Chapter Two

The Early Influence of Mining in Arizona

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Terra Incognita

Aboriginal Mining

During the earliest centuries of human habitation, the native Indians occupied a region known later by the Spanish as "Terra Incognita." In a portion of that area, now named Arizona, mineral resources played a primitive role in the development of society. Early man restricted his mining primarily to surface outcrops of salt, clay, pigment materials, quartz, stone, turquoise, and other curiosities. These commodities were used to produce pottery, tools, and weapons.

Some aboriginal mines are known to be very old. Certainly the quarrying of ubiquitous chert and obsidian, and the manufacture of tools and weapons, must have preceded most other forms of mining by several thousand years.

Paints were prepared for body adornment and to color pottery. These pigments probably were obtained from numerous localities that had exposures of such relatively common minerals as hematite (red to reddish brown color), malachite (green), and possibly carnotite (yellow). Evidence of this very early mining was reported no later than 1598 by the Spanish Captain, Marcos Farfan de los Godos after investigating what is thought to be the mineralized district of the Jerome area. Capt. Farfan reported the presence of an old shaft in the area and described it as being perhaps 16 to 17 feet deep. He categorized a variety of minerals according to color.

In 1697, the Spaniards, Capt. Cristobol Bernal and Juan Mateo Manje, reported conversations with Apache Indians in which the Apaches described minerals similar to cinnabar and native mercury. The Apaches used the vermillion cinnabar (mercury sulfide) as a body paint; blebs and pods of liquid mercury are frequently found with the sulfide. Description of the location of these deposits, and later discoveries of Indian artifacts, strongly suggest the mercury minerals referred to are those located in La Paz county, on the south flank of Cunningham Mountain in the Dome Rock mountain range. Here the Cinnabar mine was re-discovered by American prospectors in the 1880's.

The Tohono O'odham (Papago) Indians and their antecedents apparently mined the hills of Ajo for centuries to obtain hematite. According to early American descriptions, the natural colors due to intense mineralization would undoubtedly have attracted the Indians. The Papago name for the area was "au'auho" which means paint; this word was probably transliterated to "Ajo" by the Spanish.

Two small turquoise ornaments, associated with the Vahki Phase and located at the ancient Indian settlement of Ska-kaik (Snaketown), on the Gila River northwest of Casa Grande, are dated sometime between several hundred years before Christ and 300 AD. This turquoise jewelry is the oldest found in the United States.

The most extensive turquoise mines operated by the aborigines in Arizona are those located southeast of Chloride in the Cerbat Mountains of Mohave county. Openings were cut 20 to 25 feet in solid rock on Ithaca Peak and abundant mine tools were discovered later by early prospectors. Major prehistoric turquoise mines occurred on Turquoise Mountain in the Courtland-Gleeson area of Cochise county and on the east side of Canyon Creek, in Gila county, just above its confluence with the Salt River. Centuries later, in the 1900's, Tiffany and Company of New York received shipments of the blue-green gem stone from the Chloride and Courtland-Gleeson areas.

Other materials mined by the early Indians include clay, asbestos, and garnet. One rather large salt mine was operated between 900 to 1200 AD. This mine, probably the same as reported near Camp Verde in Yavapai county, by the Spanish explorer, Antonio de Espejo, in 1582, apparently had at least four underground levels. Another interesting aboriginal locale of the Terra Incognita is the Black Mesa area of central Navajo county, where archaeological investigations show that by about 1200 AD, Indians were mining and burning coal. This utilization of coal as a source of fuel may actually predate a similar use in Europe. The largest coal company in the United States, Peabody Coal Company, currently produces about 1,000,000 tons of coal each month from this same area.

Spanish and Mexican Development

The preeminent role played by gold in attracting the Spanish to the New World is well recognized. Commands made by the Spanish throne to acquire this noble metal were often translated into bizarre acts of cruelty and barbarism. The conquistadors wanted to convert the natives to Christianity and to take their gold. No attempt was made by these early Europeans to mine gold and silver;

they wanted instant wealth handed over to them by the conquered Indian nations.

Although never confirmed, stories of seven cities of gold in the Terra Incognita prompted several Spanish expeditions into what is now northern Arizona and New Mexico. (Actually the eagerly-sought Seven Cities of Cibola turned out to be the somewhat more prosaic Zuni villages of stone and mud in northwest New Mexico.) The earliest explorations were led by Fray Marcos de Niza through the Santa Cruz Valley in 1539, by Francisco Vasques de Coronado through the San Pedro Valley in 1540, and by Alarcon who sailed his ship into the Gulf of California and up the Colorado River.

Antonio de Espejo began his expedition in 1582. His travels took him via the Rio Grande into north central New Mexico and then westerly into central Arizona and the vicinity of the San Francisco Peaks. Espejo is the first foreigner on record to have discovered a major metallic mineral deposit in Arizona. He reported that he found, on May 8, 1583, rich silver ore in an area to the south of the San Francisco Peaks. This is the same locality described about 15 years later by Farfan in which he reported workings dug by Indians for pigments.

Some authorities believe this mining location is what eventually became the famous United Verde deposit at Jerome (Yavapai county), at the head of Verde Valley. The stream in this valley was referred to by the local Indians with a descriptive name which meant "green", a name given in apparent reference to the occurrence nearby of the green copper carbonate, malachite. Spaniards later translated the Indian name to "verde". The United Verde mine, and what some consider to be its original cap, the United Verde Extension, comprise the single largest bonanza copper deposit in Arizona. To date the deposits combined have yielded over 3.7 billion pounds of copper, 52 million pounds of zinc, 55 million ounces of silver, and 1.5 million ounces of gold.

During the latter years of the 17th century, Jesuit missionaries, led by Father Eusebio Francisco Kino, began establishing Catholic missions in northern Sonora, or what is now southern Arizona. As the mission churches were established principally along the major streams, Gila, San Pedro, and Santa Cruz, small military posts were garrisoned to protect Spanish settlements on the rivers and their tributaries. Settlers, priests, and Indian converts started prospecting and mining shallow deposits of oxidized and enriched silver-bearing lead deposits. About 1700, Father Kino's writings state:

> "In these new nations and new lands there are many good veins and mineral lands bearing gold and silver; and in the neighborhood and even in the sight of the missions some very good new mining camps of very rich silver ores are now being established."

The areas bordering the Santa Cruz River and its tributary, Sonoita Creek, and the areas flanking Arivaca Creek appear to have been the most heavily mined and developed by the early Spanish settlers. "Antiguas", mine pits and shallow excavations overgrown with vegetation and large trees and the remains of numerous crude adobe furnaces and slag piles, provided ample evidence to the early Americans that miners had preceded them. With the discovery in 1736 of the unusual "planchas de plata" at Arizonac, prospecting in the region intensified.

Arizonac, or Arizona as the Spaniards later called it, was about a mile south of the eventual international boundary and about eight miles west of the old Mexican town, Sasabe, at a place now called Banera. Very large masses and sheets (planchas) of pure silver were dug essentially from the ground surface. Apparently one lump weighed 2,700 pounds; others weighed 200 to 400 pounds. Ultimately, 156 "arrobas", or a little over two tons of silver, were reported. It was a find that fired the imagination of later American prospectors.

Throughout this region of northern Sonora, designated Pimeria Alta (upper Pima land) by the Spaniards, small scale mining operations were pursued despite various frontier difficulties including Apache Indian raids and local Indian revolts. The level of mining activity reduced considerably, however, during and after the Mexican Revolution of 1810-1812. As the Spanish troops were withdrawn so was the military protection. The missions, mines, and settlements were destroyed or abandoned as Apache raids and outlaw depredations increased.

With independence in 1821, northern Sonora was now a frontier of Mexico. The presidio of Tucson was reoccupied, affording some protection to the farmers and miners living in the Santa Cruz Valley and nearby areas. Apache attacks continued, however, and little mine development actually took place. Not until the war between Mexico and the United States (1846-1848) was resolved and the Gadsden Purchase was approved (1854), was there a renewed vigor towards mineral exploration and development in the region of Arizona.

Negotiations to determine the final southern boundary of the land embraced by the Gadsden Purchase is a story in itself. An obvious attempt was made to include areas of mineralization but little other than hearsay was known to guide congressional planning. Reports of the colorful outcrops at Ajo by early prospectors and '49ers traveling to California, must have been transmitted to Washington. Tom Childs, Sr., and his group of 19 men, in 1847 launched an effort to locate the mysterious planchas de plata but were forced back north by unfriendly Mexicans. On their way to Tucson, they were directed to Ajo where the prospectors saw the copper mine, worked earlier by Indians and Mexicans. Childs reported that in addition to open cuts in the hillsides, there was an inclined shaft approximately 60 feet deep. The party found notched mesquite logs used as ladders and ore buckets made from rawhide. Later, in 1849, this area was very close to one of the southern trails, El Camino del Diablo (The Devil's Highway), from Altar to Yuma, traveled extensively to the California goldfields.

Contrary to the original plan, the international boundary between the Arizona section and Mexico, was established too far north to give the United States a seaport on the Gulf of California. This unfortunate fact later created obstacles to the early development of the mineral industry and other commercial enterprises in southern Arizona. The necessity for low-cost, secure means of transporting ores and goods led to the rapid, alternative construction of railroads into the territory.

For 10,000,000, the Gadsen Purchase added over 45,000 acres below the Gila River, and southern Arizona became a part of Doña Ana County, Territory of New Mexico. This southern acquisition later yielded the single largest primary silver district in the state, Tombstone, and several very large copper districts, including the rich, multi-metal cornucopia, bountiful Bisbee.

American Settlement

Mining in California exerted a major influence on the development of western New Mexico Territory. Providence may have played a role too.

In settlement of the war with Mexico, the United States acquired the vast territory of California, Nevada, Utah, New Mexico, portions of Colorado and Wyoming, and northern Arizona. For this enormous acreage, Mexico was paid $15,000,000 pursuant to the Treaty of Guadalupe-Hidalgo signed on February 2, 1848. Unknown to both governments, interestingly, gold was discovered at John Sutter's sawmill in northern California nine days *before* the signing. In 1849, a year later, California produced some $45,000,000 in gold. In the decade, 1848-1858, California's gold production amounted to $555,000,000.

Within a year of this gold discovery, 80,000 people had gone to California. Many more were to follow and many passed through northern Sonora on their way. Regardless of success in the goldfields, some men, looking for new challenges, returned to Doña Ana County. In the 1850's, a favorite watering hole was Tucson.

It was here in the Old Pueblo, 1850, that Tom Childs, Sr., reportedly met for the first time a fellow '49er, Peter Rainsford Brady. He told Brady about Ajo and that he was preparing to return to the green-colored outcrops.

Brady took employment with Colonel Andrew Belcher Gray who in 1854 surveyed a route on the 32nd Parallel for the Texas Western Railroad. In the meantime, another survey party was establishing the boundary between Mexico and the United States, including the southern border of what is now Arizona. On the Gray expedition, while resting in Sonoita (Sonoyta), in northern Sonora, Mexico, Brady had a Seri Indian guide take him to Ajo. He brought back copper specimens and, when released from his work in San Francisco, organized the first mining company to conduct business in Arizona.

This company, the Arizona Mining and Trading Company, born in August, 1854, was created specifically to mine the ores of Ajo. At least some of the organizers and employees of the new mining firm are listed below:

Major Robert Allen, President	John Killbride
_____ Bendel	_____McElroy
William Blanding	Jock McPherson
Capt. Peter R. Brady	Granville H. Oury
*Tom Childs, Sr.	Col. _____ Porter
Francis P. Clymer	Frederick A. Ronstadt, Sr.
_____ Cook	**Charles Schuchard
B. (Hill) DeArmitt	Clem Thompson
Edward E. Dunbar, Manager	Dr._____ Webster
George Graham	George Williams
Col. Andrew B. Gray	J. Downer Wilson, Sec/Tr
O. Charles Hayward	A. S. Wright
G. Kibber	Joe Yancy

*Tom Childs and some of the fellows joined the group in Yuma.

**Charles Schuchard, B. H. DeArmitt, Col. A. B. Gray, J. Killbride, F. P. Clymer, G. H. Oury, C. Thompson, and F. A. Ronstadt, Sr., apparently formed a subsidiary party of 12 men led by Schuchard, that explored south of the border for the fabled planchas de plata. Their search was successful, finding a piece of silver weighing four ounces on the surface and later unearthing a mass weighing 19 pounds in some old shallow pits overgrown with oaks. The group was driven north by Mexicans who claimed the property was in their country.

After opening the first wagon road in this part of Arizona, from Petato as Gila Bend was known in those days, to Ajo, the company hired local Papago Indians to help open the mine. Although reports vary, the miners apparently hand-sorted the first shipment of ore, comprised chiefly of beautiful ruby-red cuprite and native copper. The ore was freighted by ox team through Fort Yuma to San Diego, 300 miles across the desert, and shipped by boat to Swansea, Wales. At least one other shipment was sent by flat boat, from Yuma, down the Colorado River to Guaymas, in the Gulf of California, where it was transferred to a shipment bound for Wales.

The copper smelter of Swansea paid according to the grade of the ore. Apparently the Arizona Mining and Trading Company received between $360 and $500 a ton. Enroute one ore shipment reportedly sank off the coast of Argentina.

To improve its profit margin by shipping a higher grade product, the company attempted to smelt its own ore. A reverberatory furnace was constructed in 1856 at a cost of $30,000. Because of the expense of coke and charcoal and the lack of suitable flux, however, the furnace was not successful. Only 100 pounds of matte copper were produced.

The remote location of the Ajo mine, high costs of transportation, comparatively low grade, and scarcity of water forced the operation to cease by 1859. It is to the credit of these mining pioneers that their enterprise lasted five years. The choice of name for the state of Arizona was undoubtedly influenced by the name of the first mining corporation to operate in the territory.

Additional influences derived from this first mining venture in Arizona are found in the later activities of some of the men involved. Brady remained in the territory and became a prominent businessman and politician. He was elected in 1866 as the first sheriff of Pima county and eventually served several terms as a territorial legislator.

Tom Childs, Sr., operated a stage station on the Gila River and continued attempts to develop the Ajo mine. In 1884, he formed a partnership with Washington Michael Jacobs and reworked the copper deposit. The ore was shipped to the Selby Smelting Company of San Francisco. Although the operation apparently produced little copper, Childs, Jacobs, and later, other partners, held on to their mining claims and eventually sold them to other developers. Childs and his son, Tom, Jr., built a relatively large ranching business in the area. In Tucson, Jacobs continued operating an assay office, opened in 1880, that is still family owned.

Granville Henderson (Grant) Oury and his older brothers were very active in southern Arizona. Grant Oury was Chief Justice of the Supreme Court for the Pro-

visional Government in 1860. He resigned the same year and eventually gained eminence as a lawyer and politician.

Frederick Augustus Ronstadt, Sr., sold his interest in the mine at Ajo for $25. His son, Frederick, Jr., established in Tucson a wagon shop that was expanded by the family into a major hardware and building supply firm. Another German by birth, Charles Schuchard, who had served as an artist on Col. A.B. Gray's railroad surveying expedition, left the Arizona Mining and Trading Company and, by 1857, had gone to work as an engineer in charge of smelting operations for another pioneer firm, the Sonora Exploring and Mining Company.

The Sonora Exploring and Mining Company was founded in 1856 by Charles Debrille Poston and Samuel Peter Heintzelman. As a result of an exploratory trip in 1854 with Herman Christian Ehrenberg and a party of 30 men, through northern Sonora and the Gadsden Purchase, Poston gained enough information and interest to help promote the general development of southern Arizona. After this trip, he returned east as the representative of California businessmen who were interested in promoting ventures in the Southwest.

Poston and Heintzelman, who was a major in the U.S. Army at the time, convinced the Wrightson brothers and other investors in the Cincinnati area of the merits of their proposed mining venture. The company was formally organized in March, 1856, with Maj. Heintzelman as President and Poston designated Commandant and Managing Agent. By the end of the month, "Col." Poston was on his way, via Texas, to Arizona.

In Texas, Poston hired men and purchased equipment. Herman Ehrenberg met the group in Tucson and by September, the company had established its main office at the abandoned Mexican presidio at Tubac. Within a few months, Sonora Exploring and Mining Company owned the 17,000-acre Arivaca Ranch and land around Tubac. On January 1, 1857, the "discovery" of the Salero vein in the Santa Rita Mountains was announced, and the annual report, dated September 1857, announced ownership of 80 mines. Of this total the lodes apparently considered the most important were:

Arivaca Ranch	**Cerro Colorado Area**
Amado	Amarillo
Arenia	Carlos
Basura	Cesario
Blanca	Guadalupe
La Purissima	Heintzelman
Los Tajitos	Longoreña
San Jose	Maria
Santa Margarita	Puertozito

Santa Rita Mountains

Ojero
Salero

The firearms inventor and manufacturer, Samuel Colt, became a major stockholder in the mining company. Eventually he was a director and in 1859, as chief stockholder, he replaced Heintzelman as president. Colt also invested in at least two other mining enterprises, the Sopori Land and Mining Company and the Arizona Land and Mining Company, companion corporations of southern Arizona.

Spun off from the Sonora Exploring and Mining Company, in 1858, was the Santa Rita Company. It was organized in Cincinnati by the founders of the parent company; the mines held and developed thus far in the Santa Rita Mountains were transferred into the new company. In May, Horace Chipman Grosvenor and Phocian Way, Cincinnati engravers, were sent to Arizona to establish headquarters and supervise the company's operations. The company offices were set up at the Hacienda de Santa Rita near the abandoned mission at Tumacacori. By the next year, seven mines were operating.

One of the Wrightson brothers, William, brought a printing press from Ohio to Tubac in January, 1859. With the blessings of the Sonora Exploring and Mining Company and the Santa Rita Company, he and his editor, Edward E. Cross, published the first newspaper in Arizona. The first issue of the *Weekly Arizonian* came out on March 3.

All the mine properties were difficult to operate. Heintzelman who supervised the mine operations in the Arivaca and Cerro Colorado areas from August, 1858, to January, 1859, was frequently discouraged by the unskilled labor, faulty, crude equipment, high costs for supplies and transportation, and difficulties with the smelting furnaces. The company appears fortunate to have had very competent, trained engineers, particularly the Europeans Frederick Brunckow, Herman C. Ehrenberg, Guido Kustel, and Charles Schuchard. Unfortunately, the number of mines they had to develop was probably too large and the variety of ores too great to treat uniformly.

Frederick Brunckow was a native of Prussia and a graduate of the Royal Mining Academy. He discovered the San Pedro silver mine, about six miles southwest of Tombstone and half a mile east of the San Pedro River, reportedly in 1857. Brunckow left the Sonora Exploring and Mining Company in 1859 to develop his property and was murdered on July 23, 1860, by his Mexican employees. Apparently, he was found at the bottom of a shaft with a drill steel through his body.

The mine which was commonly known as the Bronco influenced Ed Schieffelin in his prospecting during 1877 of the silver-bearing outcrops to the northeast. Later he and his partners apparently used the old Brunckow cabin as headquarters and assay lab while staking the bonanza area of Tombstone.

Herman Ehrenberg was born in Germany. He produced the first private map of the area encompassed by the Gadsden Purchase and, as an employee of the Sonora Exploring and Mining Company, he produced a plan of the company headquarters at Tubac and sketches of the silver regions around Tubac. In August, 1856, he helped draft a petition to Congress seeking separate territorial status for Arizona. By mid-1858, he resigned from the Sonora Exploring and Mining Company. As president of the Cahuabi Mining Company, he reopened the old Picacho silver mine in the South Comobabi Mountains. He continued his association with Sonora Exploring and Mining, however, by submitting several articles in 1859 to the "company" newspaper at Tubac.

Ehrenberg was perhaps the first and most persistent geographer and topographer of Arizona. While prospecting and carrying on mining activities in central and

western Arizona during the early 1860's, he helped establish the La Paz Town Association and as secretary, organize and draft the mining laws of the Castle Dome mining district. He built a road eastward from La Paz toward the Walker and Weaver mining districts and on northwestward toward Fort Whipple and Prescott. When his productive life was cut short by murder on October 9, 1866, his good friend and early pioneer merchant of the area, Michael Goldwater, established the town of Ehrenberg in his memory.

Austrian-born Guido Kustel was educated as a metallurgist in Germany. He introduced and improved the barrel amalgamation process for the Sonora Exploring and Mining Company. Eventually he returned to California, establishing assaying and metallurgical firms, and he became a recognized authority on the treatment of precious-metal ores.

Poston was probably the first true mine promotor in Arizona. Although some of his statements regarding the mines held by the Sonora Exploring and Mining Company were exaggerated, there is no doubt of his sincere enthusiasm to see the mineral industry and general commerce develop in the Santa Cruz River valley. A statement by him describing his tenure in Tubac reflects this philosophy:

> "It is astonishing how rapidly the development of mines increases commerce. We had scarcely commenced to make silverbars–'current with the merchant'–when the plaza of Tubac presented a picturesque scene of primitive commerce. Packtrains arrived from Mexico, loaded with all kinds of provisions. The rule was to purchase everything they brought, whether we wanted it or not. They were quite willing to take in exchange silver bars or American merchandise. Whether they paid duties in Mexico was none of our business. We were essentially freetraders."

In the operations, Heintzelman was the detail man and Poston, the "big-picture" man. While Heintzelman complained frequently in his diary of Poston's absences and apparent lack of interest, Poston appeared to be relatively busy obtaining more financing, men, and materiel for the mining enterprise.

Poston's interests were varied. On his first trip into the region of the Gadsden Purchase, he and Ehrenberg platted the townsite of Colorado City (Yuma) and sold lots. Later, when he arrived from Texas and rejoined Ehrenberg in Tucson, he also helped with the petition to seek independent territorial status for Arizona. He continued his efforts and, with Heintzelman and others' help, he saw passage of the bill creating the Territory of Arizona in 1863. Getting the bill passed by Congress and signed by President Lincoln during the Civil War was particularly difficult because of the known southern sympathies in Arizona. Upon formation of the new territorial government, Poston was appointed first Superintendent of Indian Affairs. Already known as the "father of Arizona", the voters of Arizona Territory elected him as their first Congressional Delegate to Washington, D.C.

After this two-year term, Poston was not re-elected but he did hold various public offices for a number of years. He wrote of his experiences often and was a founder of the Society of Arizona Pioneers, a precursor of the Arizona Historical Society. Poston was a strong proponent of Arizona development. Unfortunately, he lived very close to poverty in his later years and was found, June 24, 1902, dead on the dirt floor of his dilapidated adobe home in Phoenix.

During the last half of the 1850's, in addition to the companies that Brady and Poston were associated with, there were several other mining organizations active in Arizona. Like Heintzelman, many of the mine developers were military men who were, or had been, stationed in Arizona. Maj. Robert Allen, who had gained experience mining with Brady at Ajo, attempted to rework the San Xavier mine. The San Xavier Silver Mining Company was organized in 1857 in San Francisco with a Mr. Breed as its director. It erected adobe furnaces on the Santa Cruz River at the Punta del Agua, about three miles south of the San Xavier mission, but apparently had problems with sickness (malaria?) among the men. The furnaces may never have been operated; in December, 1858, an agent of the company (Edward H. Belcher?) requested the Sonora Exploring and Mining Company to smelt the San Xavier ore.

Another military man, Col. Andrew B. Gray, was director of the Maricopa Mining Company. Apparently in the late 1850's, this firm attempted to develop the Collins silver mine near the mouth of Aravaipa Creek on the San Pedro River. Gilbert W. Hopkins, a mechanical engineer, was reportedly the chief engineer on the property.

Soldiers stationed at Ft. Buchanan, at the head of Sonoita Creek, prospected the nearby Santa Rita and Patagonia ranges. Captain Richard Stoddert Ewell, Lieutenants Richard S.C. Lord and Isaiah N. Moore, (Lieutenant Horace Randal?), "Colonel" James W. Douglass, and Richard M. Doss purchased the Corral Viego mine in 1858 from a Mexican prospector. The mine was re-named Patagonia; shafts were sunk and furnaces were built. A little ore was mined but the soldiers were probably ill-equipped in terms of training to develop the mine efficiently. Some of their ore was smelted by the Sonora Exploring and Mining Company.

After passing through ownership of Elias Brevoort, a sutler at the fort, and Henry Titus, a filibuster and manager of the Union Silver Mining Company, the Patagonia was purchased in the spring of 1860 by Lt. Sylvester Mowry. He paid $25,000 for the property soon to be known as the Mowry mine.

In 1856, a Lt. Humphries is said to have discovered base-metal and precious-metal deposits, apparently in the Castle Dome Mountains northeast of Ft. Yuma. A prospector named Halstead reportedly discovered the copper deposits of the central Buckskin Mountains north of Yuma in 1858. Neither one of these areas was actively mined, however, until about 1862.

Except for possible cursory placering for gold around the Las Guijas Mountains near Arivaca, the Quijotoa Mountains near Covered Wells, and in the Cañada del Oro near Tucson, important placer development by the Americans did not begin until the 1850's when several discoveries were made in western Arizona. It has been reported that gold was re-discovered as early as 1857 in the vicinity of the Red Hills, at the southwestern foot of the Chemehuevis Mountains. This area is about 18 miles southeast of Topock and is near modern Lake Havasu City. Other discoveries

may have been made in the later 1850's in Burro Creek and nearby gulches about 18 miles northwest of Hillside, in the vicinity of Bagdad.

The first truly significant placer discovery was made in 1858 by Jacob Snively where the Gila River wraps around the north end of the Gila Mountains, about 12 miles east of Yuma. This placer ground, approximately two miles long, was the scene of a stampede and furious activity for several years. The most productive gravels were found near the mouth of Monitor Gulch where Gila City (Dome) developed. Within a few months of the announcement of this bonanza, over a thousand prospectors were in the area combing the gulches. Officials of the Sonora Exploring and Mining Company complained that their Mexican miners quit work and left for the new diggings. J. Ross Browne described the scene:

> "Enterprising men hurried to the spot with barrels of whiskey and billiard tables; Jews came with ready-made clothing and fancy wares; traders crowded in with wagons of pork and beans; and gamblers came with cards and monte-tables. There was everything in Gila City within a few months but a church and a jail . . . "

As prospectors and miners moved into the western portions of the Territory of New Mexico, settlers including farmers, traders, and teamsters followed. For protection, in addition to that offered by the Army troops garrisoned at Ft. Yuma in California, forts were occupied or established at Ft. Defiance (1851), Tucson (1856), Calabasas (1856), Ft. Buchanan (1856), Ft. Mohave (1859), and several lesser stations. Communication and transportation between villages and rural settlements were facilitated by strings of stage stations. Greatest of the stage lines was the Butterfield Overland Mail which, in Arizona, ran westerly through Apache Pass and Dragoon Springs to Tucson, turning north by Picacho Peak to the Pima Villages on the Gila River, and then heading west down the Gila to Colorado City.

Centers of civilian population were concentrated along the Butterfield route and in the fertile drainages of the Santa Cruz, Sonoita, and Arivaca washes and their adjacent mines. The aggregate population, excluding Indians, counted during the decennial census of 1860 for the Territory of New Mexico, County of Arizona (now state of Arizona) was 1,541. Tucson, with 623 persons, was the most populous locality; Tubac was second with 164. The eldest person recorded was a woman, Quiteria Murguia, 100 years old, living in Tucson; place of birth, unknown.

The general hostility of the new territory can be illustrated by reviewing the experience of Larcena Pennington Page. In 1860, Larcena was one of only 44 Anglo-American women over 16 years of age in the area. One day in March, while her husband was timbering in upper Madera Canyon of the Santa Rita Mountains, she was kidnapped from their camp by a band of Apaches. After forcing her to walk some distance, they pushed her down a hillside, stripped her of her clothing, speared her eleven times, and stoned her. Two weeks later, having lost blood and having subsisted on melted snow and wild plants, she crawled and stumbled into the lumber camp. Larcena survived this ordeal; in 1913, a year after Arizona became a state, she passed away in Tucson.

The population figures during 1860 for mining communities are:

Arivaca Mines	27	Longoreña Mines	4
Cahuabi Mines	2	Patagonia Silver Mines	5
Copper Mines (Ajo)	18	San Pedro Silver Mines	8
Gila City	58	Santa Rita Silver Mines	5
La Laguna	18	Cerro Colorado Mines	3

There were 47 men that listed their occupation as miner. Although this number represents about 7.5% of the total work force (624), many others who listed their occupations such as laborer, teamster, or blacksmith, undoubtedly worked for the mines.

When the Civil War erupted in 1861, most of the military was withdrawn. The net effect of this withdrawal was chaos as Mexican Nationals thought the American government had collapsed and the Apache Indians thought they had won their war with the American invaders. In April, the Butterfield Overland Mail Company discontinued services through Arizona. Operations at most of the mines in southern Arizona were terminated.

The headquarters at Tubac of the Sonora Exploring and Mining Company and its mines at Arivaca and Cerro Colorado were abandoned. John Lee Poston, younger brother of Charles and storekeeper at the Heintzelman (Cerro Colorado) mine, was killed by Mexican laborers in 1861. Horace Grosvenor, superintendent of the Salero mine, was murdered by Apaches on April 25, of the same year. (An earlier manager, F.N. Slack, was killed by the Apaches, probably in 1860.) The headquarters at the Hacienda de Santa Rita of the Santa Rita Company and its mines were abandoned by June 15, 1861. Within the next two years, all company operations were looted and devastated by the emboldened Indians and Mexicans.

After the war, William Wrightson returned to re-open the Santa Rita mines. He employed the prominent engineer and territorial legislator, Gilbert Hopkins. Unfortunately, Wrightson was murdered by Apaches on February 17, 1865; less than a month later, on March 1, they killed Hopkins.

Under the leadership of Lt. Mowry, however, the Mowry mine continued to prosper during the first stages of the Civil War. Production of lead and silver was maintained as the property was well equipped and well defended. Numerous settlers moved into the mining camp for security. Unfortunately, in June, 1862, Mowry was arrested by Union troops as a Confederate sympathizer and imprisoned at Ft. Yuma for six months. Union agents operated the mine, apparently without much success, until it was returned to Mowry reportedly with $40,000 in damages, in 1864. Mowry attempted to raise capital to rebuild the mine but died unsuccessful, in 1871, in London.

In contrast to the generally bleak and restricted conditions existing in the Santa Cruz River valley and its environs during the Civil War, prospecting and mining activities in central and western Arizona increased. This is due in large measure to the support given by troops stationed at Ft. Yuma and by officers such as the Union General, James H. Carleton, who provided military escorts to prospecting parties and influenced the location of Ft. Whipple established in 1863. Gen. Carleton recognized the value of gold as a means to finance the war.

Development of the Colorado River area and northeast into the Prescott area was rapid. Gold was the prime motivator.

During the fall of 1861, an Indian trapper reportedly brought into Colorado City an eagle quill full of placer gold and showed it to Pauline Weaver, one of the most respected American trappers and guides of the period. After confirming the find, Weaver organized a prospecting party of 40 men led by Jose Maria Redondo. They left in January, 1862, for the dry washes on the western slope of the Dome Rock Mountains, an area that is about seven miles east of the Colorado River. In a gulch named for him, Juan Ferra picked up a nugget that weighed 47.5 ounces.

The rush was on. A wave of prospectors from California and Sonora, Mexico, came in and by the end of 1862, La Paz, with a population of 1,500, was well established 2½ miles east of the river. The La Paz placer discovery greatly stimulated prospecting throughout the region and as far east as the Bradshaw Mountains. The Middle Camp and Oro Fino placers were discovered on the east side of the Dome Rock Mountains. Across the valley, eastward, are the Plomosa placers on the west flank of the Plomosa Mountains.

In 1863, Abraham Harlow Peeples organized a prospecting expedition at Yuma and hired Weaver as its guide. The party traveled up the Bill Williams Fork and its tributaries to Antelope and Weaver creeks, north of Wickenburg, where incredibly rich placer ground was found. On Rich Hill, Peeples is said to have picked up $7,000 in loose gold one morning before breakfast. In the same year, the lode-gold deposit of the Vulture mine was discovered by Henry Wickenburg, a member of the Peeples party. The enormous output of gold from this mine helped finance the Union Army; by the end of the war there was a 40-stamp mill in operation.

While Peeples and his gold miners were busy in the Rich Hill area, Capt. Joseph Reddeford Walker led an expedition of about 34 prospectors into the Lynx Creek area near the future site of Prescott. A member of his party, Sam Miller, discovered gold in the creek. It has the honor of being the single most prolific placer drainage in Arizona.

As the regions between Yuma and La Paz and central Arizona grew, river boat traffic on the Colorado River increased. People, produce, equipment and supplies of all description were shipped up and down the river. In 1862, the first shipment from the Planet copper mine was made; 100 tons of selected high-grade ore was sent to the smelter. It is reported to have netted $100 a ton. In 1863, Capt. John Moss, accompanying Gen. Carleton's California Volunteers, discovered the Moss vein about 5½ miles northwest of the present town of Oatman. Although he reportedly shipped $240,000 in gold from his mine within the first year, Moss apparently died in poverty.

The story of Capt. Moss is not unusual. Although Henry Wickenburg discovered one of the richest gold mines in Arizona's territorial history, he did not reap its great financial reward. Within three years of his discovery, he sold the property and tried his hand at ranching. Unfortunately, he was not particularly successful and in 1905, tired at 85 years of age, he shot himself.

Others though, like Peeples, and later, Schieffelin, were successful and retained their prosperity. Regardless of the final outcome, however, it was the initial discovery and the excitement of that find that was transformed by numerous people into opportunity and enthusiastic endeavor.

Arizona Territory

Population Centers

Governor John N. Goodwin and his gubernatorial party formally proclaimed the independent Territory of Arizona on the afternoon of December 29, 1863, at Navajo Springs in what was to become central Apache county. On January 22, 1864, the group arrived at a new Army post, Ft. Whipple, only 18 miles northeast of the future city of Prescott.

In order that the new territory could be subdivided into judicial districts and a new legislature could be formed with fair representation, the United States Marshal for Arizona was instructed to take a census. During the spring of 1864, Marshall Milton B. Duffield and two assistants were given a military escort for protection as they traveled about the territory counting its citizens.

Within just four years of the first census, the population of the territory, excluding Indians, had grown almost 300%. The aggregate total in 1864 was 4,573 persons. Although Tucson (population 1,568) was still the largest community, other areas, particularly in central and western Arizona, were rapidly being developed. This development reflected primarily a shift in mine activity. Some of the settlements with a sizable group of miners are listed with their total population:

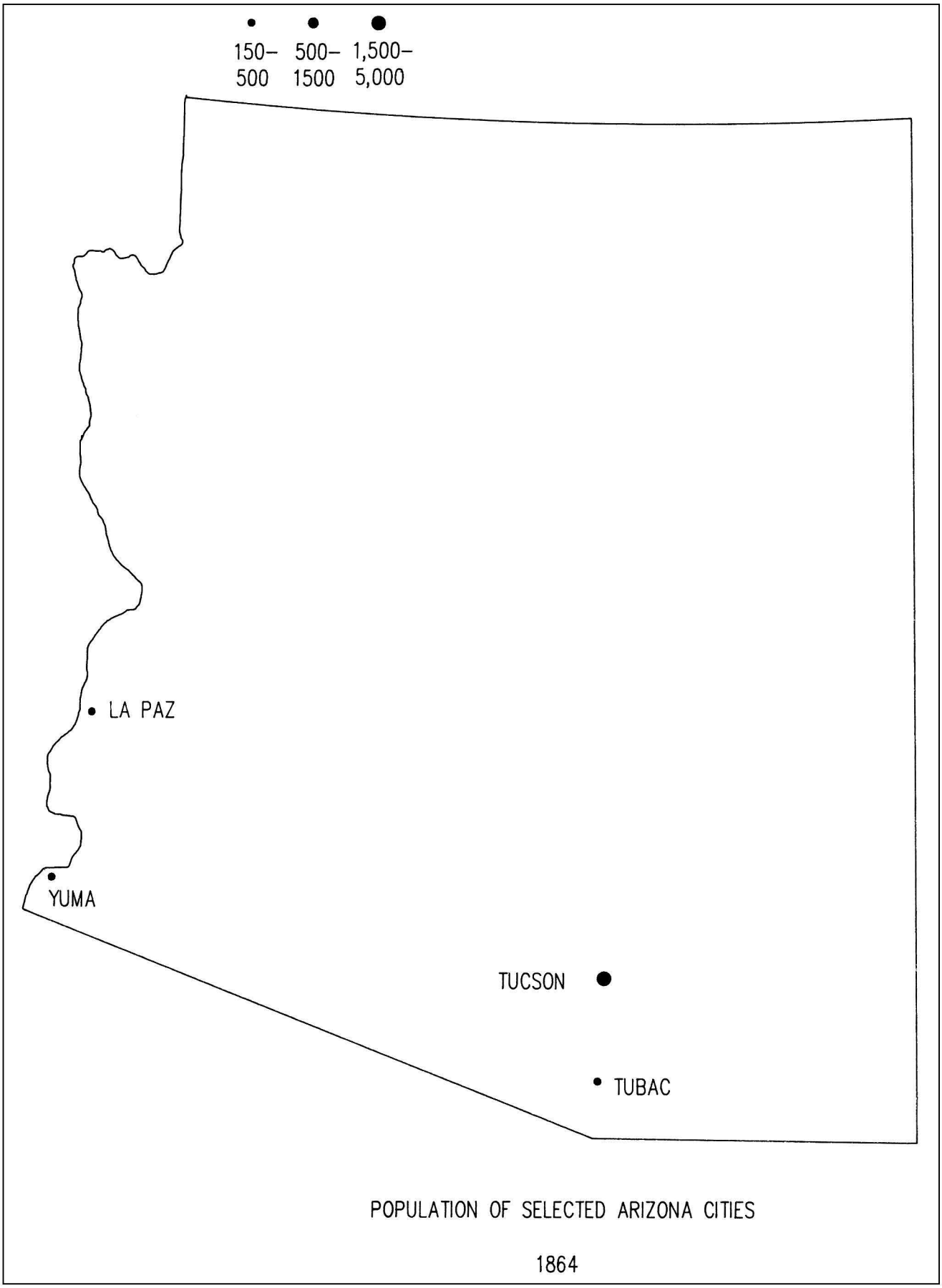
Apache Chief Mine	8	Los Posos	14
Apache Wide West Mine	3	Mineral City	16
Castle Dome	32	Mowry	252
Cerro Colorado Mine	45	New Water	61
El Dorado Canyon	90	Olive City	19
Fresnal	91	Picacho Mine	7
Fort Mojave	120	Plomosa Placers	14
Hardys Landing	32	Salizar Mine	5
Hughes Mines	54	San Antonio Mine	17
La Laguna	113	San Francisco District	62
La Paz	353	Scottie Mine	4

These villages including several others such as Arizona City (Yuma) and Tucson comprised the first and second judicial districts. The third district, actually enclosing most of the territory, contained Prescott and the mining centers of Antelope, Groom Creek, Lynx Creek, and Wickenburg. Population figures were not segregated by village in this district, but it is interesting to note that of the 761 working males (excluding soldiers), 435 of them, or 57%, gave their occupation as miner.

Practically one out of every four people in the Territory of Arizona in 1864 was a prospector or a miner. Of the total population, 53% (2,404) were working males, and of this group, 45% (1,080) were associated with mining. Jesus Angeilo, at 90 years of age, was the oldest person registered and he listed his profession as miner.

By the end of 1864, the first year of territorial government, Arizona had about 25 legally organized mining districts. Some of these, with their date of formation, are given below:

La Paz	Oct. 6, 1862
Castle Dome	Dec. 8, 1862
El Dorado Canyon	Jan. 1, 1863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500
500–
1500
1,500–
5,000
LA PAZ
YUMA
TUCSON
TUBAC
POPULATION OF SELECTED ARIZONA CITIES
1864

Pioneer	May 10, 1863
Weaver	Jun. 25, 1863
Yavapai	Sep. 28, 1863
San Francisco	Nov. 13, 1863
Quartz Mountain	Dec. 27, 1863
Eureka	Jan. 2, 1864
Cerro Colorado	Apr. 23, 1864
Walnut Grove	May 21, 1864
Wickenburg	May 21, 1864
Bradshaw	Sep. 14, 1864

Jacob Snively, of Gila City fame, was chairman of the Castle Dome mining district and Herman Ehrenberg was chosen as the District Recorder. The filing fee at his office in La Paz was $1.00. The Pioneer district was established by the "Walker" Prospecting and Mining Company and the Weaver district was named in honor of the old Tennessee trapper, Pauline Weaver. Henry Wickenburg was, appropriately, the first president of the Wickenberg district.

Politics

The fledgling government had many tasks before it. In addition to taking the census and creating three judicial districts in its first year, it located a capitol and elected the first territorial legislature.

In 1863, there were three principal centers of population: (1) the future site of Prescott and its neighboring mines, (2) La Paz, and (3) Tucson. The census taken the following year showed that the old Pueblo of Tucson had more inhabitants than all the people counted in either the second judicial district (containing La Paz) or the third district (containing the Prescott area).

Gen. Carleton, the commanding officer of the territory, was convinced that the area bordering Granite and Lynx creeks was rich in gold and he wanted to secure this wealth for the Union. He sought and received permission to establish Ft. Whipple in this area.

Carleton also apparently helped persuade Gov. Goodwin and his cabinet that a site for the capitol should be selected in central Arizona near the fort. There in a region of relatively abundant natural resources, including timber and water, and with relatively few Mexican or secessionist influences, the new seat of government could be protected and could thrive. A few months after Goodwin's party reached Ft. Whipple, the capitol was established a short distance to the southeast at a site on Granite Creek and named Prescott.

Election day, in 1864, was Monday, July 18. Voters selected nine members for the Council (now the Senate), eighteen members for the House of Representatives, and a delegate to represent the people of Arizona in the House of Representatives of the thirty-eighth Congress of the United States. A number of polling places were in the homes of mining officials and in recorders' offices of various mining districts.

Mining interests were well represented in the first Territorial Legislature. In addition to the most famous miner at that time, Charles D. Poston, who was elected handily as Territorial Delegate, miners composed 44% of the new legislative body:

COUNCIL

Name	Residence	Occupation
Coles Bashford (President)	Tucson	Lawyer
Mark Aldrich	Tucson	Merchant

COUNCIL (cont.)

Henry A. Bigelow	Weaver	**Miner**
Patrick H. Dunne	Tucson	Printer
Robert W. Groom	Groomdale	**Miner**
George W. Leihy	La Paz	**Miner**
Francisco S. Leon	Tucson	Farmer
Jose M. Redondo	Arizona City	Rancher
King S. Woolsey	Agua Fria Ranch	Farmer

HOUSE

W. Claude Jones (Speaker)	Tucson	Lawyer
Nathan B. Appel	Tubac	Merchant
Thomas J. Bidwell	Castle Dome	**Miner**
John M. Boggs	Prescott	**Miner**
Luis G. Bouchet	La Paz	Carpenter
John G. Capron	Tucson	Merchant
Jesus M. Elias	Tucson	Rancher
James Garvin	Prescott	Physician
James S. Giles	Prescott	**Miner**
Gregory P. Harte	Tucson	Surveyor
Norman S. Higgins	Cerro Colorado	**Mining Engr.**
George M. Holaday	La Paz	Hotel Keeper
Gilbert W. Hopkins	Maricopa Mine	**Mining Engr.**
Henry D. Jackson	Tucson	Wheelwright
Jackson McCracken	Lynx Creek	**Miner**
Daniel H. Stickney	Cababi	**Miner**
Edward D. Tuttle	Mohave City	**Miner**
William Walter	Mohave City	**Miner**

The enthusiasm expressed by Gov. Goodwin in his opening address, September 30, 1864, to the newly convened assembly with respect to the mineral potential of Arizona is obvious:

> "The most extensive and important interest of this territory is the mineral wealth. Its development will be greatly promoted by well considered and liberal legislation . . . (Arizona's) mineral wealth is yet unknown, but enough has been discovered to dazzle and perplex the mineralogist with its richness and extent. Whole chains of mountains are seamed with veins of gold and silver. And the gold and copper mines of the Colorado and Hassayampa are only surpassed in richness by the silver mines of southern Arizona. The obstacles which have retarded the development of this wealth will soon be overcome."

The new legislative assembly met only for a brief time, September 26 to November 10. During that period, however, the gentlemen subdivided the territory into the following four counties, also designating the respective county seats: (1) Mohave (Callville), (2) Pima (Tucson), (3) Yavapai (Prescott), and (4) Yuma (La Paz). The first legislature also enacted a code of laws, including mining laws, for the territory.

The separation of later counties and designation of county seats was to a large degree dependent on mining interests. As the focus of mine activity in Mohave county moved, for example, so did the county seat. From Callville the seat was transferred to Mohave City in 1866. During the next seven years, the seat was in Hardyville, Cerbat, and Mineral Park. Eventually, as mineral production dwindled, Kingman was made the county seat in 1887.

Cochise, Gila, Graham, Pinal, and Santa Cruz counties were created from portions of pre-existing counties primarily because of their growing mining communities. The last county created by the Territorial Legislature was named for one of its earliest prospectors, Mason Greenlee.

Gov. Goodwin and several members of his cabinet were, like the miners, struck with gold fever. The Secretary of

State, Richard C. McCormick, and the governor's private secretary, Henry W. Fleury, joined Goodwin in co-signing a number of mining claims. Indeed Secretary McCormick was so impressed by the role of mining and its potential in the new territory that he attempted to design an official seal:

> "The design, that of a stalwart miner, standing by his wheelbarrow, with pick and shovel in hand, the upturned 'paying dirt' at his feet, and the auriferous hills behind him, with motto 'Ditat Deus' (God enriches), forms an appropriate and striking combination."

To this day the importance of mining in Arizona is acknowledged in the great seal of the state. Incorporated into the design is the portal of a mine adit and a miner standing in front, with his pick and shovel, and an ore concentrating facility shown in the background.

Commerce

During territorial days the business of Arizona was closely connected to mining and influenced by mine development. Continuing a pattern begun prior to 1863, the location and construction of roads and Army forts were strongly dependent on the location of mining communities. The need to supply these communities with foodstuffs, clothing goods, medicinal materials, hardware, building materials, and a variety of other products required the efforts of farmers, freighters, blacksmiths, and merchants.

Important early business developers included such names as Barney, Hardy, Ochoa, Tully, Hughes, Goldwater, Hayden, Woolsey, and Zeckendorf. There were many others. As the fabric of society was constructed, other professionals including physicians, lawyers, teachers, ministers, journalists, and engineers established residency. Many of these early Arizonans were diversified in their business enterprises and many invested heavily in mining ventures. An example is Michael Goldwater who reportedly built a mill at Wickenburg in 1865. He operated the mill one month, realizing $3,000 a day, and then sold it.

Grub stakes, wherein normally the investor and the prospector each received 50% of any minerals found, and/or staked, were common. Optimism was high and frequently a prospector would stake 100 claims, requiring $10,000 annual development, when he had only $10 to his name. The lure then, as now, was strong and at times irresistible. The following stanza was found in a mining prospectus of territorial days:

> "Come, little brother and sit on my knee,
> And both of us wealthy will grow, you see,
> If you will invest your dollars with me,
> I will show you where money grows on the tree."

Tucson was the traditional center of mine promotion and, accordingly, it was the home of the American and Mexican Mining Exchange. Established in December, 1880, the Exchange was visited by capitalists and engineers to view ore specimens and trade information.

The "mining bug" infected a variety of people. Around 1900, acting on complaints that quarterly reports had not been received for several years from the Postmaster at Ehrenberg, the Post Office Inspector decided to investigate. He found mail that should have been delivered four years earlier. Apparently Postmaster Daniel had been too busy mining. Daniel had not even opened a letter to him from the Postmaster-General thanking him for the "high class of service . . . rendered . . . at Ehrenberg."

The enthusiasm and high regard held for mining was reflected early in the names chosen for local newspapers. The third newspaper established in the territory was the *Arizona Miner*, published by Secretary McCormick. Its first issue, March 4, 1864, was circulated from Ft. Whipple. It eventually became the *Daily Journal-Miner* of Prescott. Others followed: the *Nugget* and the *Daily Prospector* of Tombstone, *Silver Belt* of Globe, *Our Mineral Wealth* and *Mohave Mines* of Kingman, the *Wickenburg Miner*, the *Pick and Drill* of Prescott, the *Pinal Drill*, the *Copper Era* of Clifton, *Copper Belt* of Jerome, and the *Prospector* of Quijotoa.

Mine Discoveries

With the dangerous Apache, Hualapai, and Yavapai ever lurking, it was difficult for the prospector to evaluate the ground, "with a pick in one hand and a gun in the other." However, the sheer number of increasing miners, banding together, provided more self-protection, and the greater determination exhibited by the Army leaders to subdue the Indians, gradually provided a safer environment in which to develop mines. Railroad construction across Arizona began in 1877 at Yuma, and Geronimo surrendered in 1886. Transport conditions improved and ore could be shipped out and machinery brought in at reasonable prices. Capital investment was attracted from the eastern states and from Europe.

The territorial years witnessed great lode, or hardrock, discoveries of copper, lead, zinc, silver and gold deposits. Some of the finds were truly bonanzas. Among the more important mines that had a major impact on the territory, tabulated by principal metal, are the following:

Copper	**Gold**
Bisbee area	Congress
Clifton-Morenci area	Crown King
Inspiration area	Harquahala
Jerome area	Katherine
Magma	King of Arizona
Miami area	La Fortuna
New Cornelia	Mammoth area
Old Dominion	McCabe-Gladstone
Ray	North Star
Silver Bell area	Oatman area
	Octave
Lead/Zinc	**Silver**
Castle Dome area	Commonwealth
Duquesne	Hermosa
Golconda	Mack Morris
Montana	McCracken
Mowry	Peck
San Xavier	Silver King
Tennessee	Tip Top
	Total Wreck
	Tombstone area
	Vekol

Several of these mines were touted almost as much for their by-product commodities as they were for their principal metal. For example, as important as the United Eastern and Tom Reed mines were as primary gold producers in the Oatman area (more than $27,000,000), the combined precious-metal value of the United Verde and Little Daisy (United Verde Extension) *copper* mines was

almost twice as much. The Tombstone area has produced over $30,000,000 in silver, the largest primary silver district in the state, but it has also produced a very significant quantity of gold as well. The production of lead, zinc, silver, gold, and manganese, in addition to copper, from the Bisbee ores, has made this mining camp one of the most stable in the state. It has produced over $1,000,000,000 in metal.

An interesting sidelight to the discovery of the copper deposits of the Clifton-Morenci area is the story of Frederick Remmington. Remmington, a famous western artist, is reported to have lived and placered for about a year in the early 1870's at Gold Gulch, which is located on the southwest side of the present Morenci pit. In three weeks he apparently uncovered $6,000 in placer gold by removing rocks and boulders that covered a depression in which the rich gravel had settled.

Shifting Populations

While the miner may be recognized as the scout of civilization, his somewhat transient nature must also be acknowledged. Because of the rapid development and frequent exhaustion of certain ore deposits, particularly gold and silver, mining communities commonly flourished for a brief time and became ghost towns when the miners searched for more fertile ground.

In 1880, the federal records show that there were 4,678 miners, representing about 21% of the total number of working males. There were, scattered about the territory, seven copper mines, 232 precious-metal lode mines, two placer mines, 24 amalgamating mills. five arrastras, and one operating smelter. Substantial populations were found at the milling and mining villages of Charleston, Contention, McMillanville, Pinal City, and Tombstone.

The peak years of Tombstone were between 1882 and 1884, when the population was probably about 10,000. At this time the city may have been the most cultivated in the West. It was larger than San Francisco and certainly offered most cultural activities. When Cochise county was created in 1881, Tombstone was naturally selected as county seat. When the mines were initially flooded in the late 1880's, the miners and much of the populace left. By 1890, Tombstone was almost dead with a population of 1,875. Its satellite communities of Charleston and Contention were deserted.

McMillanville boomed with a peak population of about 1,500 in 1880 but by 1890, when the mines had played out, there was only one person left. The Silver King mill was located at Pinal which in the early 1880's is reported to have had a population of 2,000 people. This village rapidly disappeared, however, when the Silver King closed in 1888.

By 1890, other mining camps were becoming important population centers. These included Bisbee, Clifton, Arivaca, Harshaw, Reymert, Morenci, Congress, and Jerome. Among the male miners that year, there was one woman who gave her occupation as miner to the census taker.

Mine Contributions

Typically the principal contributions of mining during the years Arizona was a territory, were employment, payrolls, and taxes. Although individual or cumulative company wages are not known, the total income paid to miners must have been large. The total payroll was probably the largest within any one industrial segment of the territory. Employment as a percentage of the workforce varied widely, however, from year to year as changing economic conditions in the nation affected mine production and general employment at home.

According to the 1909 statistics, there were 18,094 miners working in Arizona Territory during that year. This number represented 21% of the total workforce. There were 251 producing mines. A year later, 1910, the United States Geological Survey reported that the territory contained 136 mining districts producing precious metals, copper, lead, mercury, and tungsten; gold was the chief product of 67 districts.

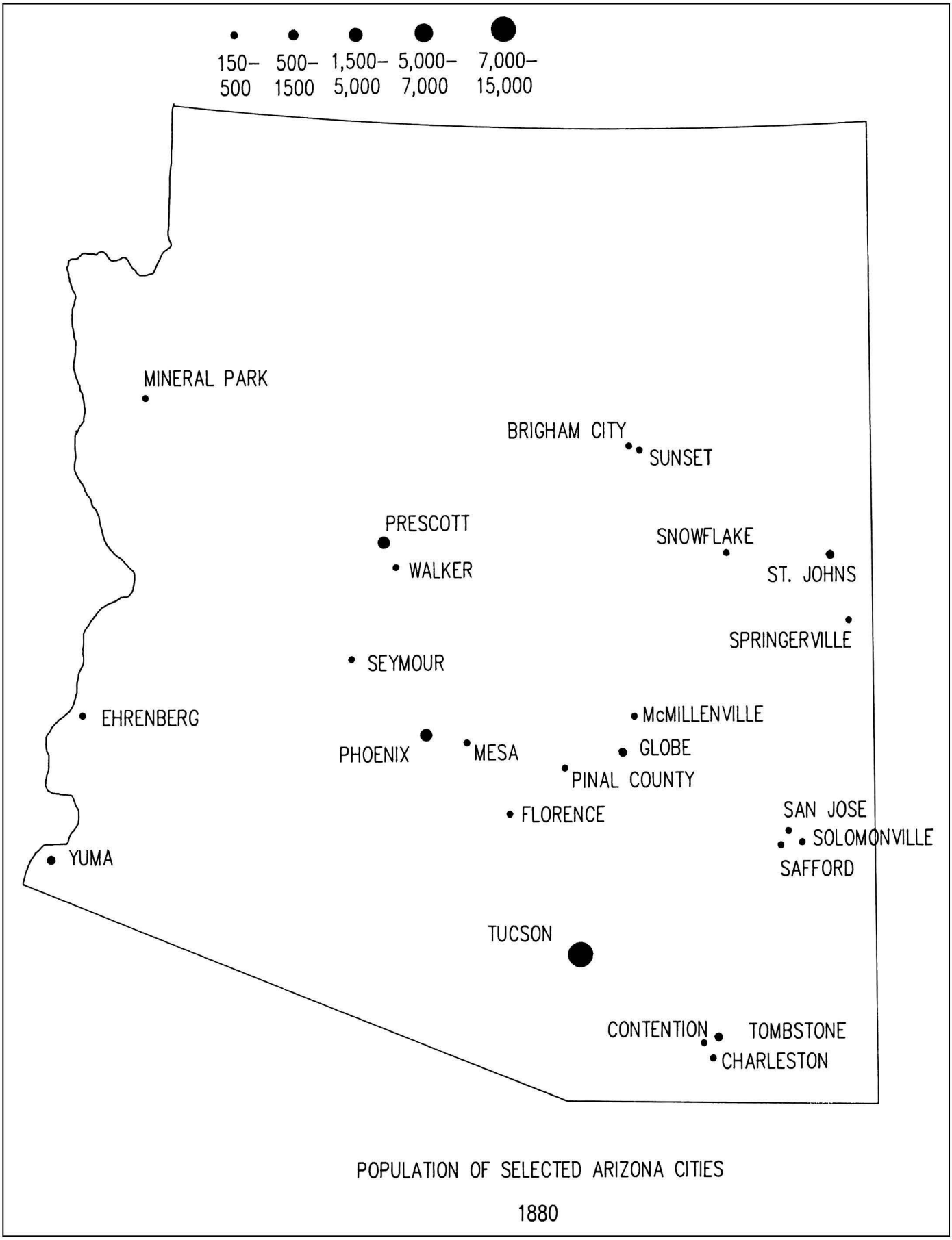
Obviously the relatively large number of mines and the high level of employment, along with substantial total income, had a major impact on the growth of Arizona. It has been reported that in the 50 years since Americans began mining in Arizona, through 1910, the total estimated value of metal production alone was over $600 million.

Taxes represented another major contribution of the mineral industry. This source of revenue collected by the government helped enormously in funding programs to build and operate schools, construct roads, dams, and other public works projects, and support various other territorial requirements.

In 1875, the Eighth Legislative Assembly enacted a law providing for the taxation of the net proceeds of the mines. Generally this amounted to two dollars for every $100 in net proceeds. This net proceeds tax was repealed six years later, leaving property and similar taxes in the hands of the county authorities. In 1884 the Territorial Auditor commented (in referring to the mines) that "the chief industry, the one without which our Territory is nothing" was not paying its fair share in taxes. The Auditor, in 1890, recommended the mineral industry help Arizona erase its more than $88,000-debt by assuming a renewed net proceeds tax of one percent.

By 1900 the net Territorial indebtedness had reached over $1,000,000 and pressure to reinstate additional mine taxes intensified. For years certain voters felt that mine valuations and assessments were too low in comparison to those assessments placed on the cattle and railroad industries. As an incentive to build, however, railroads were often extended tax exemptions for periods of 10 years or more. Eventually the 24th Legislative Assembly, in 1907, passed the Bullion Tax Law which levied a tax based on the value of a mine fixed at 25% of the value of its gross product.

The Fifteenth Legislature voted to move the capitol from Prescott to Phoenix and, in February 1901, the new Territorial Capitol was dedicated and occupied. It was built almost entirely of Arizona products. The foundation was constructed from malapai (andesite or basalt), reportedly mined from Camelback Mountain, between Phoenix and Scottsdale. Gray granite taken from the South Mountains, immediately south of the capitol city, comprised the building stone of the first floor. The upper stories were constructed of tuff quarried from a mine about two miles north of Kirkland, in Yavapai county. Recently, this porous rock has been mined, crushed, and marketed as a kitty litter.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MINERAL PARK
BRIGHAM CITY
SUNSET
PRESCOTT
WALKER
SNOWFLAKE
ST. JOHNS
SPRINGERVILLE
SEYMOUR
EHRENBERG
McMILLENVILLE
PHOENIX
MESA
GLOBE
PINAL COUNTY
FLORENCE
SAN JOSE
SOLOMONVILLE
SAFFORD
YUMA
TUCSON
CONTENTION
TOMBSTONE
CHARLESTON
POPULATION OF SELECTED ARIZONA CITIES
1880

As mining communities developed, particularly in the copper camps, a sense of permanence took hold. Families began passing their mining interests and skills on to the next generation. The mining companies played a more active role in the community by providing land and money to build hospitals, churches, libraries, fraternal organizations, YMCA's, YWCA's, and recreational facilities. They actively sponsored participation in the arts and in athletics.

Several examples of this often overlooked generosity should be mentioned. In 1903 the Phelps Dodge Corporation contributed 75% of the construction costs of the beautiful Herring Hall, the first gymnasium on the campus of the University of Arizona. A year later Phelps Dodge (through its subsidiary, the El Paso and Southwestern Railroad) and the Calumet and Arizona Mining Company donated over $37,000 to erect the YMCA building in Douglas.

Under the guidance of its owner, Senator William Andrews Clark, the United Verde Copper Company built a hospital in Jerome and employed a medical staff. The miner received free medical and surgical care; a small fee was charged for his family. A clubhouse was constructed, providing a large men's lounge containing pool and billiard tables, a ladies' lounge, a card room, a soda fountain, and a small ballroom.

In many of the mining towns, the companies attempted to make living conditions comfortable through construction of numerous facilities that were normally present only in or near larger metropolitan communities. The Old Dominion Company provided Globe with a well-appointed library. Youth activities were strongly encouraged and sponsored by the mining companies. The first YWCA in the territory was organized in 1908 in Bisbee.

Arizona's first natural gas line was brought into the copper smelter at Douglas at the turn of the century. This line was financed by a loan of $2,000,000 from Phelps Dodge to the small El Paso Natural Gas Company. Eventually El Paso was able to build a distributing network through the state.

State of Arizona

Population and Politics

On Valentines Day, February 14, 1912, the Territory of Arizona achieved statehood. Two years before, the 13th census of the Nation counted 204,354 persons living within Arizona's territorial boundaries; over 18,000 were miners.

In 1910 the largest cities were Tucson and Phoenix. (Phoenix overtook Tucson during the decade between 1910 and 1920.) The population of some important mining centers was as follows:

Arivaca	2,480	Lochiel	92
Bisbee	9,019	Lowell	4,356
Chloride	275	Mammoth	651
Clifton	4,874	McCabe	139
Congress	471	Metcalf	2,868
Copper Hill	521	Miami	1,390
Courtland	914	Mineral Park	71
Douglas	6,437	Morenci	5,010
Gleeson	600	Mowry	27
Glenwood	101	Oatman	168
Globe	7,083	Oracle	224
Golconda	198	Paradise	267
Goldroad	269	Pearce	517
Greaterville	130	Poland	117
Hackberry	84	Rosemont	68
Hayden	582	Silver Bell	1,721
Helvetia	454	Tombstone	1,582
Humboldt	525	Washington	132
Jerome	2,393	Wickenburg	570
Klondyke	334	Yucca	138

In 1912, the new state of Arizona had 445 active mines, including 51 placer gold operations. There were 72 concentrating facilities (with 4 arrastras) and 11 smelters. A gross value of over $67 million in minerals was produced. During that same year, the legislature created an office of the State Mine Inspector to establish and enforce mine safety standards.

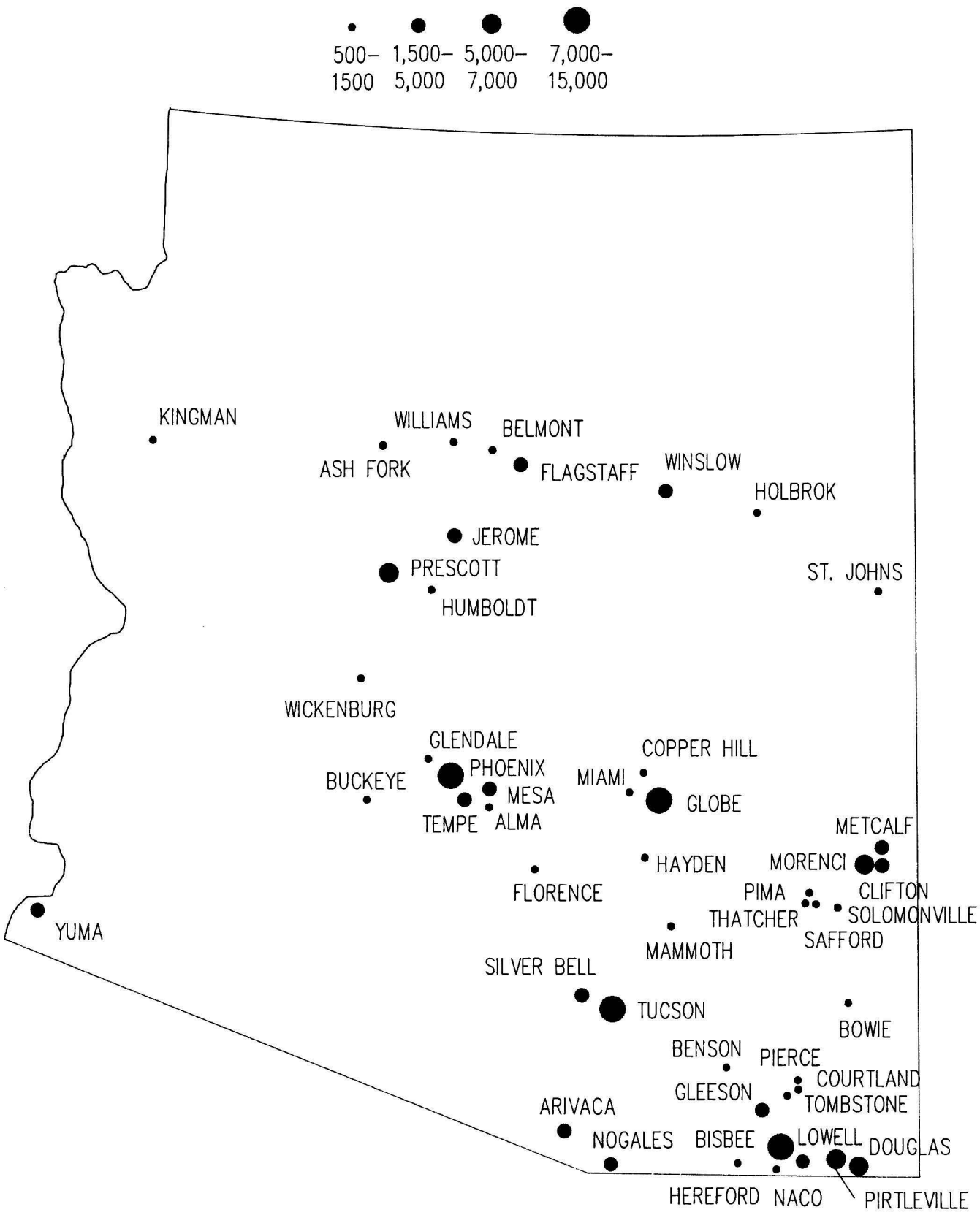
Establishing a new mining code to clarify the rules and regulations governing mine operations and a new mine taxation policy was a priority of the first state legislature. At the first session, the legislature repealed the Bullion Tax and for the next several years the politicians and the mining interests attempted to write an equitable law.

Pressures placed on the mines to produce more during World War I and the strong downturn in production and employment during the depression, created havoc with any set formula of taxation. Property valuations clearly got out of hand, however, when in 1918 the assessed value of all mine property went over $491,000,000, more than 58 percent of the total state valuation. (Meanwhile, the ostrich industry of Maricopa county, comprised of 832 ostriches, received a valuation of $7,335.) The 15th biennial report of the State Tax Commission (December 31, 1940) acknowledged the inherent difficulty in mine taxation when it said that mining property, always the largest and most valuable classification of property "is by far the most difficult on which to place a proper valuation."

A review of population statistics for Arizona's counties shows that, in general and except when a new county was created at the expense of others, from 1864 on, there was relatively steady growth. The most serious setback to this record occurred during the 1930's in the predominantly mining counties of Cochise, Gila, Greenlee, Santa Cruz, and Yavapai. As the price of copper slumped dramatically during the depression, most of Arizona's copper mines closed down or drastically curtailed production. In 1929 over 830 million pounds of copper had been produced, but in 1933 the copper produced had dropped to just over 114 million pounds. The total value of mineral production in the state was the lowest in 38 years.

Because it is generally easier to restart operations at an open-pit mine than it is at an underground mine, the deep, relatively high-grade mines were the only copper producers kept open in 1933. The three that operated were the Copper Queen at Bisbee, the Magma at Superior, and the Little Daisy at Jerome. Unemployment in Arizona was severe and miners looked elsewhere for work. During the 1930's, Cochise county lost over 15% of its population. (Ironically, in 1939, in part because of the tremendous outpouring of copper and other metals, Bisbee became the county seat in place of moribund Tombstone.)

Gila county experienced a 23% decline in population during the depression and Greenlee county suffered the



POPULATION OF SELECTED ARIZONA CITIES

1910

largest reduction by losing over 43% in the 20-year period between 1920 and 1940. During these two decades, Santa Cruz county lost over 25% of its population; Yavapai county lost nearly 7% of its residents during the thirties. The five counties described lost almost 17,000 inhabitants between 1930 and 1940.

By 1940, the aggregate population of Arizona was just shy of a half million. Continuing an unabated trend, Tucson and Phoenix had grown substantially larger than other towns and the number of significant mining communities had begun to decline. Some of the more important mines were located in the vicinity of the towns listed:

Ajo	3,049	Miami	4,722
Bisbee	5,853	Ray	2,454
Clifton	2,668	Superior	2,526
Globe	6,141	Tombstone	822
Jerome	2,295	Wickenburg	995

During the period, 1912-1940, the state legislature continued to recognize the importance of mining by creating first, the Arizona Bureau of Mines in 1915 and second, the Arizona Department of Mineral Resources in 1939. The Bureau of Mines, housed at the University of Arizona, provided the mineral industry valuable research data in geology, mining, and metallurgy. The Department of Mineral Resources assisted the small miner with his mining and marketing problems and acted as a liason in exploration projects and mine financing programs.

During this same period the Arizona Small Mine Operators Association (ASMOA) was founded to provide a unified organization that could represent the independent miner before the legislature and offer a vehicle for the exchange of technical experience. For a while Charles F. Willis, a mining engineer and former publisher of the *Arizona Mining Journal*, was its executive secretary and editor of its monthly journal, the prestigious *Pay Dirt*.

Mine Contributions

During its initial year (1912), the state ranked first among all states in the production of copper, producing 29% of the nation's total output. Its ranking in silver production was sixth place, seventh in gold. Additional metal and mineral production included lead, zinc, tungsten, semiprecious gem stones (particularly chrysoprase), clay, gypsum, lime, quartz, sand & gravel, and stone.

Important mines operated during the early years of statehood, prior to WW II, included:

Bagdad	Magma	Oatman area
Bisbee area	Mammoth area	Octave
Commonwealth	Miami area	Old Dominion
Iron King	Montana	Ray
Inspiration area	Morenci	Silver Bell
Jerome area	New Cornelia	Tombstone

The two principal mines of the Jerome area, those owned by the United Verde and the United Verde Extension companies, will be remembered for their longevity and their richness. The United Verde deposit was mined almost continuously from 1883 until 1974, and the two copper mines combined have contributed over 10% of the gold and silver produced in Arizona. The total estimated value of production exceeds $600,000,000; truly the United Verde was one of the world's greatest copper mines.

The largest single, primary producer of gold in Arizona was the United Eastern. Its total metal value was more than $14 million. When other properties, including the Tom Reed, Goldroad, Moss, and Telluride, are considered, the Oatman area produced over $35 million in gold and a minor amount of silver.

Tombstone deposits comprised the greatest concentration of primary silver in the state. Important individual mines were the Contention, Good Enough, Grand Central, and Toughnut. These properties, combined with others, have been responsible for over $40 million in metal value.

During the First World War, the capacity of Arizona's mines was relied upon heavily to supply the raw resources for armaments and materiel. A secure source of copper, lead, zinc, and other metals was a vital ingredient in the eventual defeat of Germany and her allies. The production of copper alone during the war years, 1914-1918, was over three billion pounds.

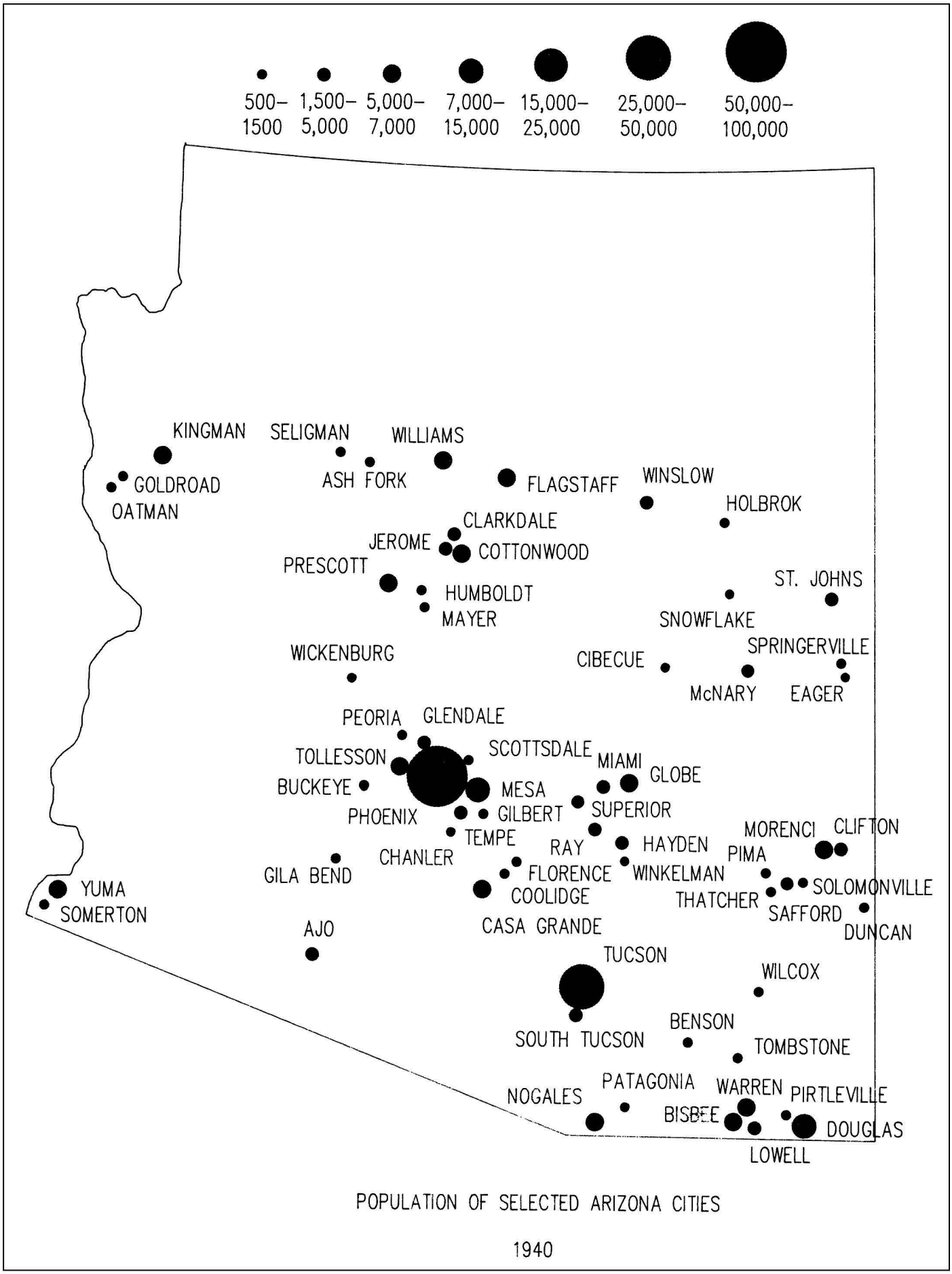
When the major mines closed or curtailed production during the depression, many miners turned to individual operations for their livelihood. Gold-bearing materials were eagerly sought as the federal government, in 1933, raised the price of gold from approximately $20.67 to $25.56. In 1934 the price was increased to $34.95 per ounce. By 1933, the number of mines, many of which were operated by the small miner, producing silicous ores containing gold, and placer gold, reached 489, virtually five times the number in 1929. Placer operations increased from 22 to 179.

As events began to lead the nation into the Second World War, Arizona was again expected to produce a major share of the required mineral materials. The Director of the U.S. Bureau of Mines, R.R. Sayers, stated:

> "Events in 1940 have demonstrated again that in this age of mechanization minerals are indeed the sinews of war. The British have shown that valor can offset, to a remarkable extent, the advantages of superior armament and munitions; but the experience of Finland, Belgium, Greece, and others have revealed the ineffectiveness of heroic men against an avalanche of iron, manganese, aluminum, and petroleum utilized in tanks and airplanes, bullets and bombs."

Arizona was prepared for the challenge. In 1940, it had 1,300 metaliferous mines, alone, and produced 31% of the nation's copper. Its combined production of lead and zinc was the largest on record. The state also extracted antimony, arsenious oxide, asbestos, barite, clay, coal, feldspar, fluorspar, gem minerals, gypsum, lime, manganese, mercury, mica, molybdenum, sand and gravel, quartz, silver, gold, sulphuric acid, tungsten, and vanadium. In terms of gross value, Arizona was the fourteenth largest producer of mineral products in the United States.

Aside from the beneficial conversion of raw minerals to useful products for mankind, the mining companies accelerated their participation in civic and community affairs. The United Verde Copper Company constructed in Clarkdale, the smelter town, a recreational facility similar to the one in Jerome. In addition, however, the new clubhouse contained an auditorium which was often used as an opera house, plus a bowling alley and a theatre. The company provided four swimming pools, several ten-



POPULATION OF SELECTED ARIZONA CITIES

1940

nis courts and baseball fields, and a golf course.

Recently an engineer, raised and educated in the Northeast, expressed his opinion that his wife, who grew up in the comparatively small town of Bisbee, received a superior education. Her fine education can be attributed primarily to the policy of those early mining companies to provide good schools, excellent teachers, churches and other amenities commonly found in metropolitan areas. This environment attracted employees of high caliber to the isolated mining camps.

Hospitals were built and modernized; libraries and recreational facilities were constructed and equipped; and stores were stocked at reasonable prices. In many cases, affordable, comfortable homes were built by the mining companies. The Miami Copper Company built the local YMCA facility and for years provided the funds to maintain it. Baseball leagues were sponsored and invited to use the company ballpark.

As of 1912, when the El Paso and Southwestern Railroad reached Tucson, the city had subscribed $60,000 towards purchase of a right-of-way and station grounds. The parent company, Phelps Dodge, however, returned the money and urged the city to use it in the construction of a YMCA building. This firm and others donated land for post offices, court houses, schools, men and women's organizations, churches, scouting facilities, fire departments, airports and cemetaries.

Numerous cash contributions, amounting to millions of dollars, have been made to a wide variety of organizations. All the major companies, including ASARCO, Inspiration, Magma, Miami, and Phelps Dodge have supported scholarship programs since before World War II. As an example of its commitment to higher education, Phelps Dodge in the early 1940's, funded 100% of the construction of the impressive College of Mines and Metallurgy Building at the University of Arizona.

Mining has assumed a major role in Arizona history. Initially, the Indians and Spainards caught a glimmer of Arizona's potential mineral wealth. Later, the Americans utilized this natural abundance to build a nation.

The early American prospectors began with simple dreams and enthusiasm, and their efforts prompted the creation and settlement of the territory. The influence of mining in the state became pervasive and it has been recognized in such place names as Poston Butte, Ehrenberg, the Grosvenor Hills, Bronco (Brunchow) Creek, the Weaver Mountains, Peeples Valley, Mowry, and Brady Peak. The individuals for whom these localities are named are to be remembered as pioneers not only in mining, but in a broader sense, as visionary developers of Arizona.

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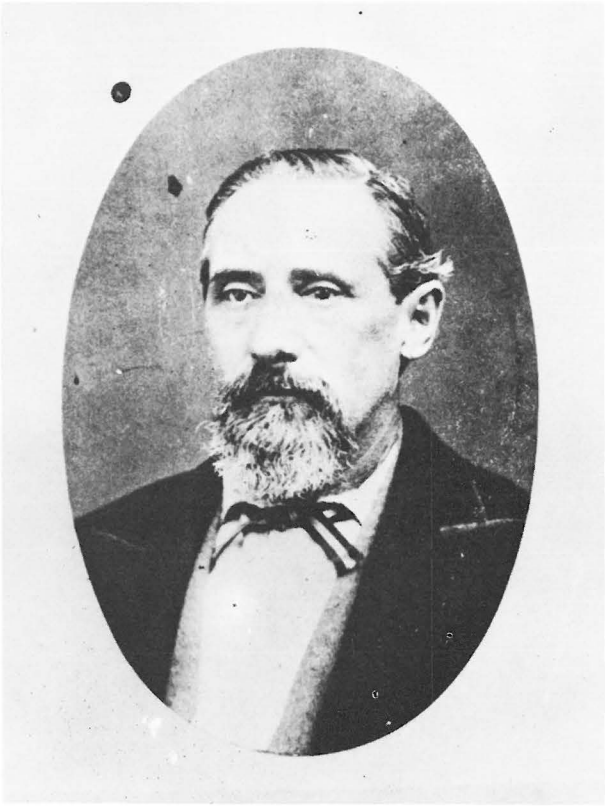

Peter Rainsford Brady

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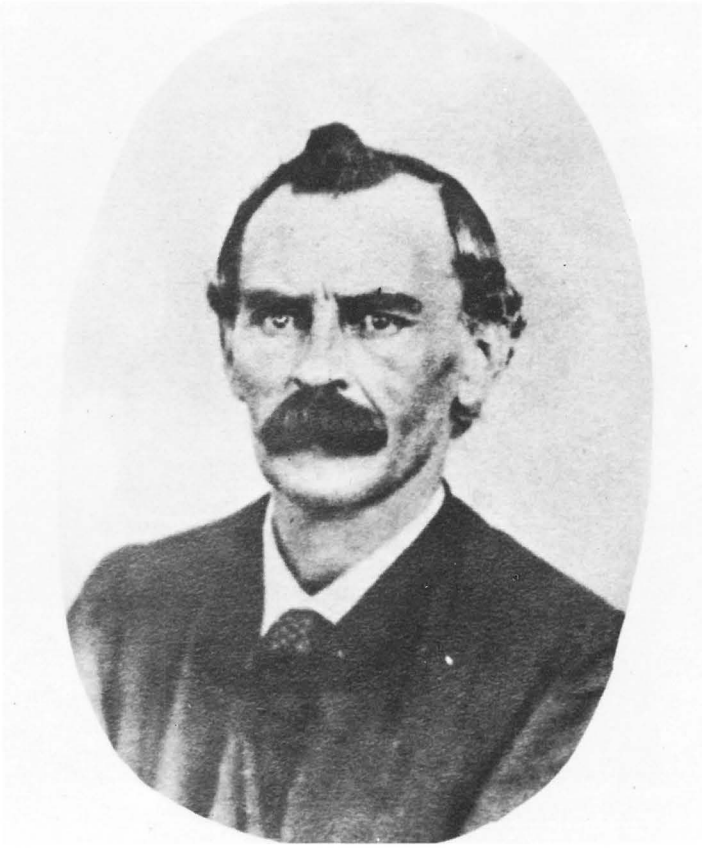
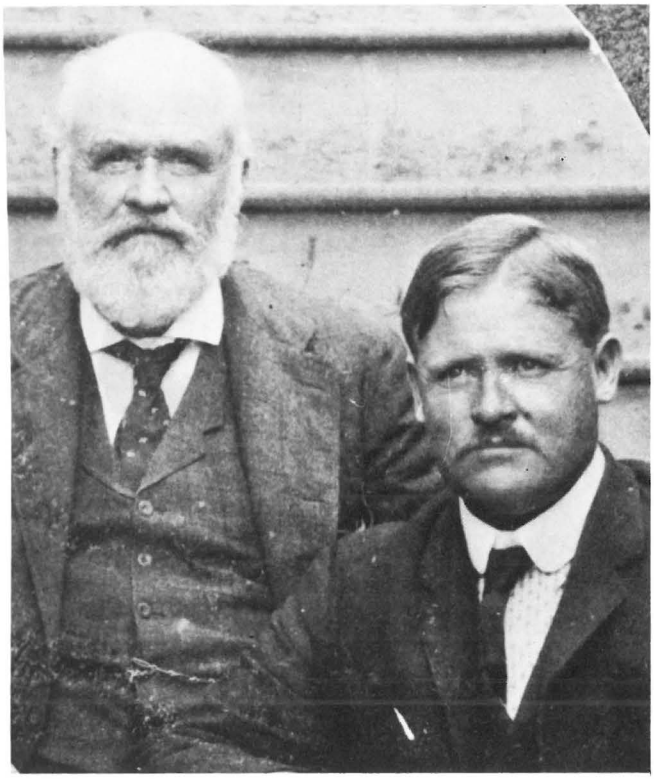
Andrew Belcher Gray



Frederick Augustus Ronstadt, Sr.

Washington Michael Jacobs



Thomas Childs, Sr., and Thomas Childs, Jr.

Copper mines at Ajo in 1914. Present New Cornelia pit occupies position of the dark hills in left center, behind buildings.

All photos courtesy of the Arizona Historical Society/Tucson

Charles Debrille Poston

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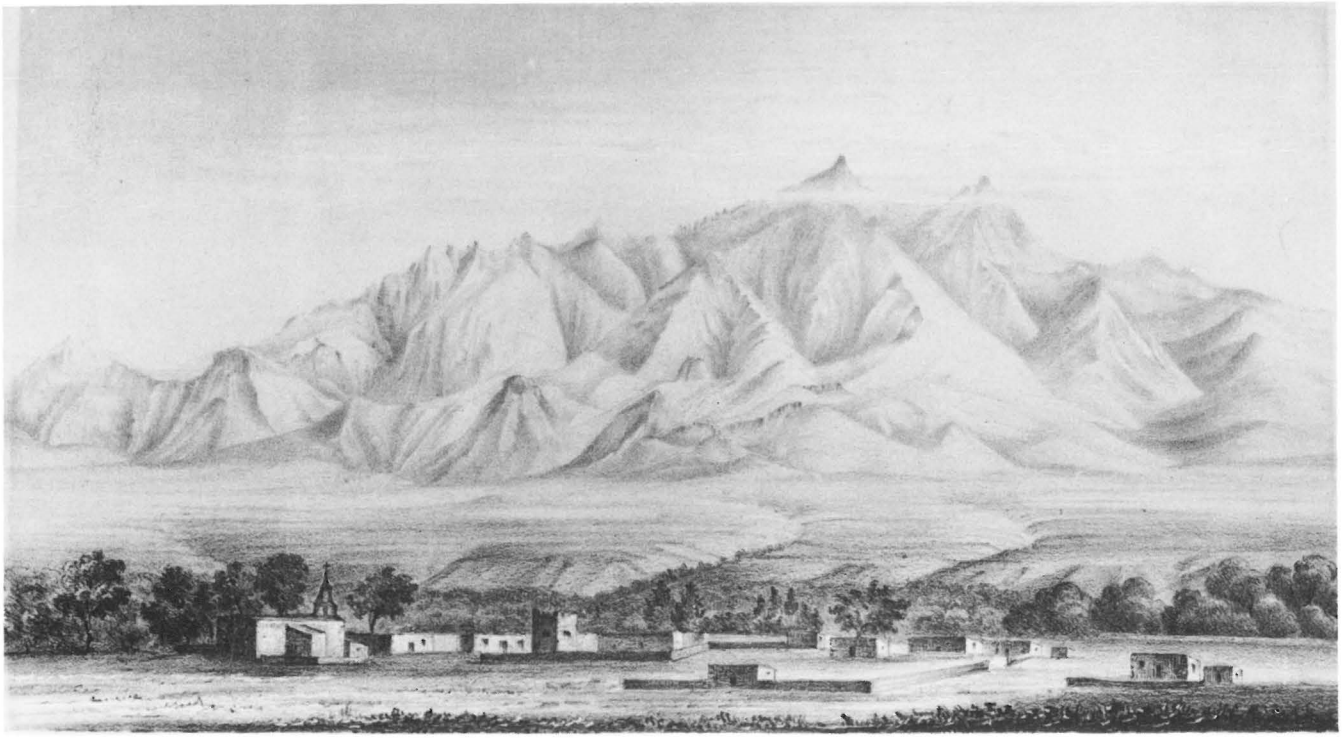
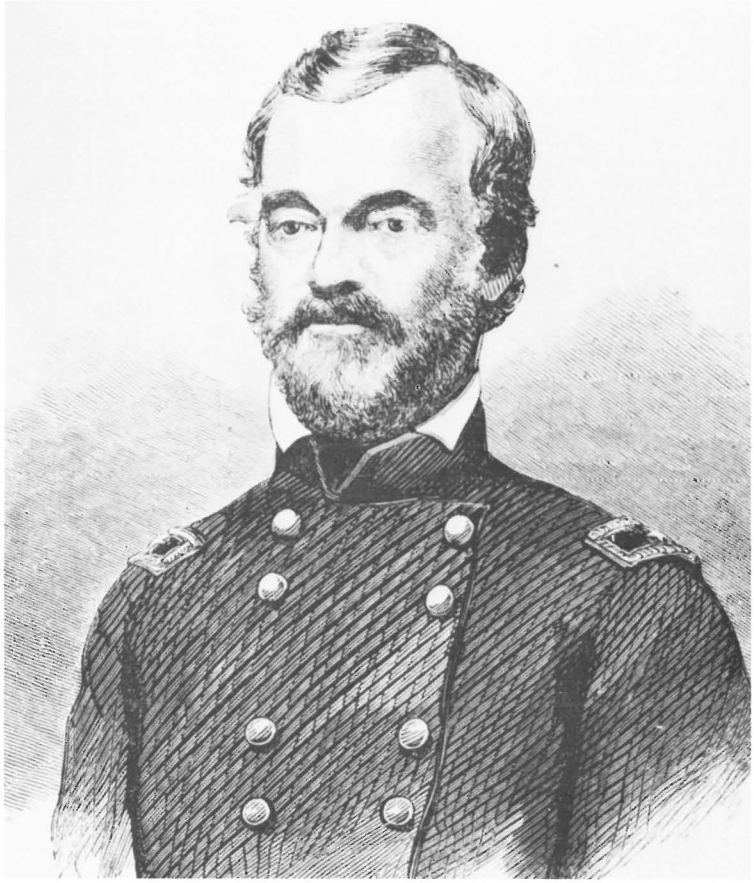
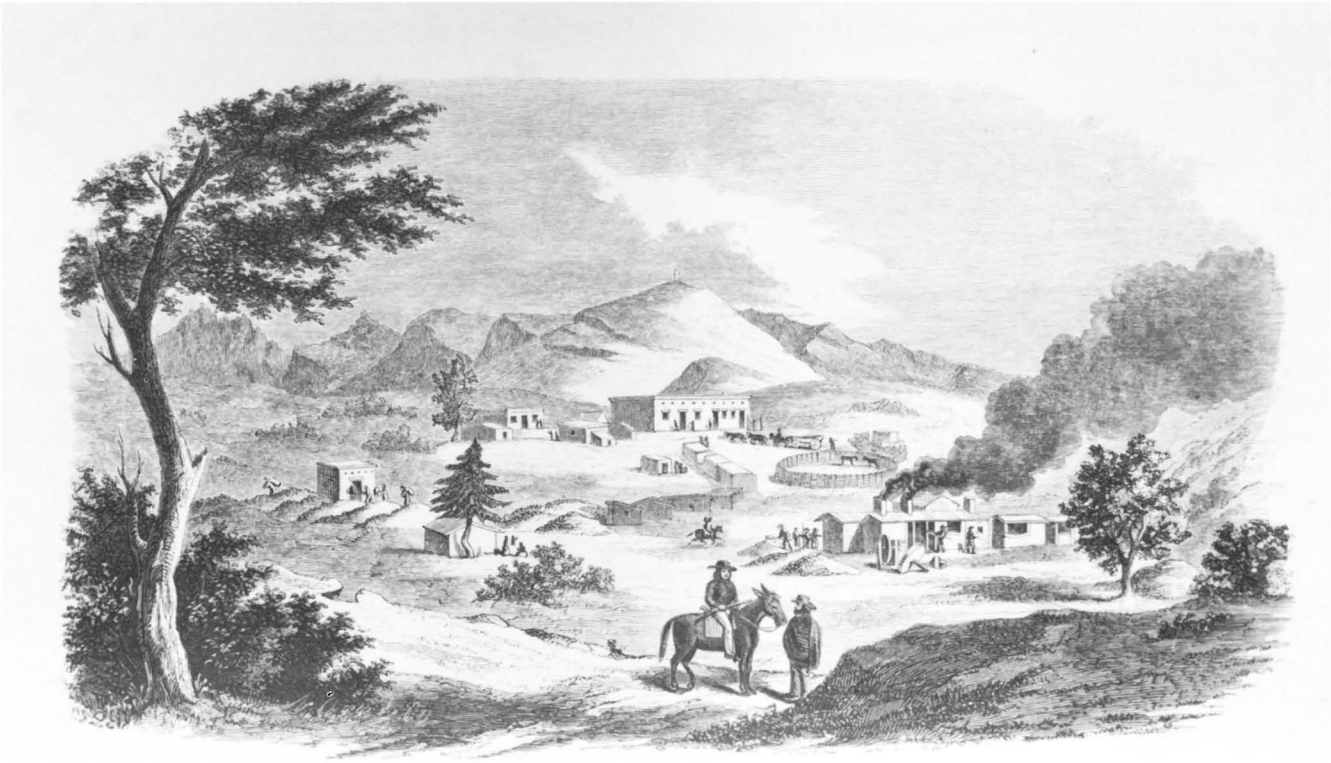


Tubac, headquarters of the Sonora Exploring and Mining Company, with Santa Rita Mountains, c. 1857.

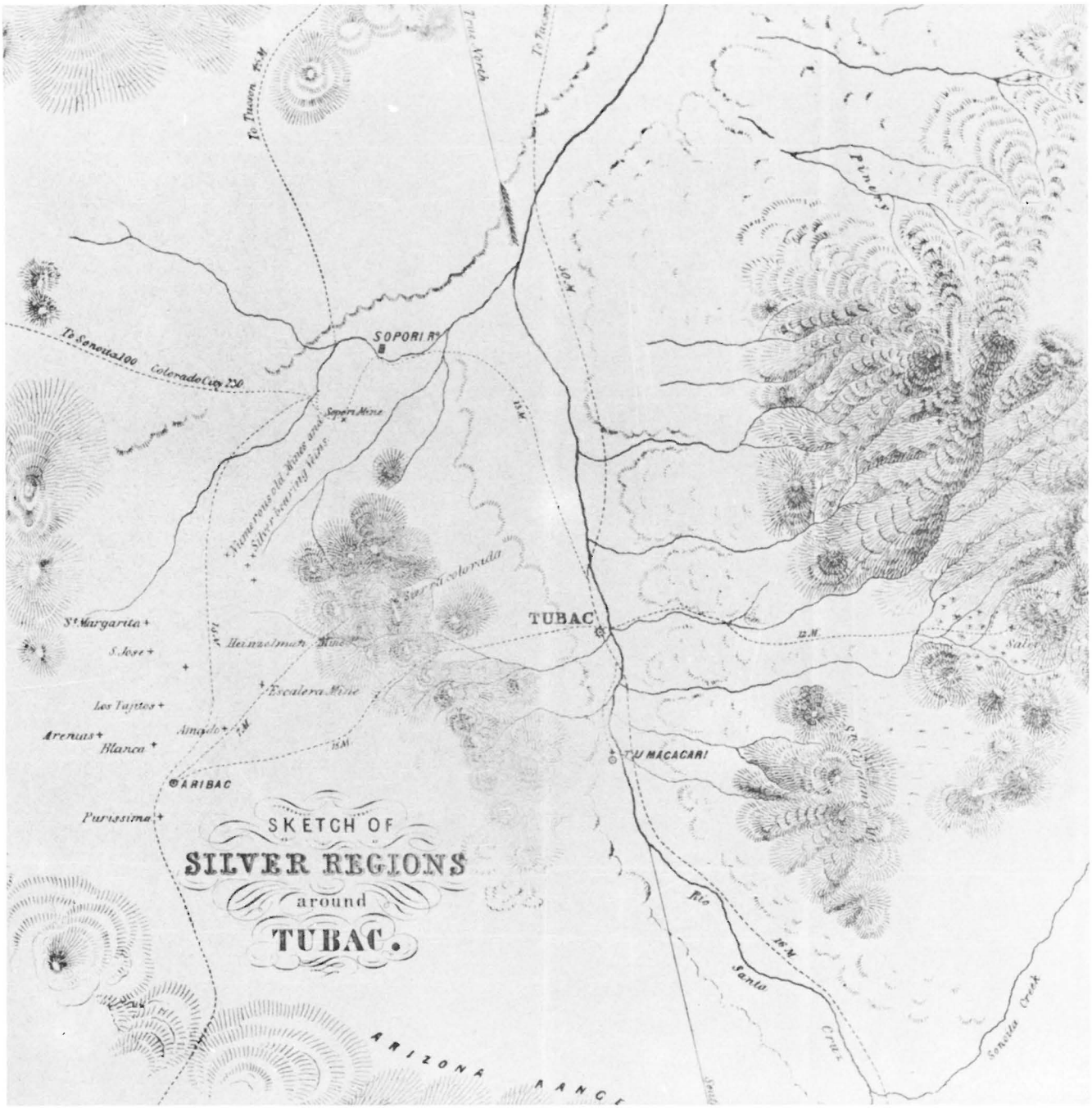


Samuel Peter Heintzelman

All photos Courtesy of Special Collections University of Arizona



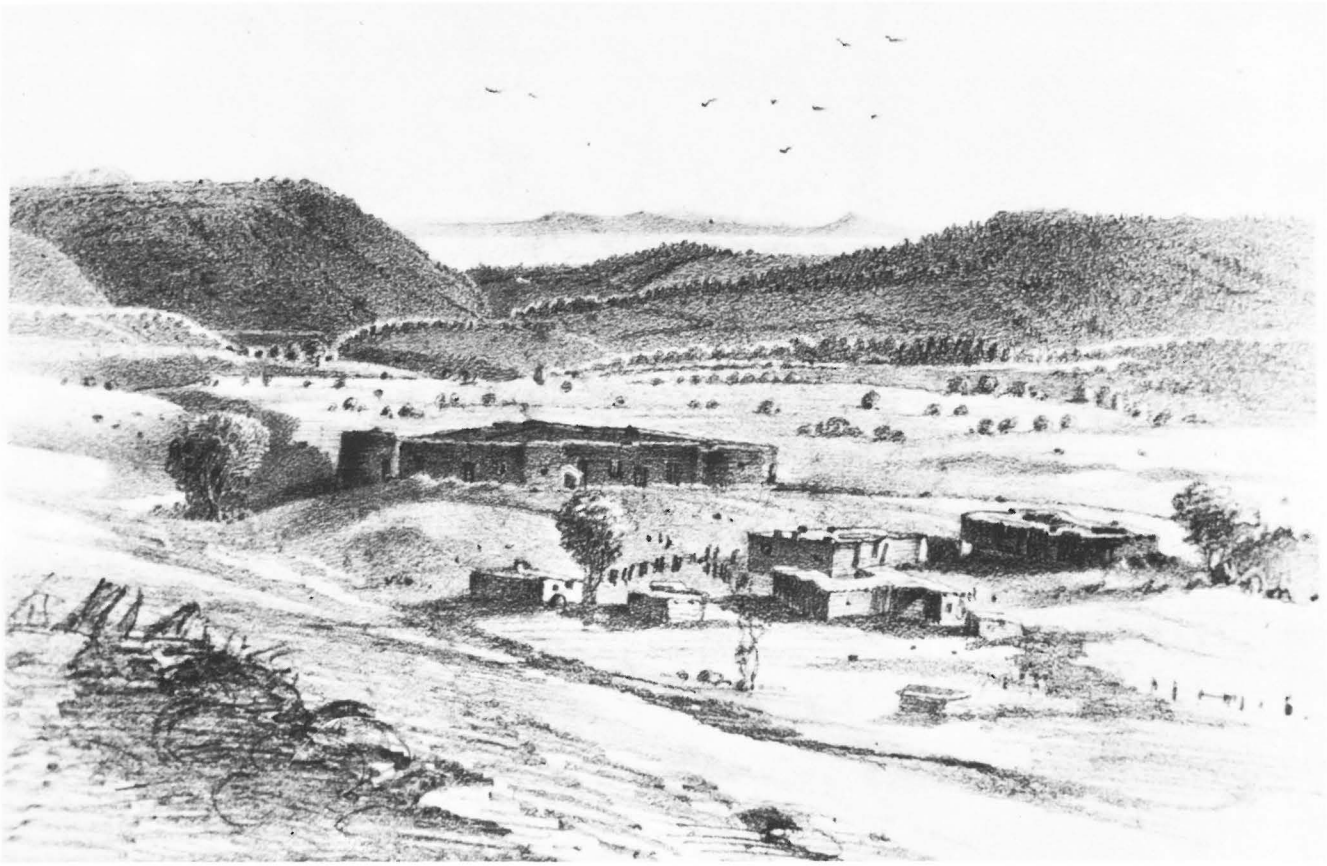
Heintzelman (Cerro Colorado) mine operated by the Sonora Exploring and Mining Company, c. 1859.



Map of the Tubac region, showing some mines held by the Sonora Exploring and Mining Company, c. 1859. Prepared by Herman Ehrenberg. *Courtesy of Special Collections, University of Arizona.*

Horace Chipman Grosvenor

Grosvenor's Tombstone



Hacienda de Santa Rita, headquarters of the Santa Rita Company, c. 1859

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Larcena Pennington (Page) Scott

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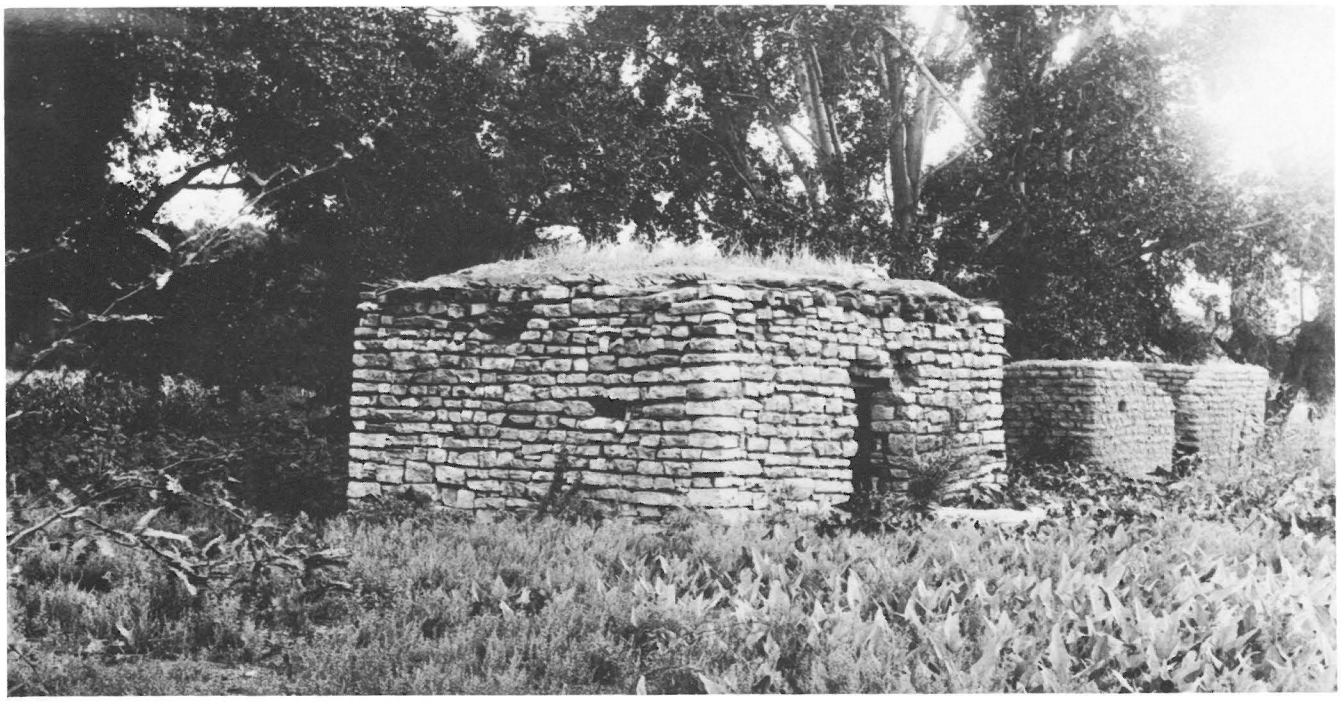
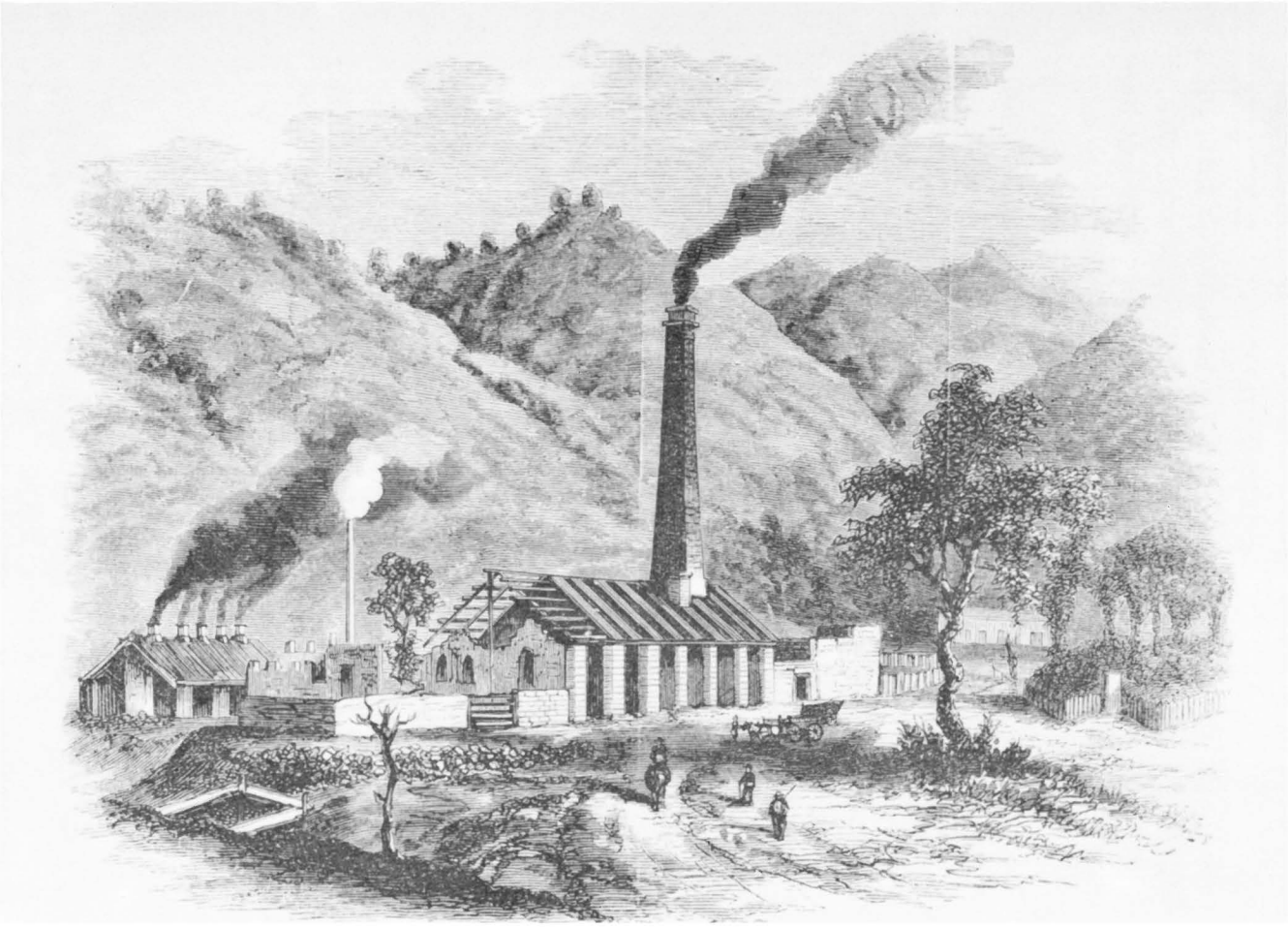


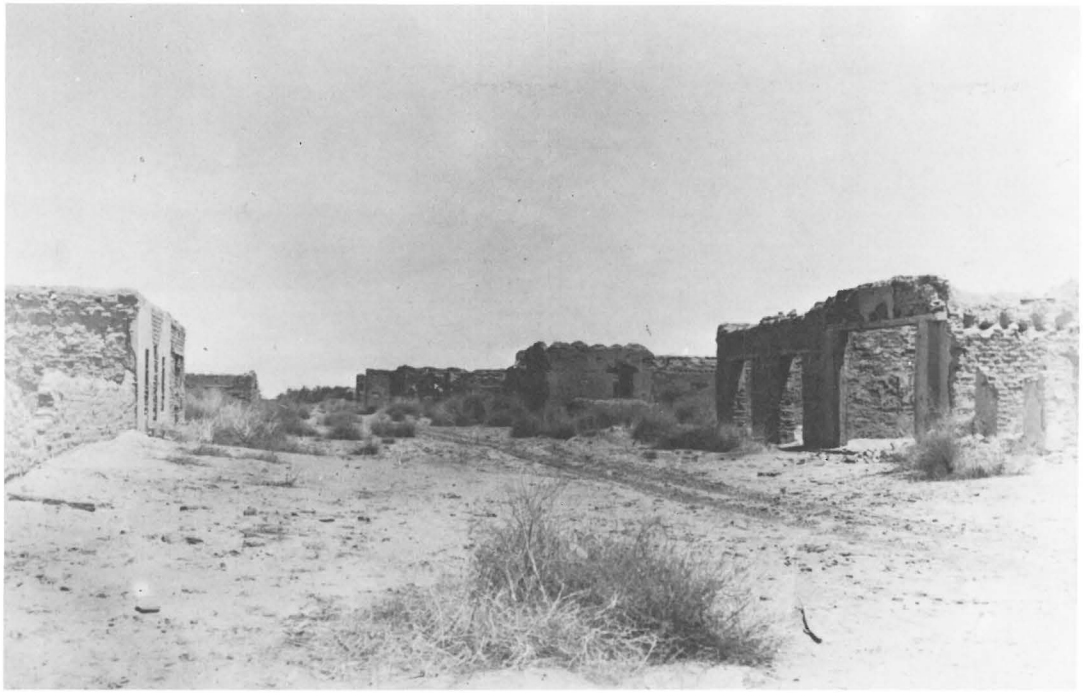
Elias Pennington home near international border. Constructed of stone with portholes for weapons, c. 1855.

Richard Stoddert Ewell. *Courtesy of the Arizona Historical Society/Tucson.*

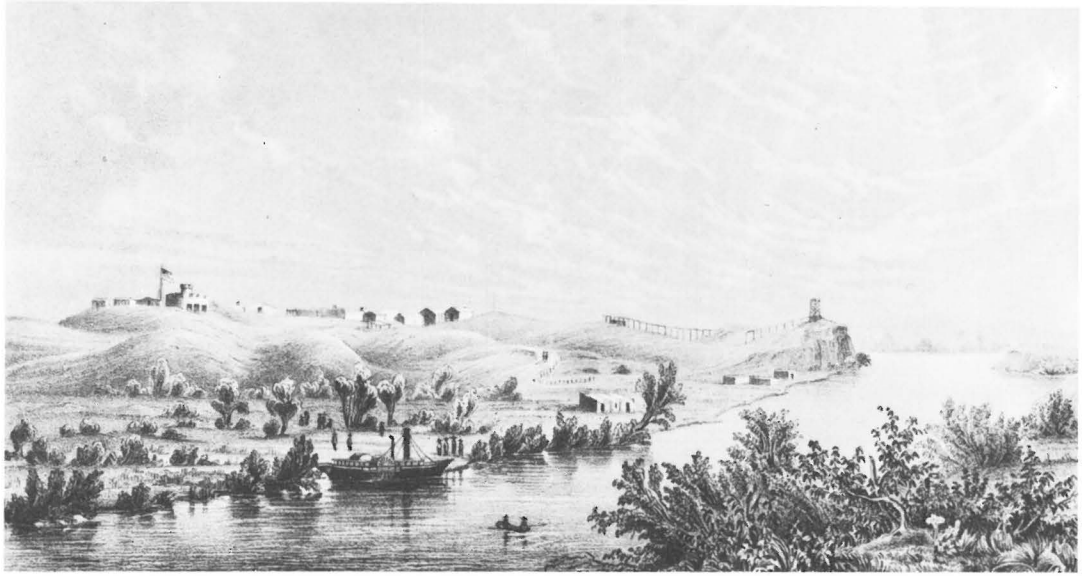
Sylvester Mowry. *Courtesy of Special Collections, University of Arizona.*



Offices and smelter at the Mowry mine, c. 1861. *Courtesy of Special Collections, University of Arizona.*



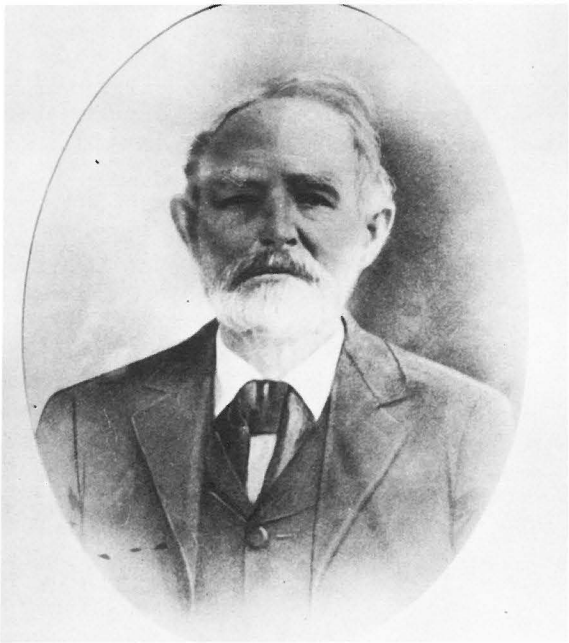
La Paz, c. 1870. *Courtesy of the Arizona Historical Society/Tucson.*



Fort Yuma, across the Colorado River from Colorado City, c. 1857. *Courtesy of Special Collections, University of Arizona.*

Pauline Weaver. *Courtesy of the Arizona Historical Society/Tucson.*

Prescott, looking west down Gurley Street with Thumb Butte in background, 1884.



Henry Wickenburg

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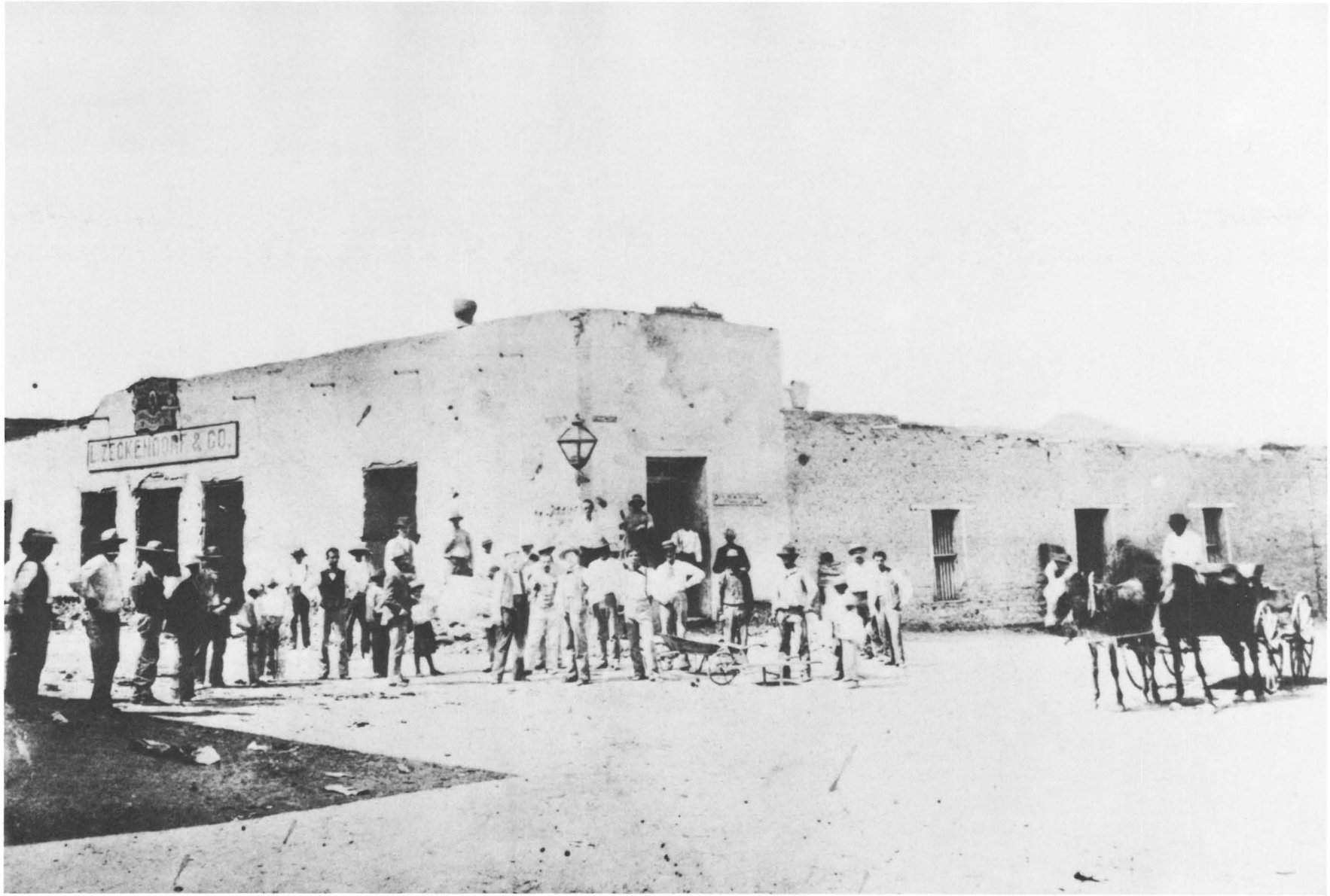
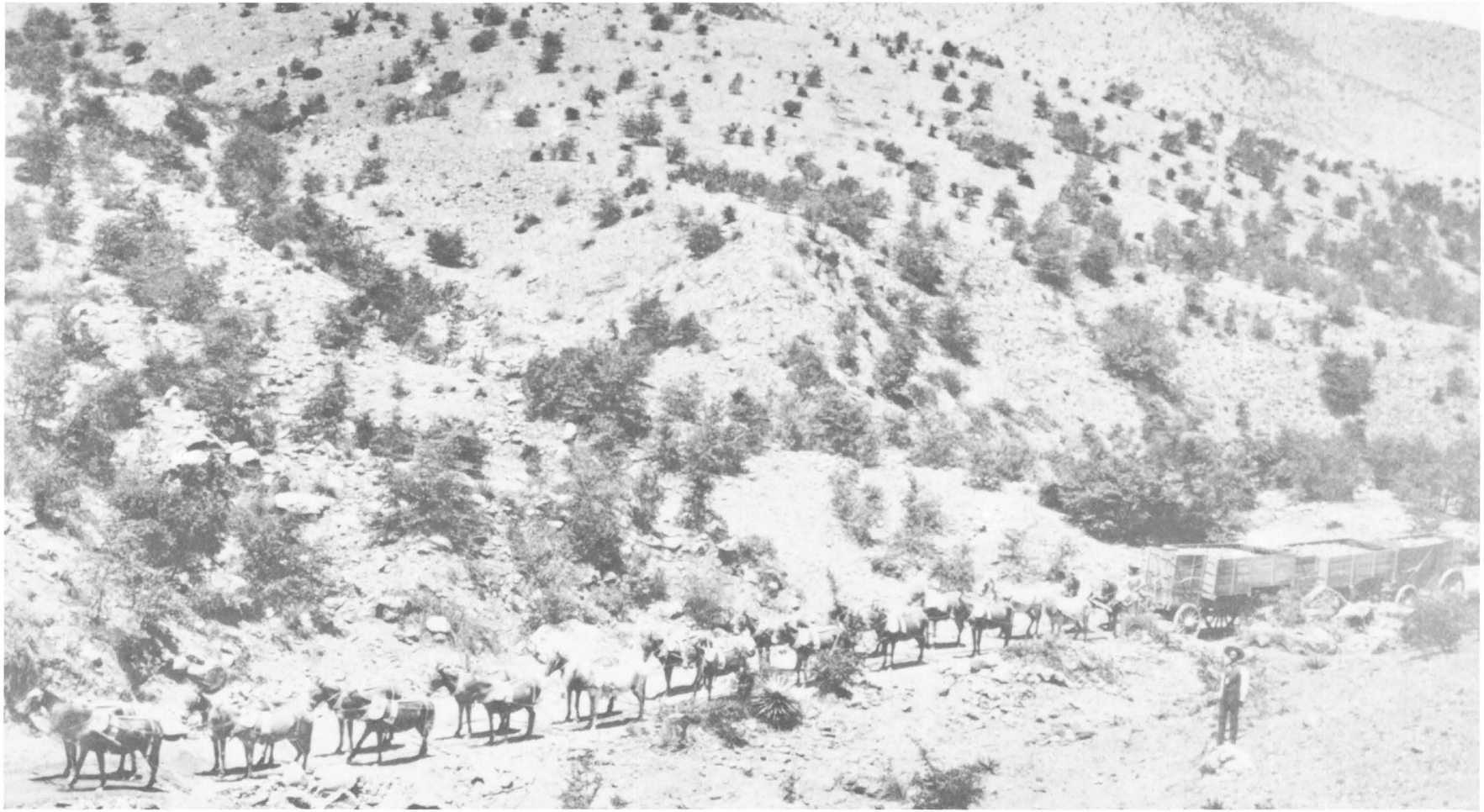


L. Zeckendorf general merchandise store, corner of Main and Pennington, Tucson, c. 1880's. *Courtesy of the Arizona Historical Society/Tucson.*

Martin blacksmith shop at Pinal City, c. 1882. *Courtesy of the Arizona Historical Society/Tucson.*

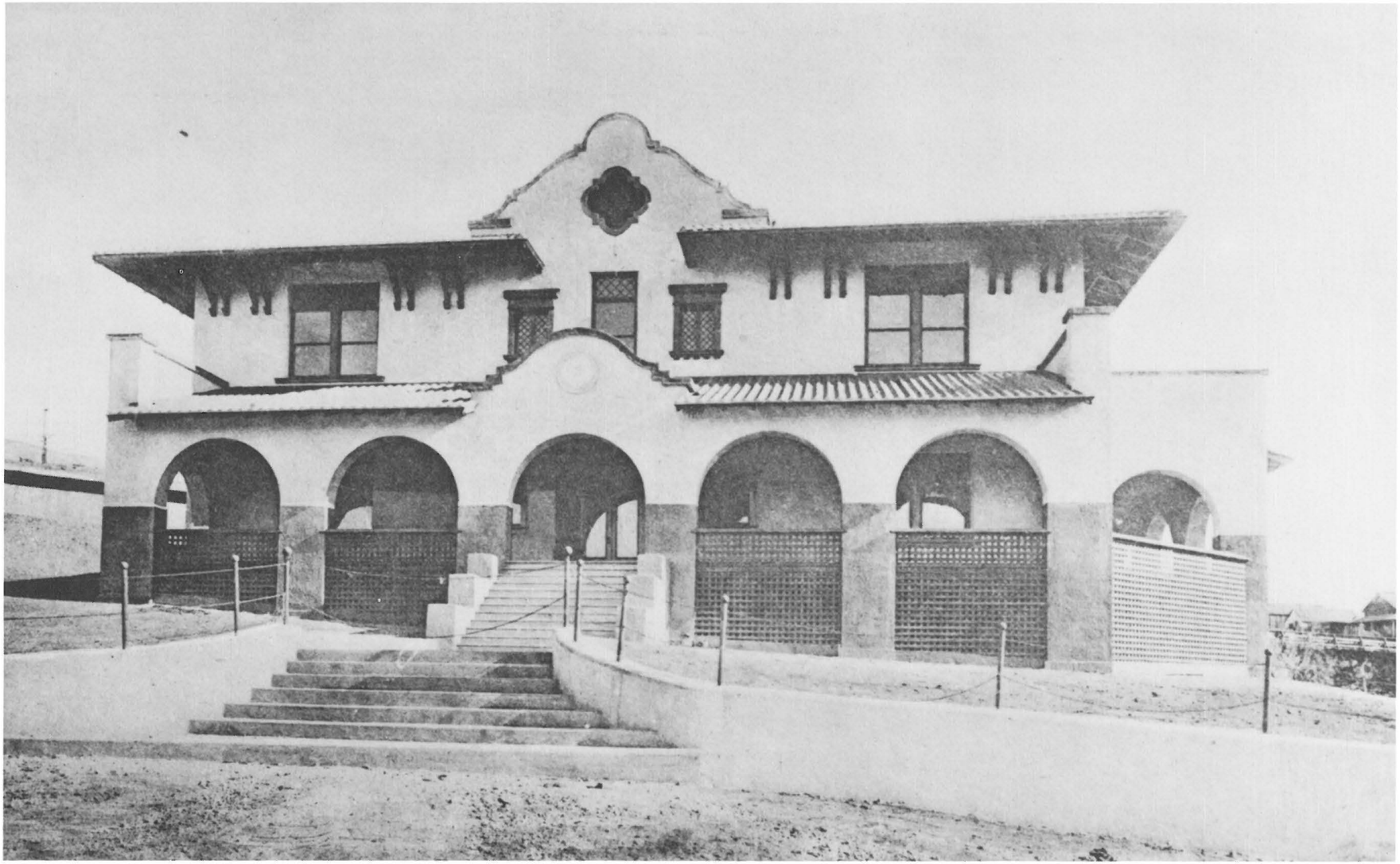


J.E. Durkee freight line hauling coke in Bisbee Canyon. *Courtesy of the Arizona Historical Society/Tucson.*

Surveyors at Salero mine, 1891. *Courtesy of the Arizona Historical Society/Tucson.*

Brewery Gulch, Bisbee, with engineering and assay office in background, c. 1904. *Courtesy of the Arizona Historical Society/Tucson.*

First schoolhouse in Bisbee, donated by the Copper Queen Mining Company, c. 1884. *Courtesy of the Arizona Historical Society/Tucson.*



Old Dominion library and clubhouse, Globe, 1906. *Courtesy of the Arizona Historical Society/Tucson.*

Pie eating contestants in Ajo, July 4, 1918. *Courtesy of the Arizona Historical Society/Tucson.*

Hospital constructed by the New Cornelia Copper Company in Ajo, c. 1914. *Courtesy of the Arizona Historical Society/Tucson.*

Herring Hall at the University of Arizona. Originally the first gymnasium, funded principally by the Phelps Dodge Corporation in 1903. *Photo by author.*

HISTORY OF MINING IN ARIZONA

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PUBLISHED BY

MINING CLUB OF THE SOUTHWEST FOUNDATION
TUCSON, ARIZONA

CO-PUBLISHED BY:

AMERICAN INSTITUTE OF MINING ENGINEERS TUCSON SECTION

SOUTHWESTERN MINERALS EXPLORATION ASSOCIATION TUCSON, ARIZONA

TUCSON, ARIZONA