.

In 1900, Professor Jackson partnered with J. Warne Phillips at the Dazet Mill and adjacent cyanide plant. In 1901, Phillips increased operations at the plant to include electric power, the derrick and boom system for working tailings, agitation vats, and the settling tanks. He added a step to the process that added zinc shavings, resulting in a 'dark sludge' that was then taken to the onsite refinery, which is still standing at the historic mill site, barely. In 1904, Phillips assumed control of operations and Jackson moved on to milling in San Francisco. Notably, Phillips introduced zinc to the milling process. The zinc/cyanide process proved very successful during this time and other cyanide plants shot up in the area from Dayton to Silver City to Virginia City, for example, Butter's Mill in Six Mile Canyon as one of the larger plants. What followed the era of Jackson and his partner Phillips was a "complete takeover of the milling operations by the cyanide operations, abandoning mercury amalgamation or concentration" (Spude, 2015, p. 11). Below are images of the Jackson Cyanide Plant.

The Jackson cyanide process was used until 1935, when the open-air cyanide operation ceased. However, the Jackson open-air leaching circuit was quite the operation. Picture 1 and 2 show the tailing ponds and the boom system. A clamshell dredge bucket on the derrick and boom removed the material from the ponds and stacked the wet tailings on the dry ground near the derrick. The tailings somewhat dried in the open air and horse-drawn wheeled scrapers spread out the tailings and the tailings were worked (Smith, 1932). Dr. Phillip's derrick and boom system moved the dried tailing from the piles into agitation vats where the cyanide solution was added. Next, the tailings were placed in redwood settling tanks where the cyanide solution and captured gold was pumped out and over to the operation building where zinc shavings were added. The Jackson and Phillips cyanide process helped revolutionize the milling process for Western mining. Picture 3 & 4 are images of Jackson's cyanide plant. The stamp mill prepared the ore and a flume carried the tailings to the tailing ponds where a separation process began. These images are during the Donovan Mill era, though.





Donovan Sr. was a competent mine and mill man who immigrated from Ireland in the mid 1880's and then headed west. Once on the Comstock and in the 1890's, John Mackay put him in charge of the Silver Hill Mining Company in Gold Hill. In 1909, Donovan Sr. acquired Trimble's 30-ton cyanide plant in Gold Canyon. Donovan Sr. and his sons William Jr. and Charles worked at the Silver Hill Mill and Trimble cyanide plant. In 1912, William Donovan Sr. purchased the Dazet Mill and Jackson Cyanide Plant from Dr. Phillips. Donovan Sr.'s consolidated operations in south Silver City reached the capacity of processing 100 tons of ore a day. He even built a flume from the McTigue Mill to the Donovan Mill. The State Bureau of Mines estimated Donovan's operations produced $176,767 between 1909 and 1925, which helped support the community of Silver City. The mills at this time in Silver City and Gold Hill worked ore from the mines in the mills and tailings at the cyanide plants. Donovan Sr. managed the mills and cyanide plants in Silver City until he turned operations over completely to his sons William Jr. and Charles in 1923.

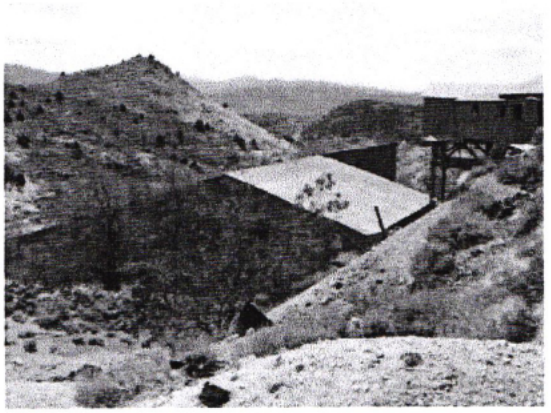
The addition of the Donovan Family on the Comstock initiated a legacy on the south part of the Comstock, and certainly formed a legacy for the Donovan Stamp Mill. Silver City was a booming mining and milling town during the 1860's and 1870's with the population peaking around 950. The population and milling operations declined in the 1880's. However, during Donovan Sr.'s era, Silver City's population and milling operations picked up. In the 1900's through the 1920's, Silver City was a small mining and milling community. The population varied between 300 and 340. The Donovan, McTigue, and Trimble families contributed much to the community and the mining and milling economy. These mill owners grew up in Silver City or Dayton. The Donovan's and Trimble's served on local school boards and were ranking members of the Elks and Masons. The diverse community of Silver City had residents from Ireland, Switzerland, Germany, and France. Below is an image of the McTigue Mill in Silver City.

William Donovan, Jr. Charles passed at a young age in 1933 and William Jr.'s assumed responsibilities of the mill operations. William Donovan Jr. enlarged the mill in 1933-4, adding 145,000-gallon leaching tanks. He enlarged the mill again in 1935 by adding classifiers and more settling tanks, increasing operations to 100 tons per day at the mill and moving the leaching process inside the plant. In 1937, Donovan enlarged the plant once again by adding 20 stamps from Dayton's Rock Point Mill, increasing operations to 150 to 200 tons per day. Dr. Phillip's derrick and boom hoisted the dried tailings to the agitation vats. The clamshell dredge bucket on the derrick and boom removed the material from the ponds and stacked wet tailings on the dry ground near the derrick. The tailings dried in the open air and horse-drawn wheeled scrapers spread out the tailings, which were worked before the material was charged into the redwood leaching vats for further processing with cyanide solutions.

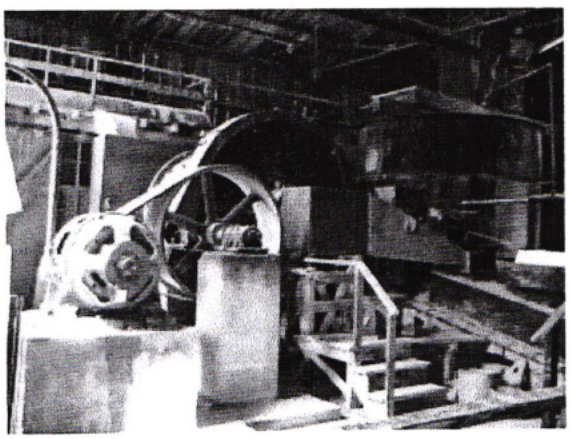
The Comstock Foundation for History and Culture (CFHC) purchased the Donovan Mill in 2014 and commenced preliminary restoration efforts in 2015. Today, volunteers are working on protection of the mill, which the Historic Preservationist calls 'first aid'. CFHC received a grant to commission the Historic Preservationist to conduct an evaluation and assessment of the site and write a report on the most appropriate and cost effective method for restoration. The goal CFHC has for this historic site is to open it as an interpretive center and Silver City museum. Donations for our project to save the Donovan Mill are much needed.

Crown Point Mill

The historic Crown Point Mill is a daunting 15,000 square foot industrial building in the heart of Gold Hill, Nevada, just south of Virginia City. Formerly the epicenter of wealth and industry, the Comstock was booming with mines, mills, miners and gold. The Crown Point Mill sits just south of the Gold Hill Hotel overlooking some of the richest land in history; the gold pulled out of the mines helped finance the Union, and built cities like San Francisco and parts of Los Angeles.



Originally built in 1935, the Sutro Tunnel Coalition re-routed the V&T railroad, and dismantled the trestle in Gold Hill to successfully mine an ore body beneath it. The Crown Point was very profitable, paying off the cost of moving the tracks and the cost of building a Mill building (in addition to the normal cost of mining) in less than 3 years. They continued mining and milling from 1935 through 1942. The Crown Point Mill was a staple in the community, processing some 300,000 tons of ore until the government forced it to shut down under the War Production Board Limitation Order, or L-208 during WWII. At the time, L-208 was intended to shut the country's gold mines down and shift the focus to "strategic metals and minerals such as lead, zinc, copper and tungsten, which were needed for the war effort. Gold and other precious metals such as silver were deemed 'non-strategic. While the Mill is not entirely operational today, permits and nuances aside, there has been a major upgrade; over 8700 man-hours and more than $700,000 went into restoring it in 1989.



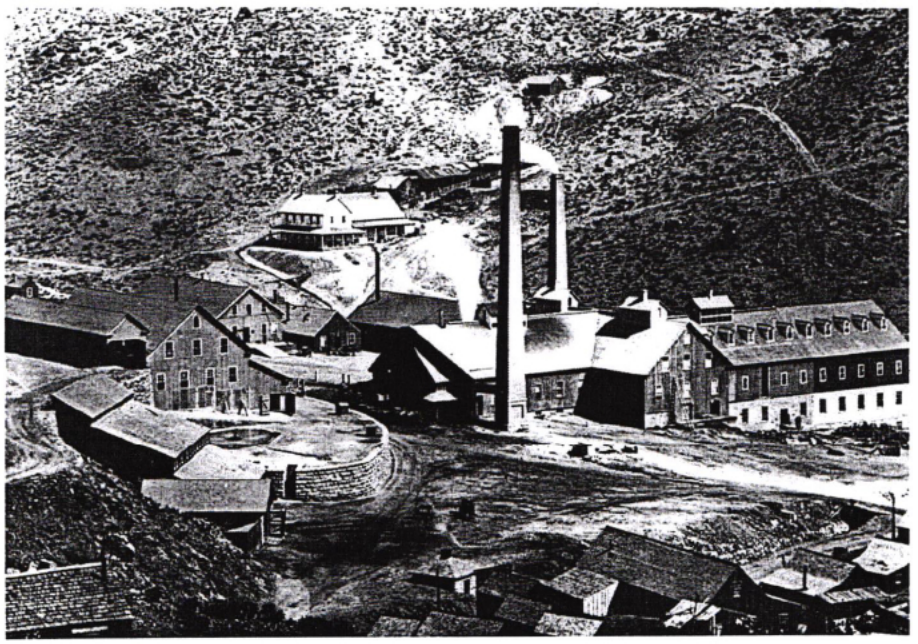
Butter's Mill

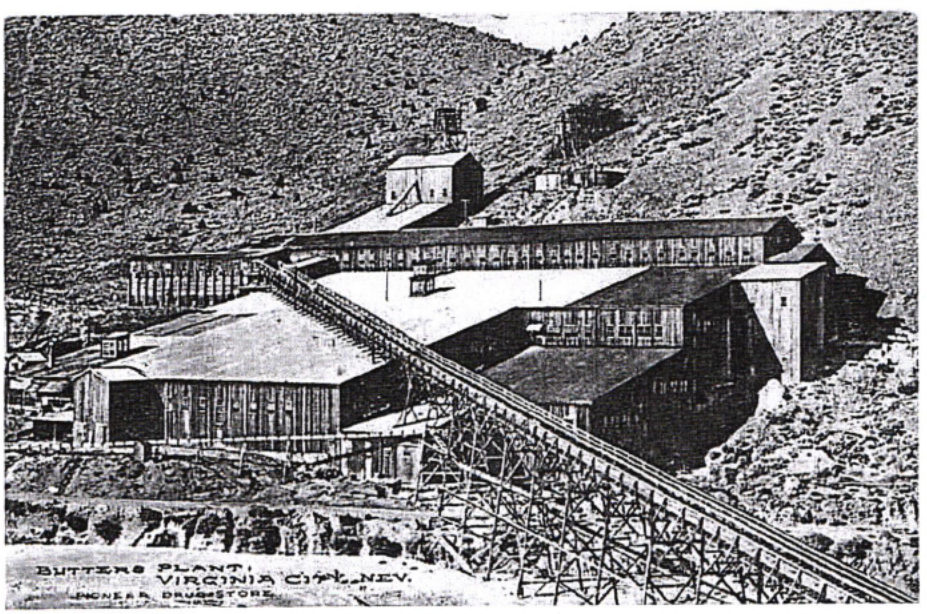
The remains of Butter's Mill by Six Mile Canyon Road are still visible, mostly the footings. After the decline of the Comstock Lode, quite often mills processed tailings from the mines. During the Comstock Bonanza eras, loss of valuable ore varied between 19% and 28% (Smith, 1966, p. 260), and sometimes higher. "In 1901 Charles Butter erected a large cyanide plant in Six Mile Canon to treat a quarter million tons of impounded tailings" (Smith, 1966, p. 258). Mr. Butter later added stamps to the mill. The introduction of the cyanide processing for ore increased the recovery rate for milling tailings. Mills like the Butter's Mill sprang up after Professor Jackson revolutionized the MacArthur/Forrest cyanide process patented in 1887 to successfully process Comstock ore, and ore from other areas. Dr. Phillips introduction of zinc in the process further advanced this for recovering gold and silver from tailings. Later on, Charles Butter leased the mill to Joseph Dietrich and Hahnewald Brothers from Leadville, Colorado. Mr. Dietrich leased workings from the Chollar and Potosi.

In 1912, the Butter's Mill processed Tonopah ore that was processed at the Best and Belcher and flumed to Butter's Mill. Butter's Mill was connected to the railroad in Virginia City via a two-wire tram for the transporting of ore (History of Mining in Nevada, p. 325). This era for processing tailings using the new process included interest from the Mexican Mine, Comstock Pumping and Ward Shaft Association, and a Sturgis who was involved with the Yellow Jacket, Crown Point, and Belcher.

The first photo shows the tram from Virginia City to Butter's Mill in the canyon.

Two images of Butter's Mill





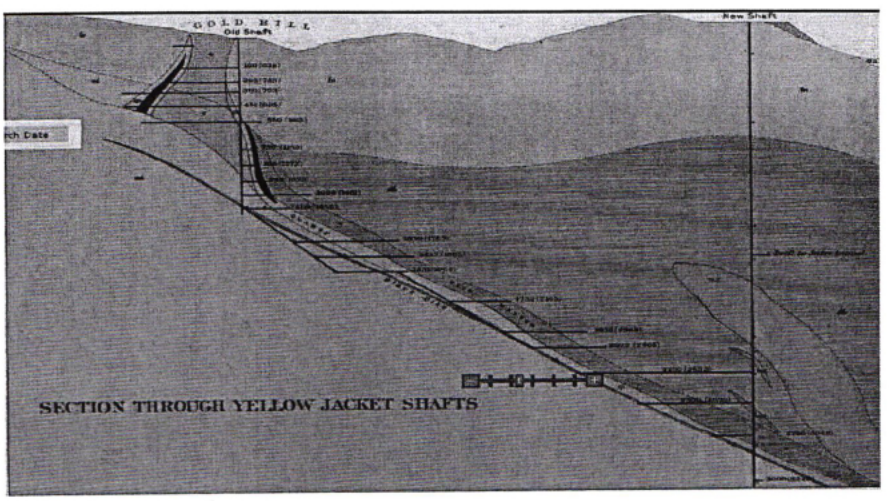
East Yellow Jacket

The Yellow Jacket Mine in Gold Hill, Nevada is significant to the history of the Comstock. Besides known as having "the greatest disaster in the history of the Lode – the Yellow Jacket Fire, in which thirty-seven men were trapped underground and lost their lives" in 1869 (Smith, 1966, p. 122), the mine has one of the deepest shafts on the Comstock. The Yellow Jacket Mine, named after a yellow jacket nest near the site where it was first located in 1859, "produced over $20,000,000; its assessments total nearly $7,000,000." (Smith, 1966, p. 94). According to James (1998) quoting Elliot Lord, the first Comstock ore transported on the V&T Railroad in 1869 was from the Yellow Jacket mine. The Yellow Jacket fire on April 7, 1869 is one of the biggest disasters in Nevada history and attracts much fame and writings of the Yellow Jacket Mine. It was leveraged by Adolf Sutro to gain support for the Sutro Tunnel. "He swung the first pick on October 19, 1869" to commence the tunnel building and operations, which lasted until around 1888. (James, 1998, p. 88).

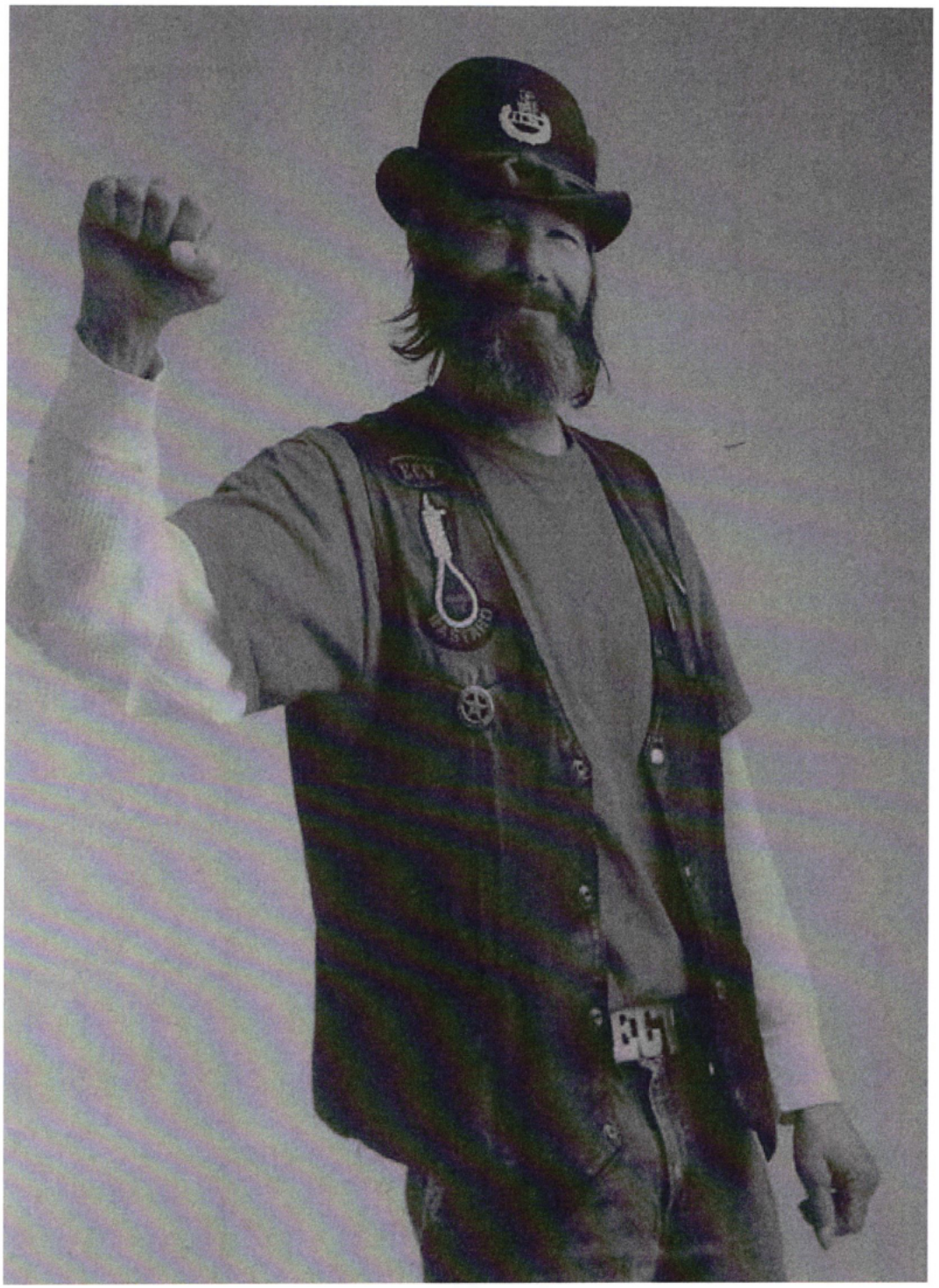
In 1876, John Mackay sank the New Yellow Jacket, or the East Yellow Jacket, mineshaft and its final depth was well over 3,000 feet. The remains, mostly footings, are seen and accessible via the truck route between Virginia City and Silver City. Grant Smith (1966) adds to the significance of the Yellow Jacket Mine's history; "The highest temperature of any considerable quantity of water (170 degrees) was recorded by the flood on the 3,000-foot level of the New Yellow Jacket shaft in November 1880" (p. 245). The New or East Yellow Jacket did not produce ore. It is connected underground to the other Yellow Jacket workings.

The Upper Yellow Jacket mineshaft dates back to the late 1930's. The Comstock Foundation restored the hoist and ore chute as its first restoration project in 2013. The structure risked complete demise, but the Foundation saved this significant historic structure, as depicted in the photo below.

Yellow Jacket Shafts
David Rumsey Map Collection



Little Al

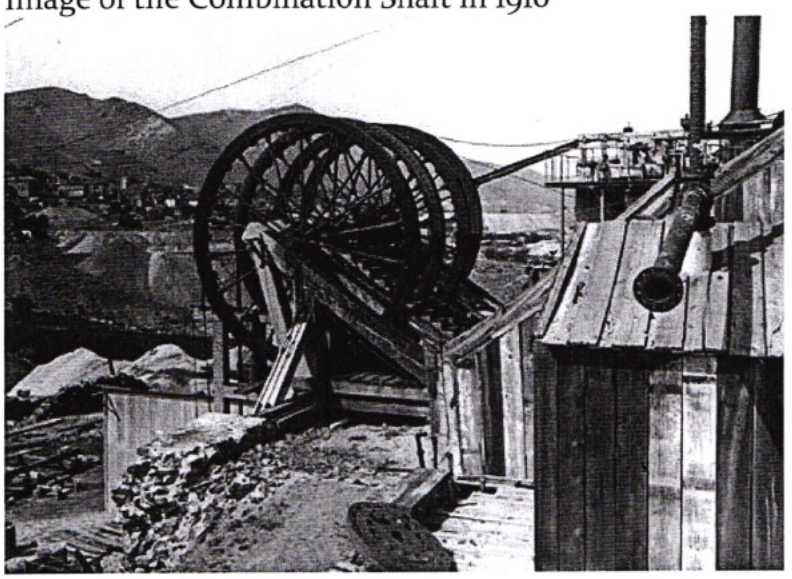


Combination Shaft

The Combination Shaft in Virginia City was sunk 3,250 feet - over half a mile – and is the deepest shaft on the Comstock. This distance is twice the height of Mt. Davidson. Five years ago the bat cage was installed by BLM over the shaft to allow bats to come and go from the shaft.

The Combination Shaft was a combined effort of the Chollar-Potosi and Hale & Norcross in 1875 to explore the Comstock Lode at a great depth. This mine was sunk in hopes of finding more of the Comstock Silver vein at deeper levels. After drilling and blasting 3300 feet down, they found that the silver vein had ran out. It was the last mine shaft sunk to find the bottom of the vein in efforts to keep Virginia City alive. It was connected to the Sutro Tunnel and was instrumental in draining the mines connected to the Tunnel. "The tunnel connected with the Savage claim on 8 July 1878. All of the Gold Hill mines stopped pumping water by March 1882, and allowed water to rise to the level of the tunnel. The Combination Shaft ceased pumping below the tunnel toward the end of 1886, which is the year operations for the Combination shaft ceased. (Jeff Williams and Wikapedia)

Image of the Combination Shaft in 1910



By YESENIA AMARO
LAS VEGAS REVIEW-JOURNAL ARTICLE
APRIL 23, 2014, http://www.reviewjournal.com/nevada-150/nevada-was-once-home-second-deepest-mine-shaft-world

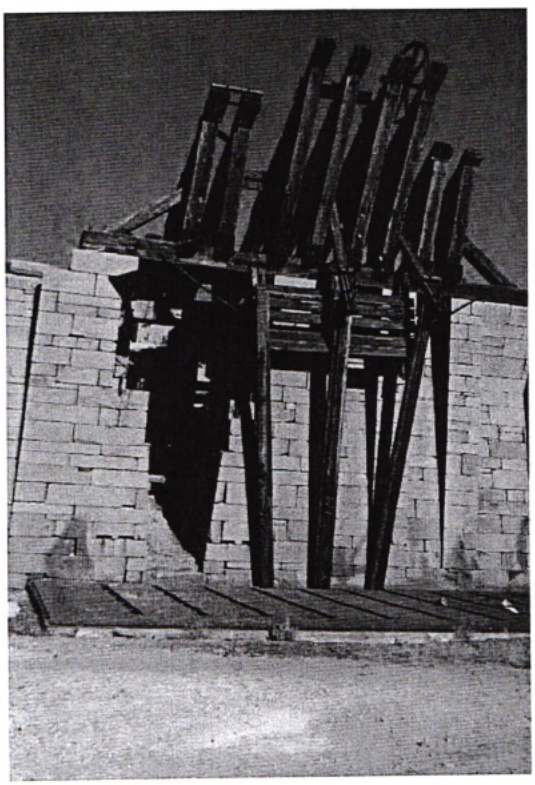
Nevada was once home to the second-deepest mine shaft in the world.
The Combination Shaft was created in 1875 during the Comstock Lode in Virginia City, said Mike Visher, deputy administrator at the Nevada Minerals Division. It was 3,250 feet deep. "That would be almost 11 football fields," he said.

The deepest mine shaft in the world was the Adalbert Shaft in the silver mines of Bohemia. However, it was only 30 feet deeper than the Combination Shaft at 3,280 feet, according to the Nevada Observer.

The Combination Shaft was sunk at the rate of 3 feet a day, Visher said. It was 30 feet by 10 feet in size. There are more than 10,000 mine shafts in Nevada. There were several mine shafts that were around 3,000 feet deep in Virginia City during the Comstock Lode, said David Davis, geologic information specialist with the Nevada Mines and Geology Bureau. Miners in Nevada were some of the highest-paid in the world, he said.

Miners working in Virginia City during the Comstock Lode were getting paid $4 a day, Davis said. They were working 12 hours a day, six days a week. At that time, the average miner was getting paid $2.50, he said. However, the working conditions prevented them from living long, healthy lives. Temperatures at the bottom of the shafts would reach about 130 degrees, Davis said. After working for about 30 minutes, men would have to go into an "ice room" to cool down. Many of them became ill with what was known as "miners consumption," which is now referred to as "silicosis," a lung disease developed by inhaling silica, Davis said. "Most of those guys never made it to their 40s," he said.

Combination shaft today, bat cage seen at bottom of photo.



Union Mine

The Union Mine is one of the northern mines on the Comstock. It was originally staked in 1869 (Ross, 1989) and included a portion of the Comstock Lode between the Mexican and Sierra Nevada mines. The North Ophir was adjacent to the Union, too. In 1879, the Consolidated Virginia purchased the Union claims. Eventually, the Union was joined with the Mexican, Sierra, and the Ophir. It reached the depths of 2400-2500 feet. The total ore from the Union between 1879 and 1882 was 35,640 tons yielding $1,221,639, but it had $1,310,000 in assessments, which meant it cost more to build and operate than it profited (Grant, 1943).

In 1879, a Cornish pump was installed to handle the water at the lower levels (Ross, 1989). It was the last Cornish pump to be installed on the Comstock. It was the largest pump in the world, cost $547,000 (at that time), and weighed 208,700 pounds. It could pump 2 million gallons per day. The flywheel was 36 feet in diameter and the cylinder 100 inch in diameter. The flywheel's destiny was to be melted down and used in the War.

On June 10th 1879 Union and Venis Claim was bought by the North Consolidated Virginia Mining Company. On July 14th 1904 the Union Shaft Fire broke out and the shaft house, machinery, and shaft were in part destroyed. The estimated loss was $100,000. It is alleged that the cause of fire stated was someone carelessly throwing a match in the rope-house. Another tragedy at the Union was when two miners were killed because the mining hoisting equipment they were descending in at the Union Mine broke and plunged 300 feet to the bottom of a shaft.

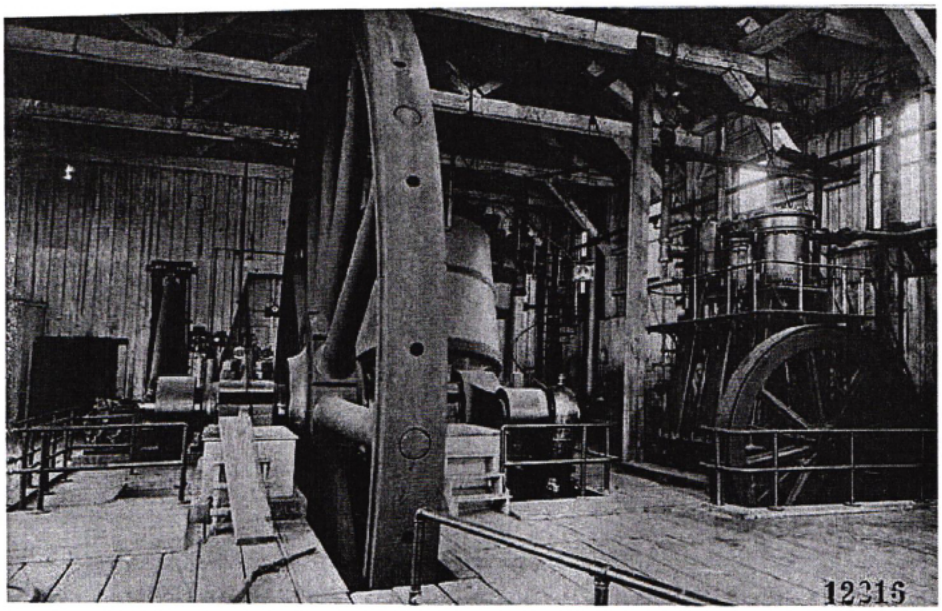
The steel head frame was designed and erected by Wellman Seaver-Morgan Company for the Union Shaft, Virginia City, Nevada. It was impossible to obtain satisfactory foundations near the shaft opening, and it was necessary to place the front vertical legs of the head frame on a heavy box plate girder. The back braces are made of two plate girders, consisting of one plate 18" X 5/16"and four angles 4" X 3" X 5/16", fully braced in the plane of girders. The front vertical posts are built H-columns, consisting of one plate 12" X 5/16" and four angles 3 ½" X 3" X 5/16". The posts are rigidly braced, and have a batter of 1 ½" in 12" from bottom to a height of 40 feet. There is no bracing between the back braces and the front posts. The back braces are firmly anchored to the foundation by means of two anchor bolts in each back brace, 1 ½" in diameter by 7 feet long. The head sheaves are 7 feet in diameter, each carrying a 1" hoisting rope. The rate of hoisting I 1,000 feet per minute, and the hoisting capacity is 500 tons from depth of 2,000 feet (Babbs, 2014).

The head frame was designed for a load of 16,000 lbs. made of the following:

6,000 lineal feet of 1" rope = 9,600lbs.

2 cages	= 2,400lbs
2 cars	= 1,100lbs
Rock in cars	= 2,400lbs
Tail sheave	= 500lbs
	16,000lbs

Union Mine Fly Wheel



Workers at the Union Shaft