

NEVADA BUREAU OF MINES

Vernon E. Scheid, Director

REPORT 7

OUTLINE OF NEVADA MINING HISTORY

PART 1

AN OUTLINE OF THE MINING HISTORY OF THE
STATE OF NEVADA (1855-1923)

By FRANCIS CHURCH LINCOLN

PART 2

AN OUTLINE OF THE MINING HISTORY
OF NEVADA, 1924-1964

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MACKAY SCHOOL OF MINES

UNIVERSITY OF NEVADA

RENO, NEVADA

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STATE OF NEVADA

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NEVADA BUREAU OF MINES

NEVADA MINING ANALYTICAL LABORATORY

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PREFACE

Because the Nevada Centennial has focused attention on the past 100 years and the immeasurable contribution of Nevada's mines and miners, it appeared that a general outline of this contribution and its development would be useful to all persons interested in Nevada. The history of mining in Nevada has not been a steady development that can be simply and readily explained to the lay reader. The three-hundred-plus mining districts in Nevada each have their own history. The development of each district varied with the character of the ore, the geographic setting, the competence of the developers, the general economic conditions of the nation, the state of the world metal markets, the availability of capital, and a score or more of other less evident factors.

An item that must be considered in preparing a history of mining is the interests of the prospective reader. The technical reader would wish to pursue details of the geology, mining methods, and metallurgical techniques. The layman, in contrast, would probably be more interested in general trends in development. At present there are available to the technical researcher volumes of information describing the development of various individual districts. This information has been published in State and Federal government publications, and in many technical journals. Unfortunately there is little information readily available to the general public, unfamiliar with the scientific literature. For this reason it was decided that this mining history should be written so as to serve the layman more than the technically trained.

Francis Church Lincoln, Director of the Mackay School of Mines from 1914 to 1924, wrote at length concerning Nevada mining. One of his articles, "An Outline of the Mining History of the State of Nevada", accurately describes the history of Nevada mining from its inception to 1924, therefore it was decided to reproduce it in its entirety for inclusion in this publication. Chapter 1 is a reprint of that article, and the reader is cautioned that the use of the present tense in that chapter refers to the year 1923 and not to 1964. Chapter 2 continues the history in outline form from the date of Lincoln's publication, 1924, up to the present.

Many references were used by the author in preparing part 2 of this history. Some of the references used can be recalled, while others, read during past years, have been forgotten even though they contributed much to the author's knowledge of Nevada's mining history. Of marked value were the Minerals Yearbook volumes published by the U. S. Bureau of Mines, and the Mineral Resources volumes published by the U. S. Geological Survey.

Various listings and illustrations have been included at the back of this report to assist the general reader in following the growth and development of Nevada's mineral industry. Table 1 is a year by year listing of the value of the State's mineral production. The values for years prior to 1903 are "best estimates", as there was no formal procedure during those years for recording production values. Figure 1 is a chart of production values, and illustrates the ups and downs of the industry. Plate 1 is a map showing the location of Nevada metal mining districts, while plate 2 shows the locations of major deposits of industrial minerals.

Reno, Nevada
October, 1964

Robert C. Horton

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PART 1

AN OUTLINE OF THE MINING HISTORY OF THE STATE OF NEVADA (1855-1923)¹

By FRANCIS CHURCH LINCOLN²

Mining has been the paramount industry of Nevada. Her population has ebbed and flowed in sympathy with her bullion production. Railroads have been built to serve Nevada mines, and mills and smelters erected to treat their products. Vast stores of treasure have been produced from mining districts scattered over the entire state. Every county has had its big mines, and some counties have been named after mining camps, while others have been organized or had their boundaries altered to accommodate mining districts. The mining industry of Nevada has not only held this dominant position in the history of the state, but has also frequently proved of great national moment.

Mining operations in Nevada were conducted on a small scale by the Indians and by the Franciscan Fathers prior to the advent of the argonauts. With the coming of the pioneers, important mining activities were inaugurated; and the mining industry of Nevada has since passed through two great cycles. At the opening of each cycle, there was a period during which many new mines were discovered and rushes to the discoveries took place. This was succeeded, in each case, by a period in which few new mines were found although mining prosperity, measured by production, continued and increased. Then followed a period of decline during which production fell, ending in a period of depression with the mining industry dormant. These cycles and periods with their approximate dates are shown in the following table:

<u>CYCLE</u>	<u>PERIOD</u>	<u>DATE</u>
Early	Discovery	1849-1868
	Prosperity	1869-1880
	Decline	1881-1891
	Depression	1892-1899
Late	Discovery	1900-1907
	Prosperity	1908-1918
	Decline	1919

The first mining operations within the area which now constitutes Nevada, were those conducted by the Indians prior to the advent of the white man. An interesting example of this aboriginal mining occurs in the Crescent District in Clark County. Pre-historic workings with stone hammers scattered about them were found at the Wood turquoise mine and served as a guide to modern exploration. Indian relics have also been found in the salt mines of southern Nevada.

The first white man to set foot on Nevada soil was probably Francisco Garces, of the order of St. Francis, who appears to have entered southern Nevada in February, 1776. The

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Franciscan monks later established a winding route known as the "old Spanish trail" from Los Angeles, California, through Las Vegas, Nevada, to Santa Fe, New Mexico. With the assistance of their Mexican converts, the Franciscan Fathers worked gold placer mines, silver lode mines, and turquoise deposits in what is now Clark County, Nevada; and left interesting relics in some of the mines.

Nevada was made a part of the United States by the treaty with Mexico signed February 2, 1848. On March 18, 1849, the Mormon "State of Deseret" was organized to include Nevada and all the other ceded Mexican territory with the exception of California; and soon afterward a Mormon company was formed to visit the recently discovered placer gold mines of California. H. S. Beatie was secretary of this company, and he with several others remained in the Carson Valley, built the first house in Nevada on the present site of Genoa, and opened a trading post. Placer gold was discovered by Abner Blackburn, a member of Beatie's party, at the mouth of Gold Canyon near the present site of Dayton in July, 1849, on his return from a trip to the California gold mines. The discovery was not rich enough to occasion excitement, but on his next trip to California, Blackburn told the Mormon company about it. Some of these Mormons together with other immigrants on their way to California worked the gravels of Gold Canyon, and the little placer mining camp of Johnstown grew up there, but it was many years before the source of this gold in the Comstock Lode was discovered. The Mormon territory of Deseret was never recognized by the United States, and on September 9th, 1850, the Territory of Utah, including Nevada, was established. At about this same time, the Mormons began to make extensive use of the old Spanish trail through Las Vegas, Nevada, into southern California; and in 1855, a party of Mormons returning over this trail from San Bernardino discovered the Potosi Mine in what is now the Yellow Pine District of Clark County. Thus the first of the modern placer mines and the first of the modern lode mines in Nevada were discovered by the Mormons. Slade was appointed superintendent of the Potosi Mine by the church authorities, and an attempt was made to smelt the lead ore at the mine. When this proved unsuccessful, the ore was carried to the Las Vegas way station where Dudd Leavitt and Issac Grundy built a furnace in a fireplace. Crude smelting operations were successfully carried on in this improvised furnace, and five tons of lead were produced, thus inaugurating lead smelting in Nevada.

The placer miners of Johnstown worked slowly up Gold Canyon and the neighboring Six-Mile Canyon and reached the Comstock Lode in 1859. In January 29th of that year, James Fennimore, familiarly known as "Old Virginia" and who afterwards named Virginia City, together with several others who had worked up Gold Canyon, located the Gold Hill croppings of the Comstock Lode as placer ground and began to work them; while on June 10, 1859, Peter O'Riley and Patrick McLaughlin, who had worked up Six-Mile Canyon dug into the croppings of the Ophir bonanza and located it as a lode, giving H. T. P. Comstock for whom the lode was named a place on their original location notice. Outside interest was not aroused until Melville Atwood of Grass Valley, California, assayed the heavy black mineral which was annoying the Gold Hill and Ophir miners by clogging their sluices, and proved it to be silver sulphide. The first silver mine in the United States had been discovered, and when the news spread to California it aroused unbounded excitement and precipitated the great Washoe rush. Hundreds crossed the mountains late in 1859, to be followed by thousands the next year. Some 20,000 people went to Virginia City on the Comstock Lode and 10,000 of them remained. Nor did all who left return to their homes, for many sought for new deposits in other parts of Nevada or joined in rushes to new camps. The population thus brought into the region made it possible for

Abraham Lincoln to admit Nevada as a state in 1864; and the enormous bullion production of the Comstock Lode helped materially to bring the Civil War to a successful conclusion. The Nevada or square set system of mine timbering was invented by Philip Deidesheimer at the Ophir mine on the Comstock Lode in 1860. The Mexican patio process was first employed for the treatment of the Comstock ores, from which the Washoe pan amalgamation was evolved, the first mill to use this process being erected by A. B. Paul in 1860. Eighty mills were in operation by 1862, and the bullion production of that year reached \$7,000,000. It remained above that figure until 1880, the maximum annual production of \$36,301,537 coming in 1877. The total recorded production of the Comstock District from 1859 to 1921 is \$386,346,931.

The Esmeralda District, which gave its name to Esmeralda County, but is now in Mineral County, was discovered on August 25, 1860, by Hicks, Corey, and Braley. Fortune hunters from the outside began to arrive late in September and continued to come all winter. The town of Aurora was founded and its population rose to 5,000 in 1862. About \$30,000,000 in bullion was produced by this district up to 1869; and \$1,974,290 was produced from 1910 to 1920. It was also in the year 1860 that ore was discovered in the northern part of the Humboldt Range and the Humboldt District organized. The Star and Buena Vista Districts in the same region were organized the following year, and in 1862 the Humboldt rush took place.

The census of 1860 gave Nevada a population of 6,587; and it was estimated that in 1861 the population had increased to about 17,000. On March 2, 1861, the Territory of Nevada was established; and on March 22, James W. Nye was commissioned Governor of Nevada. The first legislature passed an act approved November 25, 1861, dividing Nevada into the nine following counties: Churchill, Douglas, Esmeralda, Humboldt, Lake (changed to Roop, December 5, 1862, and attached to Washoe, February 16, 1864), Lyon, Ormsby, Storey and Washoe. Telegraphic connection was established between Virginia City and Placerville in 1869. During 1861, Virginia City was connected with Salt Lake City by telegraph and good toll roads were constructed over the Placerville route to California. The first stock exchange on the Pacific coast was organized in San Francisco on September 1, 1862, under the name of the San Francisco Stock and Exchange Board, and dealt largely in Nevada stocks.

REESE RIVER DISTRICT

The Reese River District was discovered by William Talcott on May 2, 1862, and was organized on May 10. A rush ensued. Austin was built, and Lander County was formed from parts of Humboldt and Churchill Counties on December 19, 1862. Austin was made the county seat the following year. It was found that the ores of the Reese River District could not be treated by the Washoe Process of pan amalgamation used on the Comstock, and the Reese River Process was evolved by which ores were subjected to a chloridizing roast before being treated by pan amalgamation. The early production amounted to some \$50,000,000, but from 1902 to 1920 the camp only produced \$262,957. Prospectors working southward from the Reese River District discovered many other precious metal districts. P. A. Haven discovered silver ore in the Shoshone Range in 1863, and the Union District was organized and the town of Lone built that same year. The district was supposed to contain many rich mines, and upon petition of the miners, Nye County, named after Governor Nye, was cut off from Esmeralda County on February 16, 1864, and Lone made the county seat. The district failed to meet the high expectations of its

founders, and in 1867 the county seat was moved to the more prosperous camp of Belmont. The Belmont District was discovered by C. L. Straight and others in 1865. The production of this camp up to 1885 amounted to more than \$15,000,000. The county seat remained at Belmont until the Tonopah boom. The Cortez District was discovered in 1863 by prospectors from Austin, and produced about \$15,000,000 in the early days. The Silver Peak and Red Mountain District was also discovered in 1863. It has produced about \$8,500,000. The Cherry Creek District was organized in 1863, although it did not become of importance until the discovery of the Cherry Creek mines in 1872. The district produced between \$6,000,000 and \$22,000,000 in the early days.

Nevada was admitted as a state on October 31, 1864. Hon. William M. Stewart, Senator from Nevada, drafted the first federal mining legislation known as the Act of 1866; and it was mainly through his efforts that this act which recognized the rules and customs of miners and provided a means of securing a legal title to mining land became the law instead of a proposed measure which would have sold all mineral lands to pay off the national debt created by the Civil War.

WHITE PINE DISTRICT

The White Pine District was organized in 1865, but did not come into prominence till 1867. On September 14 of that year, Albert Leathers, guided by an Indian, located the Hidden Treasure Mine on Treasure Hill. The ores of Treasure Hill were extremely rich in silver, and the White Pine rush which reached its height the following spring was the greatest since the Washoe rush to the Comstock. By 1869, Hamilton, the principal town had a population of 10,000; and there was 25,000 people within the boundaries of the district. White Pine County, named from the mining district, was established on April 1, 1869, with Hamilton as the county seat. The Treasure Hill mines produced \$22,000,000 up to 1887.

Ore was discovered in the Pahranaagat District about 1864 and the district was organized in 1865. W. H. Raymond bought a large amount of mining land there for eastern capitalists, and the outlook was so promising that it was decided to form a new county. Lincoln County was separated from Nye County on February 26, 1866, and the county seat was located at Crystal Springs in the Pahranaagat District, but moved to Hiko in the same district the following year. Just as the Union District, for the convenience of which Nye County was formed, failed to make good; so the Pahranaagat District, for which Lincoln County was taken from Nye County, did not become an important mining center; and the county seat moved to Pioche in 1871 as a result of the boom in that district. The Pioche District was shown to William Hamblin, a Mormon missionary to the Indians, by Pahute Indians in 1863, and was organized as the Meadow Valley District in 1864. Little was done until 1868, however, when F. L. A. Pioche, after whom the town of Pioche is named, sent C. E. Haffman to purchase claims in the district which were afterwards conveyed to the Meadow Valley Mining Company. In 1869, W. H. Raymond and J. H. Ely, who had been unsuccessfully operating a 5-stamp mill in the Pahranaagat District, purchased a mine at Pioche and brought up their mill from Hiko to Bullionville, near Pioche to treat the ores. This mill proved an immediate success, the Raymond and Ely Mining Company became the rival of the Meadow Valley Mining Company, and the Pioche District boomed. The boom reached its height in 1872 when the estimated population of Pioche was 6,000; and more than \$15,000,000 in bullion was produced by the camp up to 1875. The district experienced a revival in 1905, and from 1905 to 1921 produced metals to the value of \$9,739,323.

TRINITY DISTRICT

The Trinity District in Humboldt County, discovered by George Lovelock in 1859, was organized in 1863 and a smelter was built at Oreana to treat its ores in 1867. This was the first smelting plant to be erected in Nevada, if we except the little Mormon furnace at Las Vegas; and it vies with the smelter at Argenta, Montana, for the honor of being the first, silver-lead smelter in the United States; - Argenta having produced lead for local consumption a little earlier, but Oreana being the first to send lead to the outside market. Up to 1875, its richest mine, the Montezuma, had produced 3,150 tons of lead and \$445,000 in silver. The Eureka District was discovered on September 19, 1864, by a party of prospectors from Austin, but did not become of importance till 1869 when Col. G. C. Robbins demonstrated that its silver-lead ores could be successfully smelted. The Arentz siphon tap was invented in Eureka by Albert Arentz in 1870. The town of Eureka was founded in 1869, and on March 1, 1873, Eureka County was formed from part of Lander County with Eureka as the county seat. The Eureka District was the first great silver-lead district in the United States. From 1869 to 1882, it produced approximately \$40,000,000 in silver, \$20,000,000 in gold, and 225,000 tons of lead. If the lead be valued at \$90 per ton, the production of all three metals for that period was about \$80,000,000. Two other lead-silver districts which conducted smelting operations of importance in the early days were Battle Mountain in Lander County and Tybo in Nye County. Battle Mountain District was organized in 1866 and a mill and two smelters were installed at Galena by 1870. It is estimated that about \$5,000,000 in silver, lead and gold was produced from the veins near Galena, and upwards of \$1,000,000 in silver from the Little Giant Mine, but no figures for the early production of the entire district are available. From 1902 to 1920, the district produced \$2,383,775, the principal value being in copper. Ore was discovered at Tybo in 1866, and the district organized in 1870. A smelter was built after the organization of the district and another in 1875. Smelting continued until 1879, and an important production was made but no records of the amount are obtainable.

CANDELARIA DISTRICT

The Candelaria District, now in Mineral County, was discovered and organized by Mexicans in 1864, and its principal mine, the Northern Belle was located the following year, but the district failed to come into prominence until the relocation of that mine in 1870. The Candelaria District produced about \$20,000,000 in the early days, mainly in silver. The Pine Grove District, also in Mineral County, was discovered by William Wilson in 1866, and its two principal mines are estimated to have produced about \$8,000,000 in gold and silver up to 1893. The Palmetto District in Esmeralda County was discovered by Bunyard, Israel and McNutt in 1866; and the Palmetto Mine is credited with a production of \$6,500,000. The gold placers of the Tuscarora District were found by the Beard Brothers in 1867, and the silver lodes of the district were discovered a few years later. The district produced from \$25,000,000 to \$40,000,000; mostly in the period from 1872 to 1885. Elko County, in which the Tuscarora District is situated was separated from Lander County on March 5, 1869. The Mineral Hill District was discovered by prospectors from Austin in 1868 and produced more than \$6,000,000 in the early days.

The Paradise Valley District was also discovered in 1868. It produced some \$3,000,000. With these important strikes, what has been designated as the Early Discovery Period of Nevada mining came to a close, and the Early Prosperity Period began.

FIRST BULLION PRODUCTION

The early bullion production of the Johnstown placers was not recorded, and the first bullion production on record for Nevada is that of \$50,000 for the year 1859, the year in which the Comstock Lode was discovered. As a result of the discovery and exploitation of the Comstock and other early mining districts, the bullion production of the state rose rapidly to \$17,407,643 in 1867. The total recorded bullion production for the ten-year period from 1859 to 1868 was \$102,132,643; equivalent to an annual average production of \$10,000,000, and making up 20 per cent of the total bullion production of the entire United States for the same period. During this and the succeeding period, immense quantities of salt for metallurgical use were produced from the salt marshes of Nevada.

FIRST RAILROADS ENTER

The Central Pacific R. R. entered Nevada from California in December, 1867; reached Reno in May, 1868; and joined the Union Pacific R. R. at Promontory, Utah, on May 10, 1869, thus completing the first transcontinental line. The Virginia and Truckee R. R. was completed from Carson City to Virginia City on November 12 of that same year but did not make connections with the Central Pacific R. R. at Reno until 1872. The Eureka Nevada R. R. connected Eureka with Palisade on the transcontinental line in 1875; and the Nevada Central R. R. connected Austin with Battle Mountain on that line in 1880. The Nevada-California-Oregon R. R. out of Reno was begun in 1880 and gradually extended to Lakeview, Oregon. The Carson and Colorado R. R. was constructed from Mound House on the Virginia and Truckee R. R. to Hawthorne in 1881, and extended later. The construction of these railway lines stimulated mining in Nevada, and was an important factor in bringing about the Early Prosperity period.

EARLY PROSPERITY

The Early Prosperity Period lasted from 1869 till 1880. During this time no new districts of importance were discovered, but the production of bullion from districts found during the Early Discovery Period continued and increased. The maximum annual bullion production of Nevada came of this period, - being \$47,676,863 for the year 1878. The total bullion production during these twelve years was \$359,921,773; equivalent to an average annual production of \$30,000,000; and making up 40 per cent of the total bullion production of the United States for the same period. The maximum annual production of lead in Nevada also came in the year 1878 and amounted to 31,063 tons. The total production of lead in Nevada from 1871 to 1880 was 152,579 tons; equivalent to an average annual production of over 15,000 tons. During the Early Prosperity Period, Nevada was the principal producer of borax in the United States. The population of Nevada rose from 42,491 in 1870 to 62,266 in 1880.

PERIOD OF DECLINE

The Early Period of Decline began in 1881 extending until 1891. No important mines were discovered, and production fell off notably although not reaching the depth attained in the succeeding Period of Depression. The average annual bullion production was about \$9,000,000; and the lead production 5,000 tons; these productions being about one-third those of the preceding period. The population of Nevada fell to 47,335 in 1890.

The Early Prosperity Period opened with silver at \$1.33 an ounce. Silver was demonetized in 1873 and the price dropped gradually, being slightly boosted for brief periods by the Bland-Allison Act in 1878 and the Sherman Act in 1890, until it stood at \$0.87 at the opening of the Early Period of Depression in 1892. Subsequent to 1892, the average annual price of silver continued to fall, reaching \$0.59 in 1898 and not again exceeding \$0.68 until the year 1917 in the Late Prosperity Period.

The early Period of Depression lasted from 1892 to 1899. It was brought about by the depletion of the mines previously discovered, coupled with the failure to find many new ones, and was made still more marked by the drop in the price of silver. The bullion production for this period amounted to \$26,058,053; an average annual production of only \$3,000,000, or one-third that in the preceding period. During the Early Period of Depression came the lowest bullion production of Nevada since 1860, - \$2,218,200 for 1894. The lead production was also low, being 21,078 tons for the period.

One important discovery served to increase the bullion production of this depressed period. The Ferguson District was found in 1892, and its principal properties were purchased by Captain Delamar in 1893. The Delamar Mine soon afterward began to make an important production of gold bullion and was the principal bullion producer in Nevada up to 1900. This mine is credited with a production of \$35,000,000. The Searchlight District was also discovered during this Period of Depression, in 1897. It produced about \$5,000,000; but the bulk of this production was made in later periods, the recorded production from 1904 to 1921 being \$3,659,251.

DISCOVERY OF TONOPAH

The Early Period of Depression was brought to a close by the discovery of Tonopah, and the Late Discovery Period thereby inaugurated. James L. Butler discovered the Tonopah District on May 17, 1900, and after considerable delay, arranged for Tasker L. Oddie and Wilse Brougher to take up the ground, which they did on August 27. About one ton of ore of net value \$600 was taken out by Oddie and Brougher that year, and the following year leasers mined ore to the value of some \$4,000,000 but were unable to ship much of it on account of inadequate transportation and smelting facilities. In 1902, the original property was sold to the Tonopah Mining Company which completed a railroad in 1904, after which the production of the district greatly increased; and the output was still further augmented by the construction and operation of cyanide mills which began in 1906. From 1900 to 1920, the Tonopah District produced \$114,867,868 and it is at the present time the biggest producer of siliceous silver ores in the United States.

THEN CAME GOLDFIELD

The discovery of rich silver ore at Tonopah greatly stimulated prospecting in Nevada and resulted indirectly in the discovery of many other important camps, the first and most valuable of the new finds being Goldfield. Harry Stimler and William Marsh discovered the Goldfield District on December 2, 1902. The discovery was followed by a brief period of excitement, but as no orebodies were immediately uncovered, the excitement died down, the prospectors almost all left, and the original claims were allowed to lapse. On May 24, 1903, A. D. Meyers and R. C. Hart located the Combination lode in the Goldfield District. Ore was found on this claim in October, shipments began in December, and the big Goldfield rush followed. The railroad reached Goldfield in 1905, at which time the district had a population of about 8,000. Mills were built, the 100-stamp mill of the Goldfield Consolidated Mines Company being completed in 1908, in which year Goldfield reached its maximum population of 20,000. From 1903 to 1921, the production of the district was \$84,878,592. Goldfield was for many years the biggest gold producer in Nevada, but its present output is small.

MANHATTAN DISTRICT

The Manhattan District in Nye County north of Tonopah was discovered by John C. Humphrey in April, 1905, and a rush of prospectors ensued. From 1906 to 1920, the district produced \$4,110,101. Round Mountain to the north of Manhattan and also in Nye County was discovered by L. D. Gordon in 1906. From 1906 to 1920, it produced \$4,818,034.

The Fairview District in Churchill County was discovered in 1905 and a rush took place to the district the following year. The Fairview District produced \$3,843,624 to 1921; but its principal mine, the Nevada Hills shut down in 1917, and the production since that date has been slight. The Wonder District lying to the west of the Fairview District in the same county was discovered by J. L. Stroud in 1906; and had a somewhat similar history. Its principal mine, the Nevada Wonder, paid \$1,549,005 in dividends, but was closed up in 1919 and the district has been inactive since. The production of the Wonder District from 1907 to 1921 was \$5,838,765. The Rawhide District lies to the south of Fairview and Wonder, just over the border in what is now Mineral County. It was discovered in 1907 and has been working in a small way since that date, producing from 1908 to 1920, \$1,403,696.

Prospecting began at Seven Troughs, in what is now Pershing County, about 1905, but outside interest was not aroused until 1907. From 1908 to 1920, this district produced \$2,602,740. The National District in northern Humboldt County was discovered by J. L. Workman in 1907. Up to 1921 it produced \$3,444,997 from high grade gold ore. In the summer of 1907, ore was discovered at Gold Circle and the following spring a rush to the new camp took place. From 1908 to 1920, this district produced \$2,153,443.

The Late Discovery Period began with the discovery of Tonopah in 1900 and was closed with the discoveries of Rawhide, National and Gold Circle in 1907. The bullion production of Nevada during this period rose rapidly from \$2,848,594 in 1900 to \$20,876,100 in 1907; making a total of \$70,208,223 for the period which is an annual average of nearly \$9,000,000. The lead production of Nevada was not affected by

these discoveries and remained low, the total for the period being 16,215 tons. The production of copper in Nevada which has been insignificant and irregular in preceding periods, became more regular and began to increase although still unimportant. In 1900 it was 437,396 pounds and in 1907, 1,998,164 pounds; while the total for the period was 4,817,535 pounds, an annual average of 600,000 pounds. Zinc production in Nevada began in 1905 and amounted to 1,084 tons in 1907. At the opening of the late discovery period the population of Nevada had decreased to 42,335, a trifle less than the population in 1870. As a result of the discoveries and booms of this period, it rose to 81,875 in 1910, the highest point yet reached.

MORE RAILROADS BUILT

The Late Prosperity Period followed the late discovery period and was ushered in by the building of railroads in much the same manner as was the Early Prosperity Period. The Tonopah and Goldfield R. R. connected Tonopah with the Carson and Colorado R. R. now a branch of the Southern Pacific System in 1904, and made a connection with Goldfield in 1905. The Los Angeles and Salt Lake R. R., now a branch of the Union Pacific system, was the second transcontinental route to cross Nevada. It was completed in 1905, and made connections with Goldfield in 1907. The Silver Peak R. R. was completed from Blair Junction on the Tonopah and Goldfield R. R. to Blair in 1906. In 1907, the Barnell and Searchlight R. R. connected the Searchlight District with the Atchison, Topeka and Santa Fe R. R.; and the Tonopah and Tidewater R. R. built from Ludlow on the Santa Fe line to Rhyolite in 1906 and was connected with Goldfield by the Bullfrog Goldfield R. R. in 1907. The Nevada Northern R. R. was completed from Cobre on the Central Pacific R. R., now part of the Southern Pacific System, to Ely in 1906 and extended to the copper mines of the Ely District in 1908. The Nevada Copper Belt R. R. was built from Wabuska on the Carson and Colorado Branch of the Southern Pacific to Yerington and Mason in 1910 and later extended to the Nevada Douglas mine at Ludwig. The Western Pacific R. R., third of the transcontinental lines to cross Nevada, was completed in 1910.

The first cyanide plant in Nevada was constructed at Silver City in 1896 by R. D. Jackson to treat tailings from the Comstock. The first cyanide plant to treat raw ore was that erected at the Delamar Mine a short time later. All the important camps discovered during the Late Discovery Period built cyanide mills, and the use of the cyanide process spread to the other large precious metal mining districts in Nevada. A few small copper furnaces had been constructed in Nevada in the early days, but the first large copper smelters were that erected at McGill on the newly completed Nevada Northern R. R. and that at Wabuska on the newly completed Nevada Copper Belt R. R.

COPPER PRODUCTION

Three copper camps discovered in the early days first became important producers in the Late Prosperity Period. The Yerington District was known at least as early as 1865, when attempts were made to work the oxidized copper ore of the Ludwig Mine; but its production was not important until after the building of the Wabuska smelter and the completion of the Nevada Copper Belt R. R. From 1905 to 1920 the Yerington District produced 85,846,411 pounds of copper and the total value of its production including a little gold, silver, and lead was \$17,731,767. The Ely District was organized in

1868, but was of little importance until after the completion of the Nevada Northern R. R. and the construction of the smelter at McGill, when it became the greatest copper producer in Nevada. The first recorded copper production is of 11,814 pounds for 1907, which was increased more than a thousand fold in 1908. From 1907 to 1920, the Ely District produced 833,590,984 pounds of copper, which together with small amounts of gold, silver, zinc, and lead had a value of \$162,810,242; equaling its average annual production of about \$12,000,000. The Ely District is thus nearly ten times as important a copper producer as the Yerington District; while the Santa Fe District on the Southern Pacific branch line near Luning is about one-tenth as important as Yerington. The Santa Fe District is said to have been discovered in 1879. It produced 8,849,597 pounds of copper from 1906 to 1920, the total value of its metal production for this period being \$2,406,839.

It will be remembered that the Potosi Mine discovered by the Mormons in 1850 was the first of the modern lode mines of Nevada. Just fifty years later the presence of zinc was recognized in this mine. Shipments were made, other discoveries including that of the big Yellow Pine Mine took place, and the Yellow Pine District became not only the first but also the largest zinc producer in Nevada. The production of zinc from the Yellow Pine District from 1905 to 1921 was 78,346 tons, and the total value of the metal product of the district from 1902 to 1921 including zinc, lead, silver, copper and gold was \$19,999,424.

NEW DISCOVERIES

New precious metal discoveries of importance were made in three known districts during the Late Prosperity Period. The Jarbidge District had been explored in the early days but did not become of importance until relocated by D. C. Bourne in 1909. A rush took place to the new camp in 1910. With the decline of Goldfield, Jarbidge became the largest gold producer in Nevada, its total production being \$2,079,376 to 1921. The Rochester District was also prospected in the early days. It was relocated by Joseph Nenzel in 1911, large orebodies were found in 1912, and a rush ensued in 1913. The camp produced \$5,447,754 up to 1920, and is at present the second important silver camp in Nevada being only exceeded in production by Tonopah, although its production is only about one-tenth as much. The Divide District was found in 1901 by Runge and Rochelle, but did not become of importance until H. C. Brougher discovered rich silver ore there in 1918. A stampede followed which rivalled the big Goldfield rush. Some two hundred mining companies were incorporated to explore the district and fifty or more of these were adequately financed. Several more mines were discovered, although none approached the original Tonopah Divide Mine in richness, and the boom collapsed in 1919. Many of the Divide companies had money in their treasuries after proving their properties to be valueless, and purchased properties or undertook exploration work in various parts of Nevada and neighboring state.

Clark County was formed from southern Lincoln County on July 1, 1909, and Las Vegas was made the county seat. Mineral County was formed from northern Esmeralda County on February 10, 1911, and Hawthorne was made the county seat. The Esmeralda District for which Esmeralda County was named became part of Mineral County. Pershing County was formed from southern Humboldt County on March 18, 1919, and Lovelock was made the county seat.

WAR STIMULATES PRODUCTION

The World War which occurred during the latter part of the Late Prosperity Period served to stimulate Nevada mining by raising the price of silver and the base metals and creating a demand for the less common metals valuable for war purposes. For the year 1914 in which the war began, the average price of silver was 55.3 cents an ounce; of copper, 13.3 cents a pound; of lead, 3.9 cents a pound; and of zinc, 5.1 cents a pound. These prices all rose rapidly until for 1917 the average price of silver was 82.4 cents, of copper 27.3 cents, of lead 8.6 cents, and of zinc 10.2 cents. With the close of the war in 1918, all of these prices save that of silver dropped rapidly. The Pittman Act of April 23, 1918, authorized the sale of silver bullion from the United States Treasury for use in India as a war measure, the amount of silver thus sold to be repurchased from American producers at \$1 an ounce. \$260,000,000 in silver dollars was reduced to bullion and shipped to India under this law; and the repurchase of American silver to replace this sum has not yet been completed. The principal war minerals mined in Nevada were tungsten, manganese and antimony, while small amounts of molybdenum, uranium, and vanadium were also purchased.

METALS PRODUCTION

The Late Prosperity Period followed the Late Discovery Period beginning in 1908, and lasted till 1918 when the World War ended, to be followed by the Late Period of Decline in 1919. The bullion production for this period was \$222,419,042; making an annual average production of about \$20,000,000 just as in the Early Prosperity Period. This was 15 per cent of the total bullion production of the United States for the same period. The production of lead for this period was 70,435 tons, being an annual average of about 6,000 tons which was a great increase over that of the Late Discovery Period but only a little over half that of the Early Prosperity Period. This was the first period in which an important zinc production was made, there being produced 73,480 tons, or slightly more than of lead. Most noteworthy of all, however, was the copper production of the Late Prosperity Period which exceeded in value the gold production and the silver production and amounted to about three-quarters of the combined gold and silver production of the state. 819,940,595 pounds of copper were produced having a value of \$161,790,009 and being more than 5 per cent of the total copper production of the United States for that same period. From 1915 to 1918, Nevada produced tungsten concentrates to the value of \$3,650,485.

With the close of the World War, the demand for war minerals ceased abruptly, and the prices of the base metals fell so as greatly to depress that branch of mining. The precious metal mines discovered during the Late Discovery Period became nearly depleted with the exception of those of Tonopah, and few new discoveries were made. High prices greatly discouraged gold mining, and the only bright spot in an otherwise gloomy outlook was the temporary maintenance of the price of silver at \$1 an ounce due to the Pittman Act. Silver mining therefore flourished in Nevada till 1923 despite the depressed condition of the rest of the mining industry, and the bullion production was only lowered to about half that of the preceding period. The population in 1920 showed a decrease from that of 1910 - being only 77,407 or but 15,000 more than it had been 40 years earlier.

PART 2

AN OUTLINE OF THE MINING HISTORY OF NEVADA, 1924-1964

By ROBERT C. HORTON¹

The mining history of Nevada prior to 1923 was marked by two periods of discovery, prosperity, and decline, and one period of depression, as discussed by Lincoln in Chapter 2. The periods of discovery were marked by the beginning of operations at gold-silver camps and, to a lesser degree, by operations at lead, zinc, and copper camps. The second period of discovery, 1900 to 1907, when camps such as Tonopah, Goldfield, Jarbidge, Manhattan, and others were found, was the last genuine discovery period. Additional discoveries were made after 1907, but their importance tended to be lost, with few exceptions, in the general mining picture. Discoveries in new methods of mining and metallurgy revived old camps. Price changes radically affected mining activity, and demands for new metals and minerals added new life to mining.

At the end of 100 years of Nevada statehood the layman might expect to find mining a dying industry, surviving only on the little left by those miners gone before. Fortunately this is not the case. Nevada mining is not only healthy, it is promising a boom unlike any seen in the past. The discovery of a large gold deposit north of Carlin, Elko County, has stimulated exploration in that general area by scores of mining companies. Further, it appears that mining problems associated with the deep ores at Eureka have been solved, and that the old camp may soon see new life. Elsewhere in the State there are promising developments in copper, iron, and molybdenum. All in all, the Nevada mining economy is on an elevated plateau that promises a long life with no steep slopes of decline or deep valleys of depression that marked the first 100 years (see fig. 1, table 1).

1924-1934, PROFITS AND PANIC

Lowered metal prices and decreased demand had caused a reduction in Nevada's mineral production following World War I. By 1924 however, the industry had partially recovered. During that year high-grade gold ore was discovered at Gilbert, Esmeralda County, causing some excitement. Efforts were being made to re-establish the tungsten industry at Tungsten and in the Nightingale Mountains, Pershing County; near Pioche, Lincoln County; and east of Mina, Mineral County. Lessees were active in many of the gold-silver camps. At Goldfield, the Goldfield Deep Mines Company continued sinking a deep shaft, aiming for a depth of 2,400 feet with the intent of exploring for ore below the old workings. A demand for arsenic for use in insecticides had caused many mine

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operators to prospect for and produce this normally undesirable element. Nearly 12,000 tons of arsenic ore and speiss were shipped during 1924.

Because of the general increase in metal prices, the revival of Nevada's mining camps continued during 1925 despite a serious decrease in output of gold and silver from Tonopah. Development continued at the Gilbert gold discovery; high-grade lead-silver ore was found at Quartz Mountain and silver-lead ore at Chalk Mountain. Gold was discovered at the new camp of Westville, a few miles north of Wonder, Mineral County; and at Gold Basin, east of Fairview. The Yellow Pine district continued active, and a demand for sulfide zinc ore resulted in the reopening of the Potosi mine, originally worked by a Mormon association in 1857.

The year 1926 saw new production highs, but the increase was due entirely to an increased production of copper ore from the Ely and Yerington areas. The Thompson smelter operated for the first time since 1919. The 1,500-ton cyanide mill of the Comstock Merger Mines, Inc., long a major producer of gold and silver, was closed late in 1926. Shipments of zinc and lead from the Pioche mines, Lincoln County, increased as development of that district continued. During 1926 there were in operation in Nevada, 139 gold mines, 18 gold-silver mines, 56 silver mines, 15 copper mines, 149 lead mines, 6 copper-lead mines, 3 zinc mines, 22 lead-zinc mines, 23 amalgamation mills, 20 concentration mills, 12 cyanide mills, 2 concentration-cyanide mills, 1 amalgamation-cyanide mill, 6 amalgamation-concentration mills, 1 amalgamation-cyanide-concentration mill, and 1 copper-leaching mill.

In 1927 the total value of the mine production of gold, silver, copper, lead, and zinc in Nevada was 5 percent less than in 1926. The decrease was caused by a decline in metal prices, and the quantity produced of all metals, except copper, declined. The value of metal production from White Pine County, largely copper from the Ely operations, was \$15,282,846, nearly twice as much as that of all other counties combined. This trend continued into 1927, when White Pine County yielded over 71 percent of the total value of metals produced in Nevada.

The outstanding event of 1927 was the beginning and end of Nevada's last gold rush, the "Weepah Boom". High-grade gold ore was discovered on the property of the Weepah mine, Esmeralda County, by the son of the mine owner and a companion. News reports grossly exaggerated both the volume and value of the ore, and hundreds of persons poured into the camp in search of their fortune. Although the boom vanished almost as fast as it had formed, the mine was to become an important gold producer in later years.

The years 1928 and 1929 saw the production high point of the post-World War I years, as the mining industry was doomed to suffer along with the rest of the nation in the depression yet to come. Thirty-one million dollars worth of gold, silver, copper, lead, and zinc were produced in 1928 and 33 million dollars worth in 1929. Despite the copper boom in White Pine County, all was not joy, as the Thompson smelter, long a landmark in Mason Valley in Lyon County, closed forever in December 1928. This smelter had been blown in during January 1912 and operated until 1914. Operation was resumed in February 1917, but two years later the smelter closed. Operation was resumed in 1926 and the smelter ran continuously until the end of 1928 when it was closed and dismantled. This wrote the end to copper mining at Yerington and the rest of Mason Valley, or so many thought. But Nevada mining camps have a tenacious hold on life and, though dormant, copper mining at Yerington was to return with a vengeance a quarter of a century later - and the best may yet lie ahead.

Elsewhere in Nevada during 1928 and 1929, mining prospered. The Treadwell-Yukon Company, Ltd., purchased many of the mines at Tybo, Nye County, and in May 1929, began milling 350 tons of lead-zinc ore per day. The Bradshaw Syndicate, Inc., leased the Goldfield Consolidated tailings and milled 242,000 tons during 1928-29. In June 1928 the Comstock Tunnel and Drainage Company purchased, through its subsidiary the Sutro Tunnel Coalition, Inc., all of the mines of the Comstock Company. This placed under one management most of the important mines of the Comstock, including the Gould and Curry, Best and Belcher, Andes, Savage, Hale, Confidence, Challenge, Yellow Jacket, Crown Point, Belcher, Kentuck, Overman, Caledonia, New York, Alta, and Lady Washington. The Seven Troughs Gold Mines Company started work on a new cyanide mill; plans were made for a new reduction plant near Round Mountain for the Gold Hill Development Company; the Nevada Porphyry Gold Mines Company took over the Round Mountain mine and planned to increase the capacity of the amalgamation mill to treat ore from both the lode and placer mines.

In 1927 the price of quicksilver had risen to more than \$100 a flask, and production from the Pershing and Juniper mines in the Antelope Springs district, the B & B and Red Rock mines in the Fish Lake Valley district, and the Castle Peak mine in the Castle Peak district resulted in a new high recovery of nearly 5,000 flasks in 1929.

The Tonopah region was affected most seriously by the declining price of silver in 1929. The Tonopah Belmont and Tonopah mining companies ceased mining on company account, giving over the operations of part, if not all, of their mines to lessees. The West End Consolidated suspended activities altogether. The Tonopah Extension was sold by its receiver. Other silver mines in Nevada also were forced to close or drastically reduce operations.

The depression years of 1930, 1931, 1932, and 1933 seriously damaged Nevada mining. The value of mineral production in 1933 was only one-sixth of that of 1929. The lowest point was reached in 1932, when only \$5,133,792 worth of precious and base metals was produced. The only time in previous Nevada mining history when production was so low occurred during the post-Comstock pre-Tonopah years of 1893 to 1903.

At the beginning of 1931 copper production at Ely was less than 40 percent of capacity. Lead producers sharply curtailed operations. The Tybo mine of the Yukon-Treadwell Company, Inc., largest lead producer in Nevada, reduced its output 50 percent early in 1931 and discontinued operations in October of that year. The Goldfield Consolidated Deep Mine Company completed a three-compartment vertical shaft to a depth of 2,335 feet but, because of lack of funds, was forced to abandon the project and allow the shaft to flood. The leading gold producers in 1932 were the Elkoro Mines Company at Jarbidge; The Bradshaw Syndicate Inc., at Goldfield; the Nevada Consolidated Copper Company at Ely, and the Gold Hill Development Company and Nevada Porphyry Gold Mines, Inc., both at Round Mountain. The outstanding development of this period was the opening of a large deposit of copper ore in the Rio Tinto mine at Mountain City. In 1919 Mr. S. F. Hunt had located claims on the gossan that overlies the Rio Tinto ore body. Persistent work under great difficulty and with inadequate financial resources was rewarded by the discovery of rich secondary copper ore beneath the gossan at a depth of 242 feet, within a few feet of where Mr. Hunt had predicted he would find the ore.

A noticeable increase in gold-mining operations followed the rise in gold prices in 1933, particularly in the Comstock district where there was much activity among the old-time silver-gold producers. Mills at Silver City were busy on custom ore, and both the Comstock and Silver City districts took on new life. In June 1933 all the assets of

the Nevada Consolidated Copper Company were acquired by the Kennecott Copper Corporation. The Consolidated Coppermines Corporation was the only other major mining company active in that district.

1934-1944, THE RISE AND FALL OF GOLD

Increases in the average price per ounce of gold from \$25.56 to \$34.95, and of silver from \$0.35 to \$0.64 in 1933, gave a stimulus to Nevada mining that resulted in widespread precious-metal mining. The combination of high prices and low costs, occasioned by the depression, is not likely to be repeated. Mines containing ore having a value as low as \$1.75 per ton were successfully operated using open-pit methods, and many small underground mines made a profit on ore containing \$6.00 to \$8.00 worth of gold and silver per ton of ore. In 1934 gold was the leading metal produced in Nevada, in terms of market value, constituting 41 percent of the total value of all metals. The Tonopah district was revived, and increased production was reported from the Divide, Manhattan, Comstock Lode, Battle Mountain, Silver Peak, and Tybo districts, along with others.

During 1935 White Pine County was the largest contributor to mineral wealth in Nevada, and it appeared that the county would forge even further into the lead with the increasing copper output of the Ely area. Clark County was the scene of a general revival and the Crescent, Eldorado Canyon, and Searchlight districts were particularly active. Elko County sprang into prominence as a copper producer when the International Mining and Smelting Company took over operations of the Rio Tinto mine. The Weepah Nevada Mining Company built a 250-ton flotation mill at Weepah, Esmeralda County.

Continued expansion of copper and gold production marked 1936. Until that year the mining industry of the State was helped more by price-raising legislation than by free metal markets. During 1936 however, price rises that accompanied the expanding consumption of copper, lead, and zinc, proved to be dominant factors in the continued return of prosperity to Nevada's mineral industry. Unfavorable economic conditions in the nation served as a brake on that expansion however and, the 1937, production of gold, silver, and lead decreased while copper and zinc production increased slightly. The leveling-off of gold and silver production was significant, as it marked the end of the stimulus given Nevada's precious-metal mines by the high gold and silver prices.

The year 1938 marked the start of what might have become another period of decline and depression. Production of all metals dropped sharply, led by 27 percent decrease in copper production as compared to 1937. Among the major producers who ceased operations late in 1937 or during 1938 were Eastern Exploration Company, Goldfield district; Arizona Comstock Mining Corp., Comstock district; Buckhorn Mining Company, Buckhorn district, Eureka County; Treadwell-Yukon Company, Ltd., Tybo district; and Pioche Mines Consolidated, Pioche district. All was not black, as the Getchell Mine, Inc., began production at its newly discovered gold mine in the Potosi district, Humboldt County.

The beginning of World War II in 1939 reversed the decline in mineral production and caused a 30 percent increase. Expansion of activities at the three large copper mines in Nevada, - Nevada Consolidated Copper Corp., Consolidated Coppermines Corp., and Mountain City Copper Company - resulted in a 44 percent increase in copper production.

Activity in all metals increased during 1940. The Northumberland Mining Company began full-scale operation of its 280-ton cyanide plant, completed in 1939, and plans were made for expanding the capacity to 360 tons. Summit King Mines, Ltd., initiated operation of its new 65-ton cyanide mill in January 1940. The Combined Metals Reduction Company started construction of a 1,000-ton flotation mill at Caselton. Custom mills operated at various places in Nevada during 1940; those of importance were at Silver City, Westgate, Gold Point, and Nelson.

Cessation of old-tailings cyanidation in 1940 by the Bradshaw Syndicate, Inc., in the Goldfield district and the Caliente Cyaniding Company in the Ferguson district, terminated the large-scale working of old tailings in the State. Placer-mining activity was at a new high, however. The connected-bucket dredge of the Manhattan Gold Dredging Company in the Manhattan district was the principal producer of placer gold in Nevada in 1940. In addition, 3 dragline excavators, 85 small-scale hand-method mines, and 17 placer drift mines were in operation. Late in the year the world's largest dragline dredge, equipped with a dragline excavator using a 14-cubic-yard bucket, was installed at Dayton by the Dayton Dredging Company.

There had been little interest in mercury mining between 1932 and 1939 because of the prevalent low price. In 1939 the price increased to \$150 per flask, and by 1940 many new mines, particularly those in the Bottle Creek district, yielded so much mercury that production increased from less than 800 flasks in 1939 to a new high of nearly 6,000 flasks.

Interest in tungsten was also increasing. The Nevada-Massachusetts Company at Tungsten, Pershing County, long the largest individual source of tungsten in the United States, completed a plant for retreatment of tailings, and a new chemical treatment plant at Golconda was expected to go into operation early in 1941.

Continued expansion of copper production in 1941 and 1942 accounted for most of the increase in tonnage of ore treated as compared to 1940. Other metals continued at a high level of production until October 1942, when Order L-208 of the War Production Board forced most gold mines to close, and all of Nevada's custom cyanide mills suspended operations. Gold production dropped from 366,403 ounces in 1941 and 295,403 ounces in 1942 to 144,442 ounces in 1943. Most of the gold produced in 1943 was a by-product of copper mining. The Manhattan Gold Dredging Company was allowed to operate because of the danger of losing the dredge in a narrow canyon subject to floods.

Nevada's gold mining industry, indeed the nation's gold mining industry, has yet to recover from the effects of Order L-208. Mines are not pipelines that may be turned on and off at will, but are more like pieces of machinery that require constant maintenance. During the forced closure of the gold mines many filled with water, others collapsed and caved, while others were stripped of their equipment. This damage, plus the higher cost of supplies and labor, prevented many of the mines from opening after cancellation of the order.

Metal production dropped in 1943. Higher wages, enlistment of miners in the armed forces, migration of miners to war industries, rising prices of supplies and equipment and difficulties in obtaining them, and increased taxes, all contributed.

Mercury mines prospered in 1942-43, with 40 mines in operation. The principal mine in both years - and for many years since then - was the Cordero mine in Humboldt County. There were 5,201 flasks of mercury produced in 1942 and 4,577 flasks in 1943.

Tungsten operations also produced at a maximum during the war years. The Nevada-Massachusetts Company and affiliated companies operated mills at Tungsten, Golconda,

and Toulon. Smaller but important producers of tungsten concentrates were Nevada Scheelite Inc., operating the Leonard mine in Mineral County; Tungsten Metals Corp., operating the Scheelite Chief, Oriole, Everitt, and Silver Bell mines in White Pine County; and M.G.L. Mining Corp., operating the M.G.L. mine in Pershing County. Getchell Mines, Inc., one of Nevada's youngest and largest gold producers, was fortunate enough to discover tungsten ore adjacent to the gold ore body. A flotation mill began treating tungsten ores in August 1942, and continued operating through the war years.

1944-1954, BETWEEN WARS

Demand for manganese ore for war materials resulted in the opening of a number of manganese mines. Production reached a high point in 1944 with the operation of the Three Kids Mines, Clark County, by the Manganese Ore Company. The remainder of the production came largely from the Manganese Mining Company mines in White Pine County, the Black Rock mine in Lander County, and the Black Diablo mine in Pershing County. The leaching and nodulizing plant of the Manganese Ore Company began operations in October 1943, but closed down in September 1944 after producing 13,963 tons of nodules. The plant, designed to produce 100,000 tons of nodules annually, failed to reach anything near capacity operation.

Desire of the Federal Government to increase magnesium production in the United States led to the large scale mining of brucite and magnesite at Gabbs, Nye County. The ore was hauled by truck to the Basic Magnesium plant at Henderson, Clark County, for conversion into metallic magnesium. The project was short lived in the production of magnesium, but both the mine and the mill continue to contribute to Nevada's economy. The Henderson plant, no longer producing magnesium, has formed a solid industrial-plant base upon which a substantial chemical and metal industry has developed. The status of the Basic Magnesium operation during the war may be gleaned from the March 13, 1944 Report of the Senate Special Committee to Investigate the National Defense Program, Harry S. Truman, chairman. Discussions of various processes, used and not used, and a detailed record of the "bungling and incompetence displayed in the promotion and construction of Basic Magnesium plant at Las Vegas, Nevada", take up much of the space in the report.

Gold production in Nevada in 1944 was the lowest since 1933. The curtailment of gold mining and the stimulation of base-metal mining is evidenced by the fact that by-product gold from base metal mines in 1943 and 1944 exceeded gold derived from gold mines for the first time in the history of the State. Also, base metal ore were the source of 81 percent of the silver in 1944. Reduced copper-ore production resulted from a chronic labor shortage throughout the State, a condition which grew progressively worse as the year passed. Production of lead-zinc concentrates at Pioche increased as Combined Metals Reduction Company raised its mill capacity from 500 to 1,000 tons per day. The Getchell Mine, which had terminated tungsten mining June 1944, resumed operations of its 1,000-ton gold cyanide plant and gold mining operations. However, the company suspended gold mining operations about May 1, 1945, because of a shortage of labor and materials.

An expected increase in production of gold following the rescinding of War Production Board Order L-208 on July 1, 1945, did not materialize except at placer mines. Gold production for the year, 92,265 ounces, was the lowest in quantity since 1895 and silver production the lowest since 1899. Zinc production set a new high.

In 1946 Nevada was the leading tungsten-producing state in the nation. The Nevada-Massachusetts Company and its affiliate, Rare Metals Corp., continued to be the chief producers. In 1946 they operated mills at Toulon and Tungsten. The former plant suspended operations, however, on March 31, 1946. Other producers of tungsten concentrates in 1946 were the United States Vanadium Corporation's Riley mine; the Nevada Scheelite, Inc., mine; and the Cherry Creek Tungsten Corp. The Getchell mine also produced concentrates both from stockpiled ore and newly mined ore.

An increase in total tonnage of ore mined reflected increased prices paid for all metals except gold. It is notable that a greater tonnage of copper ore was treated to produce a smaller tonnage of copper in 1946 than in 1945, indicating a lower grade of ore.

The quantity of zinc produced in Nevada in 1947 showed a marked decline from the record level of 1946, largely owing to the expiration on June 30 of the Premium Price Plan for copper, lead, and zinc. The effect of the termination of this plan on copper and lead production was negligible, as the rise in market price, greater labor supply, and strong demand, were factors contributing to a maintained level of output of these metals. The higher Government price paid for silver after June 30, 1946 - a raise from \$0.711 to \$0.905 per ounce - was a principal factor in the 10 percent rise in the value of silver production.

The years 1948-50 saw a continuation of relative prosperity in Nevada mining. The effects of World War II had faded, and the effects of the Korean War were yet to be felt. Exaggerated metal demands and premium prices had disappeared, and the rules of a free market system were dominant. Gold and silver mining, although not booming, contributed to a steady mineral production. Some mines on the Comstock Lode began open-pit operations while others operated underground.

The start of the Korean War in June 1950 ended the short period of peacetime mining. The barely-revived gold and silver mining industry was dealt another blow by rising prices, high labor costs, and lack of supplies. Gold production dropped and silver output was the lowest recorded since 1899. Summit King Mines, Inc., second largest producer of silver in Nevada in 1951, closed its mines and mill in August owing to ore depletion. Conversion by Getchell Mine, Inc., to tungsten mining and milling again ended the substantial gold production in Humboldt County.

Responding to the extraordinary demand for base metals, expansion of open-pit mining during 1951 resulted in a sizable increase in Nevada copper production. However, the output of lead and zinc, reflecting the dearth of ore that could be developed rapidly and mined economically, fell considerably below 1950.

With a 90 percent production increase over 1950, Nevada moved into second place as a tungsten-producing state. There were 32 tungsten producers in 1951, but only 5 of these - Gabbs Exploration Company; Getchell Mine, Inc.; Lindsay Mining Company; Nevada-Massachusetts Company; and Nevada Scheelite Company - supplied 95 percent of the total production.

Nevada ranked second to California in production of mercury in 1951, a position held also in 1950 and 1949. The Cordero mine, Humboldt County, resumed production in the latter part of the year after a brief shutdown because of low mercury prices.

The outstanding mining event of 1951 was the first substantial production of Nevada iron ore. Iron ore had been first produced in Nevada in 1903 for use as a fluxing agent in Utah smelters. During World War II modest amounts were shipped to the Pacific Coast shipyards for use as ballast. But beginning in 1951 iron ore was shipped from Nevada to Japan, as well as to Pacific Coast, midwestern, and eastern consumers.

Stimulated by demands of the Korean War, Nevada mineral production continued to increase through 1952 and rose to an unprecedented dollar value high of \$73,668,000 in 1953. The healthy increase in outputs of copper and tungsten concentrates contributed heavily to this advance. Outstanding new developments were headed by Anaconda Copper Mining Company's Yerington project in Lyon County, on which expenditures for construction and development amounted to over \$20 million during the year. The first shipment of copper precipitates was made in November 1953 from a plant designed to produce 60 million pounds of copper annually from ores mined by open-pit methods.

Initial operation of the manganese section of the Caselton flotation mill of Combined Metals Reduction Company in Lincoln County, yielded manganese concentrates which were nodulized in a rotary kiln installed at Caselton by the Pioche Manganese Company, an affiliate.

Copper production represented 48 percent of the State's total mineral production value and a very large percentage consisted of the combined yields of the Kennecott Copper Corp. and Consolidated Coppermines Corp. open pits at Ruth, near Ely. Tungsten ore mining prospered under the stimulus of Government purchasing, making Nevada the leading producer of this metal in 1953.

1954-1964, AN ERA ENDS-AN ERA BEGINS

Although the Korean armistice was signed on July 27, 1953, continued Government purchase programs and accelerated industrial demands established another record-breaking dollar value of \$86,871,000 for Nevada mineral production in 1954. The continuing high price and demand for copper resulted in a production which had the highest value ever recorded in Nevada. The output was derived from Kennecott Copper's Ruth, Kimbley, and Veteran pits; Consolidated Coppermine's Morris-Brooks pit, and Ruth pit extension, at Ruth, near Ely; and Anaconda's Yerington pit in Lyon County. The second largest source of mineral wealth was from tungsten concentrates, which had a value of \$20,357,000. Among the principal producers were: United States Vanadium Company, Riley mine, and Getchell Mines, Inc., Getchell group, Humboldt County; Nevada-Massachusetts Company, Tungsten mines, Pershing County; Nevada Scheelite Company, Leonard mines, Mineral County; Wah Chang Mining Corp., Lincoln mine, Lincoln County; and Gabbs Exploration Company, Victory mine, Nye County. The London Extension Mining Company, Gold Acres mine, Lander County, Nevada's largest lode gold mine in 1954, and the Natomas Company dredge at the Greenan Placers, Lander County, were large contributors to the State's gold production.

The most exciting event of 1954 was the birth of Nevada's first producing oil well, an event that may yet have considerable significance. The search for oil in eastern Nevada had started in September 1920 when the Illipah Petroleum Syndicate spudded in the No. 1 Illipah Anticline well. Three additional wells were drilled in the same area, one in 1920, one in 1926, and another in 1927. Gas and oil shows were reported in all of the wells, but none was ever produced. Current petroleum activity in Nevada began in 1950 with the drilling of the No. 1 Meridian well by Standard Oil Company of California and Continental Oil Company. Two additional wells, No. 1 Hayden Creek and No. 1 Summit Springs, also were drilled by the two companies. Oil shows were encountered in the three wells but none proved productive.

The Gulf Oil Company next became active, drilling a total of seven dry holes during 1953-55. Most of these wells were drilled in Elko County. The Richfield Oil

Company also drilled a well in northern Elko County.

On January 11, 1954, the Shell Oil Company spudded in their first test well, the No. 1 Eagle Springs well. This well, completed on May 23, 1954, was placed on production in June 1954 with an initial production of 275 barrels per day. The discovery caused excitement throughout the oil industry, and many millions of acres in eastern Nevada were leased. Unfortunately little drilling activity resulted, and the Eagle Springs oil field remains the only oil field in Nevada.

Continuing a trend begun in 1950, the value of Nevada's mineral production passed the \$100 million mark for the first time in 1955. In national ratings Nevada ranked first as a producer of tungsten, second in mercury and manganese production, and fourth in copper production. The newly formed Battle Mountain Copper Company purchased the Copper Canyon Mining Company and began production in December. Substantial quantities of Nevada iron ore were mined, mostly for export to Japan, but with some going also to Eastern furnaces and California steel mills. Seven producers in five districts mined nearly 400,000 tons of magnetite and hematite iron ores.

Manganese production continued to grow in 1955, as output increased in spite of a labor strike at Manganese, Inc., near Henderson, chief producer in the State. Manganese nodules were produced from stockpiled ore mined from an open pit developed during the war years, 1942-44. Nevada continued to lead the nation in mine production of tungsten, which increased appreciably over the previous year with 222 individual operations in 201 mining districts spread through 15 of the State's 17 counties.

During 1955 eight oil wells were spudded in while six wells began drilling prior to the beginning of the year. Of these wells, two were placed on production, five were abandoned, and seven were still being drilled at the year's end. The two wells nearest the discovery well in the Eagle Springs field were productive, but by the end of the year one was producing and the other was temporarily shut-in.

Another unprecedented dollar value in mineral production was established in 1956 (see fig. 1) when \$126,681,287 worth of mineral wealth was produced in Nevada. This is a figure not likely to be matched until the late 1960's or early 1970's at the present rate of growth. This 1950 dollar value reflected the increased output of copper aided by a high market price. There was a general advance in production of all commodities except gold and tungsten. Most notable of the increases in production were iron ore, manganese, molybdenum (a byproduct of copper mining), lead and zinc, with silver following the higher lead output. Crude petroleum yield remained virtually on the same level as the previous year.

Normally, gold and silver production follow trends in copper output. This did not hold true for 1956. A drop in production from straight gold-mining operations was caused when the Natomas Company did not reactivate its dredging operations in Lander County. The Bruhi mill at Silver Peak closed in January 1956 but was reopened under new management in July. Iron-ore production increased 200 percent over 1955. Standard Slag Company, with operations in Douglas and Nye Counties, was the largest individual iron-ore producer. Renewed and expanded activity in the Pioche district of Lincoln County by Combined Metals Reduction Company and Bristol Silver Mines Company contributed to increased lead, zinc, and copper output. Clark County led the State in overall production of lead and zinc through ore drawn from the former Metals Reserve Company stockpile at Jean and through lead residues from manganese ores treated by Manganese, Inc. Nevada ranked second, behind California, in the nation's production of mercury. The Cordero mine near McDermitt was the State's as well as the Nation's

largest individual producer. Tungsten production during the year remained at a high level. However, the decline in shipments of concentrates reflected the delay in the Government's decision on renewal or extension of the purchase program which terminated in early 1956.

In 1957 a major depression hit much of Nevada's mineral industry, and production slumped 30 percent from the record high of 1956. A declining market price for copper, and termination of the Government Tungsten Purchase Program were responsible for over 97 percent of the total reduction. The major copper companies in Lyon and White Pine Counties curtailed operations by reducing employment and shortening the work week. The weak market for lead and zinc forced the closing of the major mining operations at Pioche. Tungsten mining had practically ceased by September 1957, and only two properties, one each in Nye and Pershing Counties, were producing on a very limited basis at year's end.

The mineral production decline continued into 1958 when a dollar value of \$68,293,000, lowest since the end of the Korean War, was recorded. A continuing depressed price for copper was responsible for a major portion of the decline. Also, metal prices shut down the last of Nevada's major tungsten mines, forced another lead-zinc mine to close, and caused the lead-zinc producers who had ceased operations in 1957 to remain closed. The only bright spot in the mining picture was the reactivation of placer mining at Round Mountain.

A minor recovery was made in 1959 when production reached \$70,159,000. Continued low prices prohibited operations of many mines, however, and it was evident that it would be many years before lead-zinc and tungsten mining returned to the scene. Manganese was added to the list of retired mineral operations with the ending in August of the Government purchase program for this commodity.

The year 1960 marked the beginning of a period of moderate yearly production increase that promises to continue for many years. There were no Government purchase programs in effect in 1960 to provide a false base for mining gains. Metal prices remained stabilized at low levels, and it was unlikely that they could fall further. The value of mineral production in 1960 was \$80,324,000. The increase over 1959 was due largely to production increases in a strike-free copper industry. Increased iron ore shipments were the result of improved export trade. However, gold production dropped when the Round Mountain placer operation closed, and Nevada's crude petroleum yield continued the decline that began following the high of 1955-56 by dropping more than 15 percent below the 1959 figure.

Mineral production in 1961 had a value of \$81,533,000. There was little change in the operations picture other than in petroleum. Shell Oil Company completed a large producing well in the Eagle Springs field and quadrupled the State's petroleum output for 1961 as compared to 1960. The brighter side of the metals industry in 1961 was the increased activity in exploration, which included the search for copper, lead-silver, antimony, and beryllium ores in White Pine County; copper and iron ores in Lyon County; beryllium and lead-zinc ores in Churchill, Douglas, Ormsby, and Pershing Counties. Also, Getchell Mine, Inc. began development of its gold property in Humboldt County for open-pit operation. Other activities included the first shipment of copper concentrates by the Anaconda Company from its new sulfide mill at Weed Heights, and a contract for construction of a 500,000-tons-per-year magnetic separation plant to be constructed by Standard Slag Company at the Minnesota iron mine, Douglas County. On the debit side the London Extension Mining Company, the last active straight lode-gold mine in Nevada, suspended operations at its Goldacres property in Eureka County on March 31.

In 1962 mineral production increased slightly to \$83,700,000. Although production increase was minor, there were several significant developments. In July, Getchell Mine, Inc. began bullion shipments from its new gold ore treatment plant. The Nevada Barth Company took over the operation of iron deposits on Southern Pacific Company land in Pershing County. The Anaconda Company operated its sulfide concentrator at Weed Heights for the full year and reported the purchase of the Mt. Wheeler beryllium deposits, White Pine County. Nevada Scheelite Division, Kennametal Inc., completed a plant at Fallon for refining tungsten carbide produced at its Mineral County operation.

Exploration activity, as in 1961, highlighted 1962. Homestake Mining Company investigated copper showings in the Crescent Peak area, Clark County; Newmont Exploration Ltd. began extensive exploration for gold-silver ore in western Elko County; Callahan Mining Corp. explored a silver-bearing deposit in Esmeralda County; and Siskon Corp. continued exploration of the Gibellini vanadium property south of Eureka. Exploration for gold ore was conducted by Kerr-McGee Oil Industries and Newmont Exploration, Ltd. in the Goldacres area, and Duval Corp. continued its exploration program for copper in the Copper Canyon - Copper Basin area, Lander County. Lyon County iron deposits were under continuous exploration by Utah Construction and Mining Company and by Columbia Iron Mining Company. American Metal Climax Company explored for molybdenum in an area near Mina. In Nye County, diamond drilling was in progress by The Anaconda Company at the Hall molybdenum property northeast of Tonopah. Many other exploration programs were underway throughout Nevada and it appeared likely that new ore bodies would be discovered.

Production in 1963 of \$84,800,000 again showed a slight increase over the previous year. The increase was credited mainly to gold production from Getchell Mine, Inc., which completed its first full year of uninterrupted operation since conversion to open-pit gold mining. Larger shipments of iron ore from mines in Douglas, Humboldt, and Pershing Counties more than offset declines at iron properties in Eureka and Lander Counties. A marked increase in the quantity of ore mined from the Mountain View property, Eureka County, accounted for a 75 percent rise in zinc production. Production and shipments of mercury were lower, and several small mines that had produced in 1962 were idle. Tungsten mining remained at a standstill.

Exploration and development work continued to expand. Most of the companies active in 1962 continued exploration in 1963, and new companies entered the picture. Included among the newcomers were Phillips Petroleum Company, Atlas Corp., and Sierra de Oro Mining Company in the Lynn district. Silver State Consolidated Mines Company was developing the old Crown Point mine in the Rochester district, Pershing County. Exploration for copper ore was underway by Norlex Mines Ltd. of Toronto, Canada, in Mason Valley (Lyon County) and in Mineral County.

The Texota Oil Company, drilling on a farm-out from the Shell Oil Company, completed another large producing well in the Eagle Springs field. The new well, completed in December, did not have sufficient production by year's end, however, to offset the decline in production of the three older producing wells.

INDUSTRIAL MINERALS

Industrial Minerals, or nonmetallic minerals as they are sometime called, are those minerals mined for their particular chemical or physical qualities rather than for their metal content. They are usually chemical combinations rather than elemental substances.

Industrial mineral production has attained commercial significance in Nevada only during the last twenty to thirty years (see fig. 1) although some of the materials were of economic importance early in Nevada's mining history. Salt and borax were mined in large amounts during the 1800's. Salt was of extreme importance to the development of the Comstock Lode and other early day mining camps, as the early metallurgical practices required large amounts in the reduction of silver. Salt cost \$150 per ton delivered to the Comstock Lode when purchased in San Francisco. In 1862 a herd of camels was imported for use in hauling salt from Rhodes Marsh in Mineral County to Virginia City. In 1863 the Sand Springs salt deposit, Churchill County, was discovered and was able to supply salt to Virginia City for \$60 per ton. This deposit still produces a small amount each year for use in deicing northern Nevada city streets and highways.

Borax deposits had been found at Salt Wells, Churchill County, and Columbus Marsh, Esmeralda County, in 1871, but it was on Teel's Marsh that F. M. "Borax" Smith discovered the deposit which gave the United States borax industry its start. Soon thereafter Smith and his brother obtained financial backing and built a borax plant. By 1873 the works at Teel's were bigger than operations at Columbus, Rhodes, and Fish Lake Marshes and soon became the largest in the world. Discoveries of colemanite, an insoluble boron mineral, in 1882 in Southern California and later discoveries of soluble boron salts at Searles Lake ended the Nevada operations.

Gypsum has been mined for many years in Nevada, beginning about 1909 when the Arden Plaster Company started operations near Arden, Clark County. This deposit, purchased in 1919 by the U. S. Gypsum Company, operated until the deposit was mined out in 1931. In 1925 the Blue Diamond Corp., Ltd., began mining a second deposit near Arden. This operation continues in operation today, supplying gypsum board and similar products to southwest markets. A second major gypsum operation is located south of Apex, Clark County, where the Fiberboard Paper Products Corp. recently began construction of a wallboard plant. The third major gypsum operation in Nevada is located near Gerlach, Washoe County. The Pacific Portland Cement Company began operations here in 1921. The mine and board plant is now owned and operated by U. S. Gypsum Company.

Diatomite deposits have been reported in almost every county in Nevada, although active mining is presently restricted to western Nevada. Three companies mine diatomite in Nevada; The Eagle-Picher Company, the Dicalite Division of the Great Lakes Carbon Corp., and the Aquafil Company. Eagle-Picher operates two mines and mills, one at Clark Station, Storey County, and one near Lovelock, Pershing County. The Celetom mine at Clark Station began regular operations in 1943 and was acquired by Eagle-Picher in 1945. The mine and mill have operated continuously since that time. The Lovelock deposit was first examined in 1953. Following extensive exploration, a mill was erected at Colado, east of Lovelock, and the first production made in September 1958. The Basalt mine of the Dicalite Division, near Basalt, Mineral County, was discovered in 1905. Occasional shipments were made from that time until 1928. Shipments began again in 1940 and greatly increased in 1944 when the Dicalite Division purchased the property. The Aquafil Company has operated a number of quarries in the Fernley area, site of their mill, and is presently mining diatomite in the Nightingale district. There have been other diatomite mines in Nevada, most notable being the Tri-O-Lite Company mine near Vivian, four miles east of Carlin, Elko County, that operated during the 1920's and early 1930's.

Barite production began in Nevada in 1907 when a small amount of barite was mined at the American Barite mine in Esmeralda County. The Yerington mine in Ormsby County

is mentioned as having produced barite in 1907. The Crystal mine in Mineral County was an active producer from 1916 through 1919, and again during the late 1920's and early 1930's. The development of the present Nevada barite industry began during the late 1930's. Most of the production has come from the Battle Mountain - Carlin area of Lander, Eureka, and Elko Counties.

Other industrial minerals presently produced in Nevada include limestone, silica sand, perlite, scoria, and fluorspar (see Pl. 2). It is likely that industrial minerals will continue a steady growth in production as demands for these minerals increase in California and other adjacent States.

THE FUTURE

In its Centennial year the Nevada mineral industry can look back upon a substantial, although oftentimes erratic, history of economic contribution to Nevada. It was because of mining that Nevada became a State — it was because of mining that Nevada was able to grow during many of the 100 years now celebrated. While the drama of the early boom days has focused attention on the past, the mineral industry has its best days yet ahead.

Recent exploration efforts promise handsome dividends. Among these are: Newmont's announcement of their intention to build a 2000-ton-per-day cyanide mill in the Lynn district, Eureka County; published reports concerning the possible operation of the Dayton iron mine by the Utah Construction Company; reports of the discovery of a large iron-copper ore body by the Columbia Iron Mining Company; completion of a large flowing oil well by the Texota Oil Company in the Eagle Springs field; continued exploration of a large molybdenum deposit north of Tonopah, Nye County, by the Anaconda Company; and the rumored discovery of another open-pit copper mine in northern Nevada.

All of these developments, plus others, will add to the continued substantial economic contribution that Nevada's mines and miners make to the Silver State.

TABLE 1

NEVADA'S MINERAL PRODUCTION 1859 - 1964

<u>Year</u>	<u>Gross yield</u>						
1859	\$ 257,000	1886	\$ 6,944,965	1913	\$32,428,352	1940	\$43,864,107
1860	1,000,000	1887	7,187,895	1914	26,801,456	1941	46,341,000
1861	2,500,000	1888	8,828,010	1915	31,820,525	1942	46,313,000
1862	6,000,000	1889	8,095,123	1916	47,539,367	1943	56,525,000
1863	12,500,000	1890	6,895,512	1917	45,016,273	1944	51,800,000
1864	16,000,000	1891	5,559,469	1918	48,635,168	1945	31,307,000
1865	16,507,728	1892	3,464,502	1919	27,847,151	1946	35,454,000
1866	13,454,831	1893	3,001,678	1920	21,474,997	1947	42,639,000
1867	15,742,464	1894	1,995,830	1921	11,772,633	1948	42,503,000
1868	13,056,906	1895	2,104,550	1922	13,018,953	1949	37,373,000
1869	39,272,687	1896	3,480,102	1923	20,920,599	1950	38,499,000
1870	17,087,752	1897	3,628,190	1924	21,764,291	1951	57,074,000
1871	20,111,671	1898	3,141,090	1925	20,434,576	1952	64,231,000
1872	23,896,402	1899	2,716,096	1926	20,597,970	1953	73,523,000
1873	32,640,677	1900	2,632,923	1927	23,640,630	1954	89,138,000
1874	30,321,705	1901	2,754,736	1928	31,349,454	1955	113,220,000
1875	35,290,308	1902	3,366,607	1929	31,493,646	1956	126,681,000
1876	45,272,839	1903	2,832,821	1930	16,275,086	1957	86,023,000
1877	46,671,870	1904	4,489,960	1931	9,407,836	1958	68,854,000
1878	30,919,653	1905	6,412,825	1932	4,283,635	1959	66,093,000
1879	16,943,257	1906	13,276,269	1933	4,612,585	1960	80,335,000
1880	11,882,786	1907	16,328,232	1934	9,035,285	1961	81,533,000
1881	8,681,223	1908	14,647,265	1935	16,546,494	1962	83,074,000
1882	7,718,015	1909	25,817,389	1936	25,778,266	1963	85,441,000
1883	7,617,173	1910	31,428,336	1937	34,039,068		
1884	6,832,607	1911	33,386,031	1938	24,945,376		
1885	7,324,062	1912	35,546,873	1939	31,379,445		
							\$ 2,946,124,000

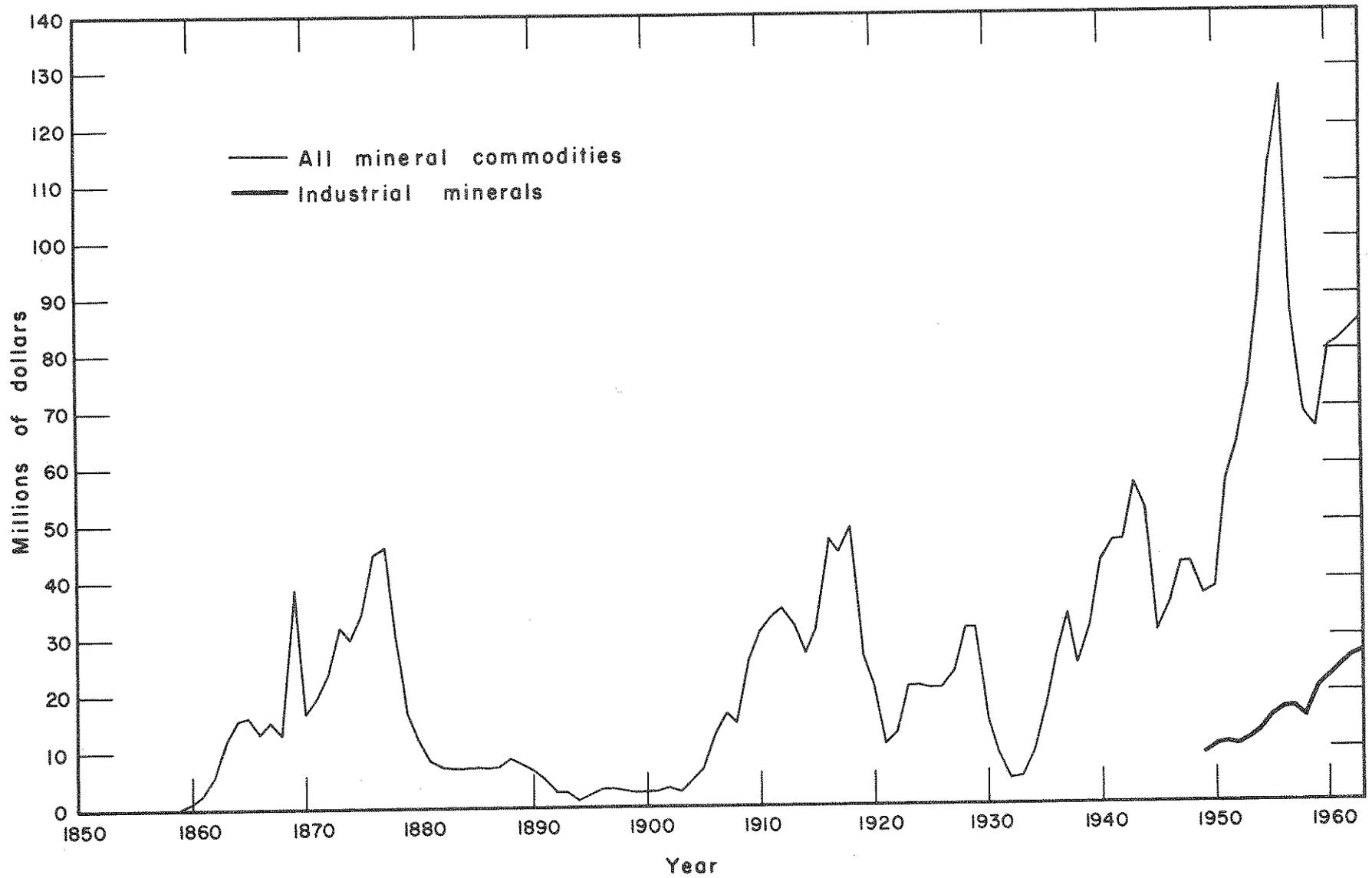


Figure 1. Production chart of Nevada mineral commodities, 1859-1964.

MINING DISTRICTS

CHURCHILL COUNTY

1. ALPINE (Clan Alpine) Ag, Au
2. BERNICE Sb, Ag, Au
3. CHALK MOUNTAIN Pb, Ag, Au
4. COPPER NETTLE Cu
5. DESERT WHITE PLAIN Au, Ag
6. EASTGATE Au, Ag, Pb
7. FAIRVIEW (Bell Mountain, Gold Basin, South Fairview) Cu, Au, Pb
8. HOLY CROSS (Fallon, Terrell, Wild Horse) Mn, Hg, Ag, Au, Pb
9. IXL (Coe Canyon, Job Peak, Silver Hill) Au, Ag
10. JESSUP Au
11. LAKE (Mopung Hills) Sb, Pb, Ag
12. MOUNTAIN WELLS (La Plata) Ag, Au, W
13. SAND SPRINGS Ag, Au, W
14. SHADY RUN (Fondaway) W, Au, Ag
15. TABLE MOUNTAIN (Bohola Boyer, Cottonwood Canyon) Au, Cu, Ni, Hg, Ag, Sb, Cu
16. TOY (Browns, St. Anthony) W
17. TRUCKEE (Fireball) W
18. TUNGSTEN MOUNTAIN (Hiltop) W
19. WESTGATE Ag, Pb, Au
20. WHITE CLOUD (Cooperized) Au, Cu, Ag
21. WONDER (Hercules) Ag, Au, Cu

CLARK COUNTY

22. ALUNITE (Railroad Pass, Vincent) Au
23. BUNKERVILLE (Copper King, Key West) Cu, Au, Ag, W, Ni, Pd, Pt, Co, Be
24. CHARLESTON Au, Ag, Cu, Pb
25. CRESCENT (Crescent Peak) Ag, Au, Pb, Cu
26. DIKE Pb
27. ELDERADO (Colorado, Nelson) Ag, Au, Pb, Cu
28. GASS PEAK Ag, Pb, Au
29. GOLD BUTTE Au, Cu, Zn, Ag, Pb, U
30. GOODS SPRINGS (Yellow Pine, Potosi) Zn, Pb, Au, Cu, V, Ni, Pt, Pd, U, Co
31. LAS VEGAS Mn, Pb, Zn
32. NEWBERRY Au, Ag
33. SEARCHLIGHT Au, Ag, Cu, Pb
34. SUNSET (Lions) Au, Ag

DOUGLAS COUNTY

35. BUCKSKIN (Smith Valley) Fe, Au, Cu, Ag
36. GARDNERVILLE (Eagle) W, Au, Ag, Sb
37. GENOA Au, Ag, Pb, Cu
38. MOUNTAIN HOUSE (Holbrook) Ag, Au, Pb, W
39. MOUNT SIEGEL Au, Ag, Pb
40. RED CANYON (Silver Lake) Ag, Au, Pb
41. RUBIE CANYON Au, Ag, W
42. SILVER CLANCE Au, Ag

ELKO COUNTY

43. ALDER (Tennessee Gulch, Tennessee Mountain) W, Ag, Au
44. AURA (Bail Run, Centennial, Columbia) Ag, Au, Sb
45. BOOTS TRAP Au, Ag
46. BURNER (Burner Hills) Pb, Ag
47. CHARLESTON (Copper Mountain, Cornwall) Sb, Ag, Au, Cu
48. CONTACT (Kit Carson, Porter, Salmon River) Cu, Ag, Pb, Au, Zn, W
49. CORNUCOPIA Ag, Au
50. DECOY Mn
51. DELANO (Delno) Pb, Ag, Cu, Zn, Au
52. DELKER Cu
53. DOLLY VARDEN (Granite Mountain, Mizpah) Cu, Pb, Ag, Au
54. EDMONT (Centennial) Au, Pb, Ag, Cu
55. ELA MOUNTAIN W
56. FERBER Cu, Pb, Ag, Au
57. FERRELLSON SPRING (Allegheny) Cu, Au
58. GOLD BASIN (Rowland) Cu, Au
59. GOLD CIRCLE (Midas, Summit) Au, Ag, Pb
60. GOOD HOPE Ag
61. ISLAND MOUNTAIN (Gold Creek) Au, W, Ag, Sb

62. IWANHOE Hg
63. JARBIDGE Au, Ag, W, Cu, W, Au, Ag, Pb
64. KINSLY Cu, W, Au, Ag, Pb
65. LAFAYETTE Pb, Ag, W
66. LEE Cu
67. LIME MOUNTAIN (Deep Creek) Cu, Au, Ag
68. LORAY (Montello, Leroy, Lurey) Pb, Ag, Cu
69. LUCIN (Buel) Cu, Ag, Pb
70. MERRIMAC (Indra Springs) Ag, Pb, Cu, Zn, Au, W
71. MOUNTAIN CITY (Cape Rio Tinto, Van Duzer) Cu, Ag, Au, U, Pb, Mn
72. MUD SPRINGS (Dead Horse, Medicine Springs) Pb, Ag
73. PROCTOR Ag
74. RAILROAD (Bullion) Pb, Cu, Ag, Au, Zn
75. ROCK CREEK (Divide, Falcon) Ag, Hg
76. RUBY VALLEY (Smith Creek) W, Pb, Zn, Ag, Cu
77. SPRUCE MOUNTAIN (Latham, Johnson, Steptoe) Pb, Ag, Zn, Cu, Au, W
78. TECOMA Ag, Au
79. TUSCARORA W, Pb, Zn
80. VALLEY VIEW (Harrison Pass) W, Pb, Zn
81. WARM CREEK Zn, Pb
82. WHITE HORSE Pb, Ag, Zn

ESMERALDA COUNTY

83. ARGENTITE Ag
84. BLACK HORSE W, Fe
85. CROW SPRINGS Au, Ag, Cu, Pb
86. CUPRITE Au, Ag, Pb
87. DIVIDE (Gold Mountain) Ag, Pb
88. DYER Hg
89. FISH LAKE VALLEY (White Mountains) Au, Ag, Cu, Hg
90. GILBERT (Desart) Au, Cu, Ag
91. GOLDFIELD (Diamondfield) Au, Ag, Cu, V
92. GOLD POINT (Hornsilver, Lime Point) Ni, Pt, Pd, U, Co
93. GOOD HOPE Ag
94. KLONDIKE Ag, Au, Pb, Cu
95. LIDA (Alma Valley) Ag, Au, Pb, Cu
96. LONE MOUNTAIN (Weepah, West Divide) Au, Ag, Cu, Zn
97. MONTEZUMA Ag, Pb, Au, Cu
98. PALMETTO (Fester, Pigeon Springs, Windygap) Pb, Au, Ag, Cu
99. RAILROAD SPRINGS Cu, Au, Ag
100. ROCK HILL W, Fe
101. SILVER PEAK (Mineral Ridge, Red Mountain) Au, Ag, Pb, Cu
102. SYLVANIA (Green Mountain) W, Au, Pb, Ag
103. TOKOP (Montie Claire, Gold Mountain, Oriental Wash) Au, Ag, Pb, U, Cu
104. TULE CANYON Au, Ag

EUREKA COUNTY

105. ALPHA Ag, Pb
106. ANTELOPE Ag, Zn, Pb, Au, Cu
107. BEOUWAHE Hg
108. BUCKHORN Au, Ag
109. CORTIZ (Ami) Canyon. Cu, Zn, Hg
110. DIAMOND (Phillipoburg) Ag, Pb, Zn, Au, Cu
111. EUREKA (Ruby Hill, Pietro, Prospect, Silverado Secret Canyon, Spring Valley) Pb, Au, Ag, Cu, Zn, Sb
112. FISH CREEK Ag
113. CIBELLINI Mn
114. LONE MOUNTAIN Zn, Pb, Ag
115. LYNN Au
116. MARGIE CREEK (Schroeder, Suzie Creek) Cu, Au, Ag
117. MINERAL PAUL Pb, Ag, Cu
118. MODARELLI (Amarilli) Fe
119. MOUNT HOPE Zn, Pb
120. ROBERTS Fe, Ag, Cu, Pb
121. SAFFORD (Barth, Palisade, Pine Valley) Pb, Ag
122. UNION

HUMBOLDT COUNTY

123. AWAKENING (Amos, Slumbering Hills) Au, Ag, Pb, Cu
124. BOTTLE CREEK Hg
125. DISASTER (Disaster Peak) Ag, Au
126. DONNELLY Au, Ag
127. DUTCH FLAT (Florence, Willow Point) Au, Hg, Ag, Pb, Cu
128. GOLOONDA W, Ag, Mn, Au
129. GOLD RUN (Adeleide) Au, Ag, Cu, Pb, Zn
130. HARMONY (Sonoma Mountain) Cu, Au, Ag
131. IRON POINT Ag, Mn
132. JACKSON MOUNTAINS (Jackson Creek) Fe
133. NATIONAL Au, Ag, Hg, Cu, W
134. OPALITE (Cordero, McDermitt) Hg
135. PARADISE VALLEY (Spring City, Mount Rosa, Poverty Creek) Ag, Hg, Au, Cu
136. POTOSI (Dogwood Range, Gatchell, Kelly Creek, Preble) W, Au, Ag, Cu, Pb, Zn
137. POVERTY PEAK Hg
138. REBEL CREEK (New Goldfields, Willow Creek) Ag, Au
139. RED BUTTE Cu, Ag, Pb, Zn, Sb
140. SAWTOOTH (Mandalay) Au
141. SHERMAN (Bloody Run) W, Au, Ag
142. SHUN Ag, W
143. SULPHUR Ag, Hg
144. VARVILITE (Columbia, Leonard Creek, Pine Forest) Au, Sb, Ag, Cu, Pb
145. WARM SPRINGS (Katonaw, Pueblo, Washburn) Au, W, Ag, Cu

LANDER COUNTY

147. BATTLE MOUNTAIN (Copper Basin, Copper Canyon, Galena, Bamcock, Telluride) Cu, Au, Pb, Zn, Sb, Ag
148. BIG CREEK Sb
149. BIRCH CREEK (Smoky Valley, Big Smoky) W, Au, Ag, U
150. BUFFALO VALLEY (Mill Canyon) Mn, Au, Ag
151. BULLION (Tenaba, Gold Acres, Lander, Campbell) Au, Ag, Cu, Pb, W
152. GOLD BASIN Au, Ag
153. HILLTOP (Kimberly, Mayesville) Au, Ag, Cu, Pb, Sb
154. IZENHOOD In
155. KINGSTON (Banker Hill, Santa Fe, Summit, Victoria) Au, Ag
156. LEWIS (Deer, Mud Springs, Pitsburg) Ag, Pb, Au, Cu, Sb
157. MCCOY (Horse Canyon) Au, Fe, Ag, Pb, Zn
158. NEW PASS Au, Mn, Ag, Pb
159. RAVENSWOOD (Sheshone) Ag, Au
160. REESE RIVER (Austin, Amador, Yankee) Ag, Au, U
161. SKOOKUM Ag, Au
162. SPENCERS HOT SPRING (Linka) W, Ag, U
163. WILD HORSE Hg, Mn

LINCOLN COUNTY

164. ATLANTA (Silver Park, Silver Springs) Au, Ag, U
165. CHIEF (Olenite) Au, Ag, Pb, Cu
166. COMET Au, Zn, Pb, Au, Cu, W
167. DELAMAR (Ferguson) Au, Ag
168. EARLE VALLEY (Fay, Staneline) Au, Ag, Pb, Cu
169. FREIBERG (Wuerttemberg) Au, Ag, Pb, Zn
170. GROOM Pb, Ag, Cu
171. JACK RABBIT (Bristol, Silverhorn) Cu, Ag, Pb, Mn, Zn, Au
172. LONE MOUNTAIN (Ely Springs) Ag
173. PARRANAGAT (Hike) Mn, Ag, Pb, Cu, Au
174. PATTERSON Ag, Au, Pb, Cu
175. PIDDIE Zn, Pb, Ag, Au, Mn, Cu, Fe

176. TEM PIUTE W, Ag, Zn, Pb
177. WIGO manganese Au, Ag, Zn, Pb
178. VIOLA Au, Ag, Cu, Pb

LYON COUNTY

179. BENWAY Au, Ag, Cu
 180. DRUMHILL W
 181. GOMI (Palmyra, Indora Springs) Au, Ag, Cu
 182. PINE GROVE (Wilson, Cambridge, Rockland) Au, Ag, Zn
 183. RAMSEY W, Fe
 184. RED MOUNTAIN Au, Fe
- SILVER CITY — included in Constock district, Storey County

MINERAL COUNTY

185. TALAPOOSA Au, Ag, Hg
186. WASHINGTON Cu, Au, Ag, Pb
187. WELLINGTON Pb, Zn, Cu
188. YERINGTON (Ludwig, Mason) Cu, Au, Ag
189. AURORA Au, Ag (Csmaralde, Cambridge)
190. BELL (Simon, Cedar Mountain, Omoc) Pb, Au, Ag, Zn, Cu, W, Hg
191. BOWARD (Rand, Copper Mountain) Au, Cu, Ag, Pb
192. BROKEN HILLS Ag, Pb, Au, Cu, Zn
193. BUCKLEY Pb, Ag
194. BUENA VISTA (Basalt, Onetta, Queens Mt, Montgomery) Au, Ag, Hg, Pb, W
195. CANDELARIA Au, Ag, Pb, Sb, Zn, Cu
196. EAGLEVILLE (Hot Springs) Au, Ag, Sb
197. FITTING (Acme) Ag, Au, Pb, W
198. GARFIELD Au, Ag, Pb, W

- HAWTHORNE — see Lucky Boy and Pamlico districts
199. LEONARD (Sunnyside) W, Au, Pb, W
 200. LUCKY BOY Au, Ag, Pb, Ag
 201. MARIETTA (Black Mountain) Ag, Pb, W
 202. MOUNTAIN VIEW (Granite, Reservation) Cu, Au, Ag, U
 203. MOUNT GRANT (East Walker, Walker Lake) Au, Ag, Cu
 204. PAMLILO (Sulphide) Au, Ag, Sb
 205. PILOT MOUNTAINS (Sodaville, Graham Springs) Ag, W, Hg, Au, Pb, Zn
 206. RAINIIDE (Regent) Au, Ag, Cu, Pb, Sb
 207. SANTA FE (Luring) Cu, Ag, Au, W, Fe, Pb, Zn, Sb
 208. SILVER STAR (Gold Range, Mina) W, Au, Ag, Cu, Pb, Mn
 209. WHISKEY FLAT (Sulphide) Cu, Au, Ag

NYE COUNTY

210. ANTELOPE SPRINGS Ag, Pb, Au
 211. ARROWHEAD Au, Ag
 212. ATHENS Au, Ag
 213. BARCELONA (Spanish Belt, Meadow Canyon) Ag, Hg, Au, W
- BEATTY — see Bullfrog and Fluorine districts
214. BELLEHELEN (Longstreet) Ag, Au, Cu
 215. BELMONT Ag, Au, Cu (Philadelphia, Silver Bend)
 216. BLACK HAWK Hg
 217. BRUNER (Phonolite) Au, Ag
 218. ELY FROG (Pioneer, Rhyolite) Au, Ag, Pb, Cu
 219. CACTUS SPRINGS Au, Ag
 220. CLIFFORD Au, Ag, Pb
 221. CLOVERDALE (Golden, Black Springs, Republic) Au, Ag, Pb
 222. CURRANT Au, Ag
 223. DANVILLE Au, Ag, Cu
 224. ELDORADO (Eben Creek, Gold Belt) Au, Ag
 225. ELLENDALE W, Au, Ag, Pb
 226. ELLSWORTH (Marble Falls) W, Au, Ag, Pb
 227. FAIRPLAY (Alwood, Goldie) Au, Ag, Pb
 228. FLUORINE (Bare Mountain) Au, Hg, Ag
 229. GABBS Fe, Pb, Ag, Hg, W
 230. GOLD CRATER Au, Ag, Pb
 231. GOLDEN ARROW (Blakes Camp) Ag, Au

232. HANNAPAH (Volcano, Silverado, Bamcock) Ag, Au
233. JACKSON (Gold Park) Au, Ag, Pb
234. JETT (Lettelatter Canyon, Peavine Canyon, Wolf Canyon) Sb, Hg, Pb, Ag, W
235. JOHNNIE Au, Ag
236. KAWICH (Gold Reed, Queen City) Au, Ag
237. LEE (Big Dome) Au, Ag
238. LODI (Granite, Marble) W, Ag, Pb, Au
239. LONGSTREET (Fresno, George Canyon) Au, Ag
240. MANHATTAN Au, Ag, Sb
241. MOREY Au, Ag, Sb
242. NORTHLAMBERLAND Au, Ag
243. OAK SPRINGS (Olimas) W, Ag, Au
244. PARADISE PEAK W, Hg

PARADISE RANGE (Monmouth) — see Ellsworth, Gabbs, and Paradise Peak districts

245. QUARTZ MOUNTAIN Ag, Pb, Au
246. REVELLE Ag, Pb, Au, Sb, Cu, W
247. ROUND MOUNTAIN (Jefferson Canyon) Au, Ag, Pb, Cu
248. ROYSTON Ag, Pb, Cu
249. SAN ANTONIO (Liberty, San Antonio) Au, Ag, Pb, Cu
250. SILVER BOW Ag, Au, Pb
251. SILVERTON Ag
252. STONEWALL Au, Ag, Cu
253. TOLICHA (Monte Cristo, Clarkdale) Au, Ag
254. TONGOPAH Ag, Au, Pb, W, Cu
255. TROY (Iron Canyon, Terrell) W, Au, Zn, Ag, Pb, Zn
256. TWIN RIVER (Millet) Au, Ag, W, Pb, Zn
257. TYBO (Hot Creek, Empire, Keystone) Pb, Ag, Zn, Sb
258. UNION (Berlin, Grantsville, Ione) Ag, Hg, Au, Pb, Cu, Sb, W
259. WAHMONE Ag, Au
260. WASHINGTON Ag, Pb
261. WELLINGTON (Jamestown, O'Briens) Au, Ag
262. WILLOW CREEK (Nyala, Quinn Canyon) Au, Ag
263. WILSONS (Trappmans) Ag, Au

ORMSBY COUNTY

264. CARSON CITY Au, Ag
265. DELAWARE (Brunswick Canyon, Sullivan) Au, Pb, Ag, Fe, W
266. VOLTAIRE (Eagle Valley, Washoe) Ag, Pb, Au, Cu, W

PERSHING COUNTY

267. ANTELOPE Cu, Ag, Au, Pb, Sb
 268. ANTELOPE SPRINGS (Relief) Hg, Sb, Pb, Mn
 269. ARABIA (Trinity) Ag, Au
 270. BLACK DRABO Mn
 271. BLACK KNOB Sb, Hg
 272. FARRELL (Stone House) Au
 273. GOLDBANKS Hg
 274. HAYSTACK Au, Ag
 275. HOOKER (Empire) W
 276. IMLAY (Humboldt, Eldorado, Prince Royal) Au, Hg, Ag, W
 277. INDIAN Ag, Au
 278. IRON HAT (Aldrich) Sb, W, Pb, Ag
 279. JERSEY Ag, Au, Pb, Ag
 280. JUNIPER RANGE W
 281. KENNEDY Au, Ag, Cu, Pb
 282. MILL CITY (Central) W, Ag, Au, Pb
 283. MINERAL BASIN Fe
 284. MOUNT JOHNS Hg, W
 285. MULTIFERRY Ag, Pb, Sb
 286. NIGHTINGALE Au, Hg, Ag
- OREANA — see Sacramento, Rochester, and Rye Patch districts
287. PLACERITES Au
 288. POKER BROWN (San Jacinto) Au, Pb, Sb
 289. RABBIT HOLE Au

290. RAGGED TOP (Copper Valley) W
291. ROCHESTER Ag, Au
292. ROSEBUD Au, Ag, Cu
293. ROSECREAK W
294. RYE PATCH (Echo) Au, Ag, W, Sb
295. SACRAMENTO Au, Ag
296. SAWTOOTH (Mandalay) Au
297. SOOSSA Au, Ag
298. SEVEN TROUGHS Au, Ag, W
299. SIENRA (Dott Glen, Chafey, Oro Fino, Sunshine) Au, Ag, Pb, Cu
300. SPRING VALLEY (Fitting, American) Hg, Au, Ag
301. STAR (Bloody Canyon, Santa Clara) Sb, Au, Ag
302. UNIONVILLE (Buena Vista) Ag, Au, Sb
303. VILEY W, Hg
304. WASHIKI (Grandpa) W, Au, Ag
305. WILD HORSE W, Sb, Ag, Pb
306. WILLARD (Loring, Loveck) Sb, Au, Ag
307. WILLOW CREEK Au

STOREY COUNTY

308. CASTLE PEAK (Red Mountain) Hg
309. COMSTOCK (Washes, Virginia City, Gold Hill, Silver City, Flowers) Au, Ag, Cu

WASHOE COUNTY

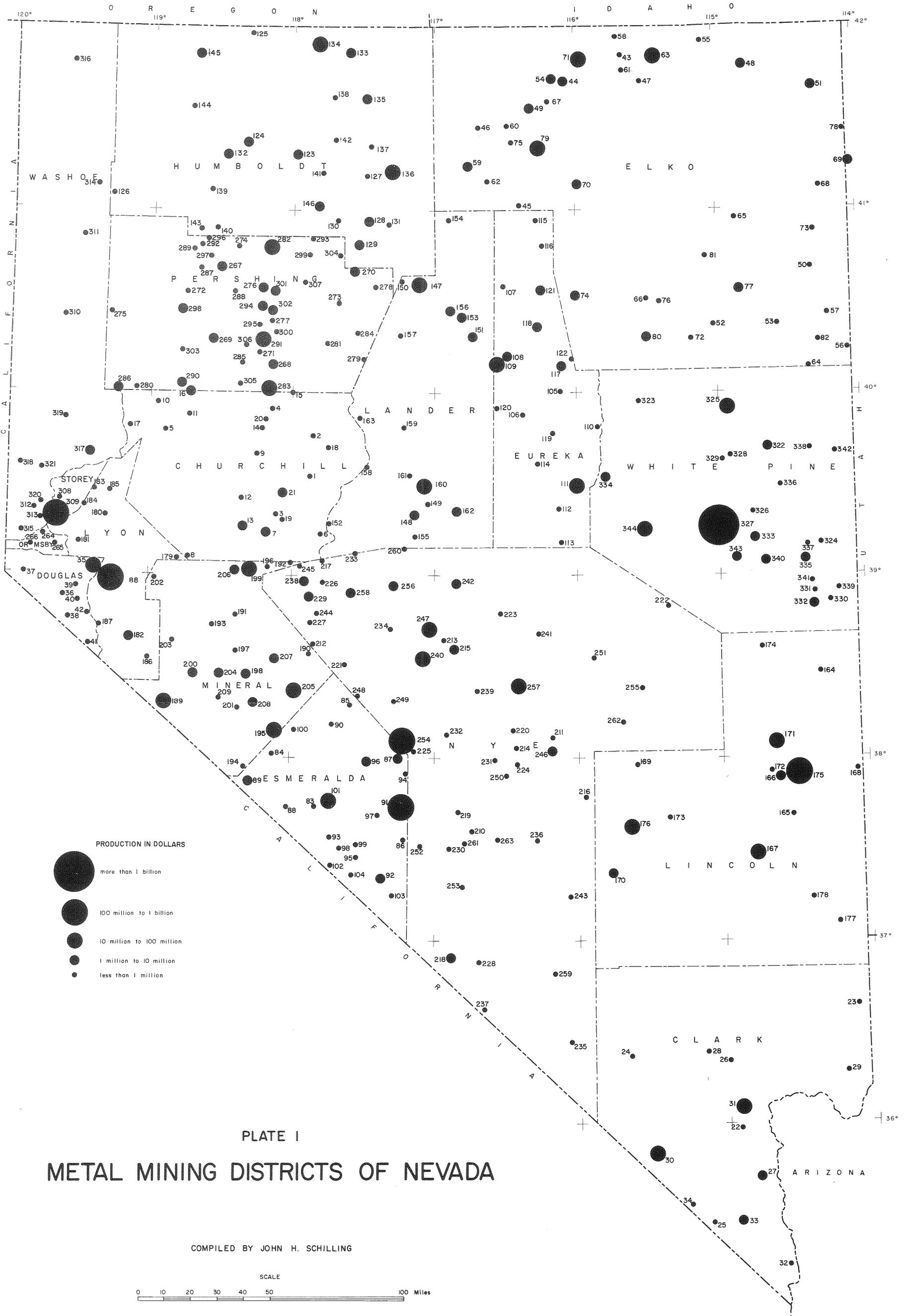
310. COTTONWOOD Au, Ag, Pb
311. DEEPHOLE (Granite Range) Au, Ag, Cu, Pb, W
312. GALENA (Washoe Valley) Zn, Pb, Ag, Cu, Au
313. JUMBO (West Constock) Au, Ag
314. LEADVILLE Au, Ag, Pb, Au
315. LITTLE VALLEY Hg
316. LONE PINE Au, Ag
317. OILHOUSE (White Horse) Au, Ag, Cu
318. PEAVINE (Reno, Granite Mountain) Ag, Au, Cu
319. PYRAMID Au, U, Cu, Sb
320. STEAMBOAT SPRINGS Hg
321. WEDERKIND (Gleadele) Au, Ag

WHITE PINE COUNTY

322. ALUMIN (Schell Creek, Schellbourne, Siegel, Queen Springs, Silver Canyon, Ruby Hill, Muncy Creek, Silver Mountain) Zn, Ag, Cu, Au, Pb, Mn
323. BALD MOUNTAIN (Joy, Ruby Mountain) W, Cu, Au, Ag, Sb
324. BLACK HORSE (Egan Canyon, Gold Canyon) Ag, W, Au, Pb
325. CHERRY CREEK (Egan Canyon, Gold Canyon) W, Ag, Cu
326. DUCK CREEK (Success) Pb, Ag, Au, Zn

EAGLE — see Red Hills and Tungstania districts

327. ELY (Robinson, Rang) Cu, Au, Ag
328. GRANITE (Steptoe) Mn, Zn, Pb, Mn
329. HUNTER Ag, Pb
330. LEXINGTON Hg
331. LINCOLN (St. Lawrence) W, Ag, Pb
332. MINERVA W, Ag
333. NEVADA Mn, Au, Ag
334. NEWARK (Strawberry) W, Ag, Au, Pb
335. OSCEOLA Au, Ag, W, Pb
336. PIERMONT Ag, Au
337. SACRAMENTO (Sacramento Pass) Au, Ag, W
338. RED HILLS Pb, Ag, Au, Cu
339. SNAKE (Bonita) W, Ag
340. TAYLOR Ag, Au, Sb, Pb
341. TUNGSTEN (Hub) W, Ag
342. TUNGSTONIA (Ragan, Kern, Pleasant Valley) W, Au, Ag, Pb, Cu, Zn
343. WARD Cu, Zn
344. WHITE PINE (Hamilton) Pb, Ag, Au, Cu, Zn, W

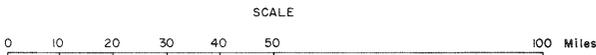


PRODUCTION IN DOLLARS

- more than 1 billion
- 100 million to 1 billion
- 10 million to 100 million
- 1 million to 10 million
- less than 1 million

PLATE I
METAL MINING DISTRICTS OF NEVADA

COMPILED BY JOHN H. SCHILLING



LOCALITIES

BARITE

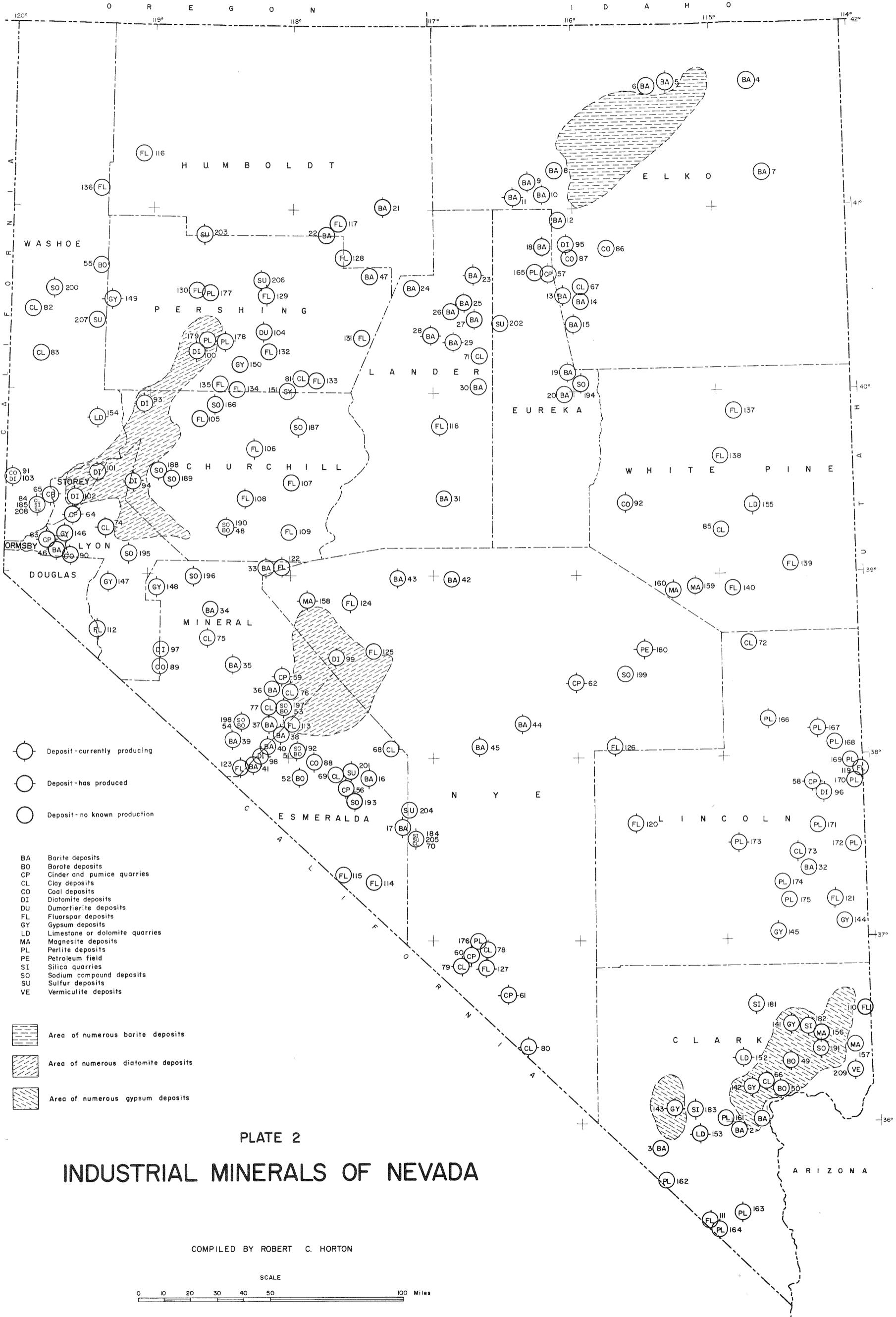
- CLARK COUNTY
 1. Lagarto
 2. Klinger
 3. Goodsprings district
- ELKO COUNTY
 4. Junco
 5. Wildcat
 6. 76 Creek area
 7. Rytting
 8. Anacabe — Gaylord
 9. Estabrook
 10. Jones Marvel
 11. Rossi
 12. Big Three — Heavy Spar
 13. Pine Mountain area
 14. Snow White
 15. Robinson Mountain area
- ESMERALDA COUNTY
 16. Lone Mountain district
 17. Congress
- EUREKA
 18. Maggie Creek district
 19. Bear
 20. Alpha district
- HUMBOLDT COUNTY
 21. Sander's
 22. Tomlinson-Mullinix
- LANDER COUNTY
 23. Argenta district
 24. Battle Mountain district
 25. Pleasant View — Bateman Canyon area
 26. Lewis district
 27. White Rock
 28. Mountain Springs
 29. Greystone
 30. Bald Mountain
 31. Laurent
- LINCOLN COUNTY
 32. Lucky Boy
- MINERAL COUNTY
 33. Eagleville district
 34. Gravity
 35. Crystal Barite
 36. Cowden-Knowles
 37. Belleville district
 38. Candelaria district
 39. Little Mountain
 40. Miller Mountain area
 41. Basalt district
- NYE COUNTY
 42. Northumberland district
 43. Summit Creek
 44. Warm Springs district
 45. Junbo
- ORMSBY COUNTY
 46. Brunswick Canyon district
- PERSHING COUNTY
 47. Sugar Loaf
- BORATES
- CHURCHILL COUNTY
 48. Sand Springs
- CLARK COUNTY
 49. White Basin
 50. Calville Wash
- ESMERALDA COUNTY
 51. Columbus Marsh

52. Fish Lake Marsh
- MINERAL COUNTY
 53. Rhodes Marsh
 54. Teels Marsh
- WASHOE COUNTY
 55. Gerlach Hot Springs
- CINDER & PUMICE QUARRIES
- ESMERALDA COUNTY
 56. Silver Peak cinders
- EUREKA COUNTY
 57. Palisade pumice
- LINCOLN COUNTY
 58. Panaca pumice
- MINERAL COUNTY
 59. Pumco pumice
- NYE COUNTY
 60. Beatty pumice
 61. Cind-R-Lite cinders
 62. Lunar Crater cinders
- ORMSBY COUNTY
 63. Cinderlite cinders
- STOREY COUNTY
 64. Naturlite pumice
- WASHOE COUNTY
 65. Basalt pumice
- CLAY
- CLARK COUNTY
 66. Muddy Mountain bentonite
- ELKO COUNTY
 67. Railroad halloysite
- ESMERALDA COUNTY
 68. Tonopah kaolin
 69. Silver Peak bentonite
 70. Cuprite kaolin
- LANDER COUNTY
 71. Cortez kaolin
- LINCOLN COUNTY
 72. Cave Valley clay
 73. Boyd bentonite
- LYON COUNTY
 74. Jupiter bentonite
- MINERAL COUNTY
 75. Chiatovich bentonite
 76. McMillan bentonite
 77. Sodaville bentonite
- NYE COUNTY
 78. Bond Marks kaolin
 79. Beatty bentonite
 80. Ash Meadows bentonite
- PERSHING COUNTY
 81. Stokes kaolin
- WASHOE COUNTY
 82. Sand Pass bentonite
 83. Flanigan clay
 84. Steamboat clay
- WHITE PINE COUNTY
 85. Ruth halloysite
- COAL
- ELKO COUNTY
 86. Elko
 87. Carlin Canyon
- ESMERALDA COUNTY
 88. Coaldale

- LYON COUNTY
 89. Washington (Lewis)
- ORMSBY COUNTY
 90. Eldorado Canyon
- WASHOE COUNTY
 91. Verdi
- WHITE PINE COUNTY
 92. Pancake Summit
- DIATOMITE
- CHURCHILL COUNTY
 93. Nightingale
 94. Hazen
- ELKO COUNTY
 95. Tri-O-Lite
- LINCOLN COUNTY
 96. Panaca
- MINERAL COUNTY
 97. Aldrich Station
 98. Basalt
- NYE COUNTY
 99. Nature Products
- PERSHING COUNTY
 100. Lovelock
- STOREY COUNTY
 101. Celatom
 102. Chalk Hills
- WASHOE COUNTY
 103. Verdi
- DUMORTIERITE
- PERSHING COUNTY
 104. Champion
- FLUORSPAR
- CHURCHILL COUNTY
 105. Madraso
 106. Revenue
 107. Purple Spar
 108. Dixie
 109. Merkt
- CLARK COUNTY
 110. Virgin Peak
 111. Nipton
- DOUGLAS COUNTY
 112. Boulder Hill
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 113. Flora
 114. Bullfrog-George
 115. Amry
- HUMBOLDT COUNTY
 116. Sunset
 117. Thunderbird
- LANDER COUNTY
 118. Iowa Canyon area
- LINCOLN COUNTY
 119. Florence
 120. Tempiute district
 121. Wells Cargo
- MINERAL COUNTY
 122. Broken Hills district
 123. Montgomery Pass district
- NYE COUNTY
 124. Berlin district
 125. Colton
 126. Quinn Canyon Range district
 127. Fluorine district

- PERSHING COUNTY
 128. Mammoth
 129. Fluorine mine
 130. Devaney
 131. Needle Peak
 132. Emerald Spar — Bohaman
 133. Fence-maker area
 134. Vesco
 135. Baker
- WASHOE COUNTY
 136. Leadville district
- WHITE PINE COUNTY
 137. Cherry Creek district
 138. Rainbow
 139. Rattlesnake Heaven
 140. Sawmill Canyon
- GYP SUM
- CLARK COUNTY
 141. North Muddy Mountains
 142. Apex
 143. Blue Diamond
- LINCOLN COUNTY
 144. Wells Cargo
 145. Galt
- LYON COUNTY
 146. Mound House
 147. Ludwig
- MINERAL COUNTY
 148. Regan
- PERSHING COUNTY
 149. Empire
 150. Lovelock
 151. Table Mountain
- LIMESTONE & DOLOMITE QUARRIES
- CLARK COUNTY
 152. Arrowhead
 153. Sloan
- WASHOE COUNTY
 154. Marble Bluff
- WHITE PINE COUNTY
 155. McGill
- MAGNESITE
- CLARK COUNTY
 156. Overton
 157. Bauer
- NYE COUNTY
 158. Gabbs
- WHITE PINE COUNTY
 159. Windous
 160. Ala-Mar
- PERLITE
- CLARK COUNTY
 161. Continental Eng. Service
 162. U. S. Perlite Products
 163. Searchlight district
 164. Nu-Lite
- EUREKA COUNTY
 165. Palisade area
- LINCOLN COUNTY
 166. Fairview
 167. Hollinger
 168. Free
 169. Snow
 170. Hackett
 171. Giant

172. Acoma
 173. Mackie
 174. Robb
 175. Johnson & Fitchett
- NYE COUNTY
 176. Doughboy
- PERSHING COUNTY
 177. Unnamed
 178. U. S. Gypsum
 179. Unnamed
- PETROLEUM
- NYE COUNTY
 180. Eagle Springs field
- SILICA QUARRIES
- CLARK COUNTY
 181. Tiffany
 182. Overton
 183. Arden
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 184. Cuprite
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 185. Steamboat
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 186. White Plains
 187. Dixie Marsh
 188. Eagle Marsh
 189. Soda Lakes
 190. Sand Springs Marsh
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 191. St. Thomas
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 192. Columbus Marsh
 193. Silver Peak (Clayton Valley)
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 194. Williams Marsh
- LYON COUNTY
 195. Wabuska Marsh
- MINERAL COUNTY
 196. Double Springs Marsh
 197. Rhodes Marsh
 198. Teels Marsh
- NYE COUNTY
 199. Butterfield Marsh
- WASHOE COUNTY
 200. Buffalo Springs
- SULFUR
- ESMERALDA COUNTY
 201. Alum
- EUREKA COUNTY
 202. Hot Springs Point
- HUMBOLDT COUNTY
 203. Sulfur
- NYE COUNTY
 204. Tognoni Springs
 205. Cuprite
- PERSHING COUNTY
 206. Humboldt House
- WASHOE COUNTY
 207. Mud Lake
 208. Steamboat
- VERMICULITE
- CLARK COUNTY
 209. Gold Butte



- Deposit-currently producing
- Deposit-has produced
- Deposit-no known production

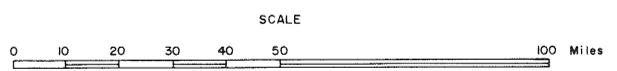
- BA Barite deposits
- BO Borate deposits
- CP Cinder and pumice quarries
- CL Clay deposits
- CO Coal deposits
- DI Diatomite deposits
- DU Dumortierite deposits
- FL Fluorspar deposits
- GY Gypsum deposits
- LD Limestone or dolomite quarries
- MA Magnesite deposits
- PL Perlite deposits
- PE Petroleum field
- SI Silica quarries
- SO Sodium compound deposits
- SU Sulfur deposits
- VE Vermiculite deposits

- Area of numerous barite deposits
- Area of numerous diatomite deposits
- Area of numerous gypsum deposits

PLATE 2

INDUSTRIAL MINERALS OF NEVADA

COMPILED BY ROBERT C. HORTON



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For information concerning the mineral resources and mineral industry of Nevada, write to: Director, Nevada Bureau of Mines, University of Nevada, Reno, Nevada.