

Chapter Five

History of the Clifton-Morenci District

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Indians

The early history of the Clifton-Morenci district was greatly influenced by bands of outlaw Apache Indians. The first mineral discoveries in the district were made in 1865, by men pursuing a band of Indians who had stolen cattle and horses from nearby ranches. Early mining was severely hampered by Indian raids. One historian wrote that "men worked with a pick in one hand and a gun in the other."

Ore wagons in the 1870's were waylaid and raided, the drivers killed and the stock stolen. Because the district was so remote, ore had to be hauled by wagon train to the nearest railroad in Colorado. Many of these wagon trains never reached their destination—victims of Indian raids.

Even the decision to build the first railroad from Clifton to Longfellow in 1879 was based on discouraging Indian raids on the wagon trains.

Early History

In 1870 a group of ranchers from Silver City, New Mexico, came through this area in pursuit of Indians who had stolen some horses. They noted the strong copper mineralization, but were mainly interested in the possibility of placer gold. Three of those ranchers were Joe Yankie, and Robert and James Metcalf.

Two years later they returned looking for gold. Although this search was largely fruitless, they located the Longfellow, Yankie, Arizona Central and Metcalf claims over copper mineralization in areas which later were to become the mines around the towns of Metcalf and Morenci.

The First Copper Company

Joe Yankie and the Metcalf brothers worked their claims for a short time, then sold most of their properties to Henry Leszinsky, Charles Leszinsky and Julius Freudenthal, who owned a general store in Las Cruces, New Mexico. Robert Metcalf held on to his properties located about seven miles north of Clifton near Chase Creek. By 1875, he had established a camp near his mines. This was the beginning of the town of Metcalf.

The Metcalf brothers, the Leszinskys and Freudenthal formed the "Francisco Mining Company" in 1872. One year later the name was changed to the "Gila Mining

Company" and finally to the "Longfellow Mining Company" in 1874.

One of the claims originally located in 1872 by Robert and James Metcalf was the Longfellow claim. This claim contained high-grade copper deposits and was located in an area now incorporated into the southeast portion of the Morenci Open Pit Mine.

The first ore mined by the Longfellow Copper Company was from the high-grade deposit on the Longfellow claim. It was first quarried from rich copper deposits on or near the surface of the ground. As mining continued, an underground mine was developed. Over the first ten-year period the average ore grade from the Longfellow Mine was 20% copper. This compares with ore being mined from the Morenci Open Pit Mine today averaging considerably less than 1% copper.

Chase Creek, where the first copper furnace was built, was far below the Longfellow Mine. Ore was lowered down an incline to the furnace, which was originally constructed of rocks. The furnace, however, had to be rebuilt after almost every charge because of the intense heat required to melt the ore. Mesquite trees growing in Chase Creek were the fuel for the primitive smelting furnace.

When that fuel supply was exhausted, I. E. Solomon furnished wood from a mesquite forest on the Gila River located about forty miles from the smelter. This later became the town of Solomonville, located near Safford, Arizona. In 1874, the smelter was moved from Chase Creek to Clifton in order to use the San Francisco River to power the blower. In the new plant the ore was smelted in a single copper-jacketed furnace.

Before the coming of the railroad, horse and mule-drawn wagons transported ore, hauled in all supplies and carried out to the railroads the limited amount of copper from the crude smelters. The nearest railroad was located in Colorado. The copper markets were located in Kansas City and San Francisco.

Wagons would leave Clifton with the copper from the smelter to deliver at Silver City, about 100 miles away. Other wagon trains would then haul the metal to the railroad in Colorado. The first wagon train would then head back to Clifton with a load of supplies. Many of these wagon trains would not complete the trip, victims of Indian raids.

The Coronado Railroad

The Clifton-Morenci district was still very much a part of the wild, wild west in 1879, when the Longfellow Copper Company built the Coronado railroad.

One of the reasons the company built the railroad was to discourage Indian raids. The first railroad was a baby gauge (20 inch) which stretched from the foot of the Longfellow Incline down Chase Creek to Clifton, a distance of about 4.5 miles. Since locomotives were not yet available, the locomotive power was supplied by mules, which would pull the empty cars uphill from the smelter in Clifton to the Longfellow Incline. The cars would then be filled with ore from the Longfellow Mine, which had been lowered down the incline. The mules and driver would then mount a platform in the rear of the train and they would all coast back down to Clifton.

Steam power for the new railroad arrived the following year, in 1880, when a steam engine was assembled in Clifton. This was a diminutive locomotive named "Emma". Local residents chose to call her "El Vapor". A locomotive identical to the "Emma" stands in Clifton today as a memorial to the early days of mining.

In 1882, the Coronado Railroad was extended upstream along Chase Creek to the town of Metcalf, thence up Coronado Canyon to the base of the Coronado Incline.

This incline rose 1,200 feet in elevation at an extremely steep grade. At the top was another section of railroad which extended west another half mile to the Coronado Mine, in very rugged terrain, which came into operation in 1881.

The Coronado railroad remained in operation until 1923, and even provided passenger service to Metcalf, Clifton and points south.

The fear of cave-in of the Longfellow Mine, and the need of a railroad into the district connecting it to the nearest railroad caused the Leszinskys to sell their property to the Arizona Copper Company of Edinburgh, Scotland, in 1882.

The Detroit Copper Company

Another early copper company in the Clifton-Morenci district was the Detroit Copper Company, which was organized in the early 1870's. The founders were Captain E. Ward, Joe Yankee and others.

The company enlisted a small force of men to work for Miles Joy who had developed the original mining claims. They mined copper in the area which was later to become the town of Morenci.

Security was an important consideration. While half the crew worked in the mines, the other half stood guard against Indian raids.

The mines gave rise to a little settlement which was first called "Joys Camp" after Miles Joy.

Early mining by the Detroit Copper Company ceased after a short time because of the danger of Indian raids and the remoteness of the mines, but was reactivated a few years later with the arrival of William Church.

Church came to Clifton from Colorado by wagon train. The trip was made under hazardous conditions. Although Church's train was not attacked, there were close shaves and evidence of recent devastation caused by bands of renegade Indians.

Upon his arrival, Church took over as General Manager of the Detroit Copper Company. Mining in the Morenci district was reactivated, and the company became a major copper producer.

William Church, who is often called the Father of Morenci changed the name of Joys Camp to Morenci. We think he named it after a town of the same name in Michigan.

Church mined copper at different sites in and around the town of Morenci. Some of these claims were the Yankee, Montezuma, Arizona Central, and Copper Mountain.

Morenci was a very remote area and mining was very slow and difficult. The nearest water supply—the San Francisco River—was five miles away, and the threat of Indian raids continued.

In 1880, Church made the decision to build a smelter to handle the ore from his mines. He didn't have the required capital, so he journeyed to New York by wagon, then by rail, to seek a loan.

On an historic day in 1881, Church entered the offices of Phelps, Dodge and Company in New York City and asked for a loan. Phelps Dodge was not then in the mining business. Instead, it was in the business of exporting commodities such as cotton, and importing metals, primarily tin, copper, brass and zinc.

Phelps Dodge did not immediately extend the loan, but asked Dr. James Douglas, a renowned metallurgist, to examine Church's claims. (In later years, Dr. Douglas was to become President of Phelps Dodge. Douglas, Arizona was named in his honor.)

Douglas' report was favorable, and Phelps, Dodge and Company advanced \$50,000 to Church and became part owner of the Detroit Copper Company.

Church thereby acquired the money to build a smelter and Phelps, Dodge and Company reached a major milestone—resulting in over 100 years of mining copper in Arizona.

With this newly acquired loan, the Detroit Copper Company built a smelter on the north side of the San Francisco River about three miles south of Clifton.

The smelter was beset by many problems. Its very isolation subjected it to Indian raids. In 1882, a raid on the smelter took the lives of four of the smelter workers.

Another problem was its distance from the mines in Morenci (about five miles). The long haul made the ore wagon trains vulnerable to the threat of Indian raids.

Because of these difficulties, William Church made the decision to move the smelter to Morenci to be closer to the mines. He concluded that it would be more economical to move the smelter to Morenci than to build a railroad to the old smelter site. That smelter was completed in 1884.

Many years later after this smelter was torn down, Morenci High School was to occupy the same site. The athletic field was located on the slag dump created by the Detroit Copper Smelter.

In May of 1886, Church began to operate the first copper concentrating plant in Arizona. The concentrator was located near the company's mines north of Morenci. (Today, the area has been mined out by the Morenci Open Pit Copper Mine.) Originally, this concentrator treated

waste material too low grade for direct smelting (high-grade ore by today's standards).

In 1892, a severe depression in the price of copper forced the Detroit Copper Company to shut down. Operations reopened a few years later, but the very high-grade oxide copper ores which had been mined from the beginning were close to being depleted. Silicates, oxides, carbonates and sulfates of copper comprised the high-grade oxide copper ores. Interest was now turning toward the lower grade sulfide copper deposits.

In 1895, William Church built a copper concentrator to handle these lower grade sulfide ores, but the concentrator turned out to be a failure. He sold his remaining interest in the company to Phelps Dodge in 1897, at which time Phelps Dodge became sole owner of the Detroit Copper Company.

The Arizona Copper Company

In 1882, the Arizona Copper Company of Edinburgh, Scotland bought the Longfellow and Metcalf properties from the Lezinsky brothers, owners of the troubled Longfellow Copper Company.

The Arizona Copper Company immediately embarked upon a three million dollar expansion plan. The Board of Directors decided (1) to build a railroad connecting Clifton to Lordsburg, a distance of 70 miles, (2) to erect a new smelter in Clifton, (3) to extend the Coronado railroad from the Longfellow Incline to the Coronado Incline, (4) to build inclines to connect all mines with the railroad, (5) to build the Longfellow railroad from the top of the Longfellow incline to Morenci, and (6) to equip the mines and inclines with locomotives, railroad cars, buildings and machinery.

The cost turned out to be twice as much as expected. This expense, coupled with a cave-in of the Longfellow Mine, brought the company to the brink of bankruptcy.

The Company was reorganized under a new Board of Directors and the whole property was mortgaged for \$1,800,000, all of which was required to complete the work at hand.

Lawrence Russell was the General Manager through the taxing years, 1884 to 1888, when the company tried to regain its footing after the initial failure.

A young man named James Colquhoun arrived in Clifton in 1883, to work for the Arizona Copper Company. Colquhoun was a great innovator, as well as engineer, and was to successfully guide the company through many hard times in years to come. In 1884, he was made Smelter Superintendent and developed a better smelting system which produced a higher grade copper product.

At the Metcalf, Queen and Coronado Mines, located near the town of Metcalf, streaks of rich ore were followed, leaving lower grade oxide copper material on each side. A leaching system was developed by the company to handle this lower grade copper ore.

Metcalf was the Arizona Copper Company town. Most of the company mines were located in the mountains overlooking Chase Creek, where the town was located. The Coronado railroad connected Clifton, where the concentrator and smelter were located, and Metcalf. The railroad was carved out of cliffs paralleling Chase Creek, and covered a distance of about 7 miles between the two

towns. It was originally baby gauge (20 inches between rails) and was later converted to narrow gauge (36 inches between rails). Besides hauling ore and supplies, a regularly scheduled passenger train was started between Clifton and Metcalf in 1901.

The Coronado Mine was the most remote large mine owned by the Arizona Copper Company. It was connected to the Coronado railroad by means of a terrifyingly steep incline which rose 1,200 feet in elevation from the Coronado railroad, located at the bottom of Santa Rosa Canyon, to a short railroad which connected the top of the incline to the mine. A baby gauge locomotive would pull the ore cars to the top of the incline. Each ore car would then be attached to a cable, and would be lowered down the incline to the Coronado railroad, 1,200 feet below.

Although the mine was abandoned over 60 years ago, three of the tiny locomotives still stand on rails near the old mine. They are so inaccessible, no one has figured a way to get them down off the mountain. Remains of the old Coronado Incline are still evident today.

In 1886, after the Detroit Copper Company under William Church had built the first copper concentrator in Arizona, the Arizona Copper Company built a concentrator near their smelter in Clifton to handle ore from the Metcalf mines.

The year 1892 was a critical year in the life of the company. The price of copper dropped to 10 cents a pound. James Colquhoun was given the job of General Manager to keep the company afloat.

Unlike the Detroit Copper Company, the Arizona Copper Company, under Colquhoun, did not shut down.

Colquhoun devised a unique leaching operation which treated tailings from the Clifton concentrator. Copper was leached from the tailings with sulfuric acid. The solution was then combined with scrap metal in two revolving, 40-gallon, copper barrels which precipitated the copper from the solution. The leach plant was located on a slag dump.

During a critical six-month period, the plant produced over 500 tons of copper from material otherwise considered waste, at a cost of five cents per pound.

The success of this plant kept the company operating. The plant not only paid for itself but also enabled the company to pay off the mortgage it had incurred in 1884 when it had to re-organize. It established Colquhoun as the master of innovation.

Up to the year 1891 mining in the Morenci District was confined to "oxide" copper deposits, which were composed of oxide, carbonate, silicate and sulfate copper ores in limestone. In 1892, lower grade sulfide copper deposits in porphyry were discovered by the Arizona Copper Company and Detroit Copper Company in Humboldt Hill on the north side of Morenci.

The Arizona Copper Company built a concentrator in Clifton in 1895, which successfully treated sulfide copper ore. As mentioned earlier, the Detroit Copper Company also built a sulfide ore concentrator in 1895, which proved to be unsuccessful.

Early Twentieth Century Mining

By the turn of the century, the Arizona Copper Company was successfully mining, concentrating and smelting

sulfide ore. The mine was located in Morenci and the concentrator and smelter were located in Clifton.

In 1900, Phelps Dodge was sole owner of the Detroit Copper Company, having purchased it in 1897 from William Church. Phelps Dodge continued to operate the Detroit Copper Company into the 1900's.

The three major copper companies in the district in the early 1900's were the Detroit, Arizona, and Shannon Copper Companies. Many small companies, such as the King, Queen, Stevens and Standard, were also actively mining copper.

The Shannon Copper Company was organized in 1899 and purchased property from the Arizona Copper Company in the mountains on the east side of Chase Creek, overlooking the town of Metcalf and the Arizona Copper Company mines. Mining began in 1901. Their mines were shallow underground mines, the dumps of which are still visible today. Originally the company utilized the Coronado railroad to haul ore from their incline which bottomed in Chase Creek north of Metcalf to their mill and smelter located in Clifton, which were constructed in 1901. Later, they built their own railroad, which paralleled the Coronado railroad along Chase Creek.

In the year 1900, Phelps Dodge, operating as the Detroit Copper Company, built a new copper concentrator near their underground mines at Morenci. It treated sulfide ore successfully and substantially increased the company's output of copper.

Dr. James Douglas became president of the company when Phelps Dodge purchased the Detroit Copper Company from William Church. (Douglas had originally recommended Phelps Dodge's initial loan to Church in 1881.)

In 1906, the Arizona Copper Company began to build the largest copper concentrator in the district—the "No. 6" concentrator. It was built to handle the lower grade sulfide ore being mined from the Humboldt Mine. The concentrator was to reach a capacity of 4,500 tons of ore per day.

The Detroit management (Phelps Dodge) had for some time considered a railroad line into Morenci. In 1900, construction began on the Morenci Southern Railroad which connected Morenci with the Arizona and New Mexico railroad at Guthrie, about 18 miles away. The line crossed the Gila River, San Francisco River and then had to negotiate a 1,400 foot rise in elevation to Morenci. Three huge loops constructed of timber were built in Morenci Canyon to make the final lift from Bunkers (where the Phelps Dodge reduction works are presently located) up Morenci Canyon to Morenci. The railroad was completed in 1901, and was nicknamed "the cork screw railroad of America". Passenger train service between Guthrie and Morenci was begun in 1905.

In 1914, three of the loops were replaced by switchbacks, as the timbered loops were getting unsteady. The Morenci Southern railroad was to operate until 1922.

Four railroads were in use in the district in the early 1900's. The Coronado railroad, Shannon railroad, Morenci Southern railroad and the Arizona and New Mexico railroad connected Clifton and Morenci to Lordsburg, New Mexico.

James Colquhoun retired as Manager of the Arizona

Copper Company in 1904. At the request of the Board of Directors, he accepted the position of President, but in 1907, he retired for health reasons. His heart did not leave the area, however, as he continued to faithfully send \$100 every year to the town of Clifton to buy Christmas candy for the children until his death in 1954.

In 1908, Phelps, Dodge and Company changed their name to Phelps Dodge Corporation. James Douglas was named President. In 1917, he was named Chairman of the Board. Dr. Douglas was instrumental in getting Phelps Dodge to Arizona and the copper mining business. Phelps Dodge in Morenci continued to be the Detroit Copper Company.

In these early days of the 20th century, the towns of Metcalf, with the Arizona Copper Company and Shannon Copper Company mines; Morenci, with Arizona Copper Company mines and concentrator and Detroit Copper Company mines, concentrator and smelter; and Clifton with Arizona Copper Company and Shannon Copper Company concentrators and smelters were all thriving.

The A.C.C. (Arizona Copper Company) smelter in Clifton was located at the confluence of Chase Creek and the San Francisco River. Its smelter stack was unique. Smoke was blown into a drift in the mountain behind the smelter. The smoke then rose up a raise driven up through the mountain, then through a short stack at the top of the mountain.

In 1912, the A.C.C. made the decision to relocate their smelter south of Clifton. Room for slag disposal was running out. The chosen site south of Clifton was also outside Clifton city limits, thus avoiding city taxes. After completion of the new smelter, however, the city limits were expanded to include it.

The new A.C.C. smelter was completed in 1913. The smelter was the largest, most modern in the district throughout the remainder of underground mining days. Today, the lonely stack keeping vigil below the left side of the highway as one drives into Clifton from the south is all that remains.

The economy of the area was devastated in 1915 and 1917 by long bitter strikes which shut down all the companies in the district. It was made worse for the companies since the price of copper was high during the strikes.

In 1919, the price of copper fell, and the Shannon Copper Company, with mines near Metcalf, and mill and smelter in Clifton, was sold to the Arizona Copper Company.

All the mines which supported the town of Metcalf were shut down by 1920. The townspeople didn't know it at the time, but except for a brief revival of the remote Coronado Mine, the mines were never to reopen. The low price of copper, high taxation and lower grade of remaining ore combined to force the closure of the mines.

This was the end of the Arizona Copper Company, which had spent 39 years in the district. The mining, milling and smelting accomplishments of the company were unsurpassed, and its passing caused much sadness. In 1921, they sold all their holdings to Phelps Dodge Corporation.

Residents of the town of Metcalf slowly began to move out, taking their houses with them. The Coronado and Shannon railroads ceased to operate.

The last residents moved out of Metcalf during the late 1930's. In 1940, the Metcalf High School which had been completed in 1918, was sold to a scrap dealer for \$1,000. A few years later, all that remained of the town were a few foundations and the walls of the old "3-B" Saloon.

In 1922, the last train passed over the Morenci Southern railroad. Phelps Dodge continued to use the upper five miles as their industrial railroad, linking Morenci and Clifton.

Phelps Dodge Corporation, Morenci Branch

With the acquisition of all the property in the Clifton-Morenci District in 1921, the Detroit Copper Company became Phelps Dodge Corporation, Morenci Branch. The "Detroit Copper Company" name was put to rest.

Phelps Dodge took over the Humboldt Mine in Copper Mountain, Morenci, the Number 6 concentrator in Morenci and the Clifton smelter, all of which had been property of the Arizona Copper Company.

Almost all of the ore mined by underground methods after 1921 was sulfide copper ore from the Humboldt Mine assaying 2% to 37% copper. The remote Coronado Mine was operated for one year—1922 to 1923—at which time it was abandoned, and the famous incline dismantled. Three baby gauge locomotives and other equipment remain at the mine today.

The close of the Coronado Mine spelled the end of all mining at the town of Metcalf, which only a few years earlier, had been the booming mining town of the Arizona and Shannon Copper Companies.

Phelps Dodge increased production from the Humboldt Mine, and by 1928, the No. 6 concentrator had a capacity of 4,500 tons of ore daily. This was in comparison with a capacity of 900 tons per day when it was first built in 1906.

Up to the end of 1928, the Morenci district, in 56 years, had produced almost two billion pounds of copper.

Phelps Dodge continued exploration of the immense low-grade sulfide copper deposit named the "Clay" orebody; they and the Arizona Copper Company had initiated exploration of the orebody before the turn of the century. Between 1928 and 1930, Phelps Dodge drilled many test holes in the "Clay" deposit. Although huge ton-nages of ore were indicated, the grade of the ore was too low to be mined profitably by underground methods.

In 1932, all underground mining came to an end in Morenci because the depression had dropped copper prices to less than six cents per pound.

Plans were under way to mine the immense low-grade sulfide copper deposit. Louis S. Cates, President of Phelps Dodge since 1930, was instrumental in making the decision and laying the groundwork for mining the Clay orebody by the open pit method.

For a time during the 1930's, three things delayed the Morenci project: the demoralized state of the copper market, the question of the mining method, and financing the huge enterprise.

The price of copper recovered to ten cents per pound in 1936, and by 1937, stripping of waste material for the new open pit mine began.

In that year, parts for the original electric shovels were delivered to the Phelps Dodge Machine Shop located in Mor-

enci. This later became the site for Morenci High School.

The shovel parts were carried in by the last steam locomotive in the district, over the upper part of the old Morenci Southern railroad. The railroad into Morenci was abandoned in 1941, with the completion of the new machine shop in its present location.

That initial mining venture in the open pit in 1937, consisted of shovels loading overburden into haulage trucks ranging from 5 to 22½ cubic yard capacity. Soon, work began on building a railroad to the mine.

By 1939, several mine levels had been established in the open pit and the first trains went into service. The new railroad line ran from the mine to the new concentrator and smelter under construction. Carved out of the side of the mountain, this was the primary track upon which the ore would be hauled from the mine to the primary crusher at the concentrator.

In early 1942, the new concentrator, smelter and power house were completed at their present locations and the first ore was delivered to the crusher by the electric-powered trains.

The original ore production from the mine was 40,000 tons per day. By 1963, production had increased to 57,000 tons of ore per day.

In 1953, Phelps Dodge began an extensive exploratory drilling program in the old King-Metcalf area, where the abandoned underground mines were located.

In 1965, a planned relocation of the town of Morenci began. The old town stood in the way of mining the upper levels of the Morenci Open Pit, as it expanded to the south. Over the years, the town was systematically dismantled while a new Morenci was being built by Phelps Dodge about three miles south. By 1982, the move was complete.

In 1969, mining of the King-Metcalf area by open pit methods began. The first ore was delivered to the new Metcalf concentrator in 1975.

In 1981, the two mines were combined. Today, 110,000 tons of ore averaging well under 1% copper are mined each day from the mine, along with an equivalent amount of waste, making Morenci the number one producer of copper in the United States.

Phelps Dodge came to Morenci in 1881, and has successfully mined copper here for over 100 years.

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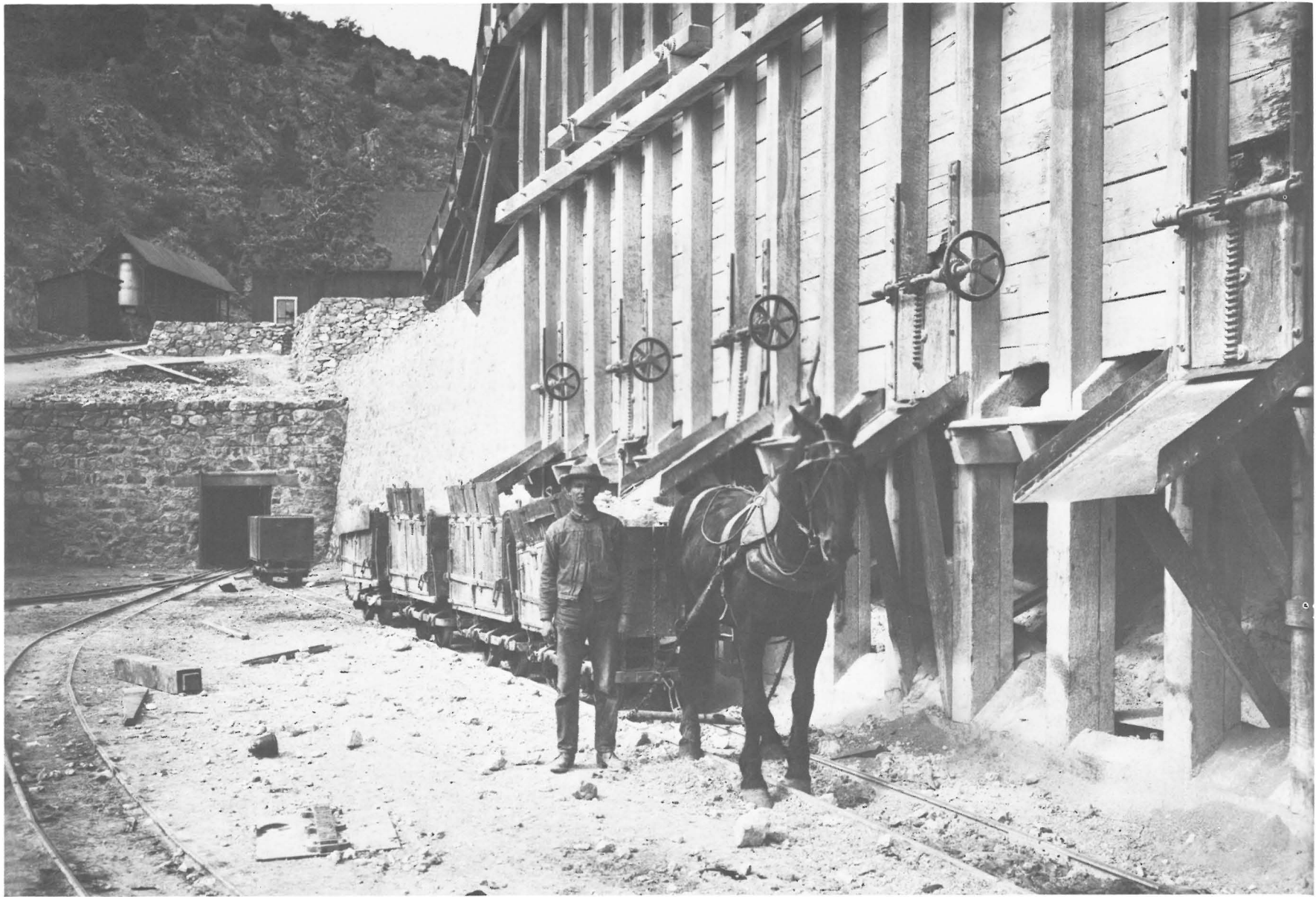
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Miners and a mule train of ore from the Shannon Mines pose at the top of the Shannon Incline, c. 1901. *Courtesy of Phelps Dodge Corporation.*



A baby gauge (20" between rails) locomotive on the Coronado railroad, by the engine house at Metcalf in the 1890's. *Courtesy of Phelps Dodge Corporation.*



A mule-drawn ore train is loaded from bins at the base of one of the Metcalf Mine inclines. *Courtesy of Phelps Dodge Corporation.*



Horse drawn ore shipments were common in the early days, before the railroads. These teams are posing on a curve near Metcalf. *Courtesy of Phelps Dodge Corporation.*



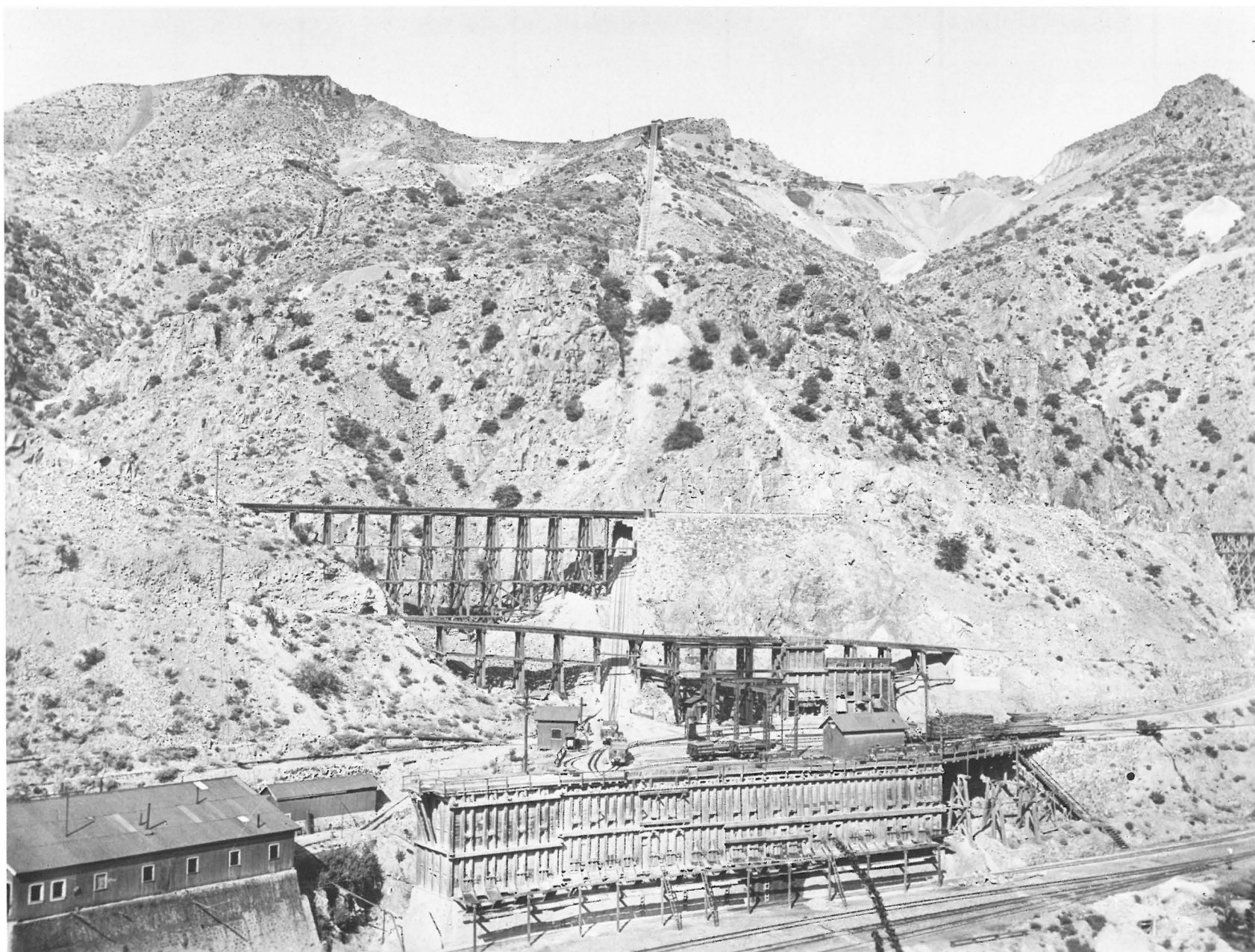
Coronado railroad engine #20 is shown parked in Clifton. The track was narrow gauge (36" between rails). Courtesy of Phelps Dodge Corporation.



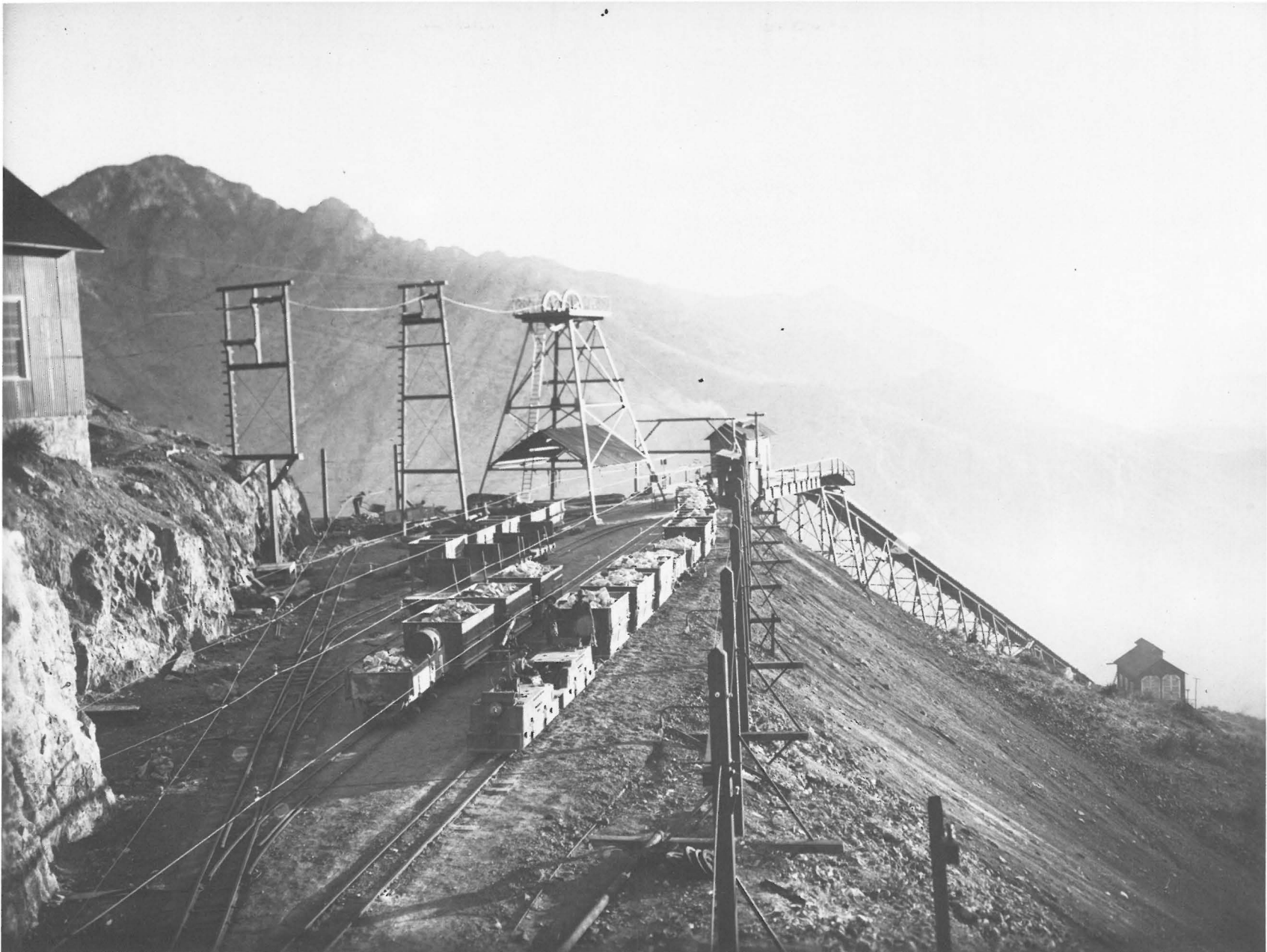
The Shannon Copper Company Mines were located near the top of this incline. Ore cars were lowered on the incline to the bins and Coronado railroad below. Later, the Shannon Company built their own railroad. *Courtesy of Phelps Dodge Corporation.*



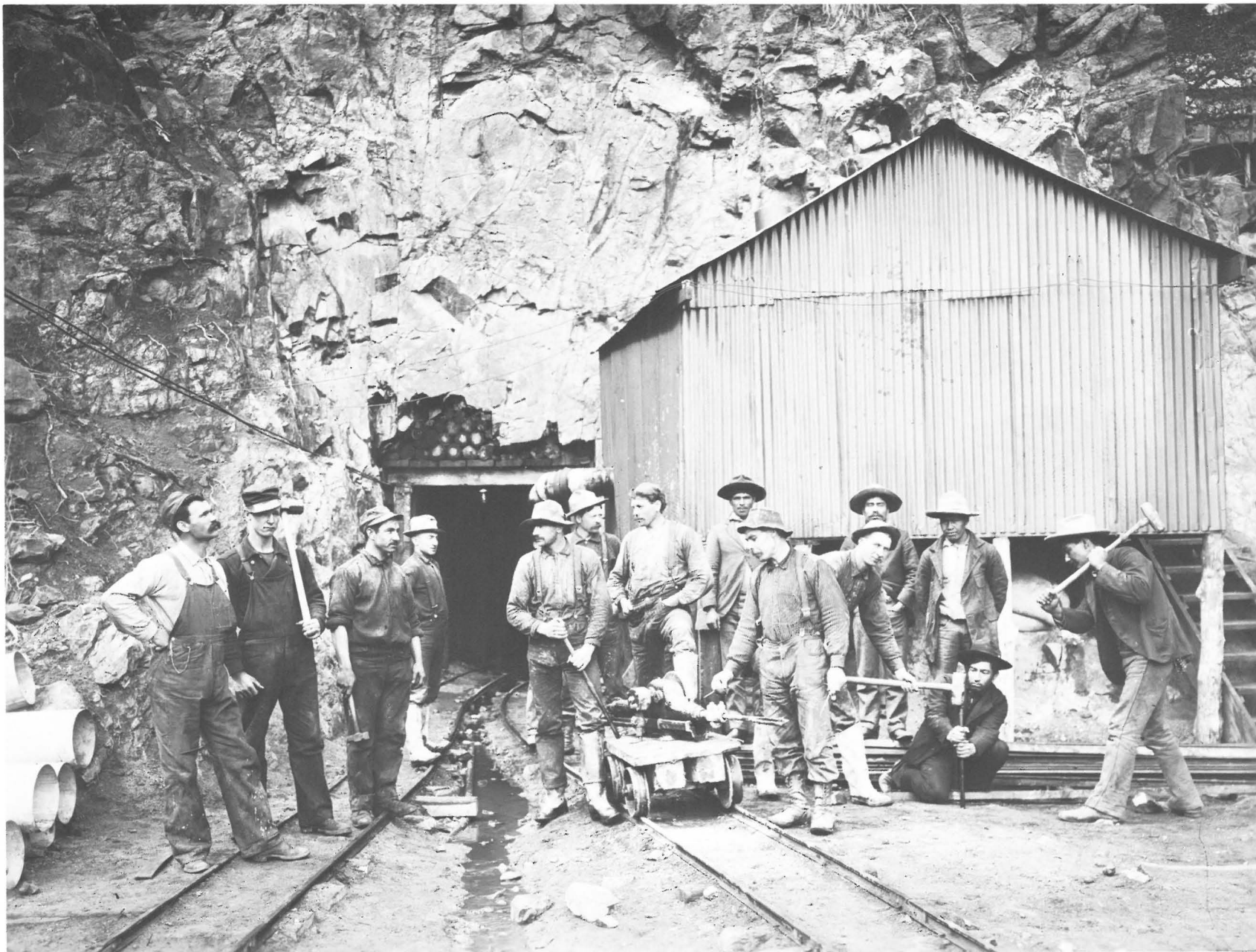
These are the Metcalf and Wilson Inclines connecting the Metcalf Mines with the storage bins and the Coronado railroad, c. 1917. Courtesy of Phelps Dodge Corporation.



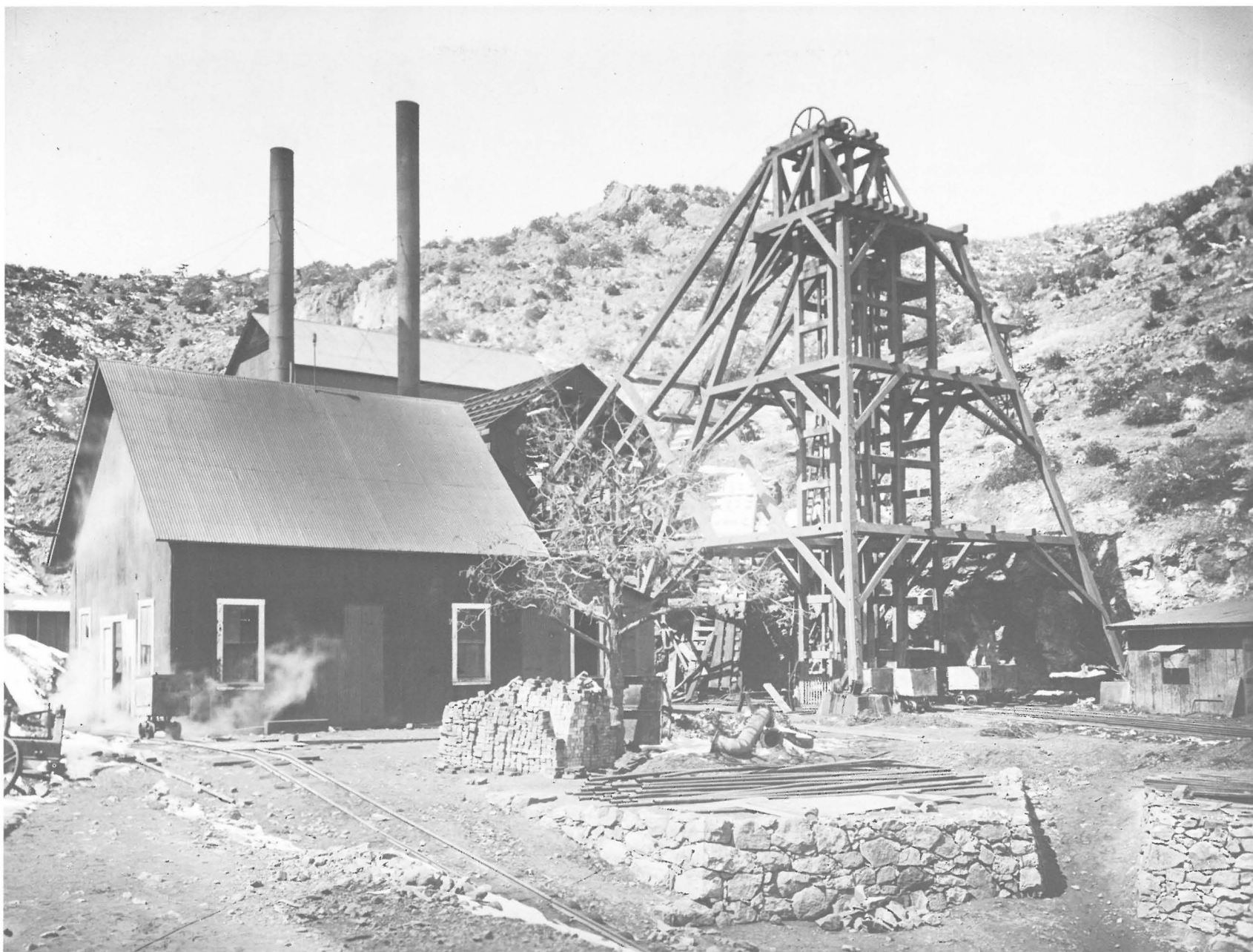
The Longfellow Incline was located on the west side of Chase Creek. Ore cars were lowered from the mine to ore bins and the Coronado railroad at the foot of the incline. The upper trestle is part of the Shannon railroad, c. 1905. Courtesy of Phelps Dodge Corporation.



Ore cars from the Longfellow Mine are ready to be lowered down the Longfellow Incline to ore bins in Chase Creek, c. 1900. Courtesy of Phelps Dodge Corporation.



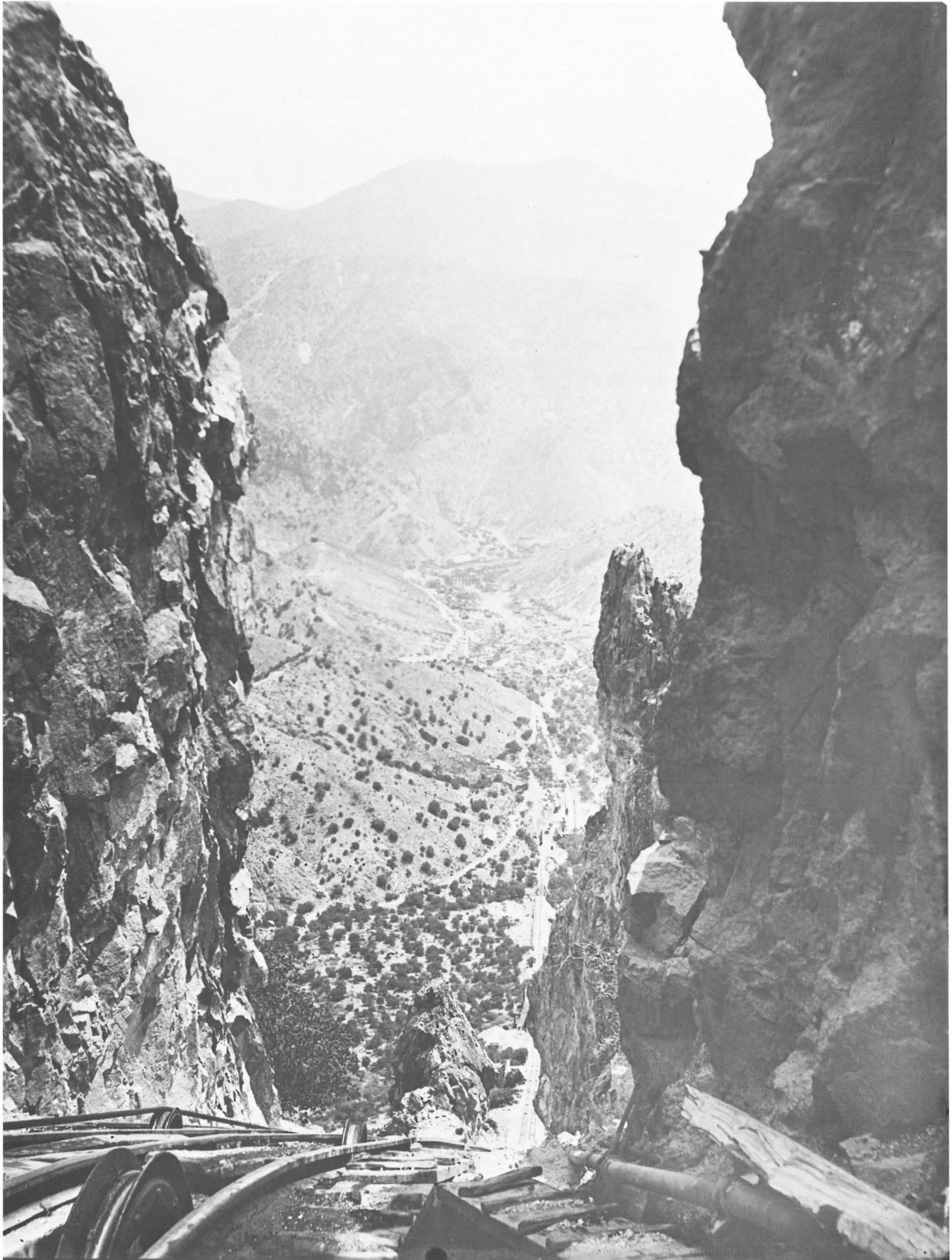
Early day miners stand in front of a mine portal near Morenci. *Courtesy of Phelps Dodge Corporation.*



The Coronado Mine headframe and steam power plant. The mine closed permanently in 1923. *Courtesy of Phelps Dodge Corporation.*



A small locomotive provides the power to move ore from the Coronado Mine to the top of the Coronado Incline. *Courtesy of Phelps Dodge Corporation.*



A view from the top of the Coronado Incline looking down at Metcalf. Courtesy of Phelps Dodge Corporation.



The Coronado Incline was the most spectacular in the district, connecting the Coronado Mine with the town of Metcalf, a difference of 1500 feet in elevation. *Courtesy of Phelps Dodge Corporation.*



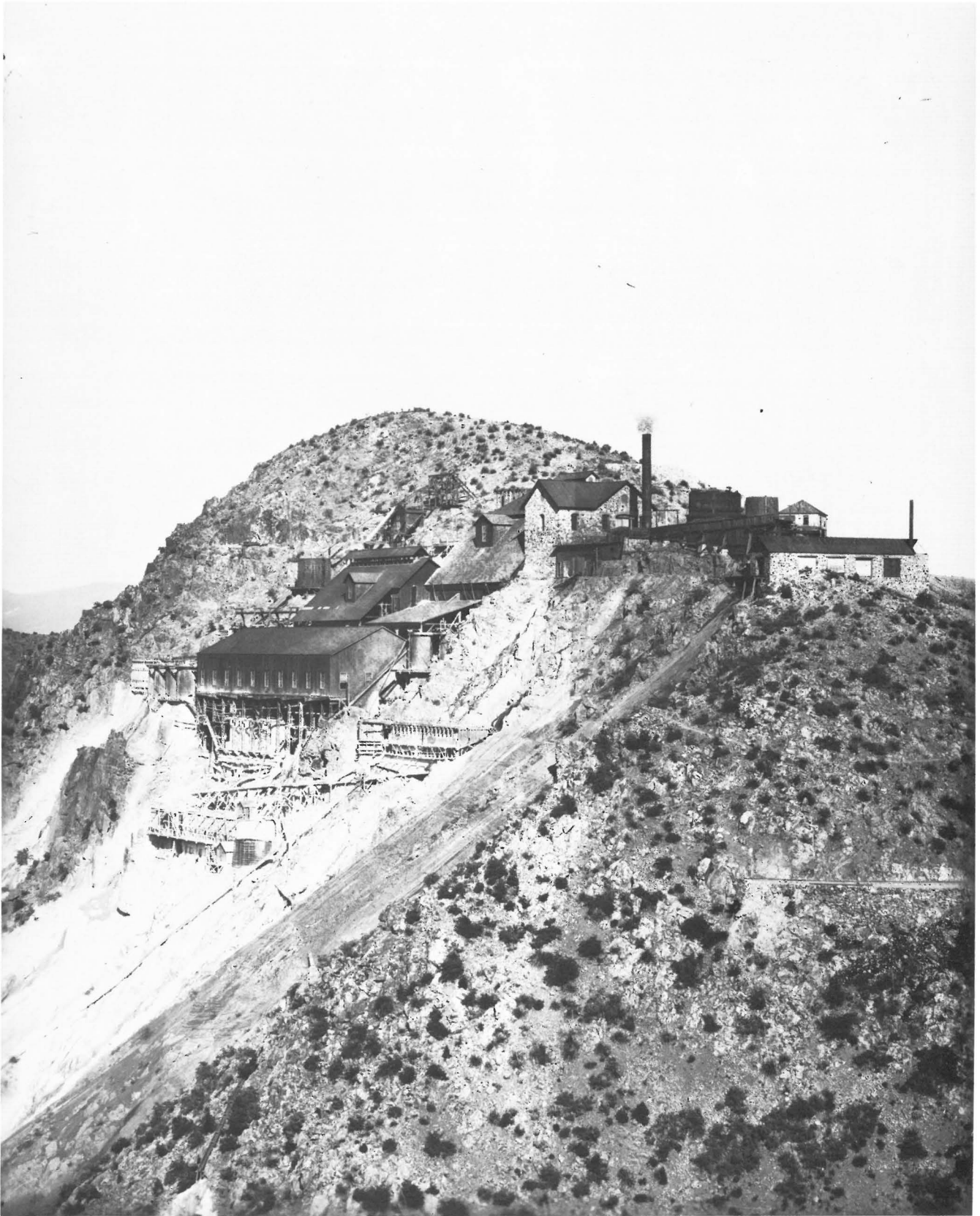
The Number 6 concentrator was built in Morenci by the Arizona Copper Company in 1906, to handle the lower grade sulfide copper ore from the underground Humboldt Mine. It remained in production until 1932, when all underground mining ceased. *Courtesy of Phelps Dodge Corporation.*



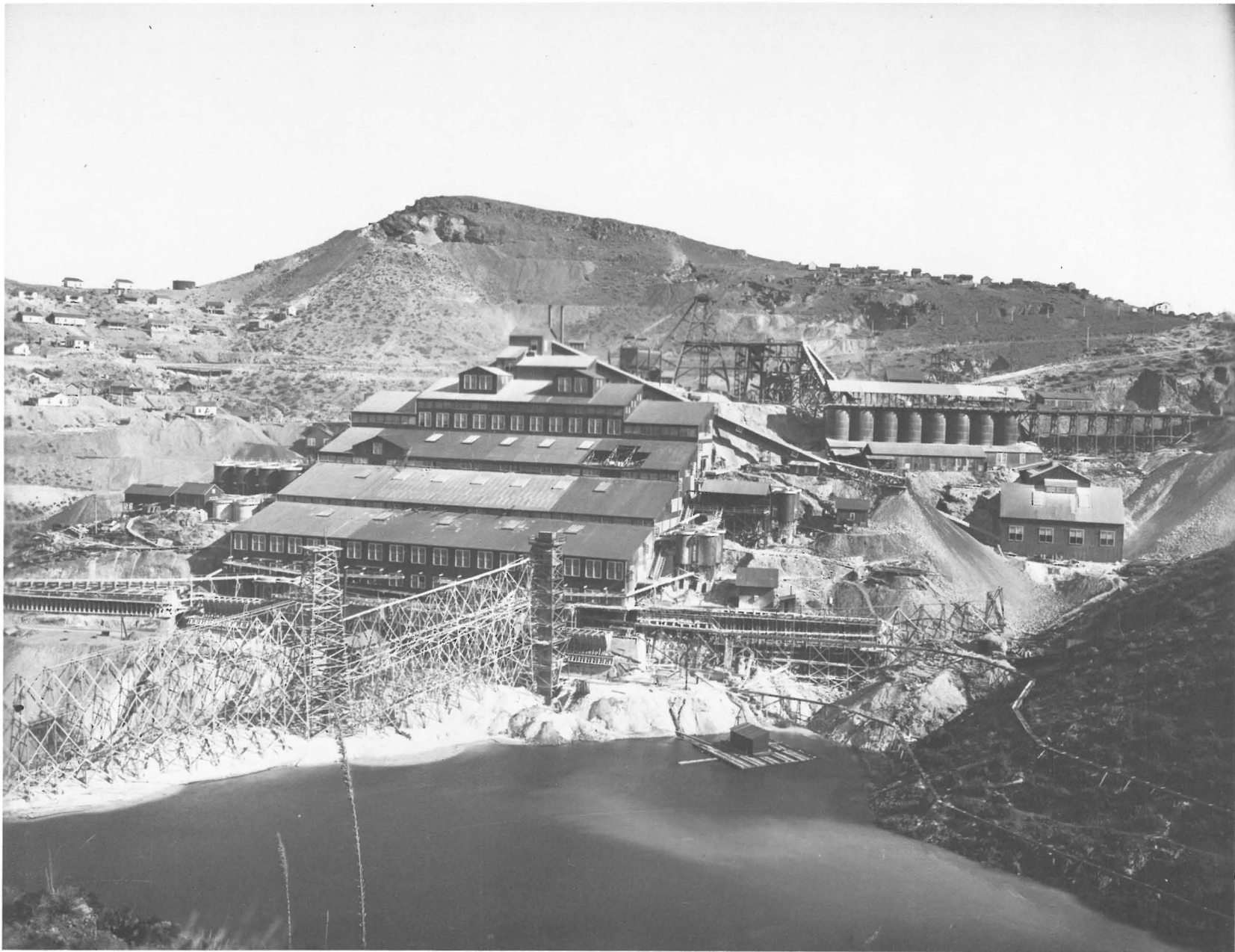
In 1906, the Number 6 concentrator was under construction, and appears in the background behind the Detroit Copper Smelter in Morenci. *Courtesy of Phelps Dodge Corporation.*



A thickener tank for the Number 6 concentrator appears in the foreground, and Morenci is shown as it appeared c. 1925. *Courtesy of Phelps Dodge Corporation.*



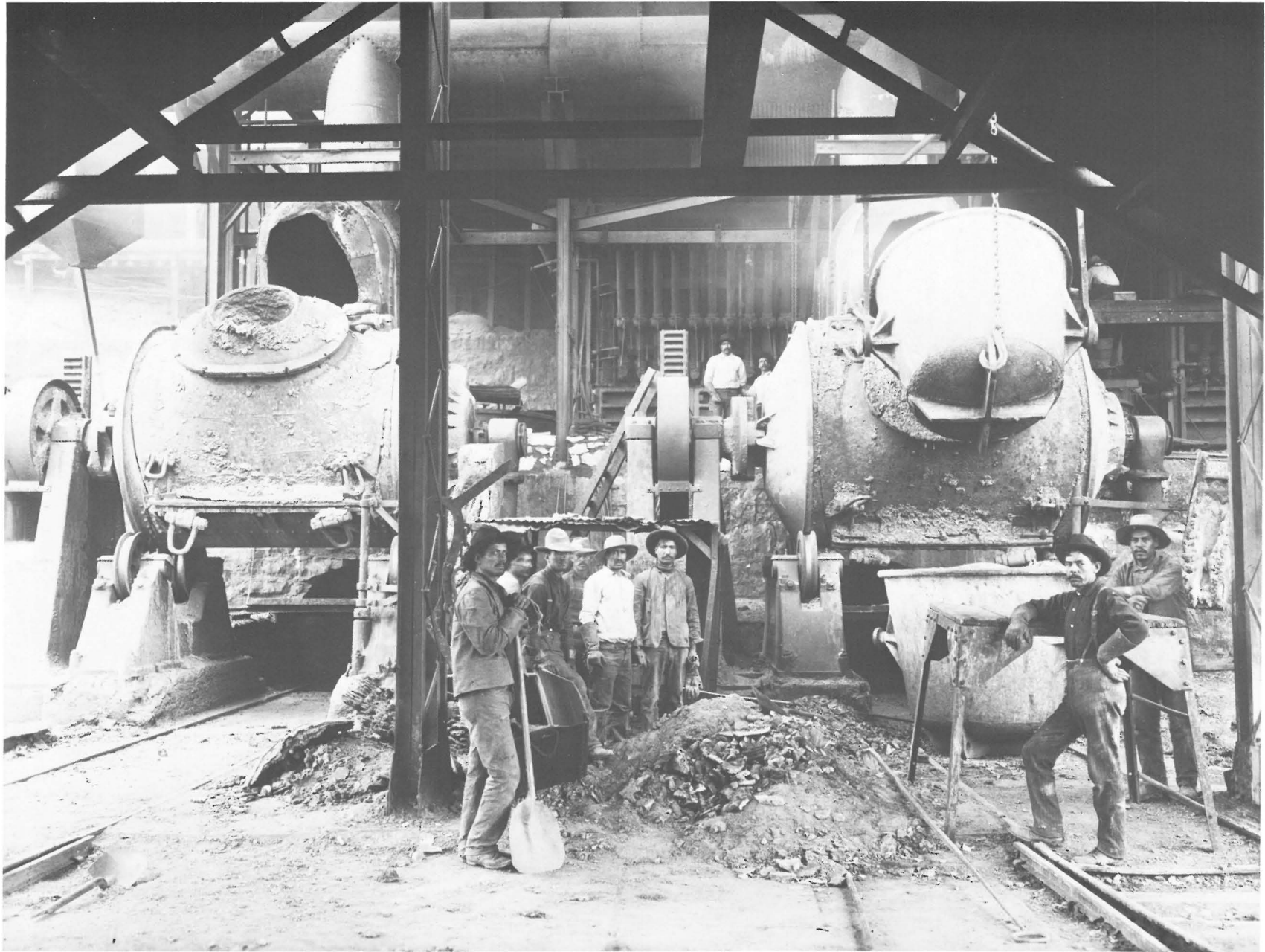
This concentrator was built by the Arizona Copper Company near the old Longfellow Mine in 1901. It only remained in production for a few years, however, because the Longfellow Mine was abandoned. *Courtesy of Phelps Dodge Corporation.*



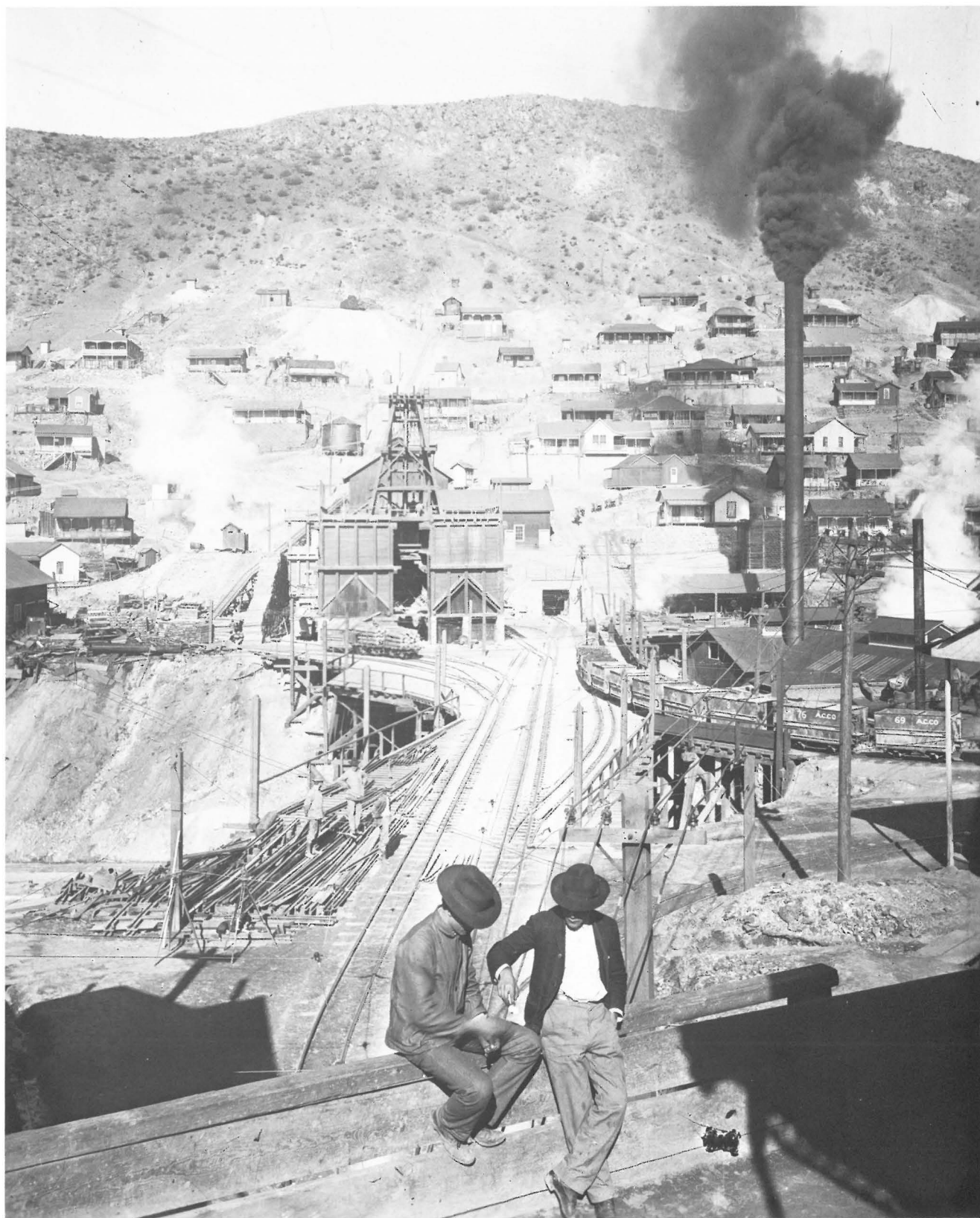
In 1900, the Detroit Copper Company, owned and operated by Phelps Dodge, built this concentrator to process sulfide copper ore. The shaft for West Yankie Mine appears behind the concentrator. *Courtesy of Phelps Dodge Corporation.*



The Arizona Copper Company smelter, located in Clifton at the confluence of the San Francisco River and Chase Creek, is shown here in 1912. Courtesy of Phelps Dodge Corporation.



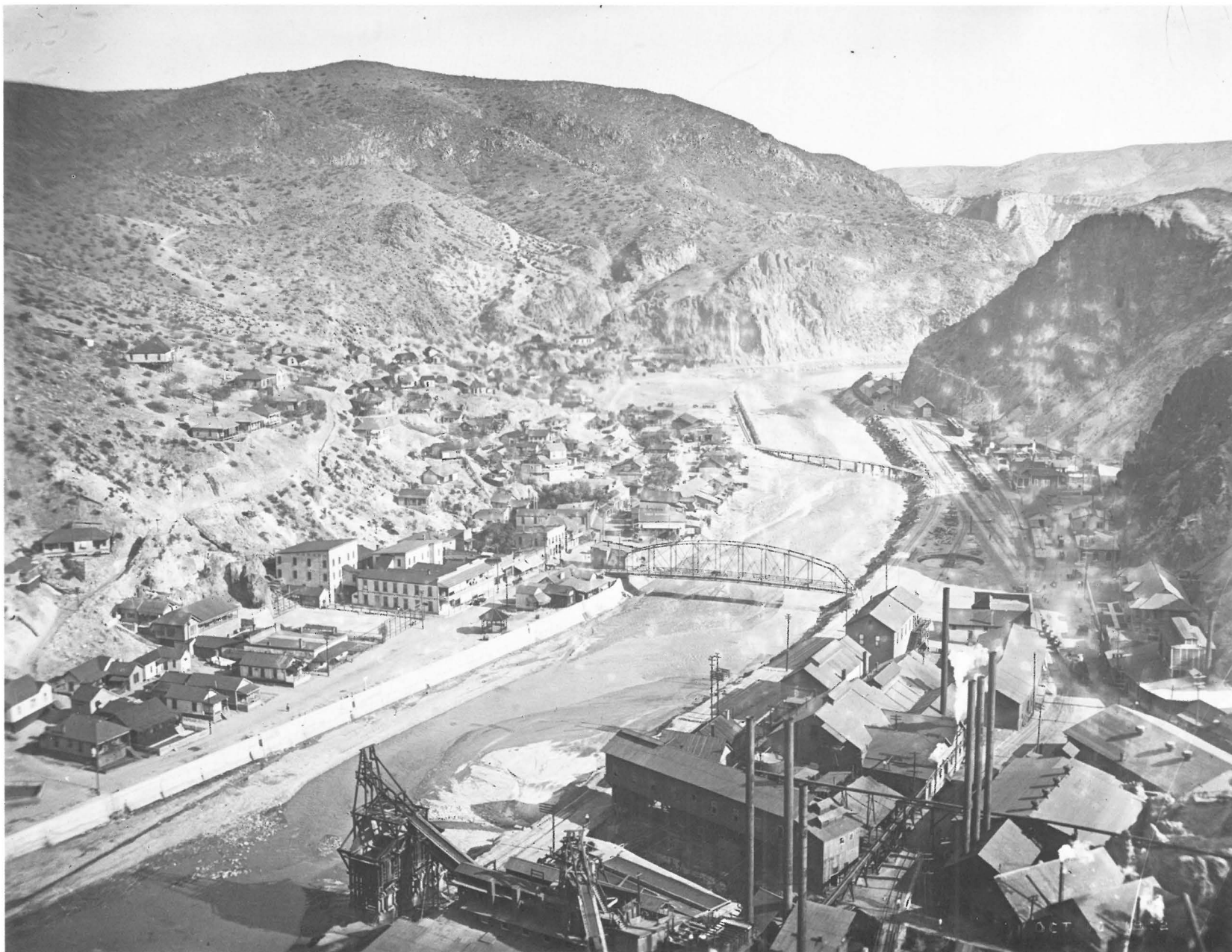
These workers and furnaces are probably in the old Arizona Copper Company smelter in Clifton. *Courtesy of Phelps Dodge Corporation.*



The Humboldt Mine, located in Morenci, was the first sulfide copper ore mine, and the most productive underground mine in the district. The first tunnel was started in the 1890's, and the mine operated until 1932. The Joy Shaft, shown here, in Morenci was the main shaft to the Humboldt Mine. Courtesy of Phelps Dodge Corporation.



The Shannon Copper Company concentrator and smelter were located on the south side of Clifton and operated from 1901 to 1919. *Courtesy of Phelps Dodge Corporation.*



Clifton in 1912, looking south down the San Francisco River. The Arizona Copper smelter and concentrator are in the foreground. *Courtesy of Phelps Dodge Corporation.*

HISTORY OF MINING IN ARIZONA

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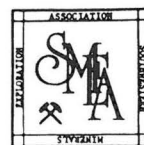


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