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.

Nippeno Group

The Nippeno group of five patented claims 2 miles east of Crescent is owned by J. W. Wilson, of Las Vegas, Nev., and Harry Trehearne, of Nipton, Calif. From 1905 to 1907 this property was worked by the Nippeno Mining Co. On February 1, 1937, the property was leased to George Miller and associates. Production from the Nippeno property is said to have been about $40,000, mostly in shipping ore.

Some years ago a mill was built near Crossman's Wells at Crescent to treat the ore. This mill is now owned by Lester A. Scott of Los Angeles. The mill is equipped with a Huntington No. 2 crusher, 5 stamps (each weighing 1,050 pounds), an amalgamation plate, and a small service concentrating table. Power is furnished by a 6-cylinder gasoline engine. Capacity of the mill is about 15 tons per day. Judging from the tailings pile, about 200 tons of ore was treated.

Development work consists of a shaft inclined 50° and 535 feet deep, with levels at 100-foot intervals, and two shafts each about 100 feet deep. Total workings are about 3,000 feet. Mining equipment comprises a 12-horsepower Fairbanks-Morse geared hoist, a Rix compressor (size 6, 8 inches) direct-connected to a gasoline engine, mining tools, blacksmith shop, and camp buildings.

The formation is granite and diorite. The ore occurs in three narrow veins ranging in width from a few inches to 2 feet and averaging about 10 inches. Values are chiefly in gold with small amounts of silver.

Budget Group

The Budget group of four unpatented claims owned by F. B. McCaughey, of Las Vegas, Nev., and associates is about 1 1/2 miles south of Crescent Peak and 9 miles east of Nipton, Calif. This property was discovered about 1906, at which time a small amount of development work was done, and as nothing of importance was found it was abandoned. It was relocated by the present owners in 1936.

Development work consists of several shallow shafts and several adits, comprising in all about 600 feet in workings. Mining equipment comprises a Ford engine compressor, jackhammer, mining tools, and blacksmith shop. The only production from the property has been 200 tons of ore, averaging about $50 per ton, shipped by the present owners. A shipment made to the American Smelting and Refining Co. from this property on April 21, 1936, furnished the following data:

Metal quotations:	Au $34.9125		
	Ag .77		
	Pb 4.60 less 3.525		
	Ounce		
Settlement assay:	Au 1.3875		
	Ag 1.95		
	Percent		
	Pb 3.6		
	Cu .1		
	Insol. 81.6		
	S .5		
	Fe 7.8		
Value per ton:	Au at 31.81825		$44.15
	Ag 95 percent less 0.5 oz. at 0.77		1.12
	Pb less 50 percent at 0.215		.39
	Gross value		45.66
Smelter charge:	Base charge	$3.50	
	10 percent excess over $20.00 gr. max.	2.00	5.50
	Net value per ton		40.16
	Pounds		
Gross weight	25,540		
Weight, 225 sacks	255		
Wet weight	25,285		
Less 1.7 percent moisture	429		
Dry weight	24,856 or 12.428 tons at $40.16		$499.11
Deductions:	Freight $4.50 per ton	$57.47	
	Emergency freight 7 percent..	4.02	
	Switching	1.35	
	Emergency freight 10 percent.	.14	
	Total	62.98	62.98
	Net proceeds		436.13

The ore occurs in a quartz vein striking about north 25 east, dipping 35° to 50°, and ranging from a few inches to 2 feet in width, averaging about 8 inches. The formation is gneiss. Values are chiefly in gold, with small amounts of silver and lead. The quartz is stained with iron and manganese oxides. Wulfenite and a vanadium mineral, probably vanadinite, occur in the vein filling.

Red Star Group

The Red Star group of five unpatented claims, owned by Harry Trehearne of Nipton, Calif., lies 4 miles north of Crescent. In February 1937 the property was under bond and lease to Ralph Wyman of Glendale, Calif., and his associates. There is no record of any production from the property.

Development work comprises a shaft about 100 feet deep and a crosscut 60 feet long driven from the bottom of the shaft. This work was done in the early days. When the writer visited the property a crew of 3 men was installing equipment in preparation for sinking a new shaft 200 feet. The equipment included a 1-drill Worthington compressor, an air-operated hoist, and mining tools.

The general country rock is gneiss. The so-called "vein" appears to be a mass of quartzite carrying gold and silver values. The deposit is reported to have a width of 25 feet and to average $7 to $8 per ton at current metal prices.

Lily Group

The Lily (formerly known as the Calavada) group of five unpatented claims owned by Charles Johnson, of Nipton, Calif., is about 5 miles a little south of east from Nipton. The claims lie on the Nevada-California boundary line, and most of the ground lies in San Bernardino County, Calif. When the writer visited the property in February 1937, it was under bond and lease to J. F. McClish of Glendale, Calif. There is no record of any production. Development work consists of one shaft 150 feet deep, 2 shafts each 60 feet deep, several short adits, and scattered surface workings, altogether totaling about 500 feet. In February 1937 the property was idle.

F. L. Ransome[9/], who visited the property in 1906, comments as follows:

> About 3 miles southwest of Crescent, on the other side of a gneiss ridge, is the Calavada property. Here, also, the deposit appears to be a much shattered and silicified bed or beds of quartzite resting on the gneiss and dipping gently south at an angle very little steeper than the general slope of the ridge upon which the deposit lies. The quartzite mass is fully 1,000 feet wide from east to west, and the distance from the highest point on the slope to the point where the deposit passes beneath the alluvium of the desert is probably still greater. A shaft 40 feet deep has been sunk at one place without reaching the underlying gneiss.
>
> The material is much shattered and in many places is a breccia of quartz fragments. It is generally rusty and varies in hardness. The deposit has been carefully and conservatively sampled over an area about 1,000 feet square for the purpose of determining its availability for extensive cyanide treatment, the proposition being to handle the material with steam shovels. These assays rarely fall below $2 per ton, and some of them run as high as $12. The average for the whole area is approximately $3 per ton. The deposit is separated from the railway by a mile of gently sloping plain, and water can be pumped from wells sunk in a playa or "dry lake" less than 3 miles away.

9/ Ransome, F. L., Preliminary Account of Goldfield, Bullfrog, and other Mining Districts in Southern Nevada: U. S. Geol. Survey Bull. 303, 1907, p. 79-80.

Double Standard Group

The Double Standard property, comprising two patented claims controlled by the Mitchell Investment Co. of Denver, Colo., is 7 1/2 miles by road northeast of Nipton, Calif. At the time of the writer's visit the property was under lease to W. C. Kelsey, of Searchlight, Nev., who was subleasing it to F. F. Galbraith and partner. Royalty paid by Galbraith is 25 percent on the net returns. In 1905 this property produced several thousand dollars in shipping ore. In 1936 Galbraith and partner mined nearly 200 tons of ore valued at from $25 to $65 per ton.

Development work comprises four shafts, the deepest of which is 100 feet, and several short tunnels, totaling in all about 500 feet. Mining is done by hand methods.

The property lies on a slope of a steep mountain, and the lessees pack the ore 1 mile off the mountain on burros. With a pack team of six burros an average of 3 tons of ore per day can be hauled, each burro carrying two sacks of ore weighing about 110 pounds each. Cost of feeding the burros averages $45 per month. The ore is hauled to Searchlight, a distance of 22 miles, and treated in the Kelsey custom mill. Trucking charge to Searchlight is $3 per ton on contract. Milling charge is $4 per ton, and payment is made for 90 percent of the assay value of the gold figured at $33 per ounce and 90 percent of the assay value of the silver less one ounce at 70 cents per ounce.

The quartz veins dip about 60° and range in width from 2 inches to 3 feet, averaging about 1 1/2 feet. Formation is granodiorite. Values are in gold and silver associated with small amounts of lead and copper.

Colonel Sellers Claim

The Colonel Sellers property, 3 miles north of Crescent, comprises one patented claim owned by the Mitchell Investment Co. of Denver, Colo. In 1937 it was under lease to Dewey Yeager of Crescent, Nev. Royalty payment is 10 percent of the net mill or smelter returns. This property was first worked about 1905, but there is no record of any production. In the latter part of 1936, Yeager shipped one carload of ore that averaged $20.80 per ton.

Equipment includes a 1-drill giant compressor belt-driven by an automobile engine, jackhammer, and mining tools. Property has been explored by several adits and scattered surface workings, totaling in all about 500 feet.

The ore occurs in narrow quartz veins that dip about 60°. Values are chiefly in gold associated with minor amounts of silver, copper, and lead. Formation is gneiss.

Cumberland Group

The Cumberland (formerly known as the Oro Fino) group of five unpatented claims owned by Oscar C. Scott of Searchlight, Nev., lies 1 1/2 miles east of Crescent. Production has been about $1,000 in shipping ore. When the writer visited the property it was inactive. Development work consists of a shaft 137 feet deep, inclined 30°, and subsidiary workings, totaling about 350 feet. There is no equipment on the property.

Formation is gneiss and granite. The ore occurs in narrow quartz veins and the values are chiefly in gold associated with silver, lead, and copper. Specimens of ore found on the dump showed vanadinite and wulfenite.

Turquoise Deposits

Turquoise occurs in two areas in the Crescent district. One deposit, known as the Morgan mine, is 1 1/2 miles south of Crescent, and two other deposits, known as the Smithson-Phillips and the Toltec mines, are on the south slope of Crescent Peak about 3 1/2 miles a little south of east from Crescent. These deposits are of interest in that they were worked in ancient times by Indians, as is evidenced by stone hammers, stone slabs, and other crude tools used to mine and polish the turquoise that were found in the vicinity. In 1894 the Crescent Peak deposits were rediscovered by George Simmons. In 1896 they were acquired by J. R. Wood of New York City, and in the following year operations began under the name of Toltec Gem Mining Co. This company worked the deposits up to 1906 and, judging from the extent of the old workings, a large amount of turquoise was produced. In 1906 a turquoise weighing 320 carats and valued at $2,600 was found in one of the mines.

The Crescent Peak deposits are covered by six patented claims now owned by the county for nonpayment of taxes. In recent years the only activity has been by lessees who confined their activities to screening the dumps. The road to these deposits has been washed out, and the last 1 1/2 miles up the mountain must be traversed on foot.

Mining activity has been confined to two areas about 1 1/2 miles apart. Total workings consisting of a shaft about 240 feet deep, a number of short adits, and open cuts, all of which total about 1,000 feet.

The formation in the vicinity of the turquoise area is a decomposed rock of granitic composition. The rock has been extensively fractured, and in these fractures veinlets of quartz and turquoise have been formed. Some of the fractures are filled with clay gouge in which nodules of turquoise occur coated with kaolin, which has to be chipped off before the quality of the gem can be determined. The color ranges from light to dark blue, texture is dense, and virtually free from matrix. Fragments of turquoise occur in the dumps, and one fragment found by the writer was

1 inch thick and approximately 1 inch square. Most likely most of the material in the dump was rejected because of its light color.

The Morgan mine, covered by one unpatented claim, is owned by Charles Johnson of Nipton, Calif. It was last worked by G. W. Morgan about 1906. Production is said to have been several hundred pounds of fine quality gem turquoise. Development consists of an adit 150 feet long and several open cuts totaling about 200 feet of workings.

Here the turquoise occurs in narrow seams and veinlets in monzonite cut by rhyolite. Fragments of pale-blue to deep-blue turquoise were observed on the dumps. These dumps have been pretty well picked over by Indians.

Feldspar Deposit

A large deposit of feldspar occurs in a pegmatite dike on the west slope of Crescent Peak 9 miles east of Nipton, Calif., the nearest shipping point. The deposit is said to be owned by Thomas Thorkildson of Los Angeles, Calif. Shipments of feldspar were made from the property about 1923. Judging from the excavations, probably about 500 tons of feldspar were shipped. In recent years the property has been inactive.

The feldspar was quarried from several open-cuts, the largest of which is about 40 feet long, 18 feet wide, and an average of 15 feet high. As seen in the open-cuts, the pegmatite consists of about 75 percent feldspar, 20 percent quartz, and 5 percent mica. By selective mining the feldspar can be obtained free from the associated minerals.

Fluorspar Deposits

Small deposits of fluorspar occur in a low range of hills 4 miles due east from Nipton, Calif. Deposits were discovered by Charles Johnson of Nipton in 1914. In 1925 a small amount of development work was done by Thomas Thorkildson of Los Angeles, Calif., but only a few tons of fluorspar have been shipped. The deposits were relocated by Allen Stolte of Searchlight, Nev., in 1934, and presumably he is the present owner. Development work consists of a short tunnel and several open-cuts totaling in all not more than 50 feet. About 6 tons of sorted fluorspar is on the dumps.

The fluorspar occurs in narrow veins ranging in width from several inches up to 15 inches and dipping about 60°. Formation is gneiss. In places the fluorite is stained with copper. The veins so far discovered are too small to produce any appreciable amount of fluorspar.

Mica Deposit

In 1935 about 5 tons of scrap mica was produced from a pegmatite dike 2 miles southeast of Crescent along the side of the old stage road between Searchlight, Nev., and Ivanpah, Calif. The deposit is owned by H. M. Benson

of Crescent, Nev. The only work done on it is an open cut about 10 feet deep and 10 feet wide.

The pegmatite dike is 15 feet wide and consists of an intergrowth of quartz, feldspar, and mica. The mica crystals are small and the material is suitable only for scrap purposes. One-quarter mile north of the pegmatite dike is a prominent outcrop of solid white quartz at least 20 feet wide. The formation is granite.

ELDORADO (COLORADO) DISTRICT

(Gold, Silver)

The Eldorado, also known as the Colorado, district comprises an area 12 miles long and 6 miles wide in the north end of the Opal Mountains in southeastern Clark County. It includes the mines in the vicinity of Knob Hill on the west and those in the Capitol area on the east. The camp of Nelson in the central part of the district is 25 miles by road south of Boulder City, Nev. This district is one of the oldest in the State and mining has been done here almost continuously for nearly 80 years. It was organized as the Colorado district in 1861. Old arrastres and prospect holes reported to have been found in this area in the sixties indicate that mining was carried on by Spanish adventurers probably several hundred years ago. The first authentic discovery was in 1857 on the Honest Miner claim, now a part of the Eldorado Rand property. The Techatticup (an Indian word said to signify either "white flower" or "plenty for all") mine was purchased from the original locaters in 1862 by the Southwestern Mining Co. The mine was opened in 1863, and in the following year a 15-stamp chlorination mill was erected at the mouth of Eldorado Canyon on the Colorado River. The salt required for the treatment of ore was mined from the Virgin River salt beds near St. Thomas, Nev., and transported by boat down the Virgin and Colorado Rivers.

The Southwestern Mining Co. dominated the district until about 1897 as it owned virtually all of the productive mines, including the Techatticup, Wall Street, Quaker City, Mocking Bird, Jubilee, Honest Miner, Morning Star, Red Butte, Rover, and others. The company was at first controlled by the Barker brothers and later by Joseph Wharton, a prominent figure in the steel industry of Pennsylvania. During its greatest activity the company owned several mills and operated its own fleet of river boats for bringing in supplies from the Pacific coast. After 1897 the properties were either sold or leased to a number of small companies, which operated with varying success. Speaking of the Eldorado district in 1906, Ransome[10] states:

> It is a little surprising that a district once alive with activity should have attracted so little outside notice. This, however, is partly accounted for by the overshadowing predominance of the Comstock, Eureka, Ely, and other districts noted in

10/ Ransome, F. L., Preliminary Account of the Goldfield, Bullfrog, and Other Mining Districts in Southern Nevada: U. S. Geol. Survey Bull. 303, 1907, pp. 63-76.