The crew that camped on the site and "busted their butts" to accomplish the job were as follows: Larry Hedrick and son Chris; Bob Schoose and sons Mark and Zach; camp cook Virgil Worth; Hank Brown; Ed Johnson; Jay Zingler; Ray Girten; and Salvador Degadillio. They related that 14-hour days were the norm.

According to Larry Hedrick, "Safety was paramount. As each key was removed, we would all rush for our cameras, fully expecting the entire building to come crashing down around our ears. It was hard, dangerous work. But the men who constructed the mill were master craftsmen; from the hand-fitted joints to the wooden dowel pins, the building hung together until the last spike was pulled."

Five truckloads of more than 70 tons of mill materials were removed and hauled 500 miles to Apache Junction. The deal was that the stamp mill went to the museum, where it was reconstructed, and the 100-year-old virgin cut wood timbers were used in the construction of Goldfield Ghost Town. An amazing thing about this donation is that the entire operation is virtually identical to the mill built by Charles Hall about 1892 in the original Goldfield, Arizona, located very near our museum site.

In 2011, the Las Conchas forest fire devastated the area and burned to the ground what was left of the town and mill. This may be the only stamp ore mill preserved from New Mexico, and is for certain the last surviving remnant of the boomtown of Bland.

Acknowledgements

The Cossak 20-stamp mill ore crusher, reconstructed and enthroned on the museum grounds after a grueling salvage project and a years-long restoration project undertaken by a dedicated cadre of volunteers, is a true vestige of bygone days and a magnificent piece of mining history. Its salvage and restoration serves as an important testament to the efforts of many people over a span of 25 years.

Our museum has been lucky enough to benefit from the efforts of many individuals, among them Charlie Connell and Roger Camplin who are knowledgeable about the repair and restoration of these old mills. These men trained and supervised the efforts of an incredibly hard working crew of volunteers including: Guy Bolinger, Bob Chapin, Lee Cooper, Rob Dunlap, Tom Fischer, Ken Grieger, Jim Geil, Morris Jackson, Bill Kane, Richard Lowe, Bill Lytle, Doug Mercer, Chuck Messersmith, Larry Miller, Ted Montague, Phil Reinhardt, Dan Ware and Charlie Ziegler.

Sincere and everlasting gratitude goes to all of the people whose efforts have made this monumental restoration dream come true.

Superstition Mountain Lost Dutchman Museum

MUSEUM HOURS

9 a.m. - 4 p.m. Daily
Closed Thanksgiving,
Christmas Day and New Year's Day

ADMISSION

Adults $5.00 • Seniors 55+ $4.00
Students with ID $2.00
Children 17 & Under FREE
Accompanied by Adult

GROUP TOURS WELCOME

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SUPERSTITION MOUNTAIN MUSEUM
4087 North Apache Trail
Apache Junction, AZ 85119
(480) 983-4888
superstitionmountainmuseum.org

Superstition Mountain Lost Dutchman Museum's 20-STAMP ORE MILL

The Only 20-Stamp Mill in AZ with an Operable Bank of Stamps

An ore stamp mill is a large mechanical device used to crush ore (the host material) that contains precious metals. It uses heavy metal stamps to pound and break apart the rock, pulverizing it so that the valuable metals can be extracted for further refining.

The very basic design of a stamp mill has been used for grinding and pulverizing purposes for thousands of years. Adaption for use in the process of mineral extraction, usually gold, silver or copper, or any other substance contained in host rock, has been around for centuries. The first ore stamp mill was built in the United States in North Carolina in 1829. In the ensuing gold rushes in this nation, the stamp ore mill became an all-important part of the mining process.

Stamp mills during the early gold rush days were generally powered by water, although sometimes steam engines were later used as a power source. Their construction typically involves a series of heavy metal stamps arranged in a wooden frame called a stamp battery. A system of a rotating shaft, cams, and tappets is used to raise and drop the stamps. Stamps were usually built in banks of five.

The stamps themselves are extremely big and heavy, made from cast iron heavy enough to pulverize the ore beneath. The stamps are repeatedly raised and dropped onto ore that is fed into the mill, until the coarse chunks of ore are reduced to fine sand.

With the ore crushed into fine powder, the amalgamation process with mercury or cyanide could be done, allowing for the final extraction of the gold.

Sluices and shaker tables were also utilized to obtain the precious metals.

How Does a Stamp Mill Work?

Minerals and ore about the size of a melon are dropped in to a **jaw crusher** that crushes the ore into manageable pieces. The rocks are crushed to about the size of a man's fist or a little smaller and then fall into the **feeder mechanisms** which distribute the rock evenly into the **mortar box**. The ore is then pounded by **stamps** weighing more than 1000 pounds that are raised and dropped more than 100 times per minute. The

stamps are raised and dropped through the action of the **cams and tappets** which are turned by the cam shaft, powered by a belt connected to the **bull wheel** and **idler pulley.**

The ore is crushed to a fine size determined by the size of screens located on the front of the **mortarbox**. As the ore is crushed it is mixed with water and forms a **slurry** that is then pumped and piped into a **cyanide tank** and combined with the chemical **cyanide**. A gear-powered paddle mechanism keeps

the process moving along and adds air bubbles.

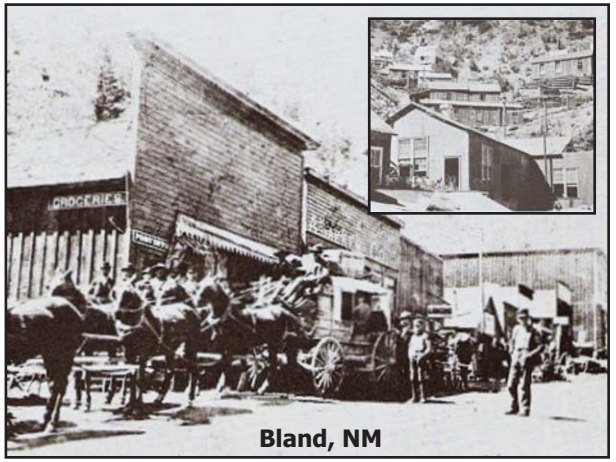
By suspending the crushed ore in a dilute cyanide solution, usually sodium cyanide or calcium cyanide, a separation of up to 96 percent pure gold can be achieved. The mixture is then filtered and refined by a process called **smelting**. Smelting involves "burning off" the impurities that the gold might be mixed with, resulting in nearly pure gold.

The process was first used in 1890, leading to a boom of investment as larger gold mines were opened up. The process is still used all over the world today. Gold cyanidation is controversial due to the toxic nature of cyanide. Today, an International Cyanide Management Code exists that strives to minimize the amount of cyanide used, encourages the design of measures to protect surface and groundwater and reduce cyanide levels in effluent, and emphasizes the use of safety measures to prevent spills.

History of this Cossak 20-Stamp Mill

This stamp mill, used to extract gold and silver from ore, was built in 1914 and originally used in Bland, New Mexico. Bland was located at the bottom of a canyon approximately 60 feet wide, part of the Cochiti Mining District, Sandoval County, New Mexico, approximately 8 miles southwest of the Los Alamos National Laboratories and an hour and a half north of Albuquerque in the Jemez National Forest.

A German prospector discovered deposits of gold and silver in the early 1890's in the area and the rush was on. The town was originally called Eagle City and later renamed for either Richard Parks Bland, a Missouri senator who fought the demonetization of silver earning him national fame, the choice also perhaps influenced by a local family of saloon keepers named Bland. A post office was established in 1894. Population of the town of Bland in



Bland, NM

the 1890's reached nearly 3,000. The town consisted of more than 50 buildings including a dozen saloons, a red light district, four sawmills, two banks, a school, an opera house and 4 ore stamp mills. Some of the structures were built into the sides of the canyon. Mining was most active between 1894 and 1916.

Cossak Mining Co. operated the mining efforts in the area from 1914-1916 and built this four-bank stamp mill into a 35-foot-high building on the side of a canyon wall. The mills were gravity fed. From 1914 to 1916 about 33,000 tons of ore was mined and milled at this site.

At that time, gold was $18 to $19 an ounce. An ore cart holds roughly one ton of quartz ore.

The decline and fall of the Cochiti District was due to several factors, among them the low grade of ore, the decline in width veins, high transportation costs, and poor management.

In 1938, the town and several mining claims were purchased by Thomas and Effie Jenks. He was a mining engineer and she was the head Harvey Girl at historic old La Fonda on the Santa Fe Plaza. His intention was to start up a gold mining operation again in Bland, but he died before his dream could come to fruition.

In 1965, Effie retired and moved to Bland where she elected herself mayor of the ghost town where she lived until her death in 1983.

In 1988, Joe and Vickie Jones owned the land upon which the 20-stamp mill was located and they donated the stamp mill to the Superstition Mountain Historical Society. The salvage job began in August, 1989.

Taking apart the old 20-stamp mill and the tall building housing it took 30 days. To enable access, the old road built about the turn of the century had to be re-opened using a 930 Cat front-end loader.