35-mesh screened product is discarded as waste, and the plus 35-minus 14-mesh product is loaded into a truck and hauled 4.7 miles to the washing plant at Arden. Power for the crushing plant is furnished by a 75-horsepower gasoline engine.

Washing-plant equipment consists of a belt and bucket elevator, two screw classifiers, conveyor belt, and storage bin. The classifiers are spiral steel screws, 14 inches in diameter and 12 feet long, that operate in a box launder inclined 19°. Power for the washing plant is furnished by a 75-horsepower gasoline engine.

COPPER KING (KEY WEST) DISTRICT

(Copper-Nickel-Platinum, Gold-Silver-Lead, Mica, Beryl, Manganese)

The Copper King district is in the west foothills of the Virgin Range about 15 miles a little west of south from Bunkerville, Nev. It can be reached by automobile by turning south off Highway 91 at Riverside and driving 1.6 miles to the Darling ranch, from which point a winding road goes to the Key West mine, 10.3 miles distant. The former Arrowhead Trail route between Bunkerville and St. Thomas traverses the district, but this road is impassable by automobile.

Copper ore was discovered on the Key West property in the late nineties by Scott Allen, a Cherokee. From 1900 to 1903 the property was explored primarily for copper and nickel by a company called the Nevada Copper and Nickel Co. During the course of this exploratory work, platinum was discovered in the ore by S. W. Darling, who was superintendent of the operations. Although considerable development work was done, very little was produced because of the metallurgical difficulties involved in recovering the metals from the matte.

After the Nevada Copper & Nickel Co. ceased operations, at least three other attempts were made to work the Key West mine, the last being made in 1936 by the International Smelting & Refining Co. of Salt Lake City, Utah.

From other properties in this area small operators and lessees produced (from 1908 to 1932) 1,550 tons of ore that yielded 51.39 ounces of gold, 1,313 ounces of silver, 99,990 pounds of copper, and 26,597 pounds of lead, valued in all at $19,726, an average value of $12.73 per ton.

Mica, beryl, and manganese also occur in this district but virtually none has been produced.

Key West Mine

The Key West group of seven patented claims is controlled by the R. E. Payne estate of Boston, Mass. The mine lies at an altitude of 3,665 feet. This property is unusually interesting because nickel and platinum are present in the ore, two metals that are comparatively rare in the United States.

The only record of production from the mine is one carload of ore (91,600 pounds) which was shipped to Fredericktown, Mo., about 1903, for testing. According to S. W. Darling, this ore was taken from various places in the mine in order to obtain a representative sample, and the analysis was as follows:

Silica	34.87 percent
Iron	10.59 "
Lime	9.41 "
Alumina	6.55 "
Magnesia	15.33 "
Copper	2.30 "
Nickel	1.79 "
Cobalt	.08 "
Sulphur	6.90 "
Platinum metals, per ton	.13 ounce
Gold, per ton	Trace
Silver, per ton	Trace

The sample contained a small trace of lead, no zinc, and no arsenic; it also contained 0.3 percent titanic oxide.

In 1936 the Key West and other properties in the vicinity were under option to the International Smelting & Refining Co. When the property was visited in November, this company employed a crew of 20 men to rehabilitate the mine. Equipment included a 120-horsepower Caterpillar Diesel engine belt-connected to a 500-cubic-foot-capacity, Sullivan, angle-compound compressor, an 80-horsepower Caterpillar Diesel direct-connected to a single-drum Sullivan hoist, and a 60-horsepower Caterpillar Diesel belt-connected to a Byron-Jackson, 350-gallon-per-minute-capacity, deep-well pump. After the mine was unwatered and a small amount of development work done, the option on the property was relinquished.

According to Bancroft[g/], the formation in the vicinity of the Key West mine is gneiss, apparently of granite origin. The gneiss is intruded by basic dikes, which, in turn, have been cut by dikes of aplite and pegmatite. The ore bodies occur as lenticular masses in the most basic of the dikes, which are a variety of peridotite. These peridotite dikes are interesting as they constitute one of the few examples of pre-Cambrian ore deposits in Nevada. The strike of the Key West dike is north 65° east, and the width varies from 8 to 60 feet, averaging about 25 feet. It is cut by numerous faults. To the southwest of the mine the dike is covered by a mantle of detritus, but it can be traced to the northeast, where the topography is rugged for several miles.

In the sulphide zone the ore occurs either as a massive or disseminated sulphide consisting principally of pyrite, chalcopyrite, and pyrrhotite, the

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g/ Bancroft, Howland, Platinum in Southeastern Nevada; Contributions to Economic Geology: U. S. Geol. Survey Bull. 430, 1909, pp. 192-199.

latter probably nickeliferous. The platinum appears to be uniformly disseminated through the ore, but the mineral has never been determined.

Great Eastern Group

The Great Eastern group of seven unpatented claims lying 1 1/2 miles northeast of the Key West mine is owned by S. W. Darling and A. M. Thompson of Riverside, Nev. This group was located about 35 years ago by the present owners, who did considerable development work by hand methods. In 1936 the property was under option to the International Smelting & Refining Co., but it reverted to the owners about the first of 1937. It has never shipped any ore.

Development work comprises three main adits ranging from 400 to 600 feet in length. Total workings comprise approximately 1,800 feet. There is no equipment on the property.

The peridotite dike has been cut by the three adits, and the geology is similar to that of the Key West mine.

Other Copper-Nickel-Platinum Claims

The United Nickel group of 13 unpatented claims owned by Robert A. Baker and associates, of Las Vegas, adjoins the Great Eastern group on the northeast. Two unpatented claims owned by Robert A. Baker individually adjoin the Key West group on the south.

In 1936 the International Smelting & Refining Co. is reported to have located a group of 32 claims near the Key West mine.

No real development work has been done on any of the foregoing claims.

Mica and Beryl Claims

On the western slope of the Virgin Range near the Arizona-Nevada boundary line about 12 miles ~~east~~ south of Mesquite, Nev., muscovite mica and beryl occur in pegmatite dikes. The deposits are reached by a poor automobile road, which connects with Highway 91 at the west end of the bridge over the Virgin River near Mesquite. From the bridge the road winds a little east of south for a distance of 9.6 miles. The last 1 1/2 miles must be traversed on foot over a steep trail. Only a small amount of sheet mica has been produced, said to have been shipped some years ago. In recent years there has been no activity.

B. R. McKenna, of Moapa, Nev., and partner own two unpatented claims. On these claims a pegmatite dike has been explored by at least five shallow shafts and open cuts. The dike on which most of the work has been done varies from 1 to 3 feet in width, with a nearly vertical dip. The formation is mica schist. The minerals in the dike are mica, quartz, and

feldspar, with occasional crystals of tourmaline and beryl, the latter up to 1 inch in diameter. Insufficient prospecting has been done to determine whether or not beryl occurs in quantities of commercial importance. The mica occurs in books up to several inches thick and from 6 to 8 inches square. The mica seen by the writer contains specks of foreign material and is not cleavable in large sheets.

The Fools Gold group of five unpatented claims recorded in Mohave County, Ariz., is owned by Lloyd Williams, Clarence Stay, and associates, of Las Vegas. According to Stay, crystals of beryl up to 3 inches in diameter have been found on this group of claims in a series of pegmatite dikes up to 12 feet or more in width.

Manganese Deposit

There is said to be a deposit of manganese in the Virgin Range 18 miles southeast of Mesquite, Nev. The last 4 miles to the deposit must be traversed either on foot or horseback. The deposit is covered by three unpatented claims recorded in Mohave County, Ariz., and owned by Ernest A. Walker and associates of Mesquite. According to Walker, picked samples of manganese ore analyzed 30 to 40 percent manganese, but on the average the grade is considerably less. The deposit has been prospected by a number of shallow open-cuts, but no manganese has ever been produced.

CRESCENT DISTRICT

(Gold, Silver, Turquoise, Feldspar, Fluorspar, Mica)

The Crescent district is in southern Clark County near the California-Nevada boundary line 6 miles east of Nipton, Calif., a station on the Union Pacific R.R. The Sunset district adjoins it on the north and the Vanderbilt district, in San Bernardino County, Calif., on the south. Prospecting began in this area about 1894, but no important discoveries were made. The period of greatest activity was from 1905 to 1907, when at least 10 incorporated companies were working in this area. During this period the little settlement of Crescent, 6 miles east of Nipton, was established, but it was abandoned soon after. Late in 1936 metal-mining was revived, stimulated by the increased price of precious metals. Most of this work is by small companies or lessees.

The principal production in this area has been derived from the turquoise mines, active from 1894 to 1906. The value of the turquoise produced is not known, but undoubtedly it was considerable. Incomplete statistics of the metal production from 1906 to 1932 give 432 tons of ore containing chiefly gold, with small amounts of silver, lead, and copper, valued at $7,655, or an average of $17.72 per ton. Small amounts of feldspar, fluorspar, and mica also have been produced.